The World of Funds of Funds

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Abstract

In this paper we provide a review of developments in the fund of funds (FoF) industry as well as related academic research work. Since the genesis of this sort of financial product in the 1960s, huge capital inflows have generated a total of US $1,200 billion of worldwide FoF assets under management as of year-end 2007. Being portfolios built out of other portfolios and assets, FoFs are a special type of investments and therefore have distinct advantages and disadvantages in comparison with other investment vehicles. When reviewing both the academic research related to the unique, or at least distinct, features of FoFs and discussing market developments, we address a good number of interesting questions and challenges. Specifically, we find that classical methods of research and assessment may be insufficient to address these questions in both theoretical and quantitative aspects. The need for a distinct treatment of FoFs is even more evident when focusing on the dynamic nature of financial market developments and increasing global competitiveness. As past research work on FoFs is scarce, especially when being compared to the amount of research work on funds, we conclude that further investigation of this sort of financial asset is necessary.

Keywords: Fund of Funds, FoF, Hedge Funds, Multi Manager Funds, Fund Portfolios

JEL Classifications:

1. Introduction

The fund of funds (FoF) concept has its origin in the 1960s, with the industry steadily growing since then. A FoF is a fund which invests in other funds and is sometimes referred to as a multi-manager fund. There are many different types of FoF. They include fund of hedge funds, fund of private equity funds, fund of mutual funds, and fund of real estate funds. With FoF as of year-end 2007 having about US $1,200 of assets under management, a closer look at the FoF industry is needed and we do so in Section 2 of this paper. In 2007, funds of hedge funds received about US $60 billion of net new assets under management, increasing the amount of global capital invested in this type of FoF to around US $800 billion.

Investments in FoF can be advantageous for both retail and institutional investors due to the distinct features of this kind of financial product. However, as with any other investment product, disadvantages and sources of possible dissatisfaction exist as well.

One out of several striking advantages of FoF concepts is the possibility for retail investors to get access to financial products in which they could not directly invest. Many funds ─ and especially hedge funds ─ are not accessible for most private, retail investors due to high minimum investments, prohibitive high transaction costs, lack of information or simply missing distribution channels.

With FoFs, retail investors are able to get exposure to sectors, asset classes, markets, and products which otherwise would not have been included in their portfolios. Such structural aspects, albeit largely differing between countries, markets, and sectors, stem from the fact that business ties and related costs are crucial in determining the investment product universe. With most FoFs pooling money from large and diverse investor bases, they are able to invest in assets that demand high minimum investments or that offer discounts for management fees, costs or loads when investing amounts above specified marks. Investing in special share classes of funds, which are generally open for all kinds of investors with pre-defined minimum investments and lower management fees, is another path to cost reduction. Because banks and fund management companies generally have their own trading infrastructure, accounting, and clearing offices and desks as well as special agreements with other market players and counterparties, absolute and relative operational costs also can be reduced significantly.

However, on the con side, the double cost structure of FoFs caused debates in the past and is still subject to discussions both in the academic world and among practitioners.

In addition to these organizational economies of scale, direct contracting between financial institutions may impose another beneficial factor when it comes to market access. With direct contracts between financial institutions, banks, endowments, management companies, and/or advisors, discounts to fund load fees for example may be agreed on, or the institution may be able to trade without paying issuance fees. Structural aspects and the effects of business ties in the fund industry have been the subject of numerous studies, which will be discussed in the fund (of fund) industry review in Section 2.

Besides constraints at the cost-of-investment side or barriers to entry, retail investors face another problem when building portfolios out of a large variety of assets and financial products: The problem of information and overview. As the fund industry is offering a huge range of products, it is difficult for retail investors to get an overview concerning funds in which they are interested. Performing the task of market screening may be both time-consuming and inefficient. Furthermore, even when having found a pool of investment possibilities, selecting the ones which suit the investor's needs and preferences is a challenging task, sometimes even for experienced investors.

As is the task to define an investment universe, the evaluation task is challenging, because based on the respective needs each single investor has, information building with respect to the quality of target funds is crucial. This stems from two interrelated facts. First, retail investors generally do not have access to sophisticated data systems or information systems. Second, even if such sources are at their disposal, retail investors may find it difficult to use such information properly.

Being exposed to some kind of informational blinkers, the only way to remedy may be delegating investment decisions. This can happen in various ways, for example with investment advisors or wealth managers. Investing in pension funds or insurance plans could be a solution, too. However, none of the mentioned forms of investment decision delegation is free from shortcomings or disadvantages. Costs have to be incurred in any case, and one is always exposed to the classical problems of moral hazard, divergence of interests, uncertainty, and, once again, insufficient information. For FoFs, the same holds true of course, and one may argue that indirectly paying a FoF manager via management fees may result in the same problems as paying directly for investment consultancy or wealth management.

However, the emergence of the industry in recent years and the steady path of growth that the branch has found, suggests another view. Seemingly, the FoF industry delivers products and investment possibilities that attract retail investors all over the world. If it would not pay in the most direct sense of the word, why should people put their money into FoFs? Is it the inexistence of better solutions, advertisement effects, or do FoFs really suit retail investors that well? These questions have yet to be answered, where attention should be drawn on the double cost structure imposed by FoFs and their management fees. This often emphasized double fee structure of FoFs is subject to the studies of (Brown et. al., 2004) and (Reddy, 2007).

Many of the problems that retail investors face when making investment decisions do not arise for institutional investors in the same manner. As mentioned above, information flows are completely different for institutional investors such as pension plans, asset managers, wealth managers, endowments, or state-owned investment funds than they are for private, retail investors. The same holds true for different cost burdens, resulting from the structures discussed above. Reconsidering the decision to choose between types of delegating investment decisions, questions concerning the value added by market professionals have to be answered.

Naturally related to management fees and advisor compensation is the question of how well the services provided suit the investors. When deciding on the sector, asset class or country to invest in, the problem is not only to separate the ones which one wants to be exposed to, but to decide on how this can be achieved. Investing in index or basket certificates or exchange traded funds (ETFs), for example, are ways to gain exposure to specific markets, sectors, countries or strategies. Most index products are very transparent when it comes to underlying constituents, have very low management fees, and offer the ability to participate directly in the movements of the underlying index. If exposure is gained through index or asset tracking products, the investor receives a return profile with zero alpha (no excess returns over the benchmark or index) and a beta of one (the returns are exactly proportional to the underlying benchmark or index).

Passively managed ─ or at least benchmark oriented ─ funds are another way to participate (almost) one-by-one, although some funds exist, which are marketed as actively managed ones, but are merely tracking their benchmark. In contrast to investing in index profiles, both retail and institutional investors are demanding excess returns from their investments, that is, they expect the managers to outperform their benchmark.

Finding fund or portfolio managers which seem to possess superior ability to outperform the market and thereby keeping track of the imposed costs is also a strain of research of its own. Questions that arise when searching for alpha include ─ among many others ─ the following: Is past performance due to pure luck or ability? Are the returns achieved driven by timing, selectivity, superior strategies or are unobservable factors responsible? May the investors expect the past performance to persist over time? As even market professionals and academics may struggle to identify winners and losers, the quest for alpha is understood as being one of the most challenging. Selection problems, performance analyses, and efforts to identify winners and losers are the subject of Section 3. These problems arise on both sides of the FoF ─ investors are interested in selecting the best FoFs and in turn FoF managers are seeking to invest in the best funds.

After discussing selectivity and identification problems that arise when deciding on investments, we lay out a problem that is very much a special FoF problem. FoF managers may choose among a large variety of funds depending on the branch they are investing in. Building portfolios out of funds may result in multiple exposures to one and the same asset or risk factor. For example, when investing in European real estate equity funds like the Henderson Horizon Pan-European Property Equity Fund or the Morgan Stanley European Property Fund, one has significant exposure to the shares of Unibail Rodamco, a real estate company that makes up more than 10% of the European Public Real Estate Association (EPRA) Europe Index.

One should be careful when selecting related funds in order to avoid the trap of ending up with a market-representing portfolio of top-holdings, while at the same time incurring higher costs than when investing in the related indices. From this, it should be clear that limits to diversification arise not only from the structure of the underlying assets but from the paralleling of holdings. Benefits of including additional funds therefore need to be weighed against the disadvantageous increased monitoring burden and the diversification drain. Of course, this problem is not limited in dimensions, as FoF-Squared (fund of fund of funds) structures exist as well, for example when institutions decide between building portfolios out of funds or investing in FoFs. We will cover FoF specific portfolio construction problems in Section 4.

2. The Fund (of Funds) Industry

As noted earlier, many different FoF types exist. Although the variety is large and growing, hedge FoFs (HFoFs) have attracted the majority of capital invested in FoFs. Hedge Fund

Research (HFR) reports net new assets of US $9.5 billion, $49.7 billion, and $59.2 billion invested in the HFoF industry in 2005, 2006, and 2007, respectively. According to HFR, by year-end 2007 assets under management of HFoFs amounted to US $798.6 billion worldwide, with the expectation of further growth. Compared with the industry-wide total of US $ 1,208 billion of assets under management of FoF as reported by Barclay Group, HFoFs represent about two thirds of total FoF global assets under management.

The large fraction of HFoFs in the industry has a straightforward structural interpretation, as one crucial benefit from investing in this type of FoF is the possibility of investing in hedge funds at all. Generally, hedge funds are not accessible for most non-institutional investors except high-net-worth individuals, and by pooling investors' money the HFoFs open the door to this asset class for nearly everybody. Of course, minimum investments exist for HFoFs too, but especially when accessing investible hedge fund indices those are found to be lower.

Diversification benefits are another source of attractiveness of all FoFs, especially when multiple hedge fund strategies such as Event Driven, Convertible Arbitrage, Distressed Securities or Global Macro for example are included in the HFoFs. Large and growing, the US $800 billion of worldwide hedge fund assets under management show a wide range of investment possibilities. Due to the fact that hedge funds are way less transparent than mutual funds and do not have the strong and strict reporting obligations that are imposed on mutual funds, the task of selection and identification in the investment process is especially tough when building portfolios that consist of or at least contain hedge funds. In this respect, HFoFs deliver a precious service to investors by screening the hedge fund market, performing due diligence processes, and selecting the most prospective investment possibilities.

As with any other asset class, the layout of the investment process is crucial to the success of the investments made. Following the due diligence process and the manager selection, the HFoF asset allocation (bottom-up or top-down approach, diversification considerations, expectation building among others) is done, followed by continuously monitoring the risks and returns of the investments made. Investment processes' setup and quality are the determining factors for the success or failure of HFoFs. For example, Standard & Poor's defines fund rating criteria that are underlying their decisions such as investment culture, due diligence approach, portfolio monitoring systems and controls, operational risk assessment, experience of fund management teams, selected managers' experience, and performance success.

Private equity FoFs (PEFoFs) parallel many features and advantages of HFoFs outlined above. These invest in leveraged buyout (LBO) or venture capital (VC) funds and by doing so serve as investment channels to otherwise not accessible investment possibilities. PiperJaffray, who offers a variety of PEFoFs, published a special report – hereafter referred to as (PiperJaffray, 2003) – on this type of FoFs, which describes the distinct features of this sort of investment, some of which are explained in the following.

LBO or VC funds invest directly in companies that are not traded publicly on stock exchanges and are not listed. While LBO funds make use of leverage after purchasing part of a target company, VC funds typically make serial equity investments without taking debt. Of course, both sub-types of private equity try to identify companies that seem to be the most promising concerning actual and future returns. Due diligence and subsequent close monitoring enhance the possibility of high prospective returns on capital invested. Especially LBO funds when taking over whole firms are directing the path of the companies in which they are investing. The difference between VC and LBO funds can be roughly seen in the maturity of their target companies, with the former commonly investing in young immature companies and the latter targeting more mature firms with more or less stable cash flows. High capital amounts are demanded to perform this kind of business, and the pooling of money by PEFoFs serves as an appropriate way of raising those.

In addition to the HFoFs and the PEFoFs, which make up most of the industry, many other FoF types have emerged in recent years. For example, FoFs that consist of stock funds and bond funds provide high diversification benefits due to the opposing movements that the fixed income and equity markets naturally take. Investors do not need to shift between bonds and stocks; the adjustments are made by the FoF managers, whose timing on the markets is crucial to the performance of this type of investment vehicle.

Sector specific or industry mutual FoFs exist as well, being portfolios that comprise investments in a certain sector, country or class of investments. For example, some Real Estate FoFs invest in both open-ended real estate funds (which are directly investing property funds with a bond-like risk and return profile) and real estate equity funds. Depending on their market expectations, the fund management teams can quickly increase their real estate equity exposure or stick to the safe-haven directly investing real estate funds.

Not all FoF are limited to invest solely in other funds. Some have the possibility to invest certain fractions of the fund volume in shares of companies, corporate or government bonds, certificates or derivatives. While increasing the flexibility and enlarging the investment universe of these FoFs, these additional investment possibilities represent both

opportunities and threats. Consider a fund manager who has a strong bullish view on one single company, to which he wants to get more exposure than is possible through the underlying fund holdings. By buying ordinary shares or derivatives on that company, the fund manager may tweak the exposure to that company to the desired level. Another strategy example would be to use derivatives or reverse index trackers to isolate underlying fund performances or alpha, or to reduce exposure to certain parts of the underlying funds while maintaining the remaining structure. Non-fund investments may therefore be a tool to sophisticated FoF strategies, with hedge fund-like strategies then being accessible by managers of long-only funds. However, if FoF managers are able to discretionally invest in non-fund assets, the FoF concept may loose its stability or the structure that was expected by investors. Put another way, the abilities of FoF managers need to be high enough to reap the benefits of non-fund investment possibilities.

Therefore, the skills of the management team are once again the crucial determinant of the success of investments. When it comes to performance measuring and attribution, a variety of questions and problems arises, such as comparability, factor selection, statistical or technical problems, measurement decisions and many more. To address these issues, the next section will be devoted to an overview concerning performance analysis and identification problems in the fund and fund of fund world.

3. Performance Analysis and Identification Problems in Fund (of Funds) Management

This Section highlights the problems of performance analysis, the search for alpha and identification problems inherent in FoF business. In doing so, we turn the focus on several problems which especially apply to FoF investments.

When building FoFs, the product management and portfolio management teams are confronted with a large set of questions. First, one has to choose how the investment universe should be defined. Generally, FoFs are set up as products that focus on a certain industry, a country, a sector, or an asset class of financial products. Several possible types of FoFs have been discussed in section 1. After the "topic" of the FoF is selected, the next step is whether to constrain the investment universe further. For example, if a FoF is bond oriented, the question is whether the FoF should be able to invest in bond funds of any kind, or whether certain profiles or countries may be excluded or limited.

In addition, some FoFs are allowed to allocate a certain fraction of their assets under management to non-fund investments, such as single stock shares, bonds, derivatives or others. As mentioned in the introductory section, this may lead to two opposing outcomes. On the one hand, the profile of the FoF could be greatly improved. With FoF managers having the ability to (partly) hedge fractions of their investments, to gain or tweak exposures to preferred sectors or companies which may be underrepresented in the fund holdings, or to circumvent structural and institutional constraints, able managers may perform better than they would when being limited to fund-only investment schemes.

A very actual example is that of real estate company Unibail-Rodamco. The EPRA (European Public Real Estate Association) Europe Index, which serves as the benchmark for most European real estate equity mutual funds, consists currently (February 2008) of about 14% of Unibail-Rodamco. As UCITS (Undertakings for the Collective Investment of Transferable Securities) regulation limits the single allocation of mutual funds in one company to 10% of the fund volume, this has led to all funds underweighting Unibail-Rodamco relative to the benchmark. If the FoF management team is bullish on Unibail-Rodamco, they may heal the expected underperformance of their regulated fund holdings by investing directly in Unibail-Rodamco shares or derivatives. Another example would be if the FoF managers want to pursue a strategy of picking small companies for which they have promising information, but which are only small fractions in the target fund holdings due to their small role in the benchmark index.

On the other hand, non-fund investment allowances for FoF managers may lead to undesirable effects. If managers take the wrong steps and have a large amount of discretionary freedom, they may dis-stabilize the FoF and introduce performance flaws. Put another way, the possibility of non-fund investments is increasing both risk and uncertainty concerning future performance from the perspective of FoF shareholders. As the investment universe and therefore the allocation possibilities may be exploding due to non-fund investments, the investor holding a FoF is confronted with increased problems concerning expectation building. Therefore, fund manager ability is the crucial factor dividing pro and con of non-fund investment possibilities for FoFs.

When it comes to ability and performance attribution as well as the identification of "better" funds and FoFs, i.e. investments that deliver "alpha", we are in the favourable position of having a huge research work body concerning performance measurement at our disposal. While the several studies are differing largely in their very nature, the aim of the most is to conduct an analysis that may be useful for selecting funds, i.e. managers. Before

the various approaches will be discussed and put in relation to the FoF world, some preceding arguments are due.

One important aim of performance analyses and identification in the search for alpha should be comparability, that is, when trying to analyse various mangers' skills and fund performances, the study needs to focus on the right factors and benchmarks. The classical model of portfolio selection and the single-index model by (Markowitz, 1952 and 1959) as well as the Capital Asset Pricing Model (CAPM) that has been developed by (Sharpe, 1964) and (Lintner, 1965), use simple linear ordinary least squares regressions (OLS). The regression is run on the excess return of an asset on its benchmark's (the market portfolio) excess return, with the excess return generally being defined as over a risk-free rate. In these models, the higher the intercept that represents the alpha, the higher the risk adjusted return, while risk is measured as beta, relative to the benchmark.

(Fama and French, 1992) in their seminal study augment the analysis with additional factors. They introduce two factors in addition to the benchmark or market portfolio, the excess return of small capitalisation stocks over large capitalisation stocks (small-minus-big, SMB) and the excess return of stocks with high ratios of book-to-market-value over ones with low book-to-market-value (high-minus-low, HML). Not representing the end of the factor model developments, the (Fama and French, 1992 and 1993) model had an invention by (Carhart, 1997), who introduced the momentum of one-year stock returns as an additional characteristic component, after (Jegadeesh and Titman, 1993) having proposed the momentum factor. The resulting four-factor model has been used extensively in the past and builds the baseline for many studies on performance analysis. The initial work on portfolio theory and benchmark-oriented performance measurement has triggered a lot of following research work, such as the arbitrage pricing theory by (Ross, 1976), an alternative to the CAPM.

Before discussing the nature of performance analyses for selection processes, a few technical facts concerning the use of alpha and beta as a measure of superior fund (manager) quality are noteworthy. As alpha is simply the intercept of an OLS regression, it tells the analyst about the (excess) return that a fund would achieve if all the explaining factors (for example the SMB excess return) were set to zero. It is understood that the intercept is somehow a bin for all non-random effects not caught up by the explaining factors and therefore may be the result of a large variety of effects, not only representing the superior ability of a funds' manager. When it comes to beta, used as a measure of fund exposure to the explaining factors, the use of linear regression analyses may be inappropriate especially when

analysing funds that show highly non-linear dependencies, for example hedge funds and other vehicles that are subject to option-like payoff structures. However, the non-linear effects may be included even in linear regression analyses when using respective explaining factors.

Not criticizing the use of the four-factor model or related setups, we stress that the four-factor model is not suitable for all kinds of performance analyses, especially when constructing FoF portfolios. For example, if the universe of the funds under review is not restricted very much, that is, if fund managers may have invested in a large variety of stocks (for example a country oriented mutual fund), the four-factor model lets conclude about the source of performance. Nevertheless, the alpha, the regressions' intercept, is not measuring the ability of the fund manager.

An intuitive example: A fraction of fund managers in a study sample overweighs small caps against large caps stronger than other fund managers. In a year where small caps subsequently perform better than their blue chip counterparts, the higher returns of the small cap biased funds are a result of their superior ability to forecast the small cap outperformance. In the four-factor model, this ability is not identified as ability, but is "soaked up" by the SML term in the regression, leaving an alpha that neglects the good decision made by the fund managers overweighing small caps. If the aim of the study is to identify where the performance comes from, this is a favourable effect, if the study was to compare fund managers in a selection process, it is not. This problem is crucial to any performance analysis in the fund universe and calls for sensible selection of the factors in relation to which information is to be obtained, thereby carefully interpreting the results obtained.

Especially when analysing funds in a FoF portfolio building process, the caveats of simply picking high Carhart-alpha funds are clear-cut. As FoFs should be well diversified portfolios build out of the most promising target funds, the misleading effects discussed above may introduce biases that lead to significant deviations from this goal. In the mentioned example, one would be underweighting funds that successfully chose the right strategy, possibly harming future performance. Therefore, it is key to use factor models such as the (Carhart, 1997) model in the right way. If the FoF management team is aiming at identifying the strategy or sector relations of target funds, the factor models may suit them well, for example when aiming at including a heterogeneous set of target funds. If they want to identify the ones that made the right investment decisions, they should change the respective view.

In the fund selection process for a FoF, we propose a multi-step use of the (Carhart, 1997) model or similar factor models. First, the model should be used to identify by which of the observable and identifiable factors or characteristics a fund's performance was driven, on a very aggregated level, for example indeed with the four factors proposed by the (Carhart, 1997) model. Second, from the initial analysis, separate classes are built for which the analysis is re-run, yielding a more reliable picture of the underlying funds' quality. In the re-run(s), the factors may be adjusted in relation to the class characteristics. For example after separating the small cap-benefited funds, one could introduce further more dis-aggregated sector benchmarks such as the S&P Technology or the Wilshire Micro Caps. Obviously, the use of the multi-step procedure may better suit FoF selection processes due to the possibility of both finding different characteristic classes of funds and finding the ones which are the best performers in the respective classes. How deep the analyses are conducted, and in which order the analyses are performed, depends on the respective needs and the structures of the target funds under consideration.

The arguments proposing a multi-step approach to fund selection are broadly in line with (Daniel et. al., 1997), who favour characteristic benchmark portfolio models over the four- factor model by (Carhart, 1997). However, even when using the proposed multi-step analysis or benchmark portfolio building processes, the analyst may struggle to identify the funds which steadily perform in the way that is found in the analysis.

As for any other investor, the search for performance persistence and the interpretation of past fund returns (and the projection of those into the future) is an important task in the FoF portfolio building process. Besides the problems discussed above, one has to take the analysis from the cross-section to the intertemporal dimension. Work on this subject goes back to (Jensen, 1969) and (Beebower and Bergstrom, 1977), and it were (Grinblatt and Titman, 1989a, 1989b, 1992), (Brown and Goetzmann, 1995), (Hendricks et.al., 1993), (Malkiel, 1995), (Elton et. al., 1996), (Daniel et. al., 1997) and (Carhart, 1997) heavily influencing the work on performance persistence. The issue of survivorship bias in performance persistence studies is an often discussed problem, as are the problems of short-history samples and non-normally distributed alphas across the funds. The latter two problems have led to the use of Bayesian and bootstrap methods, see (Pastor and Stambaugh, 2002a and 2002b) and (Kosowski et. al., 2006 and 2007) among others.

Concerning FoF performance, (Rachlin and Castro, 2007) discuss hedge fund performance measuring for FoF managers and on the FoF layer, (Chiang et. al., 2008) investigate the performance of real estate mutual FoFs.

As all of the studies above are related to analysing the performance of funds and/or assets, the question being addressed is how to identify winners and losers, and to identify which of them tend to be of the same type in the future. Following the performance analysis and identification problem, the process of fund of fund portfolio building necessitates an appropriate selection process in the task of picking the respective funds to include in the portfolio. This leads to a discussion of the problems concerning portfolio optimization and is covered in the next section.

4. Building Fund of Funds

When constructing portfolios of funds, it is critical to consider both the nature of any fund, as well as the common factors driving them. Diversification benefits stemming from low or even negative relationships among assets are important for the expected risk and return structure of the resulting portfolio. Since the seminal work of (Markowitz, 1952 and 1959), this topic has been among the most researched and discussed by both academics and practitioners, see (Steinbach, 2001) for an overview on mean-variance optimization.

(Black and Litterman, 1990 and 1992) have developed a framework that lets the investor include his subjective views, a setup being more robust to estimation errors. Extensions to the Black-Litterman approach have been made by (Giacometti et. al., 2007) who use stable distributions and therefore propose models that do not suffer from the shortcomings caused by the normality assumption of the classical models. The use of stable Paretian distributions in financial and portfolio modelling has been studied in detail by (Mittnik and Rachev, 1993 and Rachev and Mittnik , 2000), (Samorodnitsky and Taqqu, 1994), (Rachev and Han, 2000), and (Ortobelli et. al., 2002 and 2003).

When it comes to FoFs, a few words concerning the distinctiveness of FoF portfolio optimization are due. In the FoF building process, one often has to choose one or several funds out of a family of funds with very similar exposures and/or strategies. This introduces the possibility of very high correlations among underlying funds, stemming from the fact that those may be invested in the same companies, assets, sectors or markets. It is therefore crucial to identify the holding structures or risk factors of target funds, as well as common factors that are influential to the funds' performances. Only by doing so does the FoF management team avoid the risk of unnecessary and inefficient double or multiple exposures to the same companies, assets, sectors or markets. This may be done by either running factor analyses on the funds' data or by investigating the reports of funds and/or taking into account information available on them. If the unique and common features of the respective funds are

found and a set of funds in which the FoF management wants to invest is defined, the question remains how the FoF portfolio will be build. Thereby, it is not possible to build a FoF by viewing any target fund as a single asset.

Using an appropriate risk measure is crucial for FoF portfolio building, with (Goodworth and Jones, 2007) focussing on non-parametric risk measurement for hedge funds and FoFs, and (Christie, 2007) using downside leverage and event risk measures in FoFs. For a general discussion of risk measures, see (Rachev et. al., 2008).

As is the choice of the appropriate risk measure far from trivial, so is its interpretation, especially when being applied for optimizing a FoF portfolio. When viewing any target fund as a single asset, one ignores the possibility that the risk that is included in one fund may also be included in other funds.

Related to this problem is the issue of choosing not only which funds or what kinds of funds to include in a FoF, but also how many. The question is whether including additional funds really helps in diversifying the portfolio and thereby not averaging or counter-investing away the characteristics of the target funds. Among others, (Connelly, 1997), (O'Neal, 1997), (Park and Staum, 1998), (Saraoglu and Detzler, 2002), (Brands and Gallagher, 2005), (Louton and Saraoglu, 2006), (Amo et. al., 2007) and (Kooli, 2007) discuss the problem of FoF portfolio building. Especially the (Connelly, 1997) paper hits the point with the discussion surrounding so-called unintended indexing, which means that by choosing too many funds, one could end up with a costly index type investment portfolio. This does not only come from the fact that especially many mutual funds label themselves as being actively managed and thereby only slightly over- or underweight their holdings relative to their benchmark. (Connelly, 1997), in citing a speech of William E. Jacques at the Institute for International Research sponsored conference of Active vs. Passive Investment Management argues that mixing for example a growth fund with a value fund counters the investment strategies, thereby increasing the portfolio holdings deadweight.

With all the problems introduced in the preceding discussion, it is clear that FoF portfolio building is by no means a trivial or at least easy task. While only a few studies on fund portfolios exist, the literature did not yet provide a concluding answer on the questions raised, leaving open the door for further investigations and insights.

5. Conclusion and Outlook

Being a large and growing part of worldwide financial investment possibilities, funds of funds are increasingly in the focus of both practitioners and academic researchers. We lined out some specific features, (dis) advantages, developments, questions and problems that are special to FoFs. By doing so, we reviewed past research work in both the FoF world as well as in the field of funds as the natural FoF underlyings.

Among the most crucial questions and challenges that we found are the following; FoFs are very diverse according to their investment universe and need to be treated accordingly; the fees charged by FoFs have initiated the discussion of the double-cost fee structure; fund portfolios have to be build by taking into account that the target funds may not be seen a single assets.

With these problems and many more still being unresolved, we stress the importance that FoF research needs to be done with tools that are sensible in light of the special nature of fund portfolios. Identifying the nature, risk factors and exposures of the target funds, thereby assessing their similarities and differences, needs sophisticated and sensible approaches and techniques.

Especially when it comes to non-linear (inter)dependencies and relationships, classical measures and methods may not be sufficient to perform the needed analyses. Copulas, simulation models and other inventions may be needed to identify the factors that are crucial in FoF management. Of course, the obtained results need to be used with other information from the due diligence and compliance assessment processes.

When building portfolios out of funds, it is clear that one cannot rely on the classical models with an assumed normal distribution. As both the most target funds as well as their investments exhibit non-normally distributed returns, we propose the use of stable distributions in the portfolio building process for FoFs. Furthermore, the fact that several target funds may be influenced by the same factors calls for methods that detect multiple exposures or holdings.

Concluding, we stress that it is especially the need for measuring (inter) dependencies and diversification possibilities between target funds as well as the use of modelling the target funds returns in the appropriate way that should drive future fund and FoF research.

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