Don't Take Their Word For It: The Misclassification of Bond Mutual Funds

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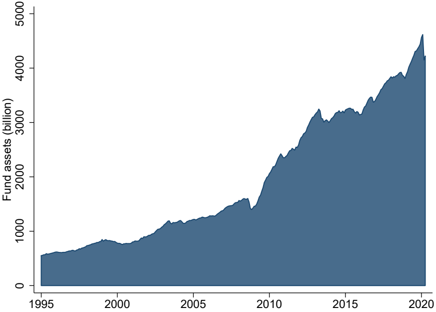
Bond Funds Have Become Increasingly Important

- AUM: $1 trillion in 2007 to $5 trillion in 2019

Figure: Total Assets



Source: Investment Company Institute

Bond Funds Provide Liquidity Transformation

Funds

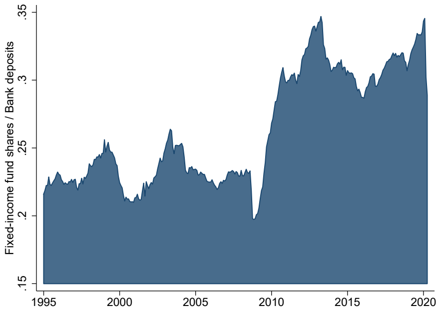
Liquid assets	Demandable equity
Illiquid assets	

- Bond funds transform a portfolio of illiquid bonds into liquid fund shares
- Liquidity provision by bond funds is significant
  - E.g. Chen, Goldstein, and Jiang 10, Chernenko and Sunderam 17, Goldstein, Jiang and Ng 17, Ma, Xiao and Zeng 19

Bond Funds Have Become Increasingly Important

- Fund shares were 22% of bank deposits in 2007
- Fund shares were 35% of bank deposits in 2019

Figure: Fund Shares/Deposits

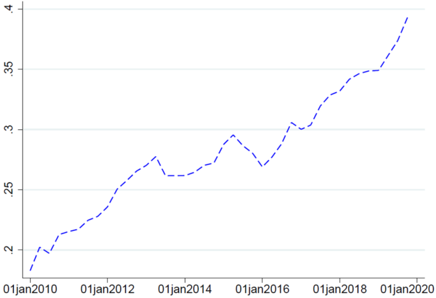


Source: Investment Company Institute, Flow of Funds

Bond Funds Have Become Increasingly Important

- Bond fund asset size nears 40% of outstanding bonds in the market in 2020Q1

Figure: Growing Importance of Bond Funds in the Corporate Bond Market



Source: Falato, Goldstein and Hortacsu 20

This is a very important paper

1. Bond funds are large and growing rapidly
2. Bond funds provide liquidity transformation for the economy

Therefore...

1. Accurately conveying bond funds' portfolio composition is very important

This is a convincing paper

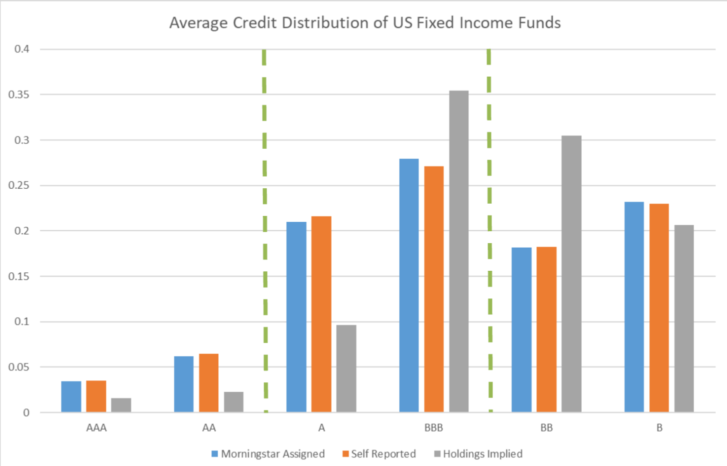
Misreporting of portfolio composition is possible for the same reasons

1. Bond funds are large and growing rapidly
    - Significant retail participation
    - 77% of bond funds are retail (Goldstein, Jiang and Ng 17)
2. Bond funds provide liquidity transformation for the economy
    - Bond funds invest in corporate bonds
    - Long maturity and low liquidity
    - Corporate bonds traded in OTC markets

The paper's findings are important + convincing

Main Findings

- 31.4% of (fixed income) funds are being reported as overly safe



- Sample: US Fixed Income Funds from Q1 2017 to Q2 2018

Comments and Suggestions

1. How about cash holdings?
2. What are the potential explanations for misclassification?
   - Why doesn't every fund do it all the time?
   - Relationship with portfolio decisions in liquidity transformation
3. What is the optimal way to classify funds? What is the rational way to interpret the classification?

1. How about Cash Holdings?

- How about funds' cash holdings? How are they considered in calculating fund portfolio composition?
- Cash plays an important role in bond funds' liquidity transformation

" ...mutual funds do not simply act as pass-throughs. Instead, consistent with the idea that mutual funds perform a significant amount of liquidity transformation, funds use holdings of cash to actively manage their liquidity provision and to reduce their impact on the prices of the underlying assets."

Chernenko and Sunderam 17

1. How about Cash Holdings?

Funds

Liquid assets	Demandable equity
Illiquid assets	

- Bond funds transform a portfolio of illiquid bonds into liquid fund shares
- Illiquid assets e.g. corporate bonds incur larger liquidation discounts
- Cash acts like a liquid asset buffer to meet redemption requests

1. How about Cash Holdings?

- Cash is a significant portion of bond funds' portfolio

Figure: Share of Cash in Bond Fund Portfolio

	Bond funds					
				Percentile		
	N	Mean	SD	25	50	75
TNA	2,648	1435.07	2537.71	233.76	521.29	1346.28
$Size$	2,648	6.41	1.23	5.45	6.26	7.21
$Family\ size$	2,648	10.55	1.72	9.54	10.76	11.56
$Cash/Assets$	2,648	7.89	7.53	2.55	5.28	10.76
$\Delta Cash/Assets$	2,578	0.77	7.68	−2.54	0.12	2.94
$\Delta(Cash/Assets)$	2,578	−0.19	6.07	−2.70	−0.12	2.24

Source: Chernenko and Sunderam 17

1. How about Cash Holdings?

Suggestions

- Include/mention cash as a separate category of holdings
  - Cash differs (more liquid) from liquid securities like Treasuries and AAA corporate debt
  - Chernenko and Sunderam 17 provide details on how to obtain cash and cash equivalents
- Discuss its' economic significance
  - How does it relate to the reporting of other asset classes?

2. What are the Explanations?

Characteristics of misclassified funds:

1. Invest in riskier assets and earn higher returns (than peer group)
   - $\rightarrow$ Higher expense ratio
   - $\rightarrow$ Higher inflows
2. Younger managers of funds with numerous share classes
   - $\uparrow$ Misclassification following $\downarrow$ recent performance
   - $\downarrow$ Misclassification following $\uparrow$ recent performance

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- Suggestion:
  - Discuss the interpretation of these characteristics a bit more
  - What are the costs and benefits of misreporting?
  - How are the costs and benefits related to fund characteristics in the cross-section?

2. What are the Explanations - Liquidity Transformation?

- Bond funds transform liquidity
- More illiquid corporate bonds, which also tend to have lower ratings, incur larger liquidation discounts
- When hit by (temporary) outflows, funds sell more liquid assets first $\rightarrow$ pecking order of liquidation
- Fund portfolio appears to have a higher composition of illiquid bonds for some time
- These portfolio fluctuations may not be reported

2. What are the Explanations - Liquidity Transformation?

Consistency with liquidity transformation + pecking order of liquidation

1. Invest in riskier assets and earn higher returns
    - Funds investing in riskier assets hold more liquid assets as liquid buffer
    - These liquid buffers are sold to meet temporary redemption shocks
    - Riskier funds may have more fluctuation in their portfolio compositions

2. What are the Explanations - Liquidity Transformation?

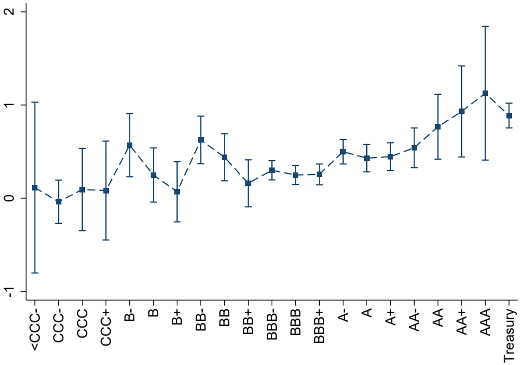
Consistency with liquidity transformation + pecking order of liquidation

1. Younger managers of funds with numerous share classes
   - $\uparrow$ Misclassification following $\downarrow$ recent performance
   - $\downarrow$ recent performance $\rightarrow$ $\uparrow$ outflows $\rightarrow$ $\uparrow$ sell more liquid assets $\rightarrow$ remaining portfolio appears more illiquid/risky
   - $\downarrow$ Misclassification following $\uparrow$ recent performance
   - $\uparrow$ recent performance $\rightarrow$ $\downarrow$ outflows $\rightarrow$ rebalance portfolio $\rightarrow$ remaining portfolio appears less illiquid/risky

2. What are the Explanations - Liquidity Transformation?

- Higher rated bonds are more likely to be sold given redemptions

Figure: Liquidation to Redemption Sensitivity

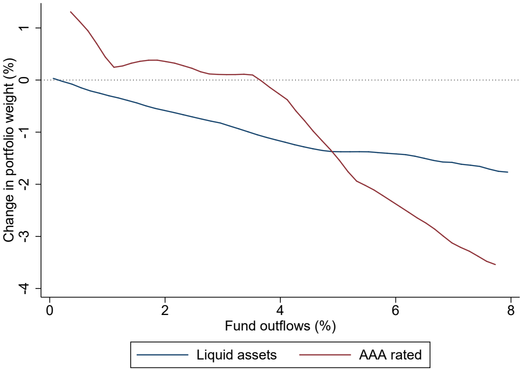


Source: Ma, Xiao and Zeng 20

2. What are the Explanations - Liquidity Transformation?

- Liquid assets are sold off first

Figure: Fund Portfolio Weight and Fund Outflows



Source: Ma, Xiao and Zeng 20

2. What are the Explanations - Liquidity Transformation?

Suggestions

- Compare index funds versus active funds
- Look for more evidence in the time series
- E.g. Check if classification is the same + reported holdings change OR IF classification changes + reported holdings remain unchanged

3. How to Classify Funds + Interpret Fund Classification?

- Explanations behind the misreporting matters for what the optimal reporting and classification + their interpretation should be
- Suggest to provide more guidance to readers/investors/funds:
  1. What should be reported when the fund expects a temporary drop in liquid assets?
  2. Maybe report both a current and an average portfolio composition?
  3. How should investors interpret the reported reporting/classification?
- Suggest to provide more guidance to Morningstar on how to classify

- Funds report → MS classifies → investors interpret
- How to fix the classification criterion post 2010?

Figure: Misclassification Over Time

Year	High Credit Quality	Med Credit Quality	Low Credit Quality	# Misclassified
2003	251	412	321	7
2004	262	396	337	4
2005	255	364	282	4
2006	315	414	332	5
2007	322	516	422	7
2008	359	610	468	8
2009	246	698	548	9
2010	209	705	583	147
2011	189	765	658	307
2012	194	857	708	283
2013	191	887	824	297
2014	178	920	891	348
2015	181	1,056	1,022	321
2016	209	1,195	1,024	360
2017	225	1,215	993	370
2018	123	581	484	191

Conclusion

1. Misclassification of bond funds is a very important finding
   - Bond fund sector growing rapidly
   - Performs important function of liquidity provision
2. The findings are very plausible + convincing
   - Fund assets are illiquid and opaque
   - Careful and thoughtful execution
3. Suggestion: bear in mind liquidity transformation by bond funds
   1. Consider cash holdings
   2. Discuss explanations
   3. Provide guidance for optimal classification + interpretation of classification