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MUTUAL FUNDS' PERFORMANCE: THE ROLE OF DISTRIBUTION NETWORKS AND OF BANK AFFILIATION

by Giorgio Albareto[*] Andrea Cardillo[*] Andrea Hamaui[°] and Giuseppe Marinelli[*]

Abstract

The paper investigates how the characteristics of the distribution network and the affiliation to a banking group affect mutual funds' performance exploiting a unique dataset with extremely detailed information on funds' portfolios and bank-issuer relationships for the period 2006-2017. We find that bank-affiliated mutual funds underperform independent ones. The structure of the distribution channels is a key-factor affecting mutual funds' performance: when bank platforms become by far the prevalent channel for the distribution of funds' shares, asset management companies are captured by banks. As for bank affiliation, results show a positive bias of bank-controlled mutual funds towards securities issued by their own banking group clients (of the lending and investment banking divisions) and by institutions belonging to their own banking group; this last bias is exacerbated for mutual funds belonging to undercapitalized banking groups. The structure of the distribution channels explains two thirds of bank-affiliated mutual funds underperformance, whereas investment biases explain one fourth of the observed differential in returns with independent mutual funds.

JEL Classification: G23, G21, G11, G32.
Keywords: banking, mutual funds, distribution networks, conflict of interest.
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Contents

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1 Introduction*

The mutual funds industry has grown significantly over the past decades. After the difficulties of the Great Recession, the Italian asset management industry has recently seen a significant expansion, reaching the 19 per cent of Italian GDP in terms of assets under management at the end of 2019. As a consequence of their increased importance, the performance of mutual funds has been under scrutiny of both practitioners and commentators, often pointing to their underperformance because of high investment costs and of inefficient investment strategies.[1] The characteristics of the distribution system of financial products and conflicts of interest arising from mutual funds affiliation to banking groups are often identified as the main drivers of these inefficiencies.

Banks dominate the distribution system and might exploit their position to extract monopolistic rents or impose hurdles on funds which rely on them for their distribution. Moreover, as many investors lacking financial knowledge purchase asset management products through intermediated channels (Bergstresser et al., 2009; Christoffersen et al., 2005), being part of a larger group which holds a dominant position in the distribution might substantially alter incentives for funds' managers, thus favoring distribution fees maximizing behaviors. A report drawn up by the working group on Italian investment funds set up in 2008 at the initiative of the Bank of Italy identified a distribution system that relies mainly on banks and intermediaries controlled by banking groups as one of the main factors negatively affecting the mutual funds industry (Bank of Italy, 2008).

As for the role of mutual funds bank affiliation[2] and its implications, the indications from the literature are not clear-cut. On the one hand, being part of a banking group could generate relevant information or cost advantages for affiliated funds over their competitors and could result in relevant cost advantages derived from the ability to access group infrastructure. On the other hand, the close interaction of banks and mutual funds could result in a loss of value for investors due to the fact that, as mutual funds do not represent banking groups' core business, investment activity could be distorted in order to support banking group interests at large. In other words, in a profit maximization perspective, managers could be willing to sacrifice revenues in an ancillary activity with the scope of favoring groups' main businesses.

Italy is a particularly suitable country to investigate the role of the distribution network and of bank affiliation on mutual funds performance. Indeed, the supply of financial products is characterized by the central role played by banks as distributors and most of wealth management financial instruments are issued by institutional investors belonging to banking groups: in 2019 the share of assets under management of mutual funds belonging to banking groups was equal to 53% (85% in 2006). These characteristics affect Italian mutual funds performance: according to a recent analysis of performances and costs of mutual funds belonging to 20 European countries, Italy was in the sixteenth place of the ranking in the fourth quarter of 2019 (Silano, 2020).

Although there is widespread consensus that bank-affiliated funds underperform their peers,

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[1] See Walker (2018).

[2] For the sake of brevity we use the expressions *bank-affiliated*, *bank-controlled*, *bank-owned* mutual funds when referring to mutual funds issued by asset management companies affiliated to banking groups.

relative little attention has been devoted to explaining such underperformance and why it persists in equilibrium. With our paper we aim at contributing to the analysis of the factors influencing mutual funds performance by addressing the following questions: do bank-affiliated mutual funds underperform with respect to independent ones? Which are the main factors explaining bank-controlled mutual funds underperformance? Does bank distribution affect mutual funds performance? Do conflicts of interest related to commercial and investment banking and to the presence of other issuers in the mutual funds banking group affect mutual funds performance? We answer these questions using a unique dataset of both bond and equity Italian open-end mutual funds belonging to different affiliation categories. The data set contains very detailed data on mutual funds portfolios and on bank-issuer relationships for the period 2006-2017.

We find that bank-controlled mutual funds underperform independent ones. Bank distribution is the most important factor influencing mutual funds performance: when bank platforms become by far the prevalent channel for the distribution of mutual funds, asset management companies are captured by banks and mutual funds performance is negatively affected. The functioning of this channel rests on banks market power as distributors and on the capture of retail clients, whose main channel to buy financial products is represented by bank branches. The nature and the concentration of the distribution network explain two thirds of bank-affiliated mutual funds' underperformance with respect to independent ones. Bank affiliation is associated to conflicts arising from the different interests of banks and asset management companies. We show a bias of such funds towards securities issued by their own banking group borrowers (excluding defaulting ones) or investment banking clients and by institutions belonging to their own banking group; this last bias is exacerbated for those mutual funds belonging to banking groups characterized by lower capital ratios. The investment biases negatively affect bank-affiliated mutual funds' performance and explain one fourth of their net excess returns differential with independent funds; using a different methodology, Ferreira et al. (2018) evaluate that conflicts of interest explain a larger share (40%) of non-U.S. bank-affiliated mutual funds underperformance.

Our findings contribute to the literature in several ways. Although there is consensus on the idea that bank-affiliated mutual funds underperform their competitors (Walker, 2018), we are the first, to the best of our knowledge, to comprehensively investigate how the structure of distribution and conflicts of interest between banking activities and mutual funds objectives shape investment strategies distorting mutual funds asset allocation.

Notwithstanding the central role banks play in the distribution of financial products represents a crucial factor in explaining mutual funds performance, due to lack of data and reliable information on distribution, to the best of our knowledge relative scarce attention has been devoted to this issue. Knuutila et al. (2007) show how, in a market characterized by a dominant position of banks in the distribution of funds, nonbank funds attract flows mainly through their performances, while bank-affiliated funds do not exhibit the same relationship between performances and flows. Han et al. (2013) argue that distribution channels that are integrated with asset management companies have an incentive to charge higher fees than independent channels that do not have such links. To the best of our knowledge our paper is the first which empirically studies the role played by bank distribution to explain mutual funds performance.

As for mutual funds bank affiliation, empirical research pointed out both its pros and cons. In particular, as lending and investment banking activity generate critical private information via repeated interactions, fund managers could benefit from positive spillovers from banks within the same group (Petersen and Rajan, 1995; Drucker and Puri, 2005; Massa and Rehman, 2008). Funds affiliated to banking groups, benefiting from larger scale operational structures, could be favored in reaching their optimal operational scale; unaffiliated funds, instead, tend to be smaller,

a characteristic resulting in a cost structure which is not convenient for investors (Khorana and Servaes, 2011). Conflicts of interest between mutual funds and banking activity could be pervasive.[3] Asset management divisions could be either exploited to support commercial banking or investment banking (Berzins et al., 2013; Degeorge and Pratobevera, 2017). In particular, as for investment banking externalities, Ritter and Zhang (2007) and Johnson and Marietta-Westberg (2009) examine how banks exploit affiliated funds in supporting "cold" IPOs, so that more equity can be raised and more deals can be executed when demand is weak. Consistently, Hao and Yan (2012) find strong evidence that investment bank affiliated funds underperform unaffiliated ones and that they are also overexposed to the stocks whose IPO their parent bank had executed. Additionally, especially in countries where financial markets are less developed and investment banking activities are not central in profit generation for banks, Golez and Marin (2015) show that conflicts of interest affecting mutual funds may result in trading to support the price of parent banks stocks. Moreover, Gil-Bazo et al. (2019) argue that bank-affiliated funds support parent banks bond issues in times of difficulty. Finally, Ferreira et al. (2018) suggest that bank-controlled funds underperform their competitors and hint that such underperformance could be attributed to an overweight of securities issued by banks syndicated lending clients in their portfolios.

Starting from the observation that bank-affiliated mutual funds consistently underperform independent ones, thanks to the unique information contained in our dataset, we are the first to conduct an extensive analysis of bank-affiliated mutual funds portfolios. In particular, we are able to match all bank activities, ranging from lending to underwriting, with mutual funds security holdings and investigate how conflicts of interest distort investment decisions and how and to what extent these in turn negatively affect funds performance. We also investigate how bank stability shapes conflicts of interest between banks and mutual funds. Indeed, as bank regulation is more pervasive and more stringent than that concerning other financial intermediaries, regulatory burdens can exacerbate conflicts of interest arising from funds bank affiliation. We add to the literature showing how bank capitalization influences the investment strategy bias arising from conflicts of interest due to the presence of security issuers in mutual funds banking groups.

Finally we use an extremely detailed and comprehensive measure of all the investment costs, the total shareholder cost (TSC), encompassing subscription and redemption costs, which have been increasing during the last years (Albareto et al., 2017). Besides that, previous analyses on mutual funds performance take into account only equity funds; we analyze the performance of both equity and bond funds. This extension allows us to achieve more general results, also considering the importance of bond funds.

The rest of the paper is organized as follows. Section 2 illustrates the characteristics of the data used and describes a few stylized facts. Section 3 discusses the empirical strategy. Section 4 reports the results of the econometric estimations and Section 5 concludes.

[3]See Mehran and Stulz (2007) for a survey of conflicts of interest within the financial sector.

2 Institutional Setting and Descriptive Evidence

2.1 Data Sources

Data on investment funds are drawn from asset management companies (AMC henceforth) supervisory reports, regulated by the Bank of Italy. All data refer to the universe of open-end investment funds governed by Italian law. In addition to funds issued by Italian AMCs, the sample include Italian open-end funds governed by Italian law established by AMCs resident in other EU member states having an EU management company passport. Funds of funds and alternative investment funds (AIF) are included in the sample whereas money market funds are excluded from the sample. Information drawn from supervisory reports such as total assets under management, value of funds units, portfolio at market value broken down by security, gross inflows, redemptions, fees are reported at individual fund level. Additional information such as cost of employees, average number of employees are reported at AMC level.

Data on banks' balance-sheets are taken from the Supervision data reporting framework and merged with the financial intermediaries and groups data base in order to calculate indicators at banking group level. Data on the affiliation of asset management companies and consequently on their investment funds' are compiled by the Bank of Italy Supervisory Department. The classification categories of the asset management companies used by the supervisory department have been grouped into four macro categories labeled *bank*, *insurance*, *independent* and *mixed*. Asset management companies classified in the first two categories include those belonging, respectively, to Italian or foreign banking groups or consortia and to insurance companies or groups. In addition to the asset management companies classified by the supervisory authorities as *independent stricto sensu*, those classified as *financial*, *public*, *private* and *industrial* were classified as such. Finally, asset management companies classified as *mixed* include those for which control is divided between companies belonging to different sectors, among which it is impossible to identify a prevailing one.

As for AMCs affiliated to foreign banking groups, only Italian banks of the group were considered for customers relationships. Italian open-ended investment funds issued by bank-affiliated AMCs represent one fourth of those offered as a whole by banking groups, whose main component are foreign funds (so called *round-trip* funds).

2.2 Regulatory Framework

The presence of asset management companies inside banking groups can involve both conflicts of interest and information spillovers among different business units, potentially affecting the financial decisions of retail investors. Financial regulation provides rules in order to shield financial investors from potentially negative effects.

Conflicts of interest are regulated by the Markets in Financial Instruments Directive (2004/39/EC; henceforth MIFID), updated in 2014 by the so called MIFID II (2014/65/EU). The directive establishes that intermediaries have to proactively identify conflicts of interests and establish rules to shield the interests of their clients from the distortions stemming from such conflicts, thus mitigating their potential impacts (article 56 of MIFID II). Where some residual risk of detriment to the clients interests remains, clear disclosure to the client of the general nature and sources of conflicts of interest and of the steps taken to mitigate those risks should be made before undertaking business on its behalf. Under the new regulatory framework, specific attention has

been dedicated to conflicts of interests affecting investment services firms. Finally, in case the organizational and administrative arrangements put in place by the investment firm to manage conflicts of interests were not sufficient to ensure a substantial protection of clients, financial intermediaries should provide their customers with sufficiently detailed information in order to allow them to make informed investment decisions.

The Testo Unico Finanziario (Decree Law 58/1998; TUF henceforth) has incorporated the indications for the prevention of conflicts of interest required by the MIFID directive establishing that the CONSOB, after consulting the Bank of Italy, regulates the management of conflicts of interest potentially prejudicial to customers (art .6) [4] .

The regulation of information spillovers stems from Directive 2003/6/EC (Market Abuse Directive; MAD henceforth). This Directive, which was later substituted by the Regulation (EU) No 596/2014 (MAD II henceforth), aims at preventing insider dealing and market manipulation both by preventing any person who possesses inside information from using them (either acquiring or disposing financial instruments to which that information relates) and by limiting any transaction or order that might provide misleading signals to the market or distort the price of financial instruments in an abnormal way.

2.3 Mutual Funds Characteristics

Our sample consists of 1,860 mutual funds managed by almost 120 asset management companies (Table 1)[5]. Half of the AMCs are affiliated to banking groups, whereas the remaining half is split into insurance affiliated, mixed affiliation and independent funds. The average size of investment funds greatly varies depending on the nature of their affiliation: bank affiliated funds are, on average, the largest managed ones (more than euro 300 million of assets under management) whereas independent funds tend to be smaller (euro 113 million). The share of mutual funds whose main assets are represented by stocks[6] is around one fourth for bank-controlled and independent funds and is higher for insurance companies-controlled ones (46%). In terms of assets such share is even lower, i.e. less than 20% for bank-affiliated and independent funds and one fourth for the others.

Independent funds perform slightly better than bank-affiliated funds, especially in terms of weighted mean of returns where the difference is 11 basis points on a quarterly basis (Table 1).[7] Insurance affiliated funds are characterized by the lowest returns regardless of the chosen indicator. Such performance indicators may be obviously affected by the size of the fund or of the AMC or by the type of investment, equity or debt, by their investment strategy, or by the region of the investment. All these factors need to be considered in a multidimensional analysis which accounts for all of them at once.

[4] The art. 48 of the TUF regulates the relations between the depositary and the asset management company and in particular establishes that the depositary acts independently and in the interests of the participants in the UCI (?). It adopts all appropriate measures to prevent potential conflicts of interest between the function of the depositary and other activities performed".

[5] The total number of funds and of AMCs in Table 1 is not 1,860 and 120 since some of them have changed affiliation during the sample period thereby leading to a few duplications when breaking down the sample by affiliation.

[6] We adopted the *Assogestioni* classification of mutual funds according to which these are classified into more than 40 categories based on the portfolio proportion of equity or debt, the main geographic area of investment and currency.

[7] Net returns are calculated as the difference between gross returns and total shareholder costs (TSC) which include those that are charged on the fund and those directly attributed to subscribers (subscription and redemption fees).

Table 1: **Summary Statistics**

This table reports summary statistics on the universe of investments funds by type of affiliation in the sample period spanning from 2006 and 2017 with a quarterly frequency. Statistics are reported by type of affiliation of the asset management company (AMC): banks, insurance companies, other financial intermediaries (OFI), mixed affiliation (two or more entities of different sectors), independent, non-financial firms and government. Assets are the assets under management of the mutual fund. Net returns are calculated as gross returns net of total shareholder costs (TSC) on a quarterly basis.

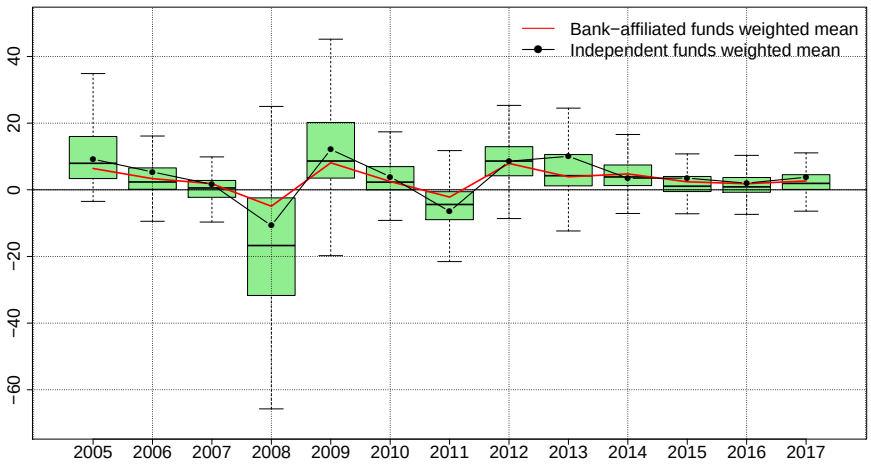
	Number of		Assets (euro millions)			
Affiliation	Funds	AMCs	Total	Mean	Median	SD
Bank	1,490	67	155,455	318	95	820
Insurance	138	14	13,115	214	82	548
Mixed	208	7	12,998	268	134	469
Independent	335	47	15,223	113	44	253
	Share of equity funds		Net Returns (%)			
Affiliation	Number	Assets	Mean	Median	W. mean	SD
Bank	25.1	15.9	0.32	0.46	0.54	5.24
Insurance	46.4	26.1	0.10	0.44	0.50	5.91
Mixed	19.0	25.2	0.54	0.50	0.89	5.28
Independent	26.6	17.8	0.37	0.51	0.65	6.46

The distribution of net returns over time has closely matched the development of the financial cycle in the last decade (Figure 1). In most of the years of our sample period more than three fourth of the funds have delivered positive net returns while in the years of the international financial crisis (2007 and 2008) such proportion has fallen to half and less than one fourth. In 2011, the *annus horribilis* of the Italian sovereign debt crisis, again only one fourth of the funds have delivered positive net returns. It can be noticed how the dispersion of returns is generally higher when the average returns are higher in absolute terms. Also the yearly developments of returns depicted in Figure 1 confirm the higher volatility of independent funds with respect to bank-affiliated ones. Figure 2 shows in a more clear way the path of quarterly net returns for independent and bank-controlled funds and their difference over time in the last twelve years. Independent funds perform better during the positive phases of the financial cycle while bank-controlled funds tend to perform better in terms of lower losses during the negative phases of the financial cycle. Such evidence confirm what has been already pointed out regarding the higher volatility of independent investment funds (Table 1).

The median value of total costs charged to funds' clients, measured in terms of total shareholder costs (TSC) and scaled by the amount of assets under management, amounts to 1.5%-2% during our sample period (Figure 3). The weighted mean of total costs is generally smaller for bank-affiliated funds when compared to that of independent funds, suggesting structural differences in the production and distribution process of the two types of funds. Such finding may reflect a better organization of AMCs operating within banking groups due to economies of scope and economies of scale, for example in terms of IT and compliance expenses. Furthermore, differences in the costs may reflect different degrees of sophistication of the supplied products: certain investment strategies require less expertise and analytical skills than others, which may be reflected in the abilities of funds' managers. Finally, independent AMCs suffer from a distribution disadvantage with respect to bank-controlled mutual funds; for this reason they usually pay high fees to distributors. These are further findings that call for a multivariate approach, accounting for all the products' characteristics at once.

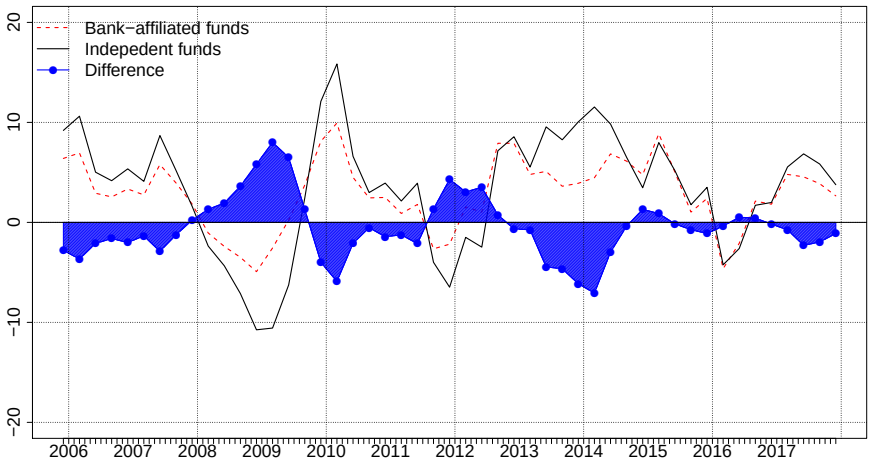
We have seen that some degree of heterogeneity in funds performances (measured in terms of

Figure 1: **Distribution of Net Returns**



This figure depicts the distribution of net returns of the universe of investments funds by type of affiliation in the sample period spanning from 2005 to 2017 with a yearly frequency. Net returns are calculated as gross returns net of total shareholder costs (TSC) on a quarterly basis. The boxplot is referred to the distribution of net returns for all the investment funds in the sample while the lines are the average net returns for bank-affiliated and independent mutual funds. The notches of the boxplots represent the 5th and 95th quartile, the hinges represent the first and third quartile while the line in the box represents the median value of the distribution.

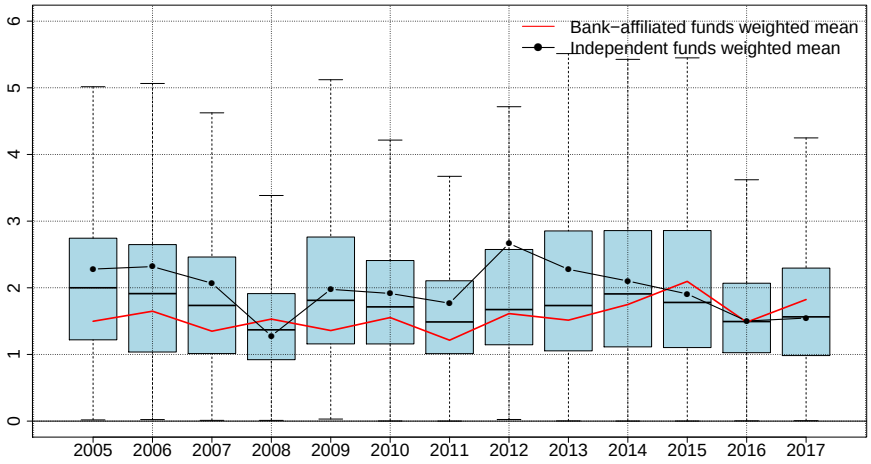
Figure 2: **Net Returns by Fund Affiliation**



This figure depicts the distribution of net returns of the universe of investments funds by type of affiliation in the sample period spanning from 2005 to 2017 with a quarterly frequency. Net returns are calculated as gross returns net of total shareholder costs (TSC) on a quarterly basis.

net returns) exists when categorizing mutual funds by the ultimate owner. As already mentioned in the introduction, the present study considers bank distribution as a channel, related to the affiliation structure, through which returns can be influenced. Throughout our study we will be using a variable which describes the fraction of the investment funds shares that are distributed through a bank network. More precisely, we calculate such variable as the ratio of the 24-

Figure 3: **Distribution of Total Costs**



This figure depicts the distribution of total shareholder costs (TSC) of the universe of investments funds by type of affiliation in the sample period spanning from 2005 to 2017 with a yearly frequency. Total shareholder costs are calculated as the sum of those that are charged on the fund and those directly attributed to subscribers (subscription and redemption fees) on a quarterly basis. The boxplot is referred to the distribution of costs for all the mutual funds in the sample while the black and red lines are the average TSCs for bank-affiliated and independent mutual funds. The notches of the boxplots represent the 5th and 95th quartile; the hinges represent the first and third quartile while the line in the box represents the median value of the distribution.

month rolling window sum of capital C_t^B raised through bank distribution networks to the 24-month rolling window total sum of capital C_t raised by the fund, i.e. $\sum_{s=t-24}^{t} C_s^B / \sum_{s=t-24}^{t} C_s$.[8] Table 2 shows the mean and the standard deviation of the share of funds' distribution through banks broken down by funds' affiliation. Unsurprisingly, bank affiliated investment funds are characterized by the highest fraction of bank distribution (more than three fourth on average). Mixed affiliation and independent funds distribute less than one third of their shares through bank networks while insurance affiliated ones lie in the middle (more than half).

Next, we split investment funds by those with a majority of bank distribution and the others. Column 3 of Table 2 shows that 83% of bank-affiliated funds rely on a majority of bank distribution. Such share is smaller for insurance affiliated funds (45%) and falls to one third for independent funds. The following three columns of Table 2 illustrate net returns by incidence of the bank distribution network, up to 50% and over 50%, and their difference within each affiliation category. While there is a small difference in returns within the bank affiliated funds, the difference is positive for insurance affiliated funds and mixed affiliation ones. It is negative, instead, in the case of independent funds. This is a first and rough evidence that the way funds shares are distributed may play a role in explaining differences in terms of returns. Differences in net returns may partially reflect differences in costs: funds which rely more on the bank distribution channel tend to charge, on average, higher fees to investors in the case of insurance-affiliated and mixed affiliation funds (Table 3). Bank-controlled and independent funds are not characterized by statistically significant differences among funds when these are broken down by the degree of reliance on the bank distribution channel.

[8] We chose a 24-month window so as to maximize the number of observations in our sample as it may happen that some funds report zero-subscriptions in certain quarters. We also tested the 12-month window but the results do not change.

Table 2: **Funds' characteristics by affiliation and distribution**

This table reports data on the distribution of investment funds' shares. The statistics concern the universe of investments funds by type of affiliation in the sample period spanning from 2006 to 2017 with a quarterly frequency. Statistics are reported by type of affiliation of the asset management company (AMC): banks, insurance corporations, mixed affiliation (two or more entities of different financial sectors), independent. The share of bank network distribution is defined as the ratio of the 24-month rolling window sum of capital C_t^B raised through bank distribution networks to the 24-month rolling window total sum of capital C_t raised by the fund, i.e. $\sum_{s=t-24}^{t} C_s^B / \sum_{s=t-24}^{t} C_s$. Net returns are calculated as gross returns net of total shareholder costs. Costs are represented by the total shareholder costs which include also the subscription and reimbursement costs. Average net returns and total shareholder costs are broken down by the share of bank distribution up to/over the 50% threshold. *, ** and *** in the difference columns denote respectively a 10, 5 and 1% significance level of the t-statistic of the test on the difference in means between the two subsamples of funds.

	Share of Bank Distribution		Share with bank
Affiliation	Mean	SD	distribution majority
Bank	77.2	33.66	82.98
Insurance	45.11	43.42	46.44
Mixed	32.43	33.51	42.8
Independent	26.73	37.33	31.12
	Net returns by bank distribution share		
	up to 50%	over 50%	Difference
Bank	0.26	0.36	-0.10
Insurance	0.55	-0.33	0.88***
Mixed	0.95	0.59	0.36*
Independent	0.29	0.71	-0.43***
	Costs by bank distribution share		
	up to 50%	over 50%	Difference
Bank	1.82	1.85	-0.03
Insurance	1.78	2.33	-0.56***
Mixed	2.12	2.29	-0.17**
Independent	2.35	2.31	0.05

The fraction of funds' distribution through bank networks is highly correlated with the share of households' subscriptions, especially in the case of bank-controlled funds. If we consider the subset of funds with a majority of bank network distribution, the proportion of assets attributable to funds with a majority of households' subscriptions is almost 90%[9] for bank-controlled funds and 80% for independent and insurance-affiliated funds (Table 3).

2.4 Estimation of Risk-Adjusted Returns

When analyzing funds' returns one should account for the underlying investment strategy, the type of investment – bonds or stocks – and the investment regional focus, thus correctly identifying the level of risk implied by the fund's strategy. Funds' performances should be compared on the basis of a risk-adjusted measure of their returns.

Consistently, as a preliminary step to our analysis, we generate a risk adjusted measure of performance as the difference between the realized and the expected return estimated using the *de facto* standard procedure in the literature i.e. the Carhart (1997) four factor model, for stocks, and, following Fama and French (1993), an augmented model with two additional controls for

[9] This is obtained as the result of $77.5/(9.8 + 77.5)$

Table 3: **Bank distribution and capital raised from households**

This table reports summary statistics on the sample of funds broken down by relevance of the bank distribution and relevance of the capital raised from households. Investment funds are classified by the affiliation of their asset management company (AMC), by the share of bank distribution being smaller/greater than 50% and by the share of capital raised from households being smaller/greater than 50%.

affiliation	Share of bank distribution	Share of households' subscriptions					
		up to 50%	over 50%	up to 50%	over 50%	up to 50%	over 50%
		Number of funds		Share of funds		Share of assets	
Bank	up to 50%	152	105	12	8.3	6.7	6
	over 50%	143	862	11.3	68.3	9.8	77.5
Insurance	up to 50%	30	34	22.7	25.8	31.2	16.4
	over 50%	11	57	8.3	43.2	11.3	41.1
Mixed	up to 50%	38	68	23.8	42.5	31.3	55.8
	over 50%	5	49	3.1	30.6	0.8	12.1
Independent	up to 50%	115	78	37.3	25.3	18.4	25.4
	over 50%	53	62	17.2	20.1	11	45.2

funds whose main assets are represented by bonds. In this way we privide each fund with a specific performance benchmark which accounts for the underlying investment strategies and their exposures to different sources of risk which are priced by the market. Analyses of Italian mutual funds' performance using analogous approaches can be found in Cesari and Panetta (2002) and Bianchi and Miele (2011). Following Ferreira et al. (2018) and Bekaert et al. (2009) we proceed estimating funds' alphas using regional factors, where the regions[10] are classified based on funds' investment localization and regional focus. Data on stock factors are derived from Fama and French database, while those for bonds are obtained from Datastream. Balanced mutual funds and those with a mix of stocks and bonds are treated with the augmented model for bonds which is just an extension of the baseline four-factor Carhart (1997) model.

We estimate quarterly factor loadings exploiting, for each fund, a 24 to 36 months rolling window [11], following Ferreira et al. (2018). In particular we exploit the following specification for investment funds whose main assets are represented by stocks:

$$R_{i,t,s} = \alpha_{i,s} + \beta_{1,i,s} MKT_{t,s} + \beta_{2,i,s} SMB_{t,s} + \beta_{3,i,s} HML_{t,s} + \beta_{4,i,s} MOM_{t,s} + \nu_{i,t,s}$$

where $R_{i,t,s}$ is the return of fund i which invests in region s in month t in excess of the risk free rate, $MKT_{t,s}$ stands for the market excess return in the fund's investment region, $SMB_{t,s}$ for the average return of the portfolio of small minus that of big capitalization stocks in the fund's relevant region, $HML_{t,s}$, instead, is the average return of the portfolio of high minus that of low book-to-market stocks in the fund's relevant region, while, finally, $MOM_{t,s}$ for the difference in returns between the portfolio with past 12-month stock winners and that with the past 12-months losers in the fund i investment region. We also estimate an extended model for those funds whose main assets are bonds in the form of the following specification:

$$\begin{aligned} R_{i,t,s} = \alpha_{i,s} + \beta_{1,i,s} MKT_{t,s} + \beta_{2,i,s} SMB_{t,s} + \beta_{3,i,s} HML_{t,s} + \beta_{4,i,s} MOM_{t,s} + \\ + \beta_{5,i,s} TERM_{t,s} + \beta_{6,i,s} DEF_{t,s} + \nu_{i,t,s} \end{aligned}$$

[10] The investment regions are classified in accordance with the Fama-French classification into Asia-Pacific, Japan, North America, Europe and Global.

[11] We generally exploit a 36-month window for factor loading estimation. When less then 36 previous months returns are available a minimum of 24 months is required to perform the above specified estimation.

where the base four-factor model is augmented with two additional factors: $TERM_{t,s}$, defined as the difference between the return on long-term government bonds and that on one-month Treasury Bill, and $DEF_{t,s}$, defined as the difference in return between long-term corporate bonds and long-term government bonds.

Finally, once the factor loadings have been estimated, we calculate funds' excess returns ($XR_{i,t}$) as the difference between each quarter realized returns and expected returns, defined as the predicted values of funds' returns according to our model. In this way we obtain a risk adjusted measure of funds' abnormal returns in each quarter.

Table 4: **Excess Returns by funds' affiliation**

This table reports data on the distribution of the excess returns estimated through the four (six) factor model *á la* Fama and French (1993) for funds with main assets being, respectively, stocks and bonds. The weighted mean is calculated using the assets under management as weights. The last three columns report excess returns broken down by the importance of bank distribution networks. Funds are classified into those with bank distribution and those without bank distribution if the share of bank network distribution is above/below the 50% threshold. The share of bank network distribution is defined as the ratio of the 24-month rolling window sum of capital C_t^B raised through bank distribution networks to the 24-month rolling window total sum of capital C_t raised by the fund, i.e. $\sum_{s=t-24}^{t} C_s^B / \sum_{s=t-24}^{t} C_s$. Excess net returns are calculated as excess gross returns net of total shareholder costs. Excess net returns are broken down by the share of bank distribution up to/over the 50% threshold. *, ** and *** in the difference column denote respectively a 10%, 5% and 1% significance level of the t-statistic of the test on the difference in means between the two subsamples of funds.

Affiliation	1st Quartile	Median	3rd Quartile	Mean	Weighted Mean	SD
Bank	-1.61	-0.48	0.65	-0.57	-0.32	3.91
Insurance	-2.01	-0.56	0.85	-0.75	-0.52	4.6
Mixed	-1.44	-0.32	0.69	-0.52	-0.12	4.68
Independent	-1.72	-0.35	1.04	-0.25	0.14	6.99

	Excess returns by bank distribution share		
	up to 50%	over 50%	Difference
Bank	-0.58	-0.51	-0.07
Insurance	-0.47	-0.92	0.46
Mixed	-0.18	-0.4	0.22
Independent	-0.17	-0.39	0.22***

The estimation results show that, on average, Italian mutual funds are characterized by negative excess returns and that more than half of them underperforms its market benchmark (Table 4). Independent mutual funds deliver higher excess returns and are the only ones with average positive values when returns are weighted with the assets under management. Funds with a higher reliance on bank distribution perform even worse except for the bank-affiliated ones. In particular, the difference in risk-adjusted returns between low and high shares of bank distribution funds is statistically significant in the case of independent funds (22 basis points).

2.5 Funds' Portfolios and Bank Loans

The second part of the empirical analysis will exploit extremely granular data on mutual funds' portfolios and on banking group loans. Data on funds' portfolios are available at security by security (ISIN code) level and were merged with the Bank of Italy Data Base on Security Issuers containing data on issuer characteristics such as nationality and sector. Italian and other euro area sovereign bonds amount to more than one third of mutual funds portfolios (24% and 13% respectively) while foreign and Italian non-financial firms bonds account for 15% and 4%

respectively. Other significant issuers are Italian and euro area banks (3.7% and 3.4%) and other financial intermediaries of the euro area (15%). Portfolios of investment funds affiliated to banking groups tend to be slightly more concentrated in the bond segment, their concentration at country level is lower than independent funds and viceversa when we consider stocks (Table 5). On average, the exposure of bank-affiliated mutual funds to debt issued by sovereign entities is higher (30%) than that of independent funds (26%) and lower with regard to debt issued by banks and insurance companies. As for mutual funds investing in equity instruments, bank and insurance companies-owned funds hold a higher portfolio share of instruments issued by banks and insurance companies themselves when compared to independent funds.

We now focus on investment funds belonging to banking groups for which we have also data on loan exposures. Data on individual loans at bank-firm level are drawn from the Bank of Italy Central Credit Register (CCR) where all the loans with a granted amount larger than euro 30,000[12] are reported by the universe of Italian banks. It can be safely assumed that the data set contains the universe of loans granted to the firms in our sample as we are dealing with firms accessing the capital markets which, in Italy, is a prerogative of larger firms. We consider only those firms that issued securities held in funds' portfolios.

Table 5: **Mutual funds' portfolio concentration**

This table reports the weighted average of the portfolio concentration of mutual funds by affiliation of the asset management company (AMC) with the assets under management being the weight. Concentration is measured by the Henfindahl-Hirschman index $HHI = \sum_{s=1}^{S} SECURITY\_SHARE_s^2$. Total concentration is measured at individual security level. Sector concentration is calculated at institutional sector level. The portfolio shares by issuer sector are the averages weighted for the assets under management. The table reports the results of multiple t-tests on the differences of the mean values of the variables between independent funds and the other three categories. ***, ** and * indicate respectively a 1%, 5% and 10% significance level.

		Concentration			Share of securities issued by Italian		
Instrument	Affiliation	Total	Country	Sector	Government	Banks	Insurance Companies
Bonds	Bank	0.06***	0.38***	0.04***	29.55***	2.61***	0.03***
	Independent	0.06	0.45	0.04	25.53	3.97	0.12
	Insurance	0.04***	0.4***	0.04***	42.4***	2.45***	0.07***
	Mixed	0.04***	0.37***	0.03***	26.22***	11.61	0.13***
Stocks	Bank	0.04	0.41*	0.03	.	3.59	0.37
	Independent	0.03	0.37	0.02	.	2.12	0.28
	Insurance	0.03***	0.48***	0.02***	.	3.59***	0.48***
	Mixed	0.02***	0.35***	0.02***	.	1.89***	0.21**

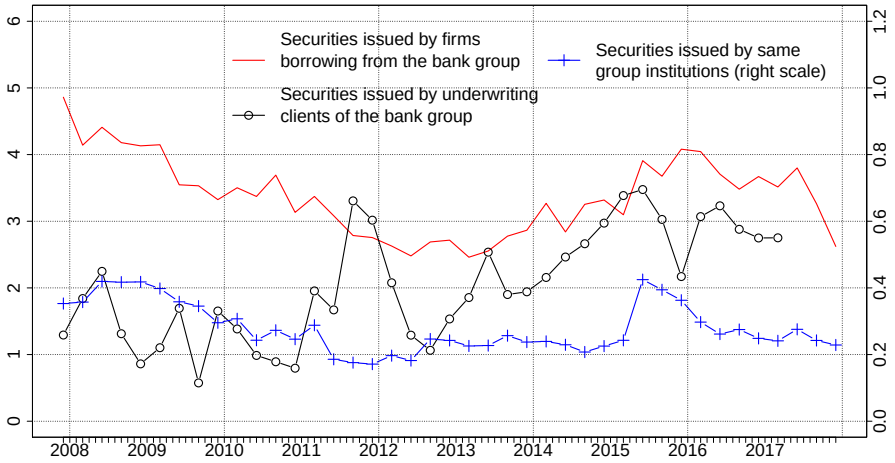
Overall the bank-issuer data set consists of 1.8 million quarterly observations with information on the amount of loans granted by the universe of banks to firms whose securities are held in the portfolios of investment funds between 2005 and 2017. On average, the sample includes the lending positions and the portfolio connections of 40 banks and 5,500 firms resulting in a total of 140 banks and more than 24,000 issuers in the whole sample. The median number of firms' credit relationships is 2 and rises to 5 in the case of Italian non-financial corporations.

The extreme level of detail of the data set allows to identify the combinations of banks and issuers where a link exists through funds' portfolios and/or a credit relationship. Thus we can derive a measure of potential conflict of interest based on the share of securities issued by

[12] A change of the threshold occurred in 2009 when it was lowered from euro 75,000. Such change should not bias our sample of loans as security issuers are large firms characterized by loan amount significantly larger than the thresholds.

connected entities in the aggregate portfolio of bank-affiliated mutual funds. The share of funds' portfolios comprising securities issued by firms which are at the same time borrowing from the same banking group is 3.8% on average in the sample period (Figure 4). The fraction of funds' portfolios invested in securities issued by the underwriting clients of the banking group has been 2.2% on average in the last decade whereas the average portfolio share of securities issued by institutions belonging to the same banking group of the investment fund has been 0.28%.[13]

Figure 4: **Bank-affiliated funds' portfolio shares**

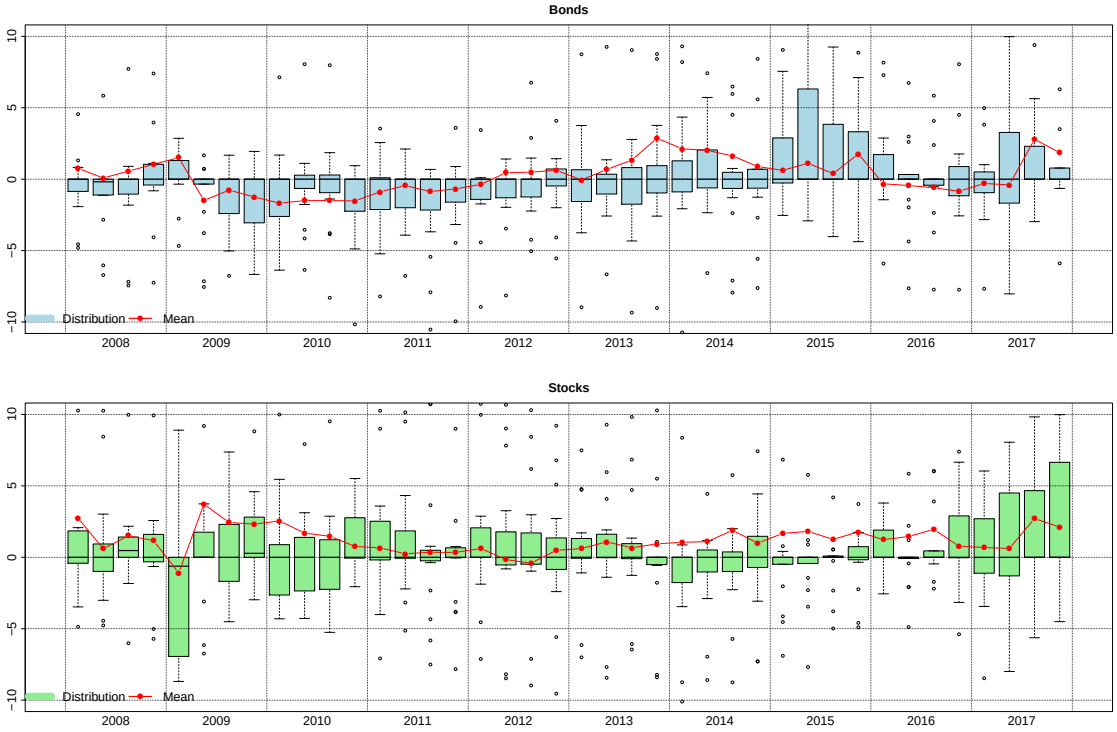


This figure depicts the development of bank-affiliated mutual funds' portfolio shares invested in securities issued by lending clients of the banking group, by firms whose securities have been underwritten by the banking group and by entities belonging to the same banking group as the mutual fund and by entities that are clients of the investment banking arm of the banking group. The indicators are are based on the share of securities issued by connected entities in the aggregate portfolio of bank-affiliated mutual funds.

As a preliminary analysis, we derived bank-affiliated funds' portfolio share of securities issued by lending clients of the same banking group and calculated portfolio shares of the same issuers in independent funds' portfolios. Under the assumption that independent funds optimally construct their portfolios while bank affiliated mutual funds have distorted incentives, the difference between the former and the latter can be defined as the overinvestment of bank-affiliated funds in securities connected to the lending business of the group (Figure 5). On average, overinvestment of bank-affiliated funds in lending clients securities has been positive between 2013 and 2015 for bonds and has been permanently positive for stocks. The analysis of the distribution of overinvestment across bank-owned funds points out that at least one fourth of these have been overweighting *connected* securities. Obviously the pattern of overinvestment could be influenced by the nature of the fund, its investment strategies and the area of investment. For example bank-affiliated mutual funds could be investing in Italian instruments whereas independent funds could be mostly global thus the possible sources of conflict for the former are more frequent. Such characteristics can be controlled for only in a multivariate analysis as the one we propose in our empirical strategy.

[13]We do not have information on the structure of business groups, which could lead to the underestimation of the potential conflicts for example in the case of securities issued by a non-financial holding company and loans to another firm of the business group. Such data limitation should not invalidate our analysis as it biases the sample against finding evidence of conflict of interests.

Figure 5: **Bank-affiliated Mutual Funds Overinvestment in Securities Issued by Lending Clients**



This figure reports the distribution and the mean value of bank-affiliated mutual funds overinvestment in securities issued by firms borrowing from the same banking group. The overinvestment is derived as the difference between the share of the bank-affiliated mutual fund portfolio invested in securities issued by the lending clients of the group and the portfolio share invested by independent funds in the securities issued by the same entities.

3 Empirical Strategy

The empirical strategy consists of two parts. In the first one, concerning the analysis of the performance of mutual funds, we use a panel data set of funds over the sample period spanning from 2006 to 2017; in the second part we exploit the information at security level in funds' assets and at bank-borrower level in the Central Credit Register to verify if conflicts of interest within banking groups affect mutual funds' performance.

3.1 Funds' Performance

In the panel analysis we use the excess returns estimated through the (augmented) four factor model as the dependent variable in our regression. The baseline econometric specification is based on a linear model where the dependent variable $XR_{i,t}$ can be alternatively represented by gross excess returns of investment fund i in quarter t or its net returns derived as the difference between gross returns and total shareholder costs (TSC henceforth).

$$XR_{i,t} = \beta^{\intercal} AFFILIATION_{i,t} + \gamma_1 BANK\_DISTRIBUTION_{i,t} + \\ + \gamma_2 BANK\_DISTRIBUTION^2_{i,t} + \delta^{\intercal} X_{i,t} + \eta_t + \varepsilon_{i,t} \tag{1}$$

The main independent variables are included in the $AFFILIATION_{i,t}$ vector of indicator variables which indicates whether the investment fund is affiliated to a bank, an insurance corporation or a mixed financial group. The omitted category of affiliation is the one comprising 'independent' funds, which will serve as a benchmark for the other categories of funds. Indeed the $OWNERSHIP$ vector includes three dummy variables – $BANK$, $INSURANCE$ and $MIXED$ – which are equal to one if the fund is affiliated to, respectively, a bank, an insurance corporation or a mixed financial group[14]. At the same time we control for the distribution channel of the fund through the $BANK\_DISTRIBUTION_{i,t}$ variable which is equal to the share of capital raised through bank distribution networks. The $BANK\_DISTRIBUTION$ variable enters also in quadratic form in order to capture possible non-linearities in the relation with returns. Mutual funds that are distributed through bank networks benefit from their ubiquitous presence, which allows to access wider markets. We hypothesize that beyond a certain threshold of the $BANK\_DISTRIBUTION$ variable mutual funds get 'locked in' the relationship with the bank providing the distribution services. At the same time the bank providing distribution services can exploit retail clients, characterized by a low level of literacy and easily capturable by the distributors. The non-linear relationship is thus characterized by a parabolic function with a negative γ_2 coefficient and a positive slope up to the vertex and a negative slope past the vertex. The vertex lies at $BANK\_DISTRIBUTION = -\gamma_1/2\gamma_2$ and if $\gamma_1 < -\gamma_2$ then excess returns $XR_{i,t}$ are negative when $BANK\_DISTRIBUTION \in (-\gamma_1/\gamma_2, 1]$. All the possible estimation results are depicted in Figure 6 including the cases where γ_1 or γ_2 are equal to zero.

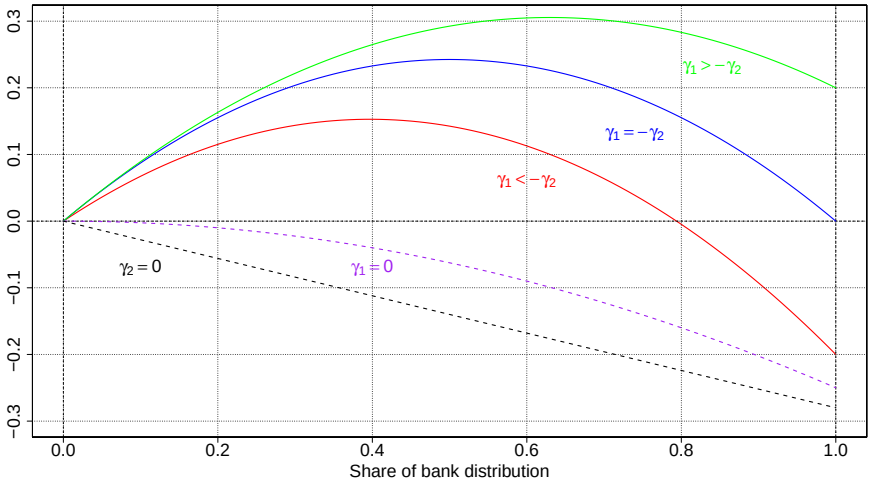
Similarly to Ferreira et al. (2018), $X_{i,t}$ is a vector of fund-level control variables, namely the log of assets under management, the share of fund's assets in the AMC total assets under management. The former should capture the size effects we have already pointed out when examining Table 1 statistics: we would expect that larger funds should perform better even if some studies such as Chen et al. (2004) have found the opposite result due to organization diseconomies. The share of fund's assets in the AMC total assets under management should proxy for the relative importance of the fund for their managers. We also control for the type of assets in the portfolios of mutual funds, stocks or bonds, through an ad hoc dummy variable $STOCK$. The baseline model specification includes also time fixed-effects η_t accounting for the economic cycle and other economy-wide macroeconomic and financial shocks. In our more robust specifications we will also include additional fixed effects at mutual fund level and at region of investment level. Standard errors are clustered at fund level in all the regressions unless otherwise specified.

3.2 Bank Distribution and Endogeneity Issues

The baseline specification could be affected by endogeneity issues in the form of omitted variables and reverse causality. We deal with omitted variable biases by adding funds fixed effects to our baseline specification, at the cost of harming our ability to identify the role of governance, since it is very stable over time. Indeed, the affiliation variable seldom changes over time and only

[14]'Independent' mutual funds include those whose asset management company is independent or is affiliated to a financial institution other than banks and insurance corporations, to the government or to other non-financial institutions. The largest part of such category is represented by independent funds *stricto sensu*.

Figure 6: **Relationship between excess returns and bank distribution share**



This figure depicts the possible excess returns parametric functions with respect to the share of distribution through bank networks. The parametric form of the $XR_{i,t}$ function depends on the the $BANK\_DISTRIBUTION_{i,t}$ coefficients γ_1 and γ_2 in model (Equation 1). The share of bank network distribution is defined as the ratio of the 24-month rolling window sum of capital C_t^B raised through bank distribution networks to the 24-month rolling window total sum of capital C_t raised by the fund, i.e. $\sum_{s=t-24}^{t} C_s^B / \sum_{s=t-24}^{t} C_s$.

10% of the mutual funds in the sample are involved in changes of affiliation, with even lower incidences for bank-controlled and independent funds (8 and 9% respectively, Table A.1).

The second issue of reverse causality may arise if weak performances may prompt fund managers to rely mainly on bank distribution to sell their products. The reasons behind such choices can be ascribed to the fact that funds' managers believe that selling their products through banks' networks might be easier or that investors relying on banks advisory services are less concerned about funds' performances. On the contrary, a strong performance might lead asset managers to distribute their shares through alternative channels with no fees to be payed to banks.

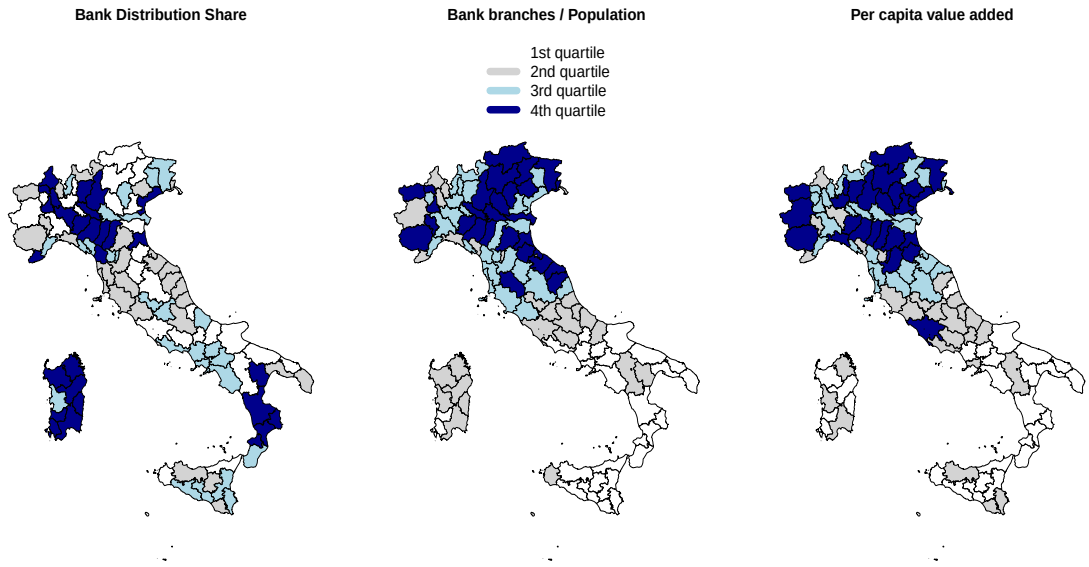
In order to address such issue we exploit an instrumental variable strategy. A valid instrument for the bank channel distribution in the excess return regressions should satisfy two requirements: first, it should be correlated with $BANK\_DISTRIBUTION_{i,t}$, our endogenous variable; second, it should not be correlated with fund excess returns $XR_{i,t}$, after controlling for the distribution channel and for the other characteristics. In other words, a valid instrument should be correlated with fund's returns exclusively through its effect on distribution.

In order to isolate the exogenous variation in distribution, we exploit information on the number of bank branches, the population and the value added of the provinces where the fund is distributed. Hence we construct two instrumental variables based on the density of bank branches and the per capita value added at provincial level. $BRANCH\_DENSITY$ is the 24-month moving average of the average number of bank branches per inhabitant across provinces in which the fund has been distributed:

$$BRANCH\_DENSITY_{i,t} = \frac{1}{24} \sum_{s=t-24}^{t} \frac{1}{P_i} \sum_{p=1}^{P_i} \frac{b_{s,p}}{pop_{s,p}}$$

where P_i is the total number of provinces where the fund is distributed, $b_{s,p}$ is the number of bank branches and $pop_{s,p}$ the total resident population in province p at time s. $VALUE\_ADDED$ is measured as the mean, over a 24-month rolling window, of the average per capita value added of the provinces in which the fund has been sold. The number of branches per inhabitant can

Figure 7: **Geographical distribution of the variable $BANK\_DISTRIBUTION$ and of the instruments**



This figure depicts the geographical distribution of $BANK\_DISTRIBUTION$ and of the instruments employed in the instrumental variable regressions, the density of bank branches and the per capita value added at provincial level. The share of bank network distribution is defined as the ratio of the 24-month rolling window sum of capital C_t^B raised through bank distribution networks to the 24-month rolling window total sum of capital C_t raised by the fund, i.e. $\sum_{s=t-24}^{t} C_s^B / \sum_{s=t-24}^{t} C_s$. The density of bank branches is derived as the ratio of the number of bank branches to the population in the province. Per capita value added is drawn from the official regional accounts statistics of the Italian Statistics Office Istat. Each map depicts the distribution of the variable by quartiles of the 110 Italian provinces. The darker the color, the higher the quartile and the value of the variable for that specific province.

be interpreted as a measure of how relevant and pervasive is bank intermediation in that specific area. It, consequently, determines how advantageous it would be, for each fund, to rely on bank distribution rather than other channels to sell their shares. On the contrary, it is very hard to believe that the number of bank branches within each province could influence fund's performances other than through its effect on the distribution. Thus, in the first stage regression of $BANK\_DISTRIBUTION$ on $BRANCH\_DENSITY$ we expect a positive coefficient on such a variable.

Per capita value added measures, instead, the level of economic development of each province in which the fund is distributed. Under the assumption that a higher level of per capita value added is correlated with a greater importance of capital markets over bank intermediation in firms' financing and a higher level of financial literacy, we would expect a negative coefficient in the first stage regression of $BANK\_DISTRIBUTION$ on $VALUE\_ADDED$.

The proportion of funds' distribution through bank channels does not have a clear pattern

across Italian provinces (Figure 7, leftmost map). The usual dichotomy between the richer Center-North and the less developed South cannot be applied in this case. Indeed the share of bank distribution is positively correlated with the density of bank branches (Figure 7, central map) but this can be counterbalanced by the average degree of sophistication of the investors proxied by the per capita GDP (Figure 7, rightmost map). For instance, in Calabria and Sardinia branch density is low but this is more than offset by the lower per capita GDP thus leading to a higher bank distribution share. On the other hand, the North-Eastern provinces, characterized by a high density of bank branches and higher per capita GDP levels, show a a lower share of distribution through the bank channel.

3.3 Conflicts of Interest

In the second part of our econometric analysis we will focus on mutual funds belonging to banking groups as we will use data on funds' portfolio allocation at individual security level and data at bank-borrower level from the Bank of Italy Central Credit Register (CCR). As already shown in the performance analysis at fund level we will be using the $INSURANCE$ indicator variable as a further control variable because, as pointed out by European Insurance and Occupational Pensions Authority (2017), the insurance sector might be afflicted by conflicts of interests and distorted incentives similarly to what one might expect to be in the banking sector.[15] Nonetheless we will not try to investigate the reasons underlying the underperformance of insurance-affiliated mutual funds as, even not considering the availability of detailed data on insurance undertakings, we deem it beyond the scope of the present paper. Having clarified this point, now we focus on the identification of several sources of conflicts of interests for asset management companies operating within banking groups. The first conflict of interest concerns the core business of banking groups: the lending activity. We will identify the effect of being a lending client on the investment choices of the asset management companies of the banking group. The second conflict of interest stems from the investment banking activity, involving the underwriting and placement of securities. In such a context AMCs may be induced to support the price of the securities underwritten or simply placed by the investment banking arm of the group. The identification strategy relies on the following fixed effects linear model:

$$ln\left(S_{b,j,t}\right) = \beta_L ln\left(L_{b,j,t}\right) + \beta_U UNDERWRITING_{b,j,t} + \delta^{\intercal} X_{b,j,t} + \eta_{b,t} + \eta_{j,t} + \varepsilon_{b,j,t} \qquad (2)$$

Our dependent variable, the log of the amount of securities issued by firm j and held by the investment funds of banking group b at the end of quarter t, is regressed on the log of loans $L_{b,j,t}$ granted by the banking group b to issuer j[16] at time t and on the $UNDERWRITING$ indicator variable, which assumes value one if the banking group b has underwritten or placed securities of firm j in the last two quarters. We also use a vector $X_{b,j,t}$ of additional control variables at bank-firm-time level such as the length of the credit relationships and an indicator variable for those positions that are flagged as bad debts by the intermediary. Thanks to bank-time fixed effects $\eta_{b,t}$ we control for shifts in the demand of securities over time due to idiosyncratic shocks whereas issuer-time fixed effects $\eta_{j,t}$ account for shifts in the quality and in the volumes of supply at firm-level. Moreover, bank-time fixed effects account for other time-varying banking group

[15] In this respect, identifies five risks of investors' detriment based on a thematic review among European countries. In particular, the identified risks include *higher costs for policyholders* and *poor investment outcomes arising from inappropriate selection processes by insurance undertakings and poor governance/systems and controls including monitoring processes.*

[16] More precisely, the log transformation of the amount of securities and of loans are $ln(S_{b,j,t}+1)$ and $ln(L_{b,j,t}+1)$ so as to preserve the zero-observations in the sample.

characteristics such as size of the group and of the asset management company in terms of assets under management.

As shown by Khwaja and Mian (2008) and Jiménez et al. (2014), our identification strategy relies on firms with multiple credit relationships and multiple funds investing in their securities in order to exploit the variability between banks granting loans to the same firm; Italian firms tend to have multiple credit relationships, especially if larger in size; the median number of credit relationships of the firms in our sample is 5.

The third source of conflict of interests may arise when, given the particular market segment of the investment fund, the asset management company faces the choice among several securities and these include some of the securities issued by entities belonging to the same banking group. In order to address the *same-group bias* in the investment funds strategy of investment, we propose the following fixed effects linear model:

$$ln\left(S_{b,j,t}\right) = \beta_G GROUP_{b,j,t} + \delta^{\intercal} X_{b,j,t} + \eta_{b,t} + \eta_{j,t} + \eta_s + \eta_c + \varepsilon_{b,j,t} \tag{3}$$

where the main independent variable $GROUP_{b,j,t}$ is an indicator variable equal to one if the issuer of the security in the investment fund's portfolio belongs to the same banking group as the fund itself. Even in such specification we employ issuer-time and bank-time fixed effects so as to control for shifts in the volumes and in the quality of security supply and for shifts in the volumes of security demand. Additionally we use fixed effects at country and sector level.

3.4 The Impact on Funds' Performance

The final part of our empirical strategy is based again on a panel regression but this time we will focus on the subsample of mutual funds operating within banking groups in order to verify whether and to what extent the characteristics of the distribution network and the previously identified conflicts of interest have an effect on funds' performance. We will test whether funds with a higher exposure vis-á-vis issuers that are at the same time borrowing from the banks of the group are characterized by a worse performance in terms of returns to their investors. Similarly we use the share of fund i portfolio invested in securities issued by underwriting clients of the banking group ($UNDERWRITING\_SHARE$). Finally, we will verify if funds with a higher share of their portfolio invested in securities issued by institutions belonging to the same banking group underperform with respect to other funds that are less exposed. In such a setup our dependent variables, gross and net excess returns $XR_{i,t}$, are regressed on four main explanatory variables: the share of bank distribution ($BANK\_DISTRIBUTION$), the portfolio share invested in securities issued by borrowers of the banks of the group ($BORROWER\_SHARE$), by investment banking clients of the group ($UNDERWRITING\_SHARE$) and by institutions of the same group ($GROUP\_SHARE$). More precisely, our specification is represented by:

$$\begin{aligned} XR_{i,t} = {} & \phi_L BORROWER\_SHARE_{i,t} + \phi_U UNDERWRITING\_SHARE_{i,t} + \\ & + \gamma_1 BANK\_DISTRIBUTION_{i,t} + \gamma_2 BANK\_DISTRIBUTION^2_{i,t} + \\ & + \delta^{\intercal} X_{i,t} + \eta_i + \eta_t + \eta_{b,t} + \eta_c + \eta_s + \varepsilon_{i,t} \end{aligned} \tag{4}$$

where the baseline panel regression model (Equation 1) now includes $BORROWER\_SHARE$ and $UNDERWRITING\_SHARE$ in order to pin down the effects on funds' returns due to conflicts of interest related to the lending and underwriting activities. A second specification

including the portfolio share of securities issued by institutions belonging to the same banking group as the mutual fund is represented by:

$$XR_{i,t} = \phi_G GROUP\_SHARE_{i,t} + \gamma_1 BANK\_DISTRIBUTION_{i,t} + \\ + \gamma_2 BANK\_DISTRIBUTION^2_{i,t} + \delta^\intercal X_{i,t} + \eta_i + \eta_t + \eta_{b,t} + \eta_c + \eta_s + \varepsilon_{i,t} \tag{5}$$

Both the models have been augmented with additional fixed effects η_c and η_s at country and sector level identifying the predominant country and sector in which the mutual fund i has invested at the end of quarter t. Finally, we add bank-time fixed effects $\eta_{b,t}$ accounting for time-varying characteristics of the banking group such as the capital ratio, the degree of liquidity of the balance-sheet.

4 Results

4.1 Main Evidence

In our baseline specification we compare the performance of funds which are bank affiliated, insurance affiliated and those which are characterized by a mixed bank and insurance affiliation with that of independent funds. Moreover the performance analysis is carried out on two subsamples, i.e. funds investing most of their assets in Europe and other funds mostly investing in extra-European assets as we expect that the former are more affected by conflicts of interest arising from concurrent activities in the credit and insurance markets. As we are dealing with mutual funds which are affiliated to Italian banks, whose main business is carried out in Europe, if we believe that the negative effect of bank affiliation is due to conflicts of interest one would expect the negative effect of bank affiliation on performance to arise only in those funds which are focused on European investments. We estimate fund-quarter panel regressions of funds' excess returns (Carhart four-factor alphas for stock funds and augmented six-factor alphas for bond funds) on a dummy variable for bank affiliation ($BANK$), one for insurance affiliation ($INSURANCE$) one for mixed affiliation ($MIXED$) together with a set of controls. Standard errors are clustered at fund level and all the regressions include time fixed effects. We begin analyzing performances net of total shareholder costs which include management, distribution, trading, deposit fees, together with subscription and withdrawal commissions. The results for our baseline estimation are presented in Table 6. The estimation has been conducted on on the whole sample of funds (column 1), on the subsample of funds which invest the majority of their assets in Europe (Column 2), and on those for which the majority of the investment is focused outside the European continent (Column 3). The last two columns focus, instead, on the relative performance of bank affiliated and independent funds, thus excluding mixed and insurance affiliated funds. We introduce controls for the amount of fund's asset under management (AuM henceforth) expressed in logarithms ($LOG(AuM)$), the (log) amount of AMC assets under management ($LOG(AuMAMC)$) and the fraction of total assets under management of the AMC which the single fund is responsible for ($FRACAuM$) together with a dummy variable which takes value one when the fund invests in stocks ($STOCK$). In Column (1), as we leave the funds regional focus unrestricted, we also control for the relevant investment region, adding regional fixed effects.

Coherently with the literature, Column (1) of Table 6 shows that bank and insurance affiliated funds underperform independent funds in terms of net performances. In particular, bank and

Table 6: **Bank affiliation**

This table reports the econometric results of the estimation of a fixed effects linear model where the dependent variables are the net excess returns derived according to the Fama-French 4-factor model. Net returns are calculated as the the difference between gross returns and total shareholder costs (TSC) which include those that are charged on the fund and those directly attributed to subscribers (subscription and redemption fees). $BANK$, $INSURANCE$ and $MIXED$ are indicator variables which are equal to one when the asset management company (AMC) of the mutual fund is affiliated respectively to a banking, insurance or mixed financial group. The omitted indicator variable is the one referring to the $INDEPEDENT$ investment funds. Other control variables include the assets under management (AuM) of the fund and of the AMC, the indicator variable $STOCK$ which is equal to one when the main assets of the fund are represented by stocks and zero otherwise. $FRAC\_AUM$ is the fraction of funds' assets in the total assets managed by the AMC. Standard errors, clustered at fund and time level, are reported in parentheses. *, ** and *** denote respectively 10%, 5% and 1% significance levels..

	(1)	(2)	(3)	(4)	(5)
	Net Ret	Net Ret	Net Ret	Net Ret	Net Ret
BANK	-0.1436**	-0.1445**	-0.0913	-0.1430**	-0.1222
	(0.0558)	(0.0686)	(0.0976)	(0.0695)	(0.0972)
INSURANCE	-0.1755**	-0.1868**	-0.1484		
	(0.0814)	(0.0884)	(0.1721)		
MIXED	-0.1516*	-0.0411	-0.3300*		
	(0.0850)	(0.0970)	(0.1686)		
LOG(AuM)	0.0371**	0.0524***	0.0843***	0.0588***	0.0611**
	(0.0147)	(0.0160)	(0.0269)	(0.0172)	(0.0238)
LOG(AuM AMC)	0.0350**	0.0306	0.0169	0.0214	0.0484
	(0.0165)	(0.0192)	(0.0314)	(0.0213)	(0.0308)
FRAC AUM	0.1537	0.1956	0.0670	0.0770	0.2308
	(0.1437)	(0.1937)	(0.2446)	(0.2207)	(0.2278)
STOCK	-0.3261***	-0.1724***	-0.2069**	-0.2099***	-0.2872***
	(0.0511)	(0.0562)	(0.0870)	(0.0653)	(0.0956)
Time FE	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	No	No	No	No
N	32368	22082	10286	18414	8631
adj. R^2	0.166	0.156	0.233	0.149	0.218
Time FEs	48	48	48	48	48

insurance affiliated funds underperform the others by about 14 and 18 basis points per quarter respectively. We find that fund size positively affects performance, while AuM of the corresponding AMCs and with the fraction of the AMCs assets under the direct fund management do not display a statistically significant effect on net returns, suggesting a role for size in reducing the incidence of costs on returns. Moreover, equity funds significantly underperform bond funds.

In Column (2) and (3) we break down the sample into funds whose main investment focus is Europe and those for which it is not, respectively. Consistently with our prior, we observe that, while bank affiliation negatively affects the performance of funds which hold on European assets, it does not display any statistically significant effect on performance of funds which mainly invest outside Europe. The evidence is confirmed even when we restrict ourselves to the analysis of the performance of only bank-affiliated and independent funds (Columns 4 and 5) [17]. The analysis

[17] In our baseline specification we do not introduce AMC fixed effects, which we will do in Table 8, but our results are robust to the introduction of controls for the type of fund each performance is originated by. In particular,

of gross of fees returns deliver consistent (if anything stonger) results, as displayed in Table A.3 in the Appendix.

In Table 7 we further extend our analysis of funds performances by introducing controls for the amount of bank-distributed funds over the total amount of raised capital. In particular we introduce the proportion of bank-distributed funds both linearly ($BANKDISTRIBUTION$) and quadratically ($BANKDISTRIBUTION^2$) which turns out to be a very relevant variable in explaining funds' performances.

We estimate our model on both gross, Column(1) and (2), and net returns, Column (3) and (4). The effect of bank distribution is very strong and statistically significant across all Table 7 specifications. In particular, bank distribution displays a quadratic relationship with performances: fund performance, after controlling for all relevant variables, is an inverse parabola, whose vertex is around 50% in bank distribution. The relation between bank excess returns and bank distribution implies that increasing bank distribution has a positive effect on performance as long as it does not represent the channel through which more than 45/50% of funds are raised; otherwise, an increase in the fraction of fund's shares distributed through the bank channel results in a strong negative effect on performance. Our estimates imply that moving from the first quartile (18.65%) to the third (99.6%) of the distribution of the percentage of fund's shares distributed through bank channel implies a decrease in gross returns equivalent to 11.8 bps per quarter[18]. Our results are confirmed even when we restrict to the sample of European investment focused funds (Column 2 and Column 4).

In Table 8 we proceed analyzing the robustness of our results to different specifications. In particular, we show that our estimates on the central role of bank governance and distribution in explaining funds underperformance are confirmed when we add AMC fixed effects and we double cluster the standard errors. In particular, the first four columns of Table 8 present results for gross returns, while the following four columns report those for net returns. Columns (1) and (5), specifically, report the estimation results on the full sample of independent and bank-affiliated funds, columns (2) and (6) those on European equity funds, while Column (3) and (7) deal with bond funds only. As expected, the underperformanance funds experience as a consequence of bank affiliation is stronger for equity funds than for bond ones. Stocks provide banks with stronger means to influence firms behavior, thus leaving more room for captive attitudes. In Columns (4) and (8) we finally show that both the magnitude and the functional form of the effect of bank distribution variable on returns are robust to the introduction of AMC fixed effects [19].

The coefficients are very stable across specifications, confirming the existence of a quadratic relation between bank distribution and fund performance which displays a vertex around 40/45%. Our analysis suggests that increasing exposure to bank distribution has a positive effect on performance as long as banks do not exert an overwhelmingly dominant position over the fund's distribution network. Finally, it is worth noting that, once we control for funds' unobservable characteristics, size in terms of managed assets has a negative effect on performance, consistently

in the Appendix, in Table Table A.4 and Table A.5, we display regression results for estimations which introduce controls for funds which only invest in publicly traded securities (UCITS). Estimation results are unchanged.

[18] We know that from our estimation the parabolic relation between fund's performance and bank distribution takes the following functional form: $-.8094 \times x^2 + .8115 \times x$. Thus the magnitude of the decrease in gross returns following a change in the distribution channel, as described in the text, can be calculated as follows: $(-.8094 \cdot 0.996^2 + .8115 \cdot 0.996) - (-.8094 \cdot 0.1865^2 + .8115 \cdot 0.1865)$.

[19] In order to provide additional credibility to our results we show, in the Appendix, in Table A.6 that our results are robust to the omission, from our sample, of the observations pertaining to years 2008 and 2013, which could be, theoretically, driving the majority of our results

Table 7: **Bank affiliation and the role of bank distribution**

This table reports the econometric results of the estimation of a fixed effects linear model where the dependent variables are alternatively the gross excess returns and the net excess returns derived according to the Fama-French 4-factor model. Net returns are calculated as the the difference between gross returns and total shareholder costs (TSC) which include those that are charged on the fund and those directly attributed to subscribers (subscription and redemption fees). $BANK$, $INSURANCE$ and $MIXED$ are indicator variables which are equal to one when the asset management company (AMC) of the mutual fund is affiliated respectively to a banking, insurance or mixed financial group. The omitted indicator variable is the one referring to the $INDEPEDENT$ investment funds. The $BANK\_DISTRIBUTION$ variable is defined as the ratio of the 24-month rolling window sum of capital C_t^B raised through bank distribution networks to the 24-month rolling window total sum of capital C_t raised by the fund, i.e. $\sum_{s=t-24}^{t} C_s^B / \sum_{s=t-24}^{t} C_s$. Other control variables include the assets under management (AuM) of the fund and of the AMC, the indicator variable $STOCK$ which is equal to one when the main assets of the fund are represented by stocks and zero otherwise. $FRAC\_AUM$ is the fraction of funds' assets in the total assets managed by the AMC. Standard errors, clustered at fund and time level, are reported in parentheses. *, ** and *** denote respectively 10%, 5% and 1% significance levels..

	(1) Gross Ret	(2) Gross Ret	(3) Net Ret	(4) Net Ret
BANK	-0.1449**	-0.1634**	-0.0728	-0.0583
	(0.0672)	(0.0737)	(0.0640)	(0.0732)
INSURANCE	-0.2124**	-0.2116**	-0.1418*	-0.1444*
	(0.0855)	(0.0894)	(0.0844)	(0.0876)
MIXED	-0.1091	-0.0671	-0.1460	-0.0726
	(0.0945)	(0.1004)	(0.0969)	(0.1067)
LOG(AuM AMC)	0.0048	0.0004	0.0454**	0.0309
	(0.0190)	(0.0206)	(0.0188)	(0.0207)
BANK DISTRIBUTION	0.8115***	1.0001***	0.5196**	0.7683***
	(0.2539)	(0.2833)	(0.2410)	(0.2685)
BANK DISTRIBUTION^2	-0.8094***	-0.9442***	-0.5710**	-0.7733***
	(0.2446)	(0.2714)	(0.2324)	(0.2570)
LOG(AuM)	0.0207	0.0367**	-0.0000	0.0337*
	(0.0180)	(0.0181)	(0.0173)	(0.0179)
FRAC AUM	-0.0928	-0.0637	0.0821	0.1042
	(0.1692)	(0.1782)	(0.1739)	(0.1909)
STOCK	-0.1389**	-0.0164	-0.4056***	-0.2463***
	(0.0540)	(0.0603)	(0.0522)	(0.0574)
Time FE	Yes	Yes	Yes	Yes
Region FE	Yes	No	Yes	No
N	27430	19792	27430	19792
adj. R^2	0.192	0.169	0.196	0.170
Time FEs	48	48	48	48

with previous results by Chen et al. (2004), Pastor et al. (2015) and Ferreira et al. (2018), who identified the interaction of liquidity and organization diseconomies as the main cause.

The role of the distribution through bank networks has been estimated on the whole sample so far, thus neglecting possible heterogeneities due to the governance of mutual funds; i.e. bank-controlled funds may be affected by higher shares of bank distribution in different ways with respect to independent funds. Hence we estimate the same fixed effects linear model on four

Table 8: **The role of bank distribution - Robustness of the results**

This table reports the econometric results of the estimation of a fixed effects linear model where the dependent variables are alternatively the gross excess returns and the net excess returns derived according to the Fama-French 4-factor model. Net returns are calculated as the the difference between gross returns and total shareholder costs (TSC) which include those that are charged on the fund and those directly attributed to subscribers (subscription and redemption fees). $BANK$ is an indicator variables which is equal to one when the asset management company (AMC) of the mutual fund is affiliated to a banking.group and 0 in case it is independent. The $BANK\_DISTRIBUTION$ variable is defined as the ratio of the 24-month rolling window sum of capital C_t^B raised through bank distribution networks to the 24-month rolling window total sum of capital C_t raised by the fund, i.e. $\sum_{s=t-24}^{t} C_s^B / \sum_{s=t-24}^{t} C_s$. Other control variables include the assets under management (AuM) of the fund and of the AMC, the indicator variable $STOCK$ which is equal to one when the main assets of the fund are represented by stocks and zero otherwise. $FRAC\_AUM$ is the fraction of funds' assets in the total assets managed by the AMC. Standard errors, clustered at fund and time level, are reported in parentheses. *, ** and *** denote respectively 10%, 5% and 1% significance levels..

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Gross returns				Net returns			
	All	Stocks	Bonds	All	All	Stocks	Bonds	All
BANK	-0.3953***	-1.1586***	-0.4525***	-0.3970***	-0.4517***	-1.2776***	-0.4736***	-0.4701***
	(0.0880)	(0.2946)	(0.1333)	(0.1040)	(0.1200)	(0.2834)	(0.1438)	(0.1341)
LOG(AuM AMC)	0.0154	0.1246	-0.0883	-0.0322	0.0272	0.0961	-0.0610	-0.0123
	(0.1477)	(0.1987)	(0.1021)	(0.1699)	(0.1443)	(0.1930)	(0.1003)	(0.1677)
LOG(AuM)	0.0559**	0.0265	0.0825***	0.0383	0.0463*	-0.0003	0.0806***	0.0270
	(0.0268)	(0.0837)	(0.0203)	(0.0325)	(0.0275)	(0.0849)	(0.0207)	(0.0332)
FRAC AUM	0.0663	-0.6430	-0.4348	-0.1382	0.2376	-0.9977	-0.1536	0.0681
	(0.2779)	(2.6323)	(0.2620)	(0.3195)	(0.2700)	(2.6469)	(0.2787)	(0.3306)
STOCK	-0.1159			-0.1810	-0.3500			-0.4066
	(0.5120)			(0.5162)	(0.5103)			(0.5140)
BANK DISTRIBUTION				1.0704**				0.8850*
				(0.5204)				(0.5164)
BANK DISTRIBUTION^2				-1.0013**				-0.8192*
				(0.4434)				(0.4274)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AMC FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	27044	4201	14210	22701	27044	4201	14210	22701
adj. R^2	0.162	0.553	0.149	0.188	0.164	0.558	0.147	0.191
Time FEs	48	48	48	48	48	48	48	48
AMC FEs	103	55	83	98	103	55	83	98

subsamples[20] on the basis of mutual funds' affiliation, namely independent funds and those that are controlled by banks, insurance corporations and a mix of different financial institutions. Furthermore, we augment the model with additional fixed effects at AMC level in order to capture further unobserved characteristics of the management. The estimated model on the independent funds subsample indicates that the quadratic relationship still holds (Table 9, Column 1) even though the magnitude of the γ_1 and γ_2 coefficients has now increased. Nonetheless the coefficients ratio still implies a vertex at around 50% of bank distribution and the null hypothesis that $\gamma_1 = -\gamma_2$ cannot be rejected. The symmetry of the parabola around the 50% bank distribution vertex implies that the effect on returns associated to 20% and 80% of bank distribution is the same. Even the regression on the subsample of bank-controlled funds suggests that the

[20] An alternative to the estimation on each subsample would have been the estimation of a model with the $OWNERSHIP$ and $BANK\_DISTRIBUTION$ interaction on the whole sample but the results are not equally clear to convey due to the double interaction of each affiliation category with the first and second degree $BANK\_DISTRIBUTION$ terms.

quadratic form is still valid even if the first degree coefficient is not significant anymore (Table 9, Column 2) thus implying always a negative effect on returns. In the case of mutual funds affiliated to an insurance corporations or with mixed affiliation (Table 9, Columns 3 and 5) the non-linear specification is rejected in favor of a linear functional form (Table 9, Columns 4 and 6) where the coefficient is similarly negative (around -0.64). Finally we test the non-linear relationship on the subsample of independent and bank-controlled mutual funds and we introduce the $BANK$ indicator variable in order to separate the effects of bank distribution on performance from the effects due to the different governance. These results confirm again the validity of the non-linear hypothesis and the estimated vertex at bank distribution roughly equal to 50%. Even in such specification we cannot reject the null hypothesis that the two coefficients of the bank distribution share are equal. The $BANK$ coefficient is now highly significant and negative, implying that when controlling for the AMC characteristics and for the share of bank distribution, bank-controlled funds are outperformed by independent ones. Such result suggests that bank-controlled funds' performance is driven not only by the distribution channel but also by other factors which are specific to banking organizations. We further investigate such issue with our analysis of conflicts of interest in Section 4.3.

The mentioned results of the models estimated on the subsamples of mutual funds can be summarized as follows. Distribution through bank networks has always a negative effect on mutual funds controlled by banks, insurance companies and by mixed affiliation. Only independent funds benefit from distributing their shares through bank networks. In particular, the positive effect on returns is higher, the more balanced is the distribution, i.e. the closer is the bank distribution to one half of total shares distributed. Such result suggests that an excessive reliance on a single distribution network is detrimental to funds' performance in terms of returns. If we consider Figure 6, bank-controlled funds results can be represented by the purple line ($\gamma_1 = 0$), independent funds can be represented by the blue line ($\gamma_1 = -\gamma_2$) and the others by the black line ($\gamma_2 = 0$).

4.2 The Role of Distribution

4.2.1 Instrumental Variables Regressions

In the first stage of the instrumental variable estimation we regress the endogenous variable – the share of bank distribution of fund i in quarter t – on the chosen instruments, i.e. the average density of bank branches and the average per capita value added in the provinces where the mutual fund has raised capital from investors. Branch density has a positive effect on the share of bank distribution (Table 10, first row). As expected, the more pervasive is the network of bank branches, the more probable is the subscription through such channel. Similarly, our second instrument, per capita value added, is significant but with a negative coefficient (Table 10, second row), suggesting that our proxy for investors' sophistication is working as expected: the higher the investor sophistication, the stronger the alternative distribution channels.

In the second stage of the instrumental variable approach we regress fund i's gross and net returns in quarter t on the predicted values of bank distribution share derived in the first stage (Table 10, Columns 3 and 4). Even though the magnitude of the phenomenon is amplified, the instrumental variable approach confirms our main results regarding the role of bank distribution (Table 10). Specifically, we observe that bank distribution displays a reversed parabolic relationship with excess returns: increasing the share of funds distributed through the bank channel has a positive effect on performance until we reach the point where at least 50% of the distribu-

Table 9: **The Role of Bank Distribution - Subsamples**

This table reports the econometric results of the estimation of a fixed effects linear model where the dependent variable is represented by mutual funds' net excess returns derived according to the Fama-French 4-factor model. Net returns are calculated as the the difference between gross returns and total shareholder costs (TSC) which include those that are charged on the fund and those directly attributed to subscribers (subscription and redemption fees). The model was estimated on subsamples of mutual funds based on the ultimate affiliation: independent, bank-controlled, insurance corporation-controlled, mixed control and independent + bank-controlled mutual funds. $BANK$, $INSURANCE$ and $MIXED$ are indicator variables which are equal to one when the asset management company (AMC) of the mutual fund is affiliated respectively to a banking, insurance or mixed financial group. The omitted indicator variable is the one referring to the $INDEPEDENT$ investment funds. The $BANK\_DISTRIBUTION$ variable is defined as the ratio of the 24-month rolling window sum of capital C_t^B raised through bank distribution networks to the 24-month rolling window total sum of capital C_t raised by the fund, i.e. $\sum_{s=t-24}^{t} C_s^B / \sum_{s=t-24}^{t} C_s$. Other control variables include the assets under management (AuM) of the fund and of the AMC, the indicator variable $STOCK$ which is equal to one when the main assets of the fund are represented by stocks and zero otherwise. $FRAC\_AUM$ is the fraction of funds' assets in the total assets managed by the AMC. Standard errors, clustered at fund and time level, are reported in parentheses. *, ** and *** denote respectively 10%, 5% and 1% significance levels.

	(1) Independent	(2) Bank	(3) Insurance	(4) Insurance	(5) Mixed	(6) Mixed	(7) Independent and banks
BANK DISTRIBUTION	3.9856***	0.9590	-1.3135	-0.6392*	-0.4380	-0.6404**	1.5861***
	(1.3422)	(0.6330)	(1.2859)	(0.3264)	(0.8801)	(0.2483)	(0.5392)
BANK DISTRIBUTION^2	-3.6375***	-1.0305**	0.7199		-0.2456		-1.5082***
	(1.3002)	(0.5226)	(1.2990)		(1.0645)		(0.4591)
BANK							-0.5307***
							(0.2037)
LOG(AuM)	-0.1533	-0.3379***	-0.2732	-0.2669	-0.9085***	-0.9089***	-0.2920***
	(0.1476)	(0.0878)	(0.2099)	(0.2043)	(0.1516)	(0.1513)	(0.0709)
LOG(AuM AMC)	-0.1151	0.0560	-0.4060	-0.4133	0.4075	0.4278	0.0934
	(0.1916)	(0.0869)	(0.2946)	(0.2927)	(0.4669)	(0.4333)	(0.0768)
FRAC AuM	-1.3715*	0.4314	-1.0801	-1.1207	2.9257**	2.9172**	-0.0373
	(0.7783)	(0.6631)	(1.2248)	(1.2063)	(1.1981)	(1.2109)	(0.4593)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AMC FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-test $\gamma_1 = -\gamma_2$	1.39	0.15	3.23*		4.30**		0.25
N	4,227	18,396	2,595	2,595	2,125	2,125	22,626
adj. R^2	0.171	0.208	0.321	0.321	0.203	0.203	0.199
Time FEs	48	48	48	48	48	48	48
AMC FEs	40	61	12	12	6	6	96
Fund FEs	280	1,148	131	131	142	142	1,351

tion occurs through bank networks. Any increase from that point onward, instead, has a strong negative effect on performance.

To interpret the correlations displayed in Table 10 as causal, we need to rely on the identifying assumption that makes branch density and per capita value added valid instruments for bank distribution in the excess returns regression. The exclusion restriction implied by our instrumental variable regression is that, conditional on the controls included in the regression, branch density and per capita value added across provinces have no effect on funds excess returns, other than their effect through bank distribution.

While it is difficult to argue that the number of branches per capita could directly influence fund's performances, the major concern with our exclusion restriction can be represented by the

fact that value added per capita is correlated with Italian aggregate GDP growth, which might indeed have an effect on funds excess returns. Nonetheless, we believe that this is unlikely to be the case for two reasons: first, in our regressions we always control for time fixed effects; second, our measures of performance are constructed in terms of excess returns, defined as the difference between realized and projected returns from fund's portfolio, which should not be influenced by regional growth.

Table 10: **Instrumental Variable Estimation Results**

This table reports the econometric results of the estimation of a fixed effects linear model with the instrumental variable (IV) method. The dependent variables are alternatively the gross excess returns and the net excess returns derived according to the Fama-French 4-factor model. Net returns are calculated as the the difference between gross returns and total shareholder costs (TSC) which include those that are charged on the fund and those directly attributed to subscribers (subscription and redemption fees). $BANK$, $INSURANCE$ and $MIXED$ are indicator variables which are equal to one when the asset management company (AMC) of the mutual fund is affiliated respectively to a banking, insurance or mixed financial group. The omitted indicator variable is the one referring to the $INDEPEDENT$ investment funds. The $BANK\_DISTRIBUTION$ variable is defined as the ratio of the 24-month rolling window sum of capital C_t^B raised through bank distribution networks to the 24-month rolling window total sum of capital C_t raised by the fund, i.e. $\sum_{s=t-24}^{t} C_s^B / \sum_{s=t-24}^{t} C_s$. Other control variables include the assets under management (AuM) of the fund and of the AMC, the indicator variable $STOCK$ which is equal to one when the main assets of the fund are represented by stocks and zero otherwise. $FRAC\_AUM$ is the fraction of funds' assets in the total assets managed by the AMC. Standard errors in parentheses. The endogenous variables $BANK\_DISTRIBUTION$ and its squared value are instrumented with two instruments: $BRANCH\_DENSITY$, i.e. the average number of bank branches per inhabitant, and $VALUE\_ADDED$, i.e. the per capita value added in those provinces where the mutual fund has raised capital. Standard errors, clustered at fund and time level, are reported in parentheses. *, ** and *** denote respectively 10%, 5% and 1% significance levels..

	(1) First Stage	(2) First Stage	(3) Second Stage GR	(4) Second Stage NR
BRANCH DENSITY	0.8393***	0.7727***		
	(0.0398)	(0.0417)		
VALUE ADDED	-0.0143***	-0.0148***		
	(0.0010)	(0.0010)		
BANK DISTRIBUTION			15.5609***	14.5556***
			(2.2722)	(2.2477)
BANK DISTRIBUTION^2			-15.5042***	-15.0326***
			(2.6706)	(2.6417)
BANK	0.4466***	0.4443***	-0.1783	0.1776
	(0.0065)	(0.0069)	(0.2712)	(0.2683)
INSURANCE	0.1647***	0.1708***	-0.1830	-0.0046
	(0.0092)	(0.0096)	(0.1402)	(0.1387)
MIXED	-0.0084	-0.0497***	-0.6813***	-0.6343***
	(0.0109)	(0.0114)	(0.1431)	(0.1416)
LOG(AuM)	0.0163***	0.0167***	0.0265	0.0431**
	(0.0015)	(0.0016)	(0.0189)	(0.0187)
STOCK	-0.0030	-0.0149***	-0.3345***	-0.5356***
	(0.0048)	(0.0050)	(0.0564)	(0.0558)
N	23604	23604	23604	23604
adj. R^2	0.277	0.260	0.059	0.059
F statistic			60.5337	60.5337

4.2.2 Capture of Asset Management Companies

One possible explanation for the relative underperformance of bank affiliated funds with respect to other type of funds might be represented by the fact that there is a misalignment between group interests and individual fund interests. Consistently, in the previous section we have indeed shown that bank distribution channel plays a central role in explaining fund performances. We now analyze how the misalignment between distribution platform incentives and fund managers ones can emerge.

In particular, distribution platforms might find profitable to incentivize investors to switch from one fund to another in order to maximize the amount of fees they can raise. It is obvious that such a behavior, which implies a high level of inflows and outflows in the fund, is not optimal for a fund manager, as it introduces uncertainty and variation in the total assets under management, which might, for example, force the managers to suboptimally liquidate some positions to keep up with the outflow. Moreover, it is important to notice that, as long as the total amount of funds which are managed by the asset management firm is not altered, maximizing the amount of switches should never be optimal for fund managers; on the contrary, as they usually generate fees for brokers and distributors, they generate revenues and are thus advantageous only for distribution platforms.

Nonetheless, we know that the amount of withdrawals from a fund might be a misleading indicator of possible conflicts of interest, as it is highly correlated with the performance which, in turn, might be determined by the governance structure of the individual fund. Thus, in order to investigate the misalignment between bank versus fund interests we introduce a variable, which we define as SWITCH RATIO, which measures the percentage of switches over the total amount of withdrawals from the fund in each quarter.

In Table 11 we report the results of the regression of the ratio of switches over withdrawals on fund affiliation and distribution structure. In Column (1) we observe that when we are not controlling for bank distribution and time constant unobserved funds characteristics, bank affiliation has a negative effect on the switch ratio, probably due to the fact that such indicator variable is capturing some unobservable fund characteristics which are specific to bank-controlled ones. Moreover, we see that asset management firm dimension positively affects it. Consistently with our expectations, the relative importance of the fund within the family, proxied by the ratio of fund's AuM to asset management firm AuM, has a very strong and statistically significant negative effect on the switch ratio. Our results thus suggest that the greater is the importance of the fund within the family of funds controlled by the asset management firm, the weaker are the incentives to introduce distortions and to expose it to potential value losses. In the second column we add controls for bank distribution. As we expected, we can immediately spot that bank distribution has a very strong and statistically significant positive effect on the switch ratio. Moreover, in Column (3) we add a control for the fraction of funds shares subscribed by retail investors. As we can see, the share of retail investors distribution has a lot of explanatory power over the switch ratio, suggesting that captive investor behavior is particularly strong when funds are held by retail investors with scarce ability to exert control over their investments and to pressure managers for their best interest.

Finally, in Column (4) of Table 11 we add fixed effects at a fund level and we double cluster standard errors. As we can see, bank distribution displays a very strong and statistically significant effect on the switch ratio; retail investors distribution effect appears now to be weaker and less statistically significant. Moreover, while the effect of the fraction of fund's AuM to total asset management firm AuM remains unchanged with respect to previous specification, the

coefficient of bank affiliation becomes positive in sign and not statistically significant, suggesting that the negative effect that was previously displayed is to be attributed to some unobserved fund level characteristics we are now accounting for.

Table 11: **Redemptions' Switch Ratio and Bank Distribution**

This table reports the econometric results of the estimation of a fixed effects linear model where the dependent variable is the ratio of switches to total withdrawals of fund i during the quarter t. $BANK$, $INSURANCE$ and $MIXED$ are indicator variables which are equal to one when the asset management company (AMC) of the mutual fund is affiliated respectively to a banking, insurance or mixed financial group. The omitted indicator variable is the one referring to the $INDEPEDENT$ investment funds. The $BANK\_DISTRIBUTION$ variable is defined as the ratio of the 24-month rolling window sum of capital C_t^B raised through bank distribution networks to the 24-month rolling window total sum of capital C_t raised by the fund, i.e. $\sum_{s=t-24}^{t} C_s^B / \sum_{s=t-24}^{t} C_s$. The $HH\_DISTRIBUTION$ variable is defined as the ratio of the 24-month rolling window sum of capital C_t^{HH} raised from households to the 24-month rolling window total sum of capital C_t raised by the fund, i.e. $\sum_{s=t-24}^{t} C_s^{HH} / \sum_{s=t-24}^{t} C_s$. Other control variables include the assets under management (AuM) of the fund and of the AMC, the indicator variable $STOCK$ which is equal to one when the main assets of the fund are represented by stocks and zero otherwise. $FRAC\_AUM$ is the fraction of funds' assets in the total assets managed by the AMC. Standard errors, clustered at fund and time level, are reported in parentheses. *, ** and *** denote respectively 10%, 5% and 1% significance levels..

	(1)	(2)	(3)	(4)
	Switch Ratio	Switch Ratio	Switch Ratio	Switch Ratio
BANK	-2.1613**	-4.4561***	-4.5301***	0.9854
	(0.8857)	(0.9313)	(0.8636)	(1.0687)
INSURANCE	-0.8572	-1.5774	-1.9241*	0.0562
	(1.0553)	(1.0640)	(1.0124)	(1.6563)
MIXED	-2.1566	-2.0134	-2.3654**	-2.4179*
	(1.3335)	(1.2781)	(1.1751)	(1.2460)
LOG(AuM)	0.0051	-0.0791	-0.0394	1.6202***
	(0.2450)	(0.2422)	(0.2430)	(0.4656)
LOG(AuM AMC)	2.0286***	1.9583***	1.7339***	1.9756***
	(0.2678)	(0.2654)	(0.2661)	(0.5348)
FRAC AuM	-7.3806***	-6.1487***	-4.7929**	-7.3552**
	(2.2079)	(2.3069)	(2.2967)	(2.8944)
STOCK	3.8715***	3.8576***	4.1209***	
	(0.6297)	(0.6119)	(0.6035)	
BANK DISTRIBUTION		5.3844***	3.9064***	5.6598***
		(0.7470)	(0.8315)	(1.0469)
HH's DISTRIBUTION			5.8914***	2.1230*
			(0.8982)	(1.2462)
Time FE	Yes	Yes	Yes	Yes
Fund FE	No	No	No	Yes
N	28093	28093	28093	28018
adj. R^2	0.148	0.160	0.168	0.481
Time FEs	48	48	48	48

4.3 Conflicts of Interest and Investment Strategy Biases

In the previous sections we have provided solid evidence that investment funds belonging to banking groups underperform in terms of returns to their investors when compared to independent funds. Besides the characteristics of the distribution network mostly based on bank branches, we argue that the difference in performance can be explained by conflicts of interest arising when mutual funds operate within banking groups.

The first conflict of interest stems from the concurrent activity of lending, the core business of banking groups. Investment funds could potentially invest in securities which are issued by firms that are at the same time borrowers of the banks of the group. This may happen because the banking group wants to support a borrowing firm in order to keep it sound or because it has underwritten the securities or because it wants to shift part of the credit risk from its balance-sheet to investors. At the same time banking groups may exploit the information collected in the lending activity by sharing such information with the asset management company. The banking group as a whole may benefit from economies of scope deriving from the multiple activities: it has been already shown that a credit relationship can be used to extract information over time. Such information can be used also to assess the investment opportunities of investment funds of the same group.

Table 12 reports the estimation results of model (2) on the full sample of banks and issuers and on three subsamples of issuers, namely the subsample of Italian issuers, of Italian non-financial corporations (NFCs) and of banks. We find that at least when considering the borrowers issuers whose securities are held by the investment fund and the subset of Italian issuers the effect of being a lending client is positive and highly significant. The estimated elasticity of investment funds' investments with respect to the amount of granted credit is rather small (1.7%). Indeed, when we consider the BAD_DEBTS indicator variable, equal to one if at least one of issuer j's loans from bank b is flagged as a bad debt, the corresponding coefficient turns out to be significantly negative. Thus bank affiliated funds seem to adjust more aggressively their investments in response to the fact that a firm in the controlling bank's lending portfolio is signalled as having troubles in repaying a loan. In this case the elasticity is higher as the amount of securities held is 40-50% less depending on the subsample we are considering. One would expect that the information rent gained by banks in their lending relationships is higher the longer the duration of the relationship; the $LENGTH$ variable should capture such mechanism but it is not significant in most of the subsamples reported in Table 12.

The business model of Italian banking groups can be described as a traditional model whose cornerstone is represented by the lending activity. In the Italian banking sector the investment banking activity based on advisory services, placement and underwriting of securities is more limited, but its relevance in terms of fees has been increasing in the last few years especially for larger groups (Albareto and Marinelli, 2018). Hence we want to test whether the underwriting activity, typical of the investment banking arm, may induce distortions in the investment choices of mutual funds of the same group. The econometric specification now includes an $UNDERWRITING$ indicator variable which is equal to one if the bank b has underwritten or placed any securities of issuer j in the current quarter. We estimate the model on the full sample and on subsamples of issuers, namely all the Italian residents, the Italian non-financial corporations and only banks (Table 13). The positive and significant coefficients of the $UNDERWRITING$ variable suggest that, once we control for shifts in the volumes and in the quality of the supply of securities (issuer-time fixed effects) and for the demand (bank-time fixed effects), mutual funds tend to allocate higher shares of their portfolios in securities issued by firms for which the group has provided underwriting or placement services. Such finding is consistent with the interests of

Table 12: **Lending client bias in investment funds' strategies**

This table reports the econometric results of the estimation of a fixed effects linear model where the dependent variable is the log of securities issued by firm j and held by investment funds of the banking group b in quarter t during the sample period spanning from 2005 to 2017. $CREDIT\_GRANTED$ is the log of loans granted by the banking group b to firm j in quarter t, BAD_DEBTS is an indicator variable which is equal to one when loans of borrowing firm j have been flagged as bad debts by the banking group b in quarter t. $LENGTH$ is the duration of the credit relationship between the banking group b and firm j expressed in terms of years. The model has been estimated for the full sample, the subset of borrowing issuers, the subset of Italian issuers and of Italian non-financial corporations (NFCs). Standard errors, clustered at fund and time level, are reported in parentheses. *, ** and *** denote respectively 10%, 5% and 1% significance levels..

	(1) Full sample	(2) Italian Residents	(3) Italian NFCs	(4) Banks
LOANS - CREDIT GRANTED	0.0173**	0.0176**	0.0195*	0.0178***
	(0.0068)	(0.0069)	(0.0112)	(0.0056)
BAD DEBTS	-0.6241***	-0.5598***	-0.8063***	
	(0.1495)	(0.1773)	(0.0080)	
LOG(LENGTH)	-0.0772**	-0.0484	-0.0497	-0.0654
	(0.0358)	(0.0384)	(0.0491)	(0.0467)
Bank x Time FE	Yes	Yes	Yes	Yes
Issuer x Time FE	Yes	Yes	Yes	Yes
Issuer Sector FE	Yes	Yes	No	Yes
Issuer Country FE	Yes	No	Yes	Yes
N	22308	17678	14086	6607
adj. R^2	0.698	0.739	0.732	0.597
Bank-Time FEs	611	609	567	446
Issuer-Time FEs	6496	4886	3917	2043

the investment banking arm, for which being the market maker and supporting the price of the underwritten securities are key-objectives, not only for the income directly generated by these activities but also for building a reputation in the market.

An additional conflict of interest may arise from the fact that banks are organized into complex groups together with other banks in the same country or in other countries and with other non-bank financial intermediaries such as asset management companies. All the intermediaries belonging to the same group follow the same strategies decided at group level, where the interests of the core business may prevail over the non-core activities. We want to test the hypothesis that investment funds belonging to banking groups tend to be positively biased towards securities issued by entities belonging to the same group. The funding needs of the banks of the group may play a significant role, especially when they need to roll-over their debt securities which come to maturity as it happened in the middle of the recent financial crisis, when the wholesale markets suddenly dried up and became paralyzed.

Table 14 shows the results of the regressions at banking group-issuer level where the log of holdings of securities issued by firm j and held by the investment funds of banking group b are regressed on the $GROUP$ indicator variable assuming a value equal to one if the issuer j belongs to the banking group b at the end of quarter t. The bank-time fixed effects should account for the time-varying observed and unobserved characteristics of the banking group such as the relevance of the lending activity and of the asset management business. The specification is used on several subsamples of issuers depending on their institutional sector and nationality.

Table 13: **Underwriting bias in investments funds' strategies**

This table reports the econometric results of the estimation of a fixed effects linear model where the dependent variable is the log of securities issued by firm j and held by investment funds of the banking group b in quarter t during the sample period spanning from 2005 to 2017. $UNDERWRITING$ is an indicator variable which is equal to one if bank b has placed or underwritten securities issued by firm j in the current or in the previous period. $CREDIT\_GRANTED$ is the log of loans granted by the banking group b to firm j in quarter t, BAD_DEBTS is an indicator variable which is equal to one when loans of borrowing firm j have been flagged as bad debts by the banking group b in quarter t. $LENGTH$ is the duration of the credit relationship between the banking group b and firm j expressed in terms of years. The model has been estimated for the full sample, the subset of borrowing issuers, the subset of Italian issuers and of Italian non-financial corporations (NFCs). Standard errors, clustered at bank and issuer level, are reported in parentheses. *, ** and *** denote respectively 10%, 5% and 1% significance levels..

	(1)	(2)	(3)	(4)
	Full sample	Italian Residents	Italian NFCs	Banks
UNDERWRITING	0.4830***	0.4826***	0.2894**	0.4438***
	(0.1573)	(0.1536)	(0.1042)	(0.1482)
LAG(UNDERWRITING)	0.2365*	0.3103**	0.2192	0.0184
	(0.1243)	(0.1325)	(0.1378)	(0.1215)
CREDIT GRANTED	0.0141**	0.0129*	0.0194*	0.0129**
	(0.0054)	(0.0075)	(0.0110)	(0.0060)
BAD DEBTS	-0.6180***	-0.5524***	-0.8048***	
	(0.1730)	(0.1924)	(0.0160)	
ln(LENGTH)	-0.0841*	-0.0589	-0.0478	-0.0764
	(0.0434)	(0.0551)	(0.0507)	(0.0453)
Bank x Time FE	Yes	Yes	Yes	Yes
Issuer x Time FE	Yes	Yes	Yes	Yes
Issuer Sector FE	Yes	Yes	No	Yes
Issuer Country FE	Yes	No	Yes	Yes
N	22308	17678	14086	6607
adj. R^2	0.699	0.741	0.732	0.599
Bank-Time FEs	611	609	567	446
Issuer-Time FEs	6496	4886	3917	2043

In the first column the model is run on the full sample of issuers. The $GROUP$ coefficient is approximately equal to one and highly significant; hence investment funds tend to invest more in securities issued by entities belonging to the same banking group. We find that the $GROUP$ coefficient is slightly smaller (0.9) when the analysis is focused on the subset of European and Euro Area banks (Columns 2 and 3) and slightly higher in the regressions on the subsamples of Italian residents and of Italian banks (Columns 4 and 5). The effect of being in the same $GROUP$ as the investment fund is substantial as holdings of securities are twice larger.

Banks under pressure due to capital requirements, especially during the recent long financial crisis in Italy, may be more prone to divert investments of their asset management companies towards securities issued by intermediaries belonging to the same group. This could be the case especially when banks are required to increase their capital through the offer of new shares on the market.

In Table 15 we reported the results of the regressions when the $GROUP$ variable is interacted with the capital ratio of the banking group. Even in this case the same specification is employed on several subsamples of securities depending on the sector and nationality of the issuer. The

Table 14: **Same-group bias in investment funds' strategies**

This table reports the econometric results of the estimation of a fixed effects linear model where the dependent variable is the log of securities issued by firm j and held by investment funds of the banking group b in quarter t during the sample period spanning from 2005 to 2017. $GROUP$ is an indicator variable which is equal to one if the issuer/firm j belongs to the same group b as the investment fund. The model has been estimated for the full sample, the subset of European, euro area and Italian banks and the subset of Italian residents. Standard errors, clustered at fund and time level, are reported in parentheses. *, ** and *** denote respectively 10%, 5% and 1% significance levels..

	(1)	(2)	(3)	(4)	(5)
	Full sample	European Banks	Euro area Banks	Italian residents	Italian Banks
GROUP	1.0004***	0.8996***	0.8883***	1.0613***	1.0279***
	(0.1948)	(0.2372)	(0.2324)	(0.1929)	(0.2179)
Bank x Time FE	Yes	Yes	Yes	Yes	Yes
Issuer x Time FE	Yes	Yes	Yes	Yes	Yes
Issuer Sector FE	Yes	Yes	Yes	Yes	No
Issuer Country FE	Yes	Yes	Yes	No	No
N	1171777	72730	59836	135556	24329
adj. R^2	0.583	0.562	0.574	0.711	0.661
Bank-Time FEs	3118	2260	2239	2481	2144
Issuer-Time FEs	198013	7907	6186	13360	1756

base effect of the issuer being in the same banking group, given by the $GROUP$ coefficient, is now larger and still highly significant in all the subsamples. The additional effect of the $CAPITAL\_RATIO$ is given by its interaction with $GROUP$: the coefficient is negative and significant when we consider the subsample of securities issued by European or Euro Area banks. Such result implies that banking groups with a lower capital ratio tend to have a more biased investment strategy of their funds. If we consider that the median value of the capital ratio is 9% in our sample period, it can be easily calculated that the median bank with the capital ratio equal to 9% is characterized by a total $GROUP$ effect which is of the same magnitude as the one we found in the previous specification with no $CAPITAL\_RATIO$ interaction. If we move from the third quartile to the first quartile of the distribution of the capital ratio, i.e. from 11.2% to 6.2%, the total same-group bias[21] doubles from 0.6 to 1.2.

4.4 The impact of Distribution Networks and Investment Biases on Performance

We have verified that mutual funds operating within banking groups are affected by conflicts of interest arising from lending and investment banking activity and from the structure of the banking group. Such conflicts of interest lead to biased investment strategies whose effects on funds' performance has to be examined together with impact of the distribution network characteristics. The final step of our empirical analysis is devoted to understanding the causal nexus, if any, going from the characteristics of the distribution network and from the investment strategy biases to the performance of bank-affiliated mutual funds. We use econometric specification (Equation 4) where excess returns $XR_{i,t}$ are regressed on a series of fixed effects capturing time-invariant characteristics of the fund, characteristics of funds' portfolios (predominant country and sector of the securities in funds' portfolio), economy-wide shocks and the financial cycle. Moreover, we

[21] The total same-group bias is calculated as the algebraic sum of the base effect of the $GROUP$ variable and of the additional effect given by the interaction with the $CAPITAL\_RATIO$ variable.

Table 15: **Same-group bias in investment funds' strategies - The role of bank capital**

This table reports the econometric results of the estimation of a fixed effects linear model where the dependent variable is the log of securities issued by firm j and held by investment funds of the banking group b in quarter t during the sample period spanning from 2005 to 2017. $GROUP$ is an indicator variable which is equal to one if the issuer/firm j belongs to the same group b as the investment fund. $CAPITAL\_RATIO$ is the percentage ratio of banking group b capital and reserves to assets. The model has been estimated for the full sample, the subset of European, euro area and Italian banks and the subset of Italian residents. Standard errors, clustered at fund and time level, are reported in parentheses. *, ** and *** denote respectively 10%, 5% and 1% significance levels.

	(1)	(2)	(3)	(4)	(5)
	Full sample	European Banks	Euro area Banks	Italian residents	Italian Banks
GROUP	1.6496***	1.8593***	1.8658***	1.5714***	1.6565**
	(0.4015)	(0.5079)	(0.5200)	(0.4325)	(0.6192)
GROUP x	-0.0765*	-0.1126**	-0.1119**	-0.0593	-0.0794
CAPITAL RATIO	(0.04392)	(0.0467)	(0.0472)	(0.0484)	(0.0563)
Bank x Time FE	Yes	Yes	Yes	Yes	Yes
Issuer x Time FE	Yes	Yes	Yes	Yes	Yes
Issuer Sector FE	Yes	Yes	Yes	Yes	No
Issuer Country FE	Yes	Yes	Yes	No	No
N	583088	33270	26842	61727	10225
adj. R^2	0.565	0.539	0.546	0.739	0.687
Bank-Time FEs	913	786	778	826	772
Issuer-Time FEs	133479	5846	4501	10159	1360

also control for time-varying characteristics of the banking group, such as the capital ratio, the degree of liquidity of the assets or managerial quality.

As in the previous regressions of funds performance, we estimate the model using alternatively gross and net excess returns as dependent variable and bank distribution share as our main explanatory variable but at the same time we exploit the information on funds' portfolio at individual security level through three new explanatory variables. In particular, we test whether the share of funds' portfolios invested in securities issued by firms borrowing from the banking group ($BORROWER\_SHARE$), by investment banking clients ($UNDERWRITING\_SHARE$) and by institutions belonging to the same banking group ($GROUP\_SHARE$) have an impact on funds' performance.

Our estimation results show that funds' exposure vis-á-vis lending clients of the banking group and vis-á-vis other institutions belonging to the same banking group do have a negative effect on their performance in terms of returns (Table 16). We find that the higher the share of the portfolio invested in securities issued by firms borrowing from the banking group, the lower the gross returns (Table 16, Column 1) and the net returns (Table 16, Column 4). The estimated coefficient of -0.0255 implies that moving from the first to the third quartile (respectively 0 and 5.92%) of the distribution of the $BORROWER\_SHARE$ variable leads to a fall of 14.5 basis points in terms of quarterly gross returns.[22] The second channel through which mutual funds' investment strategies may be induced to be biased is the one deriving from the investment banking arm of banking groups, i.e. the underwriting activity. In this case we do not find any statistically significant effect on funds' performance due to the weight of the underwriting clients in funds' portfolios ($UNDERWRITING\_SHARE$ variable in Table 16, columns 1 and 4). Such result could be interpreted in light of the certification effect and of the role played

[22]The reduction in terms of net returns amounts to 13 basis points on a quarterly basis.

Table 16: **Bank Distribution, Conflicts of Interests and Returns**

This table reports the econometric results of the estimation of a fixed effects linear model where the dependent variables are alternatively the gross excess returns and the net excess returns derived according to the Fama-French 4-factor model. Net returns are calculated as the the difference between gross returns and total shareholder costs (TSC) which include those that are charged on the fund and those directly attributed to subscribers (subscription and redemption fees). $BORROWER\_SHARE_{i,t}$ is the share of mutual fund i portfolio invested in securities issued by lending clients of banks belonging to the same group as the fund. $GROUP\_SHARE_{i,t}$ is the share of mutual fund i portfolio invested in securities issued by institutions belonging to the same group as the fund. $UNDERWRITING\_SHARE_{i,t}$ is the share of mutual fund i portfolio invested in securities issued by entities whose securities have been underwritten by the investment banking arm of the banking group. The $BANK\_DISTRIBUTION$ variable is defined as the ratio of the 24-month rolling window sum of capital C_t^B raised through bank distribution networks to the 24-month rolling window total sum of capital C_t raised by the fund, i.e. $\sum_{s=t-24}^{t} C_s^B / \sum_{s=t-24}^{t} C_s$. Other control variables include the assets under management (AuM) of the fund and of the AMC, the indicator variable $STOCK$ which is equal to one when the main assets of the fund are represented by stocks and zero otherwise. $FRAC\_AUM$ is the fraction of funds' assets in the total assets managed by the AMC. Standard errors, clustered at fund and time level, are reported in parentheses. *, ** and *** denote respectively 10%, 5% and 1% significance levels.

	(1)	(2)	(3)	(4)	(5)	(6)
	Gross Returns			Net Returns		
BORROWERS SHARE	-0.0255***	-0.0235**		-0.0226**	-0.0207**	
	(0.0089)	(0.0094)		(0.0087)	(0.0093)	
UNDERWRITING SHARE	0.0045	0.0045		0.0028	0.0029	
	(0.0063)	(0.0062)		(0.0061)	(0.0061)	
BANK DISTRIBUTIONˆ2		-0.6152**			-0.5881**	
		(0.2734)			(0.2677)	
INTRAGROUP SHARE			-0.0159**			-0.0122*
			(0.0073)			(0.0068)
FRAC AuM	2.3002**	1.7296	2.3402**	2.3636**	1.8056	2.3958**
	(1.0687)	(1.3465)	(1.0646)	(1.0294)	(1.2964)	(1.0249)
LOG(AuM)	-0.5306***	-0.5065***	-0.5339***	-0.5336***	-0.5150***	-0.5369***
	(0.1166)	(0.1252)	(0.1169)	(0.1118)	(0.1186)	(0.1121)
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Bank x Time FE	Yes	Yes	Yes	Yes	Yes	Yes
N	15147	13239	15147	15147	13239	15147
adj. R^2	0.235	0.239	0.234	0.238	0.242	0.237
Time FEs	48	48	48	48	48	48

by reputation in the investment banking industry (Carter and Manaster, 1990): banks tend to underwrite securities issued by firms with good projects or that at least do not underperform thus not affecting negatively funds' performance. We have demonstrated that the proportion of bank distribution is a key-determinant of mutual funds' performance, hence we introduce $BANK\_DISTRIBUTION$ as an additional explanatory variable together with the exposure vis-á-vis lending and underwriting clients (Table 16, columns 2 and 5). We adopt a specification where the proportion of bank distribution enters in quadratic form with no linear effect, as suggested by the results reported in the second column of Table 9. The coefficients of the lending client portfolio share and the underwriting client one do not change in magnitude.[23]

[23]The coefficient of $BORROWER\_SHARE$ is less significant probably due to the loss of observations for which

These results confirm that the proportion of products distributed through the bank channel has a negative impact on funds' performance in terms of gross and net returns.

Similarly, we find that the higher the share of the portfolio invested in securities issued by institutions belonging to the same banking group (Table 16, Columns 3 and 6), the lower the returns of the funds. In this case the estimated coefficient is smaller, -0.0159 in the gross returns equation and -0.0122 in the net returns equation, and the frequency of observations with non-zero intra-group exposures is lower. Indeed the 81st percentile is the lowest non-zero percentile of the $GROUP\_SHARE$ variable, i.e. only 20% of the observations in our panel of bank-controlled mutual funds may be potentially affected by issues arising from intra-group conflicts of interest. When we consider the distribution of funds with a non-zero intra-group exposure, moving from the first to the third quartile (respectively 0.52% and 2.57%) of the $GROUP\_SHARE$ variable leads to a reduction of 3.5 basis points in the quarterly gross returns.[24]

To estimate the contribution of the above-mentioned factors in explaining bank-affiliated mutual funds' underperformance in comparison to independent ones, we use the estimated coefficients $\hat{\phi}_L$, $\hat{\phi}_G$ and $\hat{\gamma}_2$ of equations (4) and (5) reported in columns 5 and 6 of Table 16. We found that a 1% increase in the share of portfolios invested in securities issued by lending clients of the AMC's banking group leads to a fall of 2.07 basis points per quarter in net excess returns. Similarly, a 1% increase in the portfolio share invested in securities issued by institutions belonging to AMC's banking group leads to a 1.22 basis point reduction in net excess returns on a quarterly basis. Considering that the median value of the $BORROWER\_SHARE$ and of the $GROUP\_SHARE$ variables amount respectively to 4.9% and 1.2%, this implies that the median bank-affiliated mutual fund is characterized by a 12 basis point net excess returns reduction per quarter attributable to the mentioned conflicts of interests, of which only 1.5 basis points are attributable to the *same group bias* and the remaining part to the *lending client bias*. If we consider the median value of $BANK\_DISTRIBUTION$ for bank-affiliated mutual funds (97%) and we compare this to the median of independent funds (64%), the estimated impact of bank distribution is 31.9 basis points. Thus, according to such calculations, the distribution channel explains two thirds of bank-affiliated mutual funds underperformance with respect to independent funds, whereas the investment biases explain one fourth of the underperformance.[25]

5 Concluding Remarks

The paper investigates how the characteristics of the distribution network and the affiliation to a banking group affect mutual funds performance. Italy is a particular suitable case to study these issues because banks control most of AMCs and represent the main distribution channel of financial instruments. Our results indicate that bank distribution and conflicts of interest associated to the affiliation of AMCs to banking groups are the main factors affecting bank-affiliated mutual funds performance.

In particular, we find that bank-controlled mutual funds underperform independent ones. Bank distribution is an important factor affecting mutual funds performance: when bank platforms become by far the prevalent channel for the distribution of mutual funds, asset management companies are captured by banks and mutual funds performance is negatively affected; the effect

the bank distribution variable is not available.

[24] Such reduction amounts to less than 3 basis points in the quarterly net returns equation.

[25] As shown in Table 8, the excess returns differential between independent mutual funds and bank-affiliated ones amounts to 47 basis points per quarter.

is always negative for bank-affiliated mutual funds regardless of the share of bank distribution. The functioning of this channel rests on the capture of retail clients, whose main channel to buy financial products is represented by bank branches. We find that the distribution channel explains two thirds of bank-affiliated mutual funds' underperformance with respect to independent funds. Bank affiliation is also associated to conflicts arising from the different interests of banks and mutual funds. Our results show a bias of bank-controlled mutual funds towards securities issued by their own banking group investment banking clients and borrowers. The previous bias does not concern those securities issued by firms affected by serious problems in repaying the loan. The investment strategy of bank-controlled mutual funds is also biased towards securities issued by institutions belonging to the banking group; this last bias is exacerbated for mutual funds belonging to banking groups characterized by lower capital ratios. Lending client bias and same-group bias negatively affect bank-affiliated mutual funds' performance and explain one fourth of their underperformance with respect to independent funds.

Such results have important policy implications. On one hand they indicate that mutual funds performance would benefit from the institutional separation of banks and AMCs. Indeed, in the recent years Italian banking groups have gradually sold their AMCs to non-bank financial groups or to foreign banking groups: in 2019 the share of assets under management of mutual funds belonging to banking groups was equal to 53%, falling from the 85% of 2006. This trend has been spurred by the aim of focusing on banks core business and/or of complying with stricter capital regulatory requirements. According to the results of our paper, this trend is coherent with investor protection purposes, since it dampens the negative effects on mutual funds performance arising from conflicts of interest related to the presence of AMCs in banking groups.

On the other hand the results of our paper indicate that a distribution structure that is concentrated in bank networks negatively affects mutual funds performance. In the near future bank branches will probably continue to represent the main distribution channel of financial products; recent initiatives to develop distribution channels alternative to bank branches have shown controversial results (see the launch of the trading platform dedicated to mutual funds in the Italian stock exchange). Nevertheless, the negative consequences of bank distribution could be dampened by the development of multi brand distribution platforms and by the introduction of more stringent disclosure requirements about investment costs allowing more efficient investment decisions by financial investors.

The regulatory framework of MIFID II should support these developments. In fact, to provide investment advice on an independent basis the advisor/distributor must consider a sufficiently wide range of financial instruments available on the market to ensure that the clients investment objectives can be met in a suitable way, not limiting to those provided by entities that have close links with the advisor/distributor. At the same time the explicit remuneration of financial advice services should make the total costs paid by financial investors more transparent. More radical interventions to separate banks and AMCs should be considered cautiously, taking into account the costs associated to the separation of production and distribution of financial instruments and the risks stemming from an abrupt institutional reform.[26]

[26] For this type of risks see the reform introduced in Israel in 2005, which envisaged the separation of production and distribution (Sokoler, 2006; Beltratti, 2008); for the Italian policy debate about the separation between production and distribution (and between banks and AMCs) see, among others, Bank of Italy (2008), Messori (2008) and Beltratti (2008).

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A Tables and Figures

Table A.1: **Changes of funds' affiliation**

This table reports statistics on changes in the affiliation of mutual funds in the sample.

Changes		Assets		Net excess returns			Number
from	to	Mean	Median	Mean	Median	W. mean	of funds
Bank	Bank	241.06	78.58	-0.90	-0.69	-0.61	1,309
	Independent	139.82	71.71	-0.53	-0.56	-0.37	36
	Independent ->Mixed	322.67	181.83	-0.45	-0.23	-0.02	32
	Insurance	24.22	24.22	-10.09	-10.09	-9.94	2
	Mixed	249.35	87.22	-0.16	-0.08	-0.11	46
Independent	Independent	66.80	34.57	0.06	-0.36	1.68	217
	Bank	182.93	193.87	-0.26	0.10	-0.16	5
	Bank ->Mixed	526.78	427.61	-0.46	-0.37	-0.32	10
	Mixed	144.27	92.18	-0.09	-0.11	0.14	8
Insurance	Insurance	206.63	96.15	-0.83	-0.57	-0.73	83
	Bank	123.13	42.15	-0.83	-0.93	-0.48	33
	Bank ->Independent	26.57	26.57	-0.69	-0.69	-0.69	1
	Independent	51.61	40.40	-0.19	-0.13	-0.04	19
Mixed	Mixed	167.19	102.45	-0.98	-0.73	-0.69	95
	Bank	29.67	32.19	-0.86	-0.56	-0.80	10
	Independent	10.41	10.41	-0.02	-0.02	-0.02	1
	Independent ->Bank	446.38	414.28	0.08	0.01	0.06	6

Table A.2: **Correlation matrices**

This table reports correlation matrices of the main variables for the full sample of mutual funds and for the 4 categories based on the affiliation, namely bank, independent, insurance company and mixed. XR is returns net of total shareholder costs (TSC), $BANK\_DISTRIBUTION$ is defined as the ratio of the 24-month rolling window sum of capital C_t^B raised through bank distribution networks to the 24-month rolling window total sum of capital C_t raised by the fund, i.e. $\sum_{s=t-24}^{t} C_s^B / \sum_{s=t-24}^{t} C_s$. $HH\_DISTRIBUTION$ is defined as the ratio of the 24-month rolling window sum of capital C_t^{HH} raised from households to the 24-month rolling window total sum of capital C_t raised by the fund, i.e. $\sum_{s=t-24}^{t} C_s^{HH} / \sum_{s=t-24}^{t} C_s$. AuM is the the amount of assets managed by the fund and $SWITCH\_RATIO$ is the proportion of switches from the fund to another in total redemptions.

Ownership	Variable	XR	BANK DISTRIBUTION	HH DISTRIBUTION	TSC	ln(AuM)	SWITCH RATIO
Total	XR	1	-0.02	0	0.02	0.06	-0.08
	BANK DISTRIBUTION	-0.02	1	0.40	-0.02	0.16	0.15
	HH DISTRIBUTION	0	0.40	1	0.02	0.14	0.16
	TSC	0.02	-0.02	0.02	1	-0.01	0.06
	ln(AuM)	0.06	0.16	0.14	-0.01	1	0.10
	SWITCH RATIO	-0.08	0.15	0.16	0.06	0.10	1
Bank	XR	1	0	0.03	0.02	0.05	-0.09
	BANK DISTRIBUTION	0	1	0.46	0.01	0.11	0.18
	HH DISTRIBUTION	0.03	0.46	1	0.03	0.11	0.13
	TSC	0.02	0.01	0.03	1	0.03	0.11
	ln(AuM)	0.05	0.11	0.11	0.03	1	0.12
	SWITCH RATIO	-0.09	0.18	0.13	0.11	0.12	1
Independent	XR	1	-0.01	-0.01	0.02	0.09	-0.04
	BANK DISTRIBUTION	-0.01	1	-0.02	-0.02	0.22	-0.09
	HH DISTRIBUTION	-0.01	-0.02	1	0.02	0.20	0.24
	TSC	0.02	-0.02	0.02	1	-0.05	0.02
	ln(AuM)	0.09	0.22	0.20	-0.05	1	0.03
	SWITCH RATIO	-0.04	-0.09	0.24	0.02	0.03	1
Insurance	XR	1	-0.07	-0.06	-0.01	0.04	-0.11
	BANK DISTRIBUTION	-0.07	1	0.32	0.18	0.06	0.20
	HH DISTRIBUTION	-0.06	0.32	1	0.12	-0.07	0.06
	TSC	-0.01	0.18	0.12	1	0.02	0.04
	ln(AuM)	0.04	0.06	-0.07	0.02	1	0.13
	SWITCH RATIO	-0.11	0.20	0.06	0.04	0.13	1
Mixed	XR	1	-0.05	-0.06	0.04	0.19	-0.10
	BANK DISTRIBUTION	-0.05	1	0.41	0.11	-0.33	0.07
	HH DISTRIBUTION	-0.06	0.41	1	0.10	-0.20	0.24
	TSC	0.04	0.11	0.10	1	-0.02	0.02
	ln(AuM)	0.19	-0.33	-0.20	-0.02	1	-0.20
	SWITCH RATIO	-0.10	0.07	0.24	0.02	-0.20	1

Table A.3: **Bank affiliation - Gross returns as outcome variable**

This table reports the econometric results of the estimation of a fixed effects linear model where the dependent variables are the gross excess returns derived according to the Fama-French 4-factor model. $BANK$, $INSURANCE$ and $MIXED$ are indicator variables which are equal to one when the asset management company (AMC) of the mutual fund is affiliated respectively to a banking, insurance or mixed financial group. The omitted indicator variable is the one referring to the $INDEPEDENT$ investment funds. Other control variables include the assets under management (AuM) of the fund and of the AMC, the indicator variable $STOCK$ which is equal to one when the main assets of the fund are represented by stocks and zero otherwise. $FRAC\_AUM$ is the fraction of funds' assets in the total assets managed by the AMC. Standard errors, clustered at fund and time level, are reported in parentheses. *, ** and *** denote respectively 10%, 5% and 1% significance levels..

	(1)	(2)	(3)	(4)	(5)
	Gross Ret	Gross Ret	Gross Ret	Gross Ret	Gross Ret
BANK	-0.1966***	-0.2349***	-0.0845	-0.2354***	-0.1068
	(0.0596)	(0.0704)	(0.1057)	(0.0713)	(0.1065)
INSURANCE	-0.2375***	-0.2517***	-0.2122		
	(0.0837)	(0.0919)	(0.1670)		
MIXED	-0.1324	-0.0696	-0.2345		
	(0.0849)	(0.0929)	(0.1767)		
LOG(AuM)	0.0616***	0.0626***	0.1057***	0.0674***	0.0821***
	(0.0153)	(0.0161)	(0.0276)	(0.0175)	(0.0246)
LOG(AuM SGR)	-0.0035	-0.0003	-0.0242	-0.0050	0.0047
	(0.0170)	(0.0194)	(0.0325)	(0.0218)	(0.0325)
FRAC AUM	-0.0252	0.0430	-0.1354	-0.0154	0.0490
	(0.1443)	(0.1875)	(0.2487)	(0.2177)	(0.2380)
STOCK	-0.0403	0.0686	0.0334	0.0177	-0.0392
	(0.0532)	(0.0597)	(0.0889)	(0.0679)	(0.0995)
Time FE	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	No	No	No	No
N	32368	22082	10286	18414	8631
adj. R^2	0.162	0.156	0.229	0.148	0.213
Time FEs	48.0000	48.0000	48.0000	48.0000	48.0000

Table A.4: **Bank affiliation - Gross returns as outcome variable and UCITS fixed effects**

This table reports the econometric results of the estimation of a fixed effects linear model where the dependent variables are gross excess returns derived according to the Fama-French 4-factor model. $BANK$, $INSURANCE$ and $MIXED$ are indicator variables which are equal to one when the asset management company (AMC) of the mutual fund is affiliated respectively to a banking, insurance or mixed financial group. The omitted indicator variable is the one referring to the $INDEPEDENT$ investment funds. Other control variables include the assets under management (AuM) of the fund and of the AMC, the indicator variable $STOCK$ which is equal to one when the main assets of the fund are represented by stocks and zero otherwise. $FRAC\_AUM$ is the fraction of funds' assets in the total assets managed by the AMC. Standard errors, clustered at fund and time level, are reported in parentheses. *, ** and *** denote respectively 10%, 5% and 1% significance levels..

	(1)	(2)	(3)	(4)	(5)
	Gross Ret	Gross Ret	Gross Ret	Gross Ret	Gross Ret
BANK	-0.1446***	-0.1445**	-0.0946	-0.1430**	-0.1234
	(0.0558)	(0.0686)	(0.0968)	(0.0695)	(0.0970)
INSURANCE	-0.1752**	-0.1864**	-0.1480		
	(0.0815)	(0.0883)	(0.1712)		
MIXED	-0.1451*	-0.0420	-0.3131*		
	(0.0846)	(0.0971)	(0.1648)		
LOG(AuM)	0.0333**	0.0529***	0.0757***	0.0588***	0.0611**
	(0.0145)	(0.0162)	(0.0279)	(0.0176)	(0.0257)
LOG(AuM SGR)	0.0380**	0.0301	0.0237	0.0214	0.0492
	(0.0165)	(0.0195)	(0.0318)	(0.0221)	(0.0316)
FRAC AUM	0.1929	0.1884	0.1409	0.0769	0.2452
	(0.1466)	(0.1961)	(0.2524)	(0.2253)	(0.2394)
STOCK	-0.3301***	-0.1716***	-0.2256***	-0.2099***	-0.2914***
	(0.0509)	(0.0562)	(0.0869)	(0.0652)	(0.0961)
UCITS	0.1050	-0.0276	0.2257*	-0.0004	0.0700
	(0.0814)	(0.0995)	(0.1188)	(0.1130)	(0.1289)
Time FE	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	No	No	No	No
N	32355	22082	10273	18414	8626
adj. R^2	0.166	0.156	0.233	0.149	0.218
Time FEs	48.0000	48.0000	48.0000	48.0000	48.0000

Table A.5: **Bank affiliation - Net returns as outcome variable and UCITS fixed effects**

This table reports the econometric results of the estimation of a fixed effects linear model where the dependent variables are the net excess returns derived according to the Fama-French 4-factor model. Net returns are calculated as the the difference between gross returns and total shareholder costs (TSC) which include those that are charged on the fund and those directly attributed to subscribers (subscription and redemption fees). $BANK$, $INSURANCE$ and $MIXED$ are indicator variables which are equal to one when the asset management company (AMC) of the mutual fund is affiliated respectively to a banking, insurance or mixed financial group. The omitted indicator variable is the one referring to the $INDEPEDENT$ investment funds. Other control variables include the assets under management (AuM) of the fund and of the AMC, the indicator variable $STOCK$ which is equal to one when the main assets of the fund are represented by stocks and zero otherwise. $FRAC\_AUM$ is the fraction of funds' assets in the total assets managed by the AMC. Standard errors, clustered at fund and time level, are reported in parentheses. *, ** and *** denote respectively 10%, 5% and 1% significance levels..

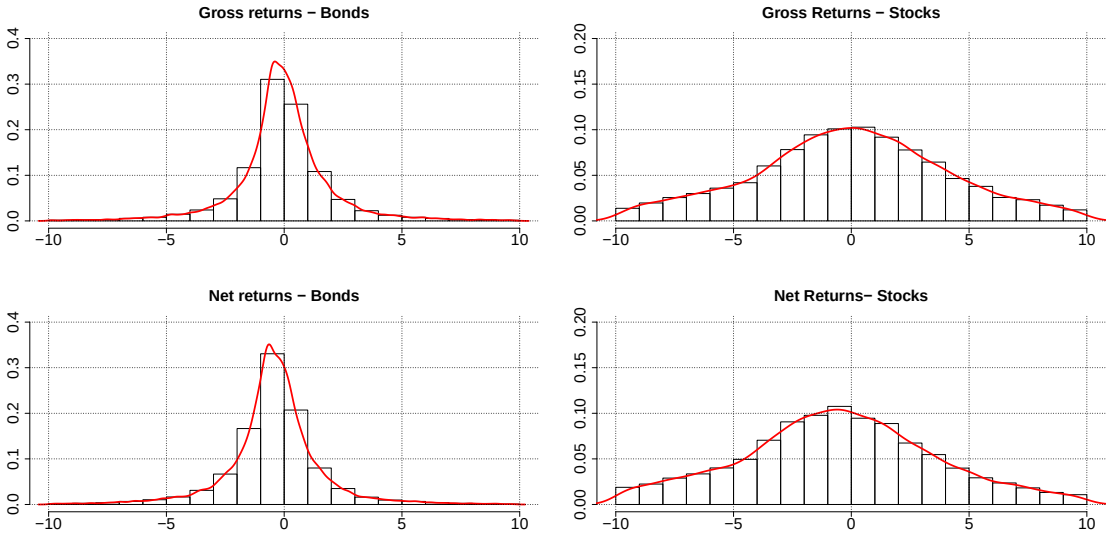
	(1)	(2)	(3)	(4)	(5)
	Net Ret	Net Ret	Net Ret	Net Ret	Net Ret
BANK	-0.1987***	-0.2350***	-0.0903	-0.2357***	-0.1097
	(0.0596)	(0.0704)	(0.1047)	(0.0712)	(0.1061)
INSURANCE	-0.2383***	-0.2525***	-0.2129		
	(0.0837)	(0.0918)	(0.1656)		
MIXED	-0.1225	-0.0679	-0.2100		
	(0.0837)	(0.0932)	(0.1698)		
LOG(AuM)	0.0549***	0.0616***	0.0919***	0.0670***	0.0791***
	(0.0150)	(0.0164)	(0.0281)	(0.0179)	(0.0261)
LOG(AuM SGR)	0.0017	0.0006	-0.0138	-0.0046	0.0075
	(0.0170)	(0.0198)	(0.0325)	(0.0227)	(0.0330)
FRAC AUM	0.0405	0.0558	-0.0302	-0.0112	0.0821
	(0.1475)	(0.1915)	(0.2543)	(0.2234)	(0.2472)
STOCK	-0.0479	0.0671	0.0060	0.0173	-0.0487
	(0.0530)	(0.0596)	(0.0882)	(0.0678)	(0.0996)
UCITS	0.1873**	0.0487	0.3121***	0.0153	0.1312
	(0.0836)	(0.1035)	(0.1152)	(0.1210)	(0.1218)
Time FE	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	No	No	No	No
N	32355	22082	10273	18414	8626
adj. R^2	0.162	0.156	0.229	0.148	0.214
Time FEs	48.0000	48.0000	48.0000	48.0000	48.0000

Table A.6: **The role of bank distribution - Omitting 2008 and 2013**

This table reports the econometric results of the estimation of a fixed effects linear model where the dependent variables are alternatively the gross excess returns and the net excess returns derived according to the Fama-French 4-factor model. Net returns are calculated as the the difference between gross returns and total shareholder costs (TSC) which include those that are charged on the fund and those directly attributed to subscribers (subscription and redemption fees). $BANK$ is an indicator variables which is equal to one when the asset management company (AMC) of the mutual fund is affiliated to a banking.group and 0 in case it is independent. The $BANK\_DISTRIBUTION$ variable is defined as the ratio of the 24-month rolling window sum of capital C_t^B raised through bank distribution networks to the 24-month rolling window total sum of capital C_t raised by the fund, i.e. $\sum_{s=t-24}^{t} C_s^B / \sum_{s=t-24}^{t} C_s$. Other control variables include the assets under management (AuM) of the fund and of the AMC, the indicator variable $STOCK$ which is equal to one when the main assets of the fund are represented by stocks and zero otherwise. $FRAC\_AUM$ is the fraction of funds' assets in the total assets managed by the AMC. Standard errors, clustered at fund and time level, are reported in parentheses. *, ** and *** denote respectively 10%, 5% and 1% significance levels..

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Gross returns				Net returns			
	All	Stocks	Bonds	All	All	Stocks	Bonds	All
BANK	-0.4671***	-0.8993**	-0.3503***	-0.4398***	-0.5599***	-1.1115***	-0.3961***	-0.5546***
	(0.0450)	(0.3734)	(0.1031)	(0.0912)	(0.0777)	(0.3426)	(0.1174)	(0.1062)
LOG(AuM SGR)	0.1940*	0.0782	0.0408	0.1555	0.2064*	0.0611	0.0613	0.1785
	(0.1144)	(0.2113)	(0.0935)	(0.1331)	(0.1101)	(0.2072)	(0.0903)	(0.1314)
LOG(AuM)	0.0770**	0.0643	0.0823***	0.0711**	0.0680**	0.0376	0.0820***	0.0580*
	(0.0286)	(0.0876)	(0.0165)	(0.0305)	(0.0272)	(0.0897)	(0.0159)	(0.0339)
FRAC AUM	0.0576	-1.3556	-0.2253	-0.4074	0.2648	-1.9349	0.0811	-0.1234
	(0.2832)	(2.7527)	(0.2761)	(0.2997)	(0.2699)	(2.7002)	(0.2474)	(0.3183)
STOCK	-0.1571			-0.2342	-0.3956			-0.4629
	(0.5169)			(0.5158)	(0.5155)			(0.5141)
distban				0.7770				0.6063
				(0.5688)				(0.5752)
distban2				-0.7528				-0.5809
				(0.4717)				(0.4631)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ACM FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	22673	3534	11999	18867	22673	3534	11999	18867
adj. R^2	0.174	0.539	0.168	0.206	0.177	0.540	0.169	0.211
Time FEs	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000
AMC FEs	101.0000	54.0000	81.0000	95.0000	101.0000	54.0000	81.0000	95.0000

Figure A.1: **Excess Returns Distribution**



Estimation of the distribution of the estimated gross excess returns (upper panel) and of the net excess returns (lower panel). Net returns are calculated as the the difference between gross returns and total shareholder costs (TSC) which include those that are charged on the fund and those directly attributed to subscribers (subscription and redemption fees). Consistently with our expectation, our estimation of funds' excess returns leads to a bell shape returns distribution with a mean which is close to zero.

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