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THE ROLE OF UNDERWRITER AFFILIATION IN FIXED INCOME FUNDS'
INVESTMENT CHOICE AND PERFORMANCE

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ABSTRACT

Using data on 1,550 U.S. fixed income funds, the aim of this thesis is to investigate how the affiliation to a bond underwriting firm affects selected facets of funds' investment behavior and returns. All in all, their portfolios are not found to be biased towards bonds the affiliated institution acted as an underwriter for, however, some signs of support for these holdings are noticeable at times of fund outflows and close to their issuance. The effect of underwriter-affiliation on funds' performance is insignificant, suggesting that funds' shareholders are neither better nor worse off than others that invest into independent counterparts.

Title: The role of underwriter affiliation in fixed income funds' investment choice and performance

Keywords: fixed income funds, bond underwriting, underwriter-affiliation, conflicts of interest, performance, portfolio composition

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1 INTRODUCTION

The control of an asset management firm by a conglomerate that provides another financial service under the same roof naturally raises the potential for competing or conflicting interests to arise. Indeed, already in 2003, a Wall Street Journal article by Lucchetti reports that a Chief Investment Officer at Deutsche Bank's (DB) asset management unit was asked by a DB underwriting executive to "be a team player" and invest in the newly issued shares of the struggling media firm Vivendi Universal SA, for which DB assumed the role of the lead underwriter. Stephen M. Cutler, Securities and Exchange Commission (SEC) Director from 2001 to 2005 (SIFMA, n.d.), further expresses his concerns that "an asset manager might feel pressured to invest in companies that its investment banking affiliate had underwritten" (2003). Spillover effects within financial conglomerates and their ramifications on affiliated funds' behavior have nowadays, indeed, been investigated from different angles in the academic literature. The purpose of this thesis is to analyse a (to the author's best knowledge) still fairly uncharted potential conflict of interest that may arise from investment banks' bond underwriting activity, which turns them into a seller of bonds, and their ownership of fixed income funds, at the same time turning them into a buyer of bonds. In fact, the absence of "Chinese walls"¹ between a firm's equity underwriting business and its fund management division has already been indicated by prior research works. For instance, a study by Johnson and Marietta-Westberg (JM) (2009) suggests that investment bank-affiliated asset management arms are able to take advantage of valuable inside information, whereas in a paper by Hao and Yan (2012), it is shown that equity mutual funds that belong to investment banks serve as a vehicle to support worse performing client stocks. The potential effects of bond underwriter-affiliation on fixed income funds' behavior, however, seem to remain widely unexplored, notwithstanding the larger size of the

¹ "Chinese walls" are a metaphor for a barrier that intends to avoid the communication between divisions if it could result in legally or ethically questionable business activities (Kenton, 2020).

global bond market compared to the equity market (SIFMA Research, 2020) and that, on average, a little more than $\frac{3}{5}$ of the world's leading banks'² underwriting revenue is accounted for by their bond underwriting business³. In order to contribute to the closure of this gap in the empirical research, this work aims to understand and discuss whether the affiliation to a bond underwriting firm changes fixed income funds' behavior in terms of their investments in corporate bonds and, in particular, if it may entail support for those bonds, for which the umbrella institution was mandated as an underwriter. Using a sample of 25,863 bond issuances in the period from 2002 to 2017 and reported holdings of 1,550 U.S. open-end fixed income funds between 2003 and 2019, the major aspects of research include the portfolio composition of affiliated funds, factors that determine their holdings of "client bonds"⁴, affiliated funds' behavior in the presence of negative fund flows and in the period after the issuance of affiliated bonds and the influence of underwriter-affiliation on fixed income funds' returns. Furthermore, the use of data on the U.S. market seems particularly appropriate for the purpose of this thesis, as fixed income funds' total assets under management experienced an increase of approx. 247.1% between 2005 and 2019 and totalled about \$4.7tn, or 22.1% of all U.S. mutual funds' assets in 2019 (SIFMA Research, 2020). They are, thus, of great economic interest. According to the results, the implications of bond funds' underwriter-affiliation are ambiguous: On the one hand, affiliated fixed income funds seem to slightly overweight client bonds in comparison to unaffiliated entities – which can especially be observed for top 10 bank-controlled asset managers – however, their portfolios are not biased towards these holdings. At the time of negative fund flows, it is noteworthy that affiliated funds reduce their portfolio weight of unaffiliated bonds and, additionally, the probability of investing in a bond in the quarter of its issuance is

² Top 10 banks acc. the Financial Times on the basis of fees earned as of 28-Sep-20 (Financial Times, 2020a)

³ On average, about 62.7% in 2018 and about 63.0% in 2019 (own analysis, using annual reports' data of JP Morgan, Goldman Sachs & Co, Bofa Securities Inc, Citi, Morgan Stanley, Credit Suisse and Deutsche Bank)

⁴ Synonym to describe bonds underwritten by funds' parent banks, also termed in this study "affiliated bonds"

positively influenced by a fund's affiliation to one of the bond's underwriters. On the other hand, no evidence is found in the main analysis that funds' performance is determined by the affiliation to a bond underwriter, which could suggest that Chinese walls allow the independent operation of affiliated fixed income funds. The remaining structure of this thesis is organised as follows: A review of related literature will first be carried out (4-7), followed by the development of the hypotheses (7-10), a description of the data sample and the methodology approach (10-17) and a demonstration of the results (17-23). The thesis concludes with an evaluation of the findings achieved, the study's limitations and an outlook on possible future research (23-25).

2 LITERATURE REVIEW

Spillover effects arising in financial conglomerates and the resulting implications for affiliated funds' investment decisions have been investigated from different angles in the empirical literature. One strand of research, for instance, focuses on bank-affiliated funds' behavior towards securities that were issued by their controlling bank. Based on a sample that consists of Spanish financial conglomerates, evidence arises in a study by Golez and Marin (2015) that bank-affiliated funds' trading is supportive of their controlling bank's stock price around seasoned equity offerings, after bad corporate news and before expected as well as after unexpected price drops. In another study exploring the Spanish mutual fund industry, Gil-Bazo, Hoffmann and Mayor-domo (2020) find that bank-affiliation is related to higher purchases of parent banks' bonds issued in the primary market (on average, +0.04%). The observed funding support, which is additionally associated with bond overpricing, especially increases in periods of financial distress that are accompanied by limited access to funding sources. In addition and in a slightly different research direction, Bagattini, Fecht and Weber (2018) document that the ownership of mutual funds allowed German banks to sell off their proprietary holdings of risky sovereign bonds during the 2010 to 2012 sovereign debt crisis in Europe.

A further line of studies, which may be considered as most closely related to the empirical part of this thesis, examines conflicts of interest between financial institutions' underwriting and asset management divisions. For instance, a paper by Marques (2017) addresses the allocation of bond issuances in Brazil between 2005 and 2015 and delivers evidence that the allocation of bonds to affiliated mutual funds entails a negative "excess return" at the time of their issuance. Based on a sample that covers mutual funds, hedge funds and institutional funds from 1990 to 2008, Berzins, Liu and Trzcinka (2013) discover that the affiliation with an investment bank is accompanied by a decline in a fund's alpha by about 46 basis points per year. The work by Hao and Yan (2012), analysing data on U.S. equity mutual funds in the period from 1992 to 2004, finds that investment bank-affiliated funds are inclined to overweight recently issued clients' stock in their portfolios and that $\frac{1}{3}$ to $\frac{1}{2}$ of the observed performance gap with independent peers could be traced back to their IPO (initial public offering) client holdings. According to the authors, these findings are consistent with the idea that investment bank-affiliation may induce asset management units to act in favor of the interests of the underwriting business, even if this is detrimental to funds' shareholders ("conflict of interest hypotheses"). The use of affiliated funds as a vehicle to enhance investment banks' reputation for introducing strong firms to the IPO market is also empirically proven by JM (2009). In addition, a further analysis of an international sample of equity mutual funds between 2000 and 2010 reveals that the affiliation to a commercial banking group leads to an underperformance relative to unaffiliated funds by about 92 basis points per year, which is linked to the overweighting of borrowing firms' stocks. This "strategy" increases a bank's chances of being selected as a lead arranger of lending deals in the future (Ferreira, Matos and Pires, 2018).

While some of the previously cited studies show that the provision of diverse financial services under one roof is able to induce a conflict of interest, which could have an adverse effect on funds' performance, other studies, by contrast, highlight how close ties within financial

institutions can entail positive effects for funds' shareholders. For instance, Mola and Guidolin (2009) observe that sell-side analysts tend to release favorable recommendations about a stock following the investment in that stock by affiliated mutual funds. Current research (Mooney, 2020) points out that affiliated mutual funds engage in the pre-announcement trading in stocks of merger targets that are advised by their controlling investment bank, which allows them to realise highly positive abnormal returns. In a further analysis conducted by Ritter and Zhang (2007), whose research focuses on U.S. investment banks' allocation process of IPOs, some evidence arises that during the so-called internet bubble period of 1999 to 2000 deeply underpriced IPO shares were preferentially sold to underwriters' affiliated mutual funds. This finding is considered supportive of the "nepotism hypothesis" (as termed by the authors), according to which hot IPOs can be used to boost the returns of affiliated funds, subsequently attracting more money inflows. In a similar vein, results achieved by JM (2009) hint underwriter-affiliated funds' ability to trade on the basis of superior information ("superior information hypothesis"), which is reflected by the realisation of higher market-adjusted returns (+7.7% per year) in comparison to asset managers whose parent banks did not lead-underwrite the IPO. A recent study by Saengchote and Sthienchoak (2020) based on data from Thailand reaches a similar conclusion by finding evidence that lead underwriter-affiliated equity mutual funds are likelier to hold underpriced IPO issues. With regard to co-manager-affiliated peers, however, the results are consistent with the "quid pro quo hypothesis", according to which bank-controlled funds can be utilised to support the stocks of IPO clients (similar to JM, 2009; Hao and Yan, 2012). As argued in the study's introduction, the possible reward of obtaining lead underwriting mandates in future deals could provide co-managing firms with an incentive to support their clients' equity issues. Lastly, Massa and Rehman (2008), whose analysis' underlying sample includes all the actively managed equity funds in the U.S. between 1993 and 2004, investigate the influence of banks' lending activities on the investment choice of their affiliated asset managers. Their

study illustrates that bank-affiliated funds selectively overweight stocks of their controlling bank's borrowing firms around the time of the new loan initiation, which is associated with superior risk-adjusted returns in the short-term. This finding is further supportive of the claim that inside information may be exchanged between the different divisions of a financial conglomerate.

Other closely related research areas observe that the superior performance of mutual funds that are run by graduates from an elite university is attributable to their better ties with underwriting firms, subsequently facilitating the access to underpriced IPO allocations (Hwang, Titman and Wang, 2018). Finally, Ma, Tang and Gómez (2019) discover that the use of explicit performance-based incentives as well as deferred compensation is positively related to the strength of potential agency conflicts, proxied by, i.a., the advisor's affiliation with a bank.

3 RESEARCH QUESTIONS AND HYPOTHESES DEVELOPMENT

3.1 Does fund size influence the fraction of affiliated bond holdings? (H1)

As is evident from the review of existing literature, an affiliated asset management unit that holds client firms' shares in its portfolio may contribute to strengthening the conglomerate's underwriting or lending division, even if this causes detriment to the funds' shareholders (e.g. JM, 2009; Ferreira et al., 2018). Empirical evidence suggests that this conflict of interest is not only taken advantage of by less reputable investment banks, where one would expect a considerably greater incentive, but also by the ones that rank among the top-tier (Hao and Yan, 2012). Further, considering that eight of the top 10 banks' investment advisory companies⁵ rank among the world's top 50 asset management firms in terms of total assets under management (ADV Ratings, 2020), one could assume that there may exist a positive association between fixed income funds' size and their portfolio fraction of affiliated bonds. This claim also seems

⁵ Top 10 banks acc. to the Financial Times on the basis of fees earned as of 28-Sep-20 (Financial Times, 2020a)

reasonable from a theoretical standpoint, as increases in funds' size may translate into enhanced possibilities to support bonds, whose underwriting syndicates include the parent bank. In a first regression analysis, it is thus to be investigated whether different proxies for fund size positively contribute to the portfolio weight that is invested in affiliated bonds:

H1: "As fund size increases, the portfolio weight of affiliated bonds is expected to rise as well."

3.2 How do fund outflows affect the variation in the fraction of (un)affiliated bonds? (H2)

Approximately half of the reporting dates in this thesis' sample of affiliated funds (50.9%) exhibit negative fund flows, arising as the amount of investor redemptions exceeds the amount of new investor inflows (TheStreet, n.d). If the holdings of liquid assets are not sufficient to meet the requested outflows, fund withdrawals could imply the necessity to convert underlying securities into cash (Indexperts, 2019) and trade them in the secondary market. In such event, one way of how affiliated funds might support their controlling bank, or rather "please" clients whose bonds were underwritten by the parent bank, could be by reducing unaffiliated bond holdings to a greater extent than affiliated ones. This leads to the second testable hypothesis:

H2: "Periods of negative fund flows are accompanied by a reduction in the fraction of unaffiliated bond holdings rather than affiliated bond holdings."

3.3 Does the affiliation to a bond's underwriter impact a fund's participation in the investment in that bond in the period after its issuance? (H3)

A further occasion where fixed income funds' behavior may be affected by the affiliation to an underwriting firm may arise in the period after the issuance of bond offerings, in which the controlling bank participated as an underwriter. Indeed, one may argue that affiliated funds' direct investment in recently issued client firms' bonds is utilised as a tool to promote the underwriter's reputation for being able to successfully place new securities on the market (see a similar argument proposed by JM, 2009). Further, one may recall the study by Hao and Yan (2012) that discovered evidence for investment bank-affiliated equity mutual funds' tendency

to overweight recently issued client firms' stocks, interpreted as an effort to provide price support and strengthen investment banks' relationships. Thus, it would be interesting to analyse if similar signs of support can be identified in bond funds' behavior in the post-issuance period of affiliated bonds. One can formulate the third testable hypothesis:

H3: "The probability of a fund participating in the investment in a bond during the quarter of its issuance is positively affected by the affiliation to one of the bond's underwriters. In addition, the fraction of a bond's offering amount held by a fund in the period of the bond's issuance is anticipated to be higher in the presence of an affiliation to one of the bond's underwriters."

3.4 Can performance differences within fixed income funds be attributed to the portfolio weight of affiliated bond holdings or bond underwriter-affiliation? (H4, H5)

In a next and final analysis, the aim is to understand whether one of the two hypotheses that have been reported in the literature on spillover effects in financial groups with an asset management arm, namely "conflict of interest hypothesis" or "information advantage hypothesis"⁶, can be inferred from underwriter-affiliated fixed income funds' returns. For instance, one may think of the studies carried out by Hao and Yan (2012), Berzins et al. (2013) as well as Ferreira et al. (2018), all of which revealed that bank-affiliated asset managers underperform stand-alone entities. Other research, in turn, argues that close ties with a bank may entail superior returns, attributed to affiliated asset management firms' privilege of trading based on an information advantage (e.g. Massa and Rehman, 2008; Hwang et al., 2018). On the one hand, one could thus assume affiliated fixed income funds' ability to base their investment decisions on valuable inside information obtained from their umbrella institution's underwriting connections, as a result of which they "cherry pick" those client bonds that will achieve higher returns. On the other hand, it could be argued that fixed income funds owned by an underwriting

⁶ The names of the hypothesis were retrieved from the study by Ferreira et al. (2018). In a different study, for example, the "information advantage hypothesis" is known as "superior information hypothesis" and the "conflict of interest hypothesis" is termed "quid pro quo hypothesis" (JM, 2009).

institution may feel pressure to or be utilised as a vehicle to support client bonds that figure among worse performers. This leads to the suggestion of two contrasting hypotheses:

H4: “The presence of underwriter-affiliation and higher portfolio weights of affiliated bond holdings are positively reflected in funds’ performance.”

H5: “The presence of underwriter-affiliation and higher portfolio weights of affiliated bond holdings are negatively reflected in funds’ performance.”

It may briefly be pointed out that the “skill hypothesis”, stated in the paper by Ferreira et al. (2018), further supports the claim of H5 that bank-affiliated funds underperform unaffiliated ones. The hypothesis assumes that affiliated funds may be less incentivised to hire talented portfolio managers due to banks’ ability to provide bundled services. Independent asset management firms, in contrast, may be considered to provide more prestigious career opportunities.

4 DATA SAMPLE

4.1 Collection of data and preparatory procedures

In order to construct the dataset for the analysis of the above-proposed hypotheses, fund data is originally obtained from the Morningstar database. The Morningstar report, which covers the period from January 31, 2003, to October 24, 2019, includes information on the asset holdings of 1,550 open-end fixed income funds that are domiciled in the U.S. The reporting frequencies of the sample funds vary from one to 207 times per year, with the most common reporting frequencies observed being quarterly and monthly. On average, the sample counts 845 funds per year, with the number of affiliated funds varying between 158 and 199. At this point, it needs to be remarked that the original dataset does not already contain the required information related to underwriter-affiliation. It is, thus, necessary to identify the funds that belong to a financial conglomerate⁷. For this purpose, the names of the affiliated funds are manually

⁷ In the present analysis, “financial conglomerate” or “bank” are used as synonyms for the term “underwriter”.

matched with the names of the corresponding underwriting institutions. Where required, further information on the funds' ultimate owners is obtained, drawing on a variety of sources, such as the Thomson Reuters Eikon database, Morningstar fund profiles and fund company websites. Within the scope of this matching process, any change in ownership that occurred at the underwriter level, for instance as a result of post-crisis bank mergers – e.g. Bank of America's acquisition of Merrill Lynch, completed as of January 1, 2009 (Thomson Reuters, 2009) –, is additionally taken into account. A more precise development of the dataset's underlying funds is illustrated in [Figure 1](#). As the chart shows, the share of affiliated funds, which has apart from a few variations slightly declined in the first two thirds of the observation period, stabilised at around 20% between 2014 and 2019. Indeed, this fraction matches statistics documented by recent literature studying an international sample of equity mutual funds (Ferreira et al., 2018). According to Ferreira et al. (2018), the fraction of commercial bank-affiliated equity mutual funds in the U.S. stood at 20% in 2010. Despite the focus of this thesis' analysis on underwriter-affiliated fixed income funds, considering that the sample funds are domiciled in the U.S. market, one may say that the derived share of affiliated fixed income funds of about 20% during the last few years of the sample period seems quite plausible. In addition, in another study, Hao and Yan (2012, p.538) state that nearly one in four mutual funds in the U.S. were affiliated with an investment bank between 1992 and 2004, which is further in line with the results obtained from the matching process. After linking each affiliated fund to its controlling bank and in the event of a takeover to the new controlling bank as well as the completion date of the acquisition, the final step of the data preparation requires the identification of affiliated bond holdings. The term “affiliated bond holdings” is used in this study to describe a set of bonds in an affiliated fund's portfolio whose underwriting syndicates include the respective fund's parent bank. It is not significant whether the controlling bank assumed the role of the lead underwriter or acted merely as a co-managing syndicate member; in the present analysis solely the participation in

the underwriting syndicate is relevant. For this purpose, an additional dataset from the Mergent Fixed Income Securities (FISD) database⁸ is collected, covering 25,863 bond issues in the period from 2002 to 2017, including information on the underwriting entities and bond-specific characteristics. [Figure 2](#) illustrates the development of the newly issued bonds over time; the total number of underwriters amounts to 301. As each bond is assigned a unique identification number, referred to as CUSIP⁹, and fixed income funds' holding data provided by Morningstar report the CUSIP numbers of bonds held in their portfolios, it is possible to identify for each affiliated fund and reporting date the bonds that are attributable to the category “affiliated bond holdings” and, at the same time, those classified as “unaffiliated bond holdings”.

Once the data preparation stage is completed, the next step involves the aggregation of selected holding data at the fund-date level, which yields for each fund the portfolio weights of (for this thesis) relevant assets as of the respective reporting dates. In total, one can count 101,837 fund-date pairs, of which 21,932 are attributable to affiliated funds. One can consult summary statistics describing the distribution of the aggregated variables as well as a number of additionally added fund characteristics¹⁰ across all available fund-date pairs, in [Table 1](#).

4.2 Descriptive statistics

While Panel A of [Table 1](#) illustrates the summary statistics based on the entire sample, the mean values of the portfolio characteristics are depicted separately for stand-alone and underwriter-controlled funds in Panel B. As can be seen, on average, the sample funds manage net assets worth approx. \$1.9bn (median: \$330mn) and witness net flows of about \$9mn from one reporting date to the next; the average age of the funds is 13 years. Looking at Panel B, it is noteworthy that the mean values of affiliated and unaffiliated bond funds' characteristics – considered on

⁸ The bond issuance dataset, just like the funds' holding data, was provided by the thesis' supervisor.

⁹ Abbreviation for Committee on Uniform Security Identification Procedures (Investor.gov, n.d.)

¹⁰ The data on the sample funds' characteristics (specifically, total net assets at the fund and share class level, net flow at the fund level and expense ratio at the share class level) were provided by the thesis' supervisor.

average across all fund-date pairs – do not differ essentially from each other. While it can be noted that affiliated funds are slightly larger in terms of their total net assets (approx. +\$55mn), the average values of their net flows and quarterly returns are rather similar to those that could be derived for the unaffiliated entities. The slightly higher average expense ratio of affiliated fixed income funds in comparison to the one of unaffiliated funds (0.49% vs. 0.46%) may be explained by banks' stronger presence in fund distribution and bank-affiliated funds' resulting ability to charge higher fees (Ferreira et al., 2018). Next, concerning the average fraction of affiliated bond holdings, one can observe a value of 2.6% for affiliated funds (1.9% if one only takes into account bonds underwritten by affiliated lead underwriters, as can be seen in Panel C) in comparison to 2.1% for unaffiliated funds¹¹. At first sight, it might thus be concluded that affiliated portfolios are slightly “overweight” in their holdings of bonds underwritten by the controlling bank. However, if one further looks at the average portfolio fraction that was underwritten by the most “frequent underwriter”¹², which amounts to 14.9%, it cannot be claimed that affiliated funds seem to actually tilt their portfolios towards bonds underwritten by their parent bank. Indeed, as can be seen in [Figure 3](#), only in 503 out of 21,932 (equivalent to 2.3%) fund-month observations, the most frequent underwriter is an affiliated underwriter. In addition, in Panel D of [Table 1](#), the fund characteristics are illustrated in more detail for funds that are affiliated to an underwriting institution that ranks among the top 10 banks in the world and funds that are affiliated to a different underwriter. In order to undertake this classification, the Financial Times League Tables ranking based on fees earned in the first three quarters of 2020 is used (Financial Times, 2020a). At this point, it may be remarked that this ranking is applied

¹¹ The portfolio weight of affiliated bonds held by an unaffiliated fund at a specific reporting date was calculated by first computing the portfolio fraction that is attributable to each underwriter that controls an asset management unit. Afterwards, an average value across these individual portfolio weights could be calculated for the respective unaffiliated fund-month pair.

¹² The designation “most frequent underwriter” describes the highest fraction of bonds in a fund’s portfolio underwritten by one single underwriter.

for the entire period under investigation. Here, one essential difference becomes evident: While a top 10 bank-affiliated fund invests, on average, about 7.8% of its assets in affiliated bonds, this fraction merely amounts to 0.3% for a fund that is affiliated to a different underwriter. Finally, Panel E reports the mean values of the main variables for selected fund style groups. In addition to the above-described summary statistics, [Figure 4](#) depicts the average weight of affiliated bonds held by affiliated funds – further split into top 10 bank-affiliated funds and other underwriter-affiliated funds – and unaffiliated funds for each quarter of the sample period¹³. In this way, it is possible to document the variable’s development across time. In line with the summary statistics, for the large majority of the sample period, affiliated funds are shaped by slightly higher fractions of affiliated bonds in comparison to underwriter-independent ones. While the overweighting can especially be observed for funds that are owned by a top 10 bank, funds that are affiliated to a different underwriter exhibit a fairly minimal portfolio weight of affiliated bonds, close to zero percent. Furthermore, throughout the entire observation period, affiliated funds’ quarterly average fraction of bonds underwritten by the most frequent underwriter (see [Figure 5](#)) exceeds the quarterly average fraction of bonds underwritten by their affiliated underwriter (see [Figure 4](#)). The direct comparison of both figures, thus, does not point to any bias in affiliated funds’ portfolios towards bonds underwritten by the parent bank. Finally, it can be seen from [Figure 6](#), which illustrates the average fraction of unaffiliated bond holdings per quarter, that the top 10 bank-controlled funds hold a notably lower portfolio weight of unaffiliated bonds in comparison to other affiliated peers for the majority of the sample period.

¹³ As there exist significant differences in the sample funds’ reporting frequencies, funds’ last reported information in a given quarter is used in order to calculate the average portfolio weight of affiliated bond holdings across the sample funds in that quarter.

5 METHODOLOGY

After briefly introducing the data sample, in the following, the regression analyses used to verify the thesis' hypotheses will be described. All the variables are defined in [Table 2](#), and, where appropriate, an explanation on their computation and any necessary assumptions are provided.

5.1 Does fund size influence the fraction of affiliated bond holdings? (H1)

In order to test H1 (see chapter [3.1](#)) and to investigate if fund size is a determinant of affiliated funds' fractions of client bonds, a fixed effects linear model ("felm") regression will be used:

$$\begin{aligned} \text{frac_aff}_{f,t} = & \beta_0 + \beta_1 \log(\text{TNA}_{f,t}) + \beta_2 \log(\text{avg_family_TNA}_{f,q-1}) \\ & + \beta_3 \text{no_family_funds}_{f,q-1} + \beta_4 \text{aff_top_10}_{f,t} + \delta \mathbf{X}_{f,t} + \alpha_s + \alpha_t + \varepsilon_{f,t} \end{aligned} \quad (1)$$

"frac_affe_{f,t}" represents the portfolio weight of affiliated bond holdings, i.e. bonds underwritten by the parent bank, held by fund *f* at reporting date *t*. "α_s" and "α_t" denote investment-style (as assigned by Morningstar) and time (reporting-date) fixed effects in order to account for unobservable variation in the data. The measures that are used to approximate fund size are (1) TNA (total net assets) at reporting date *t*, (2) the average family TNA in the preceding quarter *q-1*, (3) the number of family funds in the preceding quarter *q-1* and (4) a dummy variable that captures the affiliation to a top 10 bank. Lastly, "X_{f,t}" refers to vector of control variables that comprises selected fund- and portfolio-specific characteristics at reporting date *t*.

5.2 How do fund outflows affect the variation in the fraction of (un)affiliated bonds? (H2)

The claim asserted by H2 (see chapter [3.2](#)), according to which affiliated funds reduce unaffiliated bond holdings rather than affiliated bond holdings in the event of negative fund flows, will be tested using the following felm regression equations:

$$\begin{aligned} \Delta_frac_unaff_{f,t} \text{ (a)} \\ \Delta_frac_aff_{f,t} \text{ (b)} = & \beta_0 + \beta_1 \text{neg_net_flow}_{f,t} + \delta \mathbf{X}_{f,t/q-1} + \alpha_s + \alpha_t + \varepsilon_{f,t} \\ \text{diff_}\Delta_frac_(\text{un})\text{aff}_{f,t} \text{ (c)} \end{aligned} \quad (2)$$

In total, three regression models will be estimated. The dependent variables are the changes in a fund's fraction invested in unaffiliated (a) and affiliated (b) bond holdings between *t* and *t-1*

and the difference in both variations ($=\Delta_frac_unaff_{f,t} - \Delta_frac_aff_{f,t}$) at point in time t (c). They will be regressed on a dummy variable that captures the presence of outflows ($neg_net_flow_{f,t} = 1$), a vector of control variables ($\delta X_{f,t/q-1}$) and style as well as time fixed effects (α_s, α_t).

5.3 Does the affiliation to a bond’s underwriter impact a fund’s participation in the investment in that bond in the period after its issuance? (H3)

H3 (see chapter 3.3), which assumes a fund’s probability to participate in the investment of a bond in the quarter of its issuance to increase in the presence of the affiliation to one of the bond’s underwriters, will be tested using the following logit regression model:

$$inv_off_amt_{f,b,q(iss)} = \beta_0 + \beta_1 aff_bond_{f,b,q(iss)} + \delta X_{f,b,q(iss)} + \alpha_c / \alpha_t + \varepsilon_{f,b,q(iss)} \quad (3)$$

“ $inv_off_amt_{f,b,q(iss)}$ ” is the dependent variable, assuming the value 1 if a fund participates in the investment in a bond during the quarter of issuance and 0 otherwise. “ $aff_bond_{f,b,q(iss)}$ ” denotes a dummy variable that captures a fund’s affiliation to a bond’s underwriter during its quarter of issuance (=1). “ $X_{f,b,q(iss)}$ ” relates to a vector of fund-specific control variables during the bond’s quarter of issuance that may affect the trading behavior of a fund, all of which are described in more detail in Table 2. “ α_c ” and “ α_t ” denote CUSIP and time fixed effects, respectively. The second regression equation that is used to test H3, which further assumes that a fund’s acquired fraction of a bond’s offering amount in the quarter of issuance is higher if the fund is affiliated to one of the bond’s underwriters, has a similar structure as Equation 3. However, as a feqm regression, it uses the fraction of a bond’s offering amount held by a fund during the quarter of issuance (a) (similarly to Gil-Bazo et al., 2020) and, as an alternative, a fund’s average fraction of the offering amount held within one year after the issuance (b) as the dependent variable:

$$\begin{aligned} frac_off_amt_{f,b,q(iss)} \text{ (a)} &= \beta_0 + \beta_1 aff_bond_{f,b,q(iss)} + \delta X_{f,b,q(iss)} \\ avg_frac_off_amt_{f,b,t(iss)+12m} \text{ (b)} &+ \alpha_c + \alpha_t + \varepsilon_{f,b,q(iss)} \end{aligned} \quad (4)$$

Further, the number of observations of the dependent variables in each quarter (as is the case for the dependent variable in Equation 3) is derived by multiplying the number of bonds issued in a quarter with the number of funds, for which holding information is available in that quarter.

5.4 Can performance differences within fixed income funds be attributed to the portfolio weight of affiliated bond holdings or bond underwriter-affiliation? (H4, H5)

The final hypotheses, which postulate affiliated funds to outperform stand-alone ones (H4) on the one hand and the opposite on the other (H5), are tested using the following felm regressions:

$$\text{cum_return}_{q+1} = \beta_0 + \beta_1 \text{frac_aff}_{f,t} + \beta_2 \text{aff_top_10}_{f,t} + \delta X_{f,t/q} + \alpha_s + \alpha_t + \varepsilon_{f,t} \quad (5)$$

$$\text{cum_return}_{q+1} = \beta_0 + \beta_1 \text{aff_top_10}_{f,t} + \delta X_{f,t/q} + \alpha_s + \alpha_t + \varepsilon_{f,t} \quad (6)$$

“cum_return_{q+1}” denotes a fund’s cumulative three month return in a specific quarter. While Equation 5 is used for the subsample of affiliated funds; Equation 6 is used for the entire sample of funds. In addition, as could be seen in [Figure 4](#), fixed income funds owned by a top 10 bank exhibit notably higher portfolio weights of affiliated bonds than other affiliated funds, for which this fraction is close to zero percent. On that note, a dummy variable that captures the affiliation to a top 10 bank rather than simply the affiliation to any underwriter is used. Consistent with existing literature (e.g. Ferreira et al., 2018) that uses lagged control variables to describe funds’ returns, the dependent variable “cum_ret” is analysed for the quarter that follows a fund’s reporting date t , whereas the explanatory and control variables relate to point in time t or q .

6 EMPIRICAL RESULTS

6.1 Does fund size influence the fraction of affiliated bond holdings? (H1)

As expected, model (1) in [Table 3](#), which illustrates the main regression results, shows that affiliation to one of the top 10 banks in the world, the first proxy for funds’ size, is positively associated with the fraction of affiliated bond holdings; on average, the latter is anticipated to increase by 7.71 percentage points (p-value < 0.01). At this point, it should be borne in mind that merely the ranking as a top 10 bank may be indicative of a stronger presence in the underwriting business in comparison to other underwriters, which, in turn, would be expected to result in a higher number of bonds underwritten. Indeed, a closer analysis reveals that about 97.8% of the study’s underlying bond issues were underwritten by the top 10 banks, which either assumed the role of the lead manager or a syndicate member. In addition, 65.0% of the

underwriting mandates, whose total number amounts to 95,114, are attributable to the top 10 banks, while the remaining 35.0% are accounted for by 291 underwriters. In view of these figures, the positive influence of the affiliation to a top 10 bank on the portfolio fraction of affiliated bonds could simply be explained by the fact that the majority of the underwriting mandates are assigned to the top 10 banks. In addition, given an increase in the fraction of corporate bonds by one percentage point, the fraction of affiliated bond holdings is expected to grow by approx. 7 basis points (p -value < 0.01). While the impact seems relatively small, the positive sign of the coefficient indicates that the exposure to affiliated bond holdings is higher if funds' investment choices are directed towards corporate bonds. Considering that the majority of the underlying bond issues, specifically about 95%, are attributable to corporate clients, the positive effect can be considered as a reasonable finding. Apart from the rather weak coefficients for the remainder of the variables, their findings are further statistically insignificant and, thus, lack explanatory power. In order to examine whether the regression results differ depending on funds' investment style, models (2) to (5) are used to analyse selected sub-categories of funds. In addition to the significance of the top 10 bank-affiliation dummy, some evidence can be found in model (2), which is based on data on funds that focus on corporate bonds, that the fraction of affiliated bond holdings is positively associated with a fund's TNA (p -value < 0.1). For example, a one percentage increase in TNA is expected to result in a rise in the weight of affiliated bonds of about 78 basis points. However, with regards to the other predictors used to approximate fund size, i.e. the sum of the average TNA of all the funds that belong to the same family as well as the absolute number of family funds in the preceding quarter, the coefficients remain statistically insignificant in each sub-analysis.

6.2 How do fund outflows affect the variation in the fraction of (un)affiliated bonds? (H2)

In order to test H2, three regression equations were estimated, whose results are displayed in [Table 4](#). One can see that the presence of negative net flows is associated with a decline in the

fraction of unaffiliated bond holdings, which, on average, are expected to be reduced by 19 basis points from one reporting date to the next (p-value < 0.05). The coefficient of the outflow dummy in the regression with the variation in affiliated bond holdings as the dependent variable is weaker (-0.011 or 1.1 basis point); the effect is, however, statistically insignificant. The difference between both variations in the presence of negative fund flows is predicted, ceteris paribus, to rise by approx. 18 basis points (p-value < 0.05). With regard to the control variables in model (2), the dummy variable capturing affiliation to one of the top 10 banks exhibits a positive sign and is highly statistically significant at the 1% level. This result reflects the fact that funds, which ultimately belong to one of the top 10 banks in the world, are expected to increase their fractions of affiliated bond holdings from one reporting date to the next, ceteris paribus. In contrast, the influence of affiliation to one of the top 10 banks on the fraction of unaffiliated bonds is negative, confirming the idea that bank-affiliation, more specifically affiliation to a top 10 bank, induces a preference of affiliated bonds over unaffiliated bonds. It, thus, appears that affiliated funds' behavior lends support to bonds underwritten by their parent bank, indirectly through the reduction of unaffiliated bonds at times of fund outflows and – given the affiliation to one of the top 10 banks – directly through the general intension to raise the fraction of affiliated bonds and reduce the fraction of unaffiliated bonds from one reporting date to the next. The results should, nevertheless, be considered cautiously, since for the majority of fund-month observations, the fraction of affiliated bonds amounts to zero, which, thus, leads to a variation of zero as well and may significantly distort the interpretation of the results obtained.

6.3 Does the affiliation to a bond's underwriter impact a fund's participation in the investment in that bond in the period after its issuance? (H3)

In order to verify the assumptions of H3, six regression models are estimated, whose results are reported in [Table 5](#). In model (1), which uses time fixed effects, one can see that the affiliation to a bond's underwriting syndicate increases the log odds of investing in that bond in the quarter

of its issuance by about 0.17 units (p -value < 0.01), which is equivalent to a transformed percentage of about 19.0% ($\exp(0.174)-1$). This result means that a fund that is owned by a bond's underwriter is 19.0% more likely than a fund that is independent from a bond's underwriter to hold a percentage of the offering amount during the quarter of issuance (i.e., the odds of an investment in the offering amount is $\exp(0.174) = 1.19$ times that of an independent fund), everything else kept constant. A further interesting and anticipated result in model (1) is that as a fund's TNA increases, the likelihood of an investment in a recently issued bond increases as well (p -value < 0.01). Next, the aim of models (3) to (6) is to investigate factors that determine a fund's purchased fraction of a bond's offering amount in the period after its issuance. As can be seen in model (3), the affiliation to one of the bond's underwriters is negatively associated with the purchased fraction of the offering amount during the quarter of issuance (p -value < 0.1). However, the size of the impact is too small to constitute any meaningful association, considering that the decrease only amounts to about 2 basis points, everything else being equal. One can further see that in model (5), which uses the average acquired fraction of the offering amount within one year after the bond's issuance as the dependent variable, the coefficient of the dummy that captures the affiliation to one of the bond's underwriters is insignificant. Replacing the dummy variable that represents the affiliation to the underwriting syndicate by a dummy variable that indicates the affiliation to a top 10 bank, which is part of the underwriting syndicate (see models (4) and (6)), yields nearly identical results as already discussed. Concluding, the hypothesis postulating affiliated fixed income funds' investment participation close to the issuance of client bonds cannot clearly be supported. While there is evidence that the probability of an investment within three months after the issuance increases in the presence of the affiliation to a bond's underwriter, no meaningful association could be detected between the affiliation to a bond's underwriter and the fraction held of that bond's offering amount in the period after the issuance. It may be pointed out that in the U.S. the 1940 Investment

Company Act and SEC Rule 10(f)-3 (SEC, 2003) define a percentage limit on how an investment bank is able to allocate securities that it underwrites to its affiliated funds to avoid the “misuse” of affiliated funds as a dumping place for securities that are unmarketable (as cited in Ritter and Zhang, 2007). The negative sign of the coefficient “ $\text{aff_bond}_{f,b,q(tiss)}$ ” may, thus, seem reasonable (as funds independent from a bond’s underwriter are allowed to acquire a larger percentage of the offering amount), however, considering the negligible effect size, it cannot be said that such official regulations actually seem to be reflected in the current analysis.

6.4 Can performance differences within fixed income funds be attributed to the portfolio weight of affiliated bond holdings or bond underwriter-affiliation? (H4, H5)

The regression outputs, which are used to verify the last two hypotheses, are illustrated in [Table 6](#) and [Table 7](#). As can be seen from the results from the main model (1) in [Table 6](#), which only includes the underwriter-affiliated subsample, the estimated coefficients of the variables of interest (“ $\text{frac_aff}_{f,t}$ ”, “ $\text{aff_top_10}_{f,t}$ ”) are insignificant. The proposed hypotheses that assume the portfolio weight of client bond holdings as well as the affiliation to a top 10 bank to have an effect on affiliated fixed income funds’ returns can overall, thus, not be evidenced. However, in the subsample analysis’ model (2), it is noticeable that funds owned by a top 10 bank underwriting institution with a focus on short-term bonds realise a slight underperformance in relation to stand-alone peers (-15 bps per quarter), which can be considered as supportive of the conflict-of-interest hypothesis (H5). On the other hand, top 10 bank-affiliated fixed income funds whose asset focus is on intermediate core bonds, as demonstrated in model (5), are able to earn slightly higher returns (+15 bps per quarter), which could indicate their ability to trade on an informational advantage (H4). Next, if one looks at the control variables, it is noteworthy that in the main model (1) the coefficient of the age variable (p-value < 0.01), i.e. years since the fund’s inception date, is negative. Despite the fairly minimal impact, the negative direction of the age effect could indicate younger fixed income funds’ higher agility and greater determination to

attain a better performance to survive (Ferreira, Keswani, Ramos and Miguel, 2013). Contemporary fund performance (“cum_return_{f,q}”) has a positive and significant impact on future fund performance (p-value < 0.01), implying that success in the past is expected to persist in the future, which is consistent with the results from previous research papers published by Ferreira et al. (2013, 2018). Expressed in figures, an increase in the current cumulative quarterly return of one percentage point, ceteris paribus, translates into an increase in the next cumulative quarterly return of approx. 24 basis points. As can further be seen, the sign of the net flow coefficient is negative, which is inconsistent with the “smart money” effect relating to funds’ investors’ ability to select better-performing funds (Gruber, 1996 as cited in Zheng, 1999). One explanation for this result could be the possible reduction in costs that are associated with trading and information gathering following the reduction in the assets managed by a fund and, thereby, leading to a rise in its performance (Berk and Green, 2004). From the main model (1) in [Table 7](#), based on the entire sample of funds, it can further be observed that the coefficient of the portfolio weight in cash holdings has a negative sign (p-value < 0.05), however, due to the rather weak effect size, which is close to zero, the variable does not seem to constitute a valuable addition to the model. Nevertheless, the negative sign appears reasonable if one considers cash’s lower risk in contrast to bond or equity investments, as a result of which it is associated with a lower return option (“BlackRock”, n.d.). Further, from the sub-analyses in models (2) and (5) that focus on corporate bond funds (2) as well intermediate core bond funds (5) evidence arises that fund size has a positive influence on fund performance (p-value < 0.1), which could be a possible result of bigger funds’ ability to negotiate better spreads and distribute their fixed costs across a larger asset base (Ferreira et al., 2013). Lastly, one can see that the effect of the variable of interest, top 10 bank-affiliation, on future returns is insignificant, due to which both previously formulated hypotheses (H4, H5) cannot be supported. Indeed, one could say that the results are rather consistent with the existence of “Chinese walls” (Kenton, 2020) between

investment banks' debt underwriting and asset management units that aim to block communications and allow them to operate independently from each other. In line with this, re-running model (1) of [Table 7](#) and using underwriter-affiliation in general or affiliation to other underwriting firms instead of top 10 bank-affiliation as the independent variable likewise does not yield any significant association between funds' returns and underwriter-affiliation ([Table 8](#)).

7 CONCLUSION

The Gramm-Leach-Bliley Act, enacted in 1999, has not only advanced the field of universal banking in the U.S., but also intensified the potential for conflicts of interest in a financial institution to arise (JM, 2009). As a result, several studies have been eager to explore how asset management firms' affiliation to a conglomerate that offers diverse financial services under the same roof affects their trading behavior and performance in comparison to independent ones. As prior research has mainly focused on equity mutual funds (e.g., Massa and Rehman, 2008; Ferreira et al., 2018), the aim of this thesis was to investigate the question of how bond underwriter-affiliation affects fixed income funds' investment choice and returns. The **main results** are that (i) affiliated fixed income funds slightly overweight affiliated bond holdings, (ii) which is especially the case for top 10 bank-affiliated funds, however (iii) only in 2.3% of all fund-month pairs, the affiliated portfolio weight matches the portfolio weight that was underwritten by the most frequent underwriter, which clearly indicates that affiliated bond funds do not bias their portfolios towards – and thereby also do not “please” – bonds their parent bank acted as an underwriter for. In addition, as the chances of a fund investing in a bond in the quarter of its issuance increases in the presence of the affiliation to the bond's underwriting syndicate, (iv) it could be inferred that underwriting firms are supported by their asset management units in placing underwritten bonds on the market. While (v) further signs of support are noticeable at the time of negative fund flows, which are associated with a reduction in unaffiliated bond holdings, (vi) performance, probably the most essential statistics included in funds' factsheets, is

neither statistically influenced by the portfolio weight of affiliated bonds nor the affiliation to an underwriter. This suggests that the control of bond funds by investment banks that are engaged in bond underwriting activities results, thus, in no major benefit, but also no disadvantage to funds' shareholders. At this point, one needs to bear in mind that several of the introduced studies that investigate conflicts of interest within investment banks' asset management arms were carried out several years ago, with the underlying datasets being much older (e.g. JM, 2009; Hao and Yan, 2012). In their study from 2012, Hao and Yan mentioned that investment banks would consider their less lucrative asset management business as a possibility to prop up their services in the areas of underwriting and advisory, which have lucrative fees. In previous years, however, the importance of global banks' asset management units has strongly increased due to the stable fee income, regulatory requirements as a response to the financial crisis and demographic changes (e.g. ageing populations in developed countries) that led to a direction of money towards retirement and savings products (Marriage, 2015). A Financial Times article (Flood, 2020) further reports that Wall Street's asset management units rank among lucrative fee earners nowadays that generate high profit margins. In addition, very recently, the most reputable names Goldman Sachs as well as Morgan Stanley have endeavoured to transform their product offerings towards more durable earnings to reduce their exposure to volatile investment banking fees (Financial Times, 2020b). Hence, considering the apparent growing importance of asset management arms to financial groups' total earnings, the lack of influence of affiliated bond holdings and underwriter-affiliation on fixed income funds' returns could possibly in part be explained by the fact that investment banks' incentive to "misuse" affiliated funds in favor of the underwriting business is not as present anymore as in the past. Further, Ferreira et al. (2018) found evidence for a stricter enforcement of "Chinese walls" and a better protection of the rights of funds' investors in common-law countries, such as the U.S., which could be another explanation for the results attained in this study. Lastly, one needs to consider

that the conducted analyses are subject to a few **limitations** and could surely be improved on certain points, which would, however, have gone beyond the scope of this thesis. As the regression analyses were conducted for illustrative purposes only, they are not to be compared with more sophisticated research papers, which take into account a broader set of control variables and implement additional robustness checks to assure the plausibility of the gained estimates. Also, due to the scope of this thesis, it was not verified whether the study's underlying variables fulfil the assumptions that are necessary to justify the use of a linear regression model (e.g. homoscedasticity) (Prabhakaran, n.d.). As a result, one has to be careful with the interpretations of the results and any derived conclusions. In addition, as this thesis' definition of "affiliated bonds" includes bonds underwritten by the umbrella institution as a lead underwriter as well as syndicate member, the analyses of **future research** could concentrate on lead bond underwriters only. As stated by Hao and Yan (2012), lead underwriting firms have the highest amount of reputational capital involved in IPOs and SEOs and, thus, it would be interesting to see if the results turn out differently if one limits the dataset on bond issuances to lead underwriters only. Further, as an investment bank acts as an intermediary in the secondary market as well, the trading behavior of affiliated bond funds could be analysed in situations where their controlling bank is faced with selling or buying pressure. As a final point, forthcoming works may focus on bond funds that are domiciled outside the U.S., where bank-affiliation is a more prevalent phenomenon, or in civil-law countries, where investors' rights were found to be less protected (Ferreira et al., 2018). In view of these considerations, it becomes evident that a number of future studies are required to shed light more thoroughly on the effect of underwriter-affiliation on the investment choices of fixed income funds, which represent a significant economic interest, not only in the sample funds' country of domicile, the United States, but also globally¹⁴.

¹⁴ The share of the worldwide total assets under management (\$47.9tn) attributable to bond funds (\$10.8tn) amounted to about 22.5% at the end of the first quarter 2020 (International Investment Funds Association, 2020).

REFERENCES

- ADV Ratings. 2020. "World's Top Asset Management Firms 2020." Last modified December 1, 2020. <https://www.advratings.com/top-asset-management-firms> (accessed December 27, 2020).
- Bagattini, Giulio, Falko Fecht, and Patrick Weber. 2019. "The Fire-Sale Channels of Universal Banks in the European Sovereign Debt Crisis." Discussion Paper No. 2019-43, Deutsche Bundesbank, Frankfurt am Main.
- Berk, Jonathan B., and Richard C. Green. 2004. "Mutual Fund Flows and Performance in Rational Markets." *Journal of Political Economy* 112, no. 6: 1269-1295.
- Berzins, Janis, Crocker H. Liu, and Charles Trzcinka. 2013. "Asset management and investment banking." *Journal of Financial Economics* 110, no. 1: 215-231.
- BlackRock. n.d. "Asset classes explained." <https://www.blackrock.com/ch/individual/en/education/understanding-investments/asset-classes-explained> (accessed December 26, 2020).
- Cutler, Stephen M. "Remarks Before The National Regulatory Services Investment Adviser and Broker-Dealer Compliance/Risk Management Conference." Speech, Charleston, South Carolina, September 9, 2003. <https://www.sec.gov/news/speech/spch090903smc.htm> (accessed December 22, 2020).
- Ferreira, Miguel A., Aneel Keswani, Sofia B. Ramos, and António F. Miguel. 2013. "The Determinants of Mutual Fund Performance: A Cross-Country Study." *Review of Finance* 17, no. 2: 483-525.
- Ferreira, Miguel A., Pedro Matos, and Pedro Pires. 2018. "Asset Management within Commercial Banking Groups: International Evidence." *The Journal of Finance* 73, no. 5: 2181-2227.
- Financial Times. 2020a. "League Tables." Last modified September 28, 2020. <https://markets.ft.com/data/league-tables/tables-and-trends> (accessed October 22, 2020).

Financial Times. 2020b. “Morgan Stanley: well-balanced.” *Financial Times*. October 15, 2020. <https://app.ft.com/content/a7f8b583-c4ee-431d-ae70-16a3079f4d68> (accessed December 30, 2020).

Flood, Chris. 2020. “Wall St banks escalate asset management battle.” *Financial Times*. January 18, 2020. <https://www.ft.com/content/eb74053e-e65e-456f-a544-1da1d81139b6> (accessed December 30, 2020).

Gil-Bazo, Javier, Peter Hoffmann, and Sergio Mayordomo. 2020. “Mutual Funding.” *The Review of Financial Studies* 33, no. 10: 4883-4915.

Golez, Benjamin, and Jose M. Marin. 2015. “Price support by bank-affiliated mutual funds.” *Journal of Financial Economics* 115, no. 3: 614-638.

Hao, (Grace) Qing, and Xuemin (Sterling) Yan. 2012. “The Performance of Investment Bank-Affiliated Mutual Funds: Conflicts of Interest or Informational Advantage?” *The Journal of Financial and Quantitative Analysis* 47, no. 3: 537-565.

Hwang, Chuan-Yang, Sheridan Titman, and Yuxi Wang. 2018. “Is it who you know or what you know? Evidence from IPO allocations and mutual fund performance.” *Journal of Financial and Quantitative Analysis* 53, no. 6: 2491-2523.

Indexperts. 2019. “Mutual Fund Withdrawal: How Quickly Can I Take My Money Out?” Last modified February 15, 2019. <https://www.indexperts.com/mutual-fund-withdrawal-how-quickly-can-i-take-my-money-out/> (accessed December 27, 2020).

International Investment Funds Association. 2020. “Worldwide regulated open-end fund assets and flows. First Quarter 2020.” June 22, 2020. https://cdn.ymaws.com/iifa.ca/resource/collection/BD2DD483-21F4-4BA5-97D2-FFDD152D23ED/Worldwide_Regulated_Open-End_Fund_Assets_and_Flows_-_First_Quarter_2020.pdf (accessed December 30, 2020).

Investor.gov. n.d. “CUSIP number.” <https://www.investor.gov/introduction-investing/investing-basics/glossary/cusip-number> (accessed January 1, 2021).

- Johnson, William C., and Jennifer Marietta-Westberg. 2009. "Universal Banking, Asset Management, and Stock Underwriting." *European Financial Management* 15, no. 4: 703-732.
- Kenton, Will. 2020. "Chinese Wall." Last modified July 3, 2020, <https://www.investopedia.com/terms/c/chinesewall.asp> (accessed December 22, 2020).
- Lucchetti, Aaron. 2003. "Mutual Funds and IPO Bankers Danced Close." *Wall Street Journal*. March 12, 2003. <https://www.wsj.com/articles/SB117347905115632637> (accessed December 22, 2020).
- Ma, Linlin, Yuehua Tang, and Juan-Pedro Gómez. 2019. "Portfolio Manager Compensation in the U.S. Mutual Fund Industry." *The Journal of Finance* 74, no. 2: 587-638.
- Marques, Felipe Tumenas. 2017. "Three essays on conflicts of interest in financial markets." Doctoral dissertation, Escola de Administração de Empresas de São Paulo. FGV EAESP. https://bibliotecadigital.fgv.br/dspace/bitstream/handle/10438/18110/TESE_Felipe_Tumenas_Marques_final.pdf (accessed December 22, 2020).
- Marriage, Madison. 2015. "Banks embrace 'the age of asset management'." *Financial Times*. November 30, 2015. <https://www.ft.com/content/40c39d3e-9440-11e5-b190-291e94b77c8f> (accessed December 30, 2020).
- Massa, Massimo, and Zahid Rehman. 2008. "Information flows within financial conglomerates: Evidence from the banks– mutual funds relation." *Journal of Financial Economics* 89, no. 2: 288-306.
- Mola, Simona, and Massimo Guidolin. 2009. "Affiliated mutual funds and analyst optimism." *Journal of Financial Economics* 93, no. 1: 108-137.
- Mooney, Tim. 2020. "Pre-announcement merger trading by investment bank-affiliated mutual funds." *Managerial Finance*, Advance online publication. <https://doi.org/10.1108/MF-08-2019-0407> (accessed November 21, 2020).

Prabhakaran, Selva. n.d. “Assumptions of Linear Regression.” <http://r-statistics.co/Assumptions-of-Linear-Regression.html> (accessed December 30, 2020).

Ritter, Jay Ritter, and Donghang Zhang. 2007. “Affiliated Mutual Funds and the Allocation of Initial Public Offerings.” *Journal of Financial Economics* 86, no. 2: 337-368.

Saengchote, Kanis, and Jananya Sthienchoak. 2020. “Mutual Fund Participation in IPOs: Thai Evidence.” Discussion Paper No. 131, Chulalongkorn Business School. https://www.pier.or.th/wp-content/uploads/2020/04/pier_dp_131.pdf (accessed November 11, 2020).

Securities and Exchange Commission (SEC). 2003. “Final Rule: Transactions of Investment Companies With Portfolio and Subadviser Affiliates.” Last modified January 15, 2003. <https://www.sec.gov/rules/final/ic-25888.htm> (accessed December 29, 2020).

SIFMA Research. 2020. “2020 Capital Markets Fact Book.” <https://www.sifma.org/wp-content/uploads/2020/09/US-Fact-Book-2020-SIFMA.pdf> (accessed December 22, 2020).

SIFMA. n.d. “Stephen M. Cutler.” <https://www.sifma.org/people/stephen-m-cutler/> (accessed December 26, 2020).

TheStreet. n.d. “What Are Net Fund Flows? - TheStreet Definition. Dictionary of Financial Terms.” <https://www.thestreet.com/topic/46701/net-fund-flows.html> (accessed December 27, 2020).

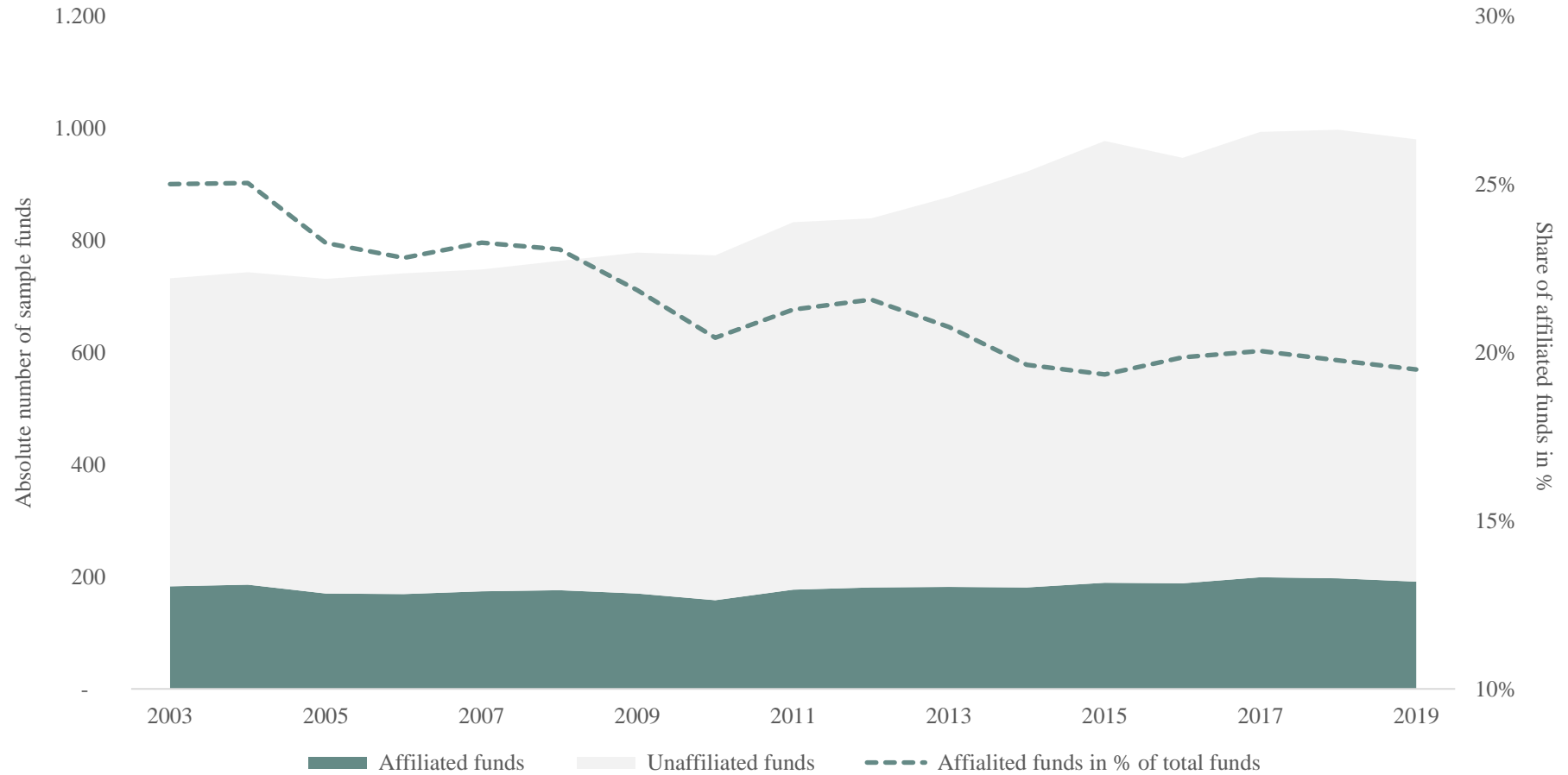
Thomson Reuters. 2009. “Bank of America completes Merrill Lynch purchase.” Last modified January 1, 2009. <https://www.reuters.com/article/businesspro-us-bankofamerica-merrill-idUSTRE5001EA20090101> (accessed December 27, 2020).

Zheng, Lu. 1999. “Is money smart? A study of mutual fund investors’ fund selection ability.” *Journal of Finance* 54, no. 3: 901-933.

APPENDIX

1. FIGURES

Figure 1: Development of sample funds over time



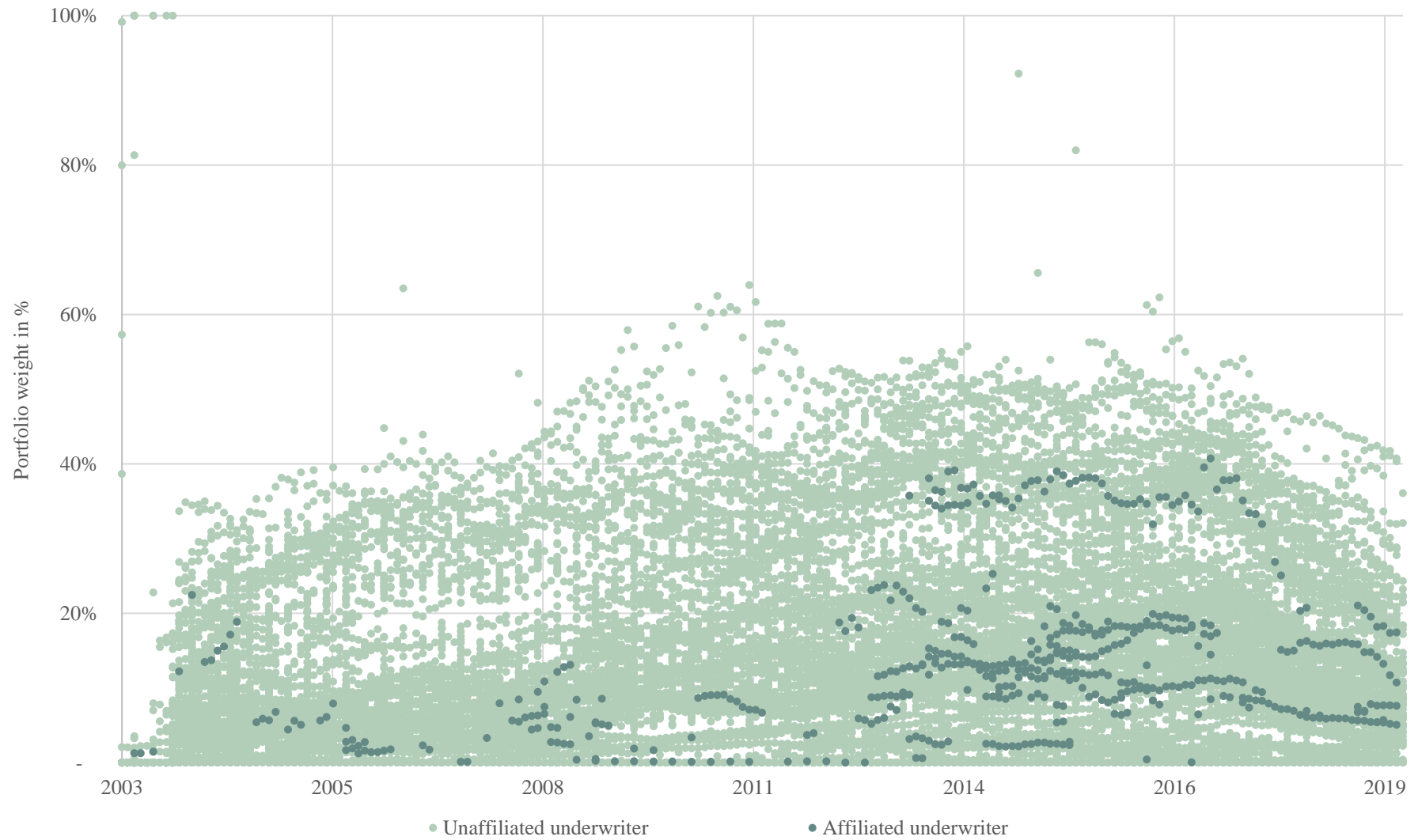
Source: Own analysis based on data retrieved from the Morningstar database as well as Mergent Fixed Income Securities database

Figure 2: Development of bond issuances over time



Source: Own analysis based on data retrieved from the Mergent Fixed Income Securities database

Figure 3: Average values of affiliated funds' portfolio weights of bond holdings underwritten by the most frequent underwriter (per quarter)



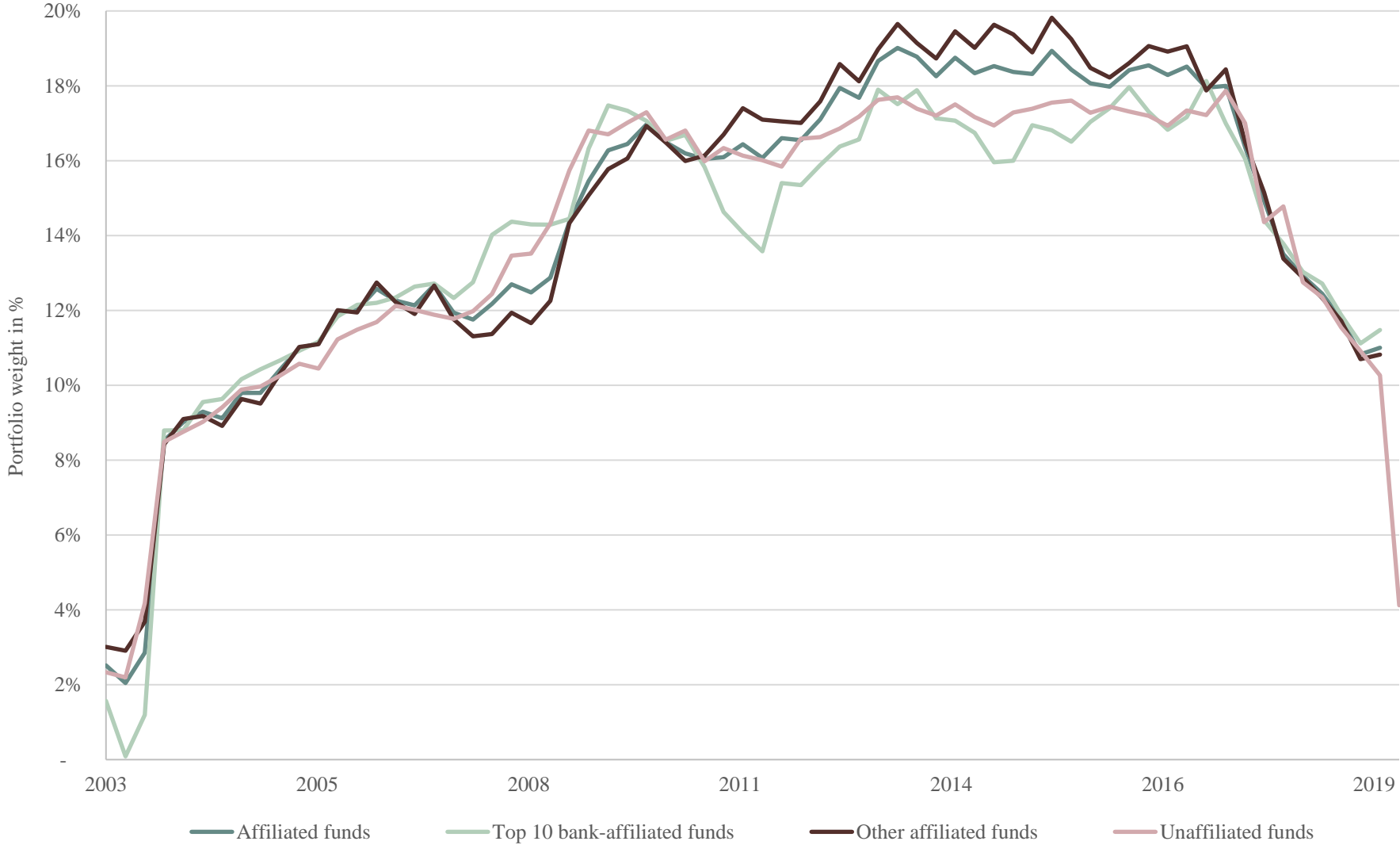
Source: Own analysis based on data retrieved from the Morningstar database as well as Mergent Fixed Income Securities database

Figure 4: Average values of affiliated and unaffiliated funds' portfolio weights of bond holdings underwritten by affiliated underwriters (per quarter)



Source: Own analysis based on data retrieved from the Morningstar database as well as Mergent Fixed Income Securities database

Figure 5: Average values of affiliated and unaffiliated funds' portfolio weights of bond holdings underwritten by the most frequent underwriter (per quarter)



Source: Own analysis based on data retrieved from the Morningstar database as well as Mergent Fixed Income Securities database

Figure 6: Average values of affiliated funds' portfolio weights of bond holdings underwritten by unaffiliated underwriters (per quarter)



Source: Own analysis based on data retrieved from the Morningstar database as well as Mergent Fixed Income Securities database

2. TABLES

Table 1: Summary statistics

This table reports the summary statistics for the dataset, on which the empirical analysis in this thesis is based; the sample period is January 2003 to October 2019. If the variable is used in one of the subsequent regressions, its abbreviation is specified next to the full name. The table consists of five Panels, with Panel A illustrating the average values of the characteristics on the basis of all sample fund-month pairs. Panel B depicts the average values of selected characteristics separately for the underwriter-unaffiliated fund-month pairs (a) and underwriter-affiliated fund-month pairs (b). Panel C displays additional statistics for affiliated fixed income funds, while Panel D further describes the subsample of affiliated fixed income funds by splitting it into top 10 bank-affiliated funds (a) and other underwriter-affiliated funds (b). Lastly, Panel E summarises the mean characteristics of funds that belong to selected investment style categories, as assigned by Morningstar.

Panel A: Fund- and portfolio-specific characteristics of all sample funds

Variable full name	Abbr. (n/a if not used in regressions)	Mean	Median	SD	p01	p99	No. of obs.
Affiliation with a bond underwriting firm (1/0)	n/a	0.22	0.00	0.41	0.00	1.00	101,837
Affiliation with a top 10 bank (1/0)	aff_top_10	0.07	0.00	0.25	0.00	1.00	101,837
Age (years)	age	13.41	11.66	10.34	0.25	42.37	101,711
TNA (\$mn)	TNA	1,889.84	330.50	8,440.57	3.42	26,835.04	99,092
Net flow (\$mn)	net_flow	9.29	0.02	191.34	(238.28)	445.18	98,907
Net flow (\$mn) in % of TNA (\$mn)	relative_net_flow	(10.28)	0.04	2,296.52	(18.78)	28.55	98,892
Negative fund flows (1/0)	neg_net_flow	0.49	0.00	0.50	0.00	1.00	98,907
Expense ratio (%)	expense_ratio	0.47	0.39	1.46	(1.45)	2.71	99,009
Weight of cash (%)	n/a	4.63	2.87	15.75	(33.22)	55.67	101,836
Weight of cash incl. bonds with a maturity of less than 1 year (%)	frac_cash	9.32	6.28	17.74	(27.53)	70.42	101,836
Weight of plain corporate bonds (%)	frac_corp_bonds	42.21	36.19	35.77	0.00	98.27	101,836
Weight attributable to the most frequent underwriting firm (%)	n/a	14.78	11.35	14.98	0.00	49.48	101,837
Cumulative three-month (quarterly) return (%)	cum_return	1.11	1.03	3.00	(7.04)	9.51	51,449
Share held of a bond's offering amount in the quarter of its iss. (%)	frac_off_amt	0.03	0.00	14.99	0.00	0.26	18,980,127

Panel B: Fund- and portfolio-specific characteristics of underwriter-independent funds (a) vs. underwriter-affiliated funds (b)

Variable full name	Abbr. (n/a if not used in regressions)	Mean (a)	No. of obs. (a)	Mean (b)	No. of obs. (b)
Age (years)	age	12.98	79,842	14.98	21,869
TNA (\$mn)	TNA	1,877.92	77,597	1,932.89	21,495

(continued)

Table 1: Summary statistics – continued

Net flow (\$mn)	net_flow	9.23	77,456	9.49	21,451
Net flow (\$mn) in % of TNA (\$mn)	relative_net_flow	(13.17)	77,448	0.13	21,444
Negative fund flows (1/0)	neg_net_flow	0.48	77,456	0.52	21,451
Expense ratio (%)	expense_ratio	0.46	77,487	0.49	21,522
Weight of cash (%)	n/a	4.53	79,904	5.02	21,932
Weight of cash incl. bonds with a maturity of less than 1 year (%)	frac_cash	9.43	79,904	8.92	21,932
Weight of plain corporate bonds (%)	frac_corp_bonds	42.22	79,904	42.19	21,932
Weight of underwriter-affiliated bonds (%)	frac_aff	2.13	79,905	2.61	21,932
Weight attributable to the most frequent underwriting firm (%)	n/a	14.75	79,905	14.92	21,932
Cumulative three-month (quarterly) return (%)	cum_return	1.11	40,448	1.10	11,001

Panel C: Selected underwriter-affiliated fund- and portfolio-specific characteristics

Variable full name	Abbr. (n/a if not used in regressions)	Mean	Median	SD	p01	p99	No. of obs.
No. of family funds	no_family_funds	10.09	8.00	6.95	1.00	30.00	11,336
Average family TNA per quarter (\$mn)	avg_family_TNA	26,862.79	7,097.87	43,875.45	56.71	181,548.95	11,241
Weight of underwriter-affiliated bonds (%)	frac_aff	2.61	0.00	5.78	0.00	28.26	21,932
Weight of lead underwriter-affiliated bonds (%)	n/a	1.90	0.00	4.64	0.00	23.93	21,932
Weight of unaffiliated bonds (%)	frac_unaff	26.65	19.40	24.17	0.00	87.99	21,932
Variation (Δ) in affiliated bond holdings (ppt)	Δ _frac_aff	0.01	0.00	0.82	(1.74)	1.97	21,605
Variation (Δ) in unaffiliated bond holdings (ppt)	Δ _frac_unaff	0.14	0.00	5.71	(10.03)	13.27	21,605
Δ unaffiliated bond holdings less Δ affiliated bond holdings (ppt)	diff_ Δ _frac_(un)aff	0.13	0.00	5.51	(9.66)	12.09	21,605
Cumulative three-month (quarterly) return (%)	cum_return	1.10	1.03	3.05	(7.02)	9.22	11,001

Panel D: Fund- and portfolio-specific characteristics of top 10 bank-affiliated funds (a) vs. other underwriter-affiliated funds (b)

Variable full name	Abbr. (n/a if not used in regressions)	Mean (a)	No. of obs. (a)	Mean (b)	No. of obs. (b)
Age (years)	age	17.44	6,690	13.89	15,179
TNA (\$mn)	TNA	2,108.43	6,532	1,856.25	14,963
Net flow (\$mn)	net_flow	5.71	6,527	11.14	14,924
Net flow (\$mn) in % of TNA (\$mn)	relative_net_flow	(0.41)	6,525	0.37	14,919

(continued)

Table 1: Summary statistics – continued

Negative fund flows (1/0)	neg_net_flow	0.57	6,527	0.50	14,924
Expense ratio (%)	expense_ratio	0.66	6,505	0.42	15,017
Weight of cash (%)	n/a	6.11	6,752	4.53	15,180
Weight of cash incl. bonds with a maturity of less than 1 year (%)	frac_cash	9.64	6,752	8.60	15,180
Weight of plain corporate bonds (%)	frac_corp_bonds	40.89	6,752	42.77	15,180
Weight of underwriter-affiliated bonds (%)	frac_aff	7.80	6,752	0.30	15,180
Weight of lead underwriter-affiliated bonds (%)	n/a	5.91	6,752	0.11	15,180
Weight of unaffiliated bonds (%)	frac_unaff	21.13	6,752	29.10	15,180
Cumulative three-month (quarterly) return (%)	cum_return	1.08	3,233	1.11	7,768

Panel E: Mean values of fund- and portfolio-specific characteristics of selected fund style categories

Variable full name	Abbr. (n/a if not used in regressions)	Corporate Bond	High Yield Bond	Short-Term Bond	Intermediate Core Bond	Nontrad. Bond	Bank Loan
Age (years)	age	15.48	13.04	13.95	14.37	6.45	7.45
No. of obs.		4,452	20,393	17,652	23,493	5,134	4,621
TNA (\$mn)	TNA	1,128.10	1,086.31	1,482.56	2,385.03	1,394.89	1,863.41
No. of obs.		4,421	19,671	16,925	22,727	5,125	4,479
Net flow (\$mn)	net_flow	8.16	(0.21)	8.97	16.18	10.18	8.45
No. of obs.		4,416	19,647	16,887	22,660	5,113	4,472
Net flow (\$mn) in % of TNA (\$mn)	relative_net_flow	(1.00)	(22.65)	0.16	(26.87)	1.49	1.65
No. of obs.		4,416	19,641	16,886	22,653	5,113	4,472
Expense ratio (%)	expense_ratio	0.45	0.67	0.29	0.44	0.38	0.45
No. of obs.		4,362	19,645	16,885	22,654	5,102	4,476
Weight of cash (%)	n/a	1.89	4.85	4.56	3.76	15.26	5.88
No. of obs.		4,452	20,423	17,656	23,540	5,136	4,621
Weight of cash incl. bonds with a maturity of less than 1 year (%)	frac_cash	6.45	6.49	14.12	8.17	23.79	7.18
No. of obs.		4,452	20,423	17,656	23,540	5,136	4,621
Weight of plain corporate bonds (%)	frac_corp_bonds	74.69	78.96	31.50	27.51	28.72	24.10
No. of obs.		4,452	20,423	17,656	23,540	5,136	4,621
Weight of underwriter-affiliated bonds (%)	frac_aff	4.60	5.53	1.35	0.95	4.32	3.26
No. of obs. (affiliated funds only)		983	4,083	4,689	5,881	1,055	952
Cumulative three-month (quarterly) return (%)	cum_return	1.25	1.65	0.62	0.93	0.76	1.06
No. of obs.		2,398	10,462	10,462	11,503	2,835	2,219

Table 2: Description of variables

The following table provides a definition for each variable that is used in the empirical part of this thesis and, where necessary, a short explanation on their computation is provided. The variables are sorted, first, according to their type (dependent variable, independent variable or control variable) and second, in order of appearance in the chapter “[Research questions and hypotheses development](#)”.

Variable type	Variable symbol / abbreviation	Variable description
Dependent variable / control variable	$\text{frac_aff}_{f,t}$ (%)	... indicates the portfolio weight of affiliated bond holdings held by fund f at reporting date t . The term “affiliated bonds” relates to a set of bonds that were underwritten by the affiliated underwriter / parent bank.
Dependent variable	$\Delta_frac_unaff_{f,t}$ (ppt ¹⁵)	... indicates the absolute change (in percentage points) in a fund f 's portfolio weight of unaffiliated bond holdings (i.e. bonds that were not underwritten by the parent bank) between reporting date t and reporting date $t-1$.
Dependent variable	$\Delta_frac_aff_{f,t}$ (ppt ¹⁵)	... indicates the absolute change (in percentage points) in a fund f 's portfolio weight of affiliated bond holdings (i.e. bonds that were underwritten by the affiliated underwriter / parent bank) between reporting date t and reporting date $t-1$.
Dependent variable	$\text{diff_}\Delta_frac_(\text{un})\text{aff}_{f,t}$ (ppt ¹⁵)	... indicates the absolute difference (in percentage points) between a fund f 's variation in the weight of unaffiliated bond holdings “ $\Delta_frac_unaff_{f,t}$ ” and a fund f 's variation in the weight of affiliated bond holdings “ $\Delta_frac_aff_{f,t}$ ”. The formula is computed as follows: $\text{diff_}\Delta_frac_(\text{un})\text{aff}_{f,t} = \Delta_frac_unaff_{f,t} - \Delta_frac_aff_{f,t}$.
Dependent variable	$\text{inv_off_amt}_{f,b,q(\text{iss})}$ (1/0)	... denotes a dummy variable that takes the value 1 if a fund f holds a fraction of a bond b 's offering amount (i.e. if the fund invested in the offering amount) during the bond's quarter of issuance $q(\text{iss})$ (a fund f 's last available reporting information on the number of shares held in bond b in the quarter of issuance $q(\text{iss})$ is considered) and 0 otherwise.

(continued)

¹⁵ ppt = percentage points

Table 2: Description of variables – continued

Variable type	Variable symbol / abbreviation	Variable description
Dependent variable	$\text{frac_off_amt}_{f,b,q(iss)} (\%)$... indicates the fraction of a bond b 's offering amount that is held by fund f during the bond's quarter of issuance $q(iss)$ (a fund f 's last available reporting information on the number of shares held in bond b in the quarter of issuance $q(iss)$ is considered).
Dependent variable	$\text{avg_frac_off_amt}_{f,b,t(iss)+12m} (\%)$... indicates the average fraction of a bond b 's offering amount that is held by fund f within one year after its issuance ($t(iss)+12m$) at point in time t .
Dependent variable / control variable	$\text{cum_return}_{f,q} (\%)$... denotes a fund f 's cumulative three month return in quarter q . The following formula is used: $\text{cum_return}_{f,q} = [(1 + \text{return } 1^{\text{st}} \text{ month}) * (1 + \text{return } 2^{\text{nd}} \text{ month}) * (1 + \text{return } 3^{\text{rd}} \text{ month}) - 1] * 100$. Further, the monthly returns at the fund date level represent weighted averages of returns at the level of a fund's share classes, which were weighted in proportion to their total net assets.
Independent variable / control variable	$\log(\text{TNA}_{f,t})$... equals the logarithmic value of a fund f 's total net assets at point in time t .
Independent variable / control variable	$\log(\text{avg_family_TNA}_{f,q})$... equals the logarithmic value of the sum of the average total net assets per quarter q of the individual funds that are affiliated to the same underwriter as fund f in quarter q , including the average total net assets of fund f in quarter q .
Independent variable / control variable	$\text{no_family_funds}_{f,q}$... equals the absolute number of funds that are affiliated to the same underwriter as fund f in quarter q , including fund f itself.

(continued)

Table 2: Description of variables – continued

Variable type	Variable symbol / abbreviation	Variable description
Independent variable / control variable	$\text{aff_top_10}_{f,t}$ (1/0)	... represents a dummy variable that takes the value 1 if a fund f is affiliated to an underwriter at point in time t , which belongs to one of the top 10 banks and 0 otherwise. Underwriting firms are considered as a “top 10 bank” if their name is included in the Financial Times League Tables ranking on the basis of fees earned as of 28-Sep-20 (Financial Times, 2020a).
Independent variable	$\text{neg_net_flow}_{f,t}$ (1/0)	... represents a dummy variable that takes the value 1 if a fund f experiences negative net flows at point in time t and 0 otherwise.
Independent variable	$\text{aff_bond}_{f,b,q(\text{iss})}$ (1/0)	... represents a dummy variable that takes the value 1 if a fund f is affiliated to a bond b 's underwriter during the quarter of its issuance $q(\text{iss})$ and 0 otherwise.
Independent variable	$\text{aff_top_10_bond}_{f,b,q(\text{iss})}$ (1/0)	... represents a dummy variable that takes the value 1 if a fund f is affiliated to a top 10 bank, which is included in bond b 's underwriting syndicate during the quarter of its issuance $q(\text{iss})$ and 0 otherwise.
Control variable	$\text{relative_net_flow}_{f,t}$ (%)	... denotes a fund f 's net flows at point in time t as a percentage of its total net assets at reporting date t .
Control variable	$\text{expense_ratio}_{f,t}$ (%)	... denotes the gross expense ratio of a fund f at point in time t . As the data on expense ratios are only available at the share class level, the implied expense ratio at the fund level at point in time t is derived by weighting the individual expense ratios of share classes (as of point in time t) that are part of fund f proportionally to their total net assets at point in time t . In order to illustrate one example, the weighted average expense ratio for a fund that consists of two share classes, A and B, is computed as follows:

(continued)

Table 2: Description of variables – continued

Variable type	Variable symbol / abbreviation	Variable description
Control variable	$\text{expense_ratio}_{f,t}$ (%)	$\text{expense_ratio}_t = [(\text{expense_ratio_A}_t * \text{size_A}_t) + \text{expense_ratio_B}_t * \text{size_B}_t] / (\text{size_A}_t + \text{size_B}_t)$. In addition, it must be remarked that the share classes' expense ratios are not always reported each month. On that note, an average expense ratio per share class and year is computed and used for each “share class - reporting date” observation during a respective year.
Control variable	$\text{age}_{f,t}$ (years)	... equals the age of fund f at point in time t . In particular, as the share classes within a fund have different inception dates, the age is computed by deducting the oldest inception date for a fund f (thus the oldest inception date of a specific share class within fund f) from the current reporting date t .
Control variable	$\text{frac_cash}_{f,t}$ (%)	... indicates the portfolio weight of cash and cash equivalents (including bonds with a maturity of less than one year) held by fund f at reporting date t .
Control variable	$\text{frac_corp_bonds}_{f,t}$ (%)	... indicates the portfolio weight of plain corporate bonds held by fund f at reporting date t .
Control variable	$\text{frac_unaff}_{f,t}$ (%)	... indicates the portfolio weight of unaffiliated bonds (i.e. bonds that were not underwritten by a fund's affiliated underwriter / parent bank) held by fund f at reporting date t .
Control variable	$\log(\text{avg_TNA}_{f,b,q(\text{iss})})$... indicates the logarithmic value of a fund f 's average total net assets during a certain bond b 's quarter of issuance $q(\text{iss})$. The value of a fund's quarterly average total net assets is computed by dividing the sum of the net assets at each reporting date during a respective quarter by the number of reporting dates in that quarter.

(continued)

Table 2: Description of variables – continued

Variable type	Variable symbol / abbreviation	Variable description
Control variable	sum_net_flow _{<i>f,b,q(iss)</i>} (\$)	... indicates the sum of net flows witnessed by a fund <i>f</i> during a certain bond <i>b</i> 's quarter of issuance <i>q(iss)</i> . The value of a fund's quarterly sum of net flow is computed by summing up the net flows experienced at each reporting date during a respective quarter.
Control variable	avg_expense_ratio _{<i>f,b,q(iss)</i>} (%)	... indicates the average expense ratio of a fund <i>f</i> during a certain bond <i>b</i> 's quarter of issuance <i>q(iss)</i> . A fund's average expense ratio in a respective quarter is computed by dividing the sum of the expense ratios reported during that quarter (calculated as weighted averages of a fund's share classes' expense ratios, see variable "expense_ratio _{<i>f,t</i>} ") by the number of expense ratios available during that quarter.

Table 3: Portfolio weight of affiliated bond holdings

Does fund size influence the fraction of affiliated bond holdings?					
<i>Dependent variable:</i>					
	frac_aff _{f,t} (%)				
	(1)	(2)	(3)	(4)	(5)
log(TNA _{f,t})	0.038 (0.183)	0.777* (0.380)	0.739 (0.591)	-0.332 (0.235)	-0.124 (0.095)
log(avg_family_TNA _{f,q-1})	0.107 (0.202)	0.506 (0.616)	-0.332 (0.353)	0.717 (0.484)	0.098 (0.109)
no_family_funds _{f,q-1}	-0.026 (0.045)	-0.101 (0.198)	0.030 (0.092)	-0.122 (0.088)	-0.025 (0.022)
aff_top_10 _{f,t} (=1)	7.709*** (0.823)	18.436*** (4.212)	14.929*** (2.203)	4.888*** (1.258)	3.076*** (0.508)
relative_net_flow _{f,t} (%)	-0.002 (0.002)	0.001 (0.004)	0.013 (0.013)	-0.001 (0.001)	-0.010* (0.006)
expense_ratio _{f,t} (%)	0.001 (0.032)	0.204 (0.839)	0.036 (0.053)	0.794 (0.599)	-0.004 (0.014)
age _{f,t} (years)	-0.008 (0.027)	-0.084 (0.073)	-0.017 (0.052)	-0.078 (0.056)	0.003 (0.011)
frac_cash _{f,t} (%)	0.010 (0.007)	-0.038 (0.048)	-0.034 (0.057)	-0.017 (0.015)	0.001 (0.005)
frac_corp_bonds _{f,t} (%)	0.071*** (0.018)	0.040 (0.053)	0.123*** (0.041)	0.065* (0.033)	0.024* (0.014)
Style fixed effects	yes	no	no	no	no
Time fixed effects	yes	yes	yes	yes	yes
Observations	21,007	946	3,908	4,577	5,484
Adjusted R ²	0.499	0.715	0.654	0.429	0.483

Table 4: Change in the portfolio weight of affiliated / unaffiliated bond holdings at the time of fund outflows

How do fund outflows affect the variation in the fraction of (un)affiliated bonds?			
This table depicts the results from the fixed effects linear regressions using the change in a fund's portfolio fraction of unaffiliated bond holdings between t and $t-1$ ($\Delta_frac_unaff_{f,t}$), the change in a fund's portfolio fraction of affiliated bond holdings between t and $t-1$ ($\Delta_frac_aff_{f,t}$) and the difference in both variations at point in time t ($diff_Delta_frac_unaff_{f,t}$) as the dependent variables, a dummy variable that captures the presence of negative fund flows as the independent variable ($neg_net_flow_{f,t}$) and a set of fund- and portfolio-specific control variables (i.e., $\log(TNA_{f,t})$, $\log(avg_family_TNA_{f,q-1})$, $no_family_funds_{f,q-1}$, $aff_top_10_{f,t}$, $expense_ratio_{f,t}$, $age_{f,t}$, $frac_cash_{f,t}$, $frac_corp_bonds_{f,t}$, $frac_aff_{f,t}$ and $frac_unaff_{f,t}$). A precise definition of each variable used can be found in Table 2 . All models include style (Morningstar category) as well as time (reporting date) fixed effects and standard errors (stated in the parentheses) clustered at the fund as well as time (reporting date) level. A 10%, 5%, and 1% level of significance is indicated by *, **, and ***, respectively.			
	<i>Dependent variable:</i>		
	$\Delta_frac_unaff_{f,t}$ (ppt) (1)	$\Delta_frac_aff_{f,t}$ (ppt) (2)	$diff_Delta_frac_unaff_{f,t}$ (ppt) (3)
$neg_net_flow_{f,t}$ (=1)	-0.187** (0.072)	-0.011 (0.010)	-0.176** (0.070)
$\log(TNA_{f,t})$	0.032 (0.048)	0.003 (0.004)	0.030 (0.047)
$\log(avg_family_TNA_{f,q-1})$	-0.123 (0.093)	0.001 (0.007)	-0.124 (0.091)
$no_family_funds_{f,q-1}$	-0.012 (0.023)	-0.002 (0.002)	-0.010 (0.023)
$aff_top_10_{f,t}$ (=1)	-0.428* (0.242)	0.159*** (0.046)	-0.588** (0.227)
$expense_ratio_{f,t}$ (%)	0.034* (0.020)	0.002 (0.003)	0.032* (0.017)
$age_{f,t}$ (years)	0.007* (0.004)	0.00003 (0.001)	0.007* (0.004)
$frac_cash_{f,t}$ (%)	0.027** (0.013)	0.002*** (0.001)	0.025* (0.013)
$frac_corp_bonds_{f,t}$ (%)	0.026 (0.041)	0.002 (0.002)	0.025 (0.039)
$frac_aff_{f,t}$ (%)	-0.040 (0.050)	-0.020*** (0.006)	-0.020 (0.047)
$frac_unaff_{f,t}$ (%)	-0.095** (0.041)	-0.004 (0.003)	-0.092** (0.040)
Style fixed effects	yes	yes	yes
Time fixed effects	yes	yes	yes
Observations	20,753	20,753	20,753
Adjusted R ²	0.079	0.027	0.075

Table 5: Fixed income funds' investment participation in bonds' quarter of issuance and within one year after their issuance

Does the affiliation to a bond's underwriter impact a fund's participation in the investment in that bond in the period after its issuance?

This table depicts the results from a set of regressions that aim to analyse the factors influencing a fund's investment (abbr. "inv") participation in a bond in the period after its issuance (abbr. "iss"). The participation of a fund is proxied by two variables: a dummy variable assuming the value 1 if a fund holds a fraction of a bond's offering amount in the quarter of its issuance and 0 otherwise, see models (1) and (2), and the percentage of a bond's offering amount held by a fund in the quarter of the bond's issuance, see models (3) and (4). As an alternative to models (3) and (4), models (5) and (6) use the percentage of a bond's offering amount held, on average, within one year after its issuance. Models (1) and (2) are both logistic regressions models that were computed using the R package bife, which allows for the inclusion of one fixed effect in a logistic model. Models (3) to (6) are based on *fel*m regressions, including CUSIP as well as time (year-quarter) fixed effects and standard errors (stated in the parentheses) clustered at the CUSIP as well as time (year-quarter) level. The independent variables (i.e., affiliation to a bond's underwriter and affiliation to a top 10 bank, which is part of a bond's underwriting syndicate) as well as the control variables are elaborated in more detail in [Table 2](#). A 10%, 5%, and 1% level of significance is indicated by *, **, and ***, respectively.

	<i>Dependent variable:</i>					
	inv_off_amt _{f,b,q(iss)} (=1)		frac_off_amt _{f,b,q(iss)} (%)		avg_frac_off_amt _{f,b,t(iss)+12m} (%)	
	<i>logistic</i>		<i>fel</i> m		<i>fel</i> m	
	(1)	(2)	(3)	(4)	(5)	(6)
aff_bond _{f,b,q(iss)} (=1)	0.174*** (0.009)	0.070*** (0.010)	-0.019* (0.011)		-0.081 (0.064)	
aff_top_10_bond _{f,b,q(iss)} (=1)				-0.022* (0.012)		-0.091 (0.074)
log(avg_TNA _{f,b,q(iss)})	0.266*** (0.001)	0.275*** (0.001)	0.018** (0.007)	0.018** (0.007)	0.119*** (0.043)	0.119*** (0.043)
sum_net_flow _{f,b,q(iss)} (\$)	0.000*** (0.000)	0.000*** (0.000)	0.000** (0.000)	0.000** (0.000)	0.000* (0.000)	0.000* (0.000)
avg_expense_ratio _{f,b,q(iss)} (%)	0.036*** (0.001)	0.041*** (0.001)	0.006 (0.005)	0.006 (0.005)	0.041 (0.030)	0.041 (0.030)
CUSIP fixed effects	no	yes	yes	yes	yes	yes
Time fixed effects	yes	no	yes	yes	yes	yes
Observations	18,550,354	15,544,532	18,550,354	18,550,354	18,550,354	18,550,354
Adjusted R ²			0.017	0.017	0.010	0.010

Table 6: Analysis of differences in performance within the subsample of affiliated fixed income funds

Can performance differences within fixed income funds be attributed to the portfolio weight of affiliated bond holdings or bond underwriter-affiliation? – Part 1

This table depicts the results from the fixed effects linear regressions using affiliated funds' three-month cumulative return in the next quarter as the dependent variable. The portfolio weight of affiliated bonds (%) as well as a dummy variable that captures the affiliation to a top 10 bank (=1) constitute the independent variables. A set of fund- and portfolio-specific variables is controlled for (i.e., TNA, net flow, expense ratio, age, portfolio fraction of cash holdings and cumulative return of the current quarter), all of which are elaborated in more detail in [Table 2](#). While the dependent variable (“cum_return_{f,q+1}”) represents a cumulative value for the next quarter, the independent and control variables relate to specific reporting dates at point in time t (with the exception of the cumulative return of the current quarter q). A fund's cumulative return in a respective quarter is, thus, used as the dependent variable for each fund-month observation of a fund during that quarter. Model (1), which is the main analysis, is based on style (Morningstar category) and time (reporting date) fixed effects. Models (2) to (5) constitute sub-analyses of funds that focus on corporate bonds (2), high yield bonds (3), short-term bonds (4) and intermediate core bonds (5); time fixed effects (reporting date) are included. In each regression model, standard errors (stated in the parentheses) are clustered at the fund as well as time (reporting date) level. A 10%, 5%, and 1% level of significance is indicated by *, **, and ***, respectively.

	<i>Dependent variable:</i>				
	cum_return _{f,q+1} (%)				
	(1)	(2)	(3)	(4)	(5)
frac_aff _{f,t} (%)	0.0004 (0.003)	-0.0001 (0.007)	0.005 (0.006)	0.012** (0.005)	-0.050 (0.033)
aff_top_10 _{f,t} (=1)	-0.025 (0.052)	0.054 (0.204)	-0.070 (0.141)	-0.152* (0.085)	0.151** (0.069)
log(TNA _{f,t})	0.0005 (0.007)	0.031 (0.025)	-0.018 (0.018)	-0.020 (0.015)	0.014 (0.014)
net_flow _{f,t} (\$)	-0.000** (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
expense_ratio _{f,t} (%)	0.002 (0.002)	0.142 (0.081)	-0.001 (0.002)	-0.070 (0.144)	0.0004 (0.0004)
age _{f,t} (years)	-0.002*** (0.001)	0.002 (0.004)	0.0004 (0.001)	0.001 (0.002)	-0.002 (0.002)
frac_cash _{f,t} (%)	-0.001 (0.002)	-0.007 (0.008)	-0.010 (0.006)	-0.002 (0.002)	-0.002 (0.002)
cum_return _{f,q} (%)	0.238*** (0.076)	0.090 (0.113)	0.271*** (0.084)	0.350*** (0.081)	0.338*** (0.095)
Style fixed effects	yes	no	no	no	no
Time fixed effects	yes	yes	yes	yes	yes
Observations	20,530	936	3,812	4,481	5,296
Adjusted R ²	0.500	0.839	0.890	0.528	0.698

Table 7: Analysis of differences in performance between affiliated and unaffiliated fixed income funds

Can performance differences within fixed income funds be attributed to the portfolio weight of affiliated bond holdings or bond underwriter-affiliation? – Part 2

This table depicts the results from the fixed effects linear regressions using funds' three-month cumulative return in the next quarter as the dependent variable. A dummy variable that captures the affiliation to a top 10 bank (=1) constitutes the independent variable. A set of fund- and portfolio-specific variables is controlled for (i.e., TNA, net flow, expense ratio, age, portfolio fraction of cash holdings and cumulative return of the current quarter), all of which are elaborated in more detail in [Table 2](#). While the dependent variable (“cum_return_{f,q+1}”) represents a cumulative value for the next quarter, the independent and control variables relate to specific reporting dates at point in time t (with the exception of the cumulative return of the current quarter q). A fund's cumulative return in a respective quarter is, thus, used as the dependent variable for each fund-month observation of a fund during that quarter. Model (1), which is the main analysis, is based on style (Morningstar category) and time (reporting date) fixed effects. Models (2) to (5) constitute sub-analyses of funds that focus on corporate bonds (2), high yield bonds (3), short-term bonds (4) and intermediate core bonds (5); time fixed effects (reporting date) are included. In each regression model, standard errors (stated in the parentheses) are clustered at the fund as well as time (reporting date) level. A 10%, 5%, and 1% level of significance is indicated by *, **, and ***, respectively.

	<i>Dependent variable:</i>				
	cum_return _{f,q+1} (%)				
	(1)	(2)	(3)	(4)	(5)
aff_top_10 _{f,t} (=1)	-0.008 (0.028)	0.030 (0.046)	0.002 (0.068)	-0.098 (0.077)	-0.016 (0.055)
log(TNA _{f,t})	0.010 (0.006)	0.023* (0.012)	-0.006 (0.010)	-0.004 (0.009)	0.018*** (0.006)
net_flow _{f,t} (\$)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
expense_ratio _{f,t} (%)	0.004 (0.005)	0.018 (0.038)	-0.001 (0.002)	-0.010 (0.032)	0.001* (0.0005)
age _{f,t} (years)	-0.001 (0.001)	-0.002 (0.001)	0.0004 (0.001)	-0.002 (0.002)	-0.002 (0.001)
frac_cash _{f,t} (%)	-0.004** (0.002)	-0.005* (0.002)	-0.009** (0.004)	-0.001 (0.001)	-0.008** (0.004)
cum_return _{f,q} (%)	0.203*** (0.072)	0.244*** (0.070)	0.221*** (0.054)	0.291*** (0.072)	0.352*** (0.092)
Style fixed effects	yes	no	no	no	no
Time fixed effects	yes	yes	yes	yes	yes
Observations	94,501	4,219	18,835	16,159	21,154
Adjusted R ²	0.492	0.800	0.877	0.483	0.718

Table 8: Analysis of differences in performance between aff. and unaff. fixed income funds (alternative)

Can performance differences within fixed income funds be attributed to the portfolio weight of affiliated bond holdings or bond underwriter-affiliation? – Part 2 (alternative)

This table depicts the results from the fixed effects linear regressions using funds' three-month cumulative return in the next quarter as the dependent variable. A dummy variable that captures the affiliation to a bond underwriter / "aff_{f,t}" (model(1)) and the affiliation to any bond underwriter that does not rank among the top 10 banks / "aff_not_top_10_{f,t}" (model(2)) constitute the independent variables. A set of fund- and portfolio-specific variables is controlled for (TNA, net flow, expense ratio, age, portfolio fraction of cash holdings and cumulative return of the current quarter). While the dependent variable ("cum_return_{f,q+1}") represents a cumulative value for the next quarter, the independent and control variables relate to specific reporting dates at point in time *t* (with the exception of the cumulative return of the current quarter *q*). A fund's cumulative return in a respective quarter is, thus, used as the dependent variable for each fund-month observation of a fund during that quarter. Both models are based on style (Morningstar category) and time (reporting date) fixed effects. In each regression model, standard errors (stated in the parentheses) are clustered at the fund as well as time (reporting date) level. A 10%, 5%, and 1% level of significance is indicated by *, **, and ***, respectively.

	<i>Dependent variable:</i>	
	cum_return _{f,q+1} (%)	
	(1)	(2)
aff _{f,t} (=1)	0.013 (0.017)	
aff_not_top_10 _{f,t} (=1)		0.022 (0.021)
log(TNA _{f,t})	0.010 (0.006)	0.010 (0.006)
net_flow _{f,t} (\$)	0.000 (0.000)	0.000 (0.000)
expense_ratio _{f,t} (%)	0.004 (0.005)	0.004 (0.005)
age _{f,t} (years)	-0.001 (0.001)	-0.001 (0.001)
frac_cash _{f,t} (%)	-0.004** (0.002)	-0.004** (0.002)
cum_return _{f,q} (%)	0.203*** (0.072)	0.203*** (0.072)
Style fixed effects	yes	yes
Time fixed effects	yes	yes
Observations	94,501	94,501
Adjusted R ²	0.492	0.492