

Chapter 2

Hedge Funds

2.1 Specificity of Hedge Funds

Currently, hedge funds are the most well-known alternative investment institutions. They emerged on the capital markets in the 70s and 80s. They evolved as a consequence of development of new financial instruments, such as e.g. derivatives. Also, limitations in functioning and in investing methods of traditional investment funds and pension funds have contributed to development of hedge funds.

Problematic aspects of hedge funds raise a lot of controversy. The term ‘hedge fund’ has not been universally defined. Analysis of legal acts concerning the sector of alternative investments proves that there is no precise definition of hedge fund. The term has not been specified by any of the US legislative acts such as: Securities Exchange Act of 1934, Investment Advisor Act of 1940 or the Commodity Exchange Act. This term neither has been defined by the Securities Exchange Commission, which has not presented any official definition.¹ What is more, there is no comprehensive definition of hedge fund by the European Union Directives.

According to the definition by Schneeweis et al. (2001), the term hedge fund can refer to an investment fund that is subjected to unrestrictive regulations, which invests the investors’ funds both on the spot market as well as on the futures market, and which uses a financial leverage for the benefit of its shareholders. Another definition describes a hedge fund as an aggressive investment portfolio using all available speculative deals in order to generate income. Ineichen (2000) in his definition of hedge funds indicates the importance of managers’ participation in the funds and calls it a private company, in which a manager or a general partner financially participate in the fund. Functioning of such a company is not subjected to restrictive regulations, which allows the fund to use various investment strategies, including short-selling and leveraging. The author stresses the fact, that hedge

¹ Securities and Exchange Commission, Registration under the Advisor Act of Certain Hedge Fund Advisers, 17 CFR parts 275, 69 Federal Register 72054, December 10, 2004.

funds usually are created as limited partnerships or as civil law partnerships, located in offshore areas, which makes their actions unrestricted by any tax or legal regulations.

While citing various definitions of hedge funds, it is worth noting the controversies related to the lack of a universal model and its precise description. For instance, the *American Heritage Dictionary*, 3rd Edition, defines a hedge fund as “an investment company that uses high-risk techniques, such as borrowing money, selling short, in an effort to make extraordinary capital gains”. Classifying hedge funds as investment companies would allow regulation of their activities under the Investment Company Act of 1940. Hedge funds, however, are not subject to regulations of that Act.

Jaeger (2002), on the other hand, states that the term ‘hedge fund’ is misleading, because hedge funds often use risky leveraged strategies, rather than hedging methods. Due to improper, as far as logic is concerned, use of this term, attempts are being made to substitute it with the term ‘arbitrage fund’. Moreover, the term ‘hedge fund’ is not appropriate from the perspective of legal regulations under which those funds are formed. Most common legal forms include: a limited partnership or a civil law partnership, and as such, also in this context, the term ‘fund’ is used improperly. Following this logic, another definition can be quoted, which describes hedge funds as entities that are not a bank, an insurance company or any other regulated financial institution characterized by a very broad and diverse spectrum of investment strategies used by it.

While presenting the concept of ‘hedge fund’ that is used in business practice, a definition provided by a prestigious financial institution Moneycentral Investor <http://moneycentral.msn.com/investor/home.asp> can be quoted. It describes a hedge fund as a risky investment fund open to wealthy investors, which is devoted to finding investment opportunities characterized by a high return rate, but by a high risk. Goldman Sachs & Co., in turn, describes hedge funds as entities using various investment strategies, characterized by a high level of risk, yet providing a possibility of a high return rate at the same time <http://www2.goldmansachs.com>, Accessed December 13, 2009. Hedge funds are investment instruments, which, in comparison with traditional investments such as stocks or bonds, provide distinct profit and risk profiles (Stefanini 2010). Clarification of this definition requires an indication, that hedge funds use alternative investment strategies and styles, and they are not subject to any regulatory restrictions that could hamper fulfillment of the undertaken investment goals. Development of a positive return rate regardless the direction of price changes on the market is a common goal of hedge fund investments. Achievement of satisfactory investment results is highly related to the unique characteristics and abilities of fund managers (Connor and Woo 2004). Jobman (2002) also confirms the lack of a universal definition of a hedge fund. Summing up all the widely accepted definitions, some characteristic features of hedge funds can be distinguished, which include:

- Focus on achievement of a definite profit that is not based on a known reference standard called a benchmark;

- Allowing the managers to use both, growths and declines on the market, including long and short positions;
- Rewarding the managers for their results;
- High flexibility in the choice of investment styles and the use of short-selling strategies, leverages and derivatives;
- Ability to use various financial instruments in order to diversify the portfolio and to reduce the risk, as well as to generate extraordinary profits.

The above presented definitions do not uniformly specify the term ‘hedge funds’. However, they allow isolation of some characteristic features, which distinguish these forms from other forms of collective investment.

2.2 Functioning of Contemporary Hedge Funds

The market of investment funds is very diversified. Nevertheless, the definitions of hedge funds presented by different authors have some elements that are characteristic of the hedge fund sector. Hedge funds most commonly belong to private investment companies, which are directed at wealthy individuals or single entities (natural person and legal persons). They are not, therefore, widely available. High amount of a deposit is its primary barrier, which only allows a selected group of wealthy investors to have access to those funds. Investors of those funds have direct access to hedge funds’ data through investment advisors of these funds.

Some hedge funds, mostly American ones, do not use third party persons as trustees of its assets nor administrators (who calculate the net value of the fund’s assets). This can lead to a conflict of interest, and in extreme cases even to misappropriation of assets. For instance, Kirk Wright International Management was accused of fraud and a breach exposing their clients to losses in the amount of \$180 million. In December 2008, Bernard Madoff was arrested for a fraud of \$50 million in a Ponzi scheme.

Despite significant differences in functioning of hedge funds, there is one characteristic feature common for all such funds—the assumption of achieving a positive return rate, in the absolute sense, that is, without using benchmarks as a target reference standard.

One important element impacting functioning of hedge funds and influencing their specific results is the relationship between the managers and a hedge fund, involving their financial participation in a given funds well as their investing abilities which generate the so-called additional alpha.

A two-stage system of compensating the managers, which is characteristic for alternative investments, is a significant feature of hedge funds. The management fee is deducted from the returns prior to their publishing. Commission from a generated income enables establishment of a strong relation between those managing the fund’s assets and the fund itself.

Investing own funds by the managers is a good protective measure against occurrence of some mechanisms characteristic of a given agency's theory,² according to which the investors and the investing have different goals. Compensation for the results is usually paid out after reaching the assumed break-even point or after making up the losses incurred by the fund during preceding periods. Hedge fund managers usually receive both, the fund management fees and commission for the fund's performance, which is also called a commission incentive. A typical hedge fund manager charges a fee of "2 and 20". This term refers to a management fee of 2 % of the fund's net asset value, and to a commission incentive of 20 % of the profit earned by the fund. Generally, management fees range from 1 to 4 % annually (standard 2 %), but are calculated and paid out monthly or quarterly. Business models of most fund managers assume the management fees to cover the manager's operation expenses, leaving the fees for performance as employee bonuses. In large hedge funds, management fees can constitute a significant part of the manager's profit.

Commission from achieved results is a characteristic feature of hedge funds. The amount of commission is calculated as percentage of the profit obtained by the fund. Typically, hedge funds charge a commission of 20 % of the overall profits. The scope of these fees, however, is diversified; well-known managers charge higher fees. For instance, in the fund SAC Capital Partners an incentive fee is as high as 35–50 %, while Jim Simmons from the Medalion Fund charges a fee of 45 % of the overall profit. The model of incentive commission has been much criticized as being the cause of excessive risk-taking on the part of managers, undertaken in order to attain short-term profits. Managers should be focused on implementation of long-term investment strategies. Goetzmann et al. (1998) have attempted an analysis of potential costs and benefits of a *High-Water Mark* system from the investor's perspective. There are many various commission models, however, the most known systems include:

- *High-Water Mark*,
- *Hurdle rate*.

High-Water Mark literally means the mark of high water that is above the highest level a given water reservoir has reached during a certain time interval. This term is often used in figurative sense to describe the highest value level of a given variable. In reference to the hedge fund sector, this term is used in conjunction with the managers' fees (Stracca 2006). This means, that the managers receive an incentive commission (*positive performance fees*), if the market value of the fund exceeds a certain assumed level. Thus, when calculating commission, the net asset value of the fund in a current year and the net asset value of the fund in a

² In the 60s and 70s of the twentieth century, Arrow and Wilson attempted to describe the problem of risk distribution, which arises when partners have different approach to risk. The agency's theory, besides the risk distribution, has developed the problem of agencies, which arises when the entities cooperating with each other have different goals.

Table 2.1 The mechanism of the high water mark commission system (Sokołowska 2014)

Year	Net asset value (millions USD)	Change in net asset value (millions USD)	The value of commission (millions USD)
2010	100	–	–
2011	120	+20	$0.2 \times 20 = 4$
2012	110	–10	0
2013	130	+20	$0.2 \times 10 = 2$

preceding year are compared. Commission is paid out, if the current net asset value of a fund (NAV) is higher than the historical maximum value of those assets.

High-Water Mark contracts are important from the perspective of the investors' interests, since incentive commissions are paid out only at the time of fulfillment of specific conditions. On the other hand, however, this mechanism can lead to higher risk-taking on the part of the managers and to higher variations in return rates of such funds.

Table 2.1 shows the mechanism of a *High-Water Mark* commission system. This simplified diagram shows, that in 2013, despite an increase in the net asset value, from \$110 to \$130 million, the incentive commission was paid out in the amount of \$2 million, because the value of \$130 million is by \$10 million higher than the highest net asset value of \$120 million, which was earned by the fund during previous periods. Such construction of a commission mechanism is meant to focus the managers on attainment of long-term investment objectives. This mechanism, however, is not devoid of drawbacks. It may happen, that the manager, who suffered significant losses, can withdraw from managing a given fund without suffering severe consequences.

Another known mechanism of an incentive commission payout is a *hurdle rate*. *Hurdle rate* generally describes the minimum return rate of an investment. In the system of compensating hedge fund managers, this term is going to describe a return rate level, which should be reached by a hedge fund in order for its managers to receive additional commission. This mechanism, therefore, allows the fund managers to collect commission that is based solely on achievement of a performance above the pre-established reference standard (the so-called benchmark). Thus, the commission fee is collected after the reference rate is exceeded, such as a LIBOR rate or another predetermined benchmark. In case of the so-called *soft hurdle* mechanism, commission fee is calculated based on the total annual return rate. In case of a more restrictive mechanism, called a *hard hurdle*, the commission level is calculated based on a return rate exceeding the benchmark.

Immediate withdrawal of the cash invested in a given fund is not possible. Most funds often predetermine the so-called fund entrance and exit barriers. Each hedge fund uses different rules regarding exiting an investment. Therefore, it may be a month period or even 3–5 years. The clauses preventing fast withdrawal form an investment are called *lock-ups*. Some hedge funds collect fees for cancellation of shares (fees for a withdrawal from the market), if the investor intends to withdraw the assets from the fund earlier. The fee for cancellation of the shares in a given

Table 2.2 Primary features of hedge funds

Investment goal	Achievement of a positive return rate, regardless the market conditions; lack of reference to the so-called benchmarks
Investment strategies	Broad spectrum of investment strategies using various investment techniques (short-selling, leveraging), with application of complex instruments (including derivatives); investing on various markets
Transaction costs	A fee for managing the fund (management fee), usually around 1–2 %; a charge based on the achieved result (performance fee)—variable, ranging from 10 to 40 %
Headquarters	Mostly offshore centers characterized by liberal legal and tax regulations
Legal form	Most common legal form is a limited partnership, limited liability company, business trusts
Management	Investment company—a managing entity or a natural person, often a support of independent investment advisors
The investors	Wealthy individual investors; institutional investors, who making a capital contribution and create a capital pool; moreover, selecting qualified investors, who are aware of the risk and know the strategies used by the fund
Restrictions	Most hedge funds are characterized by a minimal capital input and by restrictions regarding the number of investors
Regulations	Usually, there are no regulations, or the scope of regulations is small
Publicness of the fund's data	A voluntary or limited obligation to disclose data, as compared with other institutions of collective investment

fund often is collected within a particular time from the date of investment (usually 1 year period). The cancellation of shares fee is meant to discourage investors from short-term investments as well as to prevent withdrawal of the assets following a period of unfavorable investment results. In contrast to fund management fees and to an incentive commission, the fees for cancellation of shares are hoarded by the fund and they multiply the capital of other investors; thus, they do not constitute additional commission paid out to the managers.

Hedge funds use complex marketing strategies, which are analyzed in detail in Chap. 3. As a rule, these entities undertake application of a specific investment strategy determining its character and the level of the risk taken by the fund. Characteristic features of hedge funds are summarized in Table 2.2.

2.3 Classification of Hedge Funds

The sector of investment funds, which operates on the developed financial markets, distinguishes between two basic groups of funds (Wiśniewska 2007a, b):

- Traditional funds, such as equity funds, fixed income funds, hybrid funds and money market funds;
- Alternative funds, specified as: *private equity* funds, *venture capital* funds, *real estate* funds, or hedge funds.

Hedge funds also can be divided according to a geographical criterion. Such classification of hedge funds according to their location differentiates between two types of funds:

- *Onshore* hedge funds,
- *Offshore* hedge funds.

Offshore hedge funds are entities located in places characterized by liberal legal and tax laws. Estimates indicate that about 70 % of all *offshore* hedge funds are registered in the Cayman Islands <http://www.hedgefundsreview.com>. An attractive place of registration for those funds oriented at operating within the European Union is Dublin (Ireland). In turn, Hong Cong or Singapore are the best places of registration for the funds oriented at activities in the Far East.

Another criterion of hedge funds' classification is the investment strategies used by them. There is no single common division listing the strategies used by these entities. Each major research center, such as CSFB/Tremont, TASS, HFR or Van Hedge, use different rules of division. Analysis of different divisions of the particular investment strategies used by hedge funds enables their classification according to two separate criteria:

- The similarity criterion of the instruments used and of the direction of price changes occurring between them,
- The method of evaluating the market risk and the tools used for it.

Hedge funds can also be classified according to their availability. Under this classification, we can distinguish the following hedge funds:

- Private hedge funds—this category includes vast majority of the hedge funds operating on the market;
- Public hedge funds, available to a wider group of investors—including the funds, whose share units are issued e.g. in the form of certificates on selected stock exchanges.

Yet another criterion of hedge fund division takes into account investment policies, which are closely linked with the investment strategies that are used by a fund. Within the scope of the strategies, we can distinguish the following hedge funds:

- Balanced hedge funds,
- Aggressive hedge funds.

Depending on the manner of fund's management, we can distinguish the following types of funds:

- Discretionary hedge funds, that is, those using automated trading systems designed to exclude the errors related to the human factor;
- Qualitative hedge funds, which are managed using the managers' knowledge and experience.

2.4 Legal Forms of Creating Hedge Funds

A hedge fund's legal form depends on the fund's registration place and on the manner in which the financial assets are invested. Since hedge funds have originated in the United States, the legal forms of creating hedge funds in this country will be the object of analysis. These forms can serve as a reference point for the hedge funds created elsewhere.

Business entities operating in the United States can conduct their activities in various legal forms. These entities are subject to the American law, therefore they often differ from legal entities in other countries. A synthetic approach to certain American legal forms, presented below, does not mean that these forms function the same in other places in the world.

Basic legal forms of business entities in the United States are:

- Operating on the basis of an entry in the business activity register (*sole proprietorship*),
- Non-commercial/civil partnership (*general partnership*),
- Limited partnership,
- Limited liability company,
- Corporate/joint-stock company (*corporation*).

It is also possible to organize entities as³:

- A professional partnership (*limited liability partnership*),
- A limited liability limited partnership.

Most of the above listed legal forms do not bear the characteristics adequate to create a hedge fund. Vast majority of the companies in the US operate in the form of a natural person conducting activity based on an entry in the business activity register. This form of activity is suitable for individuals or for married couples, however, it does not offer the right conditions for enterprises run by a larger number of people. Basic problems associated with this activity are related to difficulties in raising the capital, difficulties in distributing the profits or losses, as well as problems associated with the scope of responsibility borne by each individual.

General partnership is a basic form of conducting any business activity on a small scale. The creditors of a general partnership may, however, execute their claims not only from the company's assets, but also from each partner's private assets.

There are two basic legal forms used to create hedge funds: a limited partnership and a limited liability company. The legal form of a limited partnership does not belong to popular modes of conducting business activity in the US; it is generally reserved for the companies investing in real estate or in extraction of natural resources (<http://newyork.trade.gov.pl>, Accessed June 1, 2014).

³The forms presented here belong to less common ones.

A hedge fund established in the form of a limited partnership consists of at least one general partner and one limited partner. A general partner is responsible for running the fund and is personally responsible for the liabilities incurred. A limited partner is responsible for the company's obligations up to the amount of his/her declared contribution (limited liability amount).

In practice, in the US, general partners of limited partnerships are legal persons. They are entitled to represent the company. Limited partners can only act as proxies. If general partner is a legal person, the company is managed on his/her behalf by the Board or by the persons appointed by him/her. Investors (limited partners) do not bear any responsibility for the decisions made by general partners, nor for the fund's liabilities. The profits earned by the company are divided between the partners, where the division criterion is based solely on the actual contributions. Organizational structure of the fund operating in the form of a limited partnership is illustrated by Diagram 2.1.

Another possible legal form of a fund is a limited liability company. Organizational structure of a fund operating as a limited liability company is presented in Diagram 2.2.

Diagram 2.1 Organization of a fund operating in the form of a limited partnership (Lhabitant 2011)

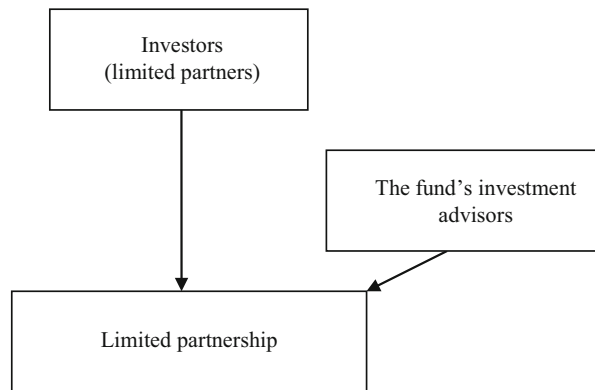
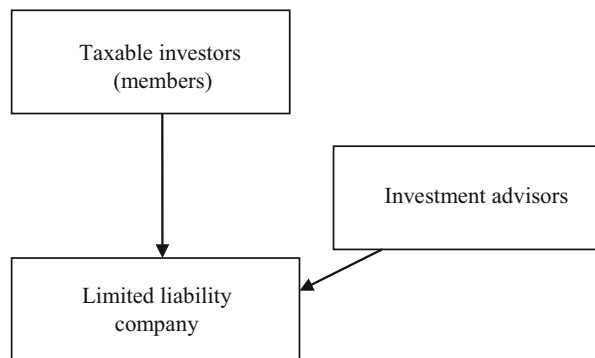


Diagram 2.2 Organization of a fund operating as a limited liability company



Since hedge funds are not registered investment firms, they are not required to disclose any information. However, they publish memorandums for their investors, which contain basic information on a given hedge fund's activity and on the strategies used by it. Moreover, the investors receive information on the fund's results, about risk analysis, and on the composition of its investment portfolio. Despite a lack of such requirement, most hedge funds employ an auditor, who makes an independent annual audit of the fund's activity and provides a report on it.

2.5 The Structure of Hedge Funds

The structure of a hedge fund is determined by its legal and organizational form. To a high degree, it depends on the laws in force in a given country. If the fund is formed in accordance with the US law, it usually is determined as a *domestic hedge fund*; if it is formed in accordance with the law of another country, it is called an *offshore hedge fund*.

Another common variant of a fund's organizational form is using the *Master-Feeder* structure. It involves joining the fund with a separate offshore fund, in accordance with the US law, in order to benefit from numerous advantages. There also is a possibility of creating a structure composed of a primary fund and at least two feeder funds. The primary fund sells its shares to feeder funds, which are the only entities authorized to acquire them. These funds offer their shares to investors. *Master-Feeder* funds often are created in the form of a corporation, under the laws different than those in the US (Lins 2002). Primary funds can also be arranged in the form of a limited partnership. Organizational structure of a *master-feeder* fund is presented in Diagram 2.3.

Another organizational structure of hedge funds' activity is a structure called *side-by-side*. In the *side-by-side* structure, investors, usually American, invest in a limited partnership formed within the US, while offshore investors invest in a fund

Diagram 2.3

Organizational structure of a *master-feeder* fund

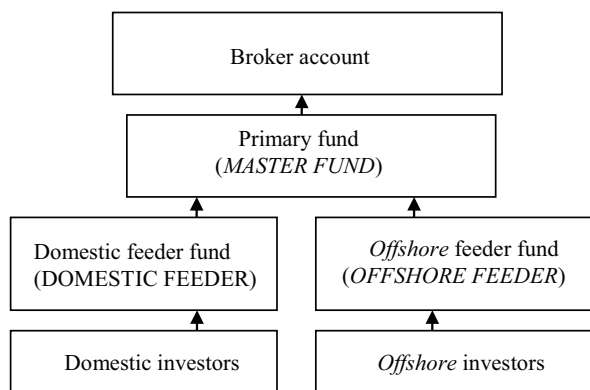
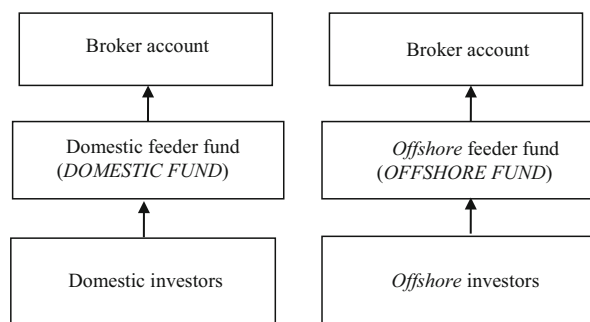


Diagram 2.4
Organizational structure of
a *side-by-side* fund



formed in tax heaven. These funds, though, have the same investment goals and the same managing entity (Diagram 2.4).

Hedge funds registered in the so-called *offshore* financial centers offer many advantages associated with their functioning. Offshore locations allow conduction of business activity free of income tax, or with a low-rate flat tax or a lump-sum tax. Offshore regulations and conducting offshore activity are characterized by the possibility of using all the advantages the tax heavens provide, without locating there the Board, the personnel or the investors themselves. Tax regulations existing at those locations have some characteristic features: limited availability of alternative funds for unskilled retail investors, protection of client confidentiality, and the fund's requirements independent of its management. This reduces the costs associated with the fund's operational activity. The headquarters located on an *offshore* territory are formal in character. Physical control and management are conducted from the entity's domestic headquarters or from another suitable place.

As opposed to hedge funds' places of registration, their managers are based primarily in the *onshore* countries. Most of hedge funds' managers come from the US (mainly from New York and Connecticut). It is estimated, that in 2008, about 7000 investment funds' managers were based in the US <http://sec.gov/rules/final/ia-2333.htm#IA>. A dominant European place of hedge funds' management is London.

Offshore hedge funds usually are organized as corporations in countries like: the Cayman Islands, British Virgin Islands, the Bahamas, Panama, Netherlands Antilles or Bermuda. Commonly, these attract tax-exempt entities, such as pension funds, charity foundations, as well as the investors outside the United States. US tax-exempt investors prefer investments in the *onshore* funds, because they could be subjected to a tax, if they invest in a domestic hedge fund set up in the form of a limited partnership.⁴

⁴ According to the US tax law, income tax exempt organizations, such as ERISA or charities which take up investment strategies requiring debt, lose that privilege. In such cases, entities are subjects to an income tax on unrelated business taxable income (UBTI). It is possible to avoid this tax by investing in *offshore* funds. More on: <http://www.greencompany.com/HedgeFunds/OffDocOffshore.shtml> [accessed: October 20, 2014].

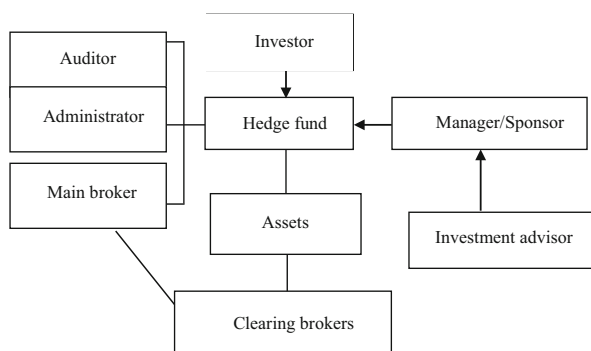
Offshore hedge funds can be organized by foreign financial institutions or by US institutions and their branches. Hedge funds operating in the so-called tax heavens, usually enter into an agreement with an investment advisor, who can be employed by an entity located in the US. Often these funds have an independent administrator of a fund located *offshore*, who can assist in the tasks related to valuation of the securities and in calculating the fund's net value. The sponsor of a fund located on an *offshore* territory usually is assigned by the Board, which controls this entity's activity.

Domestic hedge funds can employ brokers, accountants, attorneys, or administrators. In general, however, these entities do not hire employees and are not engaged in management of any other assets / cash other than those, which constitute the fund's investment portfolio. These entities often use outsourcing, that is, they distribute (outsource) the responsibilities associated with the fund to external entities. This reduces employment within the fund. The fund incurs some fees for the services provided to it according with concluded contracts. The use of external specialist advisory services is, on one hand, meant to limit the costs and on the other, to supply specialized high quality service.

Moreover, distribution of the responsibility to a larger number of entities is supposed to reduce the likelihood of embezzlement and of using dishonest practices. Such approach, however, is dangerous due to a possible lack of effective coordination of individual activities within the fund. Involvement of the managers' own financial assets, though, results in their much greater responsibility for the decisions made as well as for the results performed. Entities, which are usually involved in the fund's activities are going to be characterized in Diagram 2.5.

A so-called sponsor is an initiator of a hedge fund. The sponsors, also called the general partners of hedge funds, are former businessmen, investment advisors or financial analysts. Often they are the people, who have successfully served managerial functions in the financial sector. A sponsor, generally, deposits some assets during the phase of setting up a fund. He/she usually possesses non-transferable shares in the fund, with voting rights and the right to participate in majority of decision-making of the company's Board. If the fund is created in the form of a limited partnership, the fund's sponsor becomes its limited partner. If a different

Diagram 2.5 Classic structure of a hedge fund (<http://www.harcourt.ch> 2014)



legal form is chosen, e.g. a limited liability company, the sponsor is an entity controlling the fund's management. As such, he/she receives an income depending on performance of the fund controlled by him/her. Frequently, the sponsor contributes his/her own capital (owner's equity) to the hedge fund. The remaining shareholders of hedge funds, that is all other entities, which bring in the capital, are the investors. They receive shares proportionally to the capital contributed in the fund. Issuance of the shares occurs as a private placement. Majority of hedge funds is supervised by the Boards designated for that purpose. Actions taken up by the management are intended to supervise compliance of the undertaken activities with the fund's investment policy. Members of the Board are independent persons, who are not related to and not involved in the fund's activity. Frequently, the entities engaged in the fund's activity are the investment advisor's assistants. Independent members, on the other hand, cannot have any relations with the fund's advisor, who is supposed to guarantee objectivity of the decisions made. Generally, these persons are recruited from among prominent individuals with extensive experience in management.

Hedge fund's advisor is one of the most important entities influencing performance of a fund. He/she can influence the alpha index—additional return rate achieved by the hedge fund. Its development depends on the advisor's competence and professionalism. The fund's advisor is expected to closely cooperate with its sponsor. Usually, the advisor also manages all marketing activities and distribution of the fund shares, as well as supplies the investors with periodical reports on the fund's performance. An advisor can also act as the fund's partner. The scope of the investment advisor's activities varies depending on the fund's organizational structure.

The funds' managers are professionals hired to manage the money in accordance with the funds' investment goals. Main tasks for the person managing the securities, from an organizational perspective, involve managing the fund's portfolio and compliance with recommendations of the investment advisor. Expenses of the person managing the securities usually are covered by the management fee. In case of the hedge funds operating *offshore*, an investment manager usually operates in the form of a company which is affiliated with the fund's sponsor. This form limits the responsibility and is more beneficial in terms of taxation. In case of an *offshore* fund, the manager can act as the fund's sponsor and its manager at the same time.

Usually, hedge fund brokers are large investment banks. Hedge funds typically use services of numerous brokers, in order to guarantee themselves access to most favorable buying and selling offers. The so-called main broker, also called a *prime broker*, has a different function; he/she provides comprehensive services connected with carrying out the operations and their settlement. Main responsibilities of a fund's broker are:

- Transaction settlement,
- Acting as the fund's depository,
- Settlement of the profit margin,
- Lending the securities for the purpose of short-selling,

Table 2.3 The largest hedge funds administrators in 2012

Administrator's name	Administered assets (%)
State Street	12.8
CITCO	12.8
SS&C GlobeOp	7.6
HSBC	6.8
Citibank	6.1
Others	53.9

- Reporting on the risks,
- Conducting market research,
- Management of security deposits,
- Valuation of securities.

The prime broker often becomes a guarantor during taking up risky positions on the market, which involves additional charges for him/her.

The main role of the fund's administrator is to provide support by taking the responsibility for valuation of the assets as well as for all operational, administrative and accounting services. The level and the scope of the fund administrator's work varies depending on the level of the administered fund's complexity as well as on the activities performed by the *prime* broker. Hedge fund's administrator deals with problem description, calculates the net value of the fund's assets and performs all administrative activities related to that. In some hedge funds, especially in the US, some of these functions are performed by the hedge fund's manager. The largest entity administering hedge funds was Citco Fund Services, and State Street. Each of them managed 12.8 % funds. Table 2.3 lists the largest entities administering hedge funds in 2012, according to the percentage of the net assets administered by those funds.

Hedge funds also use legal advisors, who deal with tax law and ensure the fund's functioning in compliance with the laws in force. The role of an auditor is to ensure compliance of the fund's activities with applicable accounting standards, as well as to control the fund's financial statements. In general, an audit takes place once a year, and it results in a report that is sent out to the investors. In addition to the audit, periodical reports on the valuation of the fund's assets and on the fund's performance are prepared. They are held periodically, that is weekly, monthly or quarterly.

A transfer agent is an entity managing the records of the fund's participants. Within the scope of activities associated with such registry, a transfer agent performs current updates of the registry's balance, accepts and executes dispositions of the fund's participants (e.g. data conversion, acceptance of powers of attorney), organizes and conducts circulation of documents and cash, as well as provides accounting services. Keeping registry of the hedge fund's share-holders is also the transfer agent's task. The recorder undertakes the actions associated with subscription and withdrawal of the fund's shares from the market. The fund's other activities include allocation and distribution of the profit. If the fund does not have its own transfer agent, this function is performed by its administrator.

The entity entitled by the fund to carry out instructions and orders made by the fund's participants is the distributor. As a rule, it is a brokerage office or selected bank branches. Some hedge funds distribute their shares internally, that is without participation of a distributor. The fund's investors buy its shares directly from the fund, through a registrar or a transfer agent. Sometimes, however, distribution of the shares within the fund is done by a distributor, who can be affiliated with the fund or operates autonomously. A distributor can be, for instance, an independent brokerage firm, an insurance agent or a bank representative. Such entity is engaged in contacting the fund's potential clients directly in their jurisdictions (where it is legal, in accordance with the law). In both cases, the investor pays 25 % of the invested amount for distribution of the fund's shares. Often, a distributor is also the entity responsible for delivering the offer to potential investors.

Many institutional investors are also prohibited from investing in the stocks or shares which are not listed or recognized on a regulated stock market. Issuance on a well-known and regulated stock market is therefore an important marketing power for the promoters of hedge funds and/or funds of funds. What is more, several stock exchanges dedicated to hedge funds were founded, such as: the Irish Stock Exchange, the Channel Island Stock Exchange or the Bermuda Stock Exchange. Although these stock exchanges do not offer attractive conditions associated with a high levels of liquidity and trade, they facilitate marketing activities of the stocks/shares directed to selected groups of investors. Each fund which intends to make issuance on a stock market, usually is obliged to obtain approval and permission of a traded sponsor listed on a given stock exchange.

2.6 Hedge Fund Databases

Hedge funds belong to private investments, therefore it is difficult to obtain precise information regarding their functioning and investment performance.

Some hedge funds, however, practice monthly reporting on their results and share information about their business with specialized databases. These databases collect information on functioning of funds and sell such information to those interested in the results achieved by the funds. Information about such results is bought by investors, banks, funds of funds as well as by scientific institutions conducting research on a given sector.

There is no single complete database containing information about activities of all hedge funds. The databases being created are not representative of the entire sector either. There are various reasons for this. The first is related to the aforementioned lack of obligation to provide information on funds' activity. Due to a novelty nature of this sector, it should be noted, that the earliest historical data comes from the 90s of the twentieth century. Each of the databases already created contains different criteria for classification of funds, as well as uses different data collection and processing methods. There are two organizations which have attempted clearing their database of errors: Hedge Fund Research (HFR) and CSFB/Tremont (CT) (Table 2.4).

Table 2.4 Characterization of the largest hedge fund databases and of Commodity Trading Advisors (CTAs) (Lhabitant 2007, 2011)

Database name	Characterization of the database	Number reporting of hedge funds/CTA
Altvest/Investor Force	Founded by Altvest, taken over by Investor Force. This database provides information about alternative investments, as well as prepares analyses and reports.	Around 2600
Barclays Hedge Fund and CTA Database	The Barclays database belongs to most modern and extremely precise ones, with a high growth potential.	Around 2200
CISDM/Zurich/MAR	Databases created by Manager Account Report (MAR), sold in March 2001 to Zurich Capital Market, then donated to University of Massachusetts Center for International Securities and Derivatives Markets (CISDM) in August 2002.	Around 2500
Daniel B. Stark&Co.	Daniel B. Stark&Co.'s CTA& Futures Fund Manager Database contains information on CTAs and on future funds from the last 16 years.	Around 420 CTAs, around 200 future funds
Eureka Hedge	EurekaHedge is an advisory institution registered by Securities and Futures Commission of Hong Kong.	Over 330 in Asia Over 500 in Europe 734 of funds of funds
Investhedge AsiaHedge	Database managed by HedgeFund Intelligence—an independent institution cooperating with the Bank of Bermuda, collecting information about the results of European funds and on funds of funds.	Over 650 in Europe 700 of funds of funds
Financial Risk Management (FRM)	Database owned by FRM, an independent management group. Information in the database is subject to research in academic centers.	Around 8000
Hedge Fund Research	HFR is an advisory group registered by SEC, specialized in constructing and managing funds of funds and various portfolios. It is one of leading databases of information on hedge funds.	Over 2500
Hennessee	Hennessee is an advisory institution registered by SEC, which provides advisory services solely connected with the alternative investments sector.	Around 3000
Morgan Stanley Capital Indices (MSCI)	Founded in 2002, offers indexes of hedge funds.	Over 1300
Tass/Tremont	Tass/Tremont was founded in London in 1990, one of leading providers of data and information about the hedge funds sector. It is also one of the oldest organizations researching the market.	Over 3000
Tuna/Hedgefund.net	Hedgefund.net is a free database of information on alternative investments, used by over 35,000 accredited investors worldwide.	Around 4000

(continued)

Table 2.4 (continued)

Database name	Characterization of the database	Number reporting of hedge funds/CTA
US Offshore Funds Directory	US Offshore Funds Directory publishes information about the hedge funds sector annually	Around 1000
Van Hedge Fund Advisors	An institution providing advisory services and researching the alternative investments sector.	Over 5000

2.7 Database Errors

Any measurements comes with possible errors, which can be divided into two categories: random errors, that is coincidental ones, and systematic errors (biased errors) (Wiśniewski 2009, 2013). Random errors mainly result from imperfections of measuring devices and due to imperfections of the person conducting the measurement. This kind of errors is unavoidable during any measuring process. Random errors are characterized by a normal distribution with a zero mathematical expectation.

The so-called systematic errors are different in nature. This type of errors occurs when a test conductor deliberately tries to get a different result than the actual one (that is, higher or lower). It can therefore be assumed, that this type of errors could be eliminated through reliable measurements.

These types of errors should be considered when using databases, since they also contain random and systematic errors. Moreover, one should be aware, that even the data collected by the most prestigious databases is not representative for the entire sector of alternative investments. Random errors originate during the process of gathering information. Databases also bear errors that are systematic in nature. While analyzing the hedge funds' results available in databases, occurrence of the following errors should be taken into consideration (Fung and Hsieh 2004)

- Survivorship bias,
- Self-selection bias,
- Instant history bias,
- Database/sample selection bias.

Short time series presenting performance of hedge funds can indicate a process of continuous formation of new funds and liquidation of the funds which have not reached satisfactory results. This creates a type of errors called *survivorship* bias. Performance analysis of those hedge funds which have survived on the market until the present, can also cause some errors associated with overestimation of those funds' historical results. Many of the least profitable funds become decommissioned during the course of achieving unsatisfactory results. These funds obviously stop reporting to databases. Analysis of the relation between the number of new funds and their results can suggest that this type of errors is of significance. Most hedge funds are closed before the end of 6 years.

The funds which begin to generate losses, very often stop reporting on their results.⁵ For instance, Long-Term Capital Management, during the period from October 1997 to October 1998, had lost up to 92 % of its capital. None of the negative results achieved by the fund had been reported to the databases.

The motives related to liquidation of a fund or to its discontinuation of reporting to a given database can be various. Among the most important causes, we can list the following:

- Liquidation of a fund after a period of severe losses,
- Liquidation of a fund after a long period of achieving results below expectations, which decrease the net value of its assets, below the *high-water mark*,
- Fusion of a fund with another hedge fund. Such situation most frequently occurs when small hedge funds, achieving least satisfactory investment results, are absorbed by larger hedge funds,
- Cessation of reporting by a hedge fund, despite continuing its activity. Such funds are called *defunct funds*, while the term *dead fund* is used for the hedge funds which disappear from databases and at the same time cease their activity.

It is also possible that funds achieve such satisfactory results, that they stop using the services of institutions creating databases (Ackermann et al., 1999). Those hedge funds which achieve very good investment results, have reached their targeted volume and do not seek to expand their investment group, do not report to databases.

The estimates relating to the magnitude of those errors vary, depending on the measurement method. Fung and Hsieh have estimated their error magnitude at the level of 3 %, while Park, Brown and Goetzman have estimated their error level at the rate of 2.6 %.⁶

Self-selection bias mainly results from the nature of the hedge funds reporting to databases. Due to the private nature of those investments, reporting is selective in character. As such, it can be concluded, that those funds will be more likely to share information, which achieve favorable investment results, while hedge funds incurring losses are omitted.

Database/sample selection bias is the main source of errors related to hedge funds' performance. They result from the lack of complete databases as well as from some specific criteria the hedge funds must meet in order to be included in a given database (Lhabitant 2011). Such criteria, for instance, can be: a minimal value of the fund's assets, the fund's measurable performance, minimal time of the fund's operation. Although, they can seem rational, they do influence selection of a given fund from a particular segment of the market.

⁵ The studies on dependencies between cessation of reporting by the funds and their results was conducted by Posthuma and Van der Sluis 2003, A Reality Check on Hedge Fund Returns, Working Paper.

⁶ See also: Fung and Hsieh (2001) Park et al. (1999). Other works in which survivorship error measurement was attempted are: Brown et al. (1999), Liang (2000, 2001), Amin and Kat (2002).

The funds, which are being added to a database for the first time, also provide their historical data, which is registered in the database as *ex post* results. It is likely, that funds will only provide favorable results of their investments, in this way, overstating their average return rate. This kind of results is called an *instant history bias*.

Despite the fact that database bear some errors, they still are extremely useful and are an important source of information on the activity of the hedge fund sector. Increasing reporting activity regarding hedge funds' strategies and their results indicates that these entities are willing to be perceived as transparent. The growth rate of this sector, also reflected by database statistics, indicates that alternative funds are ceasing to be a marginal sector of the capital market.

2.8 Hedge Fund Indices

Most database suppliers offer additional services, such as e.g. assistance in selecting a fund or in selecting securities for a portfolio. The information accumulated in databases is also used to create hedge fund indices, which are a common assessment measure of funds' activity.

Indices belong to descriptive measures expressing relative time-changes in measurement series (Aczel 2000). Hedge fund indices allow a comparative analysis within the hedge fund sector as well as between other forms of capital investments. Activity of hedge funds can be described using various indices. Within the sector of alternative funds, we can distinguish the following indices (Niedziółka 2009):

- Investment indices (*investment vehicles*),
- Non-investment indices (*non-investment vehicles*),
- Cloned indices (*clone vehicles*).

Generally, indices are a synthetic measure of the changes in certain units of value making up a given index (Wiśniewska 2007a, b). Investment indices are based on the results of hedge funds. Alternative indices can be created on the basis of the results as well as based on the risk profile of a group of funds which are obliged systematically disclose certain data to a given index's creator. Using indices for the hedge fund sector brings similar benefits as for any other class of assets. Thus, many potential benefits of using indices can be noted. Such index provides important information about the condition, the results and the risk of the hedge fund sector during a particular time interval, as well as allows assessment of the links between the price changes and the assets. From the perspective of a strategic allocation of assets, it provides crucial information which facilitates proper construction of a diversified investment portfolio. It also allows evaluation of the hedge funds' results, depending on the investment strategies used by them. It should be noted, that there are large discrepancies between the skills of hedge fund managers, which often develop over time. In this situation, an index provides a pattern which allows evaluation of the managers' skills.

An index also constitutes the base for constructing a passive investment product, e.g. a fund index. Such a tool can be an interesting option for those investors, who

seek an effective diversified form of an investment. Possible benefits associated with a particular investment style are another advantage of creating investment indices. What is more, an index provides standardized data which is needed to measure a risk profile of a given fund, in comparison with the index.

Investment indices of hedge funds can be described as investment portfolios designed to present the results of selected hedge funds. The characteristics associated with distribution of hedge funds' results have been extensively described in the literature concerning the subject. For instance, Brooks and Kat stated that the results of hedge fund indices are characterized by a relatively low skewness and a high kurtosis (Kat and Lu 2002).

Indices are constructed using the same methodology that is used while constructing traditional financial indices. Investment indices are not representative, since they are created based on a selected group of hedge funds which permit reporting on their performance. A financial institution undertaking creation of an index selects the funds, the structured products and the derivatives which will constitute the basis for calculating its results. Investment indices allow the investors to invest, via the created index, in a certain group of hedge funds, according to an assumed risk profile. Those indices consider only those hedge funds, which agree to invest under the terms proposed by the constructor of an index. Often, investment indices do not consider the results of those large and profitable hedge funds, which do not accept the conditions proposed by the creators of a given index. That may be a drawback for those indices. Among recognizable investment indices the following should be mentioned: Hedge Fund Research, EurekaHedge Indices, CSFB Tremont or FTSE Hedge.

Non-investable indices, on the other hand, are representative in nature. They are used for assessment of particular hedge fund segments. At the same time, they use such statistical categories as the mean, the weighted average, or the median. Calculation of non-investable indices is based on information from the databases created on the basis of various criteria regarding selection and construction of hedge funds. This leads to significant differences between the indices being calculated.

Clone indices belong to the most innovative ones in the hedge fund sector. They seek to replicate some of the statistical properties of hedge funds. They do not reflect the results of hedge funds, but they use those hedge funds' historical results in order to construct a model, which is meant to determine the sensitivity of a given fund's return rate to the price changes of various investment assets. This model then allows construction of an investment portfolio. These indices, however, are based on rather short time series, which makes it difficult to determine whether this method is effective. Such indices are offered by Goldman Sachs and Merrill Lynch.

2.9 Selected Hedge Fund Indices

Despite a very large number of currently existing hedge fund indices, only selected indices are reputable and are recognized among investors. The following hedge fund indices belong to a category of non-investable indexes.

Eurekahedge indices are created by AMB Amro and Eurekahedge Fund Advisors. These institutions create balanced indices, which represent the condition of Asian investment funds. They include such indices as: ABN EH Index, ABN EH Japa Indeks, ABN EH Asia ex-Japan index. The funds comprising those indices manage the assets of a minimum value of \$40 million.

Altvest is a subsidiary company of InvestorForce Inc., involved in acquisition and provision of information about institutional investors, consultants and financial managers. Since 2000, Altvest has created 14 indices that are based on information from a group of over 2000 hedge funds. Altvest has constructed a base index, composed of 13 subindices. The information, that the largest pension system in the US—Calpers is going to use Altvest data for management of the positions on the market of alternative investments in total value of \$1 billion (Lhabitant 2007), has greatly contributed to popularity of indices created by Altvest.

CSFB/Tremont Index LLC is a *joint venture* company founded by Credit Suisse First Boston and Tremont Advisors Inc. CSFB/Tremont Index LLC is a leading investment firm, while Credit Suisse First Boston and Tremont Advisors Inc. is a company specialized in financial services. Indices created by this company have been created since 1998 and are based on time series beginning in 1994 Selection of the funds, based on which CSFB/Tremont indices are being created, is done quarterly. The most important criteria to be met by hedge funds are as follows <http://www.hedgeindex.com>:

- Assets value in the amount of at least \$10 million,
- Publication of financial statements,
- Meeting the requirements of CSFB/Tremont regarding the release of the data and the firm's transparency. Moreover, since August 2003 the company has been creating a series of investment indices, which are based on a sample of 60 funds.

Evaluation Associates Capital Market (EACM) is an advisory company, specialized in hedge funds and in investment programs for institutional investors and wealthy individual investors <http://www.eacm.com>. In January 1996, EACM introduced a new benchmark for alternative investment strategies, called EACM100-Index, as well as some other indices for 5 strategies and 13 substrategies that are based on information dating back to 1990. EACM indices are calculated based on information provided by a set composed of around 100 hedge funds. Based on the information obtained from hedge funds, advisory firm selects those funds, which are representative for a particular investment style. Correction of the indices is done at the beginning of the following calendar year.

Hedge Fund Research is one of the oldest hedge fund databases. This entity publishes a series of 37 indices, the value of which is based on the condition of the *onshore* and *offshore* funds reporting to the database. Since 2003, HFR has also been the founder of the HFRX index series, which reflect the changes of the following investment styles: convertible arbitration, *distressed securities*, *event-driven*, *equity hedge*, *equity market* neutral, macro, relative value and merger arbitrage. The indices created by the company have been cleared of survivorship bias errors since 1994.

Hennesse Group LLC is a company providing advisory services. The database created by Hennesse contains information on 3000 hedge funds <http://www.hennesseegroup.com>. Based on this information, 23 balanced indices and 4 complex indices are being created. Complex indices are based on a sample of 500 funds selected from 3000 of all reporting hedge funds. Majority of indices had been created in 1987, but they were published in 1992. The hedge funds contained in this database must fulfill certain qualification criteria. The assets managed by a given fund must have the value of at least \$100 million, alternatively the value not less than \$10 million, and over a year long period of operation. The next criterion is related to information that the funds are obliged to disclose to a reporting firm.

HedgeFund Intelligence is an independent publishing group which is concentrated on collecting information on the hedge fund sector and on organizing conferences. The company's independence and lack of its advisory activity or assets management are its characteristic features. Moreover, the group is owned, in 100 %, by its manager and employees. HedgeFund Intelligence also creates a series of global, European and Asian indices. European indices include the data since 2000, Asian indices since 2001 <http://www.hedgefundintelligence.com>.

Morgan Stanley Capital Indices (MSCI) is a leading institution creating indices based on the prices of the instruments that are listed on the international financial market, inter alia stocks and securities with a fixed income. In 2001 MSCI teamed up with the group Financial Risk Management and formed a new database, which collects information on about 1500 hedge funds. In addition, MSCI created the most comprehensive and most detailed criteria for classification of hedge funds, the so-called MSCI Hedge Fund Classification Standard, which allows detailed classification and grouping of hedge funds on various dimensions.

2.10 Hedge Funds and Their Impact on the Financial Market

The issue of hedge funds raises a lot of controversy. On one hand, hedge funds have a number of features that positively impact the financial market. They contribute to the growth of its liquidity and to efficiency of its functioning. Arbitrage strategies used by the managers allow effective valuation of instruments and eliminate the price imperfections prevailing on the market. Hedge funds also play a significant role in the financial system by allowing distribution of the risk onto various entities. Active participation of hedge funds on the market of derivatives contributes to a more effective transfer of the risk, among the investors operating on the market. Thus, hedge funds contribute to lowering the transaction costs. Absence of these funds on the market could result in fewer possibilities of risk management and in an increase of the cost of raising capital.

Activity of hedge funds, however, raises many disturbing questions, mostly regarding the consequences of their activity from the perspective of the entire

financial system. Hedge funds are often characterized by very high investment risk, while the strategies used by them often are speculative. The problem of too little transparency in functioning of these collective investment institutions also raises disputes. Lack of clear regulations referring to the activities of those entities, on a domestic level as well as internationally, raises additional controversies. Main controversies are raised by the following problems:

- Creation of volatility on the market, due to high transaction turnovers;
- Using leverages, which multiply the value of the rotated capital and may endanger stability of the financial system.

There are many studies connecting hedge funds with their impact on increasing market volatility. The OECD research suggests, that hedge funds serve a positive function on the financial market by ensuring its liquidity. Their activity, therefore, influences reduction of volatility Blundell-Wignall (2007).

2.11 The Global Hedge Fund Market

Data on the sizes of the hedge fund sector vary due to the lack of official statistical data, the lack of clear definition of hedge funds, as well as due to a very dynamic development of this segment of the market. Currently, the number of hedge funds operating worldwide is estimated at about 11,000, while the value of the assets managed by those funds increased within 10 years (2002–2011) from 550 billion USD to 2 trillion USD.

The global hedge fund market has also been characterized by very high growth dynamics since the moment of its emergence. While analyzing the data on the hedge fund sector, collected by Hedge Funds Research, it can be seen that the value of the hedge funds' assets increased from 39 million USD in 1990 to 1 trillion USD in 2004. The world economic crisis in 2007 led to withdrawal of the investors from investing in hedge funds, to accumulation of losses incurred by individual funds, and consequently, a to a rapid decrease in the value of the assets managed by those funds. The assets of investment funds in 2008 fell down by almost 30 % to the level of 1.5 trillion USD. Figure 2.1 represents the estimated value of the hedge funds' net assets during the years 2002–2012.

Analyzing the number of hedge funds, it can be seen, that according to Hedge Funds Research data, the number of hedge funds increased from 610 in 1990 to an estimated 1070 in 2007.⁷ In 2008, the number of hedge funds decreased by around 6 % to an estimated number of 9600 funds. It was the first year during which a decrease in the number of operating funds was reported. Despite a further systematic decrease in the number of hedge funds during the years 2008–2011, the value of the assets being managed was increasing. This signifies a progressive concentration

⁷ This data does not include funds of funds.

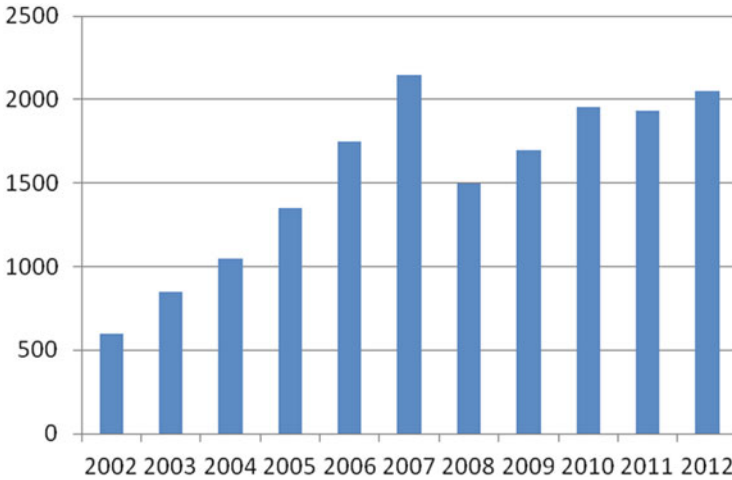


Fig. 2.1 The estimated value of the hedge funds' assets during the years 2002–2011 (\$ billion assets) (The CityUK estimates 2014)

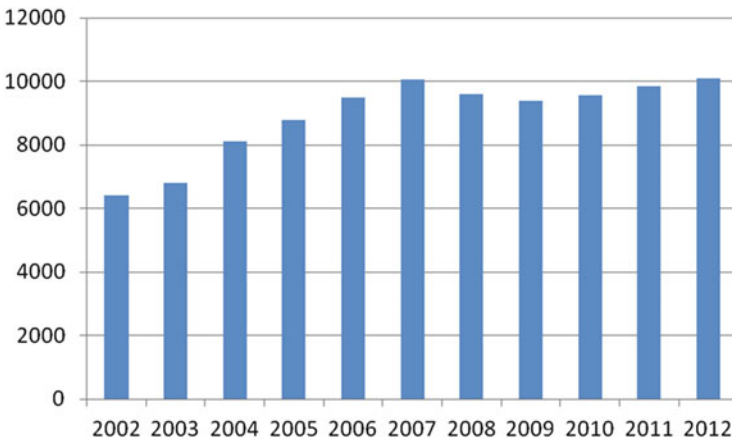


Fig. 2.2 The number of hedge funds during the years 2002–2011

of the capital being managed by the largest hedge funds. The number of hedge funds again began to increase starting in 2011, reaching a record amount in 2014, that is 11,000. The changes in the number of hedge funds during the years 2002–2012 are presented on Fig. 2.2.

Table 2.5 presents return rates of the hedge funds represented in comparison with stocks and bonds indices. The average losses of hedge funds in 2008 were around 21.3 %. It can be noted, that as much as 85 % of hedge funds reported financial losses. To compare, in 2008 the S&P 500 Index lost as much as 38 %. Hedge funds experienced heavy losses also due to closures of many banks in the US

Table 2.5 Return rates of the hedge funds represented by GV Global Hedge Fund Index, in comparison with stocks and bonds indices (Hennessee Hedge Fund Indices, ...)

Year	S&P 500 (%)	Barclays Aggregate Bond Index (%)	Global hedge fund returns
2002	−22.1	10.3	−2.8
2003	28.7	4.1	23.5
2004	10.9	4.3	10.0
2005	4.9	2.5	6.7
2006	15.8	4.33	13.5
2007	5.5	7.0	9.3
2008	−37.0	5.2	−21.3
2009	26.5	5.9	18.2
2010	15.1 %	6.5	9.7
2011	2.1	7.8	−4.6
2012	16.0	4.2	6.1

and in Europe. Other causes included rapid declines on the stock market and pressure for rapid liquidation of the positions on the market due to investors' withdrawals.

It can be seen, that the hedge funds' assets are concentrated. Around 390 hedge funds manage over 1 billion UDS, thus control over 70 % of the global net hedge funds' assets.⁸ Funds such as: Bridgewater Associates (assets valued at 76.1 billion UDS), JP Morgan Asset Management (assets valued at 53.6 billion USD) and Man Group (36.5 billion USD) manage lion's share of the assets in this sector. Table 2.6 represents the largest hedge funds according to their net assets in 2012.

While analyzing the structure of the hedge funds' assets according to the place of their management, it can be noticed, that the main place of hedge funds' management is the United States of America. In 2012 as much as 70 % of the hedge funds' assets were managed in the US. Analysis of the data from Table 2.7 indicates that during the years 2002–2008 US participation in management of those assets decreased—down to 15 %, while importance of European countries another places is increasing. Table 2.7 presents the structure of hedge funds according to the place of their management.

New York and London are the main locations of those managing hedge funds.⁹ Analyzing the data from Table 2.8 it can be noticed, that while New York holds a stable position as a location for hedge fund management, by managing with participation about 40 % of the hedge funds, during the past years the position of London as the place of management has been decreasing. While during the years 2006–2008 London managed over one fifth of the hedge fund market, in 2012 participation of the funds managed there fell down to 18 %. Other important US hedge fund management centers include: California, Connecticut, Illinois and

⁸ On the basis of the Hedge Funds Research data from December 20th, 2009.

⁹ Estimates by International Financial Services London.

Table 2.6 The largest hedge funds according to their net assets in 2012 (Institutional Investor 2014)

Largest hedge funds, 2012	Place	\$ billion
Assets under management		
Bridgewater Associates	Westport CT, US	76.1
JP Morgan Asset Man.	New York NY, US	53.6
Man Group	London, UK	36.5
Brevan Howard Asset Man.	London, UK	34.2
Och-Ziff Capital Man. Group	London, UK	30
BlackRock Advisors	New York NY, US	28.8
BlueCrest Capital Management	New York NY, US	28.8
Baupost Group	London, UK	28.6
AQR Capital Management	Boston MA, US	25.2
Paulson & Co	Greenwich CT, US	23.2
Angelo, Gordon & Co.	New York NY, US	22.6
Renaissance Technologies Corp.	New York NY, US	22.1
DE Shaw & Co.	East Setauket NY, US	20
Ellion Management Corp.	New York NY, US	19.5

Table 2.7 The structure of hedge funds according to the place of their management (in %) (TheCityUK estimates)

Management location of global hedge fund assets (% share)				
Year	Americas	Europe	Asia	Other
2002	82	13	4	1
2003	76	22	1	1
2004	72	25	2	1
2005	67	23	7	3
2006	66	27	5	2
2007	67	26	5	2
2008	67	25	6	2
2009	67	21	9	3
2010	68	22	7	3
2011	69	22	6	3
2012	70	21	6	3

Florida. The second largest hedge fund management center and at the same time the largest management center in Europe is London. Other important hedge fund management centers include: France, Spain and Switzerland.

The nature of the entities directing the assets into high risk funds has also been changing. Significant changes in the structure of different groups of investors can be noticed during the past years—an increasing significance of institutional investors on the hedge fund market. While in 1999 their participation in the structure of the assets was 47 %, in 2008 it increased by almost 49 %—up to the level of 70 %.

Table 2.8 London versus New York—share of total assets under management (%) (The CityUK estimates)

Year	London	New York
2002	11.9	50
2003	16.8	46
2004	20.7	44
2005	20.5	41
2006	22.3	40
2007	22.7	41
2008	22.6	41
2009	19.1	41
2010	18.4	41
2011	18.7	42
2012	18	42

Fig. 2.3 Global hedge funds by source of capital in 2012 (%) (Hennessee Group LLC; FSA; TheCityUK estimates)

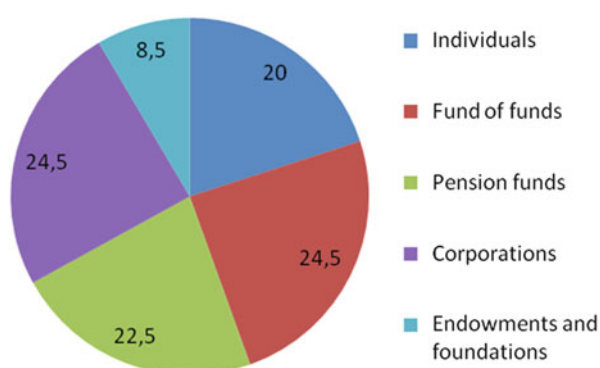


Figure 2.3 presents the share of selected groups of investors on the hedge fund market in 2012. It can be noticed, that institutional investors are the main group of investors on the hedge fund market. Their share in the structure of investors is as high as 80 %. The share of individual investors in the structure of investors in 2012 was around 20 %.

2.12 The Forecasts of the Hedge Funds Market

Alternative investments are intended for wealthy investors. It can be hypothesized, that an increase in the level of wealth of potential investors will increase the value of the hedge funds' assets. At the same time, it can be expected that these funds stand a chance of existing on the market after the financial assets at the disposal of citizens exceed a certain amount. Therefore, the impact of the value of the financial assets per one adult world citizen ($bfinad_t$) on the average annual value of the assets

in each of the existing hedge funds¹⁰ ($akt1h_t$) during the years 2000–2013 was examined. As a result, the following empirical equation (2.1) was obtained¹¹:

$$akt1h_t = \underset{(6.81)}{-163.67} + \underset{(11.92)}{12.101} bfinad_t + u_{akt1ht}, \quad (2.1)$$

$$R^2_{akt1h} = 0.922, Su_{akt1h} = 15.84, V_{akt1h} = 10.3 \text{ \%}.$$

Equation (2.1) has very good stochastic characteristics. The value of the financial assets per one adult world citizen ($bfinad_t$) explains 92.2 % of the volatility of each existing hedge fund's average annual asset value ($akt1h_t$). An increase in the value of the financial assets per one adult world citizen by a 1000 USD caused an increase in the value of the assets of each hedge fund, averagely, by 12.101 million USD.

At the same time, the absolute term of Eq. (2.1), equal to -163.67 million USD, indicates that the funds' assets are formed only after reaching a relatively high value of the financial assets at the disposal of the so-called average investor.

This amount is ($163.67/12.101 = 13.525$) and it means, that only after exceeding a certain value of the financial assets per one adult world citizen ($bfinad_t$), that is, 13.525 thousands USD, hedge funds' assets could be formed.

Equation (2.1) can be used to estimate the forecasts of the value of the average assets per 1 hedge fund ($akt1h_{Tp}$) during the years 2014–2016. Estimation of these forecasts will be possible, if forecasts of the variable $bfinad_t$ are known.

An empirical equation describing a volatility mechanism of $bfinad_t$ was constructed. As such, an autoregressive-trend equation, with a first order autoregression, emerged:

$$bfinad_t = \underset{(2.041)}{13.103} + \underset{(1.275)}{0.509}t + \underset{(1.044)}{0.364}bfinad_{t-1} + u_{bfinadt}, \quad (2.2)$$

$$R^2_{bfinad} = 0.717, Su_{bfinad} = 2.416, V_{bfinad} = 9.07 \text{ \%}.$$

Forecasts ($bfinad_{Tp}$) for the years 2014–2016 were estimated, which are the extrapolants of Eq. (2.2). The results are presented in Table 2.9 and on Fig. 2.4.

These forecasts indicate, that worldwide, during the upcoming years, an increase of the financial assets per one adult citizen can be expected. These values can range from a little over 31,000 USD in 2014, through 32,563 USD in 2015, up to 33,610 USD in 2015. These increments, thus, will result in an increase of the hedge funds' assets.

¹⁰ First and second order autoregression of the variable $akt1h_t$ and a linear trend were also analyzed. They turned out to be statistically insignificant at the significance level not exceeding $\gamma = 0.1$.

¹¹ R^2 is the value of determination coefficient, V —is the random volatility coefficient being a percentage of the standard residual error (Su) in the average arithmetic value of the equation's explanatory variable.

Table 2.9 Forecast of the values of the financial assets, worldwide, per one adult citizen (bfinad_{T_P}) for the years 2014–2016

Forecasted period (T)	Forecast of bfinad_{T_P} (thousands USD)	Average prediction error (V_T)	95 % confidence interval
2014	31.086	2.4157	25.703–36.468
2015	32.563	2.5708	26.835–38.291
2016	33.610	2.5906	27.838–39.382

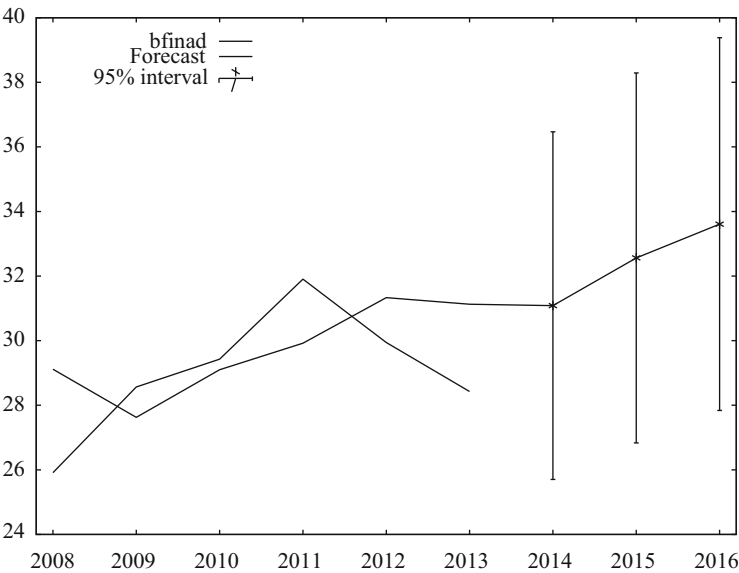


Fig. 2.4 Forecast of the values of the financial assets, worldwide, per one adult citizen (bfinad_{T_P}) for the years 2014–2016 (Table 2.9)

The forecast values of bfinad_{T_P} presented in Table 2.9 were used to estimate the forecasts of the values of the average assets per 1 hedge fund (akt1h_{T_P}) for the years 2014–2016.

The results of the calculations are presented in Table 2.10 and on Fig. 2.5 The forecasts obtained indicate that further increases in the value of the hedge funds’ assets can be expected. In 2014, the average value of a hedge find’s assets can be equal to a little over 212 million USD, in 2015 it can exceed the level of 230 million USD, while in 2016 it can reach the value of over 243 million USD.

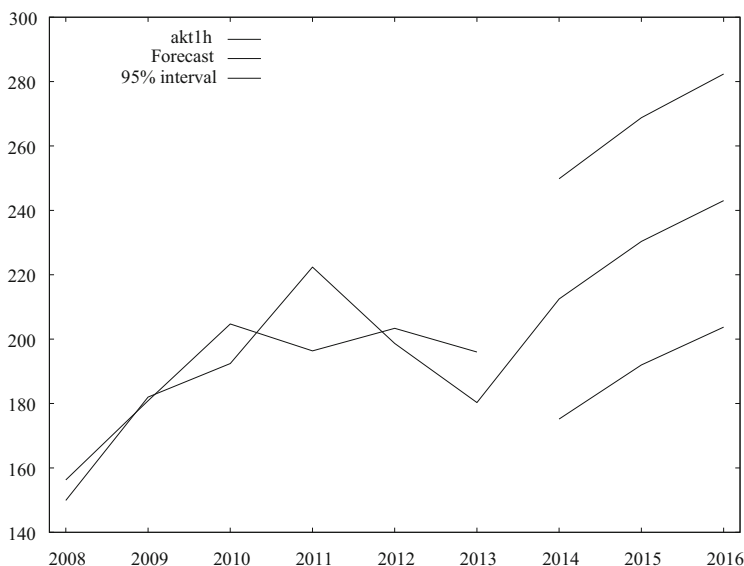
The next research question is whether global the wealth of the world (bglcur_t) has impact on the global value of the hedge funds’ assets (akthed_t)?

The impact of the global wealth on the variable akthed_t , occurrence of a trend in this variable as well as autoregressions up to and including the second order were examined. Finally, only world wealth (bglcur_t) turned out to be statistically significant.

An empirical equation (2.3) describing the variable akthed_t has the following form:

Table 2.10 Forecasts of the average value of the assets per 1 hedge fund ($akt1h_{Tp}$) for the years 2014–2016

Forecasted period (T)	Forecast of $akt1h_{Tp}$ (million \$)	Average prediction error (V_T)	95 % confidence interval
2014	212.485031	17.132084	175.157428–249.812635
2015	230.357540	17.625007	191.955949–268.759132
2016	243.026814	18.041808	203.717091–282.336537

**Fig. 2.5** Forecasts of the average value of the assets per 1 hedge fund ($akt1h_{Tp}$) for the years 2014–2016 (Table 2.10)

$$akthed_t = -1273.44 + 14.923bglcur_t + u_{akthed_t}, \quad (2.3)$$

(7.639) (16.49)

$$R^2_{akthed} = 0.958, Su_{akthed} = 144.89, V_{akthed} = 10.3 \text{ \%}.$$

Equation (2.3) indicates, that the global wealth ($bglcur_t$) explains almost 96 % of the total volatility of the hedge funds' assets. The variable $bglcur_t$ is statistically significant at the significance level of $\gamma < 0.01$.

An increase in the value of the variable $bglcur_t$ by 1 trillion USD caused an increase in the hedge funds' assets on average by 14.923 billion USD.

At the same time, a negative value of the equation's absolute term (-1273.33) indicates, that the hedge funds' assets were created after exceeding a threshold of the global wealth.

Table 2.11 Forecasts of the value of the global wealth in the world (bglcur_{T_p}) for the years 2014–2016 in trillion \$

Forecasted period (T)	Forecast of bglcur_{T_p} (billion \$)	Average prediction error (V_T)	95 % confidence interval
2014	255.3	15.56	221.4–289.2
2015	265.5	15.97	230.7–300.3
2016	275.6	16.41	239.9–311.4

The threshold is equal to $1273.44/14.923 = 85.334$ trillion USD. Above this value the global wealth (bglcur_t), that is, above over 85 trillion USD, the hedge funds' assets emerged. An increase of this global wealth entailed an increase of the hedge funds' assets which was revealed in Eq (2.3).

Equation (2.3) can be used to estimate the forecasts of the hedge funds' assets for the next 3 years. It requires, however, a description of the global wealth's volatility mechanism (bglcur_t). As such, autoregressive-trend structure of this variable was examined. It turned out, that autoregression in the variable bglcur_t is statistically insignificant. The linear trend is significant—at a low significance level of $\gamma < 0.01$. An empirical equation of the trend in the variable's bglcur_t has the following form:

$$\text{bglcur}_t = 103.07 + 10.150t + u_{\text{bglcur}t}, \quad (2.4)$$

(13.48) (11.30)

$$R^2_{\text{bglcur}} = 0.914, \text{Su}_{\text{bglcur}} = 13.547, V_{\text{bglcur}} = 7.56 \text{ \%}.$$

The trend explains 91.4 % of the global wealth's volatility. Equation (2.4) indicates that an average annual increase in the global wealth during the years 2000–2013 was above 10 trillion USD.

Equation (2.4) has good stochastic properties, which allows its application for a trend extrapolation. Estimated forecasts of bglcur_{T_p} are presented in Table 2.11 and on Fig. 2.6.

Forecasts of the value of the hedge funds' assets (akthed_{T_p}) for the years 2014–2016 are presented in Table 2.12 and on Fig. 2.6

These forecast estimations indicate,¹² that further increases in the value of the hedge funds' assets can be expected. In 2014, the value of those funds should exceed the amount of 2.5 trillion USD. During the following years, increases in the hedge funds' assets, up to the level of 2688.7 billion USD in 2015 and up to 2839.43 billion USD in 2016, can be expected. Hedge funds, thus, are facing good perspectives for development in the nearest future.

¹² Rationality of the forecasts depends on realization of the global wealth's forecasts and on stability of the description mechanism of generating the hedge funds' assets, provided by Eq. (2.3).

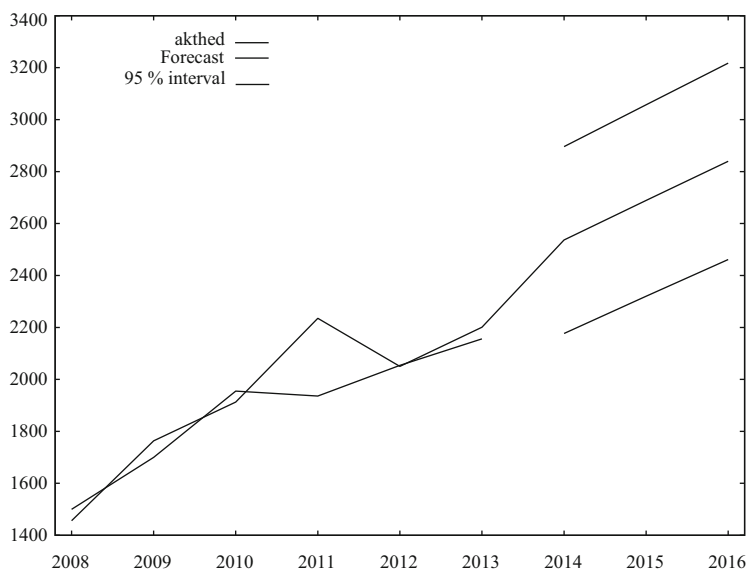


Fig. 2.6 Forecasts of the value of the hedge funds' assets (akthed_{TP}) for the years 2014–2016 (Table 2.12)

Table 2.12 Forecasts of the hedge funds' value (akthed_{TP}) for the years 2014–2016 in trillion \$

Forecasted period (T)	Forecast of akthed _{TP} (million \$)	Average prediction error (V_T)	95 % confidence interval
2014	2536.49	165.033	2176.91–2896.06
2015	2688.70	169.092	2320.28–3057.13
2016	2839.43	173.503	2461.40–3217.46

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A Study of the Global Market

Sokolowska, E.

2016, XI, 186 p. 42 illus., 4 illus. in color., Hardcover

ISBN: 978-3-319-13214-3