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DISTRIBUTION CHANNELS AND FINANCIAL ADVERTISING IN THE ITALIAN ASSET MANAGEMENT MARKET

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Advertising has a major effect on individual investors' decisions. Financial instruments tend to be advertised more when market sentiment is high, as investors are more willing to buy. Mechanisms affecting the relationship between market sentiment and advertising activity remain unexplored in the finance literature. Using a novel dataset of advertisements for mutual and exchange-traded funds from the main Italian financial newspaper, we show that the effect of market sentiment on financial advertisements depends upon the distribution channel. Sentiment matters only for products directly traded by the investors, such as exchange-traded funds. Conversely, for financial products — like mutual funds — distributed through a captive distribution network (bank branches and tied agents), financial advisers' actions mitigate the effect of market sentiment on advertising activity. Overall, our findings provide some evidence

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of the persuasive power of financial advisers in investors' decisions, which arguably requires increased attention from financial market regulators.

Keywords: Market sentiment; advertising; mutual funds; banks; ETF.

JEL Classifications: G14, G20, G40, G41, M37

1. Introduction

The advertising of financial products (henceforth, financial advertising), according to the existing academic literature, influences investment choices. Expenditure on products or brand advertising has a positive effect on the prices of listed shares (Boyd & Schonfeld 1977, Fehle *et al.* 2005, Filbeck *et al.* 2009, Lou 2014, Chemmanur & Yan 2019), the issuance prices of seasoned equity offerings and initial public offerings (Chemmanur & Yan 2009, 2017), the number of shareholders (both individual and institutional), and share liquidity (Grullon *et al.* 2004). The impact on prices is driven mainly by the purchases of retail investors (Fehle *et al.* 2005, Lou 2014).

Extensive literature in the field documents the effect that advertising expenses have on mutual fund (MF) in-flows. However, little is known about the determinants of advertisers' decisions. An important driver is investors' willingness to buy financial products (such as MF shares), which is, in turn, influenced by market sentiment (Jiang & Yüksel 2019). Suppliers of investment products implement advertising strategies that respond to market trends and increase the number of advertisements when the market performance is positive and vice versa (Ferretti *et al.* 2017).

Nevertheless, whether the distribution channel of financial products influences the dynamics of advertising remains neglected in studies of the relationship between advertising and investors' sentiment. When the placement of financial products takes place through a captive distribution network (i.e. bank branches and tied agents), the actions of the sell-side consultants could reduce the importance of the saver's sentiment in the decision to buy that product. Conversely, for asset management products generally purchased directly by investors, such as exchange-traded funds (ETFs), market sentiment should be relevant.

Italy is an excellent laboratory in which to study the influence of the distribution channel given that: (i) retail investors exhibit a low level of financial education (D'Alessio *et al.* 2020) that can amplify the role of market sentiment in their investment decisions; and (ii) MFs and ETFs have quite different distribution networks — MFs are sold to customers mainly through bank branches and tied-in agents (the great majority of Italian MFs are managed by companies belonging to banking groups), while ETFs are mainly bought directly by investors through online trading platforms.

Using a novel hand-collected dataset containing 3344 MF and ETF advertisements collected from the main Italian financial newspaper for the period 2006–2018, we provide evidence of the influence of the distribution channel on the relationship between the advertising of investment products and market sentiment: while ETF

ads follow investor sentiment, MF ads are unaffected. We measure advertising policy using the number of ads for ETFs and MFs; this measure has several advantages compared to the measure of overall marketing expenses, which have a lower reporting frequency and include costs unrelated to advertising.

Our paper contributes to two strands within the literature: the advertising policy of asset management companies and the persuasion power of financial advisory. As far as we are aware, we are the first to document that the reaction of ads dynamic to investors' sentiment depends on the distribution channel: sentiment matters only when clients are "do-it-yourself" investors. The irrelevance of sentiment when MF shares are sold through captive financial advisers suggests that advertisers believe in the efficacy of this distribution channel in influencing investors' choices. This result complements the otherwise limited evidence on the persuasion power of sell-side advisers (Guercio & Reuter 2014, Anagol *et al.* 2017, Marotta 2020, Ferreira *et al.* 2018). More importantly, our results have policy implications; the documented sell-side power justifies the increased attention toward advisory services by financial market regulators in the best interest of clients (ESMA, 2022).

The remainder of this paper proceeds as follows. In Sec. 2, we provide an extensive review of the literature review on financial advertising and develop our hypotheses. In Sec. 3, we discuss our data and outline our empirical strategy. In Sec. 4, we discuss the main results, and in Sec. 5, we provide concluding remarks.

2. Theoretical Background and Hypotheses Development

2.1. *Literature review on financial advertising*

In analyzing the relationship between advertising of financial products and investment decisions, academic research focuses on MF underwriting flows given the magnitude of the asset under management (AUM) by these instruments and their recurrence in investors' portfolios.[a] Indeed, the MF market has increased exponentially across the globe. As of the end of 2020, the capital managed by open MFs globally was USD 63.1 trillion, of which USD 29.3 is accounted for by funds in the US, USD 21.8 in Europe, USD 8.8 in Asia and the Pacific Area, and USD 3.2 in the rest of the world (ICI 2021). As of December 2018, the AUM of MFs in Italy amounted to EUR 1200 billion, with 11.5 million subscribers, or 20% of the resident population (Assogestioni 2020, 2021).

[a]In addition, on the basis of the data collected by Capon *et al.* (1996), fund underwriters place advertising in second place, after performance ratings, in the list of sources of information supporting their purchasing decision. Another survey (Roper & Brobeck 2006) shows, however, that only 6% of fund underwriters say advertising played a very or quite significant role in targeting their most recent fund purchase. However, savers who turn to MFs do not appear to have a particular financial culture or awareness; as Capon *et al.* (1996, p. 59) note: "when investors are grouped by similarity of investment decision process, a single small group appears to be highly knowledgeable about its investments. However, most investors appear to be naive, having little knowledge of the investment strategies or financial details of their investments".

The main conclusion of studies in this field is that financial advertising increases MF subscriptions, especially when advertising activity is particularly intense. For instance, Sirri & Tufano (1998) find that there is a positive effect of advertising on subscriptions for funds (or fund families) that are at the top of the list in terms of advertising expenses. A recent study by Roussanov *et al.* (2021) of the US MF market finds that an increase of one basis point in marketing expenses (which largely consist of sales loads and distribution costs) leads to an increase of about 1% in the size of a fund, with a greater effect for the best performing funds for which, therefore, it is more effective to increase marketing expenses. According to the theoretical model developed in Roussanov *et al.* (2021), marketing costs explain about 10% of changes in fund size: in other words, marketing costs seem to impact investment choices as well as the price of fund shares or management capabilities.

Most of the above-mentioned studies measure advertising in terms of the amount spent by advertisers. For instance, Sirri & Tufano (1998) assume as a proxy the total fees charged to the fund's assets. Khorana & Servaes (2012), Barber *et al.* (2005) refer to the marketing costs of individual funds (item 12b), and Gallaher *et al.* (2006), Korkeamaki *et al.* (2007) refer to the marketing and advertising costs of fund families, respectively. By contrast, only a few studies use the frequency and content of financial advertisements to point out that they have a significant effect on MF subscriptions. Among these, Jain & Wu (2000) analyze MF advertisements published in *Barron's* and *Money* magazines and find that the net subscriptions of advertised MFs are higher than those of MFs with no ads.

While investing in financial advertising provides clear benefits to the asset management company in terms of an increase in AUM, the investors' allocation of financial resources could be sub-optimal if it is distorted by advertising. Consistent with this argument, Cronqvist (2006) shows that, as a result of advertising, the savers in their sample, more than four million individuals, find themselves owning sub-optimal portfolios (i.e. with lower expected returns and higher risk) as a result of advertising. According to Roussanov *et al.* (2021), in the absence of marketing expenses, investors increase the overall utility by allocating their money toward passive index funds rather than active funds, suggesting that financial advertising could distort resource allocation.

Similarly, some experimental studies document how investors are subject to behavioral biases when dealing with MF advertising. Jordan & Kaas (2002) analyze the reactions of a sample of 499 individuals and find that the perception of MFs' expected returns is affected by the anchoring heuristic induced by the inclusion in advertising of a number in the name of the fund (the higher the number, the greater the return expectations). The perception of risk is instead affected by the heuristics of affect induced through the insertion of an emotional image and slogan (positive emotions are associated with a lower expectation of risk) and representativeness induced through brand awareness (greater notoriety is associated with a lower

perception of risk).[b] Noticeably, more severe distortions are documented for less experienced and less informed investors.

Lee *et al.* (2013) verify the positive effects of the presence in MF ads of information mandated or suggested by regulators (such as investment objectives, risk and return, and costs) on a sample of 148 individuals regarding the perception of responsible advertising, risk perception, recall (ability to remember relevant information), cognitive responses to advertisements, and attitude toward the management company, coming to the conclusion that information transparency brings benefits to both producers and consumers. Along the same lines, Dey *et al.* (2015) highlight that the intention to subscribe to MF shares is greater in cases of informational than transformational advertising, especially in female savers with higher financial literacy.[c]

Koehler & Mercer (2009), by contrast, emphasize what they call "selection neglect"; that is, the tendency of fund underwriters to interpret information based on the past performance of a specific fund contained in an advertising message as representative of the return of all funds belonging to the same management company. For both the group of experienced investors (129 individuals) and those with little experience (128 individuals), there is a more intense perception of the quality of management and a greater willingness to purchase new funds from the same management company, different from the funds advertised, when the message reports the past return of the advertised funds (specifically an above-average return) without indicating the total number of funds managed by the advertiser company. Otherwise, the effect of emphasizing above-average returns is less pronounced if the saver is warned that this kind of result only affects the fund or funds advertised and not the other funds in the group. According to Korkeamaki *et al.* (2007), past performance affects funds' flows if combined with advertising; and the effect of advertising is short-term and autonomous compared to that of past performance (Gallaher *et al.* 2006).

As summarized by Cronqvist (2006), the effectiveness of advertising can have three theoretical explanations: (a) advertising reduces the costs of finding and acquiring information useful to investors for a rational decision (search-cost theory); (b) advertising is a sign of management quality, a trait not observable directly *ex ante* (signaling theory); (c) advertising is a tool to attract the investors' attention (attention-grabbing theory). With regard to MFs, empirical evidence does not support either search-cost theory or signaling theory: in general, fund advertisements do not have really informative content (Huhmann & Bhattacharyya 2005,

[b]When the ads contained the logo of a large and well-known domestic investment company, as opposed to the logo of a large but mainly unknown foreign investment company, the risk perception by investors was lower. The authors relate this result to the representativeness heuristic without mentioning either the rationale behind the positive impact of brand awareness on risk, nor the potential role of home country bias.

[c]Recalling Puto & Wells (1984), Dey *et al.* (2015, p. 24) state that "[t]ransformational advertisements position a brand by the psychological characteristics of a consumer, whereas informational strategies are based on providing factual data related to the characteristics of the offering".

Cronqvist 2006, Wu 2009, Palmiter & Taha 2011) and advertised funds do not exhibit above-average performance in the post-advertising period (Jain & Wu 2000, Cronqvist 2006, Jones *et al.* 2007). Only Sirri & Tufano (1998) argue in favor of search-cost theory. It is, therefore, possible to agree with the statement by Barber *et al.* (2005, p. 2095) that investors "buy funds that attract their attention through exceptional performance, marketing, or advertising." This behavior is consistent with the fact that the positive effects of advertising on fund subscriptions are limited in time and relate only to the most widely publicized funds (Gallaher *et al.* 2006).

As documented in previous studies, MF advertising relies on a persuasive rather than a rational model of behavior (Mullainathan *et al.* 2008). That is, a model that leverages the pre-existing convictions of the consumer (Petty & Cacioppo 1986), even if inaccurate, instead of a model in which the advertiser conveys objective information on the quality of the product that the consumer uses to update his expectations (Stigler 1961, 1987). In other words, the message is not intended to change consumer beliefs but to tune into them. Consistent with this argument, Sirri & Tufano (1998), Gallaher *et al.* (2006) find a positive relationship between past fund returns and the flow of subscriptions. Similarly, Mullainathan & Shleifer (2005) find a positive relationship between the performance of the stock market and the share of advertising involving MFs.

Ferretti *et al.* (2017) point out that the advertising of investment products (such as funds, corporate bonds, and certificates) follows stock market trends, while the advertising of other financial products does not exhibit this dependence, returning the interpretation of this result to the dual decision-making model (Evans 2003, Kahneman 2011): consumers activate the rapid and automatic decision-making process, a behavioral response to choice, when they face investment product alternatives (which implies exposure to risk); however, consumers activate the slow and sequential decision-making process, which gives rise to a more rational approach to choice, when they face other financial-product choices. In the financial field, the choice between behavioral and rational persuasion, therefore, depends on the type of product advertised.

As a result, it is not surprising that, in order to grab the attention of investors, advertising might have different content. In MF advertisements, one of the most recurrent information types is past returns: Jones & Smythe (2003) find that this is the case for 52% of ads published in *Money* in 1999 (up from 41% in 1989 and 2.8% in 1979); Huhmann & Bhattacharyya (2005) estimate an incidence of about 60% of ads published in *Barron's* and *Money* in the two-year period 1999–2000 and another 29% contains an explicit treatment of the risk-return relationship; Mullainathan *et al.* (2008) note the presence of past returns in 60% of the announcements made in *Business Week* and *Money* in the decade 1994–2003 with a procyclical trend compared to the dynamics of the stock market; that is, the return on the fund is mentioned, especially when equities, in general, have shown positive performance (during a bull market). Swensen (2005) also offers clear evidence of procyclicality both in the number of MF advertisements and in the incidence of those with references to past

returns, published in the *Wall Street Journal*'s *Mutual Funds Quarterly Review* from 1997 to 2003.

Koehler & Mercer (2009) analyze editions of *Business Week* and *Fortune* and note the tendency of management companies to advertise only the best performing of their fund offerings; according to the authors, this selective advertising is misleading because, by obscuring cases of underperformance, it leads investors to overestimate real management skills, a distortion confirmed (as above) on an experimental level ("selection neglect"). Cost information is less frequently mentioned: Jones & Smythe (2003) report only 4% of advertisements report annual expenses charged on the fund's assets (management, administrative, and distribution fees), while underwriting fees are quoted in 48% of cases. The citation of at least one of the two cost categories is seen in about 40% of cases in Huhmann & Bhattacharyya (2005). Lee *et al.* (2013), for the period 2008–2010 and with reference to eight magazines (*Business Week*, *Economist*, *Forbes*, *Fortune*, *Money*, *Smart Money*, *Barron's*, and *Kiplinger's*), estimate a frequency of 65%; however, the 65% include not only ads that report information about costs but also ads that simply mention the price of a fund share or the minimum investment amount. As far as risk is concerned, there is a growing presence of risk in this area of advertising: if, at the time of their study, Jones & Smythe (2003) find "fund ads rarely discussed risk," in more recent years, about 60% of advertisements explicitly or implicitly refer to the risk-return relationship (Huhmann & Bhattacharyya 2005, Lee *et al.* 2013).

2.2. *Hypotheses development*

A neglected aspect of the relationship between advertising choice and market sentiment is whether the dynamics of the advertising are influenced by the channel through which the financial instrument is distributed. The question is particularly relevant for asset management products since they can be purchased following either the advice of the producers' sales force (i.e. the network of bank branches and/or tied agents; "captive distribution networks") or, alternatively, on the initiative of the investor, which is sometimes assisted by an independent financial advisor (i.e. fee-only advisor).

The first distribution channel is absolutely prevalent in the Italian market. In Italy, most of the banking groups have a dominant position in the distribution of MF to retail customers: about 70% of MF subscriptions are collected through the bank channel, and the remaining 30% through the consultant network (Barbagallo 2018); the bank channel dominance reach the 95% among the MF incorporated in Italy (Assogestioni 2021). In fact, as documented by Crespi & Mascia (2016), Barbagallo (2018), only a minority of MFs are traded in the Italian stock exchange market (ATFund market of Borsa Italiana SpA). Moreover, few intermediaries (18 as of December 23, 2019) allow their customers to have access to this market. Conversely, in countries like the US, many MF management companies do not belong to banking or insurance groups, and fee-only financial advice is more frequently adopted.

For example, Bergstresser *et al.* (2009) describe the MF distribution channels in the US and estimate that in 2002 about 47% of AUM were in charge of directly distributed funds, and 53% of funds were placed through captive networks or linked by commercial agreements.

While the existing literature documents that retail investors are affected by market sentiment when they make investment decisions, the actions of sell-side advisers can mitigate this influence.

There is evidence of the power of captive networks in directing the choices of investors (unfortunately, toward inefficient products). In Italy, according to Marotta (2020), the documented preference for the dominant alternative for personal pension plans (i.e. insurance-based investment plans or PIPs) over the less expensive open pension funds (FPAs) can be explained by the role of sell-side agents: the cost differential between PIPs and FPAs is likely to induce tied agents to nudge investors toward higher fee-generating products.

Consistent with this argument, a study on life insurance agents in India by Anagol *et al.* (2017) finds that agents recommend products with higher commissions even if those products are sub-optimal for the customer. Regarding MFs, Guercio & Reuter (2014) show that actively managed funds sold through brokers face a weaker incentive to generate alpha and significantly underperform index funds with respect to funds marketed directly to retail investors, and Ferreira *et al.* (2018) find that bank-affiliated funds underperform unaffiliated funds. Moreover, in a survey conducted by Choi & Robertson (2020), savers indicated the suggestion they received from a financial adviser was one of the main reasons for choosing a certain fund.[d]

Overall, this literature suggests that captive networks are highly persuasive in the investor's decision-making process. As a result, banks and management companies might not find it profitable to invest in MF advertising, depending upon the stock market dynamic. Therefore, we expect that the advertising of MFs in the Italian market is not affected by investor sentiment because the placement of these funds mainly results from the advice of the producers' sales force. This does not necessarily mean that, in such a context, the advertising of MF tends to rational persuasion. The role of advertising continues to be to attract the attention of investors, while the distribution network influences purchasing attitudes and behavior; the expectation that professional management is capable of beating the market is thus credible.[e]

The effect of different distribution channels on the financial advertising policy of banks and management companies is further explored by comparing MFs to a financial product that is similar in all dimensions, with the exception of the main distribution channel. More precisely, we focus on ETFs because they, like MFs, allow

[d]For a comprehensive analysis of the financial advisor–investor relation in the Italian market, see Cruciani *et al.* (2021).

[e]It should be pointed out that it is not one of the aims of our work to analyze whether and to what extent the different distribution channels are capable of creating value for investors. On this topic, among others, Christoffersen *et al.* (2005, 2013), Bergstresser *et al.* (2009), Chalmers & Reuter (2020), Mullainathan *et al.* (2012), Guercio & Reuter (2014), Linnainmaa *et al.* (2021).

savers to diversify their investments across a wide range of financial instruments and markets. However, ETFs are purchased mainly on the initiative of individual investors as captive networks prefer to direct investors toward MFs.[f] Consistent with the argument that investing in ETFs is an expression of direct purchasing decisions by investors, Egan *et al.* (2020) estimate savers' expectations (beliefs) about future stock market returns precisely from the trading volume originated by retail investors in the various S&P500-related ETFs.

Moreover, it is fairly easy for investors to invest directly in ETF shares since they can be negotiated on any online platform, like any common stock. Hong *et al.* (2019) analyze the effects on MF in-flows of their distribution being shifted to independent online platforms in China. They find an increase in the sensitivity of investment decisions to past performance with the increased use of online platforms. This is quite interesting, as Pellinen *et al.* (2011) reveal that internet investors are more knowledgeable than bank-branch investors in Finland.

Given the significant differences in the distribution channels of MFs and ETFs in Italy, we argue that the channel of distribution of the two financial investment products determines the different investors' reactions to market sentiment. Specifically, ETF investors are more prone to behavioral reactions; thus, banks and management companies predict their patterns and plan their advertising strategies accordingly. For this reason, a different mechanism is expected in the relationship between the number of ads and market sentiment for the two investment products.

Therefore, the following hypotheses are proposed:

H1. *The dynamic of MF advertisements is not affected by the stock market condition (proxy of investor sentiment).*

H2. *The dynamic of ETF advertisements is positively affected by the stock market condition (proxy of investor sentiment).*

3. Data and Methodology

3.1. *Data description*

Our sample consists of the advertisements that promote MFs and ETFs published in the main Italian financial newspaper, *Il Sole* 24 *Ore* (and in its weekly insert *Plus*24), and is specifically addressed to retail investors. The identification of advertisements involved the manual control of all daily and weekly editions published between January 2006 and December 2018, excluding Sunday and Monday editions, which do not report the stock exchange price list.

[f]ETFs mainly use a passive investment strategy while many MFs promise an active management capable of outperform a benchmark or to achieve positive results regardless of market trends (i.e. flexible or absolute return MFs). As a result, ETFs charge significantly lower management fees than MFs and no underwriting fees.

Table 1. Summary statistics of advertising by investment product: MFs vs. ETFs.

	MF	ETF	MktRet
Sum	2287	1057	—
Obs	156	156	156
Median	12	5	0.002
Mean	14.660	6.775	−0.002
Std. dev.	10.557	5.898	0.060
Min	0	0	−0.159
Max	52	29	0.194

Notes: This table contains summary statistics of our key variables over the sample period from January 2006 to December 2018. MF is the monthly number of advertisements for MFs. ETF is the monthly number of advertisements for ETFs. MktRet is the monthly return of the Italian stock market index. We winsorize MktRet at the 1st and 99th percentiles.

Table 1 provides summary statistics for the main variables used in our analysis. We define MF (ETFs) as the number of advertisements in a given month related to these funds. For our sample period (January 2006–December 2018), we hand-collected 3344 advertisements, of which 2287 (68.4%) concerned MFs and 1057 related to ETFs. In order to test our hypotheses, we construct two time series of 156 monthly observations for both the MF and ETF advertising. MF advertisements totaled, on average, almost 15 per month over our sample period, double the number of ETF advertisements. Interestingly, they do not seem to follow a similar path, as their correlation over the sample period is 0.22. MktRet is the monthly return of the Italian stock market index.[g] We winsorize MktRet at the 1st and 99th percentiles.

The use of the number of ads is particularly suitable for our analysis when compared to other proxies of the advertising policy, such as the overall marketing expenses (see, for instance, Khorana & Servaes (2012), Barber *et al.* (2005)). Marketing expenses are reported on an annual basis (sometimes semi-annual), and we were able to map the dynamic of advertising choices on a monthly basis. More importantly, the overall marketing expenses include costs that are not directly related to advertising, such as sales loads and distribution costs.

3.2. *Estimation procedure*

In this section, we examine whether ETF advertising is more likely to be affected by the stock market condition than MF advertising. As we argued earlier, there is a significant difference in the distribution channels for MFs and ETFs in the Italian market. Our hypothesis is that since ETF investments are more prone to behavioral

[g]We use the Comit Globale R index, downloaded from the Banca Intesa SanPaolo website. The results do not materially change when we use the FTSE MIB Index instead.

reactions, banks and management companies will plan their advertising strategies accordingly. We test whether the Italian stock market index returns affect the dynamics of MF and ETF advertising, H1 and H2, respectively. The performance of the Italian stock market index is our main proxy for investor sentiment, and this is consistent with the finding of Egan *et al.* (2020) that investors' expectations are based on past stock market returns. However, we confirm the robustness of our findings by using an alternative proxy for market sentiment, namely the share turnover (Baker & Wurgler 2006).

Empirically, we start our analysis by estimating the following:

$$\mathrm{ADV}_t = a_0 + b_1 \mathrm{MktRet}_{t-1} + a_1 \mathrm{ADV}_{t-1} + \cdots + a_p \mathrm{ADV}_{t-p} + u_t, \qquad (3.1)$$

with the usual assumptions concerning the behavior of errors such as $u_t \sim i.i.d.N$ $(0, \sigma^2)$, and $E(u_{i,t} * u_{j,t}) = \mathrm{Cov}(u_{i,t}, u_{j,t}) = 0$. The dependent variable (ADV) is the relative monthly change in the number of advertisements for MFs ($\mathrm{ADV}_{\mathrm{MF}}$) or ETFs ($\mathrm{ADV}_{\mathrm{ETF}}$). MktRet is the monthly return of the Italian stock market index lagged by one or more periods, and we further include p lags of ADV.[h] We lag MktRet by one month to mitigate concerns about reverse causality. If the distribution channel impacts financial advertising, we expect the coefficient b_1 to be positive for $\mathrm{ADV}_{\mathrm{ETF}}$ and not statistically significant for $\mathrm{ADV}_{\mathrm{MF}}$. A positive coefficient is consistent with the hypothesis that when market sentiment is high, management companies, on average, increase their EFT advertising.

Equation (3.1) allows us to measure the relationship between market sentiment and advertising. However, there is still the possibility that the stock market returns increase exactly when there is more advertising for a specific financial product. As we discuss in Sec. 2, advertising has a positive effect on the demand for MFs (i.e. MF inflows), and this could indirectly affect — at least to some extent — the level of the stock market index. While we do not believe this would have a major impact on our estimation from Eq. (3.1), we employ a VAR model to rule out this possibility.[i]

A VAR model is suitable for this analysis in that, in our setting, we are specifically interested in identifying which of the two variables leads the other. A VAR model can help us in our task, given that, in its general form, it treats all variables symmetrically and allows us to figure out which variable, expressed in its lags, is useful in explaining and predicting the other. More specifically, a VAR model is a multivariate time series model where the dependent variables are linear functions of past lags of themselves and past lags of the other variables. If we denote the lag order by p, a VAR(p) of our two variables of interest (the returns of the market index,

[h] Consistent with Ling & Naranjo (2015), our variable of interest is expressed in terms of change in returns instead of index levels or first differences of the index levels.

[i] An alternative approach used by, for instance, Ferretti *et al.* (2017) is to implement the Toda & Yamamoto (1995) version of the Granger causality test (Granger 1980) to estimate an augmented VAR irrespective of the level of cointegration of the series. This procedure is convenient to get rid of problems related to bias of invalid asymptotic critical values present when series are non-stationary or co-integrated, but it does not allow the interpretation of VAR coefficients. Consequently, we cannot use this approach as we are specifically interested in the sign of the coefficients of the VAR model.

MktRet, and the relative change in the number of ads, ADV) is given by the equations:

$$\begin{aligned}\mathrm{ADV}_t &= a_0 + a_1\mathrm{ADV}_{t-1} + \cdots + a_p\mathrm{ADV}_{t-p} + b_1\mathrm{MktRet}_{t-1} + \cdots \\ &\quad + b_p\mathrm{MktRet}_{t-p} + u_{1,t}, \qquad (3.2)\\ \mathrm{MktRet}_t &= c_0 + c_1\mathrm{MktRet}_{t-1} + \cdots + c_p\mathrm{MktRet}_{t-p} + d_1\mathrm{ADV}_{t-1} + \cdots \\ &\quad + d_p\mathrm{ADV}_{t-p} + u_{2,t}. \qquad (3.3)\end{aligned}$$

We estimate the above equations for both MF ($\mathrm{ADV}_{\mathrm{MF}}$) and ETF ($\mathrm{ADV}_{\mathrm{ETF}}$) advertising. Furthermore, the number of monthly lags in the VAR model is chosen based on the following criteria for various choices of p: the Akaike information criteria (AIC), the Schwarz Bayesian information criteria, and the likelihood ratio selection criteria.

4. Results

In Sec. 4.1, we report the results of our baseline analysis, and in Sec. 4.2, we confirm our main findings by estimating a VAR model.

4.1. *Baseline results*: *OLS estimation*

We test our hypothesis H1 and estimate Eq. (3.1) with the relative change in the monthly number of MF advertisements ($\mathrm{ADV}_{\mathrm{MF}}$) as the dependent variable. The results are presented in Column (1) of Table 2.

The coefficient on MktRet is positive, but it is not statistically significant; when we include one and three lags of $\mathrm{ADV}_{\mathrm{MF}}$ in Columns (2) and (3), respectively, our results remain qualitatively unchanged. Given that market sentiment does not predict MF advertising, we find support for our argument that the "captive distribution channel" impacts investment choices.

The trend variable (Trend), which serves as a proxy for a variable that affects the dependent variable and is not directly observable, is significant at the 5% level only in Column (3). The significance of the Trend variable only for MFs could suggest that advertising campaigns for MFs have a more strategic orientation rather than a short-term approach based on recent market performance.[j]

We test our hypothesis H2 by estimating Eq. (3.1) and including the relative change in the monthly number of ETF advertisements ($\mathrm{ADV}_{\mathrm{ETF}}$) as the dependent variable. In Column (4) of Table 2, we present the results. The coefficient on MktRet is positive and statistically significant at the 5% level; when we include one and three lags of $\mathrm{ADV}_{\mathrm{MF}}$ as control variables in Columns (5) and (6), respectively, our results are confirmed. Therefore, lagged market sentiment has predictive power for ETF advertising in the following periods. This is consistent with our hypothesis that

[j] We thank the anonymous referee for suggesting this plausible explanation.

Table 2. Distribution channel and financial advertising: MFs vs. ETFs.

	ADV_{MF}	ADV_{MF}	ADV_{MF}	ADV_{ETF}	ADV_{ETF}	ADV_{ETF}
	(1)	(2)	(3)	(4)	(5)	(6)
$MktRet_{t-1}$	2.747	3.180	3.417	5.408**	6.095**	6.280**
	(0.533)	(0.475)	(0.432)	(0.049)	(0.048)	(0.047)
ADV_{MFt-1}		−0.113*	−0.174**			
		(0.081)	(0.024)			
ADV_{MFt-2}			−0.221***			
			(0.001)			
ADV_{MFt-3}			−0.212***			
			(0.001)			
ADV_{ETFt-1}					−0.170***	−0.195***
					(0.002)	(0.001)
ADV_{ETFt-2}						−0.104
						(0.234)
ADV_{ETFt-3}						−0.141**
						(0.015)
Trend	0.008	0.009	0.014**	−0.002	−0.002	−0.003
	(0.137)	(0.125)	(0.043)	(0.678)	(0.641)	(0.502)
Constant	0.257	0.288	0.342	0.920*	1.074**	1.384**
	(0.433)	(0.380)	(0.290)	(0.050)	(0.032)	(0.016)
Observations	155	154	152	155	154	152
R-squared	0.021	0.033	0.111	0.018	0.046	0.074

Notes: This table presents estimates from an OLS model examining whether ADV_{MF} and ADV_{ETF} advertising is affected by market sentiment. The dependent variable is ADV_{MF} in Columns (1)–(3) and ADV_{ETF} in Columns (4)–(6). ADV_{MF} is the monthly relative change in the number of advertisements for MFs. ADV_{ETF} is the monthly relative change in the number of advertisements for ETFs. The main variable of interest is $MktRet_{t-1}$, which is the lagged monthly return of the Italian stock market index. Columns (2) and (5) include as control variable one-month lagged values of the dependent variable. Columns (3) and (6) include as control variables up to three-month lagged values of the dependent variable. In all our specifications, we include a time trend (Trend). Heteroskedasticity-consistent standard errors are estimated, and *p*-values are reported in parentheses beneath coefficient estimates. ***, **, and * indicate that the coefficient estimate is significantly different from zero at the 1%, 5%, and 10% levels, respectively.

market sentiment matters for management companies only when clients are "do-it-yourself" investors. The *R*-squared in the baseline specification in Table 2 is quite small; it ranges from 1.8% to 11.1%. The *R*-squared in Columns (3) and (6) also improve relative to the baseline specifications in Columns (1) and (4), suggesting that the model is better specified when more lags of the dependent variable are included. However, we acknowledge that these results suggest that lagged values of both market sentiment and the change in the number of advertisements are not the main drivers of the current value of the change in advertising.

We confirm the robustness of our findings by using an alternative proxy of market sentiment. As suggested by Baker & Stein (2004), Baker & Wurgler (2006), irrational investors only participate in the market, thereby adding liquidity, when they are optimistic; hence, high liquidity is a symptom of overvaluation and can serve as a

proxy for investor sentiment.[k] Therefore, similar to Baker & Wurgler (2006), we measure turnover as the natural log of the share turnover ratio, which is based on the ratio of reported share volume to shares included in the market index.[l] We re-estimate Eq. (3.1), and the results confirm our main hypotheses H1 and H2.[m]

In Table 3, we test whether the effect of market sentiment is particularly pronounced in a bull market by creating a dummy variable (BullMkt), which takes the value of one if MktRet_{t-1} is positive and zero otherwise, and we further interact it with MktRet_{t-1}. A positive coefficient on the interaction term would suggest that the effect that we document in Table 2 is more pronounced when market sentiment is high. Indeed, Column (2) in Table 3 shows that $\text{MktRet}_{t-1} \times \text{BullMkt}$ is positive and statistically significant at the 10% level.

In Columns (3)–(6), we test whether the effect of market sentiment on advertising changes over time. We lagged MktRet by three months (MktRet_{t-3}) and six months (MktRet_{t-6}) and find, again, that market sentiment is irrelevant for MF advertising even when we look at the previous three- and six-month periods. Yet, three- and six-month lagged market sentiment seems to affect ETF advertising, as the coefficients on MktRet_{t-3} and MktRet_{t-6} are positive and statistically significant at the 5% level or better.[n] Interestingly, the magnitude of the coefficients on MktRet decreases from 6.280 to 2.423 when we move from a one-month to a six-month lag, suggesting that the effect diminishes over time.

Furthermore, the negative and significant lagged coefficients of advertising in all models for either ADV_{MF} or ADV_{ETF} suggest a mean reverting process; that is, the number of advertisements increases temporarily — particularly following positive market returns for ETF — but then reverts to the historical mean. This is reasonable, provided that advertising in financial newspapers cannot increase indefinitely.[o]

4.2. *VAR model estimation*

As discussed in Sec. 3, we estimate a VAR model to ascertain the robustness of our findings. More precisely, estimation of the parameters of the VAR requires that the variables in ADV_t and MkRet_t are covariance stationary, with their first two moments finite and time-invariant. Therefore, we first analyze the integration level of all the series involved with a standard unit root test (Becketti *et al.* 2013). Panel A, B, and C of Table 4 report augmented Dickey–Fuller (ADF) results for the market index return (MktRet), MF advertising (ADV_{MF}), and ETF advertising (ADV_{ETF}) series used in our VAR analysis.

[k] Baker & Wurgler (2006) in addition to share turnover, suggest other proxies for market sentiment, such as the closed-end fund discount and the number of initial public offerings. However, the Italian markets for these and closed-end funds are quite small, preventing us from using those variables.
[l] Share turnover data are obtained from Eikon.
[m] These results are untabulated but available from the authors upon request.
[n] The Trend variable, which serve as a proxy for a variable that affects the dependent variable and is not directly observable, is significant at 5% level only in Columns (3) and (4).
[o] ETF advertising could also substitute MF advertising when there are positive market returns, but this hypothesis requires a specific test that is beyond the scope of this work.

Table 3. Distribution channel and financial advertising: Bull market and timing effect.

	Bull market			Timing effect		
	ADV_{MF} (1)	ADV_{ETF} (2)	ADV_{MF} (3)	ADV_{MF} (4)	ADV_{ETF} (5)	ADV_{ETF} (6)
$MktRet_{t-1}$	4.152	6.492**				
	(0.372)	(0.038)				
$MktRet_{t-3}$			0.202		5.590***	
			(0.911)		(0.001)	
$MktRet_{t-6}$				−0.274		2.423**
				(0.807)		(0.013)
ADV_{MFt-1}	−0.129**		−0.169**	−0.167**		
	(0.034)		(0.027)	(0.027)		
ADV_{MFt-2}	−0.180***		−0.220***	−0.222***		
	(0.001)		(0.002)	(0.001)		
ADV_{MFt-3}	−0.161***		−0.211***	−0.210***		
	(0.002)		(0.001)	(0.001)		
ADV_{ETFt-1}		−0.190***			−0.226***	−0.191***
		(0.001)			(0.001)	(0.003)
ADV_{ETFt-2}		−0.098			−0.143*	−0.108
		(0.241)			(0.095)	(0.207)
ADV_{ETFt-3}		−0.138**			−0.165***	−0.168***
		(0.015)			(0.004)	(0.009)
$MktRet_{t-1} \times BullMkt$	6.703	14.555*				
	(0.492)	(0.084)				
BullMkt	−0.065	−0.271				
	(0.887)	(0.532)				
Trend			0.014**	0.015**	−0.005	−0.003
			(0.040)	(0.041)	(0.371)	(0.605)
Constant	1.390***	1.264***	0.307	0.258	1.577***	1.313**
	(0.002)	(0.001)	(0.330)	(0.447)	(0.008)	(0.024)
Observations	152	152	152	150	152	150
R-squared	0.075	0.108	0.106	0.106	0.100	0.069

Notes: This table presents estimates from an OLS model examining whether MF and ET advertising is affected by market sentiment, specifically in a bull market. The dependent variable is ADV_{MF} in Columns (1), (3), and (4), and ADV_{ETF} in Columns (2), (5), and (6). ADV_{MF} is the monthly relative change in the number of advertisements for MFs; ADV_{ETF} is the monthly relative change in the number of advertisements for ETFs; $MktRet_{t-p}$ is the lagged monthly return of the Italian stock market index; BullMkt is a dummy variable that takes the value of one if $MktRet_{t-1}$ is positive, and zero otherwise. The main variables of interest are $MktRet_{t-p}$ and the interaction term $MktRet_{t-1} \times BullMkt$. In each column, we include as control variables up to three-month lagged values of the dependent variable. In Columns (3)–(6), we include a time trend (Trend). Heteroskedasticity-consistent standard errors are estimated, and *p*-values are reported in parentheses beneath coefficient estimates. ***, **, and * indicate that the coefficient estimate is significantly different from zero at the 1%, 5%, and 10% levels, respectively.

We test the null hypothesis that the time series contains a unit root over the sample period from January 2006 to December 2018. The null hypothesis of the presence of a unit root is rejected at the 1% significance level in all our tests. The market index return autocorrelations are marginal and statistically insignificant. Likewise, the auto correlations of each of the MF and ETF advertising series are negligible and statistically insignificantly. Therefore, the results from the unit root

Table 4. Unit root tests.

Panel A: ADF test for unit root for MktRet

	Test stat	1% Critical	5% Critical	10% Critical
$Z(t)$	−3.694	−4.025	−3.444	−3.144

MacKinnon approximate p-value for $Z(t) = 0.0228$

MktRet	Coef.	Std. err.	t	$P > \|t\|$	[95% Conf.	Interval]
L1.	−0.9577048	0.2592603	−3.69	0	−1.470547	−0.4448624
LD.	0.0014619	0.245981	0.01	0.995	−0.4851128	0.4880366
L2D.	−0.0982166	0.2331507	−0.42	0.674	−0.5594118	0.3629785
L3D.	0.0854931	0.2187416	0.39	0.697	−0.3471993	0.5181856
L4D.	0.2199297	0.2044985	1.08	0.284	−0.1845885	0.624448
L5D.	0.2549328	0.1927449	1.32	0.188	−0.1263357	0.6362013
L6D.	0.1654176	0.1830292	0.9	0.368	−0.1966323	0.5274676

Panel B: ADF test for unit root for ADV_{MF}

	Test stat	1% Critical	5% Critical	10% Critical
$Z(t)$	−5.994	−4.025	−3.444	−3.144

MacKinnon approximate p-value for $Z(t) = 0.0264$

ADV_{MF}	Coef.	Std. err.	t	$P > \|t\|$	[95% Conf.	Interval]
L1.	−2.818335	0.4702245	−5.99	0	−3.748552	−1.888119
LD.	1.602922	0.4383925	3.66	0.7356775	2.470167	
L2D.	1.308489	0.409949	3.19	0.002	0.4975117	2.119466
L3D.	1.076211	0.3797582	2.83	0.005	0.3249586	1.827463
L4D.	0.9078948	0.3474857	2.61	0.01	0.2204852	1.595304
L5D.	0.957218	0.3098957	3.09	0.002	0.3441703	1.570266
L6D.	0.7769622	0.2779011	2.8	0.006	0.2272075	1.326717

Panel C: ADF test for unit root for ADV_{ETF}

	Test stat	1% Critical	5% Critical	10% Critical
$Z(t)$	−11.112	−3.144		

MacKinnon approximate p-value for $Z(t) = 0.0000$

ADV_{ETF}	Coef.	Std. err.	t	$P > \|t\|$	[95% Conf.	Interval]
L1.	−1.060855	0.2912087	−3.64	0	−1.636936	−0.4847752
LD.	−0.0963988	0.2756579	−0.35	0.727	−0.6417158	0.4489183
L2D.	−0.1377317	0.2606704	−0.53	0.598	−0.6533999	0.3779366
L3D.	−0.2829111	0.2443904	−1.16	0.249	−0.7663736	0.2005513
L4D.	−0.2666177	0.2332721	−1.14	0.255	−0.7280855	0.1948502
L5D.	−0.1699456	0.2184936	−0.78	0.438	−0.6021782	0.2622869
L6D.	−0.1504941	0.2017668	−0.75	0.457	−0.549637	0.2486488

Notes: This table reports the ADF test on MktRet, ADV_{MF}, and ADV_{ETF}. The null hypothesis is that the time series contains a unit root. The sample period spans from January 2006 to December 2018.

Table 5. Estimated VAR equations for market index returns, mutual, and ETF advertising.

	ADV_{MF}	MktRet	ADV_{ETF}	MktRet
	(1)	(2)	(3)	(4)
$ADV_{MF t-1}$	−0.131*	0.000		
	(0.080)	(0.002)		
$ADV_{MF t-2}$	−0.182**	0.000		
	(0.079)	(0.002)		
$ADV_{MF t-3}$	−0.162**	−0.001		
	(0.079)	(0.002)		
$MktRet_{t-1}$	3.081	0.093	6.505**	0.093
	(3.781)	(0.080)	(3.255)	(0.080)
$MktRet_{t-2}$	4.270	−0.117	3.329	−0.115
	(3.771)	(0.080)	(3.273)	(0.081)
$MktRet_{t-3}$	−6.042	0.173**	5.475*	0.168**
	(3.816)	(0.081)	(3.315)	(0.082)
$ADV_{ETF t-1}$			−0.216***	0.000
			(0.080)	(0.002)
$ADV_{ETF t-2}$			−0.133	−0.001
			(0.081)	(0.002)
$ADV_{ETF t-3}$			−0.159**	0.001
			(0.079)	(0.002)
Constant	1.345***	−0.002	1.187***	−0.004
	(0.265)	(0.006)	(0.228)	(0.006)
Observations	152	152	152	152

Notes: This table presents results obtained from estimating our VAR models. We use ADV_{MF} as the dependent variable in Column (1), ADV_{ETF} in Column (3), and MktRet in Columns (2) and (4). The lag length of the VAR is chosen by using the AIC criterion for various choices of p. We find that a three-period lag provides the best fit. The estimated sample period spans from January 2006 to December 2018. p-values are reported in parentheses. *** and ** represent 1% and 5% significance levels, respectively.

tests confirm that each of the time series we use in our VAR model is stationary.[p] We present the results of our baseline VAR model in Table 5.

Columns (1) and (2) include the individual coefficient estimates and p-values from using MF advertising (ADV_{MF}) and market index returns (MktRet). The second set of results in Columns (3) and (4) contain the individual coefficient estimates obtained from estimating the models using ETF advertising (ADV_{ETF}) and market index returns (MktRet), respectively. The AIC result for various choices of p shows that the optimal number of lags in our VAR model is three.[q] We then test for the presence of cointegration in the series using the Johansen test. We find no

[p]When the time series are non-stationary the use of cointegration and VEC procedures is required. However, all our time series are stationary as shown by our unit root test in Table 4 and cointegration tests (Table 6). Therefore, a VAR model is suitable for our analysis.

[q]We further confirm that the selection of the number of lags is robust to the use of the Schwarz Bayesian information criteria and the likelihood ratio selection criteria.

Table 6. Cointegration tests.

ADV_{MF}: Johansen test for Cointegration					
Trend: Constant			Number of obs = 153		
Sample: 4–156			Lags = 2		
Maximum rank	Parms	LL	Eigenvalue	Trace statistic	5% Critical value
0	6	−236.12912	—	158.4117	15.41
1	9	−190.32827	0.45048	66.8100	3.76
2	10	−156.92327	0.35381		
ADV_{ETF}: Johansen test for Cointegration					
Trend: Constant			Number of obs = 153		
Sample: 4–156			Lags = 2		
Maximum rank	Parms	LL	Eigenvalue	Trace statistic	5% Critical value
0	6	−209.48418	—	152.3571	15.41
1	9	−166.59805	0.42914	66.5849	3.76
2	10	−133.30562	0.35286		

Notes: Johansen test for cointegration implemented in Stata is meant to study the rank of cointegration, comparing trace statistic with critical value: when the trace statistic is larger than the critical value, the hypothesis is rejected. Where all hypotheses are rejected, no cointegration exists, as in this case.

Table 7. VEC stability condition.

	Eigenvalue	Modulus
Eigenvalue stability condition: VEC of ADV_{MF}		
−0.2214819	+0.5632989i	0.605277
−0.2214819	−0.5632989i	0.605277
0.1899834	+0.560129i	0.591471
0.1899834	−0.560129i	0.591471
	0.5222712	0.522271
	−0.4974101	0.49741
Eigenvalue stability condition: VEC of ADV_{ETF}		
−0.2214819	+0.5632989i	0.605277
−0.2214819	−0.5632989i	0.605277
0.1899834	+0.560129i	0.591471
0.1899834	−0.560129i	0.591471
	0.5222712	0.522271
	−0.4974101	0.49741

evidence of cointegration, as reported in Table 6, supporting our choice to estimate a reduced form VAR model.

Consistent with our baseline finding in Sec. 4.1, we find a positive and statistically significant coefficient on market index returns (MktRet) only for ETF advertising (ADV_{ETF}) in Column (3), suggesting that market sentiment affects ADV_{ETF}, but it does not predict a change in MF advertising (ADV_{MF}). Overall, the results reported in Table 5 confirm our results of the OLS estimation: the magnitude of the coefficients estimates of MktRet are very similar to those presented in Table 2, and the main reverting property of the time series of advertising is confirmed, given that the lagged coefficients of ADV_{MF} and ADV_{ETF} are significant and negative. It must be noticed that the lagged values of either ADV_{ETF} or ADV_{MF} have no predictive power on MktRet, which rules out the possibility of reverse causality affecting our results. Lastly, the stability of the estimation is confirmed by the values of eigenvalues and modulus reported in Table 7, which all lie inside the unit circle.

5. Conclusion

In our paper, we explore two basic questions: (i) does investor sentiment affect financial advertisers? (ii) does the distribution channel matter for advertisers' exposure to investor sentiment? To answer these questions, we compared the dynamics of the advertisements of MFs and ETFs, two investment products similar in many respects but different in terms of their distribution channel. The first type is mainly placed through captive networks of bank branches and tied agents; the latter type is mainly purchased directly by savers through online trading platforms. The results of our analysis suggest a positive answer to both questions: the number of advertisements is affected by market sentiment but only in the case of ETFs.

This evidence offers new insights into the role of investor behavior in the advertising strategies of asset management companies. Our results suggest that advertisers believe in the efficacy of captive financial advisers in influencing investors' choices, indirectly confirming the persuasive power of this distribution channel. To this extent, we bring new evidence that for "do-it-yourself" investors, the number of advertisements follows their willingness to take risks and the synergy between advertising and sell-side advisers makes ads independent of investor sentiment. The distribution channel clearly plays a central role in influencing investors' choices, and greater attention from regulators and supervisors is required to help correct investor behaviors. However, as suggested by the existing literature, it must be noticed that, regardless of the distribution channel, advertising could encourage a sub-optimal allocation of investors' wealth by prompting behavioral biases. Since advertising can be distorting, a less trend-following form of advertising could help investors orient their investment policies toward the long-run horizon, which is considered a cornerstone of good investment behavior.

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