Guest editorial

Mutual fund research: a perspective on how we have arrived at the current state of academic research on mutual funds

Mutual funds have existed in one form or another since the eighteenth century, although the first modern mutual fund was created in 1924. By 2016, over $40 trillion was invested in mutual funds worldwide (Investment Company Institute, ICI, 2017). No doubt, much of the recent growth in mutual funds corresponds to the demise of the defined benefit pension plan in the USA in favor of the 401(k) and other defined contribution plans, as well as similar trends worldwide.

The academic literature in this area is, of course, substantial. Early work demonstrated that the benefits of active portfolio management are far from obvious (Jensen, 1968). Jensen's work laid out the methodology of measuring a mutual fund's performance via the intercept from the regression of a fund's return on a benchmark. Jensen's finding of negative estimated "alphas" raised questions about the skill of mutual fund managers and the rationality of investors. The following decades witnessed extensive work to explain when, how, and why investors should, or should not, pursue professionally and actively managed portfolios. The financial services industry responded with the launch of low-cost index funds (Hortaçsu and Syverson, 2004; Bogle, 2002, 2016) and new marketing efforts to justify active management (Jain and Wu, 2000; Chen *et al.*, 2000). Investors responded in two divergent ways: by directing increasing wealth to new passive investment strategies (ICI, 2017; Gruber, 1996), and by investing in alternative actively managed choices, such as hedge funds (Fung *et al.*, 2008).

The continuing flow into seemingly underperforming actively managed mutual funds was a conundrum for academic researchers in the 1980s and 1990s. Financial economists attempted to explain the inconsistency by asserting the existence of potential problems with the data and methods used to measure performance (Grinblatt and Titman, 1989; Malkiel, 1995; Daniel *et al.*, 1997; Elton *et al.*, 2001; Kothari and Warner, 2001). Refinements to the data and methods failed to resolve the issues, with some research consistent with skilled trading by fund managers (Chevalier and Ellison, 1999a; Zheng, 1999; Chen *et al.*, 2000; Bollen and Busse, 2001) and other work suggesting that investors behave irrationally by investing in actively managed funds (Goetzmann and Peles, 1997; Malkiel, 1999; Cooper *et al.*, 2005).

Evidence in the 1990s suggested that fees (Chordia, 1996; Carhart, 1997) and trading costs (Grinblatt and Titman, 1989; Daniel *et al.*, 1997; Carhart, 1997; Wermers, 2000) drive the performance of fund managers' investment choices away from the realized returns of investors in those funds. Evidence was mounting to support the notion that mutual fund flows were systematically and asymmetrically tied to fund performance (Warther, 1995; Sirri and Tufano, 1998; Barber *et al.*, 2005; Huang *et al.*, 2007; Rakowski and Wang, 2009; Cashman *et al.*, 2012).

Berk and Green (2004) developed a seminal model that explained how the conflicting evidence on fund manager skill may be consistent with rational investor behavior. Their model suggested that performance-chasing by fund investors was both rational and sufficient to explain the mixed results in studies of fund manager skill following Jensen's (1968) work. Berk and Green's model suggested that the return-only performance measures that had dominated the literature for decades (Grinblatt and Titman, 1994; Fama and French, 1993; Carhart, 1997) failed to account for the dynamic response of investors when allocating new money to managers displaying exceptional skill.

Managerial Finance
Vol. 44 No. 3, 2018
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0307-4358
DOI 10.1108/MF-12-2017-0519

The Berk and Green (2004) model provided an intuitive explanation for evidence of (under)performance by fund managers, but academic research provided only indirect evidence to support their framework. Direct evidence on diseconomies of scale in mutual fund management implied by the model has proven elusive (Latzko, 1999; Chen *et al.*, 2004; Friesen and Sapp, 2007; Pollet and Wilson, 2008; Ciccotello *et al.*, 2011; Agapova *et al.*, 2011). In addition, the interaction between fund flows and fund managers' trading discretion appears to negatively impact active fund management in a wide range of contexts that are not fully included in the model (Edelen, 1999; Johnson, 2004; Yan, 2006). Fund flows are detrimental to fund performance because of increased transaction costs (Kacperczyk *et al.*, 2006; Greene *et al.*, 2007; Dubofsky, 2010; Rakowski, 2010) and poor timing from the manager's perspective (Chalmers *et al.*, 2001; Greene and Hodges, 2002; Alexander *et al.*, 2006; Coval and Stafford, 2007; Frazzini and Lamont, 2008).

Mutual funds are a fertile research area because they involve so many aspects of financial economics. Updated performance measures are important to academics and practitioners. New methodologies and improved statistical methods (Blake *et al.*, 2017) facilitate improved inferences about luck, scale, and active management (Barras *et al.*, 2010; Fama and French, 2010; Del Guercio and Reuter, 2014; Blake *et al.*, 2017). Fund manager behavior has been associated with various personal, geographic, and demographic characteristics (Nohel *et al.*, 2010; Deuskar *et al.*, 2011; Pool *et al.*, 2012, 2015; Deng and Rakowski, 2016). Studies of individual fund managers have been expanded to examine entire fund families, focusing on important areas, such as fund launches (Khorana and Servaes, 1999; Evans, 2010; Shirley and Stark, 2016), cross-subsidization (Massa, 2003; Nanda *et al.*, 2004; Gaspar *et al.*, 2006; Kempf and Ruenzi, 2007), information flows (Brown and Wu, 2016), governance (McCahery *et al.*, 2016; Adams *et al.*, 2016), and agency conflicts (Hao and Yan, 2012; Battacharya *et al.*, 2013; Adams *et al.*, 2014; Del Guercio *et al.*, 2017).

The interaction between mutual fund investors and fund managers has widespread implications for security pricing in response to the actions of fund investors (Brown *et al.*, 2013; Anton and Polk, 2014; Koch *et al.*, 2016). The behavior of mutual fund investors, therefore, has a material impact on financial markets (Bailey *et al.*, 2011; Ben-Rephael *et al.*, 2012) and these impacts reach far beyond the fund industry. The impact of fund flows and management decisions can be inferred from overall market movements. as well as from mutual fund holdings disclosures (Agarwal *et al.*, 2014, 2015; Parida and Teo, 2018; Schwarz and Potter, 2016). The use of mutual fund holdings data in academic research has led to findings demonstrating the biases and performance impacts that arise in strategic decisions by fund managers to hold derivatives (Koski and Pontiff, 1999; Deli and Varma, 2002; Natter *et al.*, 2016) in socially responsible investments (Goldreyer *et al.*, 1999; El Ghoul and Karoui, 2017), and in exchange-traded products (Sherrill *et al.*, 2017; Rakowski *et al.*, 2017).

As academic research has driven the industry toward new models of low-cost investing and new avenues for active management, the industry has evolved with new organizational forms. Closed-end funds experienced a massive decline (ICI, 2017) after academic research exposed the inefficiencies of a structure that allows price discounts but does little to address concerns about skilled management (Day *et al.*, 2011; Cherkes, 2012; Wu *et al.*, 2016). Meanwhile, research has followed the shift of assets into funds with new structures (Agapova, 2011; Elton *et al.*, 2011; Gastineau, 2001; Clifford *et al.*, 2014), leverage abilities (Charupat and Miu, 2011; Tang and Xu, 2013), focus, or style.

This special issue on mutual funds deals with such a diverse set of institutions and behaviors that we are only able to cover a few topics in this small volume. Nevertheless, we hope that our readers find the five papers assembled in this volume to be interesting and thought-provoking. Two of the papers address issues surrounding exchange-traded vs conventional mutual funds. Two papers provide updated perspectives on how to measure

fund performance and what to infer from these measures. The final paper examines the relation between a set of sector funds and the corresponding underlying assets.

The first paper, "Portfolio turnover activity and mutual fund performance" (Champagne *et al.*, 2018), extends the literature on the relation between portfolio turnover and fund performance by examining a measure of portfolio turnover that assess trading activity in terms of portfolio weight changes (termed "modified turnover" (MT)) rather than the more conventional method whereby the analyst aggregates the dollar amounts of trades over a given period, i.e., the portfolio turnover ratio (PTR). The authors observe differences between the two measures. MT uses portfolio holding data, whereas PTR incorporates data on all trades in a given time interval. MT includes the effects of fund flows, whereas PTR does not. MT excludes offsetting trades. Utilizing their refined measure of portfolio activity, the authors conclude that portfolio churning is value destroying, and it presents a credible signal of a manager's shortcomings. These findings provide an important complement to related recent work on similar topics by Pástor *et al.* (2017) and Cremers and Pareek (2016).

The second paper, "Life after death: acquired fund performance" (Lapatto and Puttonen, 2018), examines target fund performance in the period surrounding a merger. The authors quote an assertion from the popular press suggesting that merging funds is the best option for poor performers during turbulent periods in the financial markets. The authors pose the interesting question, "Would target fund underperformance continue if not merged?". The authors employ a creative approach to determine whether target funds would have performed better, had they simply continued to operate independently as passively managed portfolios. Employing a procedure that controls for fund fees, the authors study Sharpe ratios and Fama-French-Carhart alphas. They find that target shareholders would have enjoyed a higher return, had the target fund simply pursued a buy and hold strategy rather than merge. This work facilitates better understanding of the conflicting evidence that exists in studies that compare the motivations of fund managers to merge (Namvar and Phillips, 2013; Andreu and Sarto, 2016), shut down, or follow a closet indexing strategy (Cremers and Petajisto, 2009; Cremers *et al.*, 2016).

The third paper, "Actively managed ETFs vs actively managed mutual funds" (Sherrill and Upton, 2018), examines performance characteristics of actively managed exchange-traded funds (ETFs) vs actively managed conventional mutual funds. The authors expand the work of Agapova (2011) to analyze individual and aggregate fund flows for both ETFs and conventional funds, including consideration of a 2013 change in the tax code that the authors hypothesize should favor ETFs. The paper builds upon previous research to determine substitutability and clientele effects with respect to the two types of funds. This research is relevant for investors choosing between ETF vs conventional funds that track the same index, as well as the question of how ETFs perform relative to their benchmarks. Their results show that actively managed ETFs and conventional funds are viewed as substitutes, an effect that is stronger for equity and mixed funds than for fixed income funds. Moreover, the authors find a tax clientele effect (Sialm and Starks, 2012) favoring exchanged traded funds that is stronger for fixed income and mixed funds than for equity funds. The authors conclude that extant capital market conditions may have a tendency to favor ETFs that should contribute to their continued development in this investment space.

The fourth paper, "Trading on ETF mispricings" (Kreis and Licht, 2018), examines the relation between ETF prices and the market value of the underlying portfolio (net asset value, or NAV) for a sample of European sector ETFs by analyzing a long-short trading strategy based upon price/NAV information accounting for trading costs. Their analysis demonstrates a positive gross excess return that exceeds transactions costs only during the financial turbulence that occurred between 2008 and 2010. The authors conclude that the

long-short strategy is potentially profitable only during times of high market volatility. The paper, therefore, provides an excellent analysis of the practical implications of well-known patterns in ETF mispricing (Rompotis, 2011; Petajisto, 2017).

The fifth paper, "Energy mutual funds and oil prices" (Gormus *et al.*, 2018), examines the effect of oil prices on energy mutual funds in terms of price level and volatility. Oil prices have been studied as shock factors in the capital markets generally, but this paper is unique in that it examines the impact of oil prices specifically on energy mutual funds. The price-fund relation is examined using a VAR(p) framework, and volatility transmission effect is analyzed using a GARCH(1,1) framework suggested by Hafner and Herwartz (2006). The authors find that both oil prices and fund characteristics play an important role in fund performance.

Overall, the papers in our special issue provide extensions on some of the most influential academic research on mutual funds, as well as practical applications of the findings from some of the most influential academic findings.

J. David Diltz and David Rakowski
Department of Finance and Real Estate,
University of Texas at Arlington, Arlington, Texas, USA

Acknowledgements

We thank Don Johnson, Editor of *Managerial Finance,* for the opportunity to produce this special issue. He has provided cheerful guidance, and a great deal of patience. We also thank Valerie Robillard and the team at Emerald for their support. We are grateful for the response from authors across the academy for their interest in our project and for their valuable submissions, whether selected for this volume or not. Lastly, we thank the anonymous reviewers who contributed so much of their valuable time and expertise, without compensation, to review the original submissions and to usher the manuscripts through the revision process.

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