

Assessing Changes in Prime Money Market Fund Credit Quality After the Removal of Certain References to Credit Ratings in Rule 2a-7 and Form N-MFP

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Abstract

This paper empirically assesses the credit quality of prime money market funds (“MMFs”) before and after amendments to rule 2a-7 and Form N-MFP, which were adopted in 2015. The amendments replace certain references to credit ratings by nationally recognized statistical rating organizations (“NRSROs”) with a new standard consisting of objective factors to govern credit risk in MMF portfolios. While the analysis shows that prime MMFs report on Form N-MFP higher percentages of their portfolios held in securities with higher credit risk following the compliance deadline for the amendments, prime funds simultaneously increase their reporting of credit ratings. Using a subset of prime MMFs’ portfolios that are matched to separate data on credit ratings from NRSROs, there is no evidence of a change in the credit quality of prime MMFs’ holdings following the amendments. It is shown that the apparent increase in prime MMF holdings of securities with higher credit risk on Form N-MFP is driven by MMFs that begin reporting credit ratings following the compliance deadline for the amendments.

¹ This white paper is provided in the author’s official capacity as an economist in the Commission’s Division of Economic and Risk Analysis but does not necessarily reflect the views of the Commission, the Commissioners, or other members of the staff. The author thanks staff in the Office of Asset Management, and particularly Dan Hiltgen, for their support and contributions to this analysis.

I. Introduction

In September 2015, the Commission adopted amendments to rule 2a-7 and Form N-MFP that removed certain references to credit ratings issued by NRSROs.² The amendments, which implemented provisions of the Dodd-Frank Wall Street Reform and Consumer Protection Act (“Dodd-Frank Act”)³, replaced references to credit ratings with a new standard consisting of objective factors to govern portfolio credit risk while seeking to maintain the overall credit quality of securities held by MMFs.⁴

The amendments included a statement that the Commission staff would study the impact of these amendments on capital formation and investor protection and include a review of any changes in the risk profile of money market fund portfolio security investments subsequent to the reforms.⁵ This report assesses whether, and if so to what degree, prime MMFs altered their holdings of securities with relatively high credit risk following the amendments,⁶ and discusses any resulting implications for capital formation and investor protection.

As discussed in the adopting release, commenters raised concerns that the amendments may have the potential to lower the credit quality of MMF portfolios.⁷ In particular, the

² See Removal of Certain References to Credit Ratings and Amendment to the Issuer Diversification Requirement in the Money Market Fund Rule, Investment Company Act Release No 31828 (Sept. 16, 2015) [80 FR 58124 (Sept. 25, 2015)] (“Removal of Credit Rating References Adopting Release”) and the amendments to rule 2a-7 and Form N-MFP made thereby (“the amendments”).

³ See Pub. L. No. 111-203, § 939A, 124 Stat. 1376 1887 (2010) (15 U.S.C. 78o-7 note).

⁴ See Removal of Credit Rating References Adopting Release, Section II.A.1.

⁵ Removal of Credit Rating References Adopting Release, Section V.2.i.

⁶ Prime MMFs are MMFs that generally hold a variety of taxable short-term obligations issued by corporations and banks, as well as repurchase agreements and asset backed commercial paper. See Money Market Fund Reform; Amendments to Form PF, Investment Company Act Release No. 31166 (July 23, 2014) [79 FR 47736 (Aug. 14, 2014)]. Prime MMFs are identified by Item 10 of prior Form N-MFP and Item A.10 on current Form N-MFP. This study focuses on prime MMFs because they are the largest category of MMFs that hold investments with potentially higher credit risk.

⁷ See Removal of Credit Rating References Adopting Release, Section II.A.

amendments removed the regulatory distinction between “first-tier” and “second-tier” securities, which were defined largely in reference to NRSRO ratings.⁸ The elimination of these tiers in rule 2a-7 removed the pre-amendment 3 percent cap on MMF holdings of second-tier securities,⁹ which commenters suggested could result in lower MMF portfolio credit quality.¹⁰

However, another change resulting from the amendments may countervail this concern. Following the amendments, a MMF that utilizes credit ratings from an NRSRO to determine a security’s portfolio eligibility must report in its Form N-MFP filing the name of the NRSRO and its rating of the security.¹¹ Prior to the amendments, Form N-MFP required a disclosure of each designated NRSRO for a portfolio security and the credit rating given by the designated NRSRO for each portfolio security. In 2010, Commission staff issued a no-action letter stating that they would not recommend enforcement action against MMFs that did not designate NRSROs and make related disclosures while the Commission reviewed the Dodd-Frank mandate.¹² As the release acknowledged, however, many MMFs were already reporting this information on Form N-MFP prior to the amendments.¹³ Accordingly, the predicted overall change in the accessibility and availability of information on the credit quality of a fund’s holdings resulting from the

⁸ First-tier securities consisted of securities with the highest short-term rating category for debt obligations, or unrated securities of comparable quality. *See infra* Section III.

⁹ *See* Removal of Credit Rating References Adopting Release, Section II.A.

¹⁰ *Id*

¹¹ *See* Form N-MFP Item C.10; *see also* Removal of Credit Rating References Adopting Release, Section II.E.1.

¹² *See* Investment Company Institute, SEC Staff No-Action Letter (Aug. 19, 2010) (“2010 No-Action Letter”), *available at* <https://www.sec.gov/divisions/investment/noaction/2010/ici-nrsro081910.htm>. The no-action letter was withdrawn with the adoption of the amendments. *See infra* Section III.

¹³ *See* Removal of Credit Rating References Adopting Release, Section II.E.

amendments is therefore difficult to assess.¹⁴ To the extent this information limits the credit risk MMFs take in selecting portfolio investments, the predicted overall change in credit risk through this channel is also hard to assess. This report empirically examines the credit quality of prime MMFs' portfolios before and after the amendments to assess the potential impact of the amendments on credit quality.

The remainder of this report is structured as follows: Section II summarizes the findings. Section III provides background on the amendments. Section IV outlines the data sources utilized in conducting the analysis of portfolio credit quality. The results derived from each data source and the associated methodology are presented in Section V. Section VI concludes.

II. Summary of Findings

This report analyzes data for the period from January 2013 through December 2023, and it finds the following with respect to the credit quality of prime MMF portfolios:

- Funds' self-reported ratings on Form N-MFP after the compliance date for the amendments show higher levels of holdings of securities that would likely have been classified as second-tier prior to the amendments.¹⁵
- However, there is also a marked increase in MMFs' self-reporting of ratings following the compliance date.

¹⁴ To the extent that investors relied on the tiers reported by MMFs, the removal of this item from Form N-MFP would reduce investors' accessibility to portfolio credit quality information. The availability of actual current NRSRO ratings (which are not generally available to investors in the aggregate free of charge on a real-time basis) could be higher or lower following the amendments depending on industry practice under the staff no-action letter, which was withdrawn at adoption.

¹⁵ For brevity, these securities will be referred to as second-tier securities. Details on this classification are given in Section IV.

- Using a subset of the holdings for which historical ratings information is publicly available directly from NRSROs, MMFs' overall holdings of second-tier securities have been constant or declined in the years following the compliance date.
- Further, those MMFs that increased their reporting of ratings following the compliance date hold higher percentages of their portfolios in second-tier securities over the entire sample period than MMFs whose reporting remains constant over the sample period.¹⁶

Taken together, these findings suggest that the increase in the percentage of second-tier securities observed from self-reported Form N-MFP data is due to new reporting by funds with relatively high percentages of second-tier securities, rather than to an increased prevalence of second-tier securities in prime MMFs following the reforms. However, neither the self-reported ratings data nor the sample subset for which MMF securities can be matched to the public NRSRO ratings are likely to be representative samples of true MMF credit quality over the sample period. Bearing in mind this data limitation, the results do not suggest that MMF credit quality has changed significantly following the amendments. The results therefore suggest that the amendments did not have significant consequences for capital formation or investor protection related to credit quality of MMF portfolios.

III. Background

Prior to the amendments, for a security to be eligible for inclusion in a MMF's portfolio, the security must have received a credit rating from the "requisite NRSROs" in one of their two highest short-term rating categories or have otherwise been determined by the fund's board to be

¹⁶ These MMFs also exhibit a temporary increase in their second-tier holdings in this matched sample. However, this increase occurs approximately 21 months after the compliance date. The timing and temporary nature of this increase suggests that it is unlikely to be the result of the amendments.

a comparable unrated security.¹⁷ Additionally, prior rule 2a-7 required the fund’s board (or its delegate) to determine that a security posed minimal credit risks to the fund prior to its inclusion in the fund’s portfolio. Eligible securities were further classified as first-tier or second-tier. First-tier securities were defined as eligible securities that had received a rating from the requisite NRSROs in the highest short-term rating category for debt obligations, or unrated securities determined by the fund’s board to be of comparable quality.¹⁸ Second-tier securities were defined as eligible securities that were not first-tier securities. Under prior rule 2a-7, a MMF could not acquire a second-tier security if doing so immediately resulted in more than 3 percent of its total portfolio value being held in second-tier securities. A MMF was also required to disclose the tier designation for each of the MMF’s portfolio securities¹⁹ along with the credit ratings assigned by its designated NRSROs in monthly Form N-MFP filings.²⁰

In July 2010, Congress passed the Dodd-Frank Act, which included requirements for all federal regulatory agencies to “review (1) any regulation. . . that requires the use of an assessment of the credit-worthiness of a security or money market instrument; and (2) any references to or requirements in such regulations regarding credit ratings.”²¹ The Dodd-Frank Act further directed each agency to “modify any such regulations identified by the review . . . to remove any reference to or requirement of reliance on credit ratings and to substitute in such regulations such standard of credit-worthiness as each respective agency shall determine as

¹⁷ See prior rule 2a-7. A requisite NRSRO was defined as an NRSRO that a money market fund’s board of directors has designated for use (a “designated NRSRO”) and that issues credit ratings that the board determines, at least annually, are sufficiently reliable for the fund to use in determining the eligibility of portfolio securities. A separate set of eligibility criteria applied for securities subject to a conditional demand feature.

¹⁸ See Removal of Credit Rating References Adopting Release, Section V.A.1.

¹⁹ See prior Form N-MFP Item 33.

²⁰ See prior Form N-MFP Item 34(a).

²¹ Dodd-Frank Act, § 939A(a).

appropriate for such regulations.”²² In response to the passage of section 939A of the Dodd-Frank Act, Commission staff issued a no-action letter in August 2010, indicating that the staff would not recommend enforcement action if a MMF did not designate NRSROs and make related disclosures during the review period.²³

Pursuant to the Dodd-Frank Act, the Commission proposed amendments to rule 2a-7 and Form N-MFP in March 2011,²⁴ along with amendments to other rules and forms.²⁵ The Commission subsequently re-proposed the amendments to rule 2a-7 and Form N-MFP in July 2014.²⁶ Following a public comment period, the Commission in 2015 adopted amendments to rule 2a-7 which defined eligible securities without reference to the securities’ NRSRO ratings, and removed the regulatory distinction between first- and second-tier securities²⁷. In place of references to NRSRO ratings, the amendments codified four factors that funds must consider in their analysis to determine that a security poses minimal credit risk: the issuer’s or guarantor’s financial condition, access to liquidity, ability to react to future events, and strength relative to its competitors and general economic trends.²⁸ In principle, a fund board’s determination that a security poses minimal credit risk, which was also required prior to the amendments, limits the

²² *Id.* § 939A(b).

²³ *See* 2010 No-Action Letter, *supra* footnote 12.

²⁴ *See* References to Credit Ratings in Certain Investment Company Act Rules and Forms, Investment Company Act Release No. 29592 (Mar. 3, 2011) [76 FR 12896 (Mar. 9, 2011)].

²⁵ *See* U.S. SEC. & EXCH. COMM’N, REPORT ON REVIEW OF RELIANCE ON CREDIT RATINGS (2011), *available at* <https://www.sec.gov/files/939astudy.pdf> for a discussion of all Commission rules identified by Commission staff in its review pursuant to Section 939A(c) of the Dodd-Frank Act.

²⁶ *See* Removal of Certain References to Credit Ratings and Amendment to the Issuer Diversification Requirement in the Money Market Fund Rule, Investment Company Act Release No 31184 (Jul. 23, 2014) [79 FR 47986 (Aug. 14, 2014)].

²⁷ *See* Removal of Credit Rating References Adopting Release.

²⁸ These factors were proposed as guidance in the 2014 proposal. The Commission subsequently codified them in response to public comments expressing concern that eliminating credit tiers and not replacing them with objective criteria may result in funds purchasing riskier securities.

amount of credit risk a MMF can take. However, some commenters noted concern that the removal of the first- and second-tier securities definition from rule 2a-7 could have resulted in some MMFs holding more than 3 percent of their portfolios' value in relatively lower quality (but still eligible) securities.²⁹ While acknowledging this concern, the Commission stated in the economic analysis of the adopting release that less than 4 percent of all MMFs held the maximum permissible share of second-tier securities, and less than 0.14 percent of aggregate MMFs' portfolio value was held in second-tier securities prior to adoption of the amendments.³⁰ The release also states that many MMF managers may not find it cost effective to perform additional credit research and analysis to determine that securities without credit ratings from an NRSRO's top short-term credit quality category pose minimal credit risk to the fund.³¹

The amendments also removed the Form N-MFP item that prompted funds to report whether each of their securities was a first- or second-tier security,³² along with the item prompting funds to report securities ratings given by their designated NRSROs.³³ The amended Form N-MFP instead requires funds to disclose any NRSRO ratings they consider in making their minimal credit risk determination (together with the name of the assigning NRSRO). As noted in Section I, because funds may have limited their pre-amendment reporting of NRSRO securities following the staff no-action letter, the amendments may have resulted in an increase in self-reported ratings on Form N-MFP. However, to the extent that investors utilized the tier classifications to gauge the credit quality of a MMF's investments, the removal of this Form N-

²⁹ See Removal of Credit Rating References Adopting Release, Section II.A.

³⁰ *Id.*

³¹ *Id.*

³² See Item 33 of prior Form N-MFP. This item also included the categories "unrated" and "no longer eligible," which are not considered in the present analysis.

³³ See Items 34 and 34a of prior Form N-MFP.

MFP item could have made it more difficult for investors to do so. Unconstrained by the 3 percent cap and with investor scrutiny potentially more difficult, MMFs may have increased holdings of lower quality (but still eligible) securities to reach for higher yield.³⁴ The following sections use data on MMF holdings and credit rating data to evaluate this possibility.

IV. Data

A. Form N-MFP Data

The analyses presented in Section V.A below utilize public data submitted by funds to the Commission on Form N-MFP filings.³⁵ The sample consists of monthly filings from prime MMFs between January 2013 and December 2023.³⁶ Each analysis is conducted on a data set consisting of 41 prime funds that submitted filings each month of the sample period (5,412 fund-month observations, termed the “balanced panel”), as well as on the full data set including information from all 313 prime funds’ filings (18,268 fund-month observations, termed the “full panel”).³⁷ Fund- and security-level information is extracted from each submission, generating

³⁴ An academic paper documents an increase in second-tier securities following the amendments. *See* Stefano Lugo, *Cost of Monitoring and Risk Taking in the Money Market Funds Industry*, J. FIN. INTERMEDIATION, Jan. 2023. The author documents an increase in second-tier securities following the amendments, and suggests that this increase results from reduced accessibility of information about the credit quality of fund’s holdings.

³⁵ As discussed below, this data is supplemented by data reported by NRSROs for a second analysis.

³⁶ Over this sample period, MMFs filed three versions of Form N-MFP reflecting changes to the form from various Commission rulemakings. While the changes to Form N-MFP over this period do not affect the variables considered in the analyses, they may have affected the overall reliability and continuity of the data source. For instance, some funds may not have found it worthwhile to investigate discrepancies or amend errors in filings of form version N-MFP1 given that filings would need to be submitted using Form N-MFP2 only six months following the compliance date of Form N-MFP1.

³⁷ The net asset value of all prime MMFs decreased substantially following the adoption of the Commission’s 2014 MMF reforms. *See* Figure 12 of Daniel Hiltgen, *Charting the Course: A Systematic Exploration of Influences Shaping Money Market Fund Growth* (U.S. Sec. & Exch. Comm’n, DERA Working Paper, 2024), available at https://www.sec.gov/files/dera_wp_will-mmfs-continue-grow.pdf. An analysis of any interaction between the 2014 and 2015 reforms is beyond the scope of the present paper. However, the results in Section V are similar for the balanced panel (whose funds were present before and after the 2014 reforms) and the full panel (which includes prime funds that exited or converted to non-prime fund types following the 2014 reforms).

1,774,637 (707,354) fund-month-security observations in the full (balanced) sample. Fund-level information includes a series identifier, the date of the filing, and the reporting period the filing covers. To account for amendments to the filings, only the most recent filing is kept for each series and reporting period. Each submission includes an internal identifier for each portfolio security along with the total value of the position. For securities that have CUSIP identifiers,³⁸ this information is extracted as well. Finally, funds self-report NRSRO ratings for some portfolio securities.³⁹ However, funds vary widely in the degree that they report this information. Moreover, many funds markedly increased their reporting of NRSRO ratings following the October 2016 compliance date for the final rules.⁴⁰ As discussed herein, this increase is likely due to the requirement that funds report on Form N-MFP any NRSRO ratings that fund boards considered in determining a security presents minimal credit risk, along with the simultaneous withdrawal of the staff no-action letter.

B. Rule 17g-7(b) Data

While the self-reported ratings on Form N-MFP shed light on the changes in reporting over the sample period, they do not provide consistent coverage of portfolio credit risk. To further assess any changes in MMF portfolio credit risk following the amendments, we utilize rating actions publicly reported by NRSROs. Subject to a one or two year delay,⁴¹ NRSROs must

³⁸ A CUSIP number uniquely identifies a financial instrument and its issuer. *See* <https://www.cusip.com/index.html>

³⁹ Prior to the amendments to Form N-MFP enacted in the final rule, funds also reported whether each security was first-tier, second-tier, or unrated. As this information is no longer reported following the October 2016 compliance date, it is not utilized in this analysis.

⁴⁰ *See infra* Tables 3 and 4.

⁴¹ Rating actions for credit ratings paid for by the issuer, underwriter, depositor, or sponsor of the security being rated (which represent most published credit ratings) are required to be included in the Rule 17g-7(b) data within twelve months of the date on which the action is taken. Rating actions for other credit ratings (commonly ratings made available only on a subscription basis) are subject to a twenty-four month delay. *See* 17 CFR 240.17g-7(b)(4).

publish rating actions taken with respect to a credit rating assigned to an obligor, security, or money market instrument in a class of credit ratings for which the NRSRO is registered.⁴² These disclosures are published on each NRSRO's website, and augment the Form N-MFP data in the analyses in Section V.B.

Ratings information is extracted from this data for every CUSIP reported on Form N-MFP in a prime MMF's portfolio over the sample period. This information includes the security's rating, the date the rating was issued, and the NRSRO issuing the rating. To account for filing amendments, only the most recent observation is kept for each combination of NRSRO, CUSIP, and rating action date. The ratings and their dates are then merged with the Form N-MFP filing data.⁴³ However, most securities reported in Form N-MFP cannot be matched with rating actions disclosed by NRSROs: only 11.22 percent (8.13 percent) of total securities by value in Form N-MFP can be matched with an NRSRO rating in the full (balanced) sample.⁴⁴ This low match rate may be attributable to funds' portfolios including unrated securities or securities without CUSIPs, data entry errors by either funds or NRSROs, or underreporting by NRSROs.

C. Defining Credit Tiers from Security Ratings

This section describes how MMF portfolio securities are classified as first- or second-tier for the purposes of the analyses in Section V. Prior to the amendments, first- and second-tier securities were defined in reference to the highest short-term ratings given by NRSROs.⁴⁵

⁴² See 17 CFR 240.17g-7(b).

⁴³ When matched with ratings available from NRSROs, these numbers decrease to 4,983 fund-month observations in the matched balanced panel from 41 prime funds, and 14,291 fund-months from 259 prime funds in the full matched panel. When matched with ratings available from NRSROs, these numbers decrease to 352,712 fund-month-security observations in the full matched panel and 131,212 fund-month-security observations in the matched balanced panel.

⁴⁴ See Table 3 for more details on data coverage across sources and time periods.

⁴⁵ See *supra* Section III.

However, the definition allowed for unrated securities of similar quality, as determined by a fund’s board, to qualify as either first or second-tier securities. Since it is not possible to know how such discretion would have been applied to unrated securities following October 2016 had the rule not been adopted, we construct a mapping from observed NRSRO ratings to tier classifications.⁴⁶

To partially account for the inclusion in MMF portfolios of securities for which short-term ratings have not been issued by the observed NRSROs, we map high ratings from other rating types (such as long-term ratings) to the first-tier designation.⁴⁷ This mapping is shown in Table 2 below. Ratings not included in the table are designated as second-tier securities. In both data sources, there are frequently multiple available ratings for a given security at any one time. When there is a disagreement in tier designation across different NRSROs or rating types,⁴⁸ the first-tier designation takes precedence. While this mapping does not precisely correspond to the definitions of first- and second-tier securities in former rule 2a-7, it provides an approximation of security credit quality that can be used to consistently measure MMF portfolio credit quality over the sample period.

Table 2: Mapping From NRSRO Ratings to First-Tier Designation

NRSRO	First-Tier Ratings ⁴⁹
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⁴⁶ This mapping is defined for the major credit rating agencies that account for most observations in the data: Moody’s, Fitch, S&P, and DBRS.

⁴⁷ This mapping is derived from the standard linkage table published by Moody’s. *See* MOODY’S RATINGS, RATING SYMBOLS AND DEFINITIONS 7, 12 (2024), available at <https://ratings.moody.com/api/rmc-documents/53954>.

⁴⁸ For instance, a rating agency may give a high short-term rating and a lower long-term rating to a given security, or vice versa.

⁴⁹ This table does not show gradations of a given rating (e.g. AA+ or AA-). For fund-reported ratings on N-MFP, minor corrections are for likely typos and misattributed ratings. For instance, a security reported by a fund as being rated F1 by Moody’s is classified as first-tier, even though F1 is the top short-term rating given by Fitch (and not Moody’s).

Moody's	P-1, Aaa, Aa, A, VMIG-1, MIG-1
S&P	A-1, AAA, AA, A
Fitch	F1, AAA, AA, A
DBRS	R-1, AAA, A, A

D. Data Coverage

The coverage of each of these data sources is presented in Tables 3 and 4 for the full and balanced samples, respectively. The first row displays the percentage of funds' holdings that are in securities with a listed CUSIP identifier. Both the full and balanced samples exhibit a modest drop from pre-adoption to post-compliance in the percentage of portfolio value held in securities with CUSIPs. Likewise, the third row in each table indicates that the percentage of portfolio value for which a CUSIP match can be made with the NRSRO data is lower following the amendments' compliance period relative to the period prior to adoption. A much larger difference between the pre-adoption and post-compliance period for the amendments is observed in the second row of the tables, which displays the percentage of portfolio value for which funds self-report NRSRO ratings on Form N-MFP. This row shows a marked increase in reporting, which is examined in greater detail in the following section.

Table 3: Summary Statistics (Full Sample)

	Full Panel	Pre-Adoption	Post-Compliance
Percentage with CUSIPs (Form N-MFP Data)	68.50%	72.36%	65.79%

Percentage Rated in...	Form N-MFP	23.84%	4.60%	41.55%
	NRSRO Data	11.22%	13.77%	9.59%

Statistics are presented for the full sample of 2,048,570 security-fund-month observations. The first row shows the total percent of portfolio value in Prime MMFs for which a CUSIP identifier is reported on Form N-MFP filings. The second row shows the percentage of portfolio value in Prime MMFs for which at least one NRSRO rating is reported on Form N-MFP. The third row shows the percentage of portfolio value in Prime MMFs reported on Form N-MFP over the relevant period for which a CUSIP/date match can be made with the external NRSRO data. The pre-adoption period refers to all observations before September 2015, and the post-compliance period refers to all observations following October 2016.

Table 4: Summary Statistics (Balanced Sample)

		Full Panel	Pre-Adoption	Post-Compliance
Percentage of CUSIPs		61.06%	66.03%	58.79%
Percentage Rated in...	Form N-MFP	23.19%	4.89%	33.64%
	NRSRO Data	8.13%	11.51%	6.71%

Statistics are presented for the balanced sample of 826,742 security-fund-month observations. The first row shows the total percent of portfolio value in Prime MMFs for which a CUSIP identifier is reported on Form N-MFP filings. The second row shows the percentage of portfolio value in Prime MMFs for which at least one NRSRO rating is reported on Form N-MFP. The third row shows the percentage of portfolio value in Prime MMFs reported on Form N-MFP over the relevant period for which a CUSIP/date match can be made with the external NRSRO data. The pre-adoption period refers to all observations before September 2015, and the post-compliance period refers to all observations following October 2016.

While Form N-MFP data includes a sizable share of portfolio securities without CUSIPs listed, the NRSRO rating actions data consists entirely of observations with CUSIP identifiers.

To aid comparison between analyses conducted on these two data sources, Section V.A below restricts the Form N-MFP data to securities with listed CUSIPs.

V. Results

A. Form N-MFP Data: Rise in Second-tier and Reporting Percentages

Self-reported ratings on Form N-MFP filings demonstrate an immediate and persistent increase in prime MMFs' holdings of second-tier securities at the compliance date. Figures 1.a and 1.b present time series of the value-weighted percentage of second-tier securities held by prime MMFs in the full and balanced samples, respectively. On average, this percentage increases at the compliance date from roughly zero to 0.025 percent on average in the full sample. The increase is similar for the balanced sample of 41 prime funds, but the second-tier percentage is relatively higher in the first two years of the post-compliance period as compared to the remainder of the period. In both the full and balanced samples, the percentage of second-tier portfolio holdings remains well below the 3 percent cap in place prior to the amendments.

The increase in the percentage of prime funds' second-tier securities is accompanied by a sharp increase in the prevalence of funds' reporting of these ratings.⁵⁰ Figures 2.a and 2.b illustrate the increases in fund reporting for the full and balanced samples, respectively. Prior to the compliance date for the amendments, prime funds reported NRSRO ratings on Form N-MFP for approximately 5 percent of their portfolio by value in both the full and balanced samples. At the compliance date, this percentage immediately jumps to just under 40 percent in the full sample and just over 50 percent in the balanced sample. As discussed above, this increase is most

⁵⁰ Prior to the amendments, MMFs used Item 34.a of Form N-MFP to report ratings of their portfolio holdings assigned by their designated NRSROs. Following the amendments, MMFs use Item C.10 to provide ratings assigned by any NRSRO that the fund's board or delegate considered in making its determination of minimal credit risk.

likely due to the new requirement for a fund to report on Form N-MFP any NRSRO credit ratings utilized in its board’s finding of minimal credit risk.⁵¹

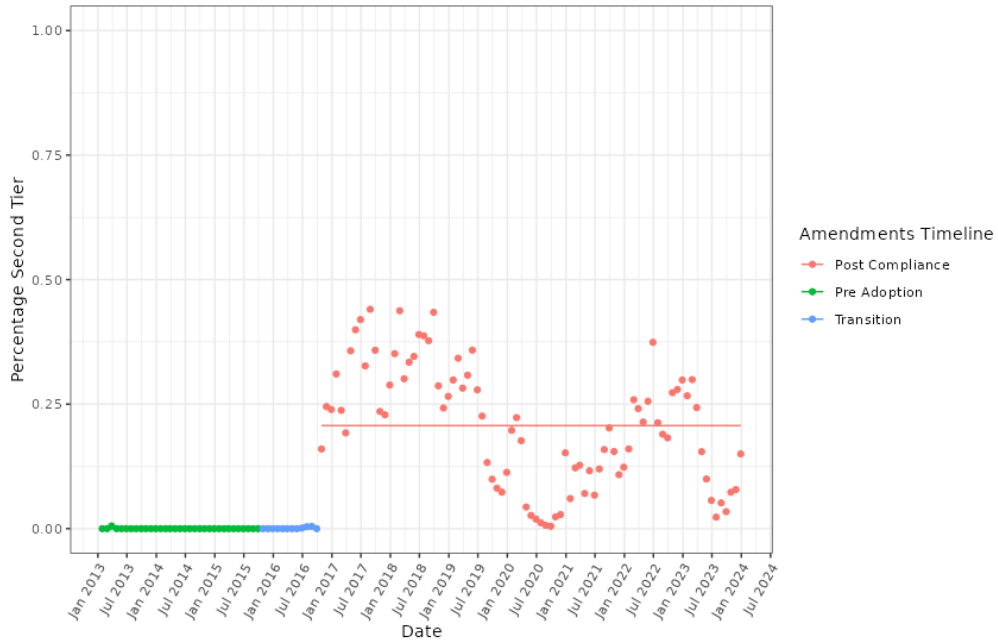


Figure 1.a) Each dot represents the percentage of prime MMFs' assets in the full sample held in second-tier securities, weighted by each fund's assets. The lines are a simple average of these values within each of the three periods.

⁵¹ See *supra* Section III.

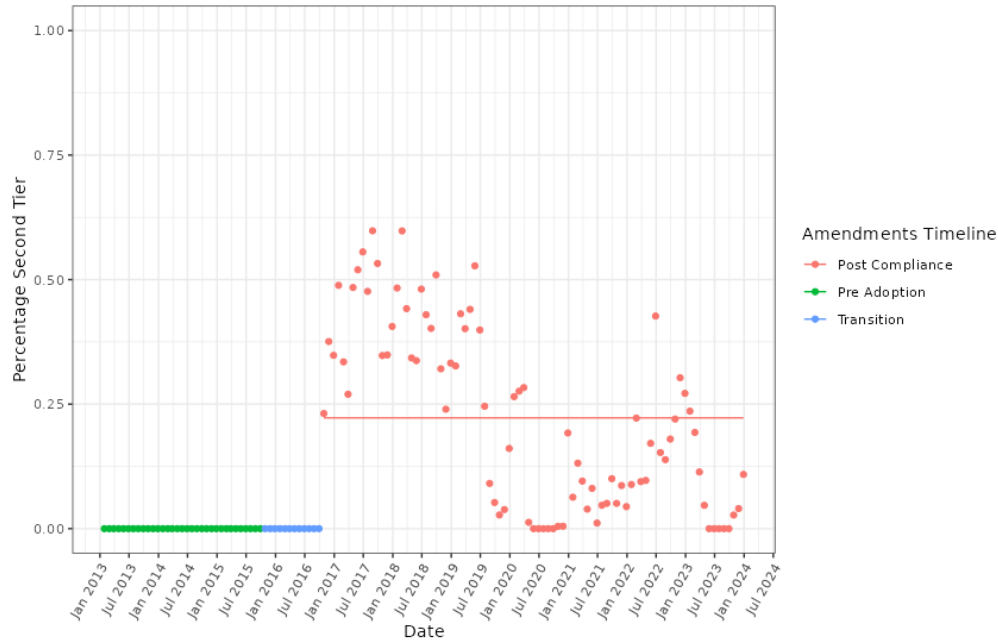


Figure 1.b) Each dot represents the percentage of prime MMFs' assets in the balanced sample held in second-tier securities, weighted by each fund's assets. The lines are a simple average of these values within each of the three periods.

Further analysis of the balanced sample reveals that these reporting increases are highly differentiated across funds.⁵² Certain funds, which we will label “switchers,” report NRSRO credit ratings for few or none of their holdings prior to the amendments, but do so for all or nearly all of their holdings following the amendments. Other funds, which we will label “low information” funds, consistently report few or no NRSRO ratings on Form N-MFP for their portfolio securities over the sample period. Lastly, two funds, termed “high information” funds, consistently report on Form N-MFP NRSRO ratings for most or all the securities in their portfolios over the sample period.⁵³ Figure 3 depicts self-reporting of NRSRO ratings for each of these categories over the sample period.

⁵² This analysis is done only for the balanced sample, as the full sample includes many funds without a sufficient Form N-MFP reporting history to infer categories based on this history. Out of 240 prime MMFs that are not included in the balanced sample, 210 have no Form N-MFP filings during the pre-adoption period, the compliance period, or the post-compliance period.

⁵³ “Low information” funds are defined as those that report NRSRO ratings for less than 1 percent of their portfolio by value over the sample period in the balanced sample; “high information” funds are those that

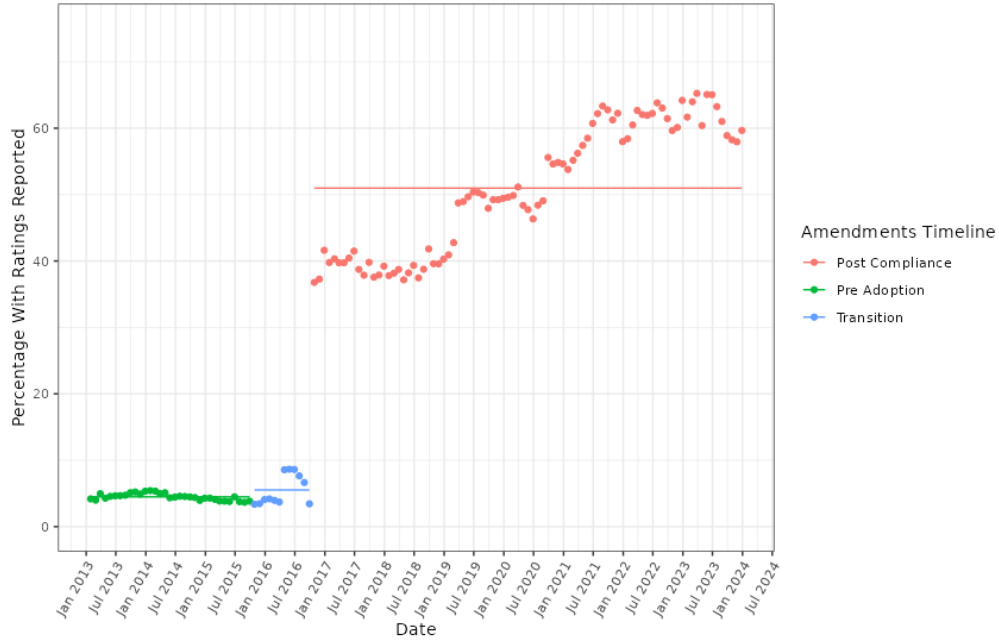


Figure 2.b) Each dot represents the value-weighted percentage of securities, for the full sample of prime MMFs, for which an NRSRO rating is reported on Form N-MFP. The lines are simple averages of these values within each period.

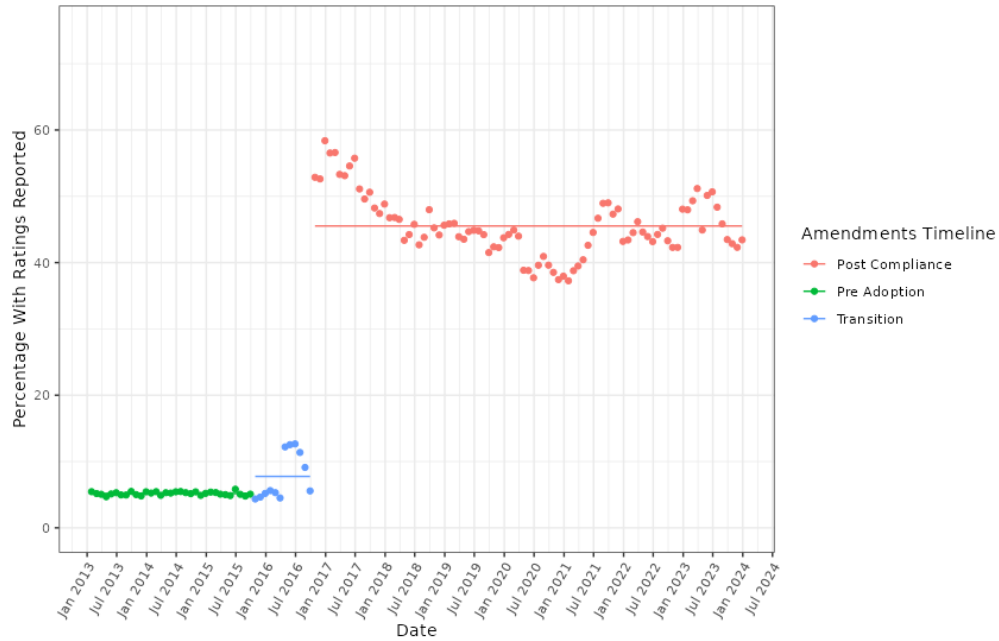


Figure 2.a) Each dot represents the value-weighted percentage of securities, for the balanced sample of prime MMFs, for which an NRSRO rating is reported on Form N-MFP. The lines are simple averages of these values within each period.

report NRSRO ratings for at least 99 percent of their portfolio by value over the sample period in the balanced sample; and “switchers” are defined as a residual category. These categories are not very sensitive to these cutoff values: the same categories would obtain if the “low information” cutoff was increased to 8 percent and the “high information” cutoff was decreased to 50 percent.

The decomposition of the balanced sample into these types indicates that most of the observed increase in second-tier holdings in the balanced sample is driven by those funds that do not report ratings prior to the compliance date.⁵⁴ Figure 4 demonstrates that, as expected, these “switcher” funds also report elevated holdings of second-tier securities relative to “high information” and “low information” funds. Additionally, the two “high information” funds exclusively hold first-tier securities. While we can infer that, based on their Form N-MFP filings, “high information” funds do not decrease the credit quality of their rated holdings following the compliance date, the same inference cannot be made for “switchers” – for the entire pre-

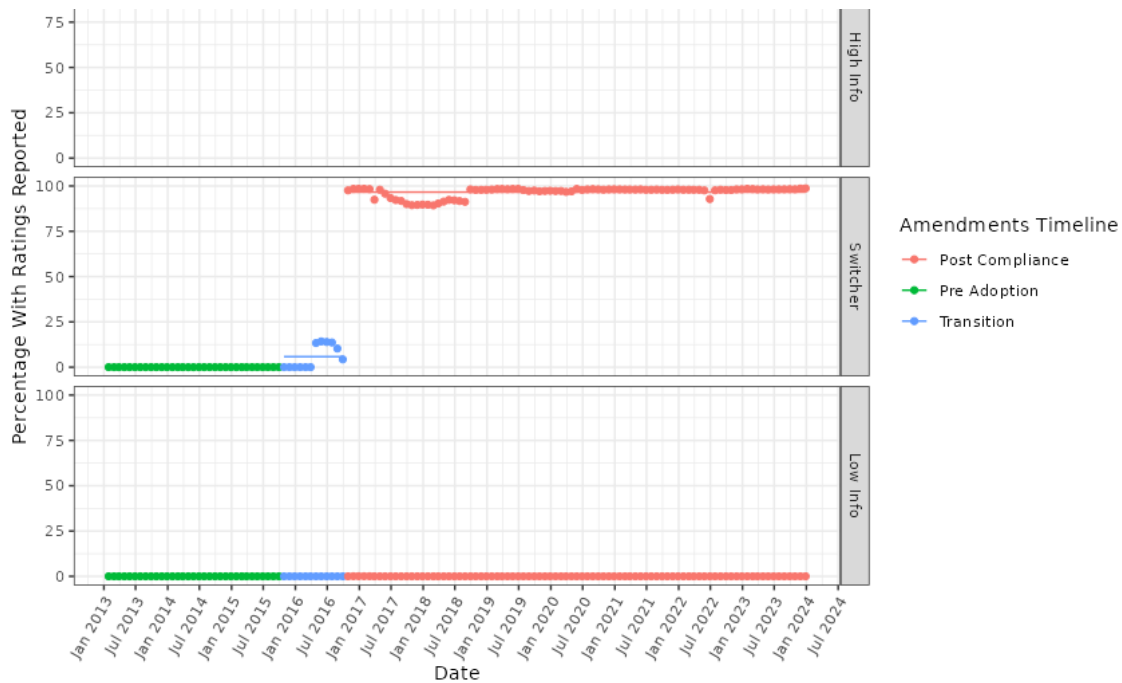


Figure 3) Prime MMFs are naturally classified into categories based on starkly different ratings reporting behavior. See *supra* footnote 5353. Each dot represents the value-weighted percentage of MMF assets for which NRSRO ratings are reported on Form N-MFP, grouped by these categories. The lines are simple averages of these values within each period.

⁵⁴ Of 41 funds in the balanced sample, 22 are “low information” funds. These funds do not report ratings for a meaningful fraction of their holdings and therefore do not contribute to the aggregate increase in reported second-tier securities. Of the remaining 19 funds in the balanced sample, only 2 are “high information” funds.

compliance period, these funds do not report ratings information for their holdings.⁵⁵ By definition, the credit quality of holdings is unobserved on Form N-MFP filings throughout the sample period for “low information” funds.

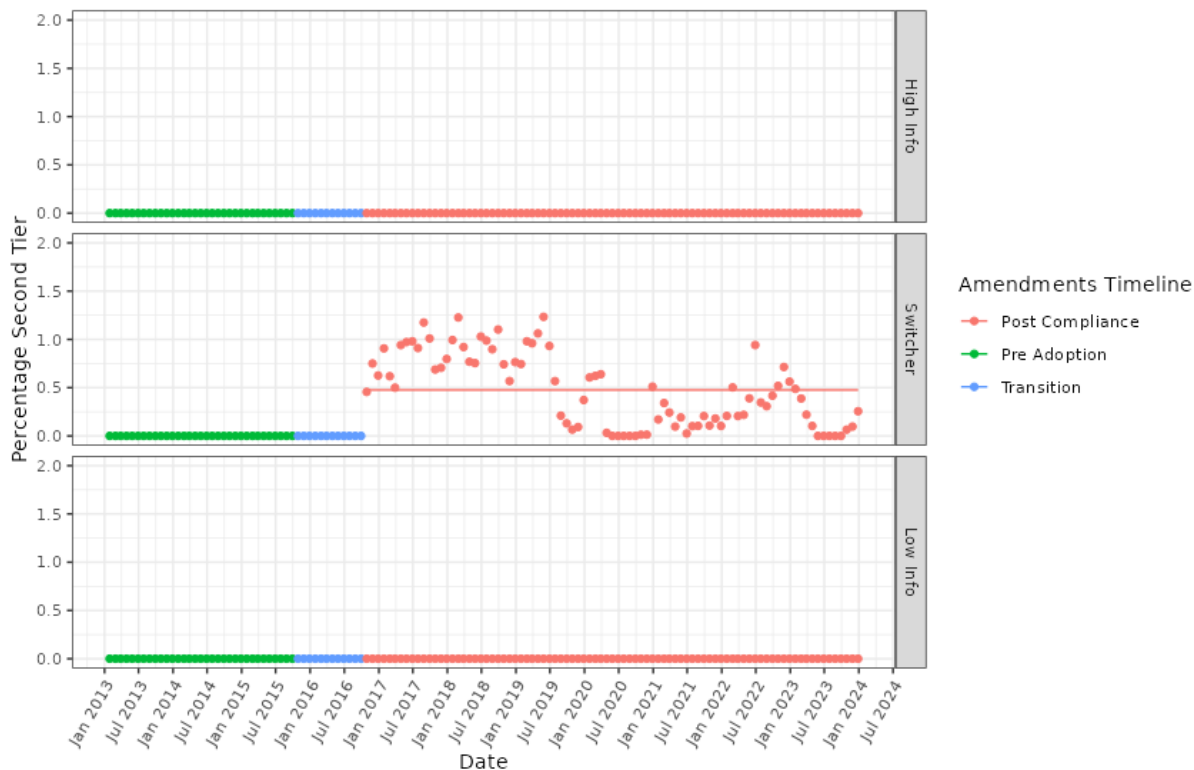


Figure 4) Each dot represents the value-weighted percentage of MMF assets that are held in securities identified as second-tier based on self-reported NRSRO ratings on Form N-MFP filings, grouped by the reporting category type. The lines are simple averages of these values within each period.

B. Rule 17g-7(b) Data: No Rise in Second-tier Percentage

To further assess whether the observed increases in second-tier holdings inferred from self-reported ratings on Form N-MFP reflect increased credit risk of prime MMF’s holdings

⁵⁵ While there is an increase in reporting of NRSRO ratings by “switchers” halfway through the compliance period, the rated percentage of holdings is below 20 percent on average. The percentage for which ratings are reported by these funds during the compliance period is unlikely to be selected at random, in which case it cannot be considered representative of their holdings.

following the compliance date, we utilize credit rating actions reported by NRSROs pursuant to rule 17g-7(b). To conduct this analysis, credit rating actions reported by NRSROs are merged with Form N-MFP holdings data using CUSIP identifiers for both the full sample of prime money market funds and the balanced sample. While the use of CUSIPs allows for MMF credit quality to be assessed using ratings reported by an entity external to the fund, it necessarily limits the analysis to a subset of funds' portfolios for which a CUSIP is available in both datasets on a given date. This limitation impedes the ability to draw conclusions about changes in the credit quality of portfolios. As the analysis using the matched samples and the analysis using Form N-MFP data alone are limited by data constraints, each should be viewed as providing complementary information on MMF portfolio credit quality over the sample period.

The time series of the aggregate percentage of second-tier securities is plotted in Figures 5.a and 5.b for the full and balanced samples, respectively. In contrast to Figures 1.a and 1.b, these plots indicate that the percentage of prime MMF portfolio value held in second-tier securities has held roughly constant or even declined (in the full sample) in the years following the compliance date. Both plots show a temporary increase in the percentage second-tier holdings around July 2018. However, unlike the increases in Figures 1.a and 1.b, the increases in Figures 5.a and 5.b do not align with the compliance date for the amendments and are followed by an offsetting decrease after approximately one year.

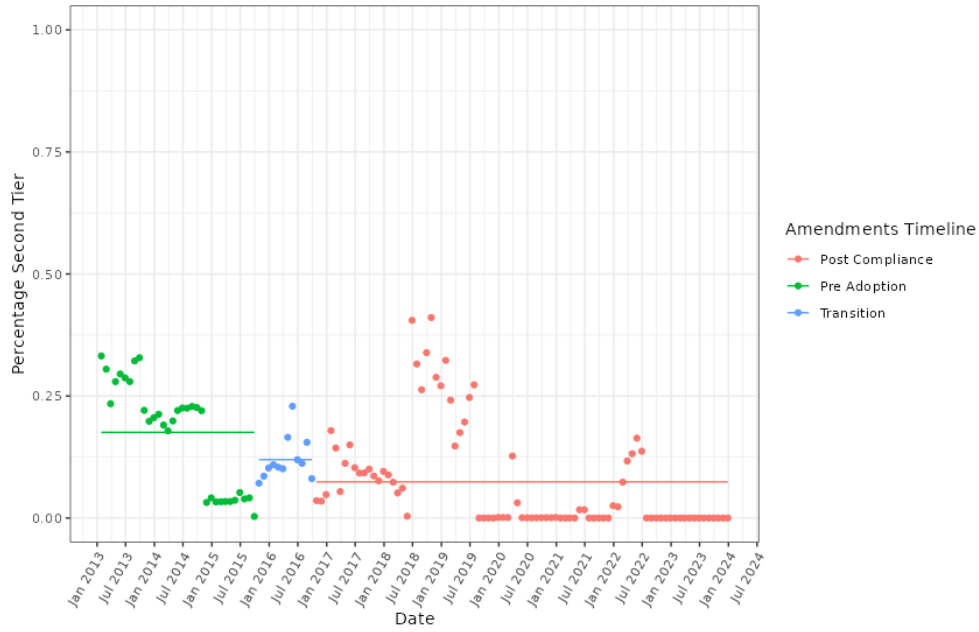


Figure 5.a) Each dot represents the value-weighted percentage of holdings that are identified as second-tier in the full sample where a CUSIP match is made with historical NRSRO ratings data. The lines are simple averages of these values within each period.

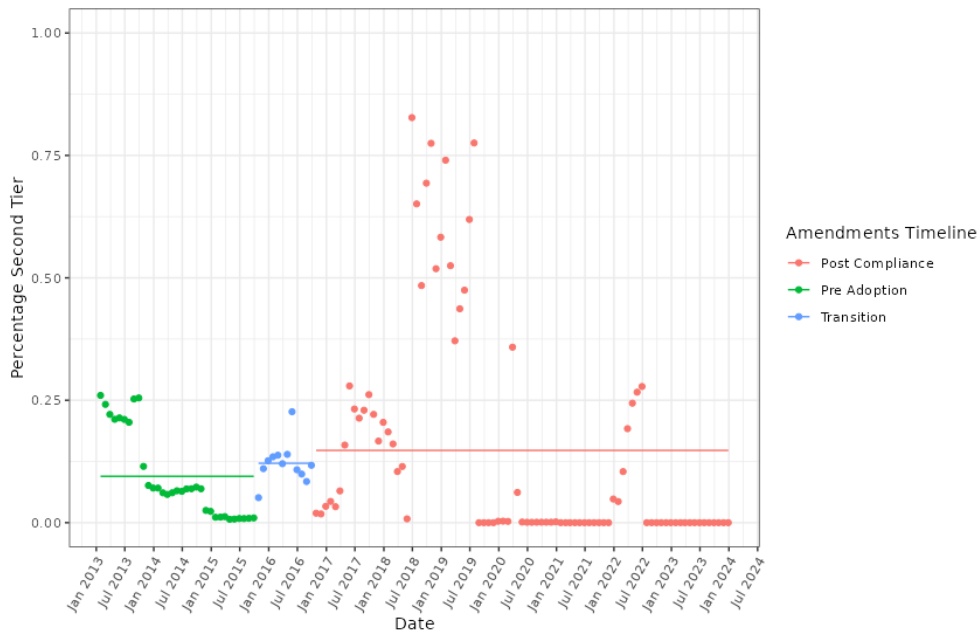


Figure 5.b) Each dot represents the value-weighted percentage of holdings that are identified as second-tier in the balanced sample where a CUSIP match is made with historical NRSRO ratings data. The lines are simple averages of these values within each period.

To further assess the credit quality of prime MMFs’ holdings before and after the amendments, a time series of the percentage of second-tier securities in the merged sample is constructed for each of the fund types defined in section V.A. This exercise allows portfolio credit qualities for the merged sample to be compared over time for “low information” funds and “switchers.”⁵⁶ These time series are plotted in Figure 6.

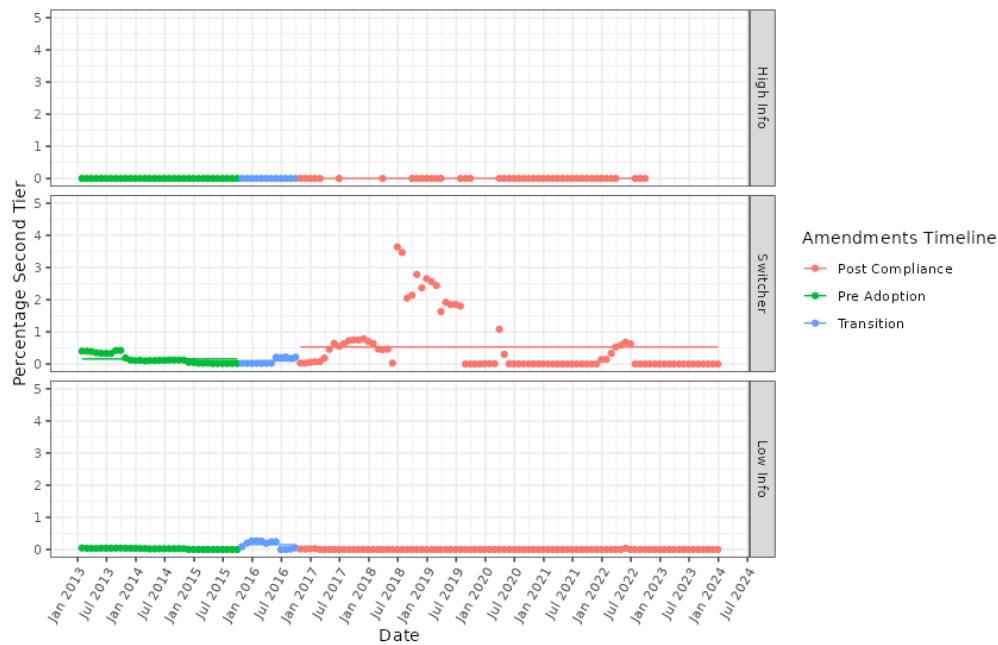


Figure 6) Each dot represents the value-weighted percentage of MMF assets that are held in securities identified as second-tier based on historical NRSRO ratings data, grouped by the reporting category type defined in Section V.A. The lines are simple averages of these values within each period.

Both “high information” and “low information” funds exhibit no increase in second-tier holdings at or following the compliance date. By contrast, second-tier percentage for “switcher” funds demonstrates a temporary increase around July 2018 mirroring the increase shown in the aggregate samples plotted in Figures 5.a and 5.b. While the cause of this increase is unclear, its timing and temporary nature are inconsistent with it being caused by the amendments, which had

⁵⁶ The definition of these types does not allow for comparison of their credit qualities over time using self-reported ratings alone. See *supra* Section V.A.

a compliance date of October 2016. However, to the degree the merged data is representative of “switcher” funds’ entire portfolios, the temporary increase suggests these funds held a percentage of second-tier holdings that would not have been permissible under rule 2a-7 prior to the amendments.⁵⁷ Notwithstanding this temporary increase, “switcher” funds hold a higher percentage of second-tier securities over the matched sample relative to the other fund types.

To the extent that the matched sample represents the portfolios for these fund types, these findings are unlikely to be the result of an insufficiently small sample size; for instance, Figure 7 shows that, for most of the sample period, around 10 percent of portfolio CUSIPs are matched with external NRSRO rating actions for “low information” funds. However, the variability of this match rate and occurrence of many consecutive observations where the second-tier percentage is 0 in Figures 5.a to 6 suggests the matched sample does not represent MMFs’ portfolio holdings as a whole.

⁵⁷ Specifically, the middle panel of Figure 6 has two months starting July 2018 with values above 3 percent.

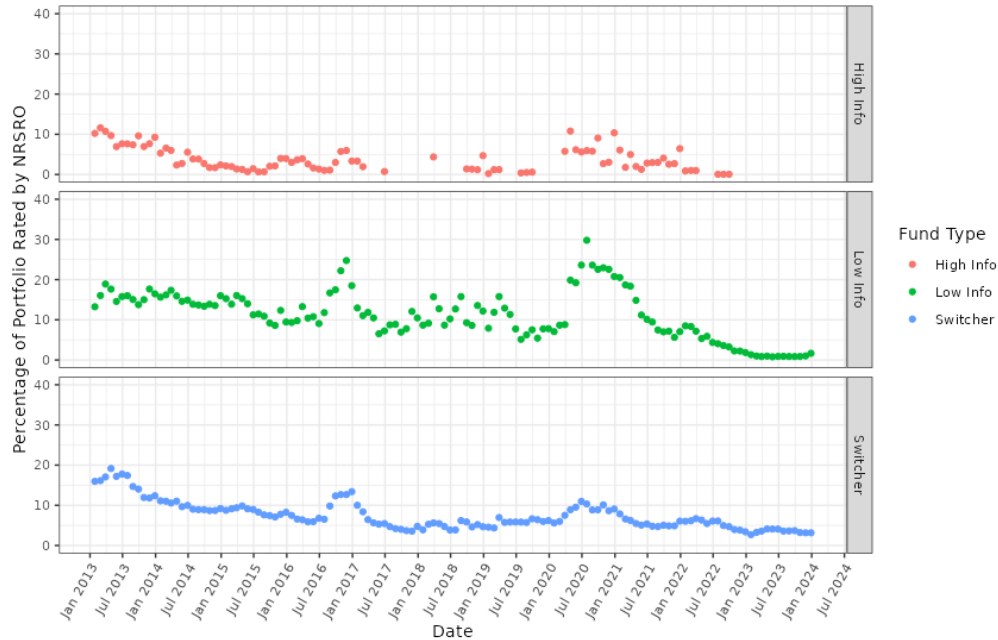


Figure 7) For each reporting category in the balanced sample, the value-weighted percentage of the portfolio for which a match is made with historical NRSRO ratings data is plotted over the sample period.

VI. Conclusion

The available evidence does not suggest that prime MMFs responded to the amendments by increasing the amount of credit risk in their portfolios. We presented evidence suggesting that the apparent increase, at the compliance deadline, in MMFs’ percentage of second-tier securities is likely an artifact of a sharp increase in reporting by funds holding higher levels of these securities. While these “switcher” funds do in fact increase their second-tier holdings later in the sample period, the timing and temporary nature of the increase are inconsistent with it being caused by the amendments. We therefore do not believe that the amendments had significant consequences for capital formation or investor protection related to credit quality of MMF portfolios.

However, neither of the data sources used in these analyses is likely to be representative of the universe of prime MMF holdings over the sample period. Ratings data obtained from Form N-MFP exhibit a sharp increase at the compliance date, with MMFs demonstrating clearly non-random reporting patterns.⁵⁸ While the historical NRSRO data do not have this issue, the low match rate and observed anomalies in the second-tier percentage in the merged sample suggest it is not a representative sample.⁵⁹ Accordingly, the results should be interpreted with caution.

⁵⁸ See *supra* Figures 2.a and 2.b.

⁵⁹ See *supra* Section V.B.