Liquidity Support in Financial Institutions

This version: November 2, 2018

Abstract

Using a unique administrative dataset of portfolio holdings of all financial institutions in Germany, we analyze the fund flows from banks to their affiliated mutual funds. We document that parent banks provide support to their affiliated mutual funds against temporary liquidity shortfalls that is beneficial both for the funds and existing fund investors. We further demonstrate that banks provide this liquidity support by directing their retail and institutional customers to their distressed funds, who, in exchange, enjoy a liquidity premium over the subsequent period. Thus, our results indicate that banks can internalize the externalities arising from temporary liquidity shocks both for their affiliated-funds and their customers.

Keywords: Bank-affiliated mutual funds, internal capital markets, liquidity provision, fund flows.

JEL Codes: G23

I Introduction

Many mutual funds belong to advisory firms that operate as the investment divisions of commercial banks.[1] The prior literature highlights the costs of bank-affiliation for fund investors as fund managers benefit to parent banks' interests at the expense of their own investors.[2] Yet, little is known about the benefits of such a relationship for bank-affiliated funds and their investors.

Members of large financial institutions can benefit from internal capital markets that enhance the efficiency of the group (Cremers et al. (2010)). One particular function of internal capital markets can be the liquidity support, that is, to provide liquidity to a member that faces transitory liquidity shortfalls. This is particularly relevant and important for mutual funds because a typical mutual fund grants daily redemptions of fund shares at the end-of-day share net asset value (NAV), but the underlying assets may not be easy to liquidate on short notice. To meet redemptions, fund managers can be forced to engage in costly liquidity-motivated trades (Edelen (1999), Christoffersen et al. (2006))[3] and even face fire-sale losses in the case of excessive redemptions (Coval and Stafford (2007)). Arguably, controlling banks aim to avoid fund failures to protect their reputation (Aoki (2013)) and to mitigate potential spillover effects (Sialm and Tham, 2015). This suggests that bank-affiliation can have as yet unexplored advantage for funds' access to capital when needed, and potentially uncovered benefits for fund investors.

In this paper, we ask whether liquidity support exists in financial institutions by analyzing the investments of parent banks to their affiliated funds. For this analysis,

[1]Bank-affiliated mutual funds account for more than 70% of mutual funds TNA in major European markets (Ferreira et al. (2015)). They are less prevalent in the United States (around 11% of fund total net assets (TNA)), but many U.S. banks form asset management divisions since the pass of Gramm-Leach-Bliley Act in 1999, which removes the barriers of combining banking and investment services under one roof.

[2]Among others, Yan et al. (2012), Golez and Marin (2015), Ferreira et al. (2015), Bagattini et al. (2018) provide evidence of the conflicts of interests in the asset management industry due to affiliation with a financial institution. See also Mehran and Stulz (2007) for a literature review on the conflicts of interests in financial institutions.

[3]Note that because fund managers conduct most of the flow-induced trades after the day of redemptions, the costs of redemptions are borne by the remaining investors, not reflected in the redeemed shares. Chen et al. (2010) find that this leads to strategic complementarities (i.e. expected redemptions incentivize remaining investors to sell the fund share) that exacerbate the damage to the fund.

we assemble a unique dataset of quarterly mutual fund holdings of the banks registered in Germany at the security level. The data allow us further to observe the total fund holdings separately in three different accounts of the bank holdings: propriety accounts, institutional clients accounts, and retail clients accounts. Using this dataset, we divide the total net flows to bank-affiliated funds, domiciled in Germany, into the parent bank flows (aggregated across three types of accounts) and the flows from outside investors. The parent bank flows represent the *direct* net new investment of the controlling bank (i.e. through buying/selling fund shares) into their affiliated funds. The outsider flows represent the amounts of new investments that do not come from the parent bank. We then analyze how parent bank flows relate to outsider flows to determine whether parent banks provide liquidity to their member funds in need, and explore the capital sources as well as the costs and benefits of such provision. To the best of our knowledge, this is the first paper that documents the interactions between banks and outside investors related to fund investments and their potential ramifications for affiliated funds and the parent banks.

We start our analysis by sorting the outsider flows to bank-affiliated funds into deciles. The lowest decile includes the group of affiliated distressed funds that experience the largest withdrawals from outside investors, whereas the funds in the highest decile experience the largest inflows from outside investors. Both univariate and multivariate tests reveal an interesting pattern. In our univariate setting, we find a positive average inflow from the parent bank into its distressed members (i.e., funds in the lowest decile) that is significantly higher than other deciles. Moreover, this apparent parent bank contrarian trading is only confined to the group of distressed affiliated funds, and the relationship between parent bank flows and those of outsiders in other deciles is neither monotonic nor significant. Multivariate regressions confirm these findings. We find again no significant correlation between the parent and outsider flows to affiliated non-distressed funds, but the association turns to be significantly negative only when the affiliated funds experience significant outflows from outside investors. Overall, the disproportionate amount of direct investments from the controlling bank establish our primary evidence of liquidity provision.

To provide corroborating evidence that is consistent with our interpretation, we conduct subsample analyses that differentiate funds based on the level of liquidity they need. We argue that if the parent bank flows indeed reflect liquidity provision, the effect should be more pronounced for affilaited funds that are more in need of liquidity. First, a sufficient hoard of cash enables the distressed fund to avoid costly flow-induced trades (Chen et al. (2010)). As a result, funds with sufficient cash reserves likely need a lower level of liquidity provision from its parent bank. Consistent with this conjecture, we observe a much stronger liquidity provision when an affiliated distressed fund is cash poor. Second, funds can raise capital through borrowings and securities lending to meet the redemptions instead of engaging costly trades. We use the change in a fund's leverage ratio to proxy for the extent of external capital raising and find that the liquidity support does not exist for funds that can sufficiently increase their leverage. It is important to note that a parent bank can also provide liquidity to its distressed funds through lending (i.e., lines of credits) along with directly purchasing the distressed fund shares. Hence, a slightly different interpretation of this result can be that the lending channel is a substitute for the liquidity provision through directly buying fund shares. Because we are unable to observe and identity of the exact source of external capital raised by the distressed funds, this result should be interpreted with caution even though it is certainly a possibility. Finally, the prior literature shows funds that belong to the same advisory firms can provide co-insurance to their distressed members through cross-subsidization or inter-fund lending (Goncalves-Pinto and Schmidt (2013), Agarwal and Zhao (2018), Bhattacharya et al. (2013)). Motivated by these findings, we conjecture that liquidity support from the parent bank should be more prevalent if the redemptions from outside investors are family-wide, leading to difficulty in obtaining within-family-coinsurance. Indeed, we find statistically higher parent bank inflows when the family flows are low or when the number of distressed funds within the family is high.

Next, we consider and discuss possible other explanations and sources of our findings alternative to liquidity provision and how we tackle them. First, banks may engage in a systematic counter-tilting strategy against severe redemptions regardless of the funds' affiliation if they believe that retail investors often make mistakes in their fund selections (Frazzini and Lamont (2008)). This explanation is not supported by the data, as we find that banks do not invest into *unaffilaited* distressed funds, suggesting that affiliation is a factor for a distressed fund to enjoy additional flows from a bank. Second, parent banks may know more about the managerial skill of their affiliated funds and only favor affiliated funds with higher managerial skill. Using gross (before fees and expenses) abnormal returns and the value-added measure of Berk and Van Binsbergen (2015) as proxies for the managerial skill, we find no heterogeneity in the level of parent flows that flock to affiliated funds that show different levels of managerial in the past nor the distressed fund managers that get the support exhibit better skill in the future. Third, we test if the liquidity provision is only provided to high-value funds, that is, the funds that generate most fee income for the fund family and potentially for the bank thorough kickbacks. We again find no support for this explanation. All in all, our results indicate that banks tend to provide liquidity support to their affiliated funds that fall into distress.

As we can observe the bank's fund holdings separately for three types of accounts (proprietary accounts, institutional, and retail clients accounts), we next turn our attention to understand the source of new investments from parent banks. Our results suggest that the new investments to affiliated distressed funds come from institutional client accounts, and to a lesser degree, from retail clients accounts. There are no positive inflows into distressed funds from proprietary accounts, suggesting that banks funnel clients' assets to provide liquidity support. Even though clients' inflows reflect, to a certain degree, banks' incentives, [4]these results raise an interesting and additional question of what incentives bank clients can face to provide liquidity support.

To answer this question, we examine the abnormal net-of-fees returns of affiliated distressed funds. We find that severe redemptions hurt the fund performance, but ad-

[4]Bank account managers often have discretionary power in making day-to-day decisions on behalf of the clients, which is particularly prominent in banks' institutional client and private wealth management units. The fact that our results are stronger in institutional clients arguably speak to the existence of this stronger discretionary power and of smaller coordination costs incurred in mobilizing fewer big institutional clients rather than small retail investors.

ditional parent bank (clients) flows mitigate the damage to the fund during extreme outflows periods. Benefits to the funds accrue to the incumbent investors, and thus, to bank clients that have already investments in the fund. Next, we find that inflows from the parent bank clients predict positive and significant future performance over the subsequent 6-months. This positive effect disappears after 6-months nor does it exist in the first 3-months, suggesting a return reversal in the prices of the distressed funds that get the support as NAV(s) bounce back. Also, our portfolio tests show that unaffiliated distressed funds significantly underperform over the same 6-month period relative to the affiliated funds with support. Overall, our results suggest that liquidity support can be indeed a rational strategy for bank clients.

Our paper belongs to the growing literature that explores the ramifications of bank-affiliation on fund complexes. The prior studies show that banks can use their affiliated fund to unwind their risky bonds (Bagattini et al. (2018), Gil-Bazo et al. (2017)) and to obtain support for their decreasing share prices (Golez and Marin (2015)), underwriting business (Johnson and Marietta-Westberg (2009), Yan et al. (2012)), and lending divisions' operations (Ferreira et al. (2015)). Also, bank-affiliated funds tend to underperform their unaffiliated peers (Ferreira et al. (2015), Yan et al. (2012)), suggesting that conflicts of interests due to bank-affiliation can be costly. Our documentation of a liquidity provision from banks highlights the existence of a mutual support system and enhances our understanding of how bank-affiliated funds exist in competitive markets.

There is a vast literature that examine the externalities of fund investors' redemptions. Coval and Stafford (2007) study the stock fire-sales in the equity funds with severe redemptions, and Mitchell et al. (2007) study bond sales in distressed convertible hedge funds. Coval and Stafford (2007), Shive and Yun (2013), and Chen et al. (2008) show that outside institutional investors can benefit from funds' costly flow-induced trades. Another strand of literature produce evidence on banks' biased financial advice (Hackethal et al. (2012), Karabulut (2013), Hoechle et al. (2018), Fecht et al. (2018)). Our paper contributes to both literature by showing that bank-affiliation contributes to mitigate the cost of redemptions for the affiliated mutual funds, and the parent banks effectively internalize the benefits of providing liquidity.

II Data, Variable Definitions, and Descriptive Statistics

A Data and Sample Construction

We obtain the information on mutual funds from two sources: *Investmentfond Statistiken* database of *Deutsche Bundesbank*, and *Morningstar Direct*. Investmentfond Statistiken database provides monthly information on various fund characteristics (i.e., both closed- and open-end funds) at the *share-class* level registered in Germany from October 2009 to July 2016. The data includes net asset values per share (NAV), the number of shares outstanding, fund company (family) identifier, and a breakdown of fund total assets and liabilities. We complement this dataset with the monthly net-of-fees returns and total net assets (TNA), yearly expense ratios, loads, the inception date, and the fund broad category (i.e equity, allocation, fixed income etc.) at the share class level collected from Morningstar Direct for the open-end mutual funds registered in Germany.[5]. We match two datasets at the share class level using the ISIN number (share class identifier) available in both databases.

The data on the banks' portfolio holdings comes from *Deutsche Bundesbank*'s *Depotstatistiken* database. This database provides us the quarter-end holdings, detailed at the security-level, in the propriety accounts of all monetary financial institutions in Germany, and in the portfolios of their retail and institutional clients between 2005 and 2016. Property accounts comprise of financial instruments (mainly individual stocks and fixed income securities) that banks trade with the intention of making (short-term) profits and stock inventories for the market-making activities. Retail accounts include the holdings of individuals in the banks' mass retail and private banking as well as those of private wealth

[5]We use the total net assets reported in the *Investmentfond Statistiken* database (i.e. NAV * shares outstanding). For the observations with missing TNA, we utilize the TNA value from Morningstar Direct to attain the largest number of observations in our analysis.

management units, which typically serve to high-net-worth individuals with relatively larger investments. Institutional clients typically include pension funds, endowments, non-financial corporations such as industrial foundations, governmental agencies, non-profit institutions as churches, trade unions, foreign banks, insurance, and other public and private corporations. We again match this data to our mutual fund database using the ISIN numbers.

To identify bank-affiliated mutual funds, we hand-collect information on whether a mutual fund is bank-affiliated from the websites of each fund family and/or bank and use this information to match the fund families with their corresponding parent banks. [6] All funds that belong to a fund family that has a parent bank are considered as bank-affiliated funds. For example, funds managed by DWS Investments, which is an integral part of the Asset Management division of Deutsche Bank, are classified as bank-affiliated funds. It is possible that multiple investment companies are affiliated with a single financial institution. For example, WestInvest Gesellschaft für Investmentfonds GmbH and Deka Investments GmbH both operate as subsidiaries of Dekabank Deutsche Girozentrale. Hence, all funds managed by these two investment companies are classified as affiliated with Dekabank. Funds managed by a management company that has no affiliation with a financial institution are labeled as unaffiliated funds. The mutual fund industry in Germany is dominated by bank-affiliated mutual funds. Of all the 68 investment companies registered in Germany, 52% (35) are affiliated with a bank, which covers 77.3% percent of all assets under management in Germany.[7]

We conduct our analysis at the fund level. Accordingly, for funds with multiple share classes, we compute fund-level variables by aggregating data across the share classes

[6] *Deutsche Bundesbank* kindly provided us with the names of all investment companies registered in Germany during our observation period, on which we base our matching list between fund families and banks. We are also grateful Stephan Jank for his valuable input when constructing the merging list between banks and fund families. We check te quality of our matching list by comparing it with a list from Factset that gives the names of fund families and their ultimate owners. We thank Macy Luo for compling this list from Factset.

[7] Like in Germany, Ferreira et al. (2015) show that bank-affiliated equity mutual funds manage more than 50% of the total net assets in major European equity fund markets, suggesting that bank-affiliated funds are the dominant players in these markets. They also report that as of December 2010, the market share of bank-affiliated equity funds in Germany is above 70%.

that belong to the same fund, using the fund identifier provided in Morningstar Direct. Specifically, we sum the total net assets (TNA) of the share classes to obtain a fund's TNA and take the TNA-weighted averages of other time-series variables such as returns and fees. For other qualitative variables such as the inception date (used to calculate the fund age), we use the data from the oldest share class. We also aggregate the mutual fund holdings in banks' portfolios reported in Depotstatistiken database to the fund level.

To arrive at our final sample, we proceed as follows. We first exclude closed-end funds, offshore funds (i.e. funds domiciled in Luxembourg) to focus open-end funds domiciled in Germany. As common in the prior literature, we further exclude fixed income funds, real-estate funds, money market funds, specialized sector funds, index, and target-date funds, restricting our attention to active equity and allocation mutual funds that represent 50.5% percent of total net assets and 68.4% of fund-quarter observations in the sample.[8] To account for the potential incubation bias and reporting errors in smaller funds (Evans (2010), Elton et al. (2001)), we eliminate funds of less than one year, funds with less than €5M asset under management.[9] Finally, we drop mutual funds with missing information on any fund-level variables we used in our tests such as past 12-month returns, flows, expense ratio, fund age, and TNA of the corresponding fund family. Overall, our final sample comprises 1,283 unique equity and mixed mutual funds, out of which 69;13% are bank-affiliated, and 14,448 fund-quarter observations, respectively.

B Defining Parent Bank and Outside Investors Flows

Since we focus on examining the relationship between the flows from the parent bank and those of outside investors, we need a decomposition of the total fund flows into the parent bank and outside flows respectively. Quarterly total (net) flows into a fund is defined as follows:

[8] This restriction in the sample construction is to increase the comparability of fund performance among funds in Section X. We show in the Internet Appendix, all our results are robust to the inclusion of funds in categories other than equity and allocation, and the inclusion of index/target-date funds.

[9] In untabulated tests, we examine the robustness of our results to using different size limits such as €1M or €10M, and obtain similar results.

$$Flow_{i,t}^{Total} = \frac{(shrout_{i,t} - shrout_{i,t-1}) * NAV_{i,t}}{TNA_{i,t-1}} \quad (1)$$

where $shrout_{i,t}$ is the total shares outstanding of fund i at the end quarter t, $NAV_{i,t}$ is the Euro net asset value (price) of fund i per share at the end of quarter t, and $TNA_{i,t-1}$ is the total Euro net assets value of fund i at the end of quarter t-1. This definition implicitly assumes that new investments occur at the end of a quarter.[10] To calculate the total net investments that a fund receives from its parent bank, we determine the total value change in the parent bank holdings in a fund:

$$Flow_{i,t}^{PBank} = \frac{(shares_{i,t} - shares_{i,t-1}) * NAV_{i,t}}{TNA_{i,t-1}} \quad (2)$$

where $shares_{i,t}$ is the total number of fund i shares that the parent bank holds in their accounts (i.e. proprietary, institutional, and retail accounts) in quarter t, and $shares_{i,t-1}$ is the total number of fund shares that the parent bank holds in the previous quarter. $NAV_{i,t}$ is the fund price per share (in Euro) at the end of quarter t. Similar to equation 1, this definition assumes the parent bank flows arrive at the end of each quarter.

Finally, we obtain the flows from outside investors by taking the difference of total net flows (equation 1) and the parent bank flows (equation 2):

$$Flow_{i,t}^{Outsider} = Flow_{i,t}^{Total} - Flow_{i,t}^{PBank} \quad (3)$$

In some analyses, we examine the relationship between the outside flows ($Flow_{i,t}^{Outsider}$) and flows from proprietary, institutional, and retail client accounts separately. Flows from each account are computed similar to the total parent bank flows in equation 2, but by taking the changes in funds shares observed in each account rather than taking the aggregate change in the fund shares. Note that the parent bank flows cannot be defined for an unaffiliated fund in our sample. For these funds, total net flows are equal

[10] In reality, cash flows can occur at any point within a quarter. Hence, this definition reflects an extreme case. Nonetheless, computing the flows with an opposite extreme assumption that flows arrive at the beginning of a quarter, or using the *average* NAV over the quarter (i.e. average of monthly NAVs) do not change our results.

to outsider flows because every investor is an outsider for an unaffiliated fund.

We are particularly interested in understanding the investment behavior of the parent bank (clients) in response to financial pressure on its affiliated funds induced by the severe redemptions of outside investors. To this end, we follow the prior literature (Coval and Stafford (2007),Chen et al. (2008) and, each quarter, sort funds in our sample into deciles. Funds that fall in the lowest decile (i.e. decile 1) are denoted as "distressed" funds. The earlier papers use two approaches to set the breakpoints for each decile. Coval and Stafford (2007) consider funds with flows in the bottom 10% in each period as financially distressed funds. This approach puts 10% of the funds in each period in the distress bucket (i.e. decile 1), but may subject to misclassification of some funds as distressed for the periods when the aggregate fund flows is large.Edmans et al. (2012) and Chen et al. (2008), on the other hand, consider a fund to be in distress if it experience outflows below a certain cut-off point (without resetting each period), which might be more desirable to avoid misclassification, but the cut-off points are somewhat arbitrary. We use both approaches. In our main analysis, we determine the fixed breakpoints using the full-sample of fund flows as in Edmans et al. (2012), and consider a fund to be in distress if its outside flow is below the 10% in the full-sample, which is -6% for decile 1. The median mutual fund in our sample holds a cash reserve of 3.6%, suggesting that, for a typical fund, an outflow of -6% or more in a quarter would lead to some level of forced liquidations of its positions. The Internet Appendix shows that our results are very similar if we instead determine distressed funds like the ones with the outside flows below the 10^{th} percentile in each period.

C Sample Statistics

Table 1 presents the descriptive statistics for the mutual funds in the final sample. We present summary statistics on various fund characteristics for unaffiliated mutual funds in columns (1) and (2) and the bank-affiliated mutual funds in (3) and (4). We also report the mean differences of fund characteristics between unaffiliated and affiliated mutual funds and the corresponding t-statistics in columns (5) and (6), respectively.

We observe that unaffiliated funds have on average a higher cash reserve and leverage ratio than the bank-affiliated funds and the mean differences are statistically significant at any conventional level. Furthermore, the unaffiliated funds are also younger and smaller in size than the affiliated funds. Interestingly, the bank-affiliated funds in our sample display a higher average past performance, as measured by their cumulative log gross returns in the prior 12-months, but they also exhibit statistically higher return volatility that is measured by the standard deviation of the monthly returns over the past 12 months.

III Do Banks Support their Affiliated Mutual Funds?

This section presents the results of fund level tests that analyze the relation between net flows from parent banks and outside investors to bank-affiliated mutual funds. First, we show evidence of a disproportionate amount of aggregate capital directed to affiliated funds from their parent banks when the affiliated funds experience severe outflows from outside investors. Second, we provide results from sub-sample analyses that are in line with the liquidity provision of parent banks to their affiliated funds.

A Parent Bank Flows vs. Outsider Flows: Fund Level Analysis

Before presenting results from formal multivariate analyses, we provide some suggestive evidence on the relationship between parent banks and their affiliated mutual funds. Specifically, we sort all equity and allocation funds in each quarter into deciles according to their outside flows ($Flow_{i,t}^{Outsider}$). We determine the decile breakpoints using the full-sample of fund flows as explained in Section II.B.[11]Funds in the top decile (i.e., decile 10) experience the largest net positive flows from the outside investors. Funds in the bottom decile (i.e., decile 1) suffer biggest redemptions from the outside investors and are considered as distressed funds.

[11]In the Internet Appendix, we determine distressed funds by resetting the breakpoints each period and find similar results.

In each quarter, we first compute, for each decile, the average flows from parent banks into their affiliated funds. Figure 1 depicts the time-series averages of parent bank flows for each outside flow decile, where the darkly shaded area highlights affiliated mutual funds (i.e., deciles 1 to 6), which, on average, experience negative net flows from outside investors.

The figure reveals an interesting pattern. Except among affiliated funds that fall into decile 1, parent banks and outside investors make to a great extent similar fund selection decisions. Banks tend to buy funds that outside investors favor (decile 7 to 10), and they sell funds that outside investors disfavor (deciles 2 to 6). Nevertheless, the relationship between the parent bank flows and those of outsiders in these deciles is neither monotonic nor significant, suggesting that banks do not follow a momentum strategy.

For distressed affiliated funds (i.e., decile 1), however, parent banks act notably different than outside investors. While the average outsider flow is around -10.6% in decile 1, the average parent bank flow is slightly larger than 0.7%, corresponding to approximately 7% of the outflows from outside investors in the same decile. The average parent bank flow in decile 1 is three times larger in magnitude than the average parent bank flow in our sample (0.2%), and is significantly larger than the average parent bank flow in other deciles, but two.[12] As evident in the graph, the observed contrarian investing of parent banks is only confined to affiliated mutual funds that face severe outflows from outside investors, whereas we do not observe a negative relationship between the flows from the parent banks and those from outsiders in other flow deciles. Taken as a whole, the hefty parent bank inflows into affiliated funds in decile 1 are conforming to liquidity provision from parent banks when their affiliated funds likely face liquidity shortfalls.

We next formally analyze the relationship between parent bank flows and outsider flows among affiliated mutual funds using panel regressions that takes the following form:

[12] The t-statistics from the equality tests between the average parent bank flow in decile 1 and that in each of the other deciles range from 3.89 to 1.28

$$Flow_{i,t}^{PBank} = \alpha + \beta_1 \cdot Flow_{i,t}^{Outsider} + \beta_2 \cdot Distress_{i,t} + \beta_3 \cdot Flow_{i,t}^{Outsider} \times Distress_{i,t} + \theta \cdot \boldsymbol{X_i} + \gamma_t + \gamma_f + \epsilon_{i,t} \tag{4}$$

where $Flow_{i,k,t}^{PBank}$ and $Flow_{i,k,t}^{Outside}$ represents the new flows to fund i from its parent bank and outside investors in quarter t, respectively. $Distress_{i,t}$ is an indicator variable that takes the value of 1 if fund i falls into decile 1 based on the outsider flows in quarter t, and zero otherwise.

Motivated by previous research, our analysis includes a wide range of fund characteristics, represented by the vector $\boldsymbol{X_i}$. The fund-level controls are the percentage of cash deposits in the fund total assets, fund leverage as measured by the ratio of a fund liabilities over its total assets, one-quarter lagged parent bank and outsider flows, the logarithm of fund and fund family total net assets, logarithm of fund age, expense ratio, past performance as measured by the cumulative previous 12-month returns, volatility of fund returns over the last 12-months. Among others, Chevalier and Ellison (1997), Sirri and Tufano (1998), Del Guercio and Tkac (2008), and Barber et al. (2005) show that these variables influence fund flows. In our specifications, we further control for fund family (γ_f) and quarter-time fixed effects (γ_t). Finally, we account for possible serial correlation and heteroskedasticity by clustering the standard errors at the individual fund level.

To analyze whether banks provide liquidity support to their distressed affiliated funds, we include an interaction term between outsider flows and distress dummy (i.e., $Flow_{i,t}^{Outsider} \times Distress_{i,t}$) in our estimation model. We conjecture that the coefficient on the interaction term, β_3, should be negative and large in magnitude (i.e., $\beta_1 + \beta_3 < 0$). The negative association between flows from parent banks and those from outside investors would imply that parent banks buy the shares of their distressed funds when outsiders are heavily selling those fund shares.

In Table 2 we report paramater estimates for various specifications. Estimates from these multivariate regressions are consistent with the univariate statistics. Regardless of the specification, we observe no significant relationship between parent bank flows and outsider flows (the β_1 coefficient) when affiliated funds are not in distress. For distressed funds, this relationship is negative and significant at the 1% level, as represented by the sum of β_1 and β_3 coefficients. The effect is also meaningful in economic terms. Specifically, a 1% decrease in outsider flows from distressed affiliated funds is associated with an average of 0.18% increase in parent bank flows that is approximately equal to the average flow into affiliated funds in our sample.

In the Internet Appendix, we provide a set of additional specifications and samples to further validate our results. First, we reset the decile breakpoints each quarter while ranking the funds into deciles based on the outsider flows and determine the distressed funds. Second, we did not restrict our sample to equity and allocation funds but also consider fixed income and money market funds in our sample. Third, we add index funds in our analysis. We repeat our univariate and multivariate tests (i.e. Figure I and Table 2) for these alternate specification and samples. The results confirm our prior findings of the significant negative relationship between parent bank and outsider flows that is only present in affiliated distressed funds. Overall, our analysis provides strong evidence for the notion that banks invest into their affiliated members in case of potential liquidity shortfalls induced by severe outflows from outside investors.

B Subsample Analysis at the Fund Level

In this section we conduct tests for different subgroup of funds to provide further evidence that collaborate with our interpretation of the results. Existing studies show that flow induced trades are costly. For example, Edelen (1999) find that 1/3 of the total trading activity of mutual funds are flow-driven, which decrease the abnormal return of the fund by approximately 1.4% per year. Christoffersen et al. (2006) show that flows impose more costs on fund managers, and lead to lower subsequent returns, when they necessitate sales, rather than buys. Given these findings, we argue that if significant bank flows to distressed funds really reflect liquidity provision, they should be stronger for funds that bear higher costs induced by severe outflows from outside investors.

We use several proxies to identify funds that are more in need of liquidity, and conduct multivariate regressions to explore if there is heterogeneity in the level of liquidity support across these funds. First, when faced with extreme redemptions, funds with a sufficient hoard of cash can avoid costly liquidity-motivated trades (Chen et al. (2010)). As a result, we expect a lower level of liquidity provision, if any, from parent banks to these affiliated funds. To test this premise, in each quarter, we define a fund as cash-rich if its cash deposit is at the top quartile, zero otherwise.

Second, funds can seek other means of solutions such as lines of credits and/or securities lending etc. to raise capital in order to meet redemptions. We use the *change* in leverage ratio, measured by total liabilities divided by total assets, between the beginning and end of the quarter to proxy for the extent of external capital raising.[13] Similar to funds with high cash reserves, funds that can raise external capital are likely to avoid costly trades, which may lessen the necessity for the parent bank to step in. Note that the parent bank can actually provide liquidity to its affiliated funds by helping them to raise capital such as issuing lines of credit. Hence, a different interpretation of this result is that the parent bank uses the lending channel to help funds rather than buying the affiliated distressed fund shares. In this case, the lending channel can be a reasonable substitute for the liquidity provision via buying fund shares. Because we only observe the liabilities at the fund level, we do not know the identity of the lender. Therefore, we are cautious to make this interpretation even though it is certainly a possibility. Nonetheless, in either case, the outcome should be a lesser degree of liquidity provision thorough buying fund shares if a fund can meet redemption with the external capital. To test this premise, in each quarter, we define a dummy variable that takes the value of 1 if the change in fund leverage is at the top quartile, zero otherwise.

Third, we exploit the fact that funds can also obtain liquidity provision from other fund family members. For example, Goncalves-Pinto and Schmidt (2013) find that funds that belong to the same family can engage in cross-trading with their distressed members. This co-insurance within the family diminishes the price impact of sells by distressed

[13]Unfortunately, we do not observe each component of the liabilities on a consistent basis over our sample period. Therefore, we opt for accumulating different components of liabilities into one by summing them up, rather than looking at each of them separately.

funds and therefore these funds likely need less support from their parent bank.Agarwal and Zhao (2018) show that funds in the same family can participate in inter-fund lending activities, and document a lower flow-performance sensitivity in these participating funds. Motivated by these papers, we argue that if the parent bank flows really indicate liquidity provision, they should be stronger for funds if the redemption requests are family-wide and consequently, funds have difficulty in obtaining within-family co-insurance. We capture family-wide liquidity problems using two proxies. First, each quarter, we compute the family level outsider flows by taking the average outsider flows (other than distressed funds) of funds that belong to the same family and create a dummy that takes the value of 1 if the family level outsider flow is in the bottom quartile, zero otherwise. Second, we compute the total number of distressed funds within the family and again create a dummy that takes the value of 1 if the number of distressed funds within a family is in the top quartile, zero otherwise.

We augment our multivariate regression in equation 4 by adding one more variable, which is the interaction between outsider flows, distress dummy, and one of the aforementioned proxies. This triple interaction captures the additional liquidity support from a parent bank to distressed affiliated funds that have a different level of liquidity needs based on our proxies.

Table 3 presents our results. The triple interaction terms range between 0.24% and 0.14% in absolute terms and all indicate a statistically and economically significant increase in the increase in the level of liquidity support from the parent bank if the affiliated distressed fund is in more need of liquidity. Specifically, 1% decrease in the outsider flows for a cash-poor affiliated distressed fund is associated with a statistically significant increase of 0.27% in the parent bank flows, whereas it is 0.33% for funds with a low change in their leverage (i.e. funds that cannot sufficiently increase their leverage). These estimates are much larger in magnitudes than the ones we obtain from our unconditional tests in Table 2).

In contrast, a 1% decrease in the outsider flows results in only 0.08% increase in the parent bank flow (significant at the 10%) for cash-rich funds and no significant increase

(0.04%) for funds that can sufficiently lever up. Our results suggest that the behavior of the parent bank depends on whether severe redemptions from outside investors force the fund manager to face costly trades. Additionally, if we assume that the parent bank plays a role in the increase of a fund leverage such as through issuing lines of credit, our results also suggest that there is a substitution effect between different mechanisms that the parent bank employ to provide liquidity to its affiliated distressed fund.

Finally, we also find the within-family co-insurance is important in determining whether there is liquidity provision from the parent bank. We find that the support from the parent bank is substantially higher if the liquidity problems are family-wide and consequently the distressed affiliated fund is unable to sell its existing positions to other member funds with a minimum price impact or to borrow from other member family members via within family inter-fund lending activities.

IV Alternative Explanations

In the prior sections, we interpret the large parent bank flows to their distressed affiliated fund as liquidity provision and provide cross-sectional evidence that is consistent with this interpretation. In this section, we investigate if our results can rather be explained by 1) a systematic contrarian strategy of banks , 2) favoritism towards funds with higher managerial skill, 3) protection of high-value (i.e.high revenue generating funds).

A Systematic Contrarian Strategy Against Severe Outside Flows

Coval and Stafford (2007) show that extreme outflows cause high transaction costs due to forced liquidations of fund positions and temporarily drive the value of fund assets away from their fundamental values, suggesting that a counter-tilting strategy (i.e. buying the shares of distressed funds) is a profitable strategy. In this section, we test if such a contrarian investing, rather than liquidity provision aimed at helping affiliated funds, can explain our results.

It is important to note that, in principle, this type of contrarian behavior should exist for funds with large capital inflows. This is because retail investors flock to funds that hold overpriced assets (Frazzini and Lamont (2008)), and fund managers scale up their existing positions to invest this additional capital creating further price pressure on those assets (Coval and Stafford (2007), Lou (2012)). Like forced sales, these inflow-driven purchases provide profitable opportunities. As shown in Figure I, banks do not sell the shares of funds with large outsider inflows while buying the shares of distressed funds, casting doubt on the interpretation of a systematic contrarian strategy against extreme flows. Nevertheless, unlike forced sales, the fund manager can accumulate cash to a certain extent rather than trade in response to high inflows limiting the profitability of going against extreme inflows. Hence, a counter-tilting strategy only against severe redemptions is still a possibility that can explain our findings

To check this possibility, we rely on the fact if the bank flows reflect a systematic contrarian investing, rather than liquidity provision to their affiliated funds, then affiliation should not matter. That is we should not observe a significant difference in bank flows between affiliated and non-affiliated funds the case of liquidity shortfall. We conduct a multivariate regression at the bank-fund level that takes the following form:

$$\begin{aligned} Flow^{Bank}_{i,j,t} =& \alpha + \beta_1 Flow^{Outsider(j)}_{i,t} + \beta_2 Flow^{Outsider(j)}_{i,t} * Distress_{i,t} + \beta_3 Flow^{Outsider(j)}_{i,t} * Affiliated_{j,t} + \\ & \beta_4 (Flow^{Outsider(j)}_{i,t} * Distress_{i,t} * Affiliated_{j,t}) + \beta_5 Distress_{i,t} + \beta_6 Affiliated_{j,t} + \\ & \theta * \boldsymbol{X_i} + \epsilon_{i,t} \end{aligned} \tag{5}$$

where $Flow^{Bank}_{i,j,t}$ refers to net flows to fund i from bank j in quarter t, and $Flow^{Outsider(j)}_{i,t}$ refers to the net flows to fund i from outside investors (i.e. total net flows minus the flows from bank j). $Distress_{i,t}$ is the dummy variable that takes the value of 1 if the fund is in distress in quarter t, and zero otherwise. $Affiliated_{j,t}$ is the dummy variable that takes the value of 1 if the fund is affiliated to bank j in quarter t and zero otherwise. The β_4 coefficient on the triple interaction term, $Flow^{Outsider(j)}_{i,t} * Distress_{i,t} * Affiliated_{j,t}$, captures the additional flows from bank j to its affiliated distressed fund relative to the additional net flows to a distressed fund that is unaffiliated with the bank. $\boldsymbol{X_i}$ represents the set of same fund level controls as in section A. Regressions include bank and time fixed effects, and in one specification, bank * time fixed effects to focus on the variation within the same bank in the same period (i.e. capturing all bank level characteristics within a period). Standard errors are clustered at the fund level.

Table 4 provide the results. We find a positive and significant correlation between bank flows and outsider flows (the β_1 coefficient), and this positive relation gets even stronger (the sum of $\beta_1 + \beta_2$) for a distressed fund. This result suggests that a bank acts similar to outside investors for funds that are *unaffiliated* with it and more so when outside investors extensively flee from these funds. For affiliated non-distressed funds, we observe an insignificant relationship between the (parent) bank flows and outsider flows, consistent with our univariate and multivariate analysis in Section III.A. This relationship, is however, significantly negative when an affiliated fund falls into distress as measured by the sum of β_1 to β_4 coefficients. The estimates indicate that a 1% decrease in outsider flows to an affiliated distressed fund is associated with an additional flow of 0.168% to 0.174% from its parent bank (p-values < 0.01). Overall, the signifciant inflows fro mthe par

B Favoritism Towards Funds with Higher Managerial Skill

While the previous section shows that banks behave markedly different towards their affiliated distressed funds than unaffiliated distressed funds, it is conceivable that asymmetric information may impact this behavior. Specifically, bank potentially knows more about the managerial skill of their affiliated funds than unaffiliated funds and so engage in contrarian trading solely in affiliated funds due to their superior information rather than liquidity provision.

To test this argument, we conduct two complementary analyses. First, we examine if there is a difference in bank flows directed to funds that show a different level of managerial skill in the past. The motivation is to understand if there is a preferential treatment toward managers with a past record of high-skill. Second, we analyze if fund managers that obtain support from their parent banks exhibit superior skill in the future relative to distressed funds without support or affiliated funds that are not in distress.

To conduct the first analysis, we augment our multivariate regression in equation 4 of section III.A by adding one more variable, which is the interaction between outsider flows, distress dummy, and a proxy for the managerial skill. This triple interaction captures the additional liquidity support from a parent bank to distressed affiliated funds that exhibit a different level of managerial skill in the past. If the parent banks prefer to support only fund managers that exhibit higher skill in the paper, the coefficient of this interaction term should be negative and significant

Following Berk and Van Binsbergen (2015), we use the time-series average of "value-added" as our main measure of managerial skill. The value added measure in each month is calculated as follows:

$$VA_{i,t} = TNA_{i,t-1} * (R^g_{i,t} - R^b_{i,t}) \tag{6}$$

where $VA_{i,t}$ is the Euro value added by fund i in month t, $R^g_{i,t}$ is the *excess* gross return of fund i in month, $R^b_{i,t}$ is the corresponding benchmark return for fund i in month t, and $TNA_{i,t-1}$ is the total net asset values of fund i in the previous month t-1 respectively. $R^g_{i,t} - R^b_{i,t}$ is the gross abnormal return of a fund i in quarter t. Then, $VA_{i,t}$ captures the Euro value of what a funds add over the benchmark. To calculate the benchmark return, at the end of each month, we regress a fund's *excess gross* returns onto factors over the previous 24 months (i.e., from month t-24 to month t-1) and save the estimated factor loadings. The benchmark return for a fund i in month t is then defined as the estimated factors loadings times the corresponding factor realizations in that month. We use the one- and five-factor models as the benchmark for the risk-adjustment.[14] Our proxy for the managerial skill the *average* value of $VA_{i,t}$ over the previous 12 months. As a second proxy for the managerial skill, we use the gross alpha (intercepts) estimated from the monthly regressions of funds' excess gross returns onto one- or five- factor models over

[14]The first four factors (Euro denominated) are the global market (in excess of), size, value, and momentum factors of Fama and French (1993) and Carhart (1997). Given that our sample include the allocation funds, we use the excess return of Bloomberg Barclays global government/corporate bond index following Blake et al. (1993) as the fifth factor.

the previous 24 months. Finally, as in Section III.B., each quarter, we define a dummy variable that takes the value of 1 if the managerial skill (i.e. average value added or gross alpha) is at the top quartile, zero otherwise.

Results reported in Table 5 shows no evidence of favoritism toward funds that exhibit higher level of skill in the past. We do not observe a significant negative coefficient on the triple interaction terms (i.e. Distress x Outsider Flow x Managerial Skill). The Wald tests also show that a significant liquidity support to affiliated distressed funds regardless of the level of managerial skill they exhibit in the past.

Our second analysis is to examine, using a portfolio test similar to Bhattacharya et al. (2013), the *future* value-added and gross alphas of affiliated distressed funds with bank support in order to see if the net new investments from the parent banks are directed to better skilled managers.[15] At the end of each quarter, we form three equally weighted portfolios: (1) *Affiliated distressed funds that obtain positive parent bank flows during the quarter*, (2) *Affiliated distressed funds that do not obtain positive parent bank flows during the quarter*, (3) Affiliated non-distressed funds. We rebalance each portfolio every quarter and compute the average of monthly value-added and gross abnormal returns for each portfolio. The first portfolio is our benchmark group, which we compare with the group of distressed funds without a positive investment from the parent bank and the group of non-distressed funds. It is important to note that while the funds in the second portfolio do not experience positive flows from the parent bank, this does not necessarily eliminate other means of liquidity provision that the parent bank might extend such as lines of credits.

Table 6 presents our results. We find no significant difference between the average value-added or gross abnormal returns of affiliated distressed funds that the parent bank invests and funds that the parent bank does not invest The results shows a negative, albeit statistically insignificant alpha, for affiliated distressed funds that obtain positive flows from the parent banks. Interestingly, no other net investment from the parent bank

[15] Among others, Gruber (1996),Zheng (1999) Sapp and Tiwari (2004), conduct a similar analysis to see if new investments to mutual funds exhibit "smart money" effect (i.e. capital inflows (outflows) predict superior (inferior) risk-adjusted returns).

delivers superior performance relative to the benchmarks

C Protecting High-Value Funds

Gaspar et al. (2006) argue that, to maximize the total revenue generated, families favor high-value funds such as the ones that generate the most fee income or perform better at the expense of low-value funds within the family. The argument for supporting funds with better past performance is due to disproportionate amount of flows that these funds gain (Sirri and Tufano (1998)), and the spillover effects of star funds' performance on flows of other funds in the family (Nanda et al. (2004)). While this cross-subsidization practice is a within-family phenomenon, these funds might also generate larger revenues for the bank thorough larger kickbacks. Hence, we analyze if significant bank flows to distressed affiliated funds merely reflects a protection of high-value affiliated funds rather than a liquidity support aimed at the helping funds regardless of their value to the family (and potentially to the bank).

We define a fund as high-value if (1) its total fees is in the top quartile in its fund family (2) its past performance is in the top quartile among all funds in the sample. We measure past performance by the cumulative returns over the previous 12 months, the Sharpe ratio based on the previous 12 months, or alphas (based net-of-fees returns) over the previous 24 months. We use one-factor and five-factor models to compute the alphas.

We again augment our multivariate variate regressions in equation 4 of section III.A by adding the interaction of distress dummy, outsider flows, the high-value (based on fee or performance) dummy. Our results Table 7 show that the liquidity provision is not merely directed to high-value funds. Regardless of the proxy we use, we find an insignificant change in the level of support from the parent bank. This is consistent with the interpretation that the family strategies' of protecting high-value funds cannot explain the reason of direct investments from the parent banks to their distressed funds.

V Decomposing Parent Bank Flows

As described in Section II.A, the fund holdings data from the *Depotstatistiken* database are reported separately for three types of accounts: propriety, institutional, and retail. Accordingly, our data enables us to further segregate the total bank inflows from these three accounts types and conduct additional tests to understand from which accounts the additional capital is directed to affiliated distressed funds. Table 8 present the results from our panel regressions that use the flows from these three accounts separately. We find that the banks do not use their own capital to provide liquidity to their distressed funds, but rather trade on behalf of their institutional and retail clients. Specifically, a 1% decrease in outside flows results in a 0.07% increase in flows from banks' institutional clients (significant at the 1%) and a 0.014% increase in flows from banks' retail clients (significant at the 10%). In contrast, there is no significant relation between flows from propriety accounts and the outside flows in the case of distress.

These results raise the question whether bank incentives in providing support to their affiliated funds align with those of their customers. While banks arguably try to avoid fund failures to protect their reputation and revenue generating mechanism, and mitigate any potential spillover effects, these incentives may not necessarily be shared by their clients. It is important to note here that the bank account managers could often have near-full discretionary power in making day-to-day decisions on behalf of the clients to implement the investment strategy developed based on the client's risk profile and needs, which is particularly prominent in banks' institutional client units and private wealth management business. In this regard, client inflows to distressed funds can, to some extent, reflects the bank incentives. The strong results in Table 8 in institutional clients potentially speak to the existence of this stronger discretionary power and the smaller coordination costs via mobilizing fewer big institutional clients rather than small retail investors.

Nonetheless, even if inflows from customer accounts do not fully reflect the bank incentives, bank clients may still have incentives to provide liquidity support. Foremost, the liquidity costs of trades due to severe redemptions are borne by the remaining investors. Chen et al. (2010) show that the fear of loss due to the possibility of large outflows can induce some other investors to redeem further and amplify the costs consequently. Accordingly, if some institutional bank clients have already invested in the fund, they can strategically choose to invest more in the fund to mitigate these externalities and, to some degree, provide liquidity backstops to retain further redemptions.[16] This is also in the best interests of the controlling bank if the incentives are to avoid fund failures. Moreover, the clients, particularly more patient traders, can benefit from the liquidity premium over the long term when net asset values bounce back unless the distressed fund is not fundamentally impaired. Hence, the rationality of providing liquidity is an empirical questions that depends on whether it is beneficial to the fund experiencing liquidity shortfall and if there are significant costs the bank client should bear associated with liquidity provision. We examine both of these questions in the next section.

VI Benefits and Costs

We show significant flows from the the parent to their affiliated distressed funds in line with liquidity provision, and the source of their additional flows are bank clients. These results raise two questions: 1) Do affiliated funds benefit from this support? 2) Is it costly for bank clients to provide support to affilaited distress funds or are there some benefits? In this section, we examine both questions in turn.

A Benefits and Costs to the Fund

We analyze how severe redemptions from outside investors relates to the net-of-fees abnormal performance of affiliated funds and how bank flows affect this relationship during these distress periods. Similar to Edelen (1999) and Bhattacharya et al. (2013), we use

[16] Chen et al. (2010) find the payoff complementaries, that is, incentives for self-fulfilling redemptions, are less pronounced in funds that are hold by large institutional investors because the negative externalities imposed by withdrawals are weaker for them.

the following the regression model:

$$Perf_{i,t} = \alpha + \beta_1 \cdot Flow_{i,t}^{PBank} + \beta_2 \cdot Distress_{i,t} + \beta_3 \cdot Flow_{i,t}^{PBank} \times Distress_{i,t} + \theta \cdot \boldsymbol{X_i} + \gamma_t + \gamma_f + \epsilon_{i,t} \tag{7}$$

where $Perf_{i,t}$ refers to the *cumulative* abnormal monthly returns of fund i over the quarter t. To compute abnormal returns, we proceed as follows. At the end of each month, we estimate the factors for each fund by regressing its excess *net-of-fees* returns on one- or five- factor models over the previous 24 months (i.e., from month t-24 to month t-1). We then compute the monthly abnormal return of each fund as the difference between a fund's realized excess return and its required return, defined as the factor loadings times the corresponding factor realization in that month. $\boldsymbol{X_i}$ contains the same fund-level control as in section A plus the one-quarter and two-quarter lagged value of performance to control for autocorrelation in fund performance. Regressions include family (γ_f) and quarter-time fixed effects (γ_t). Standard errors are clustered at the fund level.

Edelen (1999) discusses two problems in the estimation of equation 7. First, flows do not affect a fund's abnormal return, the trading activity does. Hence, flows relate to a fund's abnormal return to the extent that they induce additional trading activity. Whether fund managers engage in additional trading depends on the magnitude of the flow shocks.[17]. However, we focus on the relationship between severe redemptions (captured by the distress dummy in equation 7). and the fund's abnormal return as opposed to the relationship between fund flows and funds' abnormal return. Hence, the potential weak correlation between fund flows and the trading activity should be of a less concern in our setting since severe redemptions likely cause additional trading.

Second is the reverse causality. It is a stylized fact that flows respond to past (abnormal) returns.[18] Hence, to the extent that abnormal returns are autocorrelated, ignoring

[17] Edelen (1999) use an estimation of liquidity-motivated trades in response to flows rather than the realized fund flows to estimate the impact of flows on fund's performance in the same period. Unfortunately, we do not observe the trading activity of fund managers to estimate the size of flow-induced trading

[18] Among others, Ippolito (1992), Sirri and Tufano (1998), and Huang et al. (2007), find a positive, albeit non-linear, relationship between past returns and future fund flows.

lagged abnormal returns in equation 7 leads to a biased estimation of the impact of flows on the abnormal performance. Nevertheless using past abnormal returns as controls is not a full solution. Given that our data is at the quarterly level, the fund abnormal return in the early part of the quarter can affect the fund flows in the later part of the quarter. Following Edelen (1999), we address this intra-quarter reverse causality by instrumenting the parent bank flows by the lagged parent bank flow. Specifically, each quarter, we regress the parent bank flow on its lagged value and use the fitted values from these regressions as our instrumental variable.

Table 9 shows the results. The β_2 is negative and significant suggesting that in the state of severe redemptions, the fund performance suffers, potentially due to forced liquidity-motivated trades. However, β_3 is positive and significant implying that the additional flows from the parent banks indeed help to improve the performance of affiliated distressed funds. In particular, 1% increase in the parent bank flows reduce the impact of distress by 18 bps and 21 bps when one-factor or five-factor model is used to measure the abnormal returns respectively. The results suggest that liquidity provision mitigates the impact of financial pressure for the remaining investors, so part of the benefits accrue to the bank clients that have already a position in the underlying distressed fund. In addition, if the controlling bank has incentives to avoid fund failures, providing liquidity certainly helps to achieve this goal.

We also perform a portfolio test with a focus to compare the performance of affiliated and unaffiliated distressed funds during the distress quarter.[19] Our test involves, at the *beginning* of each quarter, forming three equally weighted portfolios: (1) *Affiliated distressed funds that obtain positive parent bank flows during the quarter*, (2) *Unaffiliated distressed funds*, (3) *Affiliated distressed funds that do not obtain positive parent bank flows during the quarter*. We rebalance each portfolio at the beginning of each quarter. The first portfolio is our benchmark group with the funds that the parent bank chooses to support thorough buying shares. As reported in Section IVA, unaffiliated funds (i.e.

[19]Note that while the multivariate regressions in equation 7 enable us to control for multiple characteristics, we could only run the regression among affiliated funds as $Flow_{i,t}^{PBank}$ is only defined for affiliated funds.

the second portfolio) do not enjoy such benefits. Additionally, while funds in the third group do not receive positive flows from the parent bank, they may obtain other means of support such as lines of credits.

Table 10 present the alphas from the monthly regressions of net-of-fees excess returns onto one- and five- factor models. While the parameters are not estimated with high precision (i.e. high standard errors), we find that affiliated distressed funds with positive bank flows has a performance of -29 bps based on five-factor model, which is 15 bps less than the unaffiliated funds, and 6.5 bps less than affiliated distressed funds with no positive bank flows. The difference between our benchmark group and the portfolio of unaffiliated funds increase to a statically significant value of 32 bps when one-factor model is employed. Overall, the results collaborate with our multivariate regressions that affiliation with a bank can be desirable for fund managers and the fund remaining shareholders as the parent bank flows can counteract the behavior of shareholders that severely redeem their shares.

B Benefits and Costs to the Clients

The fact that the additional flows come from bank clients raise the question of whether clients sacrifice for liquidity support. This is particularly pertinent given that the parent bank can use its power to direct clients' capital to their distressed members if the group benefits (i.e. benefits to the fund) outweigh the costs of providing liquidity.

We examine the future performance of funds with *positive* flows for the parent bank in relation to other affiliated funds in a multivariate setting. Our regressions take the following form:

$$Perf_{i,(t+k,t+m)} = \alpha + \beta_1 \cdot PFlow_{i,t}^{PBank} + \beta_2 \cdot Distress_{i,t} + \beta_3 \cdot PFlow_{i,t}^{PBank} \times Distress_{i,t} + \theta \cdot \boldsymbol{X_i} + \gamma_t + \gamma_f + \epsilon_{i,t} \quad (8)$$

where $Perf_{i,t}$ refers to the *cumulative* abnormal monthly returns of fund i from the beginning of quarter t+k to the end of quarter t+m.[20] $PFlow_{i,t}^{PBank}$ is a dummy takes the value of 1 if the parent bank flow to fund i in quarter t is positive, zero otherwise. $\boldsymbol{X_i}$ contains the same fund-level control as in section VI.A plus 6-month cumulative performance up to the end of quarter t (i.e. $Perf_{i,(t-2,t)}$). Regressions include family (γ_f) and quarter-time fixed effects (γ_t). Standard errors are clustered at the fund level.

Table 11 shows the results for two holding horizons: 1) 6-month (two-quarter) cumulative abnormal returns from the beginning of quarter t+1 to the end of quarter t+2, 2) 6-month (two-quarter) cumulative abnormal returns from the beginning of quarter t+3 to the end of quarter t+4. Our results suggest a positive and significant association between the parent bank flows and the future performance over the next 6-months. In particular, a 1% increase in the parent bank flows leads to a 1.2% to 1.4% increase in the cumulative abnormal returns over the next 6-month period relative to other affiliated distressed funds that do not obtain the support. That predictability disappears after 6 months. In untabulated results, we also test for the abnormal return in the following one month or three months after the end of quarter t, and find a negative coefficient on the interaction term. These results suggest a return reversal in the performance of the affiliated distressed over the 6-month period as the net-asset values bounce back.

In the Internet Appendix, we also conduct a univariate analysis that compares the performance of various portfolios over a 6-month holding period. Specifically, at the end of each quarter, we form four equally weighted portfolios: (1) *Affiliated distressed funds that obtain positive parent bank flows*, (2) *Affiliated non-distressed funds* (3) *Unaffiliated distressed funds*, (4) *Unaffiliated non-distressed funds.* We hold each portfolio for 6 months before rebalancing, meaning that the strategy we examine includes portfolios with overlapping holding periods. That is, in a given quarter, we have two portfolios, one of which is formed at the end of the previous quarter and another of which is formed two quarters ago. The entire portfolio return is a simple average of these portfolios. We use one- and five-factor model to evaluate the performance of each these groups. We

[20] Monthly abnormal returns are again calculated from one- and five-factor models using 24 months of data as in Section V.A.

find affiliated distressed funds perform at least as well as affiliated non-distressed funds. Albeit statistically insignificant, affiliated distressed funds with support have around 8 bps better alphas than affiliated non-distressed funds. Affiliated distressed fund with support outperform unaffiliated distressed funds by a statistically significant 33 bps and 26 bps when one-factor and five-factor models are used respectively. Affiliated distressed funds with support also perform better than unaffiliated funds that are not in distress. The difference in alphas s 16 bps using one-factor, and 11 bps using five-factor model.

Overall our results highlights the importance of internal capital markets to internalize the externalities in redemptions from outside investors. First, bank clients ameliorate the costs of redemptions by additional investments into the distressed funds. If some of these bank clients are existing fund investors, then liquidity provision plays the role of a self-serving mechanism because part of the benefits accrue to them. Second, the controlling bank has potentially more timely information regarding the problems in its affiliated funds. Unless there is no fundamental problem within distressed funds, this informational advantage can benefit to bank clients through earning the liquidity premium associated with temporarily distressed prices. While we cannot make an overall claim regarding the cost and benefits of being a bank-affiliated fund investor, our results suggest bank-affiliated fund investors are likely to be better off in the case of temporary liquidity shocks imposed by redemptions.

VII Conclusion

We use a unique dataset of mutual fund holdings for banks registered in Germany, and document that parent banks invest into their affiliated funds when they face severe redemptions from outside investors. This support is only prominent when funds are indeed in need of liquidity, does not exist for funds unaffiliated with the bank, and is independent of fund fees or managerial skill. These results suggest a liquidity provision from the parent bank aimed at mitigating the costs of redemptions.

Further tests reveal that the source of this provision is bank clients, in particular, institutional investors. The distressed fund benefits from the support (and so the fund remaining investors)as the additional investment mitigate the costs of redemptions. We also find that the funds that obtain support perform better over a 6-month horizon relative to other affiliated funds, suggesting that bank clients earn a premium from their new investments as NAV(s) bounce back. Hence, liquidity support might be rational for bank clients. Our paper, thus, highlights the importance of internal markets to internalize the externalities due to liquidity shocks.

References

Agarwal, V. and H. Zhao (2018). Interfund lending in mutual fund families: Role in liquidity management. *Working Paper*.

Aoki, M. (2013). Monitoring characteristics of the main bank system: An analytical and development view. *Edward Elgar Publishing*, 342–374.

Bagattini, G., F. Fecht, and P. Weber (2018). The fire-sale channels of universal banks in the european sovereign debt crisis. *Working Paper*.

Barber, B. M., T. Odean, and L. Zheng (2005). Out of sight, out of mind: The effects of expenses on mutual fund flows. *The Journal of Business 78*(6), 2095–2120.

Berk, J. B. and J. H. Van Binsbergen (2015). Measuring skill in the mutual fund industry. *Journal of Financial Economics 118*(1), 1–20.

Bhattacharya, U., J. H. Lee, and V. K. Pool (2013). Conflicting family values in mutual fund families. *The Journal of Finance 68*(1), 173–200.

Blake, C. R., E. J. Elton, and M. J. Gruber (1993). The performance of bond mutual funds. *Journal of business*, 371–403.

Carhart, M. M. (1997). On persistence in mutual fund performance. *The Journal of finance 52*(1), 57–82.

Chen, J., S. Hanson, H. Hong, and J. C. Stein (2008). Do hedge funds profit from mutual-fund distress? *Working Paper, National Bureau of Economic Research*.

Chen, Q., I. Goldstein, and W. Jiang (2010). Payoff complementarities and financial fragility: Evidence from mutual fund outflows. *Journal of Financial Economics 97*(2), 239–262.

Chevalier, J. and G. Ellison (1997). Risk taking by mutual funds as a response to incentives. *Journal of Political Economy 105*(6), 1167–1200.

Christoffersen, S. K., D. B. Keim, and D. K. Musto (2006). Valuable information and costly liquidity: Evidence from individual mutual fund trades. *Working Paper*.

Coval, J. and E. Stafford (2007). Asset fire sales (and purchases) in equity markets. *Journal of Financial Economics 86*(2), 479–512.

Cremers, K. M., R. Huang, and Z. Sautner (2010). Internal capital markets and corporate politics in a banking group. *The review of financial studies 24*(2), 358–401.

Del Guercio, D. and P. A. Tkac (2008). Star power: The effect of monrningstar ratings on mutual fund flow. *Journal of Financial and Quantitative Analysis 43*(4), 907–936.

Edelen, R. M. (1999). Investor flows and the assessed performance of open-end mutual funds. *Journal of Financial Economics 53*(3), 439–466.

Edmans, A., I. Goldstein, and W. Jiang (2012). The real effects of financial markets: The impact of prices on takeovers. *The Journal of Finance 67*(3), 933–971.

Elton, E. J., M. J. Gruber, and C. R. Blake (2001). A first look at the accuracy of the crsp mutual fund database and a comparison of the crsp and morningstar mutual fund databases. *The Journal of Finance 56*(6), 2415–2430.

Evans, R. B. (2010). Mutual fund incubation. *The Journal of Finance 65*(4), 1581–1611.

Fama, E. F. and K. R. French (1993). Common risk factors in the returns on stocks and bonds. *Journal of financial economics 33*(1), 3–56.

Fecht, F., A. Hackethal, and Y. Karabulut (2018). Is proprietary trading detrimental to retail investors? *The Journal of Finance 73*(3), 1323–1361.

Ferreira, M. A., P. Matos, and P. Pires (2015). Asset management within commercial banking groups: International evidence. *The Journal of Finance*.

Frazzini, A. and O. A. Lamont (2008). Dumb money: Mutual fund flows and the cross-section of stock returns. *Journal of financial economics 88*(2), 299–322.

Gaspar, J.-M., M. Massa, and P. Matos (2006). Favoritism in mutual fund families? evidence on strategic cross-fund subsidization. *The Journal of Finance 61*(1), 73–104.

Gil-Bazo, J., P. Hoffmann, and S. Mayordomo (2017). Mutual funding. *Working Paper*.

Golez, B. and J. M. Marin (2015). Price support by bank-affiliated mutual funds. *Journal of Financial Economics 115*(3), 614–638.

Goncalves-Pinto, L. and B. Schmidt (2013). Co-insurance in mutual fund families. *Working Paper*.

Gruber, M. J. (1996). Another puzzle: The growth in actively managed mutual funds. *The Journal of finance 51*(3).

Hackethal, A., M. Haliassos, and T. Jappelli (2012). Financial advisors: A case of babysitters? *Journal of Banking & Finance 36*(2), 509–524.

Hoechle, D., S. Ruenzi, N. Schaub, and M. Schmid (2018). Financial advice and bank profits. *The review of financial studies, Forthcoming*.

Huang, J., K. D. Wei, and H. Yan (2007). Participation costs and the sensitivity of fund flows to past performance. *The Journal of Finance 62*(3), 1273–1311.

Ippolito, R. A. (1992). Consumer reaction to measures of poor quality: Evidence from the mutual fund industry. *The Journal of Law and Economics 35*(1), 45–70.

Johnson, W. C. and J. Marietta-Westberg (2009). Universal banking, asset management, and stock underwriting. *European Financial Management 15*(4), 703–732.

Karabulut, Y. (2013). Financial advice: An improvement for worse? *Working Paper*.

Lou, D. (2012). A flow-based explanation for return predictability. *The Review of Financial Studies 25*(12), 3457–3489.

Mehran, H. and R. M. Stulz (2007). The economics of conflicts of interest in financial institutions. *Journal of Financial Economics 85*(2), 267–296.

Mitchell, M., L. H. Pedersen, and T. Pulvino (2007). Slow moving capital. *American Economic Review 97*(2), 215–220.

Nanda, V., Z. J. Wang, and L. Zheng (2004). Family values and the star phenomenon: Strategies of mutual fund families. *The Review of Financial Studies 17*(3), 667–698.

Sapp, T. and A. Tiwari (2004). Does stock return momentum explain the "smart money" effect? *The Journal of Finance 59*(6), 2605–2622.

Shive, S. and H. Yun (2013). Are mutual funds sitting ducks? *Journal of Financial Economics 107*(1), 220–237.

Sialm, C. and T. M. Tham (2015). Spillover effects in mutual fund companies. *Management Science 62*(5), 1472–1486.

Sirri, E. R. and P. Tufano (1998). Costly search and mutual fund flows. *The Journal of finance 53*(5), 1589–1622.

Yan, X. S. et al. (2012). The performance of investment bank-affiliated mutual funds: Conflicts of interest or informational advantage? *Journal of Financial and Quantitative Analysis 47*(3), 537–565.

Zheng, L. (1999). Is money smart? a study of mutual fund investors' fund selection ability. *the Journal of Finance 54*(3), 901–933.

Figure I: **Parent Bank Flows vs. Outside Flows to Affiliated Funds**

This figure depicts the relationship between bank and their affiliated funds. We sort all equity and allocation funds in each quarter into deciles according to their outsider flows. We then compute for each decile in each quarter the averages of the parent bank flows into their affiliated funds.

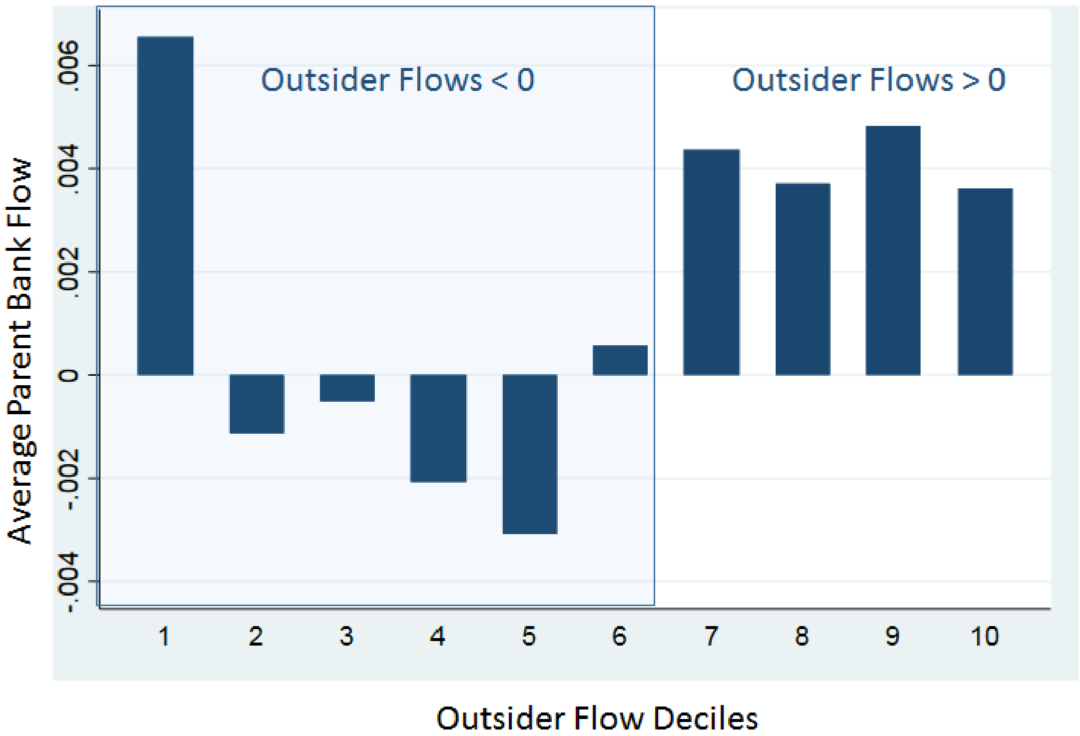

Table 1: **Descriptive Statistics for the Final Sample**

This table presents descriptive statistics for the funds in the final sample. In (1) and (2), we report the mean and standard deviation of various fund characteristics for the unaffiliated fund sample, while (3) and (4) presents the mean and standard deviation of the same fund characteristics for the bank affiliated funds. Column (5) and (6) presents the mean differences of each variable and the corresponding t-statistics. Statistical significance at the 10, 5, and 1 percent levels is indicated by *, **, and ***, respectively. Source: Author computations using *Investmentfond-* and *Depotstatistiken* datasets from *Deutsche Bundesbank*, and *Morningstar Direct* database.

	Unaffiliated Funds		Affiliated Funds			
	Mean	Std. Dev.	Mean	Std. Dev.	Difference	t-statistics
	(1)	(2)	(3)	(4)	(5)	(6)
Cash Deposits Share	0.08	0.112	0.065	0.092	0.015***	8.99
Leverage	0.007	0.022	0.006	0.016	0.001*	2.53
Age in logs	4.207	0.756	4.546	0.849	-0.340***	-27.89
Fund size in logs	17.194	1.105	17.758	1.448	-0.564***	-29.93
Expense ratio	0.017	0.008	0.017	0.007	0.001***	4.35
Family size in logs	22.945	1.479	22.895	1.32	0.050*	2.24
Past performance	0.069	0.135	0.091	0.141	-0.022***	-10.35
Past volatility	0.025	0.019	0.027	0.02	-0.002***	-5.28
Total Flow	-0.001	0.143	-0.002	0.133	0	0.17
Outsider Flows	-	-	-0.003	0.116	-	-
Parent Bank Flows	-	-	0.002	0.058	-	-
No of Obs	5,815		14,448		20,263	

Table 2: **Base Analysis: Do Banks Support their Affiliated Mutual Funds?**

This table presents the coefficient estimates from OLS regressions on whether banks provide liquidity to their affiliated mutual funds that fall into distress. In all specifications, the dependent variable is the normalized fund flows from the parent bank. Specification (1) is the parsimonious specification without considering any fund-level controls, fund-family and quarter-time fixed effects, while (4) represents our preferred specification that includes all these control variables. In all specifications, we account for possible serial correlation and heteroskedasticity by clustering the standard errors at the individual fund level. Statistical significance at the 10, 5, and 1 percent levels is indicated by *, **, and ***, respectively. Source: Author computations using *Investmentfond-* and *Depotstatistiken* datasets from *Deutsche Bundesbank*, and *Morningstar Direct* database.

	Regressand: $Flow_t^{PBank}$			
	(1)	(2)	(3)	(4)
$Flow_t^{Outsider}$ (β_1)	-0.0068	-0.0079	-0.0086	-0.0062
	(0.0186)	(0.0190)	(0.0189)	(0.0189)
Distress (β_2)	-0.0201***	-0.0213***	-0.0209***	-0.019***
	(0.0057)	(0.0056)	(0.0056)	(0.0056)
Distress x $Flow_t^{Outsider}$ (β_3)	-0.1656***	-0.1793***	-0.1779***	-0.1803***
	(0.0430)	(0.0431)	(0.0430)	(0.0429)
$Flow_{t-1}^{PBank}$	0.1715***	0.1669***	0.1667***	0.1564***
	(0.0325)	(0.0321)	(0.0321)	(0.0314)
$Flow_{t-1}^{Outsider}$	0.0378***	0.0337***	0.0340***	0.033***
	(0.0113)	(0.0111)	(0.0110)	(0.0108)
Cash deposits share		-0.0161*	-0.0147*	-0.0111
		(0.0083)	(0.0083)	(0.0086)
Leverage		-0.2491**	-0.2524**	-0.2640**
		(0.1213)	(0.1211)	(0.1246)
Age in logs		-0.0033***	-0.0037***	-0.0032***
		(0.0010)	(0.0011)	(0.0011)
Fund size in logs		0.0011**	0.0010*	0.0014**
		(0.0005)	(0.0005)	(0.0005)
Expense ratio		-0.0347	-0.0660	-0.007
		(0.0983)	(0.0979)	(0.1045)
Family size in logs		0.0013*	0.0013*	0.0039
		(0.0007)	(0.0007)	(0.0056)
Past performance		0.0142***	0.0223***	0.0213***
		(0.0031)	(0.0049)	(0.0049)
Past vola		-0.0404	-0.0441	-0.0408
		(0.0246)	(0.0276)	(0.0279)
Constant	0.00035	-0.0313***	-0.0314***	-0.1015
	(0.0007)	(0.0117)	(0.0118)	(0.0128)
No of Obs	14,443	14,443	14,443	14,443
R^2	0.0551	0.0647	0.0672	0.0716
Clustering	Fund Level	Fund Level	Fund Level	Fund Level
Fund-Family FEs	No	No	No	Yes
Time FEs	No	No	Yes	Yes
Wald Test for $\cdots$				
$\cdots$ $\beta_1+\beta_3=0$ (p-value)	<0.01	<0.01	<0.01	<0.01

Table 3: **Subsample Analysis at the Fund Level: Is It Liquidity Support?**

This table presents the coefficient estimates from OLS regressions on whether banks provide liquidity to their affiliated mutual funds that fall into distress. In all specifications, the dependent variable is the normalized fund flows from the parent bank. To analyze whether the bank support is more pronounced among specific funds that are more likely to be in need of liquidity support, we include three-way interaction terms using different proxies for liquidity need in our estimation model. In (1), we consider the liquidity support among cash poor funds, which fall into the bottom three quartiles based on their cash reserves in a given quarter. In (2), we consider those funds that are in the top quartile based on the changes in their leverage ratio in a given quarter. Specification (3) considers those funds whose fund family has experienced the largest outsider outflows (i.e., in the top quartile) in a given quarter. Finally, in (4), we consider those funds whose family has the highest number of distressed funds (i.e., in the top quartile) in that quarter. In all specifications, we account for possible serial correlation and heteroskedasticity by clustering the standard errors at the individual fund level. Statistical significance at the 10, 5, and 1 percent levels is indicated by *, **, and ***, respectively. Source: Author computations using *Investmentfond-* and *Depotstatistiken* datasets from *Deutsche Bundesbank*, and *Morningstar Direct* database.

	Regressand: $Flow_t^{PBank}$			
Z=	Cash Poor	High Δ Leverage	Low Family Flow	High No of Distressed Funds
	(1)	(2)	(3)	(4)
$Flow_t^{Outsider}$ (β_1)	-0.0128	-0.0238	-0.0052	0.0054
	(0.0275)	(0.0175)	(0.0200)	(0.0223)
Distress (β_2)	-0.0116	-0.0349***	-0.0069	-0.0106*
	(0.0079)	(0.0083)	(0.0052)	(0.0060)
Distress x $Flow_t^{Outsider}$ (β_3)	-0.0690	-0.3046***	-0.0787*	-0.1122**
	(0.0463)	(0.0643)	(0.0440)	(0.0494)
$Flow_t^{Outsider}$ x $I\{Z=1\}$ (β_4)	0.0099	0.0697	-0.0081	-0.0442
	-0,0338	(0.0451)	(0.0189)	(0.0319)
Distress x $Flow_t^{Outsider}$ x $I\{Z=1\}$ (β_5)	-0.2009***	0.2208**	-0.2385***	-0.1467*
	(0.0762)	(0.0873)	(0.0900)	(0.0877)
$I\{Z=1\}$	-0.0008	-0.0005	0.0013	0.0009
	(0.0021)	(0.0018)	(0.0012)	(0.0010)
Distress x $I\{Z=1\}$	-0.0177	0.0285***	-0.0315***	-0.0228**
	(0.0111)	(0.0106)	(0.0113)	(0.0116)
No of Obs	14,443	14,443	14,443	14,443
R^2	0.0814	0.0925	0.0845	0.0816
Fund Controls	Yes	Yes	Yes	Yes
Fund-Family FEs	Yes	Yes	Yes	Yes
Time FEs	Yes	Yes	Yes	Yes
Wald Test for ⋯				
⋯ Cash Poor $\beta_1+\beta_3+\beta_4+\beta_5=0$ (p-value)	<0.01			
⋯ Cash Rich $\beta_1+\beta_3=0$ (p-value)	<0.1			
⋯ High Δ Leverage $\beta_1+\beta_3+\beta_4+\beta_5=0$ (p-value)		>0.1		
⋯ Low Δ Leverage $\beta_1+\beta_3=0$ (p-value)		<0.05		
⋯ Low Family Flow $\beta_1+\beta_3+\beta_4+\beta_5=0$ (p-value)			<0.01	
⋯ High Family Flow $\beta_1+\beta_3=0$ (p-value)			<0.05	
⋯ High No of Distressed Funds $\beta_1+\beta_3+\beta_4+\beta_5=0$ (p-value)				<0.01
⋯ Low No of Distressed Funds $\beta_1+\beta_3=0$ (p-value)				<0.05

Table 4: **Are Banks Contrarian Against Severe Outside Flows?**

This table presents the coefficient estimates from OLS regressions on whether banks provide liquidity to their affiliated mutual funds that fall into distress. In all specifications, the dependent variable is the normalized fund flows from the parent bank. Specification (1) is the parsimonious specification without considering any fund-level controls, fund-family, bank or quarter time fixed effects, while (4) represents our preferred specification that includes all the fund controls and accounts for bank-quarter time fixed effects. In all specifications, we account for possible serial correlation and heteroskedasticity by clustering the standard errors at the individual fund level. Statistical significance at the 10, 5, and 1 percent levels is indicated by *, **, and ***, respectively. Source: Author computations using *Investmentfond-* and *Depotstatistiken* datasets from *Deutsche Bundesbank*, and *Morningstar Direct* database.

	Regressand: $Flow_t^{PBank}$				
	(1)	(2)	(3)	(4)	(5)
$Flow_t^{Outsider}$ (β_1)	0.0243***	0.0245***	0.0245***	0.0245***	0.0247***
	(0.0025)	(0.0025)	(0.0025)	(0.0025)	(0.0025)
Distress (β_2)	0.0002	0.0001	0.0001	0.0001	-0.00001
	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0006)
Distress x $Flow_t^{Outsider}$ (β_3)	0.0106**	0.0083*	0.0083*	0.0083*	0.0079
	(0.0049)	(0.0049)	(0.0049)	(0.0049)	(0.0049)
Affiliated	0.0009	0.0011	-0.0014	-0.0014	-0.0013
	(0.0013)	(0.0013)	(0.0011)	(0.0011)	(0.0011)
Affiliated x $Flow_t^{Outsider}$ (β_4)	-0.0275	-0.0275	-0.0254	-0.0254	-0.0237
	(0.0248)	(0.0248)	(0.0246)	(0.0246)	(0.0241)
Affiliated x Distress	-0.0188***	-0.0191***	-0.0189***	-0.0189***	-0.0182***
	(0.0069)	(0.0069)	(0.0069)	(0.0069)	(0.0067)
Affiliated x Distress x $Flow_t^{Outsider}$ (β_5)	-0.1757***	-0.1774***	-0.1812***	-0.1812***	-0.1773***
	(0.0503)	(0.0498)	(0.0499)	(0.0499)	(0.0493)
$Flow_{t-1}^{Pbank}$	0.1572***	0.1570***	0.1542***	0.1542***	
	(0.0217)	(0.0216)	(0.0209)	(0.0209)	(0.0211)
$Flow_{t-1}^{Outsider}$	-0.0011	-0.0016	-0.0015	-0.0015	-0.0018
	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0011)
Cash deposits share		-0.0021	-0.0017	-0.0017	-0.0017
		(0.0015)	(0.0015)	(0.0015)	(0.0015)
Leverage		-0.0274**	-0.0272**	-0.0272**	-0.0273**
		(0.0132)	(0.0132)	(0.0132)	(0.0130)
Age in logs		-0.0002	-0.0003	-0.0003	-0.0003*
		(0.0002)	(0.0002)	(0.0002)	(0.0002)
Fund size in logs		0.0003***	0.0003***	0.0003***	0.0003***
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Expense ratio		-0.0237	-0.0242	-0.0242	-0.0236
		(0.0163)	(0.0159)	(0.0159)	(0.0157)
Family size in logs		0.0002*	0.0001	0.0001	0.0001
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Past performance		0.0018***	0.0029***	0.0029***	0.0028***
		(0.0004)	(0.0007)	(0.0007)	(0.0007)
Past vola		-0.0055	-0.0072	-0.0072	-0.0072
		(0.0038)	(0.0046)	(0.0046)	(0.0046)
Constant	-0.0001**	-0.0075***	-0.0055***	-0.0055***	-0.0048***
	(0.0001)	(0.0020)	(0.0018)	(0.0018)	(0.0017)
No of Obs	94,810	94,810	94,810	94,810	94,810
R^2	0.0545	0.0558	0.0593	0.0593	0.0712
Clustering	Fund Level	Fund Level	Fund Level	Fund Level	Fund Level
Bank FEs	No	No	No	Yes	No
Time FEs	No	No	Yes	Yes	No
Bank-Time FEs	No	No	No	No	Yes
Wald Test for $\cdots$					
$\cdots$ $\beta_1+\beta_3+\beta_4+\beta_5=0$	<0.01	<0.01	<0.01	<0.01	<0.01
$\cdots$ $\beta_1+\beta_3=0$	>0.1	>0.1	>0.1	>0.1	>0.1

Table 5: **Favoritism towards Funds with Higher Managerial Skill: Multivariate Analysis**

This table presents the coefficient estimates from OLS regressions on whether banks favor certain funds based on the managerial skill when providing liquidity support. In all specifications, the dependent variable is the normalized fund flows from the parent bank. In (1) and (2), we proxy managerial skill by the average Euro value added of what a given fund over its benchmark, while (3) and (4) considers the average excess returns over the prior 12 months. In (1) and (3), we calculate the value added using a 1-factor model, while (2) and (4) use a five-factor model, including the Fama-French factors, Carhart momentum factor, and the Bloomberg Barclays Global Bond Index. In all specifications, we account for possible serial correlation and heteroskedasticity by clustering the standard errors at the individual fund level. Statistical significance at the 10, 5, and 1 percent levels is indicated by *, **, and ***, respectively. Source: Author computations using *Investmentfond-* and *Depotstatistiken* datasets from *Deutsche Bundesbank*, and *Morningstar Direct* database.

	Regressand: $Flow_t^{PBank}$			
Z=	High Value Added (1-Factor)	High Value Added (5-Factor)	High Gross Alpha (1-Factor)	High Gross Alpha (5-Factor)
	(1)	(2)	(3)	(4)
$Flow_t^{Outsider}$ (β_1)	-0.0070	-0.0079	-0.0355	-0.0221
	(0.0252)	(0.0248)	(0.02705)	(0.0263)
Distress (β_2)	-0.0246***	-0.0223***	-0.0205***	-0.0138**
	(0.0067)	(0.0066)	(0.0067)	(0.0063)
Distress x $Flow_t^{Outsider}$ (β_3)	-0.2054***	-0.1798***	-0.1465***	-0.1232***
	(0.0502)	(0.0498)	(0.0507)	(0.0450)
$Flow_t^{Outsider}$ x $I\{Z=1\}$ (β_4)	-0.0018	0.0026	0.0804**	0.0441
	(0.0277)	(0.0232)	(0.0320)	(0.0303)
Distress x $Flow_t^{Outsider}$ x $I\{Z=1\}$ (β_5)	0.1637**	-0.0004	-0.0990	-0.1766*
	(0.0087)	(0.1065)	(0.1051)	(0.0946)
$I\{Z=1\}$	-0.0025	-0.0004	0.0010	0.0003
	(0.0013)	(0.0010)	(0.0014)	(0.0011)
Distress x $I\{Z=1\}$	0.0241***	0.0087	0.0016	-0.0222*
	(0.0087)	(0.0148)	(0.0135)	(0.0131)
No of Obs	14,026	14,026	14,088	14,088
R^2	0.0667	0.0648	0.0689	0.0683
Fund Controls	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Family FE	Yes	Yes	Yes	Yes
Wald Test for $\cdots$				
$\cdots$ High Managerial Skill $\beta_1+\beta_3+\beta_4+\beta_5=0$ (p-value)	>0.1	0.052	0.029	<0.01
$\cdots$ Low Managerial Skill $\beta_1+\beta_3=0$ (p-value)	<0.01	<0.01	<0.01	<0.01

Table 6: **Favoritism towards Funds with Higher Managerial Skill: Portfolio Analysis**

This table presents the univariate tests on whether banks favor certain funds based on the managerial skill when providing liquidity support. In (1) and (2), we proxy managerial skill by average gross alphas over the prior 12 months, while (3) and (4) considers the average valued added (in million Euros) of funds over the prior 12 months. In (1) and (3), we calculate the value added using a 1-factor model, while (2) and (4) use a five-factor model, including the Fama-French factors, Carhart momentum factor, and the Bloomberg Barclays Global Bond Index. Statistical significance at the 10, 5, and 1 percent levels is indicated by *, **, and ***, respectively. Source: Author computations using *Investmentfond-* and *Depotstatistiken* datasets from *Deutsche Bundesbank*, and *Morningstar Direct* database.

	Gross Alpha (%) (1-Factor)	Gross Alpha (%) (5-Factor)	Value Added (in M) (1-Factor)	Value Added (in M) (5-Factor)
	(1)	(2)	(3)	(4)
(1) *Affiliated distressed funds with support*	0.3812	0.0146	0.4025	-0.669
	(0.0024)	(0.0024)	(0.5619)	(0.7904)
(2) *Affiliated distressed funds without support*	0.1406	-0,1325	0.4150	0.1095
	(0.0020)	(0.0022)	(0.5513)	(0.1773)
(3) *Affiliated non-distressed funds*	0.2601	-0.0301	0.8142	0.2016
	0.0021	(0.0021)	(0.5853)	(0.5661)
(1)-(2)	0.2415	0.1499	0.1874	-0.7785
	(0.0012)	(0.0013)	(0.5122)	(0.7053)
(1)-(3)	0.1219	0.0045	-0.2117	-0.8706
	(0.0010)	0,00101	(0.6732)	(0.7105)

Table 7: **Protecting High-Value Funds**

This table presents the coefficient estimates from OLS regressions on whether banks favor certain funds based on the value of the funds to the business when providing liquidity support. In all specifications, the dependent variable is the normalized fund flows from the parent bank. We use different proxies to capture the value of the fund to the group. We define funds as high value if the fund falls into the top quartile in its fund family based on the total fees (Specification (1)), or its past performance is in the top quartile across all funds. In (2), we measure the fund's performance by the Sharpe ratio over the past 12 months, and (3) and (4) measure fund performance based a 1-factor model and a five-factor model that includes the Fama-French factors, Carhart momentum factor, and the Bloomberg Barclays Global Bond Index, respectively. In all specifications, we account for possible serial correlation and heteroskedasticity by clustering the standard errors at the individual fund level. Statistical significance at the 10, 5, and 1 percent levels is indicated by *, **, and ***, respectively. Source: Author computations using *Investmentfond-* and *Depotstatistiken* datasets from *Deutsche Bundesbank*, and *Morningstar Direct* database.

	Regressand: $Flow_t^{PBank}$			
Z=	High Fee	High Sharpe	High Alpha (1-Factor)	High Alpha (5-Factor)
	(1)	(2)	(3)	(4)
$Flow_t^{Outsider}$ (β_1)	0.00652	-0.01908	-0.03483	-0.02760
	(0.0216)	(0.0234)	(0.0271)	(0.0263)
Distress (β_2)	-0.01810***	-0.01901***	-0.01939***	-0.01552**
	(0.0063)	(0.0061)	(0.0064)	(0.0064)
Distress x $Flow_t^{Outsider}$ (β_3)	-0.18519***	-0.15723***	-0.14278***	-0.13432***
	(0.0521)	(0.0471)	(0.0461)	(0.0462)
$Flow_t^{Outsider}$ x $I\{Z=1\}$ (β_4)	-0.04677	0.04277	0.07777**	0.06069**
	(0.0362)	(0.0294)	(0.0320)	(0.0304)
Distress x $Flow_t^{Outsider}$ x $I\{Z=1\}$ (β_5)	0.01578	-0.09617	-0.11734	-0.14424
	(0.1062)	-0.1082	(0.1018)	(0.0956)
$I\{Z=1\}$	-0.00049	0.00061	0.00146	0.00090
	(0.0017)	(0.0012)	(0.0014)	(0.0011)
Distress x $I\{Z=1\}$	-0.00648	-0.00496	-0.00350	-0.01691
	(0.0137)	(0.0156)	(0.0140)	(0.0132)
No of Obs	14,443	14,443	14,088	14,088
R^2	0.0759	0.0761	0.0727	0.0718
Fund Controls	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Family FE	Yes	Yes	Yes	Yes
Wald Test for $\cdots$				
$\cdots$ High Value Fund $\beta_1+\beta_3+\beta_4+\beta_5=0$ (p-value)	<0.01	<0.01	<0.01	<0.01
$\cdots$ Low Value Fund $\beta_1+\beta_3=0$ (p-value)	<0.05	<0.05	<0.05	<0.01

Table 8: **Decomposing the Parent Bank Flows**

This table presents the coefficient estimates from OLS regressions on whether banks provide liquidity to their affiliated mutual funds that fall into distress. In all specifications, the dependent variable is the normalized fund flows from the parent bank. Specification (1) is the parsimonious specification without considering any fund-level controls, fund-family and quarter-time fixed effects, while (4) represents our preferred specification that includes all these control variables. In all specifications, we account for possible serial correlation and heteroskedasticity by clustering the standard errors at the individual fund level. Statistical significance at the 10, 5, and 1 percent levels is indicated by *, **, and ***, respectively. Source: Author computations using *Investmentfond-* and *Depotstatistiken* datasets from *Deutsche Bundesbank*, and *Morningstar Direct* database.

	$Flow_t^{Prop}$	$Flow_t^{Inst}$	$Flow_t^{Ret}$
	(1)	(2)	(3)
$Flow_t^{Outsider}$ (β_1)	-0.0008	-0.0089	0.0093**
	(0.0007)	(0.0074)	(0.0038)
Distress (β_2)	-0.0002	-0.0067***	-0.0010
	(0.0004)	(0.0025)	(0.0012)
Distress x $Flow_t^{Outsider}$ (β_3)	0.0006	-0.0667***	-0.0260**
	(0.0019)	(0.0181)	(0.0105)
$Flow_{t-1}^{Outsider}$	0.0003	0.0145***	0.0036
	(0.0004)	(0.0042)	(0.0025)
Cash deposits share	-0.0032	-0.0027	0.0008
	(0.0020)	(0.0025)	(0.0031)
Leverage	0.0035	-0.0671	-0.0870**
	(0.0051)	(0.0502)	(0.0380)
Age in logs	0.0001	-0.0008**	-0.0010**
	(0.0001)	(0.0003)	(0.0005)
Fund size in logs	0.00004	0.0002	0.0005**
	(0.0000)	(0.0002)	(0.0002)
Expense ratio	-0.0033	-0.0244	-0.0195
	(0.0098)	(0.0458)	(0.0338)
Family size in logs	-0.00003	0.0032	-0.0003
	(0.0003)	(0.0030)	(0.0016)
Past performance	-0.0002	0.0098***	0.0079***
	(0.0003)	(0.0027)	(0.0020)
Past vola	-0.0027	-0.0171	-0.0230
	(0.0024)	(0.0145)	(0.0141)
$Flow_{t-1}^{Prop}$	0.2472**		
	(0.1122)		
$Flow_{t-1}^{Inst}$		0.0368	
		(0.0259)	
$Flow_{t-1}^{Ret}$			0.4975***
			(0.0558)
Constant	-0.0003	-0.0756	0.0057
	(0.0061)	(0.0683)	(0.0366)
No of Obs	14,443	14,443	14,443
R^2	0.0811	0.0387	0.3226
Clustering	Fund Level	Fund Level	Fund Level
Fund-Family FEs	Yes	Yes	Yes
Time FEs	Yes	Yes	Yes
Wald Test for $\cdots$			
$\cdots$ $\beta_1+\beta_3=0$ (p-value)	>0.1	<0.01	0.056

Table 9: **Is Liquidity Support Beneficial to Mutual Funds? Multivariate Analysis**

This table presents the coefficient estimates from OLS regressions on whether the liquidity support from banks positively contributes to the net-of-fees abnormal performance of affiliated funds that fall into distress. In (1), fund performance is measured by the 1-factor alpha, while in (2) we measure fund performance using a 5-factor model that includes the the Fama-French factors, Carhart momentum factor, and the Bloomberg Barclays Global Bond Index. In both specification, we also include one- and two-period lagged performance in the estimation model. Statistical significance at the 10, 5, and 1 percent levels is indicated by *, **, and ***, respectively. Source: Author computations using *Investmentfond-* and *Depotstatistiken* datasets from *Deutsche Bundesbank*, and *Morningstar Direct* database.

Performance:	1-Factor Alpha	5-Factor Alpha
	(1)	(2)
$Flow_t^{PBank}$ (β_1)	0.0176	0.0028
	(0.0263)	(0.0320)
Distress (β_2)	-0.0035**	-0.0032**
	(0.0015)	(0.0016)
Distress x $Flow_t^{PBank}$ (β_3)	0.1789**	0.2151**
	(0.8890)	(0.1089)
Cash deposits share	-0.0044	-0.0012
	(0.0043)	(0.0042)
Leverage	0.0915***	0.0776***
	(0.0311)	(0.0219)
Age in logs	-0.0005	-0.0021**
	(0.0010)	(0.0009)
Fund size in logs	0.0000	0.0004
	(0.0003)	(0.0003)
Expense ratio	-0.1407***	-0.2376***
	(0.0515)	(0.0629)
Family size in logs	-0.0039	0.0007
	(0.0032)	(0.0033)
Past Performance	0.2764***	0.1697***
	(0.011)	(0.0076)
Past vola	-0.5474***	-0.2556***
	(0.0931)	(0.0754)
Total Flow	-0.0113	-0.019**
	(0.0078)	(0.0089)
$Performance_{t-1}$	-0.3571***	-0.1257***
	(0.0168)	(0.0382)
$Performance_{t-2}$	-0.3457***	-0.1722***
	(0.0215)	(0.0617)
No of Obs	12,603	12,603
R^2	0.6350	0.4614
Time FE	Yes	Yes
Family FE	Yes	Yes
Wald Test for $\cdots$		
$\cdots$ $\beta_1+\beta_3=0$ (p-value)	>0.1	>0.1

Table 10: **Is Liquidity Support Beneficial to Mutual Funds? Portfolio Analysis**

This table presents the results of univariate portfolio tests on whether the liquidity support from banks positively contributes to the net-of-fees abnormal performance of affiliated funds that fall into distress. We contrast the performance of affiliated funds that fall into distress and receive support from their parent bank with that of affiliated distress funds that do not receive support, and unaffiliated distress funds, respectively. In (1), fund performance is measured by the 1-factor alpha, while in (2) we measure fund performance using a 5-factor model that includes the the Fama-French factors, Carhart momentum factor, and the Bloomberg Barclays Global Bond Index. Source: Author computations using *Investmentfond-* and *Depotstatistiken* datasets from *Deutsche Bundesbank*, and *Morningstar Direct* database.

	1-Factor Alpha	5-Factor Alpha
	(1)	(2)
(1) *Affiliated distress funds with support*	0.1383	-0.2933
	(0.0513)	(0.0024)
(2) *Affiliated distressed funds without support*	0.0112	-0.3580*
	(0.0023)	(0.0018)
(3) *Unaffiliated distressed funds*	-0.1846	-0.4433***
	(0.0019)	(0.0016)
(1)-(2)	0.1271	0.0646
	(0.0016)	(0.0016)
(1)-(3)	0.3223**	0.1499
	(0.0014)	(0.0015)

Table 11: **Benefits or Costs to Bank Clients: Multivariate Analysis**

This table presents the coefficient estimates from OLS regressions on the future performance of affiliated distressed funds to which banks provide liquidity. In (1) and (2), we consider the 6-month cumulative performance (i.e., from the beginning of $t+1$ until the end of $t+2$) after a fund falls into distress in quarter t, and (3) and (4) considers the 6-month cumulative performance in the following 6-months (i.e., from the beginning of $t+3$ until the end of $t+4$). In (1) and (3), we consider 1-factor alpha, while (2) and (4) considers 5-factor alpha as the performance measure. Statistical significance at the 10, 5, and 1 percent levels is indicated by *, **, and ***, respectively. Source: Author computations using *Investmentfond-* and *Depotstatistiken* datasets from *Deutsche Bundesbank*, and *Morningstar Direct* database.

	Performance over 6 months (from t+1 to t+6)		Performance over 6 months (from t+7 to t+12)	
	1-Factor Alpha	5-Factor Alpha	1-Factor Alpha	5-Factor Alpha
	(1)	(2)	(3)	(4)
$I\{Flow_t^{PBank} > 0\}$ (β_1)	0,00146	-0.0010	0.0004	-0.0002
	(0.0017)	(0.0021)	(0.0015)	(0.0017)
Distress (β_2)	-0.0031	-0.0023	-0.0021	-0.0024
	(0.0024)	(0.0024)	(0.0025)	(0.0024)
$I\{Flow_t^{PBank} > 0\}$ x Distress (β_3)	0.0127***	0.0143***	0.0055	0.0070
	(0.0044)	(0.0048)	(0.0048)	(0.0050)
No of Obs	12,551	12,551	12,210	12,210
R^2	0.4318	0.4296	0.4293	0.4552
Fund Controls	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Family FE	Yes	Yes	Yes	Yes
Wald Test for $\cdots$				
$\cdots$ $\beta_1+\beta_3=0$ (p-value)	<0.05	<0.01	>0.10	>0.10