**Gender and Mutual Fund Liquidity**

**Abstract**

We examine whether the female-managed U.S. mutual funds have higher portfolio liquidity than their male counterparts. Single female managers’ holdings are 8% to 25% more liquid than those of single male managed funds. When there is a transition from male to female manager, fund holdings liquidity increases compared to a male-to-male transition fund. The findings are consistent with the risk-averse and conservation decision-making behavior of female managers. We do not find evidence to support the excessive trading hypothesis that predicts higher portfolio liquidity of overconfident male fund managers. Our findings add to growing evidence that gender affects professionals’ investment choices.

**Keywords:** *Mutual funds, Gender, Mutual Fund Liquidity.*

**Introduction**

We examine the role of the gender of fund managers in designing portfolio liquidity. Various studies have analyzed investment behaviors and performance of mutual fund managers based on their gender (Atkinson, Baird, and Frye, 2003; Beckmann and Menkhoff, 2008; Niessen-Ruenzi and Ruenzi, 2019). However, the preferences of male and female fund managers for portfolio holdings remain mostly unknown. We focus on liquidity as it is one of the preferred stock characteristics for portfolio holdings (Falkenstein, 1996; Gompers and Metrick, 2001; Pinnuck, 2004). Fund managers have to manage withdrawals, so they prefer to hold liquid stocks, which facilitate them to rotate portfolios rapidly (Chan and Lakonishok, 1995; [Gompers and Metrick, 2001)](https://www.sciencedirect.com/science/article/pii/S0927538X05000715#bib13). Mutual funds have liquid securities to build a safety cushion to manage liquidity risk in the event of a crisis. When fund managers face redemptions, they sell their liquid stocks first to accommodate withdrawals quickly and at a lower cost (Scholes, 2000; Clarke, Cullen, and Gasbarro, 2007). On the contrary, some studies argue that market volatility and fund withdrawals encourage fund managers to sell their illiquid stocks first to preserve fund liquidity (Vayanos, 2004; Ben-Rephael, 2017). Furthermore, holding highly liquid stocks in a portfolio minimizes implicit transaction costs (Falkenstein, 1996). Given the importance of liquidity of portfolio holdings, it is intriguing to enquire whether the gender of fund managers plays a crucial role in asset allocation decisions.

We identify gender as the factor that explains discrepancies in managers’ liquidity preferences. Mutual funds’ management is a group of individuals with comparable financial expertise and knowledge; hence, it provides enticing research settings to test whether gender affects professionals’ investment choices. Barber *et al.* (2018) show that female fund managers are less likely to be promoted and have shorter tenures than male fund managers. They also find no significant difference between the performance of male and female fund managers, in terms of both returns and fund flows. The risk-averse and conservative decision-making behaviors are commonly associated with females; whereas, overconfidence behavior impacts male investment decisions more than females. Female executives tend to reduce firms’ leverage; hence, firms with higher risks are more likely to appoint a female CEO to reduce their riskiness (Martin, Nishikawa, and Williams, 2009; Faccio, Marchica, and Mura, 2016; Falconieri and Akter, 2023). Like executives, firms with a higher proportion of female directors in a board have lower risks (De Cabo, Gimeno, and Nieto, 2012). Usman et al. (2021) show that female directors engage in efficient but not opportunistic related party transaction (RPTs), hence their decision often more ethical and risk-averse. The mutual fund literature provides empirical evidence that female fund managers are more likely to avoid risky investments than male managers (Beckmann and Menkhoff, 2008; Niessen-Ruenzi and Ruenzi, 2019). Subsequently, to fulfill liquidity needs promptly and with minimum cost during redemption, female managers are likely to hold more liquid stocks in their portfolio than males. Stocks’ liquidity decreases their default risks as proposed by liquidity theory (Brogaard, Li, and Xia, 2017). Therefore, we expect that female fund managers exhibit a higher preference for portfolio liquidity than male managers.

Besides the risk-averse behavior, one of the preferred corporate choices of female professionals related to stock liquidity is their temptation towards price-efficient stocks. The inclusion of female directors on corporate boards increases stock price informativeness and reduces information asymmetry (Gul, Srinidhi, and Ng, 2011; Abad *et al.*, 2017). The female fund managers’ preference for informationally efficient stocks leads to higher portfolio liquidity. Informationally transparent firms have lower transaction costs and higher liquidity (Lang, Lins, and Maffett, 2012; Berger *et al.*, 2021). Consequently, compared to male fund managers, females prefer liquid stocks reflecting the information promptly.

On the contrary, male professionals are more overconfident in their decisions than their female counterparts (Huang and Kisgen, 2013; Niessen-Ruenzi and Ruenzi, 2019). Compared to females, male traders’ higher overconfident behavior results in excessive trading and lower returns on investments. (Barber and Odean, 2001). The excessive turnover in portfolios and aggressively moving money into new securities increase transaction costs (Chan and Lakonishok, 1995). Therefore, allocating more assets to liquid stocks can facilitate frequent transactions of male fund managers with minimum cost. It may be plausible that the preference to trade in liquid stocks is higher for male managers than for females.

There exists a line of literature suggesting no disparities among the behaviors of male and female professionals. Fund managers possess risk management skills, and they have advanced financial education and market knowledge. These forces alleviate the gender effect on behavioral preferences. Hibbert, Lawrence, and Prakash (2013) suggest that financial education mitigates the gender difference in risk aversion. Niessen-Ruenzi and Ruenzi (2019) document significantly lower inflows in female-managed funds than in male-managed funds because some investors with strong gender bias invest significantly less in female-managed funds. The self-selection mechanism among females on becoming fund managers can be another reason to assume that females are equally confident and competitive as their male counterparts.

Sargis and Wing (2018) report that from 1990 to 2017, the U.S. active equity and fixed-income funds have grown from 1,900 to 8,500. However, men have obtained 85 to 90% of these new roles, and women have failed to take significant advantage of the growth in positions. Hence, the scrutiny risk is higher for female fund managers compared to males because they are small in number. The regular performance ranking of fund managers by market participants and investors’ gender bias towards female managed funds may lead to female and male fund managers’ similar investment behaviors. Nekby, Thoursie, and Vahtrik (2008) show that women selected to participate in male-dominated environments are likely to be highly competitive. Gregory *et al.* (2012) analyzed gender differences in the market reaction following the announcements directors’ trade and show that in the long-term females appear to have the same information and capacity to interpret this information as their male counterparts. Therefore, it is plausible that female fund managers’ preference for portfolio liquidity is no different from male managers. Finally, Aggarwal and Boyson (2016) found similar results where female managers perform no differently than all male-manage funds with similar risk profiles[[1]](#footnote-1).

Using a sample of 1,932 U.S. domestic open-end single managed equity funds from January 2000 to December 2017, 10% (on average) run by single female managers we show that female fund managers’ preference for holding liquid portfolios is higher than male managers. Consistent with the existing literature, we document that female fund managers are involved in less frequent trading than their male counterparts. However, male and female fund managers’ net result of liquidity preference does not indicate higher liquidity demand by male managers. Thus, we do not find substantial support for the hypothesis that excessive trading of male fund managers motivates them to allocate assets to liquid stocks. The findings provide empirical evidence that gender differences exist in highly educated and experienced fund managers’ asset allocation decisions.

To identify the factors that motivate female fund managers to invest in more liquid stocks, first, we test the riskiness of female managed funds. The findings support the literature that females are more risk-averse than their male counterparts. Therefore, they prefer to invest in a more liquid portfolio to promptly convert stocks into cash and protect from high trading costs during withdrawals. Second, we test stock price efficiency by using a price delay measure, following Hou and Moskowitz (2005). Price delay may result from a lack of liquidity or investors’ inattention towards a stock. The outcomes show that female fund managers favor stocks for which their prices incorporate market and firm-specific information promptly. Subsequently, consistent with the hypothesis, female fund managers’ inclination towards price-efficient stocks leads to higher portfolio liquidity than male managers’ portfolios’ liquidity. The liquidity preference of female fund managers gives them the advantage of investing in firms where the information environment is transparent and avoids managers who try to exploit information asymmetries for personal benefits.

Some fund management companies may discriminate in their selection of a fund manager based on gender, or females may self-select more liquid funds to manage. Moreover, ownership structure, particularly institutional ownership, affects the stock’s liquidity (Agarwal, 2007; Rubin, 2007). In this scenario, the gender of the fund manager has no impact on the fund’s stockholding liquidity. Hence, it is critical to justify whether a fund manager prefers stocks with higher liquidity or stocks’ inclusion in the fund portfolio upsurges their liquidity. Moreover, time-invariant fund-specific characteristics correlated with omitted explanatory variables give rise to endogeneity issues. We, therefore, apply different approaches to substantiate the authenticity of our results.

On methodological aspects, first, we compare the liquidity preference of funds managed by female managers to a (propensity score) matched sample of peers run by male managers that are indistinguishable in terms of investment objectives, time, fund, and manager level characteristics. Second, we compare the same funds’ portfolio liquidity preference, as managed by managers of a different gender. For this purpose, we consider a sample of funds experiencing a transition from one manager to another, including male to male, female to female, male to female, and female to male fund manager (referred to as “transition funds”). Finally, we apply a difference-in-differences approach on the transition funds to compare fund liquidity before and after transitions from male to female manager, with a control sample of male to male transition funds. The findings of propensity scores matching and difference-in-differences methodologies provide empirical evidence that a significant increase in portfolio liquidity occurs around the change from male to female fund managers compared to otherwise similar peers.

We conduct one additional test to alleviate endogeneity concerns. The test relies on the instrumental variable approach, where we use a “state-level gender equality index” as an instrument for the fund managed by a female manager (Di Noia, 2002). The friendlier a state is towards female equality, the more likely a fund (with its headquarters in that state) is to have a female manager. The results support our hypothesis that female managed funds have higher portfolio liquidity than male funds. Additionally, we run our primary regression model by controlling for various stock-level variables that are likely to affect portfolio liquidity, and the results support our main conjecture.

Diversity in the context of mutual funds refers to the representation of different groups of people in the management and ownership of mutual funds. This includes diversity in terms of gender, race, ethnicity, and socioeconomic background. Currently, the mutual fund industry is dominated by white men, with a lack of representation of women, minorities, and other underrepresented groups (Di Guili *et al.*, 2022; Marti-Ballester, 2022). This lack of diversity can lead to a narrow range of perspectives and investment strategies, which may limit the potential returns and performance of the funds. Additionally, research has shown that diverse teams tend to make better decisions and perform better financially. This is because different perspectives, ideas and backgrounds lead to a better understanding of the market and can lead to more innovative solutions (Babalos *et al.*, 2015). A lack of diversity in the mutual fund industry can lead to a lack of innovative solutions and limited performance. Moreover, the lack of diversity in mutual funds also limits the access to investment opportunities for underrepresented groups and can perpetuate wealth inequality (Bliss and Potter, 2002). This is because mutual funds are a popular way for people to save for retirement and build wealth over time, and a lack of diversity in the industry means that underrepresented groups may have fewer opportunities to access these investment vehicles (Gangi *et al*., 2020). Thus, diversity in mutual funds is crucial for a fair and efficient financial market, as well as promoting the well-being of the society by providing equal opportunities for wealth creation.

Our findings are consistent with the notion that behavioral disparities among gender exist and influence their decisions, even in professional settings (e.g., Huang and Kisgen, 2013; Ho *et al*., 2015; Faccio, Marchica, and Mura, 2016). The analysis of liquidity preference among male and female fund managers contributes to the existing literature on the gender of mutual fund managers (e.g., Atkinson, Baird, and Frye, 2003; Beckmann and Menkhoff, 2008; Niessen-Ruenzi and Ruenzi, 2019). Moreover, the findings support the argument of females’ inclination towards informationally transparent stocks and the positive association between stock price efficiency and liquidity (e.g., Diamond and Verrecchia, 1991; Gul, Srinidhi, and Ng, 2011; Lang, Lins, and Maffett, 2012; Callen, Khan, and Lu, 2013; Abad *et al.*, 2017). The study further contributes to the extant research work, which reports liquidity as one of the essential characteristics of stockholdings and preferred by institutional investors (e.g., Del Guercio, 1996; Falkenstein, 1996; Gompers and Metrick, 2001).

The rest of the paper is structured as follows. Section 2 details the research methodology and data. Section 3 presents the applications of diagnostic tests, analysis, and discussion of the results. The study of the endogeneity issues is in Section 4. Section 5 concludes.

**Data and Methodology**

**Data**

This study considers U.S. domestic actively managed open-end equity funds from January 2000 to December 2017. We follow the methodology of Kacperczyk, Sialm, and Zheng (2008) to merge mutual funds’ characteristics data from the Center for Research in Security Prices (CRSP) Survivorship Bias-Free Mutual Fund Database with holdings data of Thomson Reuters and stock prices data of the Center for Research in Security Prices (CRSP). To focus our analysis on actively managed open-end domestic equity mutual funds, for which the holdings data are most complete and reliable, we exclude international, municipal bonds, bond and preferred, money market, balanced, and index funds from the data. Following Solomon, Soltes, and Sosyura (2014), the MFLINKS table matches portfolio holdings with mutual fund characteristics. We exclude the share class observations reporting negative monthly net assets, turnover ratio, or expense ratio. We sum monthly net assets of all share classes to derive the monthly total net assets. The monthly fund return and expense ratio are value-weighted. For fund age and the turnover ratio, we consider the oldest share class.

To avoid incubation bias, we exclude a fund’s monthly observations where the observation date is before the fund’s inception date reported in CRSP. We also eliminate observations where funds’ names are missing.[[2]](#footnote-2) From a fund’s aggregated holding data, we exclude funds that hold fewer than ten stocks or manage less than US$1 million in the previous month (Kacperczyk, Sialm, and Zheng, 2005). We require a fund to have at least one year of monthly returns. Following Pástor, Stambaugh, and Taylor (2020), we measure the ratio of a fund’s total net assets attained by adding up CRSP share classes’ net assets to the assets obtained by adding up the fund’s holdings from Thomson Reuters. We eliminate any fund-month observation if the ratio exceeds 2.0 (i.e., 200%), or is less than 0.5 (i.e., 50%). We have a matched sample of 3,165 domestic equity funds with 376,362 fund-month observations. We collect data on fund managers’ characteristics from the Morningstar Direct (M.S.) database.[[3]](#footnote-3)

The detailed data matching and cleaning procedure is explained in Appendix B. Our final sample covers 1,932 unique funds with 124,363 fund-month observations. We observe that 113 (5.85%) are the only female managed funds, and 1,658 (85.82%) are the only male managed fund, whereas 161 (8.33%) are funds managed by a single male and single female managers at different times.

**Dependent Variable – Portfolio Liquidity**

We use three proxies to measure fund liquidity: Portfolio liquidity developed by Pástor, Stambaugh, and Taylor (2020), Amihud’s (2002) measure, and the bid-ask spread. To derive liquidity measures, we retrieve the data of daily stock return, price, volume, bid price, ask price, and market capitalization from the CRSP stock database.

**Independent and Control Variables**

We use the female dummy as the independent variable, which is equal to “1” if the fund is single female managed, and “0” if it is a single male managed in the given month.

Following the literature on mutual funds, we control for the fund characteristics that are well known to affect fund liquidity, i.e., size, return, expense ratio, turnover ratio, age, and flow (e.g., Ben-Rephael, 2017; Huang, 2020; Yan, 2008). Fund size, which is the natural log of total net assets of the fund in millions of dollars at the end of a given month; fund return is the asset-based value-weighted average of the returns of all the share classes; fund expense ratio typically includes accounting, administrator, advisor, auditor, board of directors, custodial, distribution (12b-1), legal, organizational, professional, registration, shareholder reporting, sub-advisor, and transfer agency fees, excluding the fund’s brokerage costs or any investor sales charges, and we measure it as the value-weighted average of the net expense ratio of all the share classes; fund turnover ratio is the minimum of the fund’s dollar buys and sells during the fiscal year, scaled by the fund’s average total net assets; fund age is the natural log of fund age, measured as the difference between a fund’s inception year and the current year. We also use fund flow, defined as the net growth in total net assets of funds, as a percentage of their total net assets, adjusted for returns. Following Sirri and Tufano (1998), we measure fund flow as:

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|  |  | (1) |

where is the total net assets of share class *i* at month *t*, and is the return of share class *i* earned in month *t* on assets under management. is share class *i’s* total net assets at the end of last month. Our measure of fund flow is the aggregated monthly flow of all share classes belonging to the fund.

Managers’ demographic characteristics may affect their decision choices; therefore, we control the manager’s age and qualifications (Chevalier and Ellison, 1999; Niessen-Ruenzi and Ruenzi, 2019). Considering Bachelors (undergrad), Masters (grad), and Ph.D. (doctoral) degrees, we consider the highest degree earned by the manager. MBA is a dummy variable equal to “1” if the manager holds a Master of Business Administration degree, and “0” otherwise. Our model includes a dummy variable for professional certification, equal to “1” if the fund manager has a professional certification like CFA or CPA, and “0” otherwise. Following Chevalier and Ellison (1999), we measure manager age by assuming that a manager is 21 years old at the time of completion of his/her undergraduate degree. It is the natural log of manager age in years at year *t*.

**The Model**

This study aims to analyze the relationship between fund liquidity and the gender of the fund manager. We run the following regression model, including various controls for fund and manager attributes:

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where is one of the three proxies used to measure the liquidity of fund *i* at time *t.*  is a dummy variable equal to “1” if fund *i* is managed by a single female manager, and “0” if it is a single male managed at time *t*. Fund return , size , expense ratio , turnover ratio , flow , and age are characteristics of fund *i* at time *t*. , , and are dummy variables, where one of them is equal to “1” depending upon the highest degree, and the rest is “0”. is a dummy variable equal to “1” if the fund manager of the fund *i* holds an MBA degree at time *t*, and “0” otherwise. is a dummy variable equal to “1” if the *ith* fund manager is a member of a professional certification body at time *t*, and “0” otherwise. is the age of the manager of the fund *i* at time *t*.[[4]](#footnote-4)

For the analysis, we employ the pooled ordinary least squares (OLS) which estimates the time-series and cross-sectional variation of the association between gender of mutual fund manager and portfolio liquidity. A large number of studies on the gender of professionals use pooled regression to generate baseline results (Ahmed and Ali, 2017; Faccio, Marchica, and Mura, 2016; Niessen-Ruenzi and Ruenzi, 2019). Pooled regression with fixed effects provides efficient and unbiased results.

**Empirical Results and Discussion**

**Effect of Gender on Preference for Portfolio Liquidity**

Table 1 presents the summary statistics, while the discussion of correlation analysis is available in Appendix C. We start our main empirical analysis by examining the impact of a fund manager’s gender on portfolio liquidity and present the results in Table 2. Panel A displays the pooled regression results, where we regress each of the portfolio liquidity measures on the female dummy variable without controlling for fund or manager level characteristics. To address any impact of time and fund-related fixed factors, we include a year and fund fixed-effects model; the number of funds is 1,932, and we have 18 years’ data. There needs to be significant variations in the variables to apply Fixed effects and to produce unbiased estimates. In our study, the variable of interest, i.e., gender of mutual fund manager, is expected to vary over time. Therefore, we use fund and time fixed effects to generate consistent estimates (Niessen-Ruenzi and Ruenzi, 2019). To make the small coefficients presentable, we measure bid-ask spread portfolio liquidity in basis points throughout the analysis.[[5]](#footnote-5) The positive and significant coefficients for all three proxies indicate higher portfolio liquidity for female managed funds.

[Insert Table 1 and Table 2 about here]

The results of Panel A may be affected by the unobserved omitted fund, as well as manager-specific variables. These characteristics may explain a significant portion of the variability in the portfolio liquidity preference of fund managers. Therefore, in Panel B, we present the model’s findings in Equation (2), which controls the relevant fund and manager level attributes (Solomon *et al.*, 2014; Niessen-Ruenzi and Ruenzi, 2019). Columns (1) to (3) show that Pástor, Stambaugh, and Taylor’s portfolio liquidity (Port\_Liq\_PST) is significantly higher for female managed funds. The results indicate that the liquidity of female managed funds is 25% higher than the average liquidity of male managed funds, and this positive difference is significant at the 1% level. To exhibit economic significance of the results, the coefficients of regressions between females and the three measures of portfolio liquidity are interpreted in comparison with the average portfolio liquidity of male managed funds, i.e., coefficient/mean Port\_Liq of male managed funds (separately for each Port\_Liq measure). We also observe that fund return, expense, and turnover ratio are negatively related to Port\_Liq\_PST, whereas fund size and age are positively and significantly associated with it. The combined results of all the control variables in Column (1) describe that Port\_Liq\_PST is markedly higher for the funds managed by managers having undergraduate or graduate degrees. All these associations are significant at the 1% level, and the goodness of fit of the models is around 84%.

Columns (4) to (6) of Panel B display a significantly positive association between Amihud’s portfolio liquidity and female managed funds. The female managed funds report 11% higher Port\_Liq\_Amhd than the average liquidity of male managed funds, and this positive relationship is significant at the 1% level. Column (4) findings report significantly higher Port\_Liq\_Amhd for funds with large size, higher turnover ratios managed by a manager who holds an undergraduate or graduate or Ph.D. degree who has the professional certification. Conversely, old funds and funds managed by a manager with an MBA degree have lower portfolio liquidity. The goodness of fit of these three models is around 62%. We find consistent results for the third proxy of liquidity. Columns (7) to (9) provide evidence that female managed funds prefer higher bid-ask spread portfolio liquidity than male managed funds. The liquidity of single female managed funds is 8% higher than the mean portfolio liquidity of single-man managed funds and is significant at the 1% level. The fund and manager-specific control variables show a significant association with Port\_Liq\_Sprd. The overall goodness of fit of these models is around 72%.[[6]](#footnote-6)

Based on the results presented in Table 2, we conclude that the gender of mutual fund managers does affect the choice of portfolio liquidity, and female fund managers have a higher preference for liquidity than male managers (Huang, 2020; Ahmed and Ali, 2017). By combining the three proxies of the liquidity portfolio, it is evident that the funds managed by single female managers are 8% to 25% more liquid than single male managed funds. Consistent with Pástor, Stambaugh, and Taylor (2020), the overall results demonstrate that funds with more liquid portfolios are larger and cheaper. Two of the proxies’ coefficients indicate that funds managed by managers having a graduate degree are positive. In contrast, managers holding an MBA degree are negative, related to portfolio liquidity.

To test the overconfidence notion of males (Barber and Odean, 2001), we run a regression on fund trading and the gender of fund managers. We measure aggressive trading by using the fund Turnover ratio (Niessen-Ruenzi and Ruenzi, 2019).[[7]](#footnote-7) The higher turnover ratio depicts excessive trading by the fund. Consistent with the literature, the results show that male managed funds carry significantly higher trading than female managed funds. However, we reject the hypothesis that overconfident male fund managers prefer higher portfolio liquidity to minimize their high trading costs.[[8]](#footnote-8)

To explore the asymmetric behavior of portfolio liquidity, we apply Quantile regression method proposed by Koenker and Bassett (1978) and Koenker (2005). Quantile regression can provide detailed insight about the relationship between portfolio liquidity and the gender of mutual funds manager. Quantile regression extends the regression model to conditional quantiles of the dependent variable, and each quantile regression defines a particular center or tail, point of a conditional distribution. This regression overcomes the restrictions of the traditional conditional-mean regression models and allows the estimation of various quantile functions (Babalos, Caporale, and Philippas, 2015). The main advantage of quantile regression over least squares regression is its flexibility for modeling data with heterogeneous conditional distributions. Hence, for robustness check, applying quantile regression is appropriate for our data. The regression results of the relationship of Pástor, Stambaugh, and Taylor’s portfolio liquidity and the gender of mutual funds manager are consistent with our main findings. The positive and significant impact of female fund manager is stronger for portfolio liquidity (Port\_Liq\_PST) in higher quantiles. The association of female fund manager and Amihud portfolio liquidity (Port\_Liq\_Amhd) is positive and significant (at 1% level of significance) till 50th quantile. The results are inconsistent with our main findings and show significantly negative relationship between female fund manager and Bid/Ask Spread portfolio liquidity (Port\_Liq\_Sprd) for 5th and 10th quantile (Sonza and Valcanover, 2019).[[9]](#footnote-9)

To overcome autocorrelation concerns, we run our primary regression analysis by controlling for lagged liquidity variables. We also control for various stock-specific characteristics that may affect a fund manager's preference to hold the stock. The results are consistent and presented in the Appendix (Table C7).

**Factors Stimulating Female Fund Managers’ Preference for Portfolio Liquidity**

To explain the factors that lead to a higher portfolio preference by female fund managers than male managers, first, we test their risk-averse behavior. We measure portfolio risk, the value-weighted average of monthly volatility of all the stocks held in a portfolio. Stock volatility is the standard deviation of a stock’s daily return. To examine the relationship between a fund manager’s gender and the portfolio’s riskiness, we run the model given in Equation (3).

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|  |  | (3) |

where the variables are as defined in Section 3.

Table 3, Columns (1) and (2) display the results with all fund and manager level control variables and the year and fund fixed effects. Consistent with the literature, we find that female fund managers are more risk-averse in portfolio management than their male counterparts. Our studyassumes that risk-averse female fund managers exhibit a high preference for liquid stocks because they have lower default risk (Brogaard, Li, and Xia, 2017). Moreover, with a liquid portfolio, they can promptly fulfill the investors’ liquidity needs with lower transaction costs. Hence, risk behavior associated with the gender of mutual fund managers can influence their liquidity preference.

[Insert Table 3 about here]

Second, we test our hypothesis, which expects that females’ preference for information transparency encourages them to hold more liquid stocks in the portfolio. The literature on stock price efficiency describes that if the information environment is uncertain or opaque, its stock price slowly incorporating newly arriving value-relevant information (Callen, Khan, and Lu, 2013). Hence, in our study, we assume that female fund managers are more likely to hold stocks whose prices have fewer delays in responding to the latest information.

Following Hou and Moskowitz (2005), we measure the delay variable. The weekly market return from Fama and French (1993) can capture a stock response as relevant news arrives.[[10]](#footnote-10) As the price delay measure requires a year of prior weekly returns history (52-weeks), our calculation begins from 1999. We consider the past 52 weeks of returns corresponding to the last week of every month. Moreover, we exclude firm-year-month observations if 25 weeks out of the past 52 weekly stock returns are missing[[11]](#footnote-11).

Table 3, Columns (3) and (4) show the findings of the regression model with fund and year fixed effects and control variables. The results provide empirical evidence that single female managers’ funds significantly reduce holding those stocks whose prices are not efficient in integrating available information. Consistent with the literature, female managers are more inclined towards price-efficient stocks, and it signals their preference for firms with a high-quality information environment. Informationally transparent firms have higher liquidity (Lang, Lins, and Maffett, 2012). Hence, we conclude that the increased information efficiency encourages female managers to prefer a more liquid portfolio.

**Endogeneity**

We apply various approaches to mitigate any endogeneity concerns. We use the entire sample and a sub-sample of funds that experience replacing one manager with another manager. This sub-sample of “transition funds” consists of all fund-month observations of those funds experiencing at least one event of transition from either male to male, male to female, female to male, or female to female.

**Propensity Score Matching and Univariate Analysis**

Following Faccio, Marchica, and Mura (2016), we compare the liquidity of funds managed by female managers to the liquidity of a (propensity score) matched sample of peers run by male managers, that are indistinguishable in terms of the various fund, as well as manager level characteristics. Each pair of matched funds manifests no observable differences in relevant attributes except for the gender of the manager.

We consider female managed funds as a treatment group, with male managed funds belonging to a control group. We calculate propensity scores by running a probit regression where the dependent variable is a dummy and takes the value equals to “1” if the fund belongs to the treatment group or “0” if the fund is from the control group. We consider the fund level characteristics as independent variables, i.e., fund return, fund size, expense ratio, turnover ratio, flow, and fund age. Notably, the propensity score is estimated within the same fund investment objective and date. To find an adequately precise nearest neighbor match (with replacement) between the female managed funds and the peer funds in the control group, we only consider the pairs where the maximum difference between their propensity scores does not exceed 0.01 in the absolute term. Additionally, we select the unique pair with a minimum difference between their propensity scores. We re-run the probit regression on post-match pairs of treatment and control groups. We find that most of the fund level characteristics’ coefficients lose their significance, confirming that the matched pairs are almost the same regarding their fund-related attributes.

Table 4, Panel A reports the comparison of Port\_Liq\_PST, Port\_Liq\_Amhd, and Port\_Liq\_Sprd with the matched samples. The results show that average portfolio liquidity (for the three measures) of female managers’ funds is higher than the portfolio liquidity of male managed funds, even when other relevant characteristics between the fund pairs are virtually equal. Hence, we suggest that the gender-related differences in portfolio liquidity do not result from the observable fund characteristics. In addition, we obtain the propensity score as a function of fund and manager level characteristics (i.e., undergrad, grad, Ph.D., MBA, cert, and manager age), within the same fund investment objectives and date. Table 4, Panel B presents the comparison of portfolio liquidity between the matched funds, and the results support the outcomes in Panel A.

[Insert Table 4 about here].

We implement the same propensity score matching approach to the sub-sample of transition funds. Only female managed transition funds are the treatment group, and male managed transition funds belong to the control group. As mentioned earlier, we calculate the probability (propensity score) as a function of fund level and then fund and manager level characteristics. All other conditions are the same to match the treatment fund with an identical control fund and to obtain unique pairs. The findings presented in Table 4, Panels C and D are consistent with the earlier results. Comparing the three proxies of portfolio liquidity confirms that even transition funds managed by females tend to hold more liquid portfolios than the otherwise matched male-managed transition funds, even when the pairs' observable characteristics are virtually identical.

Finally, following Huang and Kisgen (2013), we run univariate regressions on the matched sample of transition funds to examine the gender differences in portfolio liquidity. Table 4, Panel E reports that, compared with the matched male managed funds, female managed transition funds are positively and significantly associated with all three proxies of portfolio liquidity. Columns (1) to (3) are the regression results for the propensity score-matched funds that are indistinguishable regarding the fund level characteristics, whereas Columns (4) to (6) are the findings of the matched funds concerning fund and manager level characteristics.

**Pooled Regression Analysis of Transition Funds**

Following Faccio, Marchica, and Mura (2016), we run a traditional panel regression analysis by including the controls. The omission of these controls might lead us to wrongly attribute the differences in portfolio liquidity to fund manager gender disparities. We compare fund managers of different genders managing the same fund in the fixed effects regressions. The transitions might be accompanied by changes in fund manager characteristics other than gender. Hence, we run a panel regression analysis with fund and year fixed effects, controlling for the fund and manager-specific observable characteristics. We restrict our sample to the funds experiencing either male to female or female to male transitions only.

The findings in Table 5, Panel A exhibit a significantly positive relationship between female managed funds and the three proxies of portfolio liquidity. The observable fund and manager level characteristics show a significant association with the measures of portfolio liquidity. However, the results reveal that portfolio liquidity is higher when a female manager manages the fund than when a male manager manages the same fund. Following Huang and Kisgen (2013), we repeat the above-applied panel regression analysis with fixed effects and controls. For this analysis, we include in our sample all the funds experiencing either male to male, female to female, male to female, or female to male transitions during our sample period. The results of Table 5, Panel B strongly support the evidence of the higher preference in female managed funds for portfolio liquidity.

[Insert Table 5 about here.]

**Difference-in-Differences Regression Analysis Considering Transition Events**

We apply a difference-in-differences approach for our empirical examination comparing portfolio liquidity before and after transitions from a male to a female fund manager with a control sample of male to male transition funds (Huang and Kisgen, 2013). We refer to the treatment group of funds with male to female transition as Female\_Trans. This analysis sample is twelve months before and twelve months after a change, excluding the month when the transition occurs. We require a fund manager to solely manage the fund for at least twelve months (the month he or she is hired and the eleven months following) to ensure that the manager has enough time to make essential portfolio composition changes. We exclude a transition event if observations are missing for twelve months before or after the transition.

The results from the difference-in-differences analysis are reported in Table 6. In Columns (1) and (2), the positive and significant coefficient of indicates that female fund managers prefer higher Pástor, Stambaugh, and Taylor’s portfolio liquidity, compared to male fund managers. The findings are significant at the 1% level. We report the t-statistics based on White standard errors, which indicate that portfolio liquidity increases when female managers start managing a fund. Columns (3) to (6) carry similar analyses for the Amihud and bid-ask spread’s portfolio liquidity methods. These tests show that female managed funds become more liquid after a transition from male to female manager. The coefficient of the variable is positive and statistically significant, as shown in Columns (3) and (5).

[Insert Table 6 about here.]

Although, the findings of the robustness test do not support the argument that change in fund liquidity is symmetric with gender transition, our study provides empirical evidence that the magnitude of portfolio liquidity is higher for a female managed fund as compared to a fund managed by a male manager[[12]](#footnote-12).

**Instrumental Variable Approach**

We conduct one additional test to rule out any remaining endogeneity concerns. We implement an instrumental variable approach. The instrument that we use is the state’s gender status equality index, initially developed by Sugarman and Straus (1988) and updated by Di Noia (2002). The measure analyzes the extent to which females have the same access as men to economic resources, legal rights, and positions of political power in each of the 50 U.S. states. The state’s gender equality index is a composite index to represent the cumulative effect of the economic, legal, and political indicators. It assigns each of the states a score for its gender status equality. The scores range from 33.6 (Alabama) to 73.1 (Washington), where higher values indicate more gender equality.

Following Huang and Kisgen (2013), we hypothesize that the more friendly a state is towards female equality, the more likely a fund with its headquarters located in that state is to appoint a female manager. Based on the fund’s headquarter location, we allocate each fund the state’s gender status equality value. The purpose of using this instrumental variable is that there is a high possibility that the measure is correlated with the decision to hire a female fund manager; however, it is doubtful that it will affect our portfolio liquidity proxies. The only way it may affect the outcome variables is through its direct relationship with the gender of the fund manager[[13]](#footnote-13). Hence, this measure reasonably fulfills the requirements of an instrumental variable.

Column (1) of Table 7 reports the results of the first-stage regression. It concludes that the gender equality index is significantly associated with having a female manager manage the fund. The association is significant at the 1% level. The F-statistic is 38.58, which confirms the strength of the instrument. Columns (2) to (4) depict the second-stage analysis outcomes and confirm our study's main findings. In our analysis, the positive coefficient of Port\_Liq\_Sprd is insignificant; however, the rest of the two measures are positively and significantly related to female managed funds. subsequently, we conclude that funds with a higher tendency to appoint female fund managers have higher portfolio liquidity.

[Insert Table 7 about here.]

In summary, our results show the economic significance and marginal impact of gender related leadership transition, which is consistent with the previous literature that has suggested that companies with more diverse leadership tend to perform better financially. This is often attributed to the fact that diverse teams bring different perspectives and approaches to decision-making, which can lead to more innovative solutions and better risk management (Flabbi *et al.*, 2019). Additionally, companies that are seen as promoting gender equality may be more attractive to customers and employees, which can lead to increased sales and a more talented and engaged workforce (Iman *et al.*, 2022; Karim *et al.*, 2022). Furthermore, having more women in leadership positions can help to break down gender stereotypes and discrimination in the workplace, creating a more equitable and inclusive environment for all employees. In terms of marginal impact of gender-related leadership transition, the marginal impact of increasing the representation of women in leadership roles can be significant, but it may depend on the specific context and the number of women already in leadership positions. For example, studies have found that having a critical mass of women in leadership roles, rather than just a token representation, is associated with better financial performance for companies (Lafuente and Vaillant, 2019; Karim, 2021). Additionally, literature suggests that having women in leadership roles can lead to greater gender equality and diversity within the organization, which can have a positive impact on employee morale, productivity, and innovation (Gull *et al.*, 2022). However, it is important to note that other factors such as the culture and policies of the organization play a crucial role in determining the success of gender-related leadership transition.

**Conclusion**

This study provides empirical evidence that female fund managers’ preference to hold a liquid portfolio is significantly higher than for male managers. This finding is consistent with the conjecture that stocks that incorporate available information efficiently attract female fund managers more than males. Hence, female managers’ preference for informationally transparent stocks motivates them to hold more liquid stocks in the portfolio. Consistent with the literature, this study reports a lower portfolio risk of female managed funds. On average, we document that female managed funds are smaller in size, earn a lower return, receive lesser flow, and hold a smaller number of stocks in their portfolio than male managed funds. Further, the analysis of portfolio liquidity change around manager transition indicates that portfolio liquidity increases after a male to female transition compared to a male to male transition. We use the gender status equality index as an instrumental variable in the 2SLS analysis. The results support the conjecture that female managers’ funds have higher portfolio liquidity than male managed funds.

Third, this paper provides new insight regarding gender differences in asset allocation decisions of fund managers. Female fund managers prefer to hold more liquid assets; however, we must consider the tradeoff between liquidity and returns (Amihud and Mendelson, 1986). Liquidity preferred portfolio has a higher tendency to deteriorate fund performance due to lower returns. Although female managed funds are less risky and satisfy the investors’ liquidity needs, especially during a crisis, they receive a lower inflow than male managed funds. It is not surprising if male fund managers attract fund flows by holding less-liquid stocks and reporting higher fund return performance.

The relationship between gender and mutual fund liquidity has several managerial implications. We conclude that mutual funds managed by women tend to have higher liquidity than those managed by men. This may be due to differences in investment styles or risk aversion. Managers who are aware of this relationship tend to choose to hire or promote more women in leadership roles within their fund management teams. This could lead to an increase in liquidity and potentially better performance for the fund. Additionally, managers may also implement policies and procedures to encourage their investment teams to take a more liquidity-focused approach to portfolio management. This could include setting specific liquidity targets or allocating a certain percentage of assets to more liquid investments. Overall, understanding the relationship between gender and mutual fund liquidity can provide valuable insights for fund managers looking to improve the performance and risk management of their funds.

On policy fronts, the relationship between gender and mutual fund liquidity has multiple implications as well. One implication is that regulators can consider implementing policies to promote gender diversity within the mutual fund industry. This could include initiatives to increase the number of women in leadership roles within fund management companies, or to encourage more women to pursue careers in finance. Another implication is that regulators may review the current rules and regulations that govern mutual funds to ensure that they do not inadvertently discriminate against women-led funds. For example, regulations that limit the amount of leverage that funds can use or require funds to hold certain minimum levels of liquidity may disproportionately affect funds managed by women, who tend to have higher liquidity than those managed by men. Additionally, policymakers may also consider implementing measures to promote liquidity in the mutual fund industry more generally. This could include encouraging better disclosure of liquidity risks or implementing regulations to limit the use of leverage by mutual funds. In essence, understanding the relationship between gender and mutual fund liquidity can provide valuable insights for policymakers looking to promote gender diversity, and to improve the stability and resilience of the mutual fund industry.

Although the study offers several practical implications, it has a few research limitations. Cumming, Johan, and Zhang (2019) show that mutual fund fees influence fund performance and fund flow. Using mutual fund fee structure as a control to test the impact of gender on fund liquidity may show interesting results. However, due to data limitations this variable is not included in robustness check. Based on theoretical underpinnings of the study, since we report that the magnitude of portfolio liquidity is higher for a female managed fund as compared to a fund managed by a male manager, there is still need to explore these findings in different country settings and using various methodological approaches. Subsequently, our robustness results do not support the argument that change in fund managers is symmetric with gender transition as proposed by earlier empirical studies (Falconieri and Akter, 2023; Gao *et al.*, 2022; Zhang, 2022), therefore further investigation of the current nexus is required to provide ground evidence in theory and literature.

**References**

Abad, D., Lucas-Pérez, M. E., Minguez-Vera, A., and Yagüe, J. (2017). ‘Does gender diversity on corporate boards reduce information asymmetry in equity markets?’, *BRQ Business Research Quarterly*, *20*(3), pp. 192-205.

Adams, R. B., and Ferreira, D. (2009). ‘Women in the boardroom and their impact on governance and performance’, *Journal of Financial Economics*, *94*(2), pp. 291-309.

Adams, R. B., and Ragunathan, V. (2017). ‘Lehman sisters’, *Available at SSRN 3046451*.

Agarwal, P. (2007). ‘Institutional ownership and stock liquidity’, *Available at SSRN 1029395*.

Aggarwal, R., and Boyson, N. M. (2016). ‘The performance of female hedge fund managers’, *Review of Financial Economics*, *29*(1), 23-36.

Ahmed, A., and Ali, S. (2017). ‘Boardroom gender diversity and stock liquidity: Evidence from Australia’, *Journal of Contemporary Accounting and Economics*, *13*(2), pp. 148-165.

Ajinkya, B., Bhojraj, S., and Sengupta, P. (2005). ‘The association between outside directors, institutional investors and the properties of management earnings forecasts’, *Journal of Accounting Research*, *43*(3), pp.343-376.

Amihud, Y., and Mendelson, H. (1986). ‘Asset pricing and the bid-ask spread’, *Journal of Financial Economics*, *17*(2), pp. 223-249.

Amihud, Y. (2002). ‘Illiquidity and stock returns: Cross-section and time-series effects’, *Journal of Financial Markets*, *5*(1), pp. 31-56.

Amihud, Y., Mendelson, H., and Pedersen, L. H. (2006). ‘Liquidity and asset prices’, *Foundations and Trends in Finance*, *1*(4), 269-364.

Atkinson, S. M., Baird, S. B., and Frye, M. B. (2003). ‘Do female mutual fund managers manage differently?’, *Journal of Financial Research*, *26*(1), pp. 1-18.

Babalos, V., Caporale, G. M., and Philippas, N. (2015). ‘Gender, style diversity, and their effect on fund performance’, *Research in International Business and Finance*, *35*, 57-74.

Barber, B. M., and Odean, T. (2001). ‘Boys will be boys: Gender, overconfidence, and common stock investment’, *The Quarterly Journal of Economics*, *116*(1), pp. 261-292.

Barber, B. M., Scherbina, A., and Schlusche, B. (2017). ‘Performance isn't everything: personal characteristics and career outcomes of mutual fund managers’, *Available at SSRN 3032207*.

Beckmann, D., and Menkhoff, L. (2008). ‘Will women be women? Analyzing the gender difference among financial experts’, *Kyklos*, *61*(3), pp. 364-384.

Ben-Rephael, A. (2017). ‘Flight-to-liquidity, market uncertainty, and the actions of mutual fund investors’, *Journal of Financial Intermediation*, *31*, pp. 30-44.

Berger, A. N., El Ghoul, S., Guedhami, O., and Guo, J. (2020). ‘Corporate capital structure and firm value: International evidence on the special roles of bank debt’, *Available at SSRN 3726764*.

Berger, A. N., Kick, T., and Schaeck, K. (2014). ‘Executive board composition and bank risk taking’, *Journal of Corporate Finance*, *28*, pp. 48-65.

Bliss, R. T., and Potter, M. E. (2002). ‘Mutual fund managers: does gender matter?’, *The Journal of Business and Economic Studies*, *8*(1), 1-15.

Brogaard, J., Li, D., and Xia, Y. (2017). ‘Stock liquidity and default risk’, *Journal of Financial Economics*, *124*(3), pp. 486-502.

Brooks, M., and Byrne, A. (2008). ‘Behavioral finance: Theories and evidence’, *The Research Foundation of CFA Institute. University of Edinburgh*.

Callen, J. L., Khan, M., and Lu, H. (2013). ‘Accounting quality, stock price delay, and future stock returns’, *Contemporary Accounting Research*, *30*(1), pp. 269-295.

Chan, L. K., and Lakonishok, J. (1995). ‘The behavior of stock prices around institutional trades’, *The Journal of Finance*, *50*(4), pp. 1147-1174.

Chevalier, J., and Ellison, G. (1999). ‘Are some mutual fund managers better than others? Cross‐sectional patterns in behavior and performance’, *The Journal of Finance*, *54*(3), pp. 875-899.

Chordia, T., Roll, R., and Subrahmanyam, A. (2000). ‘Commonality in liquidity’, *Journal of Financial Economics*, *56*(1), pp. 3-28.

Chordia, T., Roll, R., and Subrahmanyam, A. (2001). ‘Market liquidity and trading activity’, *The Journal of Finance*, *56*(2), pp. 501-530.

Chowdhury, R., and Doukas, J. A. (2022). ‘Are CEOs to blame for corporate failure? Evidence from chapter 11 filings’, *Review of Corporate Finance*, *2*(1).

Clarke, A., Cullen, G., and Gasbarro, D. (2007). ‘Mutual fund trades: Asymmetric liquidity preferences and fund performance’, *Journal of Financial Research*, *30*(4), pp. 515-532.

Cumming, D., Johan, S., and Zhang, Y. (2019). ‘What is mutual fund flow?’, *Journal of International Financial Markets, Institutions and Money,* *62*, 222-251.

De Cabo, R. M., Gimeno, R., and Nieto, M. J. (2012). ‘Gender diversity on European banks’ boards of directors’, *Journal of Business Ethics*, *109*(2), pp. 145-162.

Deaves, R., Lüders, E., and Luo, G. Y. (2009). ‘An experimental test of the impact of overconfidence and gender on trading activity’, *Review of Finance*, *13*(3), pp. 555-575.

Del Guercio, D. (1996). ‘The distorting effect of the prudent-man laws on institutional equity investments’, *Journal of Financial Economics*, *40*(1), pp. 31-62.

Di Giuli, A., Garel, A., and Petit-Romec, A. (2022). ‘The Voting Behavior of Women-Led Mutual Funds’, *Available at SSRN*.

Di Noia, J. (2002). ‘Indicators of gender equality for American states and regions: An update’, *Social Indicators Research*, *59*(1), pp. 35-77.

Diamond, D. W., and Verrecchia, R. E. (1991). ‘Disclosure, liquidity, and the cost of capital’, *The Journal of Finance*, *46*(4), pp. 1325-1359.

Elton, E. J., Gruber, M. J., and Blake, C. R. (2001). ‘A first look at the accuracy of the CRSP mutual fund database and a comparison of the CRSP and Morningstar mutual fund databases’, *The Journal of Finance*, *56*(6), pp. 2415-2430.

Estes, R., and Hosseini, J. (1988). ‘The gender gap on Wall Street: An empirical analysis of confidence in investment decision making’, *The Journal of Psychology*, *122*(6), pp. 577-590.

Evans, R. B. (2009). ‘Does alpha really matter? Evidence from mutual fund incubation, termination and manager change’, Working Paper, *University of Virginia.*

Faccio, M., Marchica, M. T., and Mura, R. (2016). ‘CEO gender, corporate risk-taking, and the efficiency of capital allocation’, *Journal of Corporate Finance*, *39*, pp. 193-209.

Falconieri, S., and Akter, M. (2023). ‘Gender Diversity and Beyond in Corporate Finance: Where Do We Stand?’, *Review of Corporate Finance, Forthcoming*.

Falkenstein, E. G. (1996). ‘Preferences for stock characteristics as revealed by mutual fund portfolio holdings’, *The Journal of Finance*, *51*(1), pp. 111-135.

Fama, E. F., and French, K. R. (1993). ‘Common risk factors in the returns on stocks and bonds’, *Journal of Financial Economics, 33*(1), pp. 3-56.

Fama, E. F. (1960). ‘Efficient market hypothesis’, *Diss. PhD Thesis, Ph. D. dissertation*.

Flabbi, L., Macis, M., Moro, A., and Schivardi, F. (2019). ‘Do female executives make a difference? The impact of female leadership on gender gaps and firm performance’, *The Economic Journal*, *129*(622), 2390-2423.

Gao, J., Liu, M., and Wang, Y. (2022). ‘Diversity in family business: where social goals collide with family socioemotional wealth’, *Review of Corporate Finance*, *2*(4), 861-884.

Gompers, P. A., and Metrick, A. (2001). ‘Institutional investors and equity prices’, *The Quarterly Journal of Economics*, *116*(1), pp. 229-259.

Gregory, A., Jeanes, E., Tharyan, R., and Tonks, I. (2012). ‘Does the Stock Market Gender Stereotype Corporate Boards? Evidence from the Market's Reaction to Directors' Trades’, *British Journal of Management, 24*(2), pp. 174-190.

Grinblatt, M., and Keloharju, M. (2009). ‘Sensation seeking, overconfidence, and trading activity’, *The Journal of Finance*, *64*(2), pp. 549-578.

Gul, F. A., Srinidhi, B., and Ng, A. C. (2011). ‘Does board gender diversity improve the informativeness of stock prices?’, *Journal of Accounting and Economics*, *51*(3), pp. 314-338.

Gull, A. A., Atif, M., and Hussain, N. (2022). ‘Board gender composition and waste management: Cross-country evidence’, *The British Accounting Review*, 101097.

Hibbert, A. M., Lawrence, E. R., and Prakash, A. J. (2013). ‘Does knowledge of finance mitigate the gender difference in financial risk-aversion?’, *Global Finance Journal*, *24*(2), pp. 140-152.

Ho, S. S., Li, A. Y., Tam, K., and Zhang, F. (2015). ‘CEO gender, ethical leadership, and accounting conservatism’, *Journal of Business Ethics*, *127*(2), pp. 351-370.

Hou, K., and Moskowitz, T. J. (2005). ‘Market frictions, price delay, and the cross-section of expected returns’, *The Review of Financial Studies*, *18*(3), pp. 981-1020.

Huang, J., and Kisgen, D. J. (2013). ‘Gender and corporate finance: Are male executives overconfident relative to female executives?’, *Journal of Financial Economics*, *108*(3), pp. 822-839.

Huang, J. (2020). ‘Dynamic liquidity preferences of mutual funds’, *Quarterly Journal of Finance*, *10*(04), 2050018.

Iman, A., Nazarov, Z., and Obydenkova, A. (2022). ‘Female leadership, democratization, and firm innovation: social inequalities and gender issues in post-communist economies’, *Eastern European Economics*, *60*(2), 149-170.

Jianakoplos, N. A., and Bernasek, A. (1998). ‘Are women more risk averse?’, *Economic Inquiry*, *36*(4), pp. 620-630.

Kacperczyk, M., Sialm, C., and Zheng, L. (2005). ‘On the industry concentration of actively managed equity mutual funds’, *The Journal of Finance*, *60*(4), pp. 1983-2011.

Kacperczyk, M., Sialm, C., and Zheng, L. (2008). ‘Unobserved actions of mutual funds’, *The Review of Financial Studies*, *21*(6), pp. 2379-2416.

Karamanou, I., and Vafeas, N. (2005). ‘The association between corporate boards, audit committees, and management earnings forecasts: An empirical analysis’, *Journal of Accounting Research*, *43*(3), pp. 453-486.

Karim, S. (2021). ‘Do women on corporate boardrooms influence remuneration patterns and socially responsible practices? Malaysian evidence’, *Equality, Diversity and Inclusion: An International Journal*, *40*(5), 559-576.

Karim, S., Naeem, M. A., and Ismail, R. B. (2022). ‘Re-configuring ownership structure, board characteristics and firm value nexus in Malaysia: the role of board gender and ethnic diversity’, *International Journal of Emerging Markets*. <https://doi.org/10.1108/IJOEM-01-2021-0004>

Karolyi, G. A., Lee, K. H., and Van Dijk, M. A. (2012). ‘Understanding commonality in liquidity around the world’, *Journal of Financial Economics*, *105*(1), pp. 82-112.

Koenker, R. (2005). ‘Quantile regression (Vol. 38)’, *Cambridge university press*.

Koenker, R., and Bassett Jr, G. (1978). ‘Regression quantiles’, *Econometrica: journal of the Econometric Society, 46*(1), pp. 33-50.

Korajczyk, R. A., and Sadka, R. (2008). ‘Pricing the commonality across alternative measures of liquidity’, *Journal of Financial Economics*, *87*(1), pp. 45-72.

Lafuente, E., and Vaillant, Y. (2019). ‘Balance rather than critical mass or tokenism: Gender diversity, leadership and performance in financial firms’, *International Journal of Manpower*, 40(5), 894-916.

Lang, M., Lins, K. V., and Maffett, M. (2012). ‘Transparency, liquidity, and valuation: International evidence on when transparency matters most’, *Journal of Accounting Research*, *50*(3), pp. 729-774.

Lee, H. C., Tseng, Y. C., and Yang, C. J. (2014). ‘Commonality in liquidity, liquidity distribution, and financial crisis: Evidence from country ETFs’, *Pacific-Basin Finance Journal*, *29*, pp. 35-58.

Liu, Y., Wei, Z., and Xie, F. (2014). ‘Do women directors improve firm performance in China?’, *Journal of Corporate finance*, *28*, 169-184.

Loukil, N., Yousfi, O., and Yerbanga, R. (2019). ‘Does gender diversity on boards influence stock market liquidity? Empirical evidence from the French market’, *Corporate Governance: The International Journal of Business in Society*, 19(4), 669-703.

Martí‐Ballester, C. P. (2022). ‘Mutual funds and gender equality in portfolio firms: Toward the sustainable development goals’, *Corporate Social Responsibility and Environmental Management*. <https://doi.org/10.1002/csr.2396>

Martin, A. D., Nishikawa, T., and Williams, M. A. (2009). ‘CEO gender: Effects on valuation and risk’, *Quarterly Journal of Finance and Accounting*, 48(3), pp. 23-40.

Naeem, M. A., Yousaf, I., Karim, S., Tiwari, A. K., and Farid, S. (2023). ‘Comparing asymmetric price efficiency in regional ESG markets before and during COVID-19’, *Economic Modelling*, *118*, 106095.

Nekby, L., Thoursie, P. S., and Vahtrik, L. (2008). ‘Gender and self-selection into a competitive environment: Are women more overconfident than men?’, *Economics Letters*, 100(3), pp. 405–407.

Ng, J. (2011). ‘The effect of information quality on liquidity risk’, *Journal of Accounting and Economics*, *52*(2-3), pp. 126-143.

Niessen-Ruenzi, A., and Ruenzi, S. (2019). ‘Sex matters: Gender bias in the mutual fund industry’, *Management Science*, *65*(7), pp. 3001-3025.

Pástor, Ľ., Stambaugh, R. F., and Taylor, L. A. (2015). ‘Scale and skill in active management’, *Journal of Financial Economics*, *116*(1), pp. 23-45.

Pástor, Ľ., Stambaugh, R. F., and Taylor, L. A. (2020). ‘Fund tradeoffs’, *Journal of Financial Economics*, *138*(3), 614-634.

Patel, S., and Sarkissian, S. (2017). ‘To group or not to group? Evidence from mutual fund databases’, *Journal of Financial and Quantitative Analysis*, *52*(5), pp. 1989-2021.

Pinnuck, M. (2004). ‘Stock preferences and derivative activities of Australian fund managers’, *Accounting and Finance*, *44*(1), pp. 97-120.

Powell, M., and Ansic, D. (1997). ‘Gender differences in risk behavior in financial decision-making: An experimental analysis’, *Journal of Economic Psychology*, *18*(6), pp. 605-628.

Rubin, A. (2007). ‘Ownership level, ownership concentration and liquidity’, *Journal of Financial Markets*, *10*(3), pp. 219-248.

Saffi, P. A., and Sigurdsson, K. (2011). ‘Price efficiency and short selling’, *The Review of Financial Studies*, *24*(3), pp. 821-852.

Sargis, M., and Wing, K. (2018). ‘*Fund managers by gender through the performance lens*’, Moningstar.

Scholes, M. S. (2000). ‘Crisis and risk management’, *American Economic Review*, *90*(2), pp. 17-21.

Sila, V., Gonzalez, A., and Hagendorff, J. (2016). ‘Women on board: Does boardroom gender diversity affect firm risk?’, *Journal of Corporate Finance*, *36*, pp. 26-53.

Sirri, E. R., and Tufano, P. (1998). ‘Costly search and mutual fund flows’, *The Journal of Finance*, *53*(5), pp. 1589-1622.

Solomon, D. H., Soltes, E., and Sosyura, D. (2014). ‘Winners in the spotlight: Media coverage of fund holdings as a driver of flows’, *Journal of Financial Economics*, *113*(1), pp. 53-72.

Sonza, I. B., and Valcanover, V. M. (2019). ‘Can Gender Diversity Influence Liquidity and Risk of Companies?’, *Base Revista de Administração e Contabilidade da UNISINOS*, *16*(4), 614-638.

Sugarman, D. B., and Straus, M. A. (1988). ‘Indicators of gender equality for American states and regions’, *Social Indicators Research*, *20*(3), pp. 229-270.

Sunden, A. E., and Surette, B. J. (1998). ‘Gender differences in the allocation of assets in retirement savings plans’, *The American Economic Review*, *88*(2), pp. 207-211.

Upadhyay, A., and Zeng, H. (2014). ‘Gender and ethnic diversity on boards and corporate information environment’, *Journal of Business Research*, *67*(11), pp. 2456-2463.

Usman, M., Gull, A.A., Zalata, A. M., Wang, F., and Yin, J. (2021). ‘Female Board Directorships and Related Party Transactions’, *British Journal of Management, 33*(2), pp. 678-702.

Vayanos, D. (2004). ‘*Flight to quality, flight to liquidity, and the pricing of risk* (No. w10327)’, National bureau of economic research (NBER).

Yan, X. S. (2008). ‘Liquidity, investment style, and the relation between fund size and fund performance’, *Journal of Financial and Quantitative Analysis*, *43*(3), 741-767.

Zhang, J. F. (2022). ‘Cultural diversity and capital structures of multinational firms’, *Review of Corporate Finance*, *2*(2), 295-351.

**Table 1. Summary Statistics**

This table presents average fund and manager characteristics for all our sample observations from the year 2000-2017. Column (1) shows descriptive statistics for all pooled observations, Column (2) for female managed funds, and Column (3) for male managed funds. Column (4) indicates the difference between the average characteristics of female and male managed funds. Column (5) expresses the difference as a percentage of sample mean of fund and manager characteristics. The number of fund-month observations is displayed in columns’ titles. () is a measure of monthly portfolio liquidity introduced by Pástor, Stambaugh, and Taylor (2020) and described in Equation (1). () is a measure of monthly portfolio liquidity which is the value-weighted average of Amihud liquidity of all the stocks held by a fund at time t. The illiquidity measure of Amihud (2002) is the daily ratio of absolute stock return to the dollar volume of the stock, described in Equation (2). () is a measure of monthly portfolio liquidity which is the value-weighted average of Bid\_Ask Spread of all the stocks held by a fund at time t. This illiquidity measure is the daily quoted bid-ask spread of a stock divided by its midpoint, described in Equation (3). () is a dummy variable equal to 1 if the fund is single female managed at time t, and 0 if it is single male managed. () is a measure of monthly fund return and equal to the value-weighted average of returns of all the share classes of a fund at time t. () is a measure of monthly fund size and equal to the natural log of total net assets of all the share classes of a fund in a million dollars at time t. () is a measure of monthly fund expense ratio and equal to the value-weighted average of the net expense ratio of all the share classes of a fund at time t. () is a monthly fund turnover ratio measure equal to the minimum of the fund’s dollar buys and sells during the fiscal year, scaled by the fund’s average total net assets. The annual measure is divided by 12 to convert to a monthly frequency. () is a measure of monthly fund flow and equal to the net growth in total net assets of a fund, as a percentage of its total net assets adjusted for returns at time t, described in Equation (4). () is a monthly fund age measure equal to the natural log of the difference between the fund’s inception date and the date at time t. () is a dummy variable and equal to 1 if the undergraduate degree is the highest that a fund manager has earned, and 0 otherwise. () is a dummy variable and equal to 1 if the graduate degree is the highest that a fund manager has earned, and 0 otherwise. () is a dummy variable and equal to 1 if the PhD degree is the highest that a fund manager has earned, and 0 otherwise. () is a dummy variable and equal to 1 if a fund manager has obtained a Master of Business Administration degree, and 0 otherwise. () is a dummy variable and equal to 1 if a fund manager has obtained a professional qualification (e.g., CFA or CPA), and 0 otherwise. () is a measure of monthly fund manager’s age and equal to the natural log of the difference between completion date of manager’s undergraduate degree and the date at time t. Significance is calculated based on a two-sided t-test. \*\*\*, \*\*, and \* denote 99%, 95%, and 90% significance levels.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Sample Mean | Female Funds | Male Funds | Difference | Difference (%) |
|  | (N = 124,363) | (N = 11,381) | (N = 112,982) | (Female-Male) | (Female-Male) |
|  | (1) | (2) | (3) | (4) | (5) |
| Port\_Liq\_PST | 0.0381 | 0.0407 | 0.0378 | 0.0029\*\*\* | 7.61 |
| Port\_Liq\_Amhd | -0.0104 | -0.0046 | -0.0110 | 0.0063\*\*\* | 60.58 |
| Port\_Liq\_Sprd | -24.5700 | -24.5597 | -24.5755 | 0.0158 | 6.43 |
| Ret | 0.0044 | 0.0032 | 0.0045 | -0.0013\*\* | -29.54 |
| TNA (mil $) | 1376.9553 | 678.2136 | 1447.3415 | -769.1278\*\*\* | -55.86 |
| Exp | 0.0011 | 0.0012 | 0.0011 | 0.0001\*\*\* | 9.09 |
| TOratio | 0.0763 | 0.0774 | 0.0762 | 0.0012\* | 1.57 |
| Flow | 0.6858 | 0.2751 | 0.7272 | -0.4521\*\* | -65.92 |
| Fund\_Age | 14.5307 | 14.6777 | 14.5159 | 0.1618 | 1.11 |
| N\_Stocks | 112.3043 | 86.9736 | 114.8560 | -27.8824\*\*\* | -24.83 |
| Undergrad | 0.8328 | 0.8597 | 0.8301 | 0.0296\*\*\* | 3.55 |
| Grad | 0.1402 | 0.1315 | 0.1411 | -0.0096\*\*\* | -6.85 |
| PhD | 0.0257 | 0.0066 | 0.0276 | -0.0210\*\*\* | -81.71 |
| MBA | 0.5735 | 0.5589 | 0.5749 | -0.0160\*\*\* | -2.79 |
| Cert | 0.5807 | 0.6409 | 0.5747 | 0.0662\*\*\* | 11.40 |
| Mgr\_Age | 47.8083 | 47.4425 | 47.8470 | -0.4045\*\*\* | -0.85 |

**Table 2. Fund Manager Gender and Preference for Portfolio Liquidity**

This table presents the findings of the regression of portfolio liquidity on the gender of single managed funds. Panel A exhibits the results without the fund and manager level controls. Panel B shows the findings of the regression model given in Equation (5). The dependent variable is portfolio liquidity, . We use three proxies , , and to measure portfolio liquidity. The independent variable is which is equal to 1if the fund is single female managed at time t, and 0 if it is single male managed. and are measured in basis points. The results are presented with fund and year fixed effects. The t-statistics based on White robust standard errors are reported in parentheses. \*\*\*, \*\*, and \* denote 99%, 95%, and 90% significance levels. See Table C1 in the appendix for the explanation of the fund and manager level control variables. See Table C6 in the appendix for the regression results with the control variable of .

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Panel A. Gender and Portfolio Liquidity without Controls* | | | | | | | | | | | | | | |
|  | | | | Port\_Liq\_PST | | | | Port\_Liq\_Amhd | | | | Port\_Liq\_Sprd | | |
|  | | | | (1) | | | | (2) | | | | (3) | | |
| Female | | | | 0.0099\*\*\* | | | | 0.0006\*\* | | | | 1.2630\*\*\* | | |
|  | | | | (16.69) | | | | (2.12) | | | | (3.02) | | |
| Year-fixed Effect | | | | YES | | | | YES | | | | YES | | |
| Fund-fixed Effect | | | | YES | | | | YES | | | | YES | | |
| No. of Obs. | | | | 124,363 | | | | 124,363 | | | | 124,363 | | |
| Adj. R-squared | | | | 0.8429 | | | | 0.6171 | | | | 0.7205 | | |
| *Panel B. Gender and Portfolio Liquidity with Controls* | | | | | | | | | | | | | | |
|  | Port\_Liq\_PST | | | | | Port\_Liq\_Amhd | | | | Port\_Liq\_Sprd | | | | |
|  | All controls | Fund controls | | | Manager controls | All controls | Fund controls | | Manager controls | All controls | | | Fund controls | Manager controls |
|  | (1) | (2) | | | (3) | (4) | (5) | | (6) | (7) | | | (8) | (9) |
| Female | 0.0095\*\*\* | 0.0095\*\*\* | | | 0.0099\*\*\* | 0.0012\*\*\* | 0.0011\*\*\* | | 0.0008\*\*\* | 1.9918\*\*\* | | | 2.092\*\*\* | 1.2376\*\*\* |
|  | (15.44) | (15.54) | | | (16.57) | (4.05) | (3.52) | | (2.76) | (4.40) | | | (4.65) | (2.94) |
| Ret | -0.0048\*\*\* | -0.0048\*\*\* | | | - | 0.0024 | 0.0024 | | - | 9.5592\*\*\* | | | 9.4985\*\*\* | - |
|  | (-3.94) | (-3.98) | | |  | (1.43) | (1.43) | |  | (6.51) | | | (6.47) |  |
| Size | 0.0054\*\*\* | 0.0054\*\*\* | | | - | 0.0041\*\*\* | 0.0041\*\*\* | | - | 4.0280\*\*\* | | | 4.0246\*\*\* | - |
|  | (41.84) | (41.79) | | |  | (24.21) | (24.19) | |  | (30.05) | | | (30.02) |  |
| Exp | -1.6139\*\*\* | -1.6079\*\*\* | | | - | 0.8876 | 0.8857 | | - | -1945.30\*\*\* | | | -1964.20\*\*\* | - |
|  | (-4.26) | (-4.26) | | |  | (1.50) | (1.50) | |  | (-3.76) | | | (-3.80) |  |
| TOratio | -0.0163\*\*\* | -0.0159\*\*\* | | | - | 0.0128\*\*\* | 0.0125\*\*\* | | - | 7.0946\*\*\* | | | 7.6553\*\*\* | - |
|  | (-11.57) | (-11.41) | | |  | (5.23) | (5.11) | |  | (5.37) | | | (5.79) |  |
| Flow | 0.0206 | 0.0207 | | | - | -0.0018 | -0.0017 | | - | -9.0872 | | | -8.9632 | - |
|  | (1.06) | (1.07) | | |  | (-0.77) | (-0.72) | |  | (-1.35) | | | (-1.32) |  |
| Fund\_Age | 0.0023\*\*\* | 0.0021\*\*\* | | | - | -0.0024\*\*\* | -0.0023\*\*\* | | - | -5.8234\*\*\* | | | -6.0324\*\*\* | - |
|  | (4.03) | (3.80) | | |  | (-5.03) | (-4.84) | |  | (-12.24) | | | (-12.66) |  |
| Undergrad | 0.0040\*\*\* | - | | | -0.0004 | 0.0030\* | - | | 0.0005 | -7.2871\* | | | - | -2.1912 |
|  | (3.00) |  | | | (-0.32) | (1.71) |  | | (0.36) | (-1.71) | | |  | (-0.72) |
|  |  |  | | |  |  |  | |  |  | | |  |  |
|  | | |  | | | |  | | | |  | | | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Panel B. Gender and Portfolio Liquidity with Controls (continued)* | | | | | | | | | |
|  | Port\_Liq\_PST | | | Port\_Liq\_Amhd | | | Port\_Liq\_Sprd | | |
|  | All controls | Fund controls | Manager controls | All controls | Fund controls | Manager controls | All controls | Fund controls | Manager controls |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Grad | 0.0049\*\*\* | - | -0.0007 | 0.0032\* | - | -0.0001 | -6.4583 | - | -2.0399 |
|  | (3.41) |  | (-0.56) | (1.82) |  | (-0.07) | (-1.51) |  | (-0.67) |
| PhD | -0.0001 | - | -0.0024 | 0.0081\*\*\* | - | 0.0054\*\*\* | -13.100\*\*\* | - | -8.5473\*\*\* |
|  | (-0.05) |  | (-1.60) | (4.39) |  | (3.51) | (-2.99) |  | (-2.66) |
| MBA | 0.0002 | - | 0.0000 | -0.0007\*\* | - | -0.0011\*\*\* | -0.5895\*\* | - | -1.0124\*\*\* |
|  | (0.43) |  | (0.07) | (-2.22) |  | (-3.62) | (-2.01) |  | (-3.62) |
| Cert | 0.0004 | - | 0.0000 | 0.0008\*\*\* | - | 0.0016\*\*\* | -0.0280 | - | 0.3074 |
|  | (0.82) |  | (0.06) | (3.53) |  | (6.90) | (-0.08) |  | (0.96) |
| Year-fixed Effect | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Fund-fixed Effect | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| No. of Obs. | 113,855 | 113,855 | 124,363 | 113,855 | 113,855 | 124,363 | 113,855 | 113,855 | 124,363 |
| Adj. R-squared | 0.8475 | 0.8475 | 0.8429 | 0.6252 | 0.6251 | 0.6173 | 0.7233 | 0.7232 | 0.7207 |

**Table 3. Factors for Higher Portfolio Liquidity Preference of Female Fund Managers**

Table 3, Columns (1) and (2) present the findings of the regression of portfolio risk on the single female managed funds. The dependent variable is monthly portfolio risk, , which is the value-weighted average of monthly volatility of all the stocks held by a fund at time t. Columns (3) and (4) report the findings of the regression of portfolio stock prices’ delay on the single female managed funds. The dependent variable is monthly portfolio delay, , the value-weighted average of price delay of all the stocks held by a fund at time t. The price delay measure is one minus the ratio of the restricted R2 over the unrestricted R2. The independent variable is which is equal to 1 if the fund is single female managed at time t, and 0 if it is single male managed. is measured in basis points. The results are presented with fund and year fixed effects. The t-statistics based on White robust standard errors are reported in parentheses. \*\*\*, \*\*, and \* denote 99%, 95%, and 90% significance levels. See Table C1 in the appendix for the explanation of all the variables.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Port\_Risk | |  | Delay | |
|  | All controls with manager age | All controls without manager age |  | All controls with manager age | All controls without manager age |
|  | (1) | (2) |  | (3) | (4) |
| Female | -0.0005\*\* | -0.0003\* |  | -0.0072\*\* | -0.0092\*\*\* |
|  | (-1.99) | (-1.94) |  | (-2.40) | (-5.36) |
| Ret | -0.0302\*\*\* | -0.0324\*\*\* |  | -0.0175\*\* | -0.0196\*\*\* |
|  | (-31.05) | (-46.38) |  | (-2.16) | (-3.49) |
| Size | -0.0005\*\*\* | -0.0002\*\*\* |  | -0.0074\*\*\* | -0.0064\*\*\* |
|  | (-7.70) | (-5.12) |  | (-9.73) | (-13.88) |
| Exp | -1.1324\*\*\* | -0.7550\*\*\* |  | 17.7828\*\*\* | 11.3949\*\*\* |
|  | (-4.76) | (-5.06) |  | (5.81) | (6.04) |
| TOratio | 0.0029\*\*\* | 0.0038\*\*\* |  | -0.0030 | 0.0095\* |
|  | (2.81) | (6.06) |  | (-0.40) | (1.71) |
| Flow | 0.0019 | 0.0036 |  | -0.0080 | -0.0109 |
|  | (0.58) | (1.34) |  | (-0.14) | (-0.23) |
| Fund\_Age | -0.0009\*\*\* | -0.0009\*\*\* |  | 0.0161\*\*\* | 0.0164\*\*\* |
|  | (-4.39) | (-6.25) |  | (6.25) | (9.72) |
| Undergrad | 0.0007 | -0.0022 |  | 0.0217\*\* | 0.0550\*\*\* |
|  | (1.44) | (-1.36) |  | (2.50) | (3.67) |
| Grad | 0.0021\*\*\* | -0.0014 |  | 0.0125 | 0.0504\*\*\* |
|  | (4.47) | (-0.87) |  | (1.51) | (3.35) |
| PhD | 0.0000 | -0.0025 |  | 0.0000 | 0.0504\*\*\* |
|  | - | (-1.55) |  | - | (3.27) |
| MBA | 0.0005\*\*\* | 0.0001 |  | -0.0001 | 0.0015 |
|  | (2.62) | (0.62) |  | (-0.04) | (1.30) |
| Cert | -0.0001 | -0.0000 |  | 0.0109\*\*\* | 0.0034\*\*\* |
|  | (-0.58) | (-0.17) |  | (4.17) | (2.59) |
| Mgr\_Age | 0.0023\*\*\* | - |  | -0.0050 | - |
|  | (4.34) |  |  | (-0.75) |  |
| Year-fixed Effect | YES | YES |  | YES | YES |
| Fund-fixed Effect | YES | YES |  | YES | YES |
| No. of Obs. | 55,253 | 113,855 |  | 55,253 | 113,855 |
| Adj. R-squared | 0.6446 | 0.6350 |  | 0.6316 | 0.6267 |

**Table 4. Propensity Score Matching and Univariate Analysis for Female Managed Funds**

This table presents the results of the propensity score matching approach and the univariate regression analysis of the three measures of portfolio liquidity and the matched female and male managed funds. The propensity score is estimated within the same investment objective and time. We are applying propensity scores to the whole sample. Panel A and B compare portfolio liquidity between the two gender groups similar in only fund level characteristics and fund and manager level characteristics, respectively. Using propensity scores for the transition funds sample, Panel C and D show comparing portfolio liquidity between the two gender groups similar in only fund level characteristics and fund and manager level characteristics, respectively. Significance is calculated based on a two-sided t-test. Panel E presents the univariate regression of portfolio liquidity on the female and the matched male managed transition fund. The dependent variable is portfolio liquidity. The independent variable is which is equal to 1 if the transition fund belongs to the Treatment group and 0 if it belongs to the matched Control group. is measured in basis points. The t-statistics based on White robust standard errors are reported in parentheses. \*\*\*, \*\*, and \* denote 99%, 95%, and 90% significance levels. See Table C1 in the appendix for the explanation of all the variables

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Panel A. Propensity Score Matching using Fund Level Characteristics – All funds* | | | | |
|  | Mean-Female Funds | Mean-Male Funds | Difference | t-statistic |
|  | (N=10,282) | (N=10,282) | (Female-Male) |  |
|  | (1) | (2) | (3) | (4) |
| Port\_Liq\_PST | 0.0409 | 0.0353 | 0.00562\*\*\* | 7.02 |
| Port\_Liq\_Amhd | -0.00482 | -0.0135 | 0.0087\*\*\* | 18.51 |
| Port\_Liq\_Sprd | -25.8000 | -29.1000 | 3.3000\*\*\* | 6.35 |
| *Panel B. Propensity Score Matching using Fund and Manager Level Characteristics – All funds* | | | | |
|  | Mean-Female Funds | Mean-Male Funds | Difference | t-statistic |
|  | (N=4,946) | (N=4,946) | (Female-Male) |  |
|  | (1) | (2) | (3) | (4) |
| Port\_Liq\_PST | 0.0489 | 0.0367 | 0.0122\*\*\* | 9.89 |
| Port\_Liq\_Amhd | -0.0053 | -0.0136 | 0.00834\*\*\* | 12.05 |
| Port\_Liq\_Sprd | -25.8000 | -30.1000 | 4.3000\*\*\* | 5.19 |
| *Panel C. Propensity Score Matching using Fund Level Characteristics – Transition funds* | | | | |
|  | Mean-Female Funds | Mean-Male Funds | Difference | t-statistic |
|  | (N=5,267) | (N=5,267) | (Female-Male) |  |
|  | (1) | (2) | (3) | (4) |
| Port\_Liq\_PST | 0.0523 | 0.0427 | 0.00952\*\*\* | 8.05 |
| Port\_Liq\_Amhd | -0.00291 | -0.00814 | 0.00523\*\*\* | 10.81 |
| Port\_Liq\_Sprd | -22.6000 | -26.2000 | 3.6000\*\*\* | 5.18 |
| *Panel D. Propensity Score Matching using Fund and Manager Level Characteristics – Transition funds* | | | | |
|  | Mean-Female Funds | Mean-Male Funds | Difference | t-statistic |
|  | (N=2,155) | (N=2,155) | (Female-Male) |  |
|  | (1) | (2) | (3) | (4) |
| Port\_Liq\_PST | 0.0638 | 0.0562 | 0.00759\*\*\* | 2.78 |
| Port\_Liq\_Amhd | -0.0041 | -0.00674 | 0.00264\*\*\* | 4.11 |
| Port\_Liq\_Sprd | -27.1000 | -29.4000 | 2.3000\*\* | 1.99 |
|  |  |  |  |  |

**Table 4. (continued)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *Panel E. Univariate Regression of Propensity Score Matched Transition Funds* | | | | | | | |
|  | Fund level Characteristics | | |  | Fund and Manager level Characteristics | | |
|  | Port\_Liq\_PST | Port\_Liq\_Amhd | Port\_Liq\_Sprd |  | Port\_Liq\_PST | Port\_Liq\_Amhd | Port\_Liq\_Sprd |
|  | (1) | (2) | (3) |  | (4) | (5) | (6) |
| Female | 0.0095\*\*\* | 0.0052\*\*\* | 3.5666\*\*\* |  | 0.0076\*\*\* | 0.0026\*\*\* | 2.3443\*\* |
|  | (8.05) | (10.81) | (5.18) |  | (2.78) | (4.11) | (1.99) |
| Constant | 0.0428\*\*\* | -0.0081\*\*\* | -26.2000\*\*\* |  | 0.0562\*\*\* | -0.0067\*\*\* | -29.4000\*\*\* |
|  | (51.14) | (-23.78) | (-53.83) |  | (29.12) | (-14.82) | (-35.26) |
| No. of Obs. | 10,534 | 10,534 | 10,534 |  | 4,310 | 4,310 | 4,310 |
| Adj. R-squared | 0.0060 | 0.0109 | 0.0025 |  | 0.0016 | 0.0037 | 0.0007 |

**Table 5. Female Fund Manager and Preference for Portfolio Liquidity of Transition Funds**

This table presents the regression of portfolio liquidity on the single female managed transition funds. The model is given in Equation (5). Panel A reports the results from Male to Female and Female to Male transition funds. Panel B shows the regression results using panel observations of all the transition funds, including Male to Female, Female to Male, Male to Male, and Female to Female. The dependent variable is portfolio liquidity, . and are measured in basis points. The results are presented with fund and year fixed effects. The t-statistics based on White robust standard errors are reported in parentheses. \*\*\*, \*\*, and \* denote 99%, 95%, and 90% significance levels. See Table C1 in the appendix for the explanation of all the variables.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Panel A. Regression Analysis of Male to Female and Female to Male Transition Funds* | | | | | | | | |
|  | Port\_Liq\_PST | |  | Port\_Liq\_Amhd | |  | Port\_Liq\_Sprd | |
|  | All controls with manager age | All controls without manager age |  | All controls with manager age | All controls without manager age |  | All controls with manager age | All controls without manager age |
|  | (1) | (2) |  | (3) | (4) |  | (5) | (6) |
| Female | 0.0105\*\*\* | 0.0110\*\*\* |  | 0.0014\* | 0.0008\*\* |  | 2.0359\*\* | 0.2907 |
|  | (7.26) | (14.89) |  | (1.91) | (2.20) |  | (2.13) | (0.62) |
| Ret | -0.0056 | -0.0087\* |  | 0.0072 | 0.0017 |  | 19.2000\*\*\* | 14.7000\*\*\* |
|  | (-0.79) | (-1.80) |  | (1.27) | (0.51) |  | (3.19) | (3.68) |
| Size | 0.0034\*\*\* | 0.0053\*\*\* |  | 0.0056\*\*\* | 0.0031\*\*\* |  | 6.4965\*\*\* | 3.2863\*\*\* |
|  | (4.49) | (13.18) |  | (7.60) | (10.79) |  | (7.98) | (8.97) |
| Exp | -24.0376\*\*\* | -10.6622\*\*\* |  | 5.6796\*\* | 4.1629\*\*\* |  | -4386.3000 | -1654.3000 |
|  | (-4.43) | (-3.79) |  | (2.49) | (2.96) |  | (-1.30) | (-0.89) |
| TOratio | -0.0550\*\*\* | -0.0488\*\*\* |  | 0.0308\*\*\* | 0.0065\*\*\* |  | 12.3000 | 3.0688 |
|  | (-3.33) | (-8.48) |  | (5.22) | (3.37) |  | (1.29) | (0.94) |
| Flow | -0.0398 | -0.0363 |  | 0.0148 | 0.0044 |  | -0.0004 | -0.0022 |
|  | (-0.31) | (-0.09) |  | (0.45) | (0.82) |  | (-0.04) | (-0.40) |
| Fund\_Age | 0.0444\*\*\* | 0.0255\*\*\* |  | -0.0069\*\*\* | -0.0024\*\*\* |  | -11.9000\*\*\* | -6.1508\*\*\* |
|  | (12.62) | (14.06) |  | (-4.94) | (-2.96) |  | (-3.83) | (-3.91) |
| Undergrad | -0.0122\*\*\* | -0.0089\*\*\* |  | 0.0044\*\*\* | 0.0034\*\* |  | -3.3749 | -13.1000\*\*\* |
|  | (-3.16) | (-2.81) |  | (3.92) | (2.41) |  | (-1.16) | (-2.81) |
| Grad | 0.0070\* | -0.0058\* |  | 0.0084\*\*\* | 0.0061\*\*\* |  | 1.7614 | -10.4000\*\* |
|  | (1.69) | (-1.74) |  | (4.89) | (4.05) |  | (0.63) | (-2.21) |
| PhD | 0.0000 | -0.0275\*\*\* |  | 0.0000 | 0.0288\*\*\* |  | 0.0000 | -31.6000\*\*\* |
|  | - | (-7.10) |  | - | (6.74) |  | - | (-5.27) |
| MBA | 0.0179\*\*\* | 0.0072\*\*\* |  | -0.0006 | 0.00005 |  | 3.6683\*\*\* | 1.7126\*\*\* |
|  | (10.16) | (8.78) |  | (-0.58) | (0.10) |  | (3.19) | (3.33) |
| Cert | 0.0466\*\*\* | 0.0090\*\*\* |  | 0.0025\* | 0.0023\*\*\* |  | 1.4353 | -1.0359 |
|  | (19.39) | (8.47) |  | (1.75) | (4.38) |  | (1.03) | (-1.54) |
| Mgr\_Age | -0.0288\*\*\* | - |  | -0.0045\*\* | - |  | -4.1164 | - |
|  | (-5.81) |  |  | (-2.37) |  |  | (-1.02) |  |
| Year-fixed Effect | YES | YES |  | YES | YES |  | YES | YES |
| Fund-fixed Effect | YES | YES |  | YES | YES |  | YES | YES |
| No. of Obs. | 5,961 | 12,095 |  | 5,961 | 12,095 |  | 5,961 | 12,095 |
| Adj. R-squared | 0.8677 | 0.8213 |  | 0.6958 | 0.7741 |  | 0.7590 | 0.7301 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 5. (continued)** | | | | | | | | |
| *Panel B. Regression Analysis of Male to Female, Female to Male, Male to Male, and Female to Female Transition Funds* | | | | | | | | |
|  | Port\_Liq\_PST | |  | Port\_Liq\_Amhd | |  | Port\_Liq\_Sprd | |
|  | All controls with manager age | All controls without manager age |  | All controls with manager age | All controls without manager age |  | All controls with manager age | All controls without manager age |
|  | (1) | (2) |  | (3) | (4) |  | (5) | (6) |
| Female | 0.0084\*\*\* | 0.0124\*\*\* |  | 0.0020\*\*\* | 0.0006\*\* |  | 2.3727\*\*\* | 1.4103\*\*\* |
|  | (5.80) | (18.46) |  | (3.06) | (2.17) |  | (2.75) | (3.10) |
| Ret | -0.0094\*\*\* | -0.0066\*\*\* |  | 0.0037 | -0.0002 |  | 9.4526\*\*\* | 7.5954\*\*\* |
|  | (-2.64) | (-3.01) |  | (1.07) | (-0.09) |  | (2.88) | (3.68) |
| Size | 0.0089\*\*\* | 0.0066\*\*\* |  | 0.0054\*\*\* | 0.0030\*\*\* |  | 4.8834\*\*\* | 3.3744\*\*\* |
|  | (18.14) | (30.25) |  | (12.66) | (15.49) |  | (12.95) | (17.96) |
| Exp | 0.9191 | -0.8512 |  | 1.0279 | 1.4092 |  | 807.7000 | -135.0000 |
|  | (0.99) | (-1.24) |  | (0.92) | (1.57) |  | (0.72) | (-0.17) |
| TOratio | -0.0237\*\*\* | -0.0398\*\*\* |  | 0.0322\*\*\* | 0.0193\*\*\* |  | 24.0000\*\*\* | 14.9000\*\*\* |
|  | (-4.87) | (-16.11) |  | (9.56) | (12.68) |  | (7.44) | (7.00) |
| Flow | -0.0206 | 0.0107 |  | 0.0002 | -0.0042\* |  | -0.0004 | -0.0009 |
|  | (-0.31) | (0.15) |  | (0.01) | (-2.02) |  | (-0.24) | (-0.38) |
| Fund\_Age | 0.0235\*\*\* | 0.0067\*\*\* |  | -0.0098\*\*\* | -0.0043\*\*\* |  | -10.2000\*\*\* | -5.7300\*\*\* |
|  | (11.09) | (6.80) |  | (-9.71) | (-7.59) |  | (-7.20) | (-7.75) |
| Undergrad | 0.0179\*\*\* | 0.0110\*\*\* |  | -0.0014 | 0.0053\*\*\* |  | 0.8548 | -11.3000\*\* |
|  | (5.74) | (6.78) |  | (-1.39) | (3.57) |  | (0.36) | (-2.40) |
| Grad | 0.0044 | 0.0103\*\*\* |  | -0.0020\*\*\* | 0.0049\*\*\* |  | 0.5707 | -11.5000\*\* |
|  | (1.53) | (5.86) |  | (-2.83) | (3.26) |  | (0.26) | (-2.42) |
| PhD | 0.0000 | 0.0071\*\*\* |  | 0.0000 | 0.0105\*\*\* |  | 0.0000 | -17.2000\*\*\* |
|  | - | (3.90) |  | - | (6.46) |  | - | (-3.56) |
| MBA | -0.0034\*\*\* | -0.0006 |  | -0.0037\*\*\* | -0.0023\*\*\* |  | -3.0067\*\*\* | -1.4303\*\*\* |
|  | (-3.26) | (-1.44) |  | (-5.21) | (-8.01) |  | (-3.82) | (-4.59) |
| Cert | 0.0099\*\*\* | 0.0011\*\* |  | 0.0004 | 0.0012\*\*\* |  | 0.5817 | 0.7510\*\* |
|  | (8.20) | (2.27) |  | (0.91) | (4.74) |  | (0.91) | (2.06) |
| Mgr\_Age | 0.0111\*\*\* | - |  | -0.0002 | - |  | 0.2020 | - |
|  | (4.13) |  |  | (-0.10) |  |  | (0.10) |  |
| Year-fixed Effect | YES | YES |  | YES | YES |  | YES | YES |
| Fund-fixed Effect | YES | YES |  | YES | YES |  | YES | YES |
| No. of Obs. | 21,886 | 47,518 |  | 21,886 | 47,518 |  | 21,886 | 47,518 |
| Adj. R-squared | 0.8395 | 0.8361 |  | 0.5653 | 0.5761 |  | 0.7220 | 0.7136 |

**Table 6. Difference-in-Differences Regression for Transition Funds**

This table presents the findings of the difference-in-differences regression of portfolio liquidity after the Male to Female transition. The dependent variable is portfolio liquidity, . is a dummy variable equal to 1 if the fund is a male to female transition fund and 0 if the fund is a male to male transition fund. is a dummy variable equal to 1 if month t+1 is after the transition and 0 if it is before the transition. is the multiplication of transition funds and Post variables. and are measured in basis points. The results are presented with and without fund and year fixed effects. The t-statistics based on White robust standard errors are reported in parentheses. \*\*\*, \*\*, and \* denote 99%, 95%, and 90% significance levels. See Table C1 in the appendix for the explanation of all the variables.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Port\_Liq\_PST | |  | Port\_Liq\_Amhd | |  | Port\_Liq\_Sprd | |
|  | (1) | (2) |  | (3) | (4) |  | (5) | (6) |
| Female\_TransPost | 0.0133\*\*\* | 0.0069\*\*\* |  | 0.0041\*\*\* | 0.0001 |  | 1.5754\*\*\* | 1.3554 |
|  | (5.12) | (6.02) |  | (6.17) | (0.19) |  | (2.78) | (1.26) |
| Post | -0.0027\*\* | -0.0011\*\* |  | -0.0004 | 0.0002 |  | 0.9383\*\*\* | 2.6364\*\*\* |
|  | (-2.18) | (-2.28) |  | (-0.78) | (0.50) |  | (2.83) | (8.43) |
| Ret | -0.0253\*\* | -0.0060 |  | -0.0048 | 0.0007 |  | -6.4226 | 7.1154\*\* |
|  | (-2.29) | (-1.57) |  | (-0.66) | (0.17) |  | (-1.38) | (2.03) |
| Size | 0.0043\*\*\* | 0.0056\*\*\* |  | -0.0003\*\* | 0.0065\*\*\* |  | 0.6694\*\*\* | 5.3207\*\*\* |
|  | (10.10) | (10.30) |  | (-2.43) | (8.07) |  | (4.94) | (10.70) |
| Exp | -28.4981\*\*\* | -0.8991 |  | -1.7258\*\* | -4.0899\*\*\* |  | 139.8000 | 1085.7000 |
|  | (-8.75) | (-1.05) |  | (-2.25) | (-3.81) |  | (0.28) | (0.64) |
| TOratio | -0.1251\*\*\* | -0.0448\*\*\* |  | 0.0406\*\*\* | 0.0084\*\*\* |  | 19.9000\*\*\* | 3.6957 |
|  | (-17.63) | (-9.18) |  | (12.99) | (2.64) |  | (8.99) | (1.08) |
| Flow | 0.0266 | 0.0043 |  | -0.0070 | -0.0025 |  | -0.0002 | -0.0004 |
|  | (0.85) | (0.21) |  | (-0.47) | (-1.47) |  | (-1.22) | (-0.26) |
| Fund\_Age | -0.0094\*\*\* | -0.0081\*\*\* |  | 0.0023\*\*\* | -0.0021 |  | -1.1627\*\*\* | -3.7455\* |
|  | (-7.20) | (-2.96) |  | (6.06) | (-1.19) |  | (-2.87) | (-1.87) |
| Undergrad | 0.0412\*\*\* | 0.0117\*\*\* |  | 0.0108\*\*\* | 0.0074\*\*\* |  | 10.7000\*\*\* | 9.7681\*\*\* |
|  | (13.34) | (6.06) |  | (6.76) | (4.03) |  | (10.14) | (3.96) |
| Grad | 0.0399\*\*\* | 0.0066\*\*\* |  | 0.0138\*\*\* | 0.0073\*\*\* |  | 11.2000\*\*\* | 10.4000\*\*\* |
|  | (12.56) | (3.01) |  | (8.46) | (4.05) |  | (10.23) | (4.06) |
| PhD | 0.0246\*\*\* | 0.0079\*\*\* |  | 0.0147\*\*\* | 0.0052\*\*\* |  | 10.2000\*\*\* | 6.3305\*\* |
|  | (7.08) | (3.71) |  | (8.36) | (2.81) |  | (8.51) | (2.50) |
| MBA | 0.0056\*\*\* | -0.0025\*\*\* |  | -0.0037\*\*\* | -0.0017\*\*\* |  | -1.3375\*\*\* | -1.9400\*\*\* |
|  | (4.98) | (-3.65) |  | (-7.88) | (-3.54) |  | (-3.53) | (-4.07) |
| Cert | -0.0062\*\*\* | -0.0016\*\* |  | 0.0052\*\*\* | -0.0011\*\*\* |  | 1.5446\*\*\* | 0.9625\* |
|  | (-5.53) | (-2.32) |  | (9.97) | (-4.17) |  | (4.09) | (1.71) |
| Year-fixed Effect | YES | YES |  | YES | YES |  | YES | YES |
| Fund-fixed Effect | NO | YES |  | NO | YES |  | NO | YES |
| No. of Obs. | 10,772 | 10,772 |  | 10,772 | 10,772 |  | 10,772 | 10,772 |
| Adj. R-squared | 0.1516 | 0.8758 |  | 0.1013 | 0.6250 |  | 0.6452 | 0.7440 |

**Table 7. Preference for Portfolio Liquidity - Instrumental Variable Approach**

This table presents the findings of the two-stage least squares regression. Column (1) reports the results from the first-stage ordinary least squares regression with the female dummy as the dependent variable. is the state’s gender equality index. F-statistics from the first-stage regression are at the bottom of the table. Columns (2), (3), and (4) show the results for the second-stage regressions with the three measures of portfolio liquidity as the dependent variables. is the fitted value of the female dummy from the first-stage regression. and are measured in basis points. The results are presented with year and fund style fixed effects. The t-statistics based on White robust standard errors are reported in parentheses. \*\*\*, \*\*, and \* denote 99%, 95%, and 90% significance levels. See Table C1 in the appendix for the explanation of all the variables.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Port\_Liq\_PST | Port\_Liq\_Amhd | Port\_Liq\_Sprd |
|  | First stage | Second stage | Second stage | Second stage |
|  | (1) | (2) | (3) | (4) |
| Instrumented\_Female | - | 0.0661\*\*\* | 0.0321\*\*\* | 0.4700 |
|  |  | (6.91) | (4.73) | (0.10) |
| Ret | -0.0224 | -0.0182\*\*\* | -0.0053\*\* | 1.6000 |
|  | (-1.35) | (-6.06) | (-2.04) | (0.87) |
| Size | -0.0048\*\*\* | 0.0053\*\*\* | 0.0011\*\*\* | 0.8200\*\*\* |
|  | (-9.03) | (49.63) | (16.47) | (18.01) |
| Exp | 27.8319\*\*\* | -24.1122\*\*\* | -5.5284\*\*\* | -1160.8000\*\*\* |
|  | (13.19) | (-32.65) | (-13.70) | (-5.37) |
| TOratio | -0.0103 | -0.0280\*\*\* | 0.0231\*\*\* | 12.2300\*\*\* |
|  | (-1.04) | (-14.23) | (13.07) | (12.98) |
| Flow | -0.1000 | 0.0347 | 0.0059 | -0.0008 |
|  | (-0.78) | (1.48) | (1.26) | (-1.12) |
| Fund\_Age | 0.0112\*\*\* | -0.0039\*\*\* | 0.0005\*\*\* | -0.2000\* |
|  | (8.27) | (-11.98) | (3.02) | (-1.76) |
| Undergrad | -0.0066 | -0.0203\*\*\* | -0.0202\*\*\* | -0.3000 |
|  | (-0.28) | (-6.38) | (-15.76) | (-0.09) |
| Grad | -0.0096 | -0.0179\*\*\* | -0.0197\*\*\* | -0.0871 |
|  | (-0.40) | (-5.56) | (-15.07) | (-0.03) |
| PhD | -0.0769\*\*\* | -0.0230\*\*\* | -0.0209\*\*\* | -6.2000\*\* |
|  | (-3.13) | (-6.74) | (-13.29) | (-2.09) |
| MBA | -0.0080\*\*\* | 0.0058\*\*\* | -0.0028\*\*\* | -1.6000\*\*\* |
|  | (-4.45) | (17.33) | (-11.77) | (-10.93) |
| Cert | 0.0294\*\*\* | -0.0093\*\*\* | 0.0018\*\*\* | 0.3300\* |
|  | (16.69) | (-21.77) | (5.85) | (1.77) |
| Equality\_Index | 0.0036\*\*\* | - | - | - |
|  | (18.91) |  |  |  |
| Year-fixed Effect | YES | YES | YES | YES |
| Style-fixed Effect | YES | YES | YES | YES |
| No. of Obs. | 112,842 | 112,842 | 112,842 | 112,842 |
| Adj. R-squared | 0.0157 | 0.1770 | 0.0981 | 0.6340 |
| F-statistics | 38.58 | - | - | - |
| [p-value] | [0.00] |  |  |  |

**APPENDIX A Theory development** **and Hypotheses**

**Gender and Behavioral Differences**

Several studies explore behavioral disparities among gender regarding financial decision-making in various settings in the behavioral finance literature, thus we pitch our study into the behavioral finance theory (Brooks and Byrne, 2008) where it is argued that both men and women have different psychological biases affecting their investment decisions. In this stream, using a psychological survey experiment on shareholders, security analysts, institutional investors, and general businesspersons, Estes and Hosseini (1988) find that women are significantly less confident than men in investment decisions. Powell and Ansic (1997) argue that females are less risk-seeking than males in financial decision-making, regardless of the degree of familiarity, frame, or cost. Moreover, the results show that males overvalue, and females undervalue, their current position in the currency market because females are less confident than males. Sunden and Surette (1998), using data from the 1992 and 1995 *Surveys of Consumer Finances*, show that women, either single or married, tend to allocate their investments to the retirement plan more conservatively than men. Similarly, Jianakoplos and Bernasek (1998) use surveys and other economic data to conclude that single women are more risk-averse in financial decision-making than single men.

To analyze gender differences in overconfidence, Barber and Odean (2001) use account data from a large brokerage firm and examine male and female investors’ stock investments. They find that men trade 45% more than women, which results in lower net returns than for women. They attribute the performance and trading activity of men to overconfidence in their investment abilities. Grinblatt and Keloharju (2009) evaluate Finnish investors’ trading data and document that men trade substantially more than women at all age groups. On the contrary, Nekby, Thoursie, and Vahtrik (2008) show that women selected to participate in male-dominated environments are likely to be highly competitive. Deaves, Lüders, and Luo (2009) provide experimental evidence that overconfidence drives trading. However, there is no gender effect on overconfidence or trading activity of finance and economics students.

We find contradictory evidence for behavioral differences among the gender of professionals. Huang and Kisgen (2013) document that male executives exhibit higher overconfidence than females as they are involved in more frequent acquisitions and debt issuance. Ho *et al.* (2015) document that female CEOs are more ethical and risk-averse. Hence firms with female CEOs report more conservative earnings. Faccio, Marchica, and Mura (2016) observe a subsequent decrease in a given firm’s risk-taking around the transition from a male to a female CEO. On the contrary, Berger, Kick, and Schaeck (2014) and Adams and Ragunathan (2017) state that the banks’ portfolio risk with more female directors on their boards is higher than that of banks with fewer female directors. Sila, Gonzalez, and Hagendorff (2016) find no evidence that boardroom gender diversity affects a firm’s equity risk.

Considering the literature on mutual funds, Atkinson, Baird, and Frye (2003) conclude that there is no significant gender difference in fund performance; however, female managers receive lower fund inflows than male managers. Beckmann and Menkhoff (2008) test fund managers’ survey responses and demonstrate that female fund managers are more risk-averse and less overconfident than male managers. Niessen-Ruenzi and Ruenzi (2019) recently reported that female equity fund managers relative to their male counterparts are risk-averse, have more consistent investments, and trade less based on behavioral finance theory. Their study documents no gender difference in fund performance, but female managed funds receive significantly lower inflows than male managed funds. Based on the above arguments and behavioral finance theory, we hypothesize that:

*H1: There exists a difference between male and female decision making in mutual fund investment choices following their psychological biases and risk orientation.*

**Liquidity and Stock Price Efficiency**

Several studies document a strong relationship between information asymmetry and stock liquidity. Based on liquidity theory, it is claimed that the liquidity of a stock is a significant determinant of its price (Amihud *et al.*, 2006). A stock with high liquidity is more easily traded and therefore its price is more likely to reflect its true value. Moreover, efficient market hypothesis also provides evidence that markets rely on all publicly circulated information and stock prices reflect their true value (Fama, 1960). It also argues that market participants are rational, and prices adjust quickly to new information, making it difficult for investors to make abnormal profits on new information (Naeem *et al.*, 2022). However, earlier empirical studies unveil mixed results. For instance, Diamond and Verrecchia (1991) show that revealing public information to reduce information asymmetry increases a firm’s securities liquidity. The effect is more substantial for large firms who want to appeal to institutional investors’ extensive holdings, and these investors are more concerned about future liquidity. Ng (2011) shows that higher information quality lowers liquidity risk, which results in a reduced cost of capital. The negative association between information quality and liquidity risk is stronger when significant, unexpected market liquidity changes.

Moreover, Lang, Lins, and Maffett (2012) conclude that transaction costs are lower, and liquidity is higher for firms with better transparency. The transparency is less evidence of earnings management, better accounting standards, higher quality auditors, more analyst following, and more accurate analyst forecasts. We observe that various studies on price efficiency attempt to capture different aspects of liquidity as controls and indicate that high liquidity stocks tend to have less price delay (e.g., Callen, Khan, and Lu, 2013; Hou and Moskowitz, 2005; Saffi and Sigurdsson, 2011).

Many research examines females’ monitoring role on corporate boards and the resulting improved informativeness of stock prices. Adams and Ferreira (2009) describe that female directors better monitor managers’ actions by promoting better board attendance and joining monitoring positions on audit, nominating, and corporate governance committees. Hence, higher board quality is related to lower information asymmetry (e.g., Ajinkya, Bhojraj, and Sengupta, 2005; Karamanou and Vafeas, 2005). Gul, Srinidhi, and Ng (2011) explain that stock prices are more informative when boards are gender diverse. They argue that gender diversity improves stock price informativeness through increased public disclosure in large firms and encourages private information collection in small firms. Upadhyay and Zeng (2014) report that board diversity (gender and ethnicity) is negatively associated with corporate opacity.

Similarly, Abad *et al.* (2017) find that gender diversity on boards of directors is negatively associated with information asymmetry in the stock market. Consequently, the extant literature provides empirical evidence that transparency and price informativeness inspire female professionals. There exists little evidence relating to the effect of gender on liquidity preference. Ahmed and Ali (2017), and Loukil, Yousfi, and Yerbanga (2019) document that female directors’ efficient monitoring leads to higher stock liquidity. Consequently, analyzing gender differences in portfolio liquidity preference provides new insight into the literature. Based on these arguments and sourcing the propositions of liquidity theory and efficient market hypothesis in terms of gender, the current study hypothesizes that,

*H2: There exists an asymmetric information transmission mechanism between male and female following the liquidity and stock price efficiency.*

**APPENDIX B Data Matching, Merging and Cleaning**

The matched dataset contains 3,109 unique equity funds with 372,551 fund-month observations collected from January 2000 to December 2017. We use the data point of “Manager history” in M.S., which provides managers’ names, and dates of joining and leaving the fund, and then, we hand-collect the data for fund managers’ various attributes, including gender, year of graduation, tenure with the fund, earned degrees, and professional certifications. We identify managers’ gender with the title prefixing their names (i.e., Mr., Ms., and Mrs.). If the titles are missing, we search for terms like “he”, “his”, “him”, “she”, or “her” in their biography or online.

Following Patel and Sarkissian (2017), we classify a fund as a single or team managed based on the number of managers managing the fund at the end of every month. We follow the matching process of Kacperczyk, Sialm, and Zheng (2008) to finalize the U.S. domestic actively managed open-end equity funds from January 2000 to December 2017. Based on Investment Objective Codes (IOC) in the Thomson Financial database dataset, known as CDA/Spectrum S12 for mutual funds holdings, we exclude non-equity funds from the holdings data i.e., international, municipal bonds, bond and preferred, and balanced funds. The study deals with the two main issues of the S12 dataset, which are “late reporters” i.e., cases where a fund rarely shows RDATE (the date for which the holdings are actually held by the fund) holdings that correspond to the same quarter as the FDATE vintage (the date when the holdings are filed), and “stale data” i.e., where the same RDATE based holdings are shown in two or more consecutive FDATE vintages. We keep the holdings of the first given FDATE and the most recent RDATE for a portfolio. According to the mutual funds disclosure policy in 2004, funds are required to disclose their holdings quarterly instead of semiannually. We assume that, for funds that report semiannual holdings or if the gap between disclosure dates is more than 6 months, the most recently available filing is unchanged until the next filing is reported (the cut off for the holding period is 6 months). The monthly prices from CRSP are obtained to allocate a dollar value to the monthly holdings. We exclude the holdings if their CUSIPs cannot be linked to the CRSP stock database.

While selecting domestic equity funds from CRSP, we focus on funds with the following Lipper class or Lipper objectives: EIEI, G, LCCE, LCGE, LCVE, MCCE, MCGE, MCVE, MLCE, MLGE, MLVE, SCCE, SCGE, SCVE, or CA, EI, G, GI, MC, MR, SG. If both of them are missing, we select funds with the following Strategic Insight objectives: AGG, GMC, GRI, GRO, ING, or SCG. If Lipper class, objectives, and Strategic Insight objectives are not available for a fund, we choose funds with the following objectives of Wiesenberger Fund Type Code: G, G-I, AGG, GCI, GRI, GRO, LTG, IEQ, MCG, SCG. If none of these objectives is given and the fund has a CS policy (common stocks primarily held by the fund), then the fund is included. Moreover, we ignore funds that, on average, hold less than 80%, or more than 105%, in stocks. We exclude index funds based on the provided index\_fund\_flag and their names that contain the following words: INDEX, INDE, INDX, IDX, S&P, MSCI, ETF, ISHARES, DOW JONES, INTERNATIONAL. The MFLINKS table, utilized to match portfolio holdings with mutual fund characteristics, uses “wficn” as the fund identifier, whereas the CRSP “fundno” identifier is used for each share class. Therefore, we aggregate multiple “fundno” share classes into one wficn”.

We collect data on fund managers’ characteristics from the Morningstar Direct (MS) database. In MS, “secid” is the unique identifier for a fund share class, whereas “fundid” uniquely identifies a fund. Therefore, different share classes of the same fund have different secids, tickers, and CUSIPs, but the same fundid. For the purpose of matching, we use qualitative attributes like wficn, crsp\_fundno, 8-digit CUSIP, name, ticker, and inception date of fund share classes of our completely matched CRSP and Thomson Reuters sample. First, we use the CUSIP of each share class to find a match in MS and obtain the relevant fundid. Second, we verify the matching accuracy of the obtained fundid with crsp\_fundno, and attain the missing fundid (if given) from the matched/merged list of CRSP and MS funds developed by Pástor, Stambaugh, and Taylor (2015).[[14]](#footnote-14) At this stage, our matched CRSP and Thomson Reuters sample of share classes has the matched fundid. Third, we make sure that all matched MS share classes with the same fundid also have a unique wficn. Here, we encounter the following issues:

1. Almost 25% (or below) of the matched MS share classes with the same wficn have different fundid,
2. Almost 50% of the matched MS share classes with the same wficn have different fundid,
3. Almost 75% (or above) of the matched MS share classes with the same wficn have different fundid, and
4. Some share classes with a particular fundid belong to more than one wficn.

We manually deal with these issues by verifying with “Manager history” from MS, as well as the name and inception date of the oldest share class from MS and our matched CRSP and Thomson Reuters sample (Patel and Sarkissian, 2017). The data point of manager history provides managers’ names and dates of joining and leaving the fund from the date of its origination. Therefore, all share classes belonging to one fund have a similar management history. To deal with the first matching issue, for every unique wficn, we keep management information of the share classes that are in majority and have the same fundid.[[15]](#footnote-15) For the second issue, we consider the management history of the share classes with varying fundid. We cross-verify the joining date of the very first fund manager with the inception date of the oldest share class having unique wficn. We consider the management information of the share class if the joining date is the same or very shortly after the inception date. We also look at the name and inception date of this share class to see if they match with the information of the oldest share class of unique wficn. We address the third issue by excluding such funds because share classes have different fundids as well as management history and inception dates. Finding an exact match in this case is not feasible. To deal with the fourth issue, we cross-check monthly net assets, names, and inception dates of the share classes with fundid with the ones having unique wficn. Then, based on the above-mentioned selection process, we finalize the management information of these funds.[[16]](#footnote-16)

At this stage, we have the share class aggregated fund characteristics, management history, and stock holdings for every unique wficn identifier, which forms the basis for further analysis. The resulting dataset contains 3,109 unique equity funds with 372,551 fund-month observations. We use the data point of “Manager history” in M.S., which provides managers’ names, and dates of joining and leaving the fund. We then hand-collect the data for fund managers’ various attributes, including gender, year of graduation, tenure with the fund, earned degrees, and professional certifications. We consider managers’ characteristics whether they have been serving, joined, or left the fund during the sample period, i.e., January 2000 to December 2017. Managers who had resigned before January 2000 or started managing the fund after December 2017 are not the focus of this research. We also remove fund-month observations for which the manager’s name or tenure date is unavailable. Similarly, we discard team-managed funds but do not provide any description of their team members.

Morningstar provides a “People” tab for every fund which contains management information. We identify managers’ gender with the title prefixing their names (i.e., Mr., Ms., and Mrs.). If the titles are missing, we search for terms like “he”, “his”, “him”, “she”, or “her” in their biography. Moreover, we record the graduation year when managers earn their first undergraduate degree and the titles of all their degrees and certifications. If none of this information is available in M.S., we look for their executive profile and biography in Bloomberg, LinkedIn, Facebook, Zoominfo, and the fund management company’s website. Following Patel and Sarkissian (2017), we classify a fund as a single or team managed based on the number of managers managing the fund at the end of every month. If there is only one manager with the fund at the end of a month, we consider the fund as single managed for that month. Management teams may overshadow individual members’ decisions, making it difficult to analyze the impact of gender on decision choices. We, therefore, concentrate the analysis on single-managed funds only.

**APPENDIX C Variable Description, Summary Statistics and Robustness Tests**

**Portfolio Liquidity**

Pástor, Stambaugh, and Taylor’s (2020) portfolio liquidity is the liquidity of stocks held in the portfolio and the degree to which it is diversified. The measure defines the fundamental concept of portfolio liquidity and trading cost as follows:

|  |  |  |
| --- | --- | --- |
|  |  | (1) |

where is the number of stocks, is the portfolio’s weight on stock *i* and is the weight on stock *i* in a market-cap-weighted benchmark portfolio containing stocks. The market-cap-weighted benchmark portfolio is the overall market. We use monthly data from the CRSP stock database to calculate portfolio liquidity and denote it as .

**Amihud Illiquidity**

To measure fund liquidity, we use the illiquidity measure of Amihud (2002), which is the daily ratio of absolute stock returns to the dollar volume of the stock. The Amihud is a measure of price impact and stock’s liquidity due to its’ high correlation with the alternative price impact measures of liquidity, which use intra‐day data (e.g., Korajczyk and Sadka, 2008).

Following Karolyi, Lee, and Van Dijk (2012) and Lee, Tseng, and Yang (2014), we add a constant to the Amihud measure and take the natural log to reduce outliers’ impact. We multiply this measure by “-1” to interpret our regression results in terms of liquidity instead of illiquidity. Finally, the measure is multiplied by 106.

|  |  |  |
| --- | --- | --- |
|  |  | (2) |

where is the return, is the closing price, and is the trading volume of stock *i* on day *d*. Before calculating the measure, we exclude all stock-day observations with CRSP reported returns less than “-1”, reported price, and trading volume equal to “0” or missing. We consider the absolute value of the price. To obtain monthly stock liquidity, we average daily liquidity every month of a year, under the condition that the stock has at least 11 daily observations per month. Our fund liquidity is the value-weighted average of the monthly stock liquidity of all the stock holdings of a fund in a given month. To eliminate outliers, we winsorize this measure at the 1% and 99% levels and denote it as .

**Bid-Ask Spread**

Our third proxy, bid-ask spread, is the daily quoted bid-ask spread of a stock divided by its midpoint (Chordia, Roll, and Subrahmanyam, 2000; 2001). Bid-ask spread is the price of the market-makers’ demand for providing liquidity services. Hence, a greater bid-ask spread signals higher stock illiquidity. We multiply this measure by “-1” to interpret our regression results in terms of liquidity instead of illiquidity.

|  |  |  |
| --- | --- | --- |
|  |  | (3) |

where is the adjusted ask price and is the adjusted bid price of stock *i* on day *d*. Before calculating the measure, we exclude all stock-day observations having CRSP reported bid or ask prices less than or equal to “0”. To eliminate outliers, we exclude the observation if the daily spread is less than 0.2% (0.002) or more than 50% (0.5). To obtain monthly stock liquidity, we average daily spread every month of a year, under the condition that the stock has at least 11 daily observations per month. Our fund liquidity is the value-weighted average of the monthly stock liquidity of all the stock holdings of a fund in a given month. We denote this measure as . Table C1 below shows the description of all variables used in this study.

[Insert Table C1 here]

**Descriptive Statistics**

Our final sample consists of 124,363 fund-month observations, of which 112,982 (90.85%) are for single male managed funds, and 11,381 (9.15%) are for single female managed funds. The total number of domestic equity funds in our sample is 1,932. We observe that 113 (5.85%) are the only female managed funds, and 1,658 (85.82%) are the only male managed fund, whereas 161 (8.33%) are funds managed by a single male and single female managers at different times. Overall, a single male manages 86.91% of funds compared to 13.09% of single female funds during our sample period.[[17]](#footnote-17) We have 1,790 managers in our sample; 1,596 (89.16%) are male, and 194 (10.84%) are female. During our sample period, the average number of funds managed by a female manager is 1.5, and a male manager manages 2.0 funds on average. The average number of unique male (female) fund managers per month is 380 (39).

Figure 1 depicts the total number of single female and male managed funds each year, from January 2000 to December 2017. It also plots the proportion of single female managed funds over our sample period. We observe the proportion of single female managed funds decreased over our sample period from a maximum of 11.15% in 2001 to a minimum of 7.68% in 2012. Consistent with the previous studies, we notice an overall diminishing trend in the total number of single managed funds (Patel and Sarkissian, 2017), including male and female managed funds, which indicates a higher preference for team managed funds in the U.S. mutual fund industry.

[Insert Figure 1 about here.]

Table C3 displays the means and means differences between female and male managed funds regarding the fund and manager level characteristics used in our baseline model in Equation (2). In all three portfolio liquidity proxies, we find that females managed funds having significantly higher Pástor, Stambaugh, and Taylor’s portfolio liquidity and Amihud’s portfolio liquidity than male managed funds. However, on average, there is no significant gender difference in the bid-ask spread’s portfolio liquidity. On average, female managers manage smaller size funds than their male counterparts, and female fund managers are significantly less likely to hold a graduate or Ph.D. degree. Consistent with the literature, female managed funds have significantly lower flows than male managed funds (Niessen-Ruenzi and Ruenzi, 2019).

Table C4 displays the correlation matrix showing that Amihud portfolio liquidity is correlated to Pástor, Stambaugh, and Taylor’s portfolio liquidity by 14.6% and the correlation is significant at the 1% level. Similarly, Bid/Ask spread portfolio liquidity is positively and significantly correlated to Amihud and Pástor, Stambaugh, and Taylor’s portfolio liquidity. Prior literature has used 0.7 as an acceptable threshold of correlation coefficient for independent variables (Liu, Wei, and Xie, 2014). The scale of the correlation coefficient among our independent variables is less than 0.7; hence, multicollinearity may not be a concern in our analysis.

**Delay variable**

Following Hou and Moskowitz (2005), we measure the delay variable. We compute the monthly Delay variable as follows. At the end of every month of a year, we run two regressions: first, for each stock’s weekly returns on the contemporaneous market return; and second, for each stock’s weekly returns on four weeks of lagged market returns over the past year[[18]](#footnote-18).

|  |  |  |
| --- | --- | --- |
|  |  | (4) |
|  |  | (5) |

where is the return on stock *j* in week *t*.is the market return in week *t*, and is the lagged market return from week *t-1* to week *t-4*. If the stock responds rapidly to market news, significantly differs from zero, but none of the will be different from zero. If the stock’s price responds with a lag, then some of the will be significantly different from zero.

Using the estimated R2 from the regressions in Equations (4) and (5), we compute the measure of the monthly Price Delay for each stock as follows:

|  |  |  |
| --- | --- | --- |
|  |  | (6) |

where is from the regression in Equation (4), which restricts =0 for lagged weekly market returns. is from the regression in Equation (5), with no restrictions.

Our study measures portfolio delay as the value-weighted average of the monthly stock price delay of all the stock holdings of a fund in a given month. We denote this measure as and run the model shown in Equation (7).

|  |  |  |
| --- | --- | --- |
|  |  | (7) |

where is the value-weighted average delay of fund *i* in month *t*. The other variables are as defined in Section 2.

**Difference-in-Differences approach**

For robustness, we run difference-in-differences analysis by comparing portfolio liquidity before and after transitions from a female to a male fund manager. We run regression on the model given in Equation (8) with controls and time and fund fixed effects:

|  |  |  |
| --- | --- | --- |
|  |  | (8) |

where is one of the three measures of portfolio liquidity measured at the end of month *t+1*. is a dummy variable equal to “1” if fund *i* is a male to female transition fund, and “0” if the fund is a male to male transition fund. is a dummy variable equal to “1” if month *t+1* is after the transition, and “0” if it is before the change. is an interaction term between transition funds and Post variables. All other control variables are as explained in Section 2.

The treatment group consists of funds that go through a transition from a female to a male manager, whereas the control group has funds with a male to male fund manager transition. The analysis provides mixed results, as shown in Table C9, where preference for Bid/Ask Spread based portfolio liquidity significantly decreases when a female manager is replaced by a male fund manager. However, Port\_Liq\_PST shows an increase in portfolio liquidity preference when a male manager takes charge of a fund.

[Insert Table C9 here]

**Instrumental Variable Approach**

We use the two-stage least squares (2SLS) instrumental variable (IV) design:

First stage regression:

|  |  |  |
| --- | --- | --- |
|  |  | (9) |

Second stage regression:

|  |  |  |
| --- | --- | --- |
|  |  | (10) |

where is one of the three measures of portfolio liquidity measured at the end of month *t*. is a dummy variable equal to “1” if the fund is single female managed and “0” if it is single male managed. is the instrumental variable of the state’s gender status equality index (Di Noia, 2002). is the fitted value of the female dummy variable from the first-stage regression. All other control variables are as explained in Section 2.

**Figure 1. Distribution of Single Managed Funds by Manager Gender**

Figure 1 shows the total number of single male and female managed funds and the proportion of female managed funds from January 2000 – December 2017. The data is from the Morningstar Direct database.

%

Num

**Table C1: Description of Variables**

This table defines all the main variables of this study.

|  |  |
| --- | --- |
| **Variables** | **Description** |
|  | Measure of monthly portfolio liquidity introduced by Pástor, Stambaugh, and Taylor (2020) and described in Equation (1). |
|  | Measure of monthly portfolio liquidity which is the value weighted average of Amihud liquidity of all the stocks held by a fund at time t. The illiquidity measure of Amihud (2002) is the daily ratio of absolute stock return to dollar volume of the stock, described in Equation (2). |
|  | Measure of monthly portfolio liquidity which is the value weighted average of Bid\_Ask Spread of all the stocks held by a fund at time t. This illiquidity measure is the daily quoted bid-ask spread of a stock divided by its midpoint, described in Equation (3). |
|  | Dummy variable equals to 1 if fund is single female managed at time t, and 0 if it is single male managed. |
|  | Measure of monthly fund return. Equal to the value weighted average of returns of all the share classes of a fund at time t. |
|  | Measure of monthly fund size. Equal to the natural log of total net assets of all the share classes of a fund in million dollars at time t. |
|  | Measure of monthly fund expense ratio. Equal to the value weighted average of net expense ratio of all the share classes of a fund at time t. |
|  | Measure of monthly fund turnover ratio. Equal to the minimum of the fund’s dollar buys and sells during the fiscal year, scaled by the fund’s average total net assets. The annual measure is divided by 12 to converted to monthly frequency. |
|  | Measure of monthly fund flow. Equal to the net growth in total net assets of a fund, as a percentage of its total net assets adjusted for returns at time t, described in Equation (4). |
|  | Measure of monthly fund age. Equal to the natural log of the difference between fund’s inception date and the date at time t. |
|  | Dummy variable. Equal to 1 if the undergraduate degree is the highest that a fund manager has earned, and 0 otherwise. |
|  | Dummy variable. Equal to 1 if the graduate degree is the highest that a fund manager has earned, and 0 otherwise. |
|  | Dummy variable. Equal to 1 if the PhD degree is the highest that a fund manager has earned, and 0 otherwise. |
|  | Dummy variable. Equal to 1 if a fund manager has obtained a Master of Business Administration degree, and 0 otherwise. |
|  | Dummy variable. Equal to 1 if a fund manager has obtained a professional qualification (e.g. CFA or CPA), and 0 otherwise. |
|  | Measure of monthly fund manager’s age. Equal to the natural log of the difference between completion date of manager’s undergraduate degree and the date at time t. |

**Table C2: Distribution of Single Managed Funds by Gender**

This table shows the total number of single male and female managed funds and the proportion of female managed funds in percentage from January 2000 – December 2017.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year | Total Funds | No. of Male Funds | No. of Female Funds | Proportion of Female Funds (%) |
| 2000 | 802 | 714 | 88 | 10.97 |
| 2001 | 933 | 829 | 104 | 11.15 |
| 2002 | 971 | 870 | 101 | 10.40 |
| 2003 | 985 | 883 | 102 | 10.36 |
| 2004 | 934 | 835 | 99 | 10.60 |
| 2005 | 908 | 814 | 94 | 10.35 |
| 2006 | 797 | 716 | 81 | 10.16 |
| 2007 | 778 | 711 | 67 | 8.61 |
| 2008 | 840 | 764 | 76 | 9.05 |
| 2009 | 773 | 706 | 67 | 8.67 |
| 2010 | 664 | 605 | 59 | 8.89 |
| 2011 | 601 | 545 | 56 | 9.32 |
| 2012 | 534 | 493 | 41 | 7.68 |
| 2013 | 509 | 467 | 42 | 8.25 |
| 2014 | 491 | 445 | 46 | 9.37 |
| 2015 | 463 | 427 | 36 | 7.78 |
| 2016 | 431 | 393 | 38 | 8.82 |
| 2017 | 396 | 361 | 35 | 8.84 |

**Table C3: Detailed Summary Statistics by Manager Gender**

This table provides descriptive statistics of fund and manager characteristics by grouping them based on the gender of mutual fund managers.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Gender | Variable | Obs. | Mean | Median | Std. Dev. | P1 | P99 |
| Male | Port\_Liq\_PST | 112,982 | 0.0378 | 0.0174 | 0.0575 | 0.0003 | 0.2706 |
| Male | Port\_Liq\_Amhd | 112,982 | -0.0110 | -0.0005 | 0.0392 | -0.2667 | -0.00003 |
| Male | Port\_Liq\_Sprd | 112,982 | -24.5800 | -9.6100 | 36.3700 | -178.9200 | -1.8700 |
| Male | Ret | 112,982 | 0.0045 | 0.0093 | 0.0543 | -0.1589 | 0.1310 |
| Male | TNA (mil $) | 112,982 | 1447.3415 | 188.5000 | 5172.5695 | 2.2000 | 23007.0000 |
| Male | Exp | 104,354 | 0.0011 | 0.0010 | 0.0005 | 0.0002 | 0.0027 |
| Male | TOratio | 103,456 | 0.0762 | 0.0517 | 0.0951 | 0.0025 | 0.4183 |
| Male | Flow | 112,982 | 0.7272 | -0.0039 | 52.1456 | -0.4217 | 1.4991 |
| Male | Fund\_Age | 112,982 | 14.5159 | 11 | 13.6379 | 1 | 73 |
| Male | N\_Stocks | 112,982 | 114.8560 | 69 | 236.7667 | 18 | 1255 |
| Male | Undergrad | 112,982 | 0.8301 | 1 | 0.3755 | 0 | 1 |
| Male | Grad | 112,982 | 0.1411 | 0 | 0.3481 | 0 | 1 |
| Male | PhD | 112,982 | 0.0276 | 0 | 0.1638 | 0 | 1 |
| Male | MBA | 112,982 | 0.5749 | 1 | 0.4944 | 0 | 1 |
| Male | Cert | 112,982 | 0.5747 | 1 | 0.4944 | 0 | 1 |
| Male | Mgr\_Age | 54,308 | 47.8470 | 46 | 10.1299 | 29 | 73 |
| Female | Port\_Liq\_PST | 11,381 | 0.0407 | 0.0173 | 0.0538 | 0.0010 | 0.2751 |
| Female | Port\_Liq\_Amhd | 11,381 | -0.0046 | -0.0005 | 0.0179 | -0.0875 | -0.00004 |
| Female | Port\_Liq\_Sprd | 11,381 | -24.5600 | -10.1400 | 33.9100 | -166.6200 | -1.9100 |
| Female | Ret | 11,381 | 0.0032 | 0.0085 | 0.0537 | -0.1597 | 0.1262 |
| Female | TNA (mil $) | 11,381 | 678.214 | 177.000 | 1673.642 | 2.200 | 8746.500 |
| Female | Exp | 10,482 | 0.0012 | 0.0011 | 0.0007 | 0.0004 | 0.0023 |
| Female | TOratio | 10,399 | 0.0774 | 0.0600 | 0.0629 | 0.0033 | 0.3108 |
| Female | Flow | 11,381 | 0.2751 | -0.0051 | 10.0860 | -0.4320 | 1.8819 |
| Female | Fund\_Age | 11,381 | 14.6777 | 11 | 13.4503 | 1 | 68 |
| Female | N\_Stocks | 11,381 | 86.9736 | 73 | 63.4785 | 23 | 294 |
| Female | Undergrad | 11,381 | 0.8597 | 1 | 0.3473 | 0 | 1 |
| Female | Grad | 11,381 | 0.1315 | 0 | 0.3380 | 0 | 1 |
| Female | PhD | 11,381 | 0.0066 | 0 | 0.0809 | 0 | 0 |
| Female | MBA | 11,381 | 0.5589 | 1 | 0.4965 | 0 | 1 |
| Female | Cert | 11,381 | 0.6409 | 1 | 0.4798 | 0 | 1 |
| Female | Mgr\_Age | 5,744 | 47.4425 | 46 | 9.3257 | 30 | 68 |

**Table C4: Correlation Matrix**

This table presents a correlation matrix for the fund and manager characteristics from the year 2000 to 2017. Panel A presents the correlation matrix for the three measures of portfolio liquidity, gender of the fund manager, and other fund and manager level characteristics. Panel B depicts the correlation among the gender of fund managers and other fund and manager level characteristics. \*\*\*, \*\*, and \* denote 99%, 95%, and 90% significance levels. See Table C1 in the appendix for the explanation of all the variables.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Panel A. Correlation Matrix for Portfolio Liquidity and All Variables* | | | | | | | | | | | | | | | | |
|  | | | | Port\_Liq\_PST | | | | Port\_Liq\_Amhd | | | | | Port\_Liq\_Sprd | | | |
| Female | | | | 0.015\*\*\* | | | | 0.048\*\*\* | | | | | 0.0001 | | | |
| Ret | | | | -0.015\*\*\* | | | | 0.002 | | | | | 0.101\*\*\* | | | |
| TNA | | | | 0.203\*\*\* | | | | 0.038\*\*\* | | | | | 0.043\*\*\* | | | |
| Exp | | | | -0.250\*\*\* | | | | -0.090\*\*\* | | | | | -0.089\*\*\* | | | |
| TOratio | | | | -0.109\*\*\* | | | | 0.016\*\*\* | | | | | -0.069\*\*\* | | | |
| Flow | | | | 0.007\*\* | | | | 0.003 | | | | | 0.004 | | | |
| F\_Age | | | | 0.115\*\*\* | | | | 0.081\*\*\* | | | | | 0.136\*\*\* | | | |
| N\_Stocks | | | | 0.366\*\*\* | | | | -0.135\*\*\* | | | | | -0.003 | | | |
| Undergrad | | | | -0.006\*\* | | | | -0.022\*\*\* | | | | | 0.006\*\* | | | |
| Grad | | | | 0.014\*\*\* | | | | 0.025\*\*\* | | | | | 0.007\*\* | | | |
| PhD | | | | -0.012\*\*\* | | | | -0.005\* | | | | | -0.027\*\*\* | | | |
| MBA | | | | 0.065\*\*\* | | | | -0.046\*\*\* | | | | | -0.017\*\*\* | | | |
| Cert | | | | -0.029\*\*\* | | | | 0.037\*\*\* | | | | | -0.005\* | | | |
| Age\_mgr | | | | -0.076\*\*\* | | | | -0.040\*\*\* | | | | | 0.067\*\*\* | | | |
| *Panel B. Correlation Matrix for All Variables* | | | | | | | | | | | | | | | | |
|  | Female | Ret | TNA | | Exp | TOratio | Flow | | F\_Age | N\_Stocks | Undergrad | Grad | | PhD | MBA | Cert |
| Ret | -0.007\*\* |  |  | |  |  |  | |  |  |  |  | |  |  |  |
| TNA | -0.045\*\*\* | 0.011\*\*\* |  | |  |  |  | |  |  |  |  | |  |  |  |
| Exp | 0.042\*\*\* | -0.016\*\*\* | -0.195\*\*\* | |  |  |  | |  |  |  |  | |  |  |  |
| TOratio | 0.004 | -0.032\*\*\* | -0.083\*\*\* | | 0.205\*\*\* |  |  | |  |  |  |  | |  |  |  |
| Flow | -0.003 | -0.003 | 0.017\*\*\* | | -0.008\*\*\* | 0.000 |  | |  |  |  |  | |  |  |  |
| F\_Age | 0.003 | 0.016\*\*\* | 0.245\*\*\* | | -0.157\*\*\* | -0.101\*\*\* | 0.011\*\*\* | |  |  |  |  | |  |  |  |
| N\_Stocks | -0.035\*\*\* | 0.016\*\*\* | 0.083\*\*\* | | -0.195\*\*\* | -0.067\*\*\* | 0.000 | | -0.016\*\*\* |  |  |  | |  |  |  |
| Undergrad | 0.023\*\*\* | 0.001 | -0.082\*\*\* | | 0.011\*\*\* | -0.018\*\*\* | -0.008\*\*\* | | 0.012\*\*\* | 0.011\*\*\* |  |  | |  |  |  |
| Grad | -0.008\*\*\* | -0.001 | 0.094\*\*\* | | -0.032\*\*\* | 0.020\*\*\* | 0.008\*\*\* | | -0.004 | -0.013\*\*\* | -0.901\*\*\* |  | |  |  |  |
| PhD | -0.038\*\*\* | 0.001 | -0.009\*\*\* | | 0.012\*\*\* | 0.001 | 0.000 | | -0.021\*\*\* | 0.006\*\* | -0.362\*\*\* | -0.066\*\*\* | |  |  |  |
| MBA | -0.009\*\*\* | 0.014\*\*\* | 0.073\*\*\* | | -0.072\*\*\* | -0.037\*\*\* | 0.001 | | 0.022\*\*\* | 0.107\*\*\* | 0.249\*\*\* | -0.212\*\*\* | | -0.113\*\*\* |  |  |
| Cert | 0.039\*\*\* | 0.001 | -0.007\*\*\* | | -0.070\*\*\* | -0.025\*\*\* | 0.004 | | 0.007\*\* | -0.094\*\*\* | 0.061\*\*\* | -0.043\*\*\* | | -0.039\*\*\* | 0.073\*\*\* |  |
| Age\_mgr | -0.012\*\*\* | 0.012\*\*\* | 0.003 | | 0.051\*\*\* | -0.151\*\*\* | -0.005 | | 0.145\*\*\* | -0.049\*\*\* | -0.033\*\*\* | -0.008\*\* | | 0.110\*\*\* | -0.011\*\*\* | -0.036\*\*\* |

**Table C5: Fund Manager Gender and Preference for Portfolio Liquidity**

**(Quantile Regression)**

This table presents the findings of the quantile regression of portfolio liquidity on the gender of single managed funds. The baseline regression model is given in Equation (5). The dependent variable is portfolio liquidity, . The independent variable is which is equal to 1 if fund is single female managed at time t, and 0 if it is single male managed. The t-statistics are reported in parentheses. \*\*\*, \*\*, and \* denote 99%, 95%, and 90% significance levels. Results are presented for seven different quantiles namely q05, q10, q25, q50, q75, q90, and q95. See Table C1 in the appendix for the explanation of the fund and manager level control variables.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *Panel A: Gender and PST Portfolio Liquidity with Controls* | | | | | | | |
|  | Port\_Liq\_PST | | | | | | |
|  | q05 | q10 | q25 | q50 | q75 | q90 | q95 |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Female | 0.0005\*\*\* | 0.0007\*\*\* | 0.0006\*\*\* | 0.0013\*\*\* | 0.0117\*\*\* | 0.013\*\*\* | 0.0114\*\*\* |
|  | (8.81) | (11.64) | (3.84) | (3.09) | (14.02) | (9.97) | (5.23) |
| Ret | -0.0005\*\*\* | -0.0008\*\*\* | -0.0021\*\*\* | -0.0113\*\*\* | -0.0256\*\*\* | -0.0662\*\*\* | -0.0969\*\*\* |
|  | (-3.11) | (-3.81) | (-4.42) | (-8.18) | (-6.65) | (-7.8) | (-6.32) |
| Size | 0.0006\*\*\* | 0.0007\*\*\* | 0.001\*\*\* | 0.0025\*\*\* | 0.0067\*\*\* | 0.0108\*\*\* | 0.0154\*\*\* |
|  | (53.12) | (50.72) | (41.32) | (35.34) | (65.12) | (41.14) | (39.86) |
| Exp | -1.4409\*\*\* | -2.252\*\*\* | -4.8938\*\*\* | -10.2572\*\*\* | -14.8841\*\*\* | -18.9659\*\*\* | -17.3748\*\*\* |
|  | (-33.24) | (-29.53) | (-34.94) | (-34.55) | (-41.47) | (-50.04) | (-18.53) |
| TOratio | 0.0013\*\*\* | 0.0022\*\*\* | 0.0027\*\*\* | -0.0037\*\*\* | -0.0211\*\*\* | -0.0314\*\*\* | -0.0471\*\*\* |
|  | (11.47) | (9.65) | (10.05) | (-5.28) | (-18.54) | (-10.27) | (-12.56) |
| Flow | 0\* | 0\* | 0 | 0 | 0 | 0 | 0 |
|  | (1.75) | (1.66) | (1.63) | (1.17) | (0.23) | (0.01) | (0.05) |
| Fund\_Age | 0.0002\*\*\* | 0.0004\*\*\* | 0.0013\*\*\* | 0.0029\*\*\* | 0.0026\*\*\* | -0.0062\*\*\* | -0.0149\*\*\* |
|  | (6.83) | (12.32) | (23.66) | (21.46) | (10.01) | (-12.06) | (-19.77) |
| Undergrad | -0.0029\*\*\* | -0.0042\*\*\* | -0.0066\*\*\* | -0.0124\*\*\* | -0.0107\*\*\* | -0.0021 | 0.0155\*\* |
|  | (-6.05) | (-6.92) | (-11.46) | (-5.25) | (-3.91) | (-0.54) | (2.39) |
| Grad | -0.0023\*\*\* | -0.0034\*\*\* | -0.0057\*\*\* | -0.0113\*\*\* | -0.0076\*\*\* | -0.0014 | 0.014\*\* |
|  | (-4.67) | (-5.61) | (-9.77) | (-4.73) | (-2.76) | (-0.36) | (2.05) |
| PhD | -0.002\*\*\* | -0.0029\*\*\* | -0.0045\*\*\* | -0.0131\*\*\* | -0.0161\*\*\* | -0.0044 | 0.0174\*\* |
|  | (-4.12) | (-4.64) | (-7.09) | (-5.58) | (-5.5) | (-1.04) | (2.41) |
| MBA | 0.0001\*\*\* | 0.0001\*\* | 0 | 0.0004\*\* | 0.0043\*\*\* | 0.0067\*\*\* | 0.0069\*\*\* |
|  | (4.78) | (2.46) | (0.33) | (2.13) | (10.83) | (7.23) | (4.18) |
| Cert | 0.0001\*\*\* | 0 | -0.001\*\*\* | -0.0022\*\*\* | -0.0081\*\*\* | -0.0197\*\*\* | -0.0222\*\*\* |
|  | (3.09) | (0.27) | (-13.07) | (-11.62) | (-22.82) | (-24.41) | (-16.72) |
|  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Table C5: (continued)** |  |  |  |  |  |  |  |
| *Panel B: Gender and Amihud Portfolio Liquidity with Controls* | | | | | | | |
|  | Port\_Liq\_Amhd | | | | | | |
|  | q05 | q10 | q25 | q50 | q75 | q90 | q95 |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Female | 0.025\*\*\* | 0.0072\*\*\* | 0.0008\*\*\* | 0.0001\*\*\* | 0 | 0 | 0 |
|  | (35.49) | (41.43) | (16.41) | (8.84) | (-1.27) | (0.96) | (-0.69) |
| Ret | -0.0052 | -0.0003 | 0.001\*\*\* | 0.0003\*\*\* | 0.0002\*\*\* | 0.0001\*\*\* | 0.0001\*\*\* |
|  | (-0.77) | (-0.21) | (3.01) | (3.23) | (6.76) | (10.26) | (9.99) |
| Size | 0.0035\*\*\* | 0.0009\*\*\* | 0.0001\*\*\* | 0\*\*\* | 0\*\*\* | 0\*\*\* | 0 |
|  | (15.55) | (16.54) | (11.36) | (-4.24) | (-7.96) | (-5.59) | (-0.64) |
| Exp | -29.8997\*\*\* | -12.4686\*\*\* | -2.6375\*\*\* | -0.6215\*\*\* | -0.1329\*\*\* | -0.0397\*\*\* | -0.0166\*\*\* |
|  | (-17.11) | (-35.23) | (-22.71) | (-51.28) | (-36.61) | (-28.89) | (-14.75) |
| TOratio | 0.0488\*\*\* | 0.0209\*\*\* | 0.0023\*\*\* | -0.0008\*\*\* | -0.0005\*\*\* | -0.0002\*\*\* | -0.0001\*\*\* |
|  | (13.23) | (14.21) | (10.34) | (-10.68) | (-18.24) | (-18.04) | (-13.98) |
| Flow | 0 | 0 | 0 | 0\* | 0 | 0 | 0 |
|  | (0.03) | (0.02) | (0.26) | (1.73) | (0.1) | (0) | (-0.14) |
| Fund\_Age | 0.0083\*\*\* | 0.0054\*\*\* | 0.0013\*\*\* | 0.0002\*\*\* | 0.0001\*\*\* | 0\*\*\* | 0\*\*\* |
|  | (11.18) | (44.05) | (56.98) | (54.33) | (45.48) | (36.93) | (33.11) |
| Undergrad | -0.0352\*\*\* | -0.0097\*\*\* | -0.0064\*\*\* | -0.0013\*\*\* | -0.0003\*\*\* | -0.0001\*\*\* | -0.0001\*\*\* |
|  | (-11.2) | (-3.64) | (-13.96) | (-13.65) | (-14.72) | (-7.49) | (-8.95) |
| Grad | -0.0287\*\*\* | -0.0092\*\*\* | -0.0067\*\*\* | -0.0014\*\*\* | -0.0003\*\*\* | -0.0001\*\*\* | -0.0001\*\*\* |
|  | (-8.98) | (-3.45) | (-14.58) | (-14.16) | (-15.5) | (-8.32) | (-10.84) |
| PhD | -0.0339\*\*\* | -0.0102\*\*\* | -0.006\*\*\* | -0.0013\*\*\* | -0.0003\*\*\* | -0.0001\*\*\* | -0.0001\*\*\* |
|  | (-9.93) | (-3.55) | (-12.88) | (-12.7) | (-15.63) | (-9.29) | (-12.11) |
| MBA | -0.0168\*\*\* | -0.0057\*\*\* | -0.0007\*\*\* | -0.0001\*\*\* | 0\*\*\* | 0\*\*\* | 0\*\*\* |
|  | (-17.02) | (-30.35) | (-19.28) | (-9.98) | (-3.68) | (-3.63) | (-3.820 |
| Cert | 0.0111\*\*\* | 0.0024\*\*\* | 0 | 0 | 0\*\*\* | 0\*\*\* | 0\*\*\* |
|  | (10.85) | (12.12) | (-0.64) | (0.67) | (16.69) | (9.99) | (5.43) |
|  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Table C5: (continued)** |  |  |  |  |  |  |  |
| *Panel C: Gender and Bid/Ask Spread Portfolio Liquidity with Controls* | | | | | | | |
|  | Port\_Liq\_Sprd | | | | | | |
|  | q05 | q10 | q25 | q50 | q75 | q90 | q95 |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Female | -0.0006\*\* | -0.0003\*\* | -0.0001 | 0\*\*\* | 0\*\*\* | 0\*\*\* | 0\*\*\* |
|  | (-2.43) | (-2.13) | (-1.46) | (-2.8) | (-6.18) | (-8.31) | (-4.79) |
| Ret | 0.0116\*\*\* | 0.0107\*\*\* | 0.008\*\*\* | 0.004\*\*\* | 0.0015\*\*\* | 0.0006\*\*\* | 0.0004\*\*\* |
|  | (12.92) | (25.46) | (41.32) | (41.5) | (23.91) | (13.91) | (9.81) |
| Size | -0.0002\*\*\* | -0.0001\*\*\* | -0.0001\*\*\* | 0\*\*\* | 0\*\*\* | 0\*\*\* | 0\*\*\* |
|  | (-4.95) | (-4.08) | (-6.73) | (-20.22) | (-31.89) | (-34.71) | (-31.2) |
| Exp | -0.281\*\*\* | -0.7031\*\*\* | -0.7408\*\*\* | -0.5303\*\*\* | -0.2765\*\*\* | -0.1546\*\*\* | -0.0998\*\*\* |
|  | (-2.72) | (-6.38) | (-18.18) | (-38.39) | (-46.94) | (-41.96) | (-31.27) |
| TOratio | 0.0016\*\*\* | -0.0015\*\*\* | -0.0033\*\*\* | -0.0019\*\*\* | -0.001\*\*\* | -0.0005\*\*\* | -0.0004\*\*\* |
|  | (4.76) | (-4.02) | (-12.82) | (-21.69) | (-28.4) | (-21.4) | (-23.63) |
| Flow | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | (0.09) | (0.18) | (1.64) | (0.2) | (0.77) | (0.01) | (-0.03) |
| Fund\_Age | 0.0028\*\*\* | 0.0021\*\*\* | 0.0012\*\*\* | 0.0005\*\*\* | 0.0003\*\*\* | 0.0002\*\*\* | 0.0002\*\*\* |
|  | (36.63) | (51.66) | (84.87) | (79.42) | (91.66) | (106.07) | (69.8) |
| Undergrad | 0.0062\*\*\* | 0.0017 | 0.002\*\*\* | 0.0002 | -0.0001 | -0.0002\*\*\* | -0.0002\*\*\* |
|  | (2.77) | (1.15) | (4.32) | (1.33) | (-1.43) | (-3.06) | (-7.07) |
| Grad | 0.0067\*\*\* | 0.002 | 0.0021\*\*\* | 0.0002 | -0.0001\* | -0.0003\*\*\* | -0.0002\*\*\* |
|  | (2.94) | (1.34) | (4.49) | (1.1) | (-1.95) | (-3.66) | (-9.04) |
| PhD | 0.002 | -0.0004 | 0.0018\*\*\* | 0.0003\* | -0.0001 | -0.0002\*\*\* | -0.0002\*\*\* |
|  | (0.83) | (-0.27) | (3.6) | (1.9) | (-0.91) | (-2.62) | (-6.9) |
| MBA | -0.0006\*\*\* | -0.0004\*\*\* | -0.0003\*\*\* | -0.0001\*\*\* | 0 | 0\*\*\* | 0\*\*\* |
|  | (-4.37) | (-5.58) | (-9.09) | (-8.5) | (-1.14) | (4.8) | (4.23) |
| Cert | -0.0002 | -0.0002\*\*\* | -0.0001\*\*\* | -0.0001\*\*\* | 0\* | 0\*\*\* | 0\*\*\* |
|  | (-1.56) | (-2.99) | (-3.89) | (-9.75) | (-1.76) | (18.04) | (14.83) |

**Table C6: Fund Manager Gender and Preference for Portfolio Liquidity**

**(Manager age as control variable)**

This table presents the findings of the regression of portfolio liquidity on the gender of single managed funds, including the control variable of . The baseline regression model is given in Equation (5). The dependent variable is portfolio liquidity, . The independent variable is which is equal to 1 if fund is single female managed at time t, and 0 if it is single male managed. and are measured in basis points. The results are presented with fund and year fixed effects. The t-statistics based on White robust standard errors are reported in parentheses. \*\*\*, \*\*, and \* denote 99%, 95%, and 90% significance levels. See Table C1 in the appendix for the explanation of the fund and manager level control variables.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Port\_Liq\_PST | |  | Port\_Liq\_Amhd | |  | Port\_Liq\_Sprd | |
|  | All controls | Manager controls |  | All controls | Manager controls |  | All controls | Manager controls |
|  | (1) | (2) |  | (3) | (4) |  | (5) | (6) |
| Female | 0.0050\*\*\* | 0.0047\*\*\* |  | 0.0023\*\*\* | 0.0010\* |  | 2.3774\*\*\* | 1.1760 |
|  | (3.89) | (3.71) |  | (3.79) | (1.69) |  | (3.00) | (1.55) |
| Ret | -0.0057\*\*\* | - |  | 0.0038 | - |  | 12.0000\*\*\* | - |
|  | (-3.05) |  |  | (1.42) |  |  | (5.09) |  |
| Size | 0.0067\*\*\* | - |  | 0.0076\*\*\* | - |  | 5.5560\*\*\* | - |
|  | (28.48) |  |  | (22.02) |  |  | (23.15) |  |
| Exp | -2.6334\*\*\* | - |  | 0.3978 | - |  | 370.7000 | - |
|  | (-4.12) |  |  | (0.40) |  |  | (0.48) |  |
| TOratio | -0.0093\*\*\* | - |  | 0.0260\*\*\* | - |  | 11.3000\*\*\* | - |
|  | (-4.70) |  |  | (9.48) |  |  | (6.27) |  |
| Flow | 0.0129 | - |  | 0.0025 | - |  | -0.0006 | - |
|  | (0.38) |  |  | (0.58) |  |  | (-0.63) |  |
| Fund\_Age | 0.0054\*\*\* | - |  | -0.0051\*\*\* | - |  | -8.1463\*\*\* | - |
|  | (5.61) |  |  | (-6.19) |  |  | (-10.32) |  |
| Undergrad | 0.0140\*\*\* | 0.0139\*\*\* |  | 0.0004 | 0.0047\*\*\* |  | 0.7830 | 4.4713\*\* |
|  | (5.00) | (5.08) |  | (0.36) | (5.07) |  | (0.35) | (2.03) |
| Grad | 0.0043\* | 0.0035 |  | 0.0000 | 0.0031\*\*\* |  | 1.6267 | 3.8876\* |
|  | (1.68) | (1.41) |  | (0.05) | (4.15) |  | (0.78) | (1.91) |
| PhD | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |  | 0.0000 | 0.0000 |
|  | - | - |  | - | - |  | - | - |
| MBA | -0.0023\*\* | -0.0032\*\*\* |  | -0.0017\*\*\* | -0.0016\*\* |  | -0.8741 | -0.8674 |
|  | (-2.55) | (-3.51) |  | (-2.58) | (-2.35) |  | (-1.19) | (-1.21) |
| Cert | 0.0109\*\*\* | 0.0101\*\*\* |  | 0.0004 | 0.0015\*\*\* |  | -0.4664 | 0.1629 |
|  | (9.58) | (8.97) |  | (0.92) | (3.28) |  | (-0.75) | (0.27) |
| Mgr\_Age | 0.0170\*\*\* | 0.0227\*\*\* |  | 0.0010 | 0.0053\*\*\* |  | 0.9949 | 3.6087\* |
|  | (7.51) | (10.18) |  | (0.70) | (3.71) |  | (0.52) | (1.95) |
| Year-fixed Effect | YES | YES |  | YES | YES |  | YES | YES |
| Fund-fixed Effect | YES | YES |  | YES | YES |  | YES | YES |
| No. of Obs. | 55,253 | 60,052 |  | 55,253 | 60,052 |  | 55,253 | 60,052 |
| Adj. R-squared | 0.8421 | 0.8359 |  | 0.6174 | 0.6040 |  | 0.7201 | 0.7175 |

**Table C7: Fund Manager Gender and Preference for Portfolio Liquidity**

**(Lagged Liquidity and Stock characteristics as control variables)**

This table presents the findings of the regression of portfolio liquidity on the gender of single managed funds, including stock level characteristics along-with the fund and manager level controls. The baseline regression model is given in Equation (5). The dependent variable is portfolio liquidity, . The independent variable is which is equal to 1 if fund is single female managed at time t, and 0 if it is single male managed*. Port\_Liq\_PST\_lag* is a proxy of portfolio liquidity introduced by Pástor, Stambaugh, and Taylor (2020) and measured at time t-1. *Port\_Liq\_Amhd\_lag* is a measure of portfolio liquidity which is the value weighted average of Amihud liquidity of all the stocks held by a fund at time t-1. *Port\_Liq\_Sprd\_lag* is a measure of portfolio liquidity which is the value weighted average of Bid\_Ask Spread of all the stocks held by a fund at time t-1. *Port\_Vlty* is the value weighted average of the monthly percentile rank of volatility of all the stocks held by a fund at time t, where volatility is the standard deviation of daily stock returns. *Port\_Div* is the value weighted average of the monthly percentile rank of dividend yield of all the stocks held by a fund at time t. *Port\_Size* is the value weighted average of the monthly percentile rank of size of all the stocks held by a fund at time t, where size is the natural log of stock’s market capitalization*. Port\_Cumret* is the value weighted average of the monthly percentile rank of cumulative return of all the stocks held by a fund at time t, where cumulative return is measured for t-12, t-1. and are measured in basis points. The results are presented with fund and year fixed effects. The t-statistics based on White robust standard errors are reported in parentheses. \*\*\*, \*\*, and \* denote 99%, 95%, and 90% significance levels. See Table C1 in the appendix for the explanation of the fund and manager level control variables.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Port\_Liq\_PST | Port\_Liq\_Amhd | Port\_Liq\_Sprd |
|  | (1) | (2) | (3) |
| Female | 0.0008\*\*\* | 0.0005\* | 0.5336\* |
|  | (3.36) | (1.94) | (1.89) |
| Ret | 0.0015\*\*\* | 0.0143\*\*\* | 18.5000\*\*\* |
|  | (3.31) | (11.05) | (23.27) |
| Size | 0.0002\*\*\* | 0.0012\*\*\* | 0.9083\*\*\* |
|  | (5.62) | (10.32) | (11.41) |
| Exp | 0.0701 | 1.1346\*\*\* | -223.3000 |
|  | (0.58) | (2.70) | (-0.78) |
| TOratio | -0.0014\*\*\* | 0.0035\*\* | 0.7854 |
|  | (-2.70) | (2.19) | (0.96) |
| Flow | 0.0125 | -0.0006 | -0.0005 |
|  | (0.88) | (-0.42) | (-1.49) |
| Fund\_Age | 0.0002 | -0.0000 | -0.8142\*\*\* |
|  | (1.52) | (-0.04) | (-2.61) |
| Undergrad | -0.0005 | 0.0011 | -2.0490 |
|  | (-0.63) | (1.48) | (-0.82) |
| Grad | -0.0006 | 0.0012\* | -1.8385 |
|  | (-0.71) | (1.68) | (-0.73) |
| PhD | -0.0011 | 0.0028\*\*\* | -3.4094 |
|  | (-1.29) | (3.19) | (-1.33) |
| MBA | 0.0001 | -0.0003 | -0.0695 |
|  | (0.90) | (-1.33) | (-0.37) |
| Cert | 0.0001 | 0.0005\*\*\* | -0.0225 |
|  | (0.44) | (2.65) | (-0.10) |
| Port\_Liq\_PST\_lag | 0.9265\*\*\* | - | - |
|  | (120.71) |  |  |
| Port\_Liq\_Amhd\_lag | - | 0.6199\*\*\* | - |
|  |  | (60.61) |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Table C7: (continued)** | | | |
|  | Port\_Liq\_PST | Port\_Liq\_Amhd | Port\_Liq\_Sprd |
|  | (1) | (2) | (3) |
| Port\_Liq\_Sprd\_lag | - | - | 7589.8000\*\*\* |
|  |  |  | (107.61) |
| Port\_Vlty | -0.0009\*\* | 0.0100\*\*\* | -6.6277\*\*\* |
|  | (-1.99) | (8.55) | (-9.14) |
| Port\_Div | -0.0034\*\*\* | -0.0050\*\*\* | 0.9423 |
|  | (-7.84) | (-5.85) | (1.37) |
| Port\_Size | 0.0191\*\*\* | 0.0586\*\*\* | 14.6000\*\*\* |
|  | (6.88) | (13.86) | (9.15) |
| Port\_Cumret | -0.0009\*\*\* | -0.0011 | -1.5257\*\* |
|  | (-2.91) | (-1.39) | (-2.44) |
| Year-fixed Effect | YES | YES | YES |
| Fund-fixed Effect | YES | YES | YES |
| No. of Obs. | 112,184 | 112,184 | 112,184 |
| Adj. R-squared | 0.9826 | 0.7757 | 0.8933 |

**Table C8: Female Fund Manager and Trading**

This table presents the findings of the regression of fund trading on the single female managed funds. The dependent variable is monthly turnover ratio, . The independent variable is which is equal to 1 if fund is single female managed at time t, and 0 if it is single male managed. is measured in basis points. The results are presented with fund and year fixed effects. The t-statistics based on White robust standard errors are reported in parentheses. \*\*\*, \*\*, and \* denote 99%, 95%, and 90% significance levels. See Table C1 in the appendix for the explanation of all the variables.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | TOratio | |
|  |  | All controls with manager age | All controls without manager age |
|  |  | (1) | (2) |
| Female |  | -0.0058\*\*\* | -0.0020\* |
|  |  | (-3.54) | (-1.96) |
| Ret |  | 0.0066 | 0.0009 |
|  |  | (1.29) | (0.25) |
| Size |  | -0.0079\*\*\* | -0.0059\*\*\* |
|  |  | (-9.88) | (-14.50) |
| Exp |  | 19.9253\*\*\* | 20.3350\*\*\* |
|  |  | (3.73) | (7.89) |
| Flow |  | 0.0438 | 0.0205 |
|  |  | (1.46) | (1.03) |
| Fund\_Age |  | -0.0058\*\*\* | -0.0075\*\*\* |
|  |  | (-3.71) | (-6.37) |
| Undergrad |  | 0.0216\*\*\* | 0.1363\*\*\* |
|  |  | (6.75) | (6.01) |
| Grad |  | 0.0222\*\*\* | 0.1468\*\*\* |
|  |  | (7.60) | (6.45) |
| PhD |  | 0.0000 | 0.1019\*\*\* |
|  |  | - | (4.47) |
| MBA |  | 0.0077\*\*\* | -0.0031\*\*\* |
|  |  | (5.78) | (-3.96) |
| Cert |  | -0.0076\*\*\* | -0.0028\*\*\* |
|  |  | (-5.18) | (-3.27) |
| Mgr\_Age |  | -0.0258\*\*\* | - |
|  |  | (-7.26) |  |
| Year-fixed Effect |  | YES | YES |
| Fund-fixed Effect |  | YES | YES |
| No. of Obs. |  | 55,253 | 113,855 |
| Adj. R-squared |  | 0.7344 | 0.7056 |

**Table C9. Difference-in-Differences Regression for Female to Male Transition Funds**

This table presents the findings of the difference-in-differences regression of portfolio liquidity after the Female to Male transition. The dependent variable is portfolio liquidity, . is a dummy variable equal to 1 if the fund is a female to male transition fund and 0 if the fund is a male to male transition fund. is a dummy variable equal to 1 if month t+1 is after the transition and 0 if it is before the transition. is the multiplication of transition funds and Post variables. and are measured in basis points. The results are presented with fund and year fixed effects. The t-statistics based on White robust standard errors are reported in parentheses. \*\*\*, \*\*, and \* denote 99%, 95%, and 90% significance levels. See Table C1 in the appendix for the explanation of all the variables.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Port\_Liq\_PST |  | Port\_Liq\_Amhd |  | Port\_Liq\_Sprd |
|  | (1) |  | (2) |  | (3) |
| Male\_TransPost | 0.0041\*\*\* |  | -0.0005 |  | -2.0437\*\* |
|  | (3.46) |  | (-0.53) |  | (-2.49) |
| Post | -0.0014\*\*\* |  | 0.0001 |  | 0.0003\*\*\* |
|  | (-2.64) |  | (0.31) |  | (7.58) |
| Ret | -0.0072 |  | 0.0008 |  | 0.0006\* |
|  | (-1.64) |  | (0.24) |  | (1.92) |
| Size | 0.0065\*\*\* |  | 0.0062\*\*\* |  | 0.0005\*\*\* |
|  | (11.38) |  | (14.82) |  | (13.51) |
| Exp | -1.5702 |  | -3.5726\*\*\* |  | 0.1484 |
|  | (-1.06) |  | (-3.34) |  | (1.47) |
| TOratio | -0.0377\*\*\* |  | 0.0082\*\* |  | 0.00004 |
|  | (-7.17) |  | (2.16) |  | (0.11) |
| Flow | 0.0026 |  | -0.0021 |  | -0.0004 |
|  | (0.11) |  | (-0.12) |  | (-0.26) |
| Fund\_Age | -0.0027 |  | 0.0004 |  | -0.0005\*\*\* |
|  | (-1.22) |  | (0.24) |  | (-3.5) |
| Undergrad | 0.0051 |  | 0.0062 |  | -0.0006 |
|  | (0.69) |  | (1.16) |  | (-1.14) |
| Grad | 0.0005 |  | 0.0058 |  | -0.0005 |
|  | (0.06) |  | (1.09) |  | (-1.09) |
| PhD | 0.0019 |  | 0.0038 |  | -0.0009\* |
|  | (0.25) |  | (0.69) |  | (-1.78) |
| MBA | -0.0013\*\* |  | -0.0016\*\*\* |  | -0.0002\*\*\* |
|  | (-2.06) |  | (-3.53) |  | (-4.01) |
| Cert | -0.0022\*\*\* |  | -0.0009\* |  | 0.0001\*\* |
|  | (-3.17) |  | (-1.86) |  | (2.34) |
| Year-fixed Effect | YES |  | YES |  | YES |
| Fund-fixed Effect | YES |  | YES |  | YES |
| No. of Obs. | 11,347 |  | 11,347 |  | 11,347 |
| Adj. R-squared | 0.8634 |  | 0.6214 |  | 0.7522 |

1. Further comments on theory development and research hypotheses are available in Appendix A. [↑](#footnote-ref-1)
2. See, for example, Elton, Gruber, and Blake (2001); Evans (2009). [↑](#footnote-ref-2)
3. See the details of the matching procedure and data in Appendix B [↑](#footnote-ref-3)
4. The manager age data contains many missing observations because of the unavailability of many fund managers' graduation year. The unavailability of manager age data reduces our sample significantly. Our main results, however, are not affected by the inclusion of this variable. [↑](#footnote-ref-4)
5. The Port\_Liq\_Sprd is scaled by 104. [↑](#footnote-ref-5)
6. We have many missing observations for the control variable of manager age, i.e., Mgr\_Age. The inclusion of this variable significantly reduces the number of observations for our regression analysis. Although the results do not change with this variable, we present the findings in the Appendix (Table C6). [↑](#footnote-ref-6)
7. The description of all the variables is in the Appendix (Table C1). [↑](#footnote-ref-7)
8. The regression results are in the Appendix (Table C8). [↑](#footnote-ref-8)
9. The quantile regression results are in the Appendix (Table C5). [↑](#footnote-ref-9)
10. The market return is from the Kenneth R. French-Data Library. <https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html> [↑](#footnote-ref-10)
11. Econometric specifications are available in Appendix C. [↑](#footnote-ref-11)
12. The results are presented in the Appendix C (Table C9). [↑](#footnote-ref-12)
13. Econometric specifications are available in Appendix C. [↑](#footnote-ref-13)
14. Lucian A. Taylor has been very kind to provide the data of matched CRSP and MS share classes (including crsp\_fundno, secid, and fundid). The comprehensive matching process, till the end of year 2014, is described in their paper (Pástor, Stambaugh, and Taylor, 2015). We find some discrepancies in their matched fundid and the ones we obtain from MS, due to different study time windows. For our analysis, we mostly rely on fundid retrieved from MS, as they fulfill our matching criteria. [↑](#footnote-ref-14)
15. In all such cases, name and inception date of the oldest share class with fundid are exactly matched with the oldest share class of the allocated unique wficn. [↑](#footnote-ref-15)
16. During the selection process to deal with all the matching issues, we have verified inception dates of all funds with the year when their first manager(s) started managing the fund, given in the manager history data point. [↑](#footnote-ref-16)
17. We count the same fund twice if both genders manage it. [↑](#footnote-ref-17)
18. Econometric specifications are available in Appendix C. [↑](#footnote-ref-18)