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FINANCIAL ECONOMICS | RESEARCH ARTICLE

Does direct-sold funds provide a sizeable edge to investors? Evidences from selected mutual funds in India

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Abstract: In this study, an attempt has been made to find out why investors still prefer broker-sold fund over direct-sold fund despite the superior performance of the latter. We find the sensitivity of funds flow in selected direct-sold funds and broker-sold funds in India. We do not find any evidence that direct-sold funds underperform the broker-sold funds. Despite the superior performance of direct-sold funds, Indian investors go for broker-sold funds because of ignorance and also for the additional services provided by the brokers. We find that fund houses in India offer both direct and broker-sold funds to target different segments of investors.

Subjects: Corporate Finance; Investment & Securities; Financial Management

Keywords: mutual funds; fund flows; fund performance; total net assets

JEL classification: G2; G11; G24

1. Introduction

It is a well-documented fact that the direct-sold funds earn an extra return over the broker-sold funds. This gives rise to two major puzzles in the mutual funds industry. First, why the broker-sold funds fail to generate higher return? Second, given this underperformance, why most people still invest through the broker's channel? The common belief for the first question is that it is difficult to make higher return in an efficient market through broker's advice. Although there is no concrete answer to the second question, the same puzzle exists for actively managed fund and index fund, where it is documented that actively managed funds fail to generate higher return. Gruber (1996)

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PUBLIC INTEREST STATEMENT

This paper gives an insight into the performance of direct-sold and broker-sold funds and how investors in India are ignorant about their performance. Intermediation in any transaction results in higher cost for the end users. In a similar fashion, going through agents in order to buy mutual funds schemes should cost higher to the investors. Our research tries to find out whether going through brokers in mutual fund industry gives any additional return or benefits to the investors. It further explores the possible reasons for which investors in India still prefer broker-sold mutual fund schemes. General public should be aware of the pros and cons of the two different channels of investing in mutual fund industry.

first points out that this might be due to the ignorance of the investors or their irrational behaviour. Berk and Van Binsbergen (2012) also resonate the same findings. In Indian context, the brokers provide a bundle of other services along with their advice, which makes it easier for the investors to go through the brokers' channel. Though there is much evidence that fund managers generate higher return than the benchmarks (Jensen, 1968), there is also well documented literature which shows that the relative performance of actively managed funds does not depend fully on the past performances (Gruber, 1996; Carhart, 1997; Zheng, 1999). Chevalier and Ellison (1997) and Sirri and Tufano (1998) find that investors choose mutual fund on the basis of their past performance and the net cash flows in a fund, i.e. net of inflows and outflows are strongly correlated with the lagged measures of excess returns.

Malkiel (1995), Gruber (1996), Fama and French (2010), Guercio and Reuter (2014) show evidence of poor performance of fund managers as compared to the benchmarks. Fama and French find that actively managed US mutual funds underperformed as compared with the benchmarks by about 1% per year over the last 23 years. Pástor and Stambaugh (2010) argue that as the size of the mutual fund increases, the fund manager's ability to generate excess return in comparison to that of the benchmark decreases. This means that as more money is invested to generate higher return, the prices are affected and opportunity to generate higher return decreases. Evidence also shows that fund managers actually cannot generate excess return (especially in a developed and matured market) and if there is any excess return that is due to the luck of the fund managers and not their skill or ability. If that is the case, there should not be any reward for the fund managers. But in reality, the fund managers earn handsome return for the funds' performance. Similarly, it is well documented in the literature that investors in a broker-sold funds earn less than the direct-sold funds (Bergstresser, Chalmers and Tufano 2009; Guercio and Reuter, 2014).

Thus, the dilemma before the researchers is why investors choose actively managed funds and broker-sold funds over index funds or direct-sold funds, respectively. This is an ongoing research area and most researchers question the use of positive unconditional alpha as the sole criterion for measuring the performance of the fund managers. Baks, Metrick and Watcher (2001) find that investors who are doubtful about the fund managers' performance still allocate a portion of their investment in an actively managed fund if the after-fee alpha is positive. Glode (2011) argues that investors can accept negative average alpha in a recessionary period if fund managers outperform the index funds, when the marginal utility is high. This argument is supported by the findings of Moskowitz (2000), and Staal (2006), where the actively managed funds ominously outperform the index funds during the recessionary period than the non-recessionary period. Pástor and Stambaugh (2010) argue that rational investors can invest in actively managed funds when they are aware about the skill of the fund managers and to what extent decreasing returns to scale affects the performance of the fund managers.

Guercio and Reuter (2014) argue that mutual funds sold to retail investors are not homogeneous and are segmented. Accordingly, different funds compete for different types of investors. They divided the investors in two distinct categories. Direct-sold funds cater to the investors whose focus is to maximise after-fee risk adjusted return and are expected to take their investment decisions independently. Broker-sold funds, on the other hand, serve the investors who fail to take the investment decisions on their own. These two different segments in investors and funds' behaviour show new light to the underperformance of the broker-sold actively managed retail funds.

Motivated by the findings of Bergstresser et al. (2009) and Guercio and Reuter (2014), we argue that the mutual funds sold directly to investors generate higher returns than the funds sold through the brokers. This lesser returns on the broker-sold funds are due to the commission paid to the brokers. The investors are ready to accept a lesser return for a host of services offered by the brokers in the Indian market. The investors prefer brokers channel not only for financial advice, but also for ease of investment. Guercio, Reuter and Tkac (2010) find that the fund houses in US sell

mutual funds either directly or through intermediaries but seldom do both. But the fund houses in India do both as the penetration of the Indian mutual fund is very low. It has not become possible for all the mutual funds operating in India to reach the semi urban and rural areas. The best way to sell them is through the intermediaries. The common practice in Indian mutual fund industry is that the brokers do provide many other services like processing of initial application, Know-Your-Customer verification, investors queries, etc. apart from investment advice. In India, the brokers play the role of an advisor as well as a distributor. That means they advise the client as well as sell the mutual fund. The brokers get commission as a distributor from the asset management companies for recommending and selling the mutual funds to their clients. They receive an upfront fee as well as a subsequent commission from asset management companies which is deducted from the investor's account. The brokers get commission as long as the investors stay invested in mutual funds. In fact, fund houses also prefer to sell their product through the brokers as they do some of their jobs as well. Our observation for the Indian market is that the knowledgeable investors with access to direct-sold funds invest directly and their focus is to earn higher returns. On the other hand, the investors, who cannot take their investment decisions independently and do not have access to invest directly, go through the brokers. In addition, the first time investors prefer to go through the brokers in most of the cases. Thus, it is the services provided by the brokers and not always the ignorance and irrational behaviour of the investors, which make the brokers' channel so popular in India.

Mutual Fund in India has come of age. There are 42 fund houses in India offering more than 11,000 schemes. Total assets under management has grown from INR 3.36 trillion on 31 March 2007 to INR19.97 trillion on 31 July 2017, which is more than six-fold in 10 years. In fact, the average assets under management in July 2017 were INR 20.42 trillion which crossed the INR20 trillion for the first time. The total number of accounts or folios as on 31 July 2017 stood at 59.4 million.¹ Despite being available in the market for almost 53 years, the mutual fund penetration in India is less than 10%. The people in India still consider it as a high-risk asset and prefer to keep their money in bank fixed deposits, life insurance policies and other low-yield fixed income investments. Therefore, to increase the retail penetration in India, the asset management companies have to overcome the investors' ignorance and risk aversion. Indian market is not as matured as the US and other developed markets. Total asset under management in India is less than 10% of GDP compare to 83% of the GDP in US. Another important point to note is that the return on traditional investments like fixed deposits, PPF, NSC, insurance products, etc., are not enough to beat the inflation. People even prefer to invest in life insurance products as there is no social security system for the dependents. Under these scenarios, mutual fund investment can be the best bet for the retail investors who lack expertise knowledge and do not prefer a direct investment in equity. Motivated by the recent bull run as well as massive advertisement by the fund houses and Association of Mutual Funds in India, the investors in India have started shifting their funds from traditional fixed deposits, real estates and gold to mutual funds. The assets under management of the mutual funds in India has grown from INR16.42 trillion in December 2016 to INR21.37 trillion in December 2017, which is a 30% jump in one year.

There is a lot of literature on the performance evaluation of mutual funds in India, yet very few studies have made an attempt to show the net fund flows to the mutual funds. Narend and Thenmozhi (2016) made a performance analysis of index exchange-traded funds and index mutual funds on the basis of fund flows. Their findings are that the index mutual funds track their benchmarks better than index exchange-traded funds. Most of the studies in India on mutual fund performances are based on returns and not the factors which drive the fund flows. To the best of our knowledge, there is no study in India on why the investors choose intermediaries over the direct-sold funds even though they fail to generate a higher return. Our explanation for investors' preference towards brokers' channel is similar to that of Guercio and Reuter (2014). However, Indian investors' preference towards broker-sold funds are not only for their advice but also for a host of other services provided by them. As the brokers in India play the role of an advisor as well as a distributor, there is a possibility of mis-selling to investors because of getting

paid by the asset management companies for pushing a particular mutual fund. In US and other developed markets, where advisors and distributors are different, the investors take advice from the advisor and invest either in direct-sold funds or broker-sold funds. In the context of Indian equity mutual funds, the investors can earn up to 1% more by investing in direct-sold funds over broker-sold funds. After the ban of entry load in 2009 by the Securities and Exchange Board of India, which was an upfront fee of around 6% deducted from the investors and paid to the brokers, most of the brokers/distributors in India, especially the banks, try to earn a better fee and other incentives. They advise and sell mutual funds to the investors, though the extent of mis-selling has moderated significantly since then. However, this bold move by the Securities and Exchange Board of India paved the way for making the mutual fund one of the safest place to park funds today. The brokers are benefited enormously from the increase in inflow of funds via brokers' channel, whereas direct-sold funds account for around 8% only till December 2017.

In our study, we have collected data from Bloomberg and cross-checked it with Morningstar India for selected broker-sold and direct-sold open ended actively managed mutual funds. Then the sensitivities of lagged alpha, lagged net returns and lagged percentage change in net fund flows on the percentage change in net fund flows of both the segments have been tested. The results show that the direct-sold segments are more sensitive alpha than the broker-sold segments, as detailed in Section 5. Our contribution to the literature has been that, in India, despite giving more returns, the direct-sold funds fail to attract higher investments compared to broker-sold funds mainly due to three reasons. First, the brokers in India not only act as advisors but also as distributors thereby earning a commission along with the advisors' fee, which is payable to them as long as the investor stays with the fund. Second, the investors are also benefitted from other value-added services provided by the brokers at their door step including filling up of forms, Know-Your-Customer compliance, etc., thereby relying on them for these services. Third, unlike developed countries, financial literacy in India is very low and hence investments through the brokers' channel are significantly high.

This paper is organized as follows. Section 1 of our study argues that, even though the broker-sold funds do not generate a higher return compare to the direct-sold funds, the investors prefer brokers' channel for a host of services that they receive from them. Section 2 reviews the relevant literature. Section 3 talks about the formation of hypothesis. Section 4 indicates the data sources, methodology and summary statistics. Section 5 presents the empirical results. Section 6 provides the details of robustness test. Finally, Section 7 concludes the paper.

2. Literature review

Investors pay for professional services offered by the fund managers in actively managed funds and broker-sold funds. Actively managed funds and broker-sold funds or Indexed-funds and direct-sold funds—which one provides a higher return, is a debatable point and researchers are divided in this particular issue. To find a potential answer, French (2010) explores the cost associated with active management and explains why there are lower returns from actively managed funds compared to passive ones. Jensen (1968), Malkiel (1995), Gruber (1996) and others have earlier carried out similar work to highlight the under-performance of typical US equity actively managed funds, which shows that such funds earn a negative after-fee alpha. Bergstresser et al. (2009) find in their study that broker-sold funds do not generate excess risk-adjusted returns over direct-sold funds.

One of the answers to this puzzle as pointed out by Glode (2011) is that rational investors can accept negative alpha if the funds perform exceptionally well during economic downturn. Gruber (1996), on the other hand, finds the ignorance of the investors about the underperformance of actively managed fund as another reason, even though Berk and van Binsbergen (2012) have attributed the skill of fund managers as a major reason for investors investing in actively managed funds. Majority of the investors still invest in active funds because of their unawareness about the invisible costs over and above the expense ratio (Edelen, Evans, & Kadlec, 2013). These invisible

costs are in the form of aggregate trading costs including trading volume, brokerage commission, bid-ask spread and price impact. Baks et al. (2001) pose a debatable topic on whether investors should invest in active funds or not. Their study reveals that empirical analysis alone cannot justify this question.

The underperformance associated with actively managed funds can be attributed to the underperformance of broker-sold funds (Guercio & Reuter, 2014). The main reason for this, as analysed by Bergstresser et al. (2009) and Christoffersen and Evans (2013) is that funds sold through brokers have a weaker incentive for alpha generation than those sold directly. Following their path of study, Guercio and Reuter (2014) in their paper analysed the incentive for alpha generation in both the direct and broker-sold plans. They exploited the fact that retail funds in different market segments compete for different types of investors. The knowledgeable investors with a pre-determined goal to achieve risk-adjusted alpha, invest in direct-sold fund. On the other hand, the investors who cannot take their own investment decisions invest in broker-sold funds. They measure the performance of the funds based on the net fund flows. A good return and alpha will create an incentive for the investors to further invest in the fund in succeeding periods thereby increasing the fund flows to that particular fund. Chalmer and Reuter (2010) advocate that broker-sold funds emphasize on other parameters besides alpha generation. Kackperzyk, Sialm and Zheng (2008) use the method of return gap to capture the impact of unobserved actions on direct-sold funds and find that they add more value.

In order to answer the puzzle on why investors invest in broker-sold funds, Bergstresser et al. (2009) document the benefits of broker-sold funds and the costs associated with it. However, their findings suggest that there is no better asset allocation in broker-sold funds than direct-sold funds and broker-sold funds do not generate any extra return. We are consistent on the findings of Sirri and Tufano (1998) that suggest a negative relation between the fund flows and the expense ratio. Hence, one can conclude that investors invest in broker-sold funds not only for excess return but also for other financial services. Campbell (2006) suggests that the investors fail to react and take suboptimal decisions regarding complex financial matters and this might be a possible reason for investing through the brokers.

Fund flow has been considered as an important indicator of fund performance in recent times. A pervasive result in the empirical literature on equity mutual funds is that the flow-to-performance relation tends to have a convex shape, i.e. inflows to equity funds tend to be very sensitive to good past performance, whereas outflows are overall not that sensitive to bad past performance. Papers documenting this pattern, its origin and consequences include Brown, Harlow, and Starks (1996), Chevalier and Ellison (1997), Sirri and Tufano (1998), Lynch and Musto (2003), Huang, Wei, and Yan (2007), among others. In contrast to these findings in the literature on equity mutual funds, Spiegel and Zhang (2013) show that the convexity is an artefact of heterogeneity and that it disappears within subsamples.

In order to analyse how different funds perform, we need to consider the macroeconomic aspects and their influence on fund flows. It is important to find a relation between the economic factors and fund performance to help the government shape appropriate policies. Monjazebe and Ramazanpour (2013) tell us about the different economic factors and their influence on cash flows in the Pakistani mutual funds industry.

Krishnamurthy, Pelletier, and Warr (2014) focus on inflation as an economic parameter to examine whether it affects the flows into equity mutual funds at the economy-wide level and that a high level of inflation consistently leads the investors to reduce fund flows to equities or not.

Motivated by the above studies, we make an attempt to find out the effect of different factors on the net fund flows of some selected mutual funds in India and test whether the broker-sold funds generate extra returns over the direct-sold funds or not. We, therefore, develop the following hypothesis.

3. Hypothesis development

3.1. Fund flow and fund returns

Our first hypothesis relates to the effect of the fund's return on the change in fund flow of the investors in broker-sold funds. It is based on the implicit assumption that higher returns will attract higher investments in the fund. This is an accepted fact that "investors in mutual funds chase performance". They reward good past performance with increased cash inflow and poor performance with increased cash outflow. Sirri and Tufano (1998) find that there exists a non-linear relationship between fund performance and cash flow, where good performance attracts high cash inflow while poor performance leads to low cash outflow. But literature suggests that actively managed funds significantly underperform compare to passive ones. Now the question is, which market segment can majorly be targeted for such underperformance—broker-sold funds or direct-sold funds? To answer this, we need to develop measures to inspect divergent investments in active management and their effect on fund flow performance.

H1a. The coefficients of lagged fund flow are same in both the segments.

Guercio and Reuter (2014) show that past fund flows determine the current fund flows. They find a positive relation between past fund flows and current fund flows of a typical US equity fund. This means that investors in the US increase or decrease their current fund investments based on the fund inflow or outflow. This enables us to examine the impact of previous period's investment over the current investment. The objective is to analyse how investors react to past history of cash flows in the two different market segments and analyse if Indian investors have a positive relation to fund flows and which segment is more sensitive to past fund flows.

H1b. The coefficients of lagged net returns are same in both the segments.

If performance persists, good past returns are expected to induce investors to increase their cash inflows and poor performance leads to cash outflows. We have proposed this hypothesis to check whether the investors in the direct and broker-sold segments have the same sensitivity to returns in India. For this, we need to test which group of investors chase higher returns. This will give us an idea of exactly how much a fund house should focus on generating returns to attract further investments.

H1c. The coefficients of lagged alpha are same in both the segments.

The alpha generation capacity of a fund depends on the managers' skill. With rational expectations, investors respond to new information on fund manager's skills by changing their sensitivities to fund flow. According to literature, investors of direct-sold funds, being more aware of managers' skills, chase alpha. In this hypothesis, we seek to test whether the investors in the direct-sold segments are more sensitive to fund flows in the current period with respect to the alpha of the fund in the previous period.

H2. Fund flows and extreme performing funds

In this hypothesis, we have introduced a dummy for the extreme performing funds which give abnormal high and low returns. The purpose is to see the effect of returns of these funds on the investor's mind-set reflected through the fund flow. Good performance shown by very high net returns is expected to draw the attention of the investors resulting in more fund inflows whereas poor performing funds are expected to result in cash withdrawal. The sensitivity of the two different segment of investors to fund flow is our subject of interest.

H2a. The coefficients of net returns of top 20% funds are same in both segments.

For this, we have included a dummy variable to denote the funds giving net returns in the top 20th percentiles of our sample of funds to see how their performance impact the fund flow in the direct and broker-sold segment. It is expected that top performance will increase fund flow but which segment has greater sensitivity to performance is our area of study.

H2b. The coefficients of net returns of bottom 20% funds are same in both segments.

The funds giving returns in the bottom 20th percentile is selected through a dummy variable in our sample of funds. As poor performance results in cash outflow, we want to see if the direct and broker-sold investors react in the same manner to poor performance with respect to the fund flow or are they significantly different in their approach of investment. We also want to test if the convex nature of fund flows exists for the investors in the Indian mutual funds industry.

4. Data and methodology

4.1. Sample selection

In this study, monthly data is applied and fund information is obtained from Value Research, Morningstar India and Bloomberg. Our sample starts with actively managed open-ended equity diversified growth funds from July 2013 to May 2017 (as direct-sold funds were introduced in India from 2013). We have collected data on direct-sold and broker-sold funds separately. Data on important variables such as alpha and total net return have been directly downloaded from Bloomberg database. Other control variables such as expense ratio, current turnover have been directly downloaded from Value Research. Data on macroeconomic indicators like inflation rate and real interest rate have been collected on a monthly basis from OECD database. Only rated funds by Value Research have been considered in our study. Initially, we collected a sample of 350 mutual fund schemes from Bloomberg. 100 fund schemes with mismatched data from Morningstar India have been deleted. We further excluded 150 fund schemes with missing information on the variables that have been used in our study. The outlier effects are also eliminated at 1% level. The final sample consists of 57 mutual fund schemes from different fund houses with 28 direct-sold and 29 broker-sold fund schemes. There are 1289 monthly observations for direct-sold and 1335 monthly observations for broker-sold fund schemes.

4.2. Methodology

Cash flows into and out of the mutual fund is a modern-day indicator of investors' sentiments, therefore influencing investment decisions of wise investors. We calculated the percentage of net cash flow to the fund by following the methodology used by Sirri and Tufano (1998):

$$\frac{TNA_{i,t} - TNA_{i,t-1}(1 + R_{i,t-1})}{TNA_{i,t-1}}$$

where $TNA_{i,t}$ is the total assets under management of fund i at time t and $R_{i,t-1}$ is the return of the fund i in the previous month.

We have used Jensen's alpha in our study and it is downloaded from Bloomberg database. It is calculated as the difference between the security average return versus risk free rate and the beta times benchmark excess return.

The control variable expense ratio shows the percentage of total assets which is the management fee to run a mutual fund. It involves fund management fee, agent commissions, registrar fees, and selling and promoting expenses. All these fall under a single basket disclosed in every March and September and is expressed as a percentage of the fund's average weekly net assets.

We establish an equation explaining the determinants of percentage monthly net fund flow at time “t” in the spirit of Guercio and Reuter (2014). This helps us to understand how the cash flows to a fund is affected by the different factors with the following equation:

$$\begin{aligned} \text{NFF}_t = & \alpha_0 + \alpha_1 \text{NFF}_{t-1} + \alpha_2 \text{TNR}_{t-1} + \alpha_3 \text{Alpha}_{t-1} + \alpha_4 \text{TNA}_{t-1} + \alpha_5 \text{salesload}_{it} + \alpha_6 \text{Firmage}_{it} \\ & + \alpha_7 \text{Expenseratio}_{it-1} + \alpha_8 \text{Turnover}_{it} + \alpha_9 \text{managertenure}_{it} + \varepsilon_{it} \end{aligned} \quad (1)$$

where NFF_t is the percentage of net fund flows in the current month. In the analysis, we look into the effect of fund flow determinants in direct-sold and broker-sold fund schemes separately. Fund flow is driven by investor sentiment because of which we have included percentage change in net fund flow in the previous month. Consistent with literature (Guercio & Reuter, 2014) we expect the lagged percentage change in net fund flow to be significantly positive, and test H1a by examining lagged NFF in the two segments separately and expect it to be significantly positive. The excess return of the investment relative to the benchmark is termed as alpha. The alpha generation is dependent on the skill of the fund manager in actively managed funds. Thus, the investors invest in a fund depending on the alpha generation capacity of the fund. Consistent with literature, we also expect the relation between net fund flow and alpha to be positive (Guercio & Reuter, 2014). Our subject of interest is to see whether the coefficients of alpha of the two segments are significantly different or not. We further analyse the effect of total net return of a fund scheme on the fund flow and compare the coefficients in the two segments according to H1c. The total return of a fund is defined as the percentage of a fund’s performance over the time frame (in this case one month). The return combines price change (appreciation or depreciation) and dividend distributions. The dividends are reinvested back into the fund. The total net return is arrived at after deducting the expenses to run the fund. The total net return of a mutual fund is always calculated net of expenses. Therefore expenses make the difference between the total net return in a direct-sold fund and a broker-sold fund.

We have also included various control variables in Equation (1). TNA is the natural log of total net assets of the fund scheme indicating the size of the fund scheme or the total assets under management of the mutual fund. More TNA means that the fund can invest in various share classes or the larger size can make it difficult to manage, thereby dragging down the fund’s performance. Thus, the sign of the TNA is ambiguous. Expense ratio is the fund’s operating and management fees which can impact the fund’s profitability to a large extent. It shows the percentage of total assets, which is the management fee to run a mutual fund. It involves fund management fee, agent commissions, registrar fees, and selling and promoting expenses. All these fall under a single basket disclosed in every March and September and are expressed as a percentage of the fund’s average weekly net assets. The expected sign of the expense ratio is negative. Broker-sold funds have higher expense ratio thus influencing the fund’s profitability to a greater extent compare to direct-sold funds. A dummy variable for sales load equal to 1 if the fund charges an exit load and 0 otherwise. This adds to the cost incurred by the investors in investing in the fund and thus the sign of sales load is expected to be negative. The experience of fund managers in actively managed funds is vital for alpha generation. Therefore, we expect the sign of manager tenure to be positive in both the segments. The turnover is the value of transactions of the fund. Turnover of a fund is calculated as the average value of all transactions (buying and selling) as a percentage of fund’s total holdings. It measures the replacement of holdings in a fund and is normally presented to investors as a percentage over a period of one year. Actively managed growth funds are expected to have high turnover ratio as fund managers look for stocks or securities that are leaders in their respective industries and hence we expect its sign to be positive. An older fund with steady performance is expected to be preferred over younger unproven funds. Thus, we include the fund age, study its impact on fund performance and expect a positive coefficient. Following previous studies, we have used the one period lag of alpha, log of total net assets and total net returns.

Further to examine the impact of abnormally high or low returns to the fund performance, we include a dummy variable, which indicates whether the net return of the fund in 't - 1' was in the top or bottom 20%. The direct-sold funds are expected to be more sensitive to extreme performance. Thus, consistent with literature (Guercio & Reuter, 2014), our hypothesis H2d is to test whether the sensitivities of extreme performance on fund flows vary significantly in the two segments. The equation is expressed as follows:

$$\begin{aligned} \text{NFF}_t = & \alpha_0 + \alpha_1 \text{NFF}_{t-1} + \alpha_2 \text{TNR}_{t-1} + \alpha_3 \text{Alpha}_{t-1} + \alpha_4 \text{TNA}_{t-1} + \alpha_5 \text{salesload}_{it} + \alpha_6 \text{Firmage}_{it} \\ & + \alpha_7 \text{Expenseratio}_{it-1} + \alpha_8 \text{Turnover}_{it} + \alpha_9 \text{managerteneure}_{it} + \alpha_{10} \text{Extremepermonace} + \varepsilon_{it} \end{aligned} \quad (2)$$

While strategic diversification depends on the needs of the investor, significant value can be added to the portfolio by tactically modifying the asset allocation using macro indicators. How much to invest in mutual funds depend on the real interest rates and inflation. Monthly data on inflation and real interest rate are taken into account to study their impact on fund flows in the two market segments and analyse the perception of the two classes of investors on investments. We expect the sign of interest rate to be negative, signifying that a higher interest rate on fixed income instruments will reduce fund flows into mutual funds. Moreover, we expect sign of inflation rate to be positive because to beat a higher inflation rate, investors will invest in mutual funds. Following previous studies, we have taken quarterly lag of inflation rate and monthly lag of real interest rate. The equation has been developed as follows:

$$\begin{aligned} \text{NFF}_t = & \alpha_0 + \alpha_1 \text{NFF}_{t-1} + \alpha_2 \text{TNR}_{t-1} + \alpha_3 \text{Alpha}_{t-1} + \alpha_4 \text{TNA}_{t-1} + \alpha_5 \text{salesload}_{it} + \alpha_6 \text{Firmage}_{it} \\ & + \alpha_7 \text{Expenseratio}_{it-1} + \alpha_8 \text{Turnover}_{it} + \alpha_9 \text{managerteneure}_{it} + \alpha_{10} \text{inflationrate}_{it-4} + \varepsilon_{it} \end{aligned} \quad (3)$$

$$\begin{aligned} \text{NFF}_t = & \alpha_0 + \alpha_1 \text{NFF}_{t-1} + \alpha_2 \text{TNR}_{t-1} + \alpha_3 \text{Alpha}_{t-1} + \alpha_4 \text{TNA}_{t-1} + \alpha_5 \text{salesload}_{it} + \alpha_6 \text{Firmage}_{it} \\ & + \alpha_7 \text{Expenseratio}_{it-1} + \alpha_8 \text{Turnover}_{it} + \alpha_9 \text{managerteneure}_{it} + \alpha_{10} \text{interestrate}_{it-1} + \varepsilon_{it} \end{aligned} \quad (4)$$

5. Empirical results

5.1. Fund flow and total net return

In this section, we conduct a multivariate analysis to provide empirical evidence on how the increase in total net return impacts the change in fund flows using the regression model as represented by Equation (1). The results are presented in Table 2. The percentage change in net fund flow is taken as the dependent variable. In column 2, the estimated coefficient of lagged total net return, which is found to be significant at 5% level of significance, implies that an increase in the total net return in the previous period by 1% results in an increase in the percentage change in net fund flow by 11.6%, which is a positive coefficient of total net return for the combined segments.

Column 3 reflects a positive coefficient of 0.05623 for the lagged total net return from the direct-sold funds and column 4 shows a positive coefficient of 0.0611 for the lagged total net return from the broker-sold funds. None of them has been found to be significant at 5% level of significance, which suggests that investors' investment in the funds scheme does not increase significantly when there are better or higher return in the previous period. This implies that the investors' are indifferent to higher returns in the previous period.

Now the question may arise that whether the investors in both the segments possess the same level of sensitivity to lagged total net return. To answer this, we have conducted a hypothesis testing to check if the responsiveness of the investors to the lagged total net return from broker and direct-sold segments are equal or not. This takes into account the positive coefficient obtained from columns [3] and [4] of Table 2, and a chi-square test has been performed. The value 0.0015

Table 1. Summary statistics of direct and broker-sold funds

| Variable | Direct-sold funds mean | Broker-sold funds mean | T-statistic |
|--------------------------|------------------------|------------------------|-------------|
| Percentage net fund flow | -0.35 | -0.57 | -0.54 |
| Alpha | 0.28 | 0.04 | -1.10*** |
| Current turnover | 1.05 | 0.91 | -6.15*** |
| Total net return | 2.04 | 1.94 | -0.70 |
| Manager tenure | 4.15 | 3.43 | -18.28*** |
| Expense ratio | 1.91 | 2.65 | -37.69*** |
| Log total net assets | 9.37 | 9.41 | 1.55 |
| Age of the fund scheme | 4.5 | 14.31 | 68.40*** |

Table 1 shows the mean of the key variables employed in our analysis and the univariate tests of difference in means between direct-sold and broker-sold funds. Our sample covers 57 mutual fund schemes (29 broker-sold and 28 direct-sold funds). The monthly dataset spans over a period of four years from July 2013 to May 2017 and consist of 2624 data points. The univariate statistics are based on time-series averages for each firm averaged across firms. All of the variables are winsorized at the 1% tail. The first column shows the variables we have considered namely; monthly percentage net fund flow(NFF), alpha, current turnover, log of total net assets of funds(TNA), total net returns(TNR), expense ratio, manager tenure and the life of the fund schemes. The significance of the differences in means is based on the Student t-test. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

Table 2. Effect of lagged alpha, lagged total net returns, lagged fund flow on net fund flows in both the segment

This table contains the results from panel regression where the dependent variable is monthly percentage change in net fund flow. The percentage change in net fund flow is calculated as growth in TNA less the capital appreciation. The unit of fund is actively managed equity funds i of month t . The panel regression also contains the control variables which are not reported such as lagged log of TNA, expense ratio, manager tenure, dummy for sales load and the current fund age. The second column contains the results for both the direct sold and broker sold segments combined. Columns (3) and (4) contains results from single regression of direct sold and broker sold datasets respectively. The regression has robust standard errors.

| Net fund flow [t] | | | |
|---|---------------|-------------|-------------|
| | BOTH SEGMENTS | DIRECT-SOLD | BROKER-SOLD |
| Net Flow[t-1] | 0.00* | 0.01* | 0.00* |
| | [0.00] | [0.00] | [0.03] |
| Alpha [t-1] | 7.08* | 7.59* | 2.55* |
| | [0.02] | [0.00] | [0.00] |
| Net Return [t-1] | 0.12* | 0.06 | 0.06 |
| | [0.00] | [0.12] | [0.26] |
| | | | 0.12 |
| The coefficients of lagged alpha are same in both the segments. | | | [0.26] |
| The coefficients of lagged total net returns are same in both the segments? | | | 0.00* |
| | | | [0.04] |
| The coefficients of lagged net fund flow are same in both the segments. | | | 0.23 |
| | | | [0.36] |

obtained from the same is found to be significant at 5% level of significance., which implies that the level of sensitivity of the investors towards the total net return are significantly different in the two different segments.

Thus the results indicate that, investment in broker-sold funds not only yield a higher return, but also the effect it has on investors fund flow is higher compare to that of direct-sold funds.

5.2. Net fund flow and lagged net fund flow

The net fund flows in the previous period is a determinant of the net fund flows for the current period. According to Guercio and Reuter (2014), there is a positive relation between the net fund flows in two consecutive periods. Our findings have similar interpretations. Column 2, of our table (Table 2) shows the coefficient of lagged net fund flow into the combined segment as 0.000078, significant at 5% level. Similarly, when the coefficients are calculated separately for the direct and broker-sold funds, we get a positive coefficient for them too. Column 3 shows the coefficient for the direct-sold segment as 0.005017, significant at the 5% level of significance. Likewise, column 4 gives a coefficient for the broker-sold segment as 0.004415, also significant at 5% level. The result illustrates that investments in both the segments are based on the lagged net fund flows.

Now, to interpret the difference in behavioural characteristics between the direct and broker-sold investors, we once again perform the chi-square test taking the coefficients of the lagged net fund flow of both the segments, respectively. The resultant value obtained (0.2256) is not found to be significant at 5% level indicating no change in the behavioural pattern of the investors in both the segments, which is in same spirit to that presented by Guercio and Reuter (2014).

5.3. Net fund flow and alpha

An investor seeks to identify a mutual fund that is able to deliver an alpha while selecting an actively managed fund for investment. A fund's alpha is estimated after stripping out any fund return that can be traced to the risk associated with the fund's investments. The third and the fourth column of our table (Table 2) reflects a positive coefficient of lagged alpha in both the segments, with the direct-sold segment having a higher coefficient of 7.588 compare to 2.55 of the broker-sold segment This is similar to the findings of Guercio and Reuter (2014), where the estimated coefficient of lagged alpha is positive in both the segments with the direct-sold segment having a higher coefficient of 0.176 compare to 0.021 of the broker-sold segment [Table 2, page 1685, Journal of Finance].

Revenues from mutual fund fee increase with the assets under management. Thus mutual funds have a strong incentive to provide the services that attract new inflows into the funds. A typical Indian mutual fund has a difference of 50–75 bps in the expense ratio of the broker and direct-sold segment. These expense ratio saved, is used to invest in managers, analysts and trading infrastructure, generating an incentive or higher alpha. The chi-square statistic, checking whether the coefficients of the direct and broker-sold funds are equal or not, as developed by the hypothesis, is shown in the fourth column. The value obtained [0.1235], not significant at 5% level, interprets no difference between the coefficients of the direct and broker-sold funds.

The brackets in the table contain the *p*-values and the coefficients with asterisk [*] indicate that they are significant at the 5% level of significance. The chi-square statistic checking whether the coefficients of the direct-sold funds are equal to that of the broker-sold funds, as developed by the hypothesis, is shown in the fourth column.

5.4. Extreme performing funds and fund flow

We have further carried out our analysis by introducing funds with abnormal returns in our sample. Dummies have been introduced for funds in the top and bottom 20th percentile. In the broker-sold segment, we have the coefficient of funds -2.472 in the bottom 20th percentile, 0.5371 in the top 20th percentile, both significant at the 5% level of confidence. Similarly, in the direct-sold segment, the coefficient for top 20th percentile is 8.541 and -1.325 for the bottom 20th percentile which are also significant at the 5% level of confidence. The hypothesis, testing the coefficients of top 20th percentile funds in the two segments are significantly different and they are not significantly different for the funds in the bottom 20th percentile

in the two segments. From here, we can say that in both the segments, the investors are sensitive to top performing funds and increase their investments more when the funds are yielding high returns. The under-performing funds do not result in cash outflow for broker-sold investors but redemption for direct-sold investors. This proves the convex nature of investments by the investors in both the segments. The investors in the direct-sold segment are more sensitive to fund returns than those in the broker-sold segment. The null hypothesis checking whether the coefficients of the extreme performing funds are significantly different in both the segments proves the same. Table 3 below summarizes the empirical results

Table 3. Effects on top 20th percentile and Bottom 20th percentile on fund flow

This table contains the results from panel regression where the dependent variable is monthly percentage change in net fund flow. The percentage change in net fund flow is calculated as growth in TNA less the capital appreciation. The unit of fund is actively managed equity funds i of month t . The panel regression also contains the control variables which are not reported such as lagged log of TNA, expense ratio, manager tenure, dummy for sales load and the current fund age. This table also contains a dummy variable indicating whether the total net return at $t-1$ was in the top 20% or bottom 20%. The second column contains the results for both the direct sold and broker sold segments combined. Columns (3) and (4) contains results from single regression of direct sold and broker sold datasets respectively. The regression has robust standard errors.

| | Net fund flow [t] | | |
|---|-------------------|-------------|-------------|
| | BOTH SEGMENTS | DIRECT-SOLD | BROKER-SOLD |
| Net Flow[t-1] | 0.00* | 1.11* | -0.00 |
| Alpha [t-1] | | [0.00] | [0.27] |
| | 1.93* | 7.0548* | 2.76* |
| Net Return [t-1] | | [0.0000] | [0.00] |
| | 0.23* | 0.10* | 0.23* |
| Net return in top 20 percentile | | [0.00] | [0.00] |
| Net return in bottom 20 percentile | 0.78* | 8.54* | 0.54* |
| | | [0.00] | [0.01] |
| The coefficients of lagged alpha are same in both the segments. | 4.87 | -1.33* | -2.47* |
| | | [0.03] | [0.03] |
| The coefficients of lagged total net returns are same in both the segments. | | | 0.79* |
| The coefficients of lagged fund flow are same in both the segments. | | | [0.04] |
| The coefficients of lagged net return in top 20 percentile are the same. | | | 0.10 |
| | | | [0.15] |
| The coefficients of lagged net return in bottom 20 percentile are the same. | | | 0.04* |
| | | | [0.03] |
| | | | 0.55 |
| | | | [0.48] |
| | | | 0.14 |
| | | | [0.23] |

The brackets contain the p -values. The asterisk [*] indicates that the coefficient is significant at the 5% level of significance.

5.5. Fund flow and macroeconomic indicators

Investors react to systematic factors rather than just fund performance and managers' skill. This analysis is important mainly from the fund managers' standpoint. Although all these variables cannot be controlled, analysing their impacts paves the way for mechanisms that reduce redemption volumes while boosting fund inflows. This is of much interest to investors mainly *in situations* with more frequent redemptions. Theoretically, the higher the redemption level, the weaker the bargaining power of the manager for some assets. In other words, the manager may be forced to abandon a specific position merely to honour its redemption commitments. We take two macroeconomic factors—real interest rate and inflation rate, and study their impact on fund flows as shown in Table 4. In the broker-sold segment, the coefficient for real interest rate is $-0.9,469,854$, not significant at the 5% level whereas the same for the inflation is $2.699,242$, which is significant at the 5% level. Compared to this, the coefficient for the lagged real interest rate in the direct-sold segment is $-5.5,515,398$ and that for the inflation rate (lagged by a quarter) is 5.6323 , both being significant at the 5% level. From this we can say that the investors in both the direct and broker-sold segments decrease their investment with an increase in the rate of inflation. The real rate of interest, on the other hand, seems to have no significant impact on the funds flowing into the broker-sold segment but is found to have an influence on those flowing into the direct-sold segment. This is because the investors in the broker-sold segment choose to go by their broker's advice irrespective of any change in the real interest rate, whereas those investing in the direct-sold segment are capable of taking independent decisions and hence they seem to be highly sensitive to any change reflected in the real interest rate. The investors in the direct-sold segment being much aware of the changes in the macro economic factors tend to invest more in the mutual funds so as to beat the higher inflation rate in the economy, compare to those investing in the broker-sold segment. This is because the decisions taken by the investors in the broker-sold segment are completely influenced by their broker's advice. Table 4 summarizes the empirical results.

6. Robustness test

We have also carried out the test of robustness of the data used in our analysis to check for the accuracy of the results. The first robustness check is of multicollinearity, it is defined as the dependence of one independent variable on the other independent variable/s leading to inefficient estimation, if present in our regression. To account for multicollinearity, we use the Variance inflation factor (VIF) which measures how much the variance of a regression coefficient is increased because of multicollinearity. All the variables in our analysis have VIF within 2.5 (values above 10 is said to have multicollinearity) indicating the absence of multicollinearity. The panel regression performed can either be a fixed-effect regression or a random-effect regression. In order to check which model is the most appropriate for our analysis, the Hausman test has been carried out. The Hausman test is used to differentiate between the fixed-effect and random-effect model. The null hypothesis suggest that random-effect model is preferred and the alternative hypothesis is in favour of fixed-effect model. The chi-square value of 88.95 with a p -value of 0.001 suggests that we reject the null hypothesis of random-effect panel regression. Next, we account for heteroscedasticity. The Modified Wald test checks the GroupWise heteroscedasticity of fixed-effect panel regression model. The p -value 0.000 indicates heteroscedastic error terms. We take clustered robust error terms to take care of the problem of heteroscedasticity. Unit root tests have been carried out to check whether the variables in our analysis have unit roots or not. We carry out the Levin- Lu-Chin unit root test for each of the variables. The results of our analysis are shown below.

The lag order has been selected on the basis of minimum AIC. In order to determine whether the series have a long run relationship, we perform the cointegration tests. The Kao cointegration test reports five statistics reported in the table and each of them provides strong evidence that all panels are cointegrated. Further we perform the Westerlund test which imposes fewer restrictions

Table 4. Effect of real interest rate and inflation rate on net fund flow

This table contains the results from panel regression where the dependent variable is monthly percentage change in net fund flow. The percentage change in net fund flow is calculated as growth in TNA less the capital appreciation. The unit of fund is actively managed equity funds i of month t . The panel regression also contains the control variables which are not reported such as lagged log of TNA, expense ratio, manager tenure, dummy for sales load and the current fund age. This table also contains a dummy variable indicating whether the total net return at $t-1$ was in the top 20% or bottom 20%. The second column contains the results for both the direct sold and broker sold segments combined. Columns (3) and (4) contains results from single regression of direct sold and broker sold datasets respectively. The regression has robust standard errors.

| | Net fund flow [t] | | |
|---|-------------------|-------------|-------------|
| | BOTH SEGMENTS | DIRECT-SOLD | BROKER-SOLD |
| Net Flow[t-1] | 0.00* | 1.11* | -0.00 |
| Alpha [t-1] | | [0.00] | [0.27] |
| | 1.93* | 7.0548* | 2.76* |
| Net Return [t-1] | | [0.0000] | [0.00] |
| | 0.23* | 0.10* | 0.23* |
| Net return in top 20 percentile | | [0.00] | [0.00] |
| Net return in bottom 20 percentile | 0.78* | 8.54* | 0.54* |
| | | [0.00] | [0.01] |
| The coefficients of lagged alpha are same in both the segments. | 4.87 | -1.33* | -2.47* |
| | | [0.03] | [0.03] |
| The coefficients of lagged total net returns are same in both the segments. | | | 0.79* |
| The coefficients of lagged fund flow are same in both the segments. | | | [0.04] |
| The coefficients of lagged net return in top 20 percentile are the same. | | | 0.10 |
| | | | [0.15] |
| The coefficients of lagged net return in bottom 20 percentile are the same. | | | 0.04* |
| | | | [0.03] |
| | | | 0.55 |
| | | | [0.48] |
| | | | 0.14 |
| | | | [0.23] |

The p-values are reported in parentheses. The results significant at the 5% level of confidence are shown by *.

and it also states that some panels are cointegrated. All the tests have been directly performed on Stata using `xtcointtest` package. Tables 5 and 6 above shows us only those variables which have accepted the null hypothesis of having unit-roots. The other variables in our analysis have rejected the null hypothesis and thus are stationary.

7. Conclusion

In this study, we made an attempt to show that the direct-sold funds generate higher return than the broker-sold funds by examining the sensitivity of funds flow in 28 direct-sold funds

Table 5. Result of robustness test

The table below shows the results of the Levin–Lin–Chu robustness test on both the direct-sold and broker-sold fund dataset combined. The null hypothesis for this test is that the series contains a unit root. Column (2) of the table contains the adjusted *t*-statistic for the test for each of the variable we have used in our analysis. The corresponding *p*-values further tell us whether we should accept or reject the null hypothesis. The order selection for our variables are found out by AIC criteria shown in column

| Variable | Adjusted statistic | <i>p</i> -value | Order selection [AIC] |
|------------------|--------------------|-----------------|-----------------------|
| Inflation rate | 17.98 | 0.98 | 4 |
| Rate of Interest | −3.85 | 0.13 | 1 |
| Total net Return | −8.70 | 0.23 | 1 |
| Alpha | −5.85 | 0.578 | 1 |

Table 6. Kao co-integration test the table below reports the statistics for Kao integration test for the variables found out to have unit roots. The null hypothesis for the same is that there is no co-integration. The alternative hypothesis states that the panels are cointegrated

| | Statistic | <i>p</i> -value |
|--|-----------|-----------------|
| Modified Dickey–Fuller <i>t</i> | −1128.32 | 0.00 |
| Dickey–Fuller <i>t</i> | −458.78 | 0.00 |
| Augmented Dickey–Fuller <i>t</i> | −359.24 | 0.00 |
| Unadjusted modified Dickey–Fuller <i>t</i> | −5879.26 | 0.00 |
| Unadjusted Dickey–Fuller <i>t</i> | −789.41 | 0.00 |

and 29 broker-sold funds. We also found that investors in mutual funds are not homogeneous. The investors in the broker-sold segment rely on the broker’s advice and services. The investors in the direct-sold segment choose their own fund according to the alpha generating capacity of the fund. The fund houses also target the customer under these two segments separately.

Our empirical result suggests that the sensitivity of both types of investors on fund flow based on total net returns is significantly different, though the sensitivity of fund flow due to alpha generation is higher for direct-sold fund. Therefore, in spite of providing higher alpha and higher after fee net returns, majority of the investors in India still go through the broker-sold segment. According to Berk and Green (2004), there is little evidence that proves the actively managed direct-sold funds underperform as compared to the passively managed ones because the direct-sold funds make operational decisions to increase their return with the investment flows linked to high alpha. Fama (2008), on the other hand, finds that actively managed broker-sold funds underperform as compared to the passive ones. So, one can conclude that the underperformance is majorly linked to the broker-sold segment. However, the question remains that, despite this underperformance, why investors prefer broker-sold funds? Campbell (2006) suggests that a majority of the investors are sceptical about taking complex financial decisions on their own and so these disadvantaged investors prefer the broker led channels. The direct-sold investors are mainly those who have a sound knowledge of the functioning of the financial structure. The effect of macroeconomic indicators on these investors shows that they are more consistent and focused on the long-term returns rather than going with the advice of their brokers on short term changes in real interest rates and inflation rate. It is also important to see whether the brokers are advising for their own benefit or for the benefit of the investors. In US and other developed markets, most investors are financially literate and can take their own investment decisions. Broker’s advice in such a developed and matured market

may not add any extra value. In India, many investors find it difficult to invest directly as they cannot take their own investment decisions and majority do not have access to the direct channel due to the low levels of penetration of mutual fund in India. Fund houses will also incur more expenses to serve the investors if all of them come through the direct-sold channel. Therefore in Indian context, the brokers provide a lot of services apart from the financial advice. They act as advisor as well as distributor. Many investors are not in a position to make a complete transaction without the help of the brokers. In return, brokers earn a trail fee which is paid by the asset management company as long as the investors stay invested; longer the investors stay with the fund, the more fees for the brokers. This sometimes led to miss-selling by the brokers. However, there is no evidence that the brokers' advice is not beneficial for their client.

Securities and Exchange Board of India came out with a consulting paper on 2 January 2018 on mutual fund advisory guidelines. The paper says that distributors cannot act as an advisor. In other words, a broker who advises a client on which mutual fund scheme to invest in cannot simultaneously sell that scheme and earn a fee from asset management company. Similarly, a distributor accepting a fee for selling a scheme cannot simultaneously advise a client to invest in the same mutual fund scheme. This new rule, if implemented, will be a game changer for mutual fund industry in India as the advisors will now advice their clients to go for direct-sold funds which yield a higher return compare to the broker-sold funds. However, the biggest challenge is to provide an initial support to the non-tech savvy small investors, who in turn can, pay both the advisor and the distributor for buying a mutual fund scheme.

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Note

1. Source: Association of Mutual Funds in India.

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