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ABSTRACT

Do asset managers reach for yield because of competitive pressures in a low rate environment? I propose a tournament model of money market funds (MMFs) to study this question. When funds care about relative performance, an increase in the risk premium leads funds with lower default costs to increase risk taking, while funds with higher default costs decrease risk taking. Without changes in the premium, lower risk-free rates reduce the risk taking of all funds. I show that these predictions are consistent with MMF risk taking during the 2002–2008 period and that rank-based performance is a key determinant of money flows to MMFs.

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1. Introduction

Do money market funds (MMFs) reach for yield because of competitive pressure when risk-free rates decrease? Are there differences in the cross section? What is the proper notion of competitive pressure for money market funds? To

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answer these questions, I propose a tournament model of money market funds and test its predictions for the 2002–2008 period.

“Reach for yield” refers to the tendency to buy riskier assets to achieve higher returns. Recently, there has been much debate about asset managers reaching for yield in a low risk-free rate environment, especially in competitive industries. Asset managers are typically compensated with asset-based fees, and, as widely observed, investors positively respond to fund performance. Hence, asset managers are induced to compete with each other over relative performance to attract money flows. The concern is that lower returns on safe assets could exacerbate this risk-taking incentive and lead asset managers to delve into riskier assets.¹ US prime money market funds are seen as a leading example of asset managers reaching for yield because of competitive forces.² Both regulators and academics have

¹ See [Financial Stability Council \(2013\)](#), [Office of Financial Research \(2013\)](#), [Bernanke \(2013\)](#), [Haldane \(2014\)](#), and [Yellen \(2014\)](#).

² [Stein \(2013, pg. 4\)](#): “A leading example here comes from the money market fund sector, where even small increases in a money fund’s yield

lately paid close attention to prime MMFs because of their crucial role in the 2007–2009 financial crisis. Although the possible reach for yield of MMFs is central to the agenda of regulators and academics, a relative lack of theoretical and empirical literature exists on the topic.

The two economic forces at work in the MMF industry are fund competition over performance and risk of breaking the buck. To capture these features, I model the industry as a static fund tournament with a continuum of risk-neutral funds that have heterogeneous default costs. The cost of default in the model represents the cost of breaking the buck in the real world. The heterogeneity of default costs captures the real-world heterogeneity of reputational damages to fund sponsors in case their funds default. These damages include outflows from other funds in the same family and losses in the sponsor's franchise value (Kacperczyk and Schnabl, 2013, KS). In terms of methodological contribution, to the best of my knowledge, this paper is the first to solve a tournament model with a continuum of players in a fully analytic way without first-order approximations.

I show that the tournament has a unique Nash equilibrium, fund risk taking strictly decreases with the cost of default, and equilibrium default probability is strictly positive for (almost) all funds. Funds trade off expected costs of default for the expected gains of outperforming competitors by taking more risk. The fund with the highest default cost anticipates that, in equilibrium, it will have the lowest expected performance and optimally chooses to keep its default probability at zero regardless of other funds' actions. Funds with slightly lower default costs anticipate this and optimally keep their default probability slightly above zero to outperform the highest default cost fund in expectation. The same reasoning applies to all other funds in descending order of default costs. That is, in equilibrium, funds with lower default costs face higher competitive pressure, since they optimally choose to outperform a larger fraction of competitors, and therefore take on more risk. I show that the fund-specific equilibrium competitive pressure is uniquely determined by the distribution of default costs in the industry and is independent of asset returns. Competition causes the equilibrium default probability to be positive for (almost) all funds regardless of the scale of default costs in the industry. This result comes from the strategic nature of the tournament and would not hold if funds' payoff depended on absolute performance.

The equilibrium default probability depends on asset returns only via a tournament version of the standard risk premium, which is exogenously given. This tournament risk premium is the risk-taking incentive of competition. It measures the marginal gain in expected performance rank from investing in the risky asset. An increase in the premium leads all funds to increase their equilibrium default probability but, in terms of the amount of risky investment, it generates a bifurcation in the fund population. Consider an increase in the riskiness of the risky asset that causes the premium to rise. Since funds with higher de-

fault costs face lower competitive pressure, they are less attracted by the increase in the premium and increase their default probability less. If the increase in risk is sufficiently large, they will have to cut risky investment to keep the default probability sufficiently close to zero. Conversely, since funds with lower default costs face higher competitive pressure, they are more attracted by the increase in the premium and increase their default probability more. If they face sufficiently high competition, they will increase risky investment despite the increase in risk. This bifurcation comes from the heterogeneity of equilibrium competitive pressure.

The equilibrium default probability does not depend on the level of the risk-free rate. Absent default, funds care only about relative performance and, in case of default, they pay a fixed idiosyncratic cost. The equilibrium risky investment, however, does depend on the level of the risk-free rate because the safe assets in a fund's portfolio work as a buffer against default risk. If the return on safe assets decreases, funds are forced to cut their risky investment to keep the same default probability. That is, holding the premium constant, a decrease in the risk-free rate reduces the risky investment of all funds. This anti-reach for yield behavior is stronger for funds with higher default costs, which implies that the cross-sectional risky investment differential increases as the risk-free rate decreases.

These results show that to understand the risk taking of MMFs, the role of the risk-free rate level must be distinguished from that of the risk premium. Risk premiums trigger risk taking but affect funds with low and high default costs in opposite ways. Low risk-free rates increase the buffer of safe assets necessary to maintain the equilibrium default probability and therefore reduce risky investment for all funds. Both effects are peculiar to MMFs and come from their distinctive feature of a stable net asset value (NAV) and consequent risk of breaking the buck.

My empirical analysis shows that these predictions are consistent with the risk taking of institutional prime MMFs over January 2002–August 2008. I choose this time window because it includes both a significant surge in the risk premiums available to MMFs (August 2007–August 2008) and a prolonged period of low Treasury rates (January 2003–July 2004). At the same time, it does not include the run on MMFs in September 2008, the consequent government intervention, and the ensuing long-lasting debate on new regulation that could have altered the standard risk-taking incentives of MMFs. The concern for a possible reach for yield of financial intermediaries, and particularly MMFs, in a low interest rate environment emerged for the first time in 2003–2004 (Federal Deposit Insurance Corporation, 2004; Rajan, 2006). To map the model to the data, I identify the fund's cost of default with the sponsor's reputation concern introduced by Kacperczyk and Schnabl (2013), which is the share of non-MMF business in the sponsor's total mutual fund business.

I show that the rank of fund performance, and not the raw performance, determines money flows to MMFs, confirming the importance of relative performance competition in the industry and justifying the choice of a tournament model. I provide evidence supporting the model's predictions on the level of risky investment in the time

relative to its competitors can attract large inflows of new assets under management."

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