The Exclamation Mark of Cain: Risk Salience and Mutual Fund Flows[1]

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Abstract

This paper examines the effect of risk salience on investors' decisions. Utilizing a staggered implementation of a regulatory reform focused on risk disclosure as a quasi-natural experiment, and using proprietary daily mutual fund flow data, we find that an apparently minor visual change of adding an exclamation mark ("!") to the names of certain mutual funds *caused* an immediate and significant drop of net inflows into these funds, relative to comparable funds. The economic magnitude of this effect is four to five times larger than the unconditional mean of daily flows. The effect is also noticeable employing monthly data, and it lasts up to 5 months following the regulatory change. Further examination suggests that the increased risk salience mostly affected retail investors. We find that the slight change in mutual fund names also trickled down to their base assets, significantly affecting the corporate bond market.

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1. Introduction

According to conventional decision theories, investment decisions are affected only by rational calculations, such as risk, return, fees, and so forth. However, literature on behavioral finance shows that changes in the presentation of information, and particularly an increase in the salience of specific information, play a significant role in affecting investors' behavior. This documented effect is driven by investors' behavioral biases, such as framing—a tendency to address a problem through a specific context— and investors' limited attention and processing power. While this issue has been examined in various experiments, their findings may not necessarily reflect investors' behavior in the real world.

This paper examines the effect of information presentation, in our case risk salience, in a real-world high-stakes trading environment. Specifically, we analyze the impact of an Israeli regulatory reform focused on risk disclosure, implemented in March 2010, that required the minor visual change of adding an exclamation mark ("!") to the names of certain mutual funds. Our research takes advantage of the relatively clean setting created by the specific characteristics of this regulatory quasi-natural experiment. First, modifications in the presentation of information usually accompany actual economic changes, or at least changes in the information set available to investors. In our setting, however, the modification of the names of mutual funds was not accompanied by changes in mutual fund activities relative to the pre-reform period, and not even in the information set obtainable by investors. Second, whereas regulatory reforms typically affect an entire universe of comparable investment vehicles, in the studied reform an exclamation mark was affixed only to the names of certain mutual funds, to the exclusion of similar funds with comparable characteristics. Therefore, our setting provides a unique control group, with attributes that are comparable to those of the treated mutual funds.

A significant number of investors worldwide rely on mutual funds as a main financial vehicle for investment and retirement, as mutual funds provide retail clients with relatively cheap and easy access to professional asset management, and facilitate exposure to financial markets. According to the Investment Company Institute's 2015–2016 quarterly statistics on the global mutual fund industry, the industry is in a state of steady increase, having reached an all-time high of $40.4 trillion. Mutual funds worldwide are subject to very strict regulations that purport to protect smaller investors by monitoring components, such as asset allocation, management fees, and pricing methods. These include legislation such as the Investment Company Act of 1940 in the US, the 2014 Undertaking for the Collective Investment of Transferable Securities (UCITS) Directive in the EU, and the Joint Investment Trust Law of 1994 in Israel.

In recent years regulators around the world have made great efforts to simplify the disclosure of financial information, improve its accessibility, and facilitate investors' ability to compare financial products. As regulators around the world become aware of the effect of information presentation on

investors, there are growing concerns about the exact structure of information disclosure. Specifically, regulators tend to prefer visual representation of the main characteristics of the investments, especially their risk levels. Some of the visual representations make use of an exclamation mark to signal specific risks of the investment product. The use of an exclamation mark as a risk indicator in retail investment products was adopted in various regulatory policies worldwide, including in the EU, Canada, Spain, and Israel.

A noteworthy case, and one that demonstrates this paper's potential contribution to contemporary regulatory discussions, is Key Investor Information Disclosure (KIID). KIID was designed to improve the way essential characteristics of PRIIPS (Packaged Retail and Insurance-based Investment Products) and UCITS (Undertakings for Collective Investments in Transferable Securities) are disclosed, so that investors are reasonably able to understand the risks of retail investment products. KIID regulation uses a numeric risk indicator, and it was decided to affix an exclamation mark after the risk category number to signal the presence of particular risk characteristics that render the fund unsuitable for the wider methodology used for risk and reward disclosure.[2] The proposed KIID modification was examined in a survey-based study (IFF Research and YouGov, 2009) that tested subjects' understanding and interpretation of the exclamation mark. While most surveyed clients claimed that the purpose of the mark was to attract attention, or to warn that the fund was risky, intermediaries raised concerns that the use of the exclamation mark could cause confusion as clients wouldn't know how to interpret it. Therefore, most of them argued that it was unnecessary or too complicated and could deter some clients from investing. The proposed use of the exclamation mark to signal additional risks also provoked a public debate over its merits and limitations.[3] Our research directly relates to this current debate on the impact of information presentation formats, and specifically to the growing use of exclamation marks. As such it may provide useful insights for regulators and market players into the implications of such regulatory policies.

We utilize proprietary data of 25,278 fund-day observations, pertaining to 1,222 mutual funds. We apply the differences–in-differences technique to estimate the causal effect of adding an exclamation mark to certain mutual fund names during March 2010 on their net inflows, *vis-à-vis* other mutual funds that were not required to add the mark to their names. Using either the full sample of mutual funds or restricted samples of fixed income funds and corporate bond funds, we find that the addition of an exclamation mark to fund's name is associated with a drop in daily scaled net inflows to this fund. This drop is statistically

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[2] For instance, the fund has not existed long enough to generate the required length of time series, or the volatility of its historical return series is not expected to represent the future risk and reward profile.

[3] For example, the Securities Industry and Financial Markets Association (SIFMA) and the Center for Financial Market Integrity opposed the use of an exclamation mark on the grounds that it could cause investors to perceive the fund negatively, while the European Savings and Retail Banking Group (ESBG) was in favor of such use for possessing the ability to "capture the attention of the investor, motivating him to look for further information on the product."

significant, and almost five times as large as the average daily scaled net inflows into mutual funds in our sample period.

Looking into the two components of the net inflows, we find that both inflows into treated funds were lower than expected absent the reform, and outflows from treated funds were higher relative to the counterfactual expected outflows. The relative economic magnitude of the effect, however, is larger for the inflows, probably since current investors in treated mutual funds enjoyed high yields in preceding months and were thus less sensitive to the increased risk salience than their potential future counterparts who did not enjoy the aforementioned yields. These results are in line with psychological research about warnings following safe personal experience (Barron, Leider, and Stack, 2008).

Further examination shows that the results are not likely to stem from unrelated time trends, nor are they driven by self-fulfilling prophecy. Using Monte Carlo simulations with a randomly chosen day for the exclamation mark addition, we demonstrate that the t-statistic of our diff-in-diff estimator lies in the extreme left tail of the simulation distribution, suggesting that pure chance in the timing of the reform cannot explain the daily estimation results. Using hand-collected data to examine mutual funds' marketing efforts, we detect some evidence of the reform's influence on funds' advertising. Nevertheless, controlling for these marketing efforts, either directly or by exclusion of mutual funds that advertise, does not alter our main results.

The significant effect of the reform is also evident when applying the diff-in-diff methodology to monthly data on mutual fund flows. It is worth noting that this effect gradually fades, becoming statistically insignificant 4–5 months after the reform. This dissipation of the effect accords with psychological studies that show that the tendency to weight rare events decreases with safe experience (Yechiam, Erev, and Barron, 2008). Such an effect can also be driven by a change in fundamentals. Specifically, we show that the reform in mutual fund regulation also affected asset prices. The diff-in-diff estimation reveals that the spreads of corporate bonds that were presumably more sensitive to the reform increased relative to the spreads of other corporate bonds by as much as 135 basis points following the reform. If indeed the prices of these corporate bonds declined beyond their fundamental value because of reform-driven sell pressure and if the mutual funds that received an exclamation mark are seen as a useful investment vehicle to invest in such bonds, then the return of investors to these funds can be framed as rational.

Finally, we use detailed proprietary data on foreign investors' holdings of Israeli mutual funds to investigate whether sophisticated investors were also affected by the increased risk salience. Using the diff-in-diff estimation to study the effect of the reform on foreign investors' net inflows into Israeli mutual funds, we do not find evidence that the reform reduced their flows into treated mutual funds. This, along

with anecdotal evidence regarding local institutional investors' lack of response to the reform, suggests that financially sophisticated investors were not affected by the increased risk salience. Hence, it seems that the effect we find is driven by retail investors, in line with the literature that suggests that such investors are more prone to behavioral biases than their professional counterparts.

This paper contributes both to the well-established literature on mutual fund investors' decision-making and to the behavioral literature about the effects of limited attention, salience, and the presentation of information on investment activity.

Empirical studies that examined mutual fund flows show that investors make their decisions based on past performances (Hendricks, Patel, and Zeckhauser, 1993). Hendricks *et al.* relate this behavior to the hot-hands effect, while Sapp and Tiwari (2004) oppose the idea of "smart money" or that investors have selection ability, and show that investors simply choose the recent winners. Further, Goetzmann and Peles (1997) provide evidence that investors' tendency to adjust their beliefs to justify past actions prevents outflows from poorly performing mutual funds. Other common and well-researched behavioral biases include disregard of costs and preference for more salient options. Pontari, Stanaland, and Smythe (2009) show that investors often focus on past performance and ignore fees and costs, which have a direct impact on their wealth. Similar findings are obtained by Barber, Odean and Zheng (2005), who analyze mutual fund flows and the changes in their fees over several decades. They conclude that investors learn quickly about front-end-load fees and commissions as they are more obvious and salient, but do not prefer funds with lower operating and marketing expenses. Finally, Shaton (2017) demonstrates that limiting the presentation of retirement fund yields reduced fund flow sensitivity to past returns *vis-à-vis* a control group of mutual funds.

Marketing and advertising also play a significant role in mutual fund inflows (Jain and Wu, 2000; Cronqvist, 2006; Lee *et al.*, 2012). Sirri and Tufano (1998) find that due to search costs, mutual funds with greater media attention or those that belong to larger fund families enjoy greater flows. Moreover, investors tend to ignore selection bias in advertised data by mutual fund families, which emphasizes the high-performing funds (Koehler and Mercer, 2009). As investors are affected by media coverage of mutual funds, fund managers react strategically to the media-driven increased attention by increasing marketing efforts (Kaniel and Parham, 2017). Finally, Cooper, Gulen, and Rau (2005) find that mutual funds that changed their names to reflect popular investment styles enjoyed positive abnormal flows, regardless of actual changes in their portfolio holdings. It is noteworthy that Cooper *et al.* examine strategic name changes allegedly aimed at exploiting investors' irrational behavior, while we study a minor, regulator-imposed change in some fund names aimed at increasing risk salience.

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The present research also relates directly to the literature exploring the effect of visual presentation and risk salience on investors' behavior. Scholars have shown that investors and managers are inclined to focus on graphical and salient information (Hirshleifer and Teoh, 2003; Jarvenpaa, 1989; Dessaint and Matray, 2017). In a concurrent paper, Frydman and Wang (2017) also use a natural experiment to study the causal effect of salience on investors' behavior. Frydman and Wang (2017) study a change initiated by a specific branch of a brokerage firm that increases the salience of the purchase price for its clients. By contrast, we study a regulatory reform that affects the salience of a specific risk factor. Our paper further complements their detailed examination by analyzing the macro consequences of a minor change to mutual funds' names for the general investor population.

In particular, studies have been conducted on the effect of graphical presentation and risk perception. Bordalo *et al*. (2012) conduct an experiment and develop a model that illustrates the effect of salience on investors' decisions under risk. According to their research, investors overweigh the upside or the downside of a risky choice depending on salience. Similarly, Kaufmann and Weber (2013) show that a higher degree of information aggregation results in greater risk-taking; thus, different graphical representations of risk impact portfolio choices differently. The exaggerated focus on salient information stems from limited attention and information overload, as investors do not apply all the available information in the decision-making process. Thus, shorter and more vivid and simplified information disclosure can enhance its effectiveness (Walther, 2015). The effectiveness of simplified information in handling cognitive overload and limited attention has been confirmed in various laboratory experiments. In a seminal experiment on consent to drug treatments (Epstein and Lasagna, 1969), subjects were given different consent forms for the use of a specific drug, acetylhydroxybenzoate, that included information on its risks. The experiment showed that the length of the form was negatively correlated with patients' understanding. For example, some subjects who received the longer form were unaware of potential death risks.

Finally, our research contributes to a growing body of work on consumer financial protection. Campbell, *et al.* (2011) investigate three case studies: of mortgage markets, payday lending, and financing retirement consumption. The researchers show the need for, and limits of, regulation in different realms of household financial environment. In our case, we show how a minor regulatory intervention could significantly move financial markets.

The remainder of the paper proceeds as follows. Section 2 presents the unique attributes of the setting and elaborates on the characteristics of the Israeli mutual fund industry and the regulatory reform in the display of the names of the mutual funds. Section 3 discusses the data. Section 4 describes the methods used to measure the changes in the net inflows due to the regulatory reform, and to evaluate the long-term effect of this shock to salience. Section 5 provides the results divided into short-term results, longer-term

results, and results regarding the economic impact of the reform that we examine. Section 6 tests the robustness of the results, and Section 7 concludes.

2. Setting

2.1. The Israeli mutual funds industry

Mutual funds in Israel, like their global counterparts, are an important investment vehicle. Local mutual fund investors are almost exclusively retail clients who invest directly in the funds. This investment, in Israel, doesn't provide investors with any tax benefits, and hence it is not used for retirement savings. As of the end of 2016, the mutual fund industry accounted for 6.3 percent of the public financial assets portfolio. There are 1,393 funds managing NIS 214 billion.[4] Mutual funds in Israel are regulated by the Israel Securities Authority (ISA). The mutual funds have significant holdings of corporate bonds, holding about a quarter of outstanding domestic corporate bonds.

2.2. The Israeli corporate bond market

In contrast to the situation in most countries, including the US, corporate bonds in Israel are mostly traded on the stock exchange. Similarly to stocks, corporate bonds in Israel are traded on the Tel Aviv Stock Exchange (TASE), which is the only exchange in Israel. Though corporate bonds have been officially traded on the TASE from its inception in 1953, their market value start increasing rapidly only in 2005, following several reforms that liberalized the Israeli capital market. Abudy and Wohl (2018) examine the liquidity of the Israeli corporate bond market and find it to be very liquid in spite of its relatively small size and its relative isolation, with low foreign investors' participation. Specifically, they find high volume and low spreads relative to the US corporate bond market. The researchers attribute the high liquidity of the Israeli corporate bond market to the use of a limit order book.

2.3. The exclamation mark reform

On March 1, 2010, the ISA issued a new regulation to be implemented by the end of that month. The new regulation required mutual funds to add an exclamation mark to their names if their investment policy enabled them to hold high-yield corporate bonds (non-rated bonds and bonds rated below investment-

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[4] The figures in dollar terms are about 1/3.8 of the shekel sums (December 2016).

grade—below BBB—according to the local rating scale) in excess of their maximum possible stock exposure. This regulation replaced the previous regulation that required a monthly (ex-post) report by the manager of each fund with holdings of high-yield corporate bonds that exceeded its maximum possible stock exposure on at least one day of the month.

A unique feature of this reform is that there was no change in the available information set relative to the pre-reform period, because:

(1) The mutual funds' investment policies had already been available to the public.

(2) The mutual funds' names had already included a number indicating the funds' maximum stock exposure.

(3) The mutual funds' actual end-of-month holdings had already been reported by all of the funds' managers.

(4) Specifically, the mutual funds' holdings of high-yield corporate bonds in excess of the maximum stock exposure had already been reported by the relevant funds' managers.

Thus, the reform changed only one minor characteristic of mutual funds' names: an exclamation mark was added to the middle of the relevant funds' names. Appendix A offers a few examples of the change.

3. Data

Our proprietary data consists of 25,278 fund-day observations, pertaining to 1,222 mutual funds managed by 29 different management firms. We exclude 2008 fund-day observations pertaining to 96 mutual funds with less than $1 million in assets under management as of the end of February 2010 (NIS 3.796 million, using the exchange rate at that time). We further truncate 1% of each side of the distribution of our main variable of interest *scaled net inflows*, resulting in the loss of another 465 fund-day observations.

In addition, we use hand-collected data on mutual fund advertisements to investigate if our results are driven by changes in the marketing of different mutual funds following the exclamation mark reform. We interchangeably use either *Num_Ads* or *Val_Ads*, where $Num\_Ads_{n,t}$ is the number of advertisements for fund n on day t, and $Val\_Ads_{n,t}$ is the value of advertisements for fund n on day t. $Val\_Ads_{n,t}$ is calculated as the product of the number of ads multiplied by their size (where a full-page ad equals 1), multiplied by the value of the page in the specific newspaper in which the ad appeared in thousands of shekels (based on data from Yifat Media Research, a private firm that estimates the value of a newspaper's page based on its exposure), and divided by the number of mutual funds mentioned in the ad.

Table 1 describes the components of our main variables of interest.

[TABLE 1]

We supplement the daily data with monthly fund flow data that enables us to examine the medium-term effects of the reform. Looking beyond the daily data also enables us to examine further who was affected by the reform. Specifically, we use proprietary data on foreign investors' holdings of Israeli mutual funds as of February 2010 and April 2010, and quarterly data on institutional investors' holdings of mutual funds as of December 2009 and March 2010, to study if these more sophisticated groups of investors were also affected by the increased salience of the treated mutual funds. The data on foreign investors' holdings was collected by the Bank of Israel, based on detailed reports from all domestic commercial banks. The data on institutional investors' holdings comes from "Praedicta," a local data vendor that works with the Israeli Ministry of Finance, and is based on the institutional investors' reports. Finally, we compile data on mutual funds' corporate bond holdings and on corporate bond spreads around the reform in order to estimate the impact of the reform on the corporate bonds market.

4. Methodology

We use the differences-in-differences methodology to estimate the effect of adding an exclamation mark to certain mutual funds' names during March 2010 on their net inflows, *vis-à-vis* other mutual funds that were not required to add the mark to their names. The first difference is between funds that received the exclamation mark and funds that did not receive the mark, and the second difference is between the days after the funds received the exclamation mark and the days before they received the mark.

We employ proprietary data on mutual funds' *daily* inflows and outflows to calculate daily net inflows for each fund.[5] We scale these net inflows by the funds' assets under management (AUM) as of the end of February 2010 to construct our dependent variable. In addition, we collected data on funds' names, which enables us to identify the specific day on which the fund received an exclamation mark (each fund received the mark on a different day of the month). We use this data to construct a dummy variable that equals 1 for funds that received an exclamation mark in March 2010, effective from the day they received the mark, and equals 0 otherwise.

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[5] The mutual funds' daily flow data have also been studied by Ben-Rephael, Kandel, and Wohl (2011). For studies on the performance of Israeli mutual funds, we refer the reader to Lauterbeach and Barak (2002, Hebrew), Blass (2007, Hebrew), and Abudy, Barel, and Wohl (2016).

We regress the scaled net inflows of the fund on the exclamation mark dummy variable as well as on fund and day fixed effects:

(1) $scaled\_net\_inf_{n,t} = \alpha + \beta_0 * excl\_mark_{n,t} + \lambda_t + \varphi_n + \mathcal{E}_{n,t}$,

where $scaled\_net\_inf_{n,t}$ are the net inflows (inflows minus outflows) of mutual fund n on day t scaled by the fund's assets under management as of February 2010; $excl\_mark_{n,t}$ is a dummy variable that equals 1 for mutual fund n on day t if the fund's name on this day included an exclamation mark and equals zero otherwise; λ_t is a day fixed effect; and φ_n is a mutual fund fixed effect. We cluster standard errors at the management firm (the fund's family) level.[6] Our main interest is in the estimation of β_0, which captures the diff-in-diff effect of the exclamation mark on fund flows.

Equation (1) estimates the effect of receiving the exclamation mark, while controlling for all the fund's attributes and for possible day-of-the-month effects. It facilitates the measurement of the reform's effect on fund flows *above and beyond* heterogeneity between funds and time trends. The use of daily data allows us to control for the exact timing of the reform for each treated fund. Furthermore, the staggered addition of exclamation marks to funds' names by different management firms means that our control group is constructed not only from funds that never received the mark, but also from funds that received a mark later on.

The mutual funds that received the exclamation mark are almost exclusively fixed income funds. Therefore, we also repeat the estimation only for fixed income funds in order to reduce noise generated by other types of funds that may be susceptible to different factors than the treated funds. Furthermore, about three-quarters of the mutual funds that received the mark are corporate bond funds.[7] Therefore, we also repeat the estimation only for these types of funds in order to concentrate on the most relevant mutual funds for the examined reform.

We also repeat the estimation only for the funds that received the exclamation mark during March, i.e., only for the treatment group, and run a regression in order to estimate the difference between the post-reform and pre-reform periods for the treated funds (with different reform dates for each management firm). This specification arguably avoids the noise generated by less relevant funds.

Finally, to investigate how long-lasting the effect of the reform is, we re-estimate Equation (1) using monthly, rather than daily, data. This yields the following equation:

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[6] Clustering at the fund level or at the manager-day level yields qualitatively similar results (the standard errors are even somewhat lower).

[7] These include two types of funds: domestic-corporate bonds and domestic-other bonds.

(2) $scaled\_net\_inf_{n,T} = \alpha + \beta_1 * post\_treated_{n,T} + \lambda_T + \varphi_n + \varepsilon_{n,T}$,

where $scaled\_net\_inf_{n,T}$ are now the net inflows (inflows minus outflows) of mutual fund n in month T scaled by the fund's assets under management as of the end of month T-1; $post_T$ is a dummy variable that equals 1 in the months after March 2010 and zero otherwise; $post\_hy_{n,T}$ is a dummy variable that equals 1 after March 2010 only if mutual fund n's name included an exclamation mark from April 2010 onward[8][9] and equals zero otherwise; λ_T is a month fixed effect; and φ_n is a mutual fund fixed effect. We use standard errors robust to heteroscedasticity.[10] Our main interest is in the estimation of β_1, which captures the diff-in-diff effect of the exclamation mark on fund flows.

5. Results

5.1. Identification of short-term effects

We start by estimating Equation (1) using either the full sample of mutual funds or the restricted samples of fixed income funds and corporate bond funds. We also repeat all these specifications only for the treated funds. The results, presented in Table 2, show that the addition of an exclamation mark to the mutual fund name is associated with a highly statistically significant decline in daily scaled net inflows into this fund. This decline is also economically important, as it is almost five times as large as the unconditional mean of daily scaled net inflows that we presented in Table 1.

[TABLE 2]

To further ensure that the results are not affected by flow time trends that are specific to the funds that received the exclamation mark but are not driven by the mark itself,[11] we conduct a placebo test.[12] We run 10,000 Monte Carlo simulations, randomly choosing the treatment day for each manager (i.e., for all the funds of each manager) within the month of March 2010. In each simulation we regress the funds' scaled

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[8] We exclude from the monthly estimation any fund that received an exclamation mark later than March 2010 or that dropped the exclamation mark before the end of the sample (the end of September 2010). This also renders a high-yield fund dummy (treated-fund dummy variable) redundant, given the fund fixed effect.

[9] A few mutual funds added the exclamation mark to their names as early as the end of February 2010. To the extent that those funds can affect the estimation results, they can only weaken the statistical significance of the coefficient of interest (the diff-in-diff estimator β_1).

[10] Clustering at the management firm (the fund's family) level is impossible in this specification, as some funds moved between management firms during the sample period.

[11] This would be the case, for example, if funds specializing in high-yield bonds suffered from negative sentiment at the end of March for some reason unrelated to the fact that many such funds received an exclamation mark in the preceding days.

[12] We also repeat our estimations separately for funds that received the mark relatively early or relatively late in the month. The results, available from the authors upon request, show that the reform significantly affected both groups of funds.

net inflows on the "placebo exclamation mark" (as well as on fund and day fixed effects) and then compare the resulting t-statistic with the t-statistic from our base specification (1). If the effect of the reform is not driven by pure chance, we expect to find that the estimated t-statistic based on the real data will be in the extreme left tail of the simulated t-statistic distribution. Indeed, as Figure 1 demonstrates, the base specification β_0 t-statistic of -4.36 lies in the extreme left tail of the simulation distribution, with only a handful of the 10,000 Monte Carlo iterations to its left. This enhances our confidence that our results on the effect of the reform are not driven by pure chance.

[Figure 1]

In previous sections, we established a causal relationship between the addition of the exclamation mark to mutual funds' names and the subsequent flows into these funds. Such a relationship may be due, however, to a self-fulfilling prophecy. It is possible that the mutual funds' management firms anticipated that adding the exclamation mark to the mutual funds' names would affect the flows into these funds, and reacted simultaneously by switching their marketing efforts. Specifically, if fund families reacted to the reform by reducing advertising for treated funds, and if investors were indeed positively affected by fund advertisements, then our results may be driven by a self-fulfilling prophecy, rather than by the treated funds' increased risk salience.

In order to study this alternative channel, we search all three national business newspapers in Israel for ads for specific mutual funds throughout the month of the reform. For each advertisement we also record its size and the number of mutual funds mentioned in it. We begin our analysis of the effect of the marketing efforts by directly testing whether mutual fund management firms changed their marketing efforts concurrently with the reform. Specifically, we repeat our main estimation (Equation (1)) but replace the dependent variable with either *Num_Ads* or *Val_Ads*, where $Num\_Ads_{n,t}$ is the number of advertisements for fund n on day t and $Val\_Ads_{n,t}$ is the shekel value of advertisements for fund n on day t. The results, presented in Table 3, show that mutual fund advertisements tend to decrease both in number (Panel A) and in value (Panel B) following the addition of the exclamation mark, but that this effect is not statistically significant in most specifications.

[TABLE 3]

As we detect some reaction on the part of management firms' marketing efforts to the reform, we want to examine whether it accounts for the main results. To this end, in Table 4 we:

(a) Repeat the main estimation (Equation (1)), excluding all mutual funds that ever advertised in the aforementioned business newspapers throughout March 2010, i.e., all mutual funds for which $Num\_Ads_{n,t} > 0$ for at least one day in March (Panel A).

(b) Add $Num\_Ads_{n,t}$ as another explanatory variable to Equation (1) (Panel B).

(c) Add $Val\_Ads_{n,t}$ as another explanatory variable to Equation (1) (Panel C).

The results of all these examinations[13] are very much in line with the main results, presented in Table 2. Accordingly, we infer that while the reform may have affected the marketing efforts of mutual funds to some extent, this cannot explain our results. Rather, it seems that the increased salience of the risk embedded in investments in high-yield corporate bonds is the cause of the documented decline in net inflows.

[TABLE 4]

So far, we have concentrated on the net inflows and shown that the reform had a strong impact. One may wonder, however, whether the results stem from the inflows, the outflows, or both. A seminal paper by Barber and Odean (2008) shows that investors purchase attention grabbing stocks. The research does not document the same effect for individuals' sales, since retail investors tend to sell the subset of securities they already own, and seldom take short positions. These results suggest that in our setting, current investors in mutual funds will note the exclamation mark and may tend to sell. The effect on potential buyers is less clear, as on the one hand the exclamation mark signals enhanced risk, thus deterring potential investors, but on the other hand the increased attention may drive purchases.[14] A series of experiments conducted by Barron, Leider, and Stack (2008) offer less ambiguous hypothesis. The researchers find that people may make riskier decisions if they experienced a series of safe outcomes. This suggests that in our context, current investors in treated mutual funds may be less affected by the reform than potential new investors who have not yet gained positive experience from this investment.

To address this question empirically, we repeat our main estimation, this time distinguishing between outflows and inflows. The results in Table 5 show that both inflows into and outflows from treated mutual funds were affected by the addition of the exclamation mark. Inflows into treated funds were lower than expected absent the reform and outflows from treated funds were higher relative to the counterfactual expected outflows. Though both the inflows and the outflows were affected by the reform, the relative

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[13] We note that the correlation between *Num_Ads* and *Val_Ads* is high (80%), and so we do not use them together on the right-hand side of the regression equation. The correlation between these variables and *excl_mark* is much lower (2.3% and 1.1%, respectively), thus alleviating multicollinearity concerns in the estimated regressions.

[14] Hirshleifer, Myers, Myers, and Theo (2002) and Lee (1992) find that investors are net buyers following earnings surprises – both positive and negative.

economic magnitude of the effect differs: the daily increase in outflows accounts for less than half of the average fund daily scaled redemptions, while the daily drop in inflows represents about 110% of the average fund daily scaled creations. This difference may be attributable to the high yields that investors in treated mutual funds gained by holding these funds in the period prior to the reform.[15] This positive experience could have made current investors in the treated mutual funds less sensitive to the increased risk salience than their potential future counterparts who did not enjoy the aforementioned yields.

[TABLE 5]

5.2. Longer-term effects of the reform

Up to this point we have concentrated on the short-term effect of the reform, demonstrating that the increased risk salience had a statistically and economically significant effect on daily mutual fund flows. We now turn to monthly data in order to investigate how long-lasting this effect was. Figure 2 presents a simple linear approximation of the monthly scaled net inflows before and after March 2010, separately for treated funds (mutual funds that added an exclamation mark to their names) and control funds (mutual funds that did not add an exclamation mark to their names). The first panel presents these trends for the entire universe of mutual funds, the second panel focuses on fixed income mutual funds, and the third panel focuses only on the most relevant type of funds: corporate bond mutual funds. It is noticeable from the charts that there was a general decline in mutual funds' net inflows around March 2010, especially in corporate bond funds. However, the mutual funds that added an exclamation mark to their names experienced a further decline in net inflows on top of this general trend, and in line with the daily evidence presented above.

[Figure 2]

In order to estimate the causal effect of the reform, controlling for the noticeable general time effects as well as for specific fund characteristics, we estimate Equation (2), using monthly data before and after the reform.[16] We continue applying the diff-in-diff methodology. The first difference is still between funds that received the exclamation mark and funds that did not receive the mark, but the second difference is now between the months after the reform (i.e., after March 2010) and the months before the reform (i.e.,

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[15] The average mutual fund that added an exclamation mark to its name earned a yield of 35% in the 12 months that preceded March 2010. This extraordinary yield was the result of a strong recovery of the markets, and the corporate bond market in particular, following their crash during the global financial crisis.
[16] We exclude March 2010 from all the monthly estimations, as different funds received the exclamation mark on different days of that month.

before March 2010). We continue conducting the estimations for all mutual funds, fixed income mutual funds, and corporate bond mutual funds. In order to present the results in brief and to better demonstrate the fading of the reform's effect, we present the results as a figure of the t-statistics from the monthly regressions for 1–6 months before and after the reform (i.e., moving from the regression explaining the inflows 1 month before and 1 month after the reform to the regression explaining the inflows 6 months before and 6 months after the reform). We focus on the regressions that include both the treated funds and the control funds, since we believe that monthly estimations of just the treated funds are less informative, as the treated mutual funds were all affected simultaneously in monthly terms. The full results of the monthly regressions appear in Appendix Tables 2–7.

[Figure 3]

Figure 3 shows that the effect that we detected using the daily data is also apparent in the monthly data. Nevertheless, this effect is not permanent but gradually fades, becoming statistically insignificant 4–5 months after the reform. The recovery in net inflows after the momentous shock following the addition of the exclamation mark complies with the studies suggesting that decisions based on experience are associated with underweighting rare events, while decisions based on description are associated with an overweighting of low-probability events. (For example, Yechiam, Erev, and Barron (2006) find that drivers tend to buy safety devices, but their tendency to use them decreases with experience. After a year, most drivers remove the safety device.)

The use of monthly data allows us not only to study the longer-term impact of the reform, but also to improve our understanding of the channels through which it functioned. Mutual funds grant retail clients access to professional asset management, and facilitate exposure to financial markets. Yet, they can attract more sophisticated investors as well. Several studies have focused on the question of whether sophisticated investors are also susceptible to behavioral biases. Many such studies evaluate the effect of specific behavioral biases on professional investors. Fund managers, for example, were found to be prone to loss aversion (Olsen, 1997) and to overconfidence (Puetz and Ruenzi, 2011). Other papers suggest that experience and professionalism can alleviate some of the impact of the behavioral biases. The disposition effect, for example, seems to be much weaker among sophisticated investors than among retail investors (Shapira and Venezia, 2001; Feng and Seasholes, 2005). Similar conclusions were reached in respect to other biases, such as endowment effect (List, 2003) and familiarity bias (Grinblatt and Keloharju, 2000). A separate analysis on whether increased salience affects professional investors is particularly important in light of their importance for the efficiency of the financial markets.

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Our setting provides an opportunity to investigate whether sophisticated investors in mutual funds were affected by the increased risk salience stemming from the addition of the exclamation mark. To this end we use detailed proprietary data on foreign investors' holdings of Israeli mutual funds. We obtain data on foreign investors' holdings of Israeli mutual funds for the months of February 2010 and April 2010 from the Bank of Israel. This data enables us to disentangle the change stemming from foreign investors' flows into and out of local mutual funds from the changes stemming from changes in mutual funds' prices and from currency fluctuations. As of February 2010, foreign investors' holdings of Israeli mutual funds totaled 346 million USD, representing 1% of the mutual funds' total NAV. Foreign investors had holdings in 1001 Israeli mutual funds (85% of the available funds), with the largest holding of 23 million USD comprising 1/6 of the fund assets. The dispersed holdings of foreigners in the local mutual funds were also reflected in a very low HHI of 0.01. We note that although on average[17] the foreign investors are more financially sophisticated than households, which constitute the majority of mutual fund investors, they may also be less informed about current developments in local mutual fund industry regulation. We therefore abstain from making ex-ante assumptions as to their relative sensitivity to the increased risk salience.

[TABLE 6]

Table 6 presents the results of a diff-in-diff OLS estimation of the effect of the reform on foreign investors' net inflows into Israeli mutual funds. Comparing foreign investors' net flows in April 2010 to their net flows in February 2010, it is noticeable from the table that the reform did not cause a relative reduction in foreign investors' flows into treated mutual funds. This suggests that unlike other investors, the foreign investors were not affected by the increased risk salience, in line with the idea that financially sophisticated investors are less prone to limited attention bias. Anecdotal evidence from institutional investors' holdings of mutual funds suggests that, indeed, sophisticated investors were not affected by the addition of the exclamation mark.[18]

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[17] Unfortunately, our data does not enable us to reliably distinguish between different groups of foreign investors.

[18] The local institutional investors are financially sophisticated investors that are also well familiar with the local capital market and regulation. However, Israeli institutional investors (pension funds, provident funds, and insurance firms) barely invest in local mutual funds, preferring to invest directly in traded securities. Looking at data from "Praedicta," based on the institutional investors' reports, it turns out that collectively they had holdings of only 20 mutual funds in December 2009 and March 2010. A back-of-the-envelope calculation based on these few holdings suggests that the local institutional investors were also not affected by the reform. (This is also the case when their March 2010 holdings are compared to their June 2010 holdings, and this fact suggests a lack of reaction on the part of the local institutional investors in the months following March 2010 as well.)

5.3. Economic impact of the reform

We have demonstrated that increased risk salience following the addition of an exclamation mark to some mutual funds' names significantly affected the flows into those funds relative to their counterparts, and that this effect likely stems from retail investment in mutual funds. The question remains, though, whether the reform's effect was also conspicuous at the mutual fund industry level. A rough examination of monthly net flows into mutual funds suggests that it was. Net inflows into the mutual funds that added an exclamation mark to their names in March 2010 were lower than half of their level in February 2010. By comparison, net inflows into other mutual funds, those that were not affected by the regulatory reform, increased more than fivefold between February and March. In total, net inflows into the treated funds were almost NIS 1 billion lower in March 2010 than in the previous month, and net inflows into untreated funds were about NIS 1.2 billion higher than in the previous month. These figures suggest that there was a change in the composition of flows into treated and untreated mutual funds in March 2010, in line with our previous findings. It seems that around NIS 1 billion (almost 1% of total mutual fund assets at the time) moved between mutual funds as a result of the minor change in the funds' names.[19]

Through its impact on the mutual fund industry, the exclamation mark reform could also have impacted the financial assets market. Specifically, as the new regulation mostly influenced mutual funds that specialized in corporate bonds, it is interesting to examine if it also affected corporate bond prices. To this end we collected data on mutual funds' corporate bond holdings from mutual fund managers' monthly holdings reports, [20] and we obtained data on corporate bond spreads from the Bank of Israel. As of the end of February 2010, local mutual funds had holdings of 417 corporate bonds, of which 159 were high-yield bonds according to the local rating scale, pertaining to 264 different firms. The average (median) corporate bond was traded at a spread of 854 (373) basis points above comparable government bond, and its average (median) duration was about 3 (2.5) years.

We hypothesize that corporate bonds that are heavily held by mutual funds that experienced relative outflows due to the addition of the exclamation mark will decline in price (at least in the short run) relative to corporate bonds that are held by funds that were less affected by the reform. To examine this question, we study the effect of the reform on corporate bond spreads (relative to benchmark government bonds) around the time of the reform. We distinguish bonds by their expected sensitivity to being sold by treated mutual funds either according to the bond classification (investment grade vs. high-yield) or according to

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[19] The difference is even more striking if we focus our examination on intra-monthly net flows in March 2010, comparing the first half of the month to the second half. While total net flows into untreated mutual funds declined by 17 percent from the first half of March to the second half, total net flows into treated mutual funds declined by as much as 94 percent between those periods.

[20] Available to the public on maya.tase.co.il.

actual holdings of the corporate bonds by treated mutual funds relative to other mutual funds at the end of February 2010.[21]

[TABLE 7]

The results, presented in Table 7, suggest that the reform indeed affected corporate bond prices. The spreads on corporate bonds that were presumably more vulnerable to the reform increased in April 2010 relative to February 2010 more than those of their less vulnerable counterparts (Columns 7–9). The effect was economically important, as the spreads on high-yield corporate bonds increased by 83 basis points more than the spreads on investment grade bonds (Column 7). The relative surge in spreads is as high as 135 basis points when we juxtapose the 25 percent of corporate bonds that were most heavily held by treated mutual funds relative to other mutual funds against the 25 percent of corporate bonds that were least popular among treated mutual funds relative to other mutual funds (Column 9). The effect of the reform on corporate bond spreads, though strong, was also short-term. When we extend the examination beyond the month before and the month after the reform, we find no significant effect on corporate bond spreads (Columns 1–6), in line with a reversal of the prices toward fundamental values within 2 months of the reform.

The impact of the reform on corporate bond prices may also help to explain the dying out of its impact on mutual fund flows. If some corporate bond prices dropped beyond fundamental value because of sell pressure from treated funds, these funds may then serve as a useful investment vehicle to invest in the bonds whose price dropped. Hence investors' return to "!" funds may stem from rational risk-return investment behavior as well as from behavioral safe experience-driven complacency.

6. Robustness tests

The methodological discussion thus far has suggested the standard diff-in-diff methodology to estimate the reform's effect on mutual fund flows. However, Bertrand, Duflo, and Mullainathan (BDM, 2004) demonstrate that such a standard methodology can lead to upwardly biased t-statistics in the presence of serial correlation. While we believe that this is not a major concern in our daily flow data,[22] it may affect

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[21]Specifically, we sort all the bonds by the ratio of holdings of treated funds to the holdings of untreated funds. For the median corporate bond, holdings of treated funds constituted 80% of holdings of untreated funds. The respective figures for the corporate bonds in the 25 percentile and 75 percentile of this ratio are 30% and 197%.

[22] The average fund's daily autocorrelation during March 2010 was only 3.4 percent, compared with the average fund's monthly autocorrelation of 22.2 percent. Nevertheless, we used the two-stage modification suggested by Bertrand, Duflo, and Mullainathan (2004) for staggered reforms, by collapsing the daily data into a two-period panel estimation. The results, available from the authors upon request, show that the addition of the exclamation mark significantly reduced relative net inflows into treated mutual funds, even controlling for the potential daily autocorrelation in flows.

our monthly results. We address this concern by ignoring the time series information in the monthly data, as suggested by BDM. Specifically, we average the observations before March 2010 and the observations after March 2010 for each fund, and re-estimate Equation (2) using a two-period panel of mutual funds. The results, of which the t-statistics are presented in Figure 4, greatly resemble the main results (Figure 3). [23] In particular, the exclamation mark reform reduced monthly inflows into treated funds relative to their counterparts that did not receive the exclamation mark, but its impact dissipated within a few months.

[Figure 4]

Another concern could be possible selection into "the exclamation mark group." To address this concern we make use of the mandatory reports that fund managers were required to provide prior to the reform on holdings of high-yield bonds in excess of their maximum stock exposure. Based upon these reports we identify a group of "suspected funds," i.e., mutual funds that were susceptible to receiving an exclamation mark based on the February 2010 reports, but ultimately did not receive the mark.

First, we repeat our main estimation excluding the "suspected funds," since these funds enter the control group in the main examination, presented in Table 2, but may be seen as deviators that should have been part of the treatment group. We present the results of this estimation for all mutual funds but the "suspected funds," for all fixed income mutual funds but the "suspected funds," and for all corporate bond mutual funds but the "suspected funds" in Table 8, Columns 1–3, respectively. As the Table shows, the results are robust to the exclusion of the "suspected funds" from the control group. Specifically, even without these funds the addition of the exclamation mark was detrimental to mutual funds' net inflows.[24]

The "suspected funds" are not merely potential noise in the data, but may be interesting in their own right as they are arguably very similar to the funds that received the exclamation mark, but ultimately the suspected funds were not affected by the reform. Hence, they constitute a natural control group to the treated funds. Therefore, in Columns 4–6 of Table 8, we repeat the main estimation for all mutual funds, fixed income funds, and corporate bond funds, respectively, but this time only for the restricted subsample of treated funds and "suspected funds." The results again demonstrate that the addition of an exclamation mark significantly affected mutual funds' net inflows. This suggests that even with respect to funds that were ex-ante similar in the relevant risk dimension, the mutual funds for which risk became more salient suffered relative net daily outflows.

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[23] Full tables of the results are available from the authors upon request.

[24] To alleviate concerns that some management firms systematically avoided adding the exclamation mark and that this explains the results, we also repeated the main estimation excluding the quartile of managers with the highest proportion of "suspected funds." The results, available from the authors upon request, were again very similar to the results from the main estimation presented in Table 2.

[TABLE 8]

Having shown that the daily results are mainly unchanged using the "suspected funds" as a control group, we now present the t-statistics from the monthly diff-in-diff estimation results using only the treated funds and the "suspected funds" (Figure 5).[25] Similar to the results of the daily estimation, it seems that the monthly results based upon the restricted sample are in line with the main monthly results, presented in Figure 3. Even in comparison with mutual funds that were ex-ante liable to receive an exclamation mark, the funds that actually added an exclamation mark to their name suffered lower net inflows following the regulatory change.

[Figure 5]

In order to further alleviate endogeneity concerns, we use two other control groups based on a matching procedure. We match each mutual fund that added an exclamation mark to its name to a similar fund that did not do so, based on the funds' attributes and past performance. More specifically, to construct the first control group, we match each treated fund to an untreated fund that belongs to the same fund category (e.g., domestic-corporate bonds) with the closest average yield in the six months prior to the regulatory reform (i.e., September 2009–February 2010). To construct the second control group, we match each treated fund to an untreated fund that belongs to the same fund category **and to the same management firm (fund family)** with the closest average yield in the six months prior to the regulatory reform. We thus combine exact matching of fund type (and management firm) with nearest-neighbor matching (with replacement) of the fund's past yield. Both the daily results, presented in Table 9, and the t-statistics from the monthly results, presented in Figure 6, confirm that the exclamation mark addition negatively affected net flows into treated funds relative to similar untreated funds in both the short and medium terms.[26] Together with the previous results, which use the "suspected funds" as a control group, these results suggest that it is the increased risk salience that caused the reduction in net flows into the treated funds, rather than some pre-determined trait they possess.

[TABLE 9]

[Figure 6]

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[25] Full tables of the results are available from the authors upon request.
[26] Full tables of the results are available from the authors upon request.

7. Conclusions

Using the diff-in-diff methodology and proprietary mutual fund daily flow data, we demonstrate a causal effect from a minor change of some mutual fund names to subsequent net inflows into these funds, *vis-à-vis* other mutual funds that were not subject to this change. The impact is very significant statistically and economically, although the regulatory reform affected only the mutual funds' risk salience, and not their fundamentals or the data set available to the investors. The effect of the regulatory reform does not seem to stem from self-fulfilling prophecy or from selection in the application of the reform or its timing, nor are the results driven by unaccounted-for autocorrelation in fund flows. We show that both inflows into treated funds and outflows from them contributed to this impact, but the economic magnitude is larger for the inflows. We find that the reform's effect is also apparent in the monthly data, and offer both behavioral and rational explanations for its gradual attenuation. Additionally, it seems that the impact of risk salience on mutual fund flows stems from the retail investors and not from the more financially sophisticated investors. Finally, we find that the apparently minor change to some mutual funds' names had significant economic effects, affecting not only the mutual fund industry, but also the corporate bond market.

This paper adds to the behavioral literature on the effect of limited attention, salience, and the presentation of information on investment activity. Importantly, only a few papers show a relationship between well-known behavioral biases and people's behavior in the real world, let alone in the financial investment arena. The present paper takes advantage of a unique regulatory experiment that changes the salience of risk but neither the risk itself nor its fundamental disclosure. Our unique setting also provides us with a highly comparable control group. Moreover, the staggered implementation of mutual funds' name changes by different management firms enables us to use the treated funds in the control group up until they add the exclamation mark to their name.

We believe that the present paper can also inform policy decisions. Our results demonstrate that minor changes to the presentation of information may have a major impact on investors' activities, especially in the case of retail investors. As regulators around the world strive to simplify financial information and facilitate retail investors' ability to purchase the most suitable financial products, we believe that changes to the display of information may serve as a valuable addition to their toolkit.

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Figure 1 – Placebo test for the day-of-month effect

The figure presents a distribution of t-statistics from 10,000 Monte-Carlo simulations. In each iteration we randomly chose the treatment day for each manager (i.e., for all the funds of each manager) within the month of March 2010, and regress the funds' scaled net inflows (creations minus redemptions scaled by fund size at the end of February 2010) on a "placebo exclamation mark" (randomly chosen "treatment" day for all the funds of each manager within the month), as well as on a fund fixed effect and on a day fixed effect. The figure also includes a vertical line indicating the t-statistic from our base specification (the difference vs. the t-statistic from Column 1 of Table 2 stems from the exclusion of all mutual funds pertaining to 4 management firms that did not add the exclamation mark to all the relevant funds they manage on the same day).

25
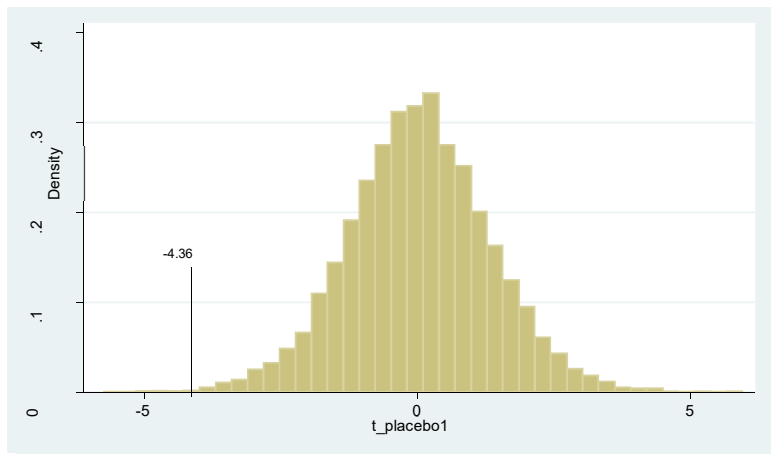
Figure 2 – Monthly flows treated vs. non-treated funds

The figure presents a simple linear approximation of the monthly scaled net inflows before and after March 2010 separately for treated funds (mutual funds that added an exclamation mark to their names) and control funds (mutual funds that did not add an exclamation mark to their names). The first panel presents these trends for the entire universe of mutual funds, the second panel focuses on fixed income mutual funds, and the third panel focuses only on the most relevant type of funds: corporate bond mutual funds.

Panel A – All mutual funds
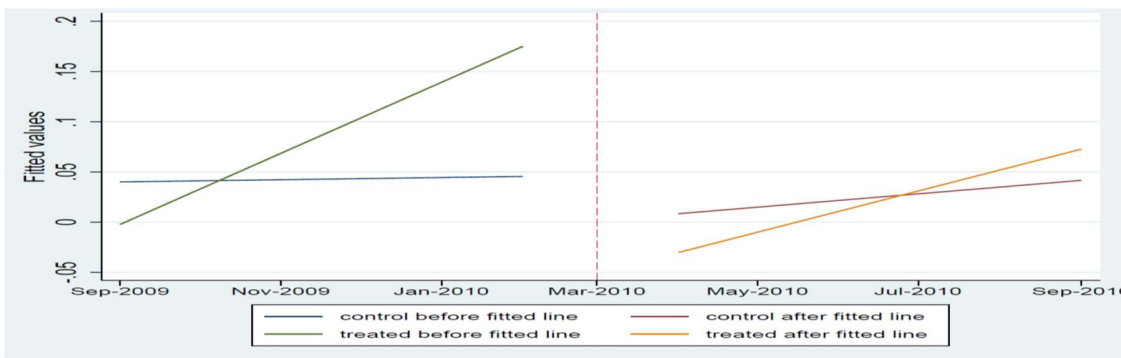
Panel B – Fixed income mutual funds
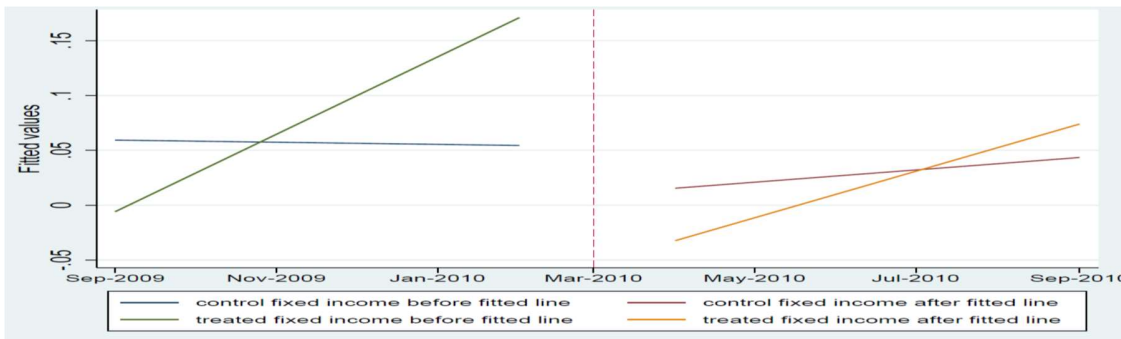
Panel C – Corporate bond mutual funds
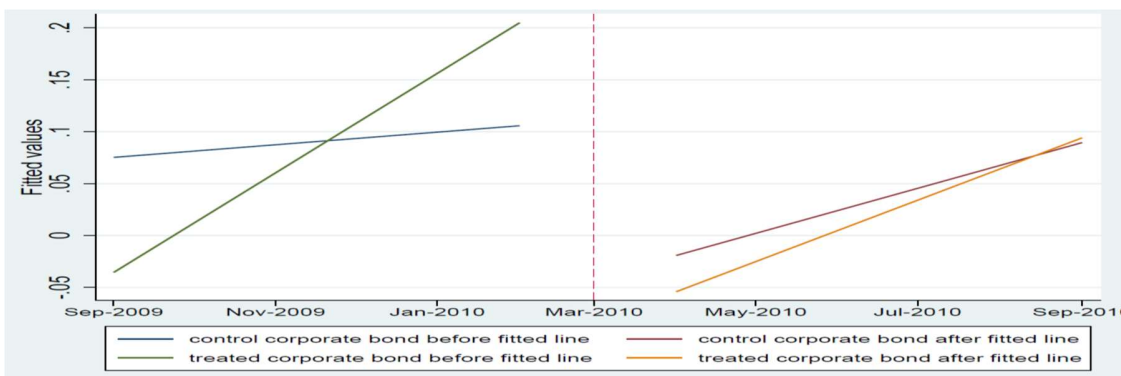
Figure 3 – The effect of the exclamation mark on monthly fund flows

The figure reports t-statistics of the coefficient β_1 in Equation (2) that captures the diff-in-diff effect of the exclamation mark on fund flows. The estimation is based on the results of OLS panel regressions of monthly net mutual fund inflows (creations minus redemptions scaled by fund size at the end of the previous month), on *post_treated* (a dummy variable that equals 1 for funds that received an exclamation mark after March 2010 and onward and equals 0 otherwise), as well as on a fund fixed effect and on a month fixed effect. The full estimation results appear in the Appendix. The blue diamonds depict the estimation results using the entire sample of mutual funds, the green triangles depict the results using a restricted sample consisting only of fixed income mutual funds, and the red squares depict the results using the even more restricted sample of corporate bond mutual funds. The black dashed line marks the t-statistics for the 5% significance level (-1.96).
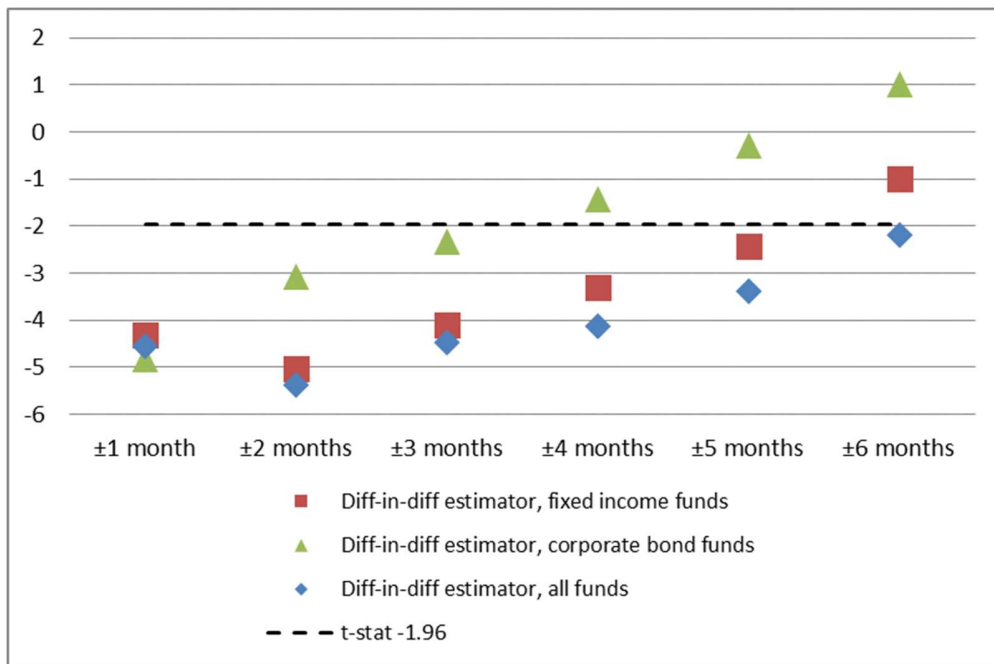
Figure 4 – The effect of the exclamation mark on monthly fund flows

Collapsing the data into 2 periods: before and after the reform

The figure reports t-statistics of the coefficient β_1 in Equation (2) that captures the diff-in-diff effect of the exclamation mark on fund flows. The estimation is based on the results of OLS two-time-period panel regressions of average monthly net mutual fund inflows (creations minus redemptions scaled by fund size at the end of the previous month) before and after March 2010 on *post* (a dummy variable that equals 1 in the second period (after March 2010)) and *post_hy* (a dummy variable that equals 1 for funds that received an exclamation mark in the second period (after March 2010) and equals 0 otherwise), as well as on a fund fixed effect. The blue diamonds depict the estimation results using the entire sample of mutual funds, the green triangles depict the results using a restricted sample consisting only of fixed income mutual funds, and the red squares depict the results using the even more restricted sample of corporate bond mutual funds. The black dashed line marks the t-statistics for the 5% significance level (-1.96).


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Figure 5 – The effect of the exclamation mark on monthly fund flows

For the restricted sample consisting of treated funds and "suspected funds"

The figure reports t-statistics of the coefficient β_1 in Equation (2) that captures the diff-in-diff effect of the exclamation mark on fund flows. The estimation is based on the results of OLS panel regressions of monthly net mutual fund inflows (creations minus redemptions scaled by fund size at the end of the previous month) on *post_treated* (a dummy variable that equals 1 for funds that received an exclamation mark after March 2010 and onward and equals 0 otherwise), as well as on a fund fixed effect and on a month fixed effect. The blue diamonds depict the estimation results using all treated mutual funds and all the "suspected funds" (mutual funds that were susceptible to receiving an exclamation mark based on the February 2010 reports, but ultimately did not receive the mark), the green triangles depict the results using a restricted sample consisting only of treated and "suspected" fixed income mutual funds, and the red squares depict the results using the even more restricted sample of treated and "suspected" corporate bond mutual funds. The black dashed line marks the t-statistics for the 5% significance level (-1.96).
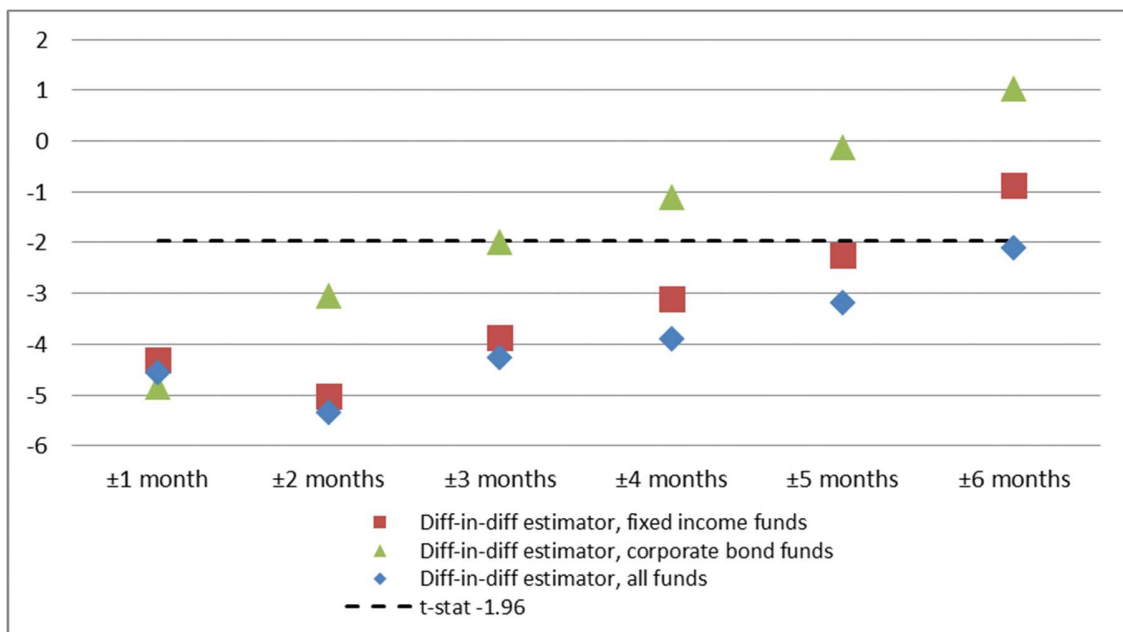

29
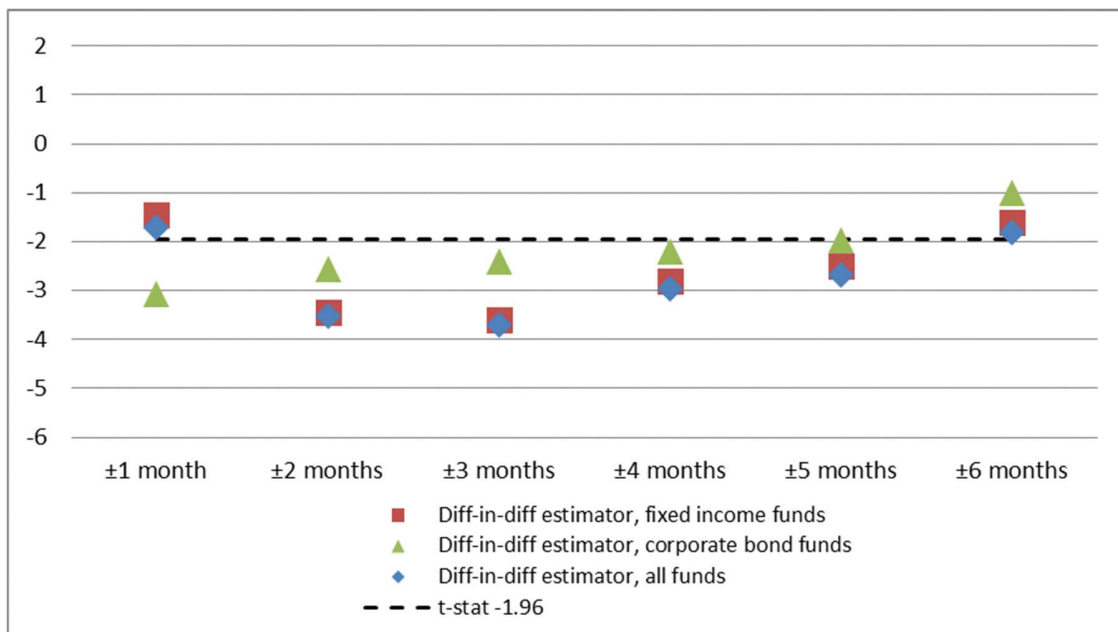
Figure 6 – The effect of the exclamation mark on monthly fund flows

For the restricted sample consisting of treated funds and matched funds

The figure reports t-statistics of the coefficient β_1 in Equation (2) that captures the diff-in-diff effect of the exclamation mark on fund flows. The estimation is based on the results of OLS panel regressions of monthly net mutual fund inflows (creations minus redemptions scaled by fund size at the end of the previous month) on *post_treated* (a dummy variable that equals 1 for funds that received an exclamation mark after March 2010 and onwards and equals 0 otherwise), as well as on a fund fixed effect and on a month fixed effect. The blue diamonds depict the estimation results using all treated mutual funds and all matched mutual funds. The green triangles depict the results using a restricted sample consisting only of treated and matched fixed income mutual funds, and the red squares depict the results using the even more restricted sample of treated and matched corporate bond mutual funds. Matching in Panel A is based on exact matching on fund category and nearest-neighbor matching on average yield from September 2009 to and through February 2010; matching in Panel B is based on exact matching on both fund category and management firm and nearest-neighbor matching on average yield from September 2009 to and through February 2010. The black dashed line marks the t-statistics for the 5% significance level (-1.96).

Panel A – Exact matching on fund category
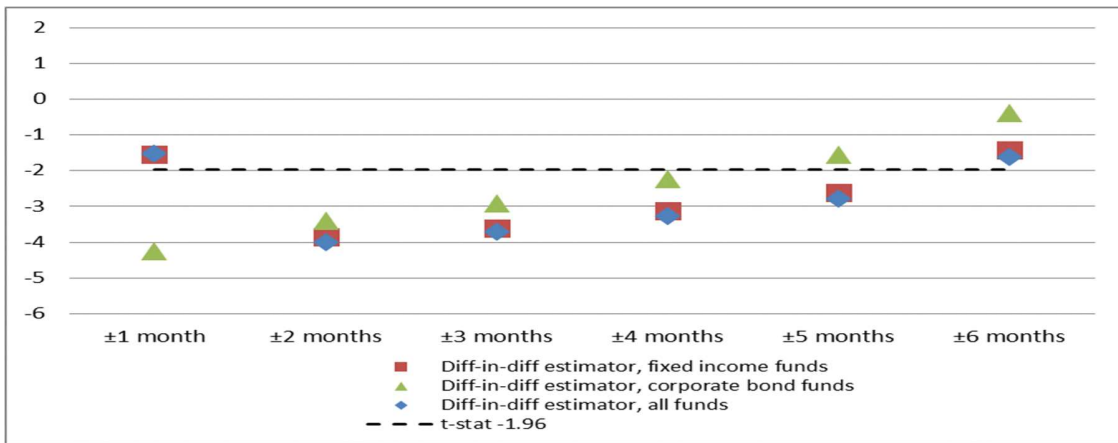
Panel B – Exact matching on fund category and management firm
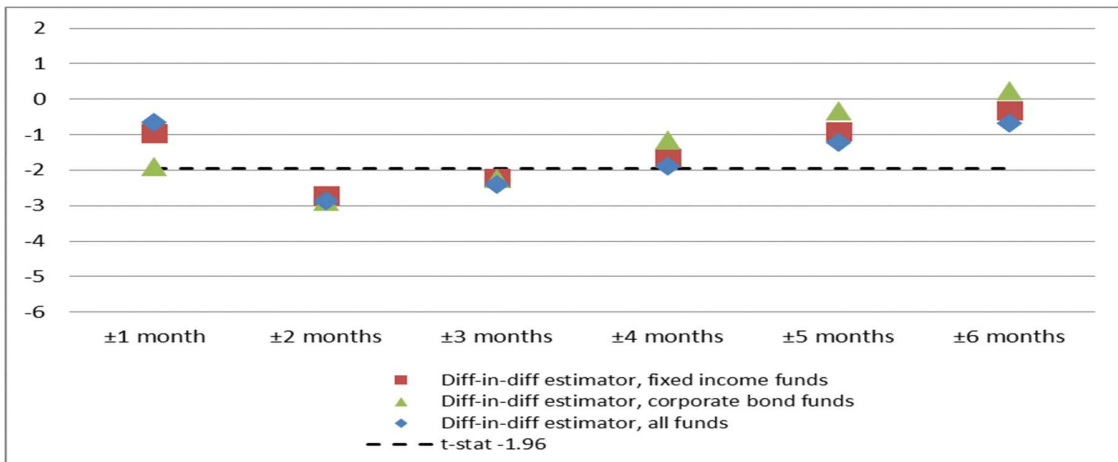
Table 1 – Descriptive Statistics

The table describes the main variables of interest based on the daily data. *Creations* are daily creations in thousands of New Israeli Shekels, *redemptions* are daily redemptions in thousands of New Israeli Shekels, *net inflows* are daily *creations* minus daily *redemptions* in thousands of New Israeli Shekels, *AUM* are assets under management as of the end of February 2010 in thousands of New Israeli Shekels, *scaled net inflows* are *net* inflows divided by *AUM* in percentages, *scaled inflows* are *creations* divided by *AUM* in percentages, *scaled outflows* are outflows divided by *AUM* in percentages, *Num Ads* is daily number of advertisements in the three national business newspapers, *Val Ads* is daily value of advertisements in the three national business newspapers calculated as *Num Ads* times the size of the advertisement (where 1 equals a full-page advertisement) times the value of a page in the specific newspaper in thousands of New Israeli Shekels divided by the number of mutual funds mentioned in the ad. All variables are winsorized at 1% of each tail of the *scaled net inflows* distribution.

Variables	Mean	Std. Dev.	Median
Creations	565.0	2,237.4	106.1
Redemptions	477.4	1,897.4	106.7
Net Inflows	87.6	1,714.9	0.0
AUM	126,450.3	275,345.5	49,623.3
Scaled Net Inflows	0.2%	1.0%	0.0%
Scaled Inflows	0.6%	1.3%	0.2%
Scaled Outflows	0.4%	1.0%	0.2%
Num Ads	0.021794	0.203047	0
Val Ads	0.49049	5.578372	0

Table 2 – The effect of the exclamation mark on daily fund flows

The table reports the results of OLS panel regressions of net mutual fund inflows (creations minus redemptions scaled by fund size at the end of February 2010) on *excl_mark* (a dummy variable that equals 1 for funds that received an exclamation mark from the day they received the mark and onward and equals 0 otherwise), as well as on a fund fixed effect and on a day fixed effect. Standard errors, clustered at the management firm level, appear in parentheses below the coefficients. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. Columns 1 and 2 report the estimation results for all mutual funds and for treated mutual funds (those that added an exclamation mark to their name during March 2010), respectively. Columns 3 and 4 report the estimation results for the restricted sample of fixed income mutual funds and of treated fixed income mutual funds, respectively. Columns 5 and 6 report the estimation results for the further restricted sample of corporate bond mutual funds and of treated corporate bond mutual funds, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
excl_mark	-0.85***	-0.50***	-0.87***	-0.51***	-0.95***	-0.66***
	(0.16)	(0.13)	(0.16)	(0.13)	(0.14)	(0.13)
Trading Day in March Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Mutual Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	22,370	1,840	15,368	1,819	6,797	1,392
R^2	0.023	0.185	0.031	0.188	0.080	0.257

Table 3 – The effect of the exclamation mark on daily fund advertisements

The table reports the results of OLS panel regressions of daily mutual fund advertisements on *excl_mark* (a dummy variable that equals 1 for funds that received an exclamation mark from the day they received the mark and onward and equals 0 otherwise), as well as on a fund fixed effect and on a day fixed effect. In panel A daily mutual fund advertisements are measured by *ads_num* (the daily number of advertisements for the mutual fund). In panel B daily mutual fund advertisements are measured by *ads_val* (the daily value of advertisements for the mutual fund, calculated as the product of the number of ads times their size times the value of a page in the specific newspaper in thousands of NIS and divided by the number of mutual funds mentioned in the ad). Standard errors, clustered at the management firm level, appear in parentheses below the coefficients. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. Columns 1 and 2 report the estimation results for all mutual funds and for treated mutual funds (those that added an exclamation mark to their name during March 2010), respectively. Columns 3 and 4 report the estimation results for the restricted sample of fixed income mutual funds and of treated fixed income mutual funds, respectively. Columns 5 and 6 report the estimation results for the further restricted sample of corporate bond mutual funds and of treated corporate bond mutual funds, respectively.

Panel A – Number of ads

	(1)	(2)	(3)	(4)	(5)	(6)
excl_mark	-0.009	-0.01	-0.006	-0.010	0.012	-0.015
	(0.011)	(0.09)	(0.011)	(0.009)	(0.016)	(0.015)
Trading Day in March Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Mutual Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	22,370	1,840	15,368	1,819	6,797	1,392
R^2	0.004	0.007	0.006	0.007	0.014	0.003

Panel B – Value of ads

	(1)	(2)	(3)	(4)	(5)	(6)
excl_mark	-0.409	-0.387*	-0.376	-0.398*	-0.106	-0.63
	(0.32)	(0.217)	(0.339)	(0.226)	(0.417)	(0.397)
Trading Day in March Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Mutual Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	22,370	1,840	15,368	1,819	6,797	1,392
R^2	0.002	0.005	0.003	0.005	0.006	0.006

Table 4 – The effect of the exclamation mark on daily fund flows, controlling for ads

The table reports the results of OLS panel regressions of net mutual fund inflows (creations minus redemptions scaled by fund size at the end of February 2010) on *excl_mark* (a dummy variable that equals 1 for funds that received an exclamation mark from the day they received the mark and onward and equals 0 otherwise), as well as on a fund fixed effect and on a day fixed effect. In Panel A we exclude from the estimation all the mutual funds that advertised in the three Israeli national business newspapers at least once during March 2010. In Panel B we add *ads_num* (the daily number of advertisements for the mutual fund) as another explanatory variable. In Panel C we add *ads_val* (the daily value of advertisements for the mutual fund, calculated as the product of the number of ads times their size times the value of a page in the specific newspaper in thousands of NIS and divided by the number of mutual funds mentioned in the ad) as another explanatory variable. Standard errors, clustered at the management firm level, appear in parentheses below the coefficients. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. Columns 1 and 2 report the estimation results for all mutual funds and for treated mutual funds (those that added an exclamation mark to their name during March 2010), respectively. Columns 3 and 4 report the estimation results for the restricted sample of fixed income mutual funds and of treated fixed income mutual funds, respectively. Columns 5 and 6 report the estimation results for the further restricted sample of corporate bond mutual funds and of treated corporate bond mutual funds, respectively.

Panel A – Excluding advertising funds

	(1)	(2)	(3)	(4)	(5)	(6)
excl_mark	-0.84***	-0.56***	-0.86***	-0.57***	-0.97***	-0.73***
	(0.16)	(0.13)	(0.16)	(0.13)	(0.14)	(0.13)
Trading Day in March Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Mutual Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	21,536	1,714	14,680	1,693	6,316	1,287
R^2	0.022	0.177	0.030	0.180	0.075	0.254

Panel B – Using number of adds as another explanatory variable

	(1)	(2)	(3)	(4)	(5)	(6)
excl_mark	-0.85***	-0.50***	-0.87***	-0.51***	-0.95***	-0.66***
	(0.16)	(0.13)	(0.16)	(0.13)	(0.14)	(0.13)
Num_Ads	0.10	-0.04	0.08	-0.05	0.02	-0.13
	(0.08)	(0.10)	(0.09)	(0.10)	(0.10)	(0.20)
Trading Day in March Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Mutual Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	22,370	1,840	15,368	1,819	6,797	1,392
R^2	0.024	0.185	0.032	0.188	0.080	0.257

Panel C – Using value of adds as another explanatory variable

	(1)	(2)	(3)	(4)	(5)	(6)
excl_mark	-0.85***	-0.50***	-0.87***	-0.51***	-0.95***	-0.66***
	(0.16)	(0.13)	(0.16)	(0.13)	(0.14)	(0.13)
Val_Ads	0.0005	-0.0003	-0.0002	-0.0004	-0.0007	-0.0022
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.006)
Trading Day in March Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Mutual Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	22,370	1,840	15,368	1,819	6,797	1,392
R^2	0.023	0.185	0.031	0.188	0.080	0.256

Table 5 –The effect of the exclamation mark on daily fund flows by direction

The table reports the results of OLS panel regressions of mutual fund inflows (creations scaled by fund size at the end of February 2010) in Panel A and outflows (redemptions scaled by fund size at the end of February 2010) in Panel B, on *excl_mark* (a dummy variable that equals 1 for funds that received an exclamation mark from the day they received the mark and onward and equals 0 otherwise). Standard errors, clustered at the management firm level, appear in parentheses below the coefficients. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. Columns 1 and 2 report the estimation results for all mutual funds and for treated mutual funds (those that added an exclamation mark to their name during March 2010), respectively. Columns 3 and 4 report the estimation results for the restricted sample of fixed income mutual funds and of treated fixed income mutual funds, respectively. Columns 5 and 6 report the estimation results for the further restricted sample of corporate bond mutual funds and of treated corporate bond mutual funds, respectively.

Panel A – Inflows

	(1)	(2)	(3)	(4)	(5)	(6)
excl_mark	-0.65***	-0.43***	-0.64***	-0.44***	-0.74***	-0.59***
	(0.12)	(0.10)	(0.12)	(0.10)	(0.10)	(0.10)
Trading Day in March Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Mutual Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	22,370	1,840	15,368	1,819	6,797	1,392
R^2	0.012	0.158	0.012	0.160	0.018	0.251

Panel B – Outflows

	(1)	(2)	(3)	(4)	(5)	(6)
excl_mark	0.20***	0.07	0.22***	0.07	0.22***	0.07
	(0.06)	(0.06)	(0.05)	(0.06)	(0.06)	(0.07)
Trading Day in March Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Mutual Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	22,370	1,840	15,368	1,819	6,797	1,392
R^2	0.010	0.044	0.003	0.045	0.002	0.056

Table 6 – The effect of the exclamation mark on monthly foreign flows to mutual funds

The table reports the results of OLS panel regressions of net mutual fund inflows by foreign investors (change in foreign holdings adjusted for changes in price and USD-NIS exchange rate, and scaled by foreign investors holdings in the fund at the end of the previous month) on *post* (a dummy variable that equals 1 for April 2010 and 0 for February 2010), and on *post_treated* (a dummy variable that equals 1 for funds that received an exclamation mark after March 2010 and equals 0 otherwise), as well as on a fund fixed effect. Standard errors, robust to heteroscedasticity, appear in parentheses below the coefficients. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. Columns 1 and 2 report the estimation results for foreign holdings of all mutual funds and of treated mutual funds (those that added an exclamation mark to their name during March 2010), respectively. Columns 3 and 4 report the estimation results for the restricted sample of foreign holdings of fixed income mutual funds and of treated fixed income mutual funds, respectively. Columns 5 and 6 report the estimation results for the further restricted sample of foreign holdings of corporate bond mutual funds and of treated corporate bond mutual funds, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
post	-3.40***	-10.68**	-4.58***	-8.97**	-9.71***	-9.53*
	(1.09)	(4.76)	(1.34)	(4.46)	(1.95)	(5.30)
post_treated	2.28		2.24		3.54	
	(3.05)		(3.12)		(3.74)	
Mutual Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	1,838	199	1,243	195	564	144
R^2	0.005	0.024	0.008	0.022	0.031	0.025

Table 7 – The effect of the exclamation mark on monthly corporate bond spreads

The table reports the results of OLS panel regressions of corporate bond spreads (spread in percentage points above government bonds with the same indexation and with similar duration) on a month fixed effect and a bond fixed effect. Standard errors, clustered at the firm level, appear in parentheses below the coefficients. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. Columns 1–3 present corporate bond spreads for the month after the reform vs. the month before the reform; Columns 4–6 present corporate bond spreads for the 2 months after the reform vs. the 2 months before the reform; Columns 7–9 present corporate bond spreads for the 3 months after the reform vs. the 3 months before the reform. Columns 1, 4, and 7 present the spreads of high-yield bonds vs. investment-grade bonds; Columns 2, 5, and 8 present the spreads of the top median of treated funds' holdings relative to non-treated funds' holdings vs. the spreads of the bottom median of treated funds' holdings relative to non-treated funds' holdings; Columns 3, 6, and 9 present the spreads of the top quartile of treated funds' holdings relative to non-treated funds' holdings vs. the spreads of the bottom quartile of treated funds' holdings relative to non-treated funds' holdings.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
high_yield				2.564** (1.174)			-0.346 (1.370)		
post_hy	0.831* (0.450)			0.276 (0.482)			-0.396 (0.499)		
post_held_by _treated		0.781** (0.347)			0.259 (0.373)			-0.354 (0.398)	
post_top_hold ings_treated			1.348*** (0.484)			0.490 (0.509)			-0.324 (0.546)
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Corporate Bonds Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	836	836	411	1,674	1,674	822	2,495	2,495	1,226
R^2	0.028	0.027	0.074	0.069	0.067	0.075	0.113	0.113	0.101

Table 8 – The effect of the exclamation mark on daily fund flows either excluding 'suspected funds' or using them as a control group

The table reports the results of OLS panel regressions of net mutual fund inflows (creations minus redemptions scaled by fund size at the end of February 2010) on *excl_mark* (a dummy variable that equals 1 for funds that received an exclamation mark from the day they received the mark and onward and equals 0 otherwise). Standard errors, clustered at the management firm level, appear in parentheses below the coefficients. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. Columns 1–3 report the estimation results for all mutual funds, fixed income funds, and corporate bond funds, respectively, excluding "suspected funds" (mutual funds that were susceptible to receiving an exclamation mark based on the February 2010 reports, but ultimately did not receive the mark). Columns 4–6 report the estimation results for all mutual funds, fixed income funds, and corporate bond funds, respectively, excluding all but treated funds and "suspected funds" (mutual funds that were susceptible to receiving an exclamation mark based on the February 2010 reports, but ultimately did not receive the mark).

	(1)	(2)	(3)	(4)	(5)	(6)
excl_mark	-0.85***	-0.88***	-0.97***	-0.65***	-0.67***	-0.74***
	(0.16)	(0.16)	(0.14)	(0.14)	(0.14)	(0.13)
Trading Day in March Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Mutual Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	21,134	14,153	6,102	3,076	3,034	2,087
R^2	0.024	0.033	0.086	0.124	0.126	0.187

Table 9 – The effect of the exclamation mark on daily fund flows

Only treated funds and matched control group

The table reports the results of OLS panel regressions of net mutual fund inflows (creations minus redemptions scaled by fund size at the end of February 2010) on *excl_mark* (a dummy variable that equals 1 for funds that received an exclamation mark from the day they received the mark and onward and equals 0 otherwise), as well as on a fund fixed effect and on a day fixed effect. The sample consists of mutual funds that received an exclamation mark on March 2010 and of a control group of mutual funds based on matching. Columns 1–3 are based on a matching procedure that matches each treated mutual fund (mutual fund that added an exclamation mark to its name during March 2010) with an untreated mutual fund that belongs to the same category of funds and whose yields in the six months prior to March 2010 were the closest to those of the treated fund. Columns 4–6 are based on a matching procedure that matches each treated mutual fund (mutual fund that added an exclamation mark to its name during March 2010) with an untreated mutual fund that belongs to the same category of funds, is managed by the same management firm (same fund family), and whose yields in the six months prior to March 2010 were the closest to those of the treated fund. Columns 1 and 4 report the estimation results for all mutual funds' types. Columns 2 and 5 report the estimation results for the restricted sample of fixed income mutual funds. Columns 3 and 6 report the estimation results for the further restricted sample of corporate bond mutual funds. Standard errors, clustered at the management firm level, appear in parentheses below the coefficients. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
excl_mark	-0.61***	-0.62***	-0.72***	-0.57***	-0.57***	-0.67***
	(0.16)	(0.16)	(0.14)	(0.12)	(0.12)	(0.13)
Trading Day in March Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Mutual Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	3,171	3,024	2,287	3,087	2,984	2,292
R^2	0.074	0.082	0.125	0.082	0.086	0.125

Appendix A – Examples of the regulatory reform implementations

(1) Announcement of fund's name change (Hebrew)

שם הקרן לפני השינוי:

מגדל (0A) אג"ח חברות קרן נאמנות (מספר קרן: 5104849)

שם הקרן לאחר השינוי:

מגדל (0A)(!) אג"ח חברות קרן נאמנות

שם הקרן באנגלית לאחר השינוי:

Migdal (0A)(!) Agach Havarot Mutual Fund

מובהר בזה, כי הכללת הסימן (!) בשם של קרן משמעותו, כי על פי מדיניות ההשקעות של הקרן, שיעור החשיפה האפשרי שלה לאג"ח שאינן בדירוג השקעה (כהגדרתן להלן) עשוי לעלות על שיעור החשיפה המרבי של הקרן למניות כעולה מדרגת החשיפה שלה למניות,

(2) Several examples of mutual funds' new names

- ANALYST (0A)(!) DIVERSIFIED PORTFOLIO WITHOUT EQUITY
- EPSILON (1B)(!) 10/90
- HAREL (2B)(!) CORPORATE AND CONVERTIBLE BONDS

Appendix B – Tables

Appendix B Table 1 – Variables' Definitions

Variable	Definition	Units
Creations	Daily creations	NIS Thousands
Redemptions	Daily redemptions in thousands of NIS	NIS Thousands
Net Inflows	Daily *creations* minus daily *redemptions*	NIS Thousands
AUM	Assets under management as of the end of February 2010	NIS Thousands
Scaled Net Inflows	*net* inflows divided by *AUM*	Percentages
Scaled Inflows	*Creations* divided by *AUM*	Percentages
Scaled Outflows	*Redemptions* divided by *AUM*	Percentages
Num Ads	Daily number of advertisements in the three national business newspapers	Integers
Val Ads	Daily value of advertisements in the three national business newspapers	NIS thousands
Excl_mark	1 for funds that received an exclamation mark from the day they received the mark and onward and 0 otherwise	Binary
Post	1 for the period after March 2010 and 0 otherwise	Binary
Post_treated	1 for the period after March 2010 only for funds that received an exclamation mark and 0 otherwise	Binary
Foreign Scaled Net Inflows	Change in foreign holdings adjusted for changes in price and USD-NIS exchange rate, and scaled by foreign investors holdings of the fund at the end of the previous month	Percentages
Spread	Corporate bond spread above government bonds with the same indexation and with similar duration	Percentage Points
High_yield	1 for corporate bonds without rating or with rating below (BBB-) on the local rating scale and 0 otherwise	Binary
Post_hy	1 for the period after March 2010 only for high-yield corporate bonds and 0 otherwise	Binary
Post_held_by_treated	1 for the period after March 2010 only for corporate bonds whose ratio of holdings by treated funds to holdings by other funds exceeded the median and 0 otherwise	Binary
Post_top_holdings_treated	1 for the period after March 2010 only for corporate bonds whose ratio of holdings by treated funds to holdings by other funds exceeded the top quartile and 0 otherwise	Binary

Appendix B Table 2 – The effect of the exclamation mark on monthly fund flows in the 1 month before and after the reform

The table reports the results of OLS panel regressions of monthly net mutual fund inflows (creations minus redemptions scaled by fund size at the end of the previous month) in the month before and the month after March 2010 on *post_treated* (a dummy variable that equals 1 for funds that received an exclamation mark after March 2010 and onward and equals 0 otherwise), as well as on a fund fixed effect and on a month fixed effect. Standard errors, robust to heteroscedasticity, appear in parentheses below the coefficients. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. Columns 1 and 2 report the estimation results for all mutual funds and for treated mutual funds (those that added an exclamation mark to their name during March 2010), respectively. Columns 3 and 4 report the estimation results for the restricted sample of fixed income mutual funds and treated fixed income mutual funds, respectively. Columns 5 and 6 report the estimation results for the further restricted sample of corporate bond mutual funds and treated corporate bond mutual funds respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
post_treated	-7.09***	-20.52***	-7.08***	-19.89***	-6.04***	-26.65***
	(1.55)	(3.22)	(1.63)	(3.18)	(1.25)	(3.70)
Month Fixed Effects	Yes	No	Yes	No	Yes	No
Mutual Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	2,137	211	1,463	207	673	153
R^2	0.012	0.162	0.019	0.170	0.117	0.262

Appendix B Table 3 – The effect of the exclamation mark on monthly fund flows in the 2 months before and after the reform

The table reports the results of OLS panel regressions of monthly net mutual fund inflows (creations minus redemptions scaled by fund size at the end of the previous month) in the 2 months before and the 2 months after March 2010 on *post_ treated* (a dummy variable that equals 1 for funds that received an exclamation mark after March 2010 and onward and equals 0 otherwise), as well as on a fund fixed effect and on a month fixed effect. Standard errors, robust to heteroscedasticity, appear in parentheses below the coefficients. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. Columns 1 and 2 report the estimation results for all mutual funds and for treated mutual funds (those that added an exclamation mark to their name during March 2010), respectively. Columns 3 and 4 report the estimation results for the restricted sample of fixed income mutual funds and treated fixed income mutual funds, respectively. Columns 5 and 6 report the estimation results for the further restricted sample of corporate bond mutual funds and treated corporate bond mutual funds, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
post_treated	-14.80***	-23.37***	-13.95***	-22.61***	-10.88***	-28.46***
	(2.75)	(3.22)	(2.77)	(3.13)	(3.53)	(3.88)
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Mutual Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	4,233	420	2,902	413	1,334	306
R^2	0.074	0.255	0.081	0.252	0.235	0.347

Appendix B Table 4 – The effect of the exclamation mark on monthly fund flows in the 3 months before and after the reform

The table reports the results of OLS panel regressions of monthly net mutual fund inflows (creations minus redemptions scaled by fund size at the end of the previous month) in the 3 months before and the 3 months after March 2010 on *post_ treated* (a dummy variable that equals 1 for funds that received an exclamation mark after March 2010 and onward and equals 0 otherwise), as well as on a fund fixed effect and on a month fixed effect. Standard errors, robust to heteroscedasticity, appear in parentheses below the coefficients. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. Columns 1 and 2 report the estimation results for all mutual funds and for treated mutual funds (those that added an exclamation mark to their name during March 2010), respectively. Columns 3 and 4 report the estimation results for the restricted sample of fixed income mutual funds and treated fixed income mutual funds, respectively. Columns 5 and 6 report the estimation results for the further restricted sample of corporate bond mutual funds and treated corporate bond mutual funds respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
post_treated	-9.94***	-17.03***	-9.27***	-16.14***	-6.70**	-20.03***
	(2.22)	(2.82)	(2.25)	(2.67)	(2.85)	(3.30)
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Mutual Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	6,355	631	4,353	621	1,992	460
R^2	0.047	0.206	0.050	0.203	0.180	0.284

Appendix B Table 5 – The effect of the exclamation mark on monthly fund flows in the 4 months before and after the reform

The table reports the results of OLS panel regressions of monthly net mutual fund inflows (creations minus redemptions scaled by fund size at the end of the previous month) in the 4 months before and the 4 months after March 2010 on *post_ treated* (a dummy variable that equals 1 for funds that received an exclamation mark after March 2010 and onward and equals 0 otherwise), as well as on a fund fixed effect and on a month fixed effect. Standard errors, robust to heteroscedasticity, appear in parentheses below the coefficients. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. Columns 1 and 2 report the estimation results for all mutual funds and for treated mutual funds (those that added an exclamation mark to their name during March 2010), respectively. Columns 3 and 4 report the estimation results for the restricted sample of fixed income mutual funds and treated fixed income mutual funds, respectively. Columns 5 and 6 report the estimation results for the further restricted sample of corporate bond mutual funds and treated corporate bond mutual funds, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
post_treated	-7.65***	-16.14***	-6.25***	-15.16***	-3.30	-19.18***
	(1.84)	(2.76)	(1.88)	(2.57)	(2.30)	(3.19)
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Mutual Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	8,452	837	5,783	823	2,641	610
R^2	0.042	0.176	0.051	0.173	0.155	0.255

Appendix B Table 6 – The effect of the exclamation mark on monthly fund flows in the 5 months before and after the reform

The table reports the results of OLS panel regressions of monthly net mutual fund inflows (creations minus redemptions scaled by fund size at the end of the previous month) in the 5 months before and the 5 months after March 2010 on *post_treated* (a dummy variable that equals 1 for funds that received an exclamation mark after March 2010 and onward and equals 0 otherwise), as well as on a fund fixed effect and on a month fixed effect. Standard errors, robust to heteroscedasticity, appear in parentheses below the coefficients. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. Columns 1 and 2 report the estimation results for all mutual funds and for treated mutual funds (those that added an exclamation mark to their name during March 2010), respectively. Columns 3 and 4 report the estimation results for the restricted sample of fixed income mutual funds and treated fixed income mutual funds, respectively. Columns 5 and 6 report the estimation results for the further restricted sample of corporate bond mutual funds and treated corporate bond mutual funds, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
post_treated	-5.39***	-15.06***	-3.93**	-14.08***	-0.57	-17.55***
	(1.58)	(2.68%)	(1.60)	(2.49)	(1.95)	(3.11)
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Mutual Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	10,538	1,043	7,194	1,025	3,290	761
R^2	0.035	0.158	0.044	0.158	0.137	0.237

Appendix B Table 7 – The effect of the exclamation mark on monthly fund flows in the 6 months before and after the reform

The table reports the results of OLS panel regressions of monthly net mutual fund inflows (creations minus redemptions scaled by fund size at the end of the previous month) in the 6 months before and the 6 months after March 2010 on *post_treated* (a dummy variable that equals 1 for funds that received an exclamation mark after March 2010 and onward and equals 0 otherwise), as well as on a fund fixed effect and on a month fixed effect. Standard errors, robust to heteroscedasticity, appear in parentheses below the coefficients. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. Columns 1 and 2 report the estimation results for all mutual funds and for treated mutual funds (those that added an exclamation mark to their name during March 2010), respectively. Columns 3 and 4 report the estimation results for the restricted sample of fixed income mutual funds and treated fixed income mutual funds, respectively. Columns 5 and 6 report the estimation results for the further restricted sample of corporate bond mutual funds and treated corporate bond mutual funds, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
post_treated	-3.10**	-11.82***	-1.43	-10.86***	1.75	-13.22***
	(1.41)	(2.84)	(1.43)	(2.69)	(1.74)	(3.39)
Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Mutual Fund Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	12,601	1,246	8,590	1,224	3,929	909
R^2	0.027	0.145	0.036	0.146	0.109	0.226