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The invisible hand of internal markets in mutual fund families☆

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ABSTRACT

The internal markets of fund families can encourage member funds to deviate excessively from their investment mandates. Theoretically, we show that fund managers following sufficiently different style benchmarks can engage in risk-shifting by trading with one another at low cost inside their family. This benefits the managers and the family even in the absence of a family-level strategy. However, the excessive risks taken by the managers can be costly to fund investors. Empirically, we find support for the positive effect of intra-family style diversity on offsetting trades across funds and on deviations of funds' portfolios from their benchmarks.

1. Introduction

Mutual fund families can potentially make up very large internal markets. The median family manages nearly $6 billion in assets and has 5 funds under its umbrella. Moreover, up to 35% of the portfolios of funds affiliated with the same family is invested in the same stocks. Funds in need of rebalancing their portfolios will thus likely search within their family first for counterparties to their trades, as trading in the internal market is less costly compared to trading with the external market.[1] In this paper, we argue both theoretically and empirically that the internal markets within fund families not only reduce transaction costs for their member funds but also increase the potential for misalignment between the investment policies of the funds and the mandates of their respective shareholders.

We model a family consisting of two funds that follow different benchmarks. Fund managers maximize expected utility of end-of-period compensation, which is positively related to the money flows of the fund investors. Building on the findings of Sirri and Tufano (1998) and Basak et al. (2007), we assume that investors' flows are a convex function of funds' past performance relative to the performance of their style benchmarks (DelGuercio and Tkac, 2002). In order to motivate trading in the internal market, we account for the empirically documented overlap in stock holdings inside a family by assuming that member funds share some of their portfolio holdings. In the model, the internal market offers an advantage over the external market for trades in illiquid holdings. We then allow the two fund managers in our family to meet at the start of the investment period and decide whether it is in their mutual best interest to cross-trade some of their illiquid

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[1] Chalmers et al. (2013) estimate that the annual trading costs for equity funds are of first order relevance, averaging 1.44% of fund assets. In line with these estimates, a survey study conducted by the Bank for International Settlement (BIS, 2003) points to savings on transaction arising from "crossing of trades" as one of the main factors behind the trend towards consolidation among investment managers in the asset management industry.

holdings. After this initial meeting, managers choose their funds' investment policies independently of each other.

The first outcome of our model is that style diversity alone can induce cross-trading within a fund family. Trades in the same asset but in opposite directions can happen even when fund managers share the same information and have the same preferences. Moreover, the cross-trading in our model is not coordinated at the family-level but results from the optimal decentralized investment decision of the individual fund managers. The mechanism is as follows: (i) fund managers seek to beat their benchmarks to increase their personal compensation; (ii) to improve the chance of beating their benchmarks, managers need to deviate their portfolio composition away from the composition of their benchmarks; (iii) a manager following a risky benchmark deviates by taking safe bets, while a manager following a safe benchmark deviates by taking risky bets; (iv) when deviating at the same time, the first manager could be underweighting a risky illiquid asset that the second manager seeks to overweight in her portfolio, which creates the opportunity for cross-trading. The internal market within the mutual fund family facilitates these interfund trades, even without the need for a family-level strategy.

We show that the more dispersed the styles that these funds follow, the higher the probability that they place opposite orders on the same asset, and the larger the expected magnitude of the internal trade. As a result, cross-trading increases monotonically with style dispersion and can be substantial in diverse enough families. Style diversity is then both a necessary condition for, and positively related to, the decentralized cross-trading in our model. In the empirical section of the paper we find support for this prediction.

Throughout the investment period, fund managers do not necessarily rebalance their portfolios towards their respective benchmark compositions. Hence, the initial cross-trade along with the subsequent trading may alter the average portfolio liquidity of the family-affiliated funds relative to their benchmarks in a way that differs significantly from standalone funds (i.e., equivalent funds with no possibility of cross-trading). When following a low-liquidity style, funds increase liquidity relative to the benchmark more when they belong to a family. Conversely, funds following a high-liquidity style decrease portfolio liquidity more when affiliated with a family. Moreover, the deviation of funds' liquidity from the liquidity of their benchmarks increases with style diversity within the family.

As if led by an "invisible hand" of internal markets, the decentralized cross-trading that maximizes each of the fund manager's utility also increases the benefits accruing to the family as a whole despite the absence of a family-level strategy.[2] It helps increase the value of future assets under management for the family, because it allows fund managers to take advantage of the relation between performance and future flows to a larger extent. We show that the benefits accruing to the family increase with the dispersion of styles within the family. These results provide an alternative rationale for fund families to offer a diverse menu of investment styles across their funds, as observed in practice.

There are two main drivers of cross-trading in our model. First, as the intra-family style diversity increases, benchmarks become more concentrated, and funds are encouraged to deviate from their benchmarks to diversify their portfolios. This is the case even in the absence of convex incentives. Second, funds deviate from their benchmarks to increase the likelihood of future flows, which are a convex function of the funds' benchmark-adjusted performance. In order to distinguish these two motives in the model, we remove the convexity in the flow-performance relation. We show that the risk-shifting incentive to deviate from benchmarks can be costly. The resulting costs of cross-trading are borne by the investors of at least one of the funds, who would be better off by delegating to a standalone fund. Thus, investors' decision to invest in family-affiliated versus standalone funds involves trading off the benefit of lower transaction costs versus the higher risk-shifting costs that result from the availability of a cross-trading platform.

We use a sample of U.S. domestic actively managed equity mutual funds to examine empirically the novel predictions of our model. We test the hypothesis that the style diversity offered by a family is positively related to (i) the level of intra-family offsetting trades, and (ii) the deviation of funds' portfolio liquidity with respect to the liquidity of their style benchmarks. We also examine the implications of cross-trading for fund performance. Our prior is that, in the industry equilibrium, funds should engage in cross-trading until its benefits and costs exactly offset.

We measure intra-family style diversity through the correlations of returns across all the benchmarks followed by the funds affiliated with the same family.[3] We find that the diversity in styles offered by a mutual fund family is a first-order determinant of the offsetting trades within the family. Even after controlling for strategic cross-fund subsidization (Gaspar et al., 2006), the extent of overlap in holdings, and the flow correlations across funds affiliated with the same family, a one standard deviation increase in style diversity is associated with a 21% increase in intra-family offsetting trades across all stocks. The figure raises to 25% when we focus on offsetting trades of illiquid stocks only. As predicted by our model, this effect should only be present *within* families. We show that this is indeed the case, as style diversity has no effect on the level of interfund trading for placebo families, which we create by randomly drawing for each of the actual families comparable funds from all the other families in our sample.

We also find that style diversity is positively associated with the deviation in liquidity between funds' portfolios and their style benchmarks. As predicted by our model, funds following high-illiquidity benchmarks deviate by decreasing the illiquidity of their portfolios, and vice-versa for funds following low-illiquidity benchmarks. We show that these portfolio distortions are unrelated to the cross-subsidization motive of Gaspar et al. (2006).

Regarding the implications of intra-family style diversity on fund performance, our model suggests that the net effect should be positive for passive funds, but zero for active funds. This is because passive funds only engage in cross-trading to save in trading costs, while active funds engage in cross-trading not only to save in trading costs, but also for risk-shifting purposes. Our empirical evidence is also consistent with these predictions.

Our paper is related to the growing literature on cross-trading within asset management companies. In their seminal work, Gaspar et al. (2006) find that one way in which mutual fund families can transfer performance across member funds ('cross-fund subsidization'), to favor those funds with a higher expected contribution to family profits, is to have them cross-trade at below or above market prices. Chaudhuri et al. (2017) find evidence of a similar strategic performance re-allocation across the different products offered by an institutional asset management company, with stronger effects occurring within illiquid investment styles. Casavecchia and Tiwari (2016) document a similar effect for brokers and other clients of the fund advisor, at the expense of

[2] The term "invisible hand" was introduced by Adam Smith to describe his belief that individuals seeking their economic self-interest actually benefit society more than they would if they tried to benefit society directly.

[3] Our measure of intra-family style diversity is defined as the (negative of the) minimum of all the pairwise correlations of returns across the different benchmarks followed by the funds affiliated with the same family. The composition of these benchmark portfolios is outside of the control of the fund family. This way we avoid the endogeneity issues that would arise if pairwise correlations were computed using fund returns instead of benchmark returns.