

How Safe Are Prime Money Market Funds? (And Are All Funds the Same?)

EXECUTIVE SUMMARY:

This update to our original whitepaper published in April 2006 seeks to answer two questions: 1) Are prime funds getting safer? 2) Are all prime funds alike?

The general risk profile of the large prime fund group has improved since our last publication. The average fund now has better liquidity, better credit quality and lower structural complexity. Weighted average maturity (WAM) risk, however, is on the rise.

There is wide dispersion among funds in each of the major risk categories. Investors can choose from various funds if they are concerned with certain risks.

INTRODUCTION

Since we published our whitepaper *How Safe Are Money Market Funds* in April 2006 which alerted readers to increased risk taking by major prime money funds, this class of funds has been the focus of heightened concern for institutional investors. Significant credit events that have affected money market funds include troubles with subprime mortgage issuers, the disintegration of structured investment vehicles (SIVs), widespread downgrades of AAA-rated bond guarantors, a seized-up short term credit market, and a mass exodus from prime funds in the days after the Reserve Primary Fund's net asset value (NAV) fell below the constant \$1.00 share price.

For this updated paper, we seek to answer how the risk behaviors of large prime money market funds have changed since the Reserve Primary event in September 2008; and how these behaviors differ from fund to fund. Based on empirical data from the fund industry and our own fundamental analysis, we hope this postmortem will help investors identify the evolving risk management necessities of prime money fund due diligence.

We should point out that this paper does not cover the cause and effect of the recent credit events, possible solutions, or pending Securities and Exchange Commission ("SEC") money fund regulations, which have been discussed in some of our earlier research papers and commentaries.

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RISK FRAMEWORK AND PEER GROUP DEFINITION

One positive outcome of the recent credit crisis is that investors are now paying more attention to risks in money market funds, a concept that was largely theoretical before the Reserve event. As with all fixed income investments, a typical prime fund portfolio takes risks in several categories including: interest rate, liquidity, credit, and structure. Additional non-portfolio related risks, such as sponsor and shareholder risks, will not be covered in this paper.

WAM: Interest rate risk refers to marked-to-market losses of portfolio holdings due to higher interest rates. This risk increases with the length of maturity in an investment, thus a major indicator of a portfolio's interest rate risk is the weighted average maturity (WAM) of its individual securities. We will use this indicator to gauge the behaviors of the fund group over time.

Liquidity: Thanks to the daily liquidity requirements on money funds, liquidity risk refers to a fund's ability to satisfy such requests without delay. The portion of a portfolio maturing overnight is a major indicator of liquidity risk. We approximate this risk based on a portfolio's holdings in repurchase agreements (repos) and overnight bank deposits. Maturities within seven days and holdings of U.S. Treasury securities also can be good indicators of liquidity strength. Note that selling securities to satisfy redemptions is not a reliable source of liquidity because of similar holdings by major fund groups and thus similar shareholder responses to market events.

Credit: Credit risk is generally easy to understand but difficult to quantify. It refers to the certainty of receiving principal and interest payments on time as promised. The SEC's Rule 2a-7 regulation on money market funds requires that all eligible investments be rated top tier (A-1/P-1/F1) by a major rating agency. However, almost all troubled money market securities in history, including Lehman Brothers, met these ratings requirements. Thus, one needs to look to more granular measures of risk, such as issuer diversification and concentration in financial issuers.

Structural Complexity: Perhaps the least understood but potentially most potent factor in causing problems for money funds is a fund's use of bonds with structural features. Examples of structurally complex securities may include asset-backed commercial paper (ABCP), floating rate notes (FRNs), and callable and extendible securities. Not all structured bonds cause problems, but because their behaviors are more difficult to observe and predict, structural risk is often simply overlooked.

Peer Group Definition: For our analysis, we use average group statistics of the 16 largest, triple-A rated, prime institutional funds, as they tend to be the most widely held and could be considered representative of all prime funds. Capital Advisors Group bases these 16 constituents on the combined "Top 15" rankings by asset size at iMoneyNet and Crane Data,

two major money market fund data providers, as of June 30, 2009. This group had a combined asset size of \$619 billion, representing 32% of all non-government money fund assets, and 53% of all prime institutional fund assets in the U.S. as of that date.¹ A list of these funds is located in the appendix.

TIME SERIES ANALYSIS – WHAT CHANGED AS A GROUP?

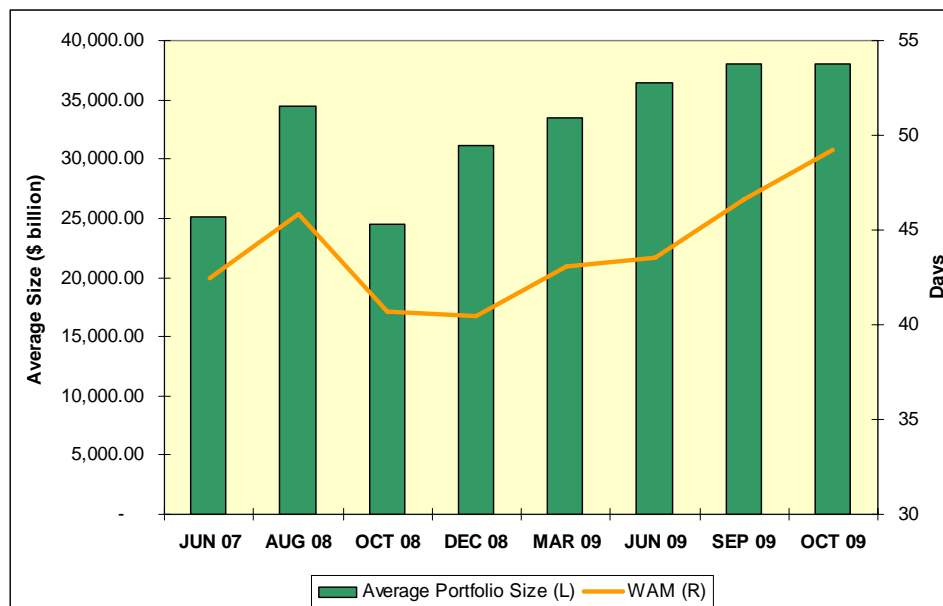
For purposes of illustration, we took snapshots of average portfolio data on the following dates: June 2007, representing the industry before the credit crisis; August 2008 and October 2008, before and after the Reserve event; quarterly data since then; and the most recent data as of 10/20/2009.

Interest Rate (WAM) Risk: As Figure 1 below indicates, the average portfolio maturity rose three days from 42.5 to 45.8 days between 2007 and August 2008, partly as the result of the Federal Reserve’s easing policy, taking the Federal funds rate from 5.25% to 2.00% during the period. Then, between August and October of 2008, WAM dropped 5.2 days reflecting the funds’ need to keep maturities short for emergency liquidity needs after the Reserve event.

There has been a gradual increase in WAM exposure throughout 2009 despite, or perhaps because of, the Federal Reserve’s policy in keeping the federal funds rate between 0% and 0.25%. At 49.3 days as of October 2009, the WAM risk is still relatively low. The increase of average WAM as displayed in Figure 1, deserves investor attention. To secure AAA fund ratings, a fund’s WAM must not exceed 60 days.

Key Thought: *The WAM risk in the average prime portfolio has increased in 2009 to surpass the pre-crisis level.*

Figure 1: Average WAM and Portfolio Size

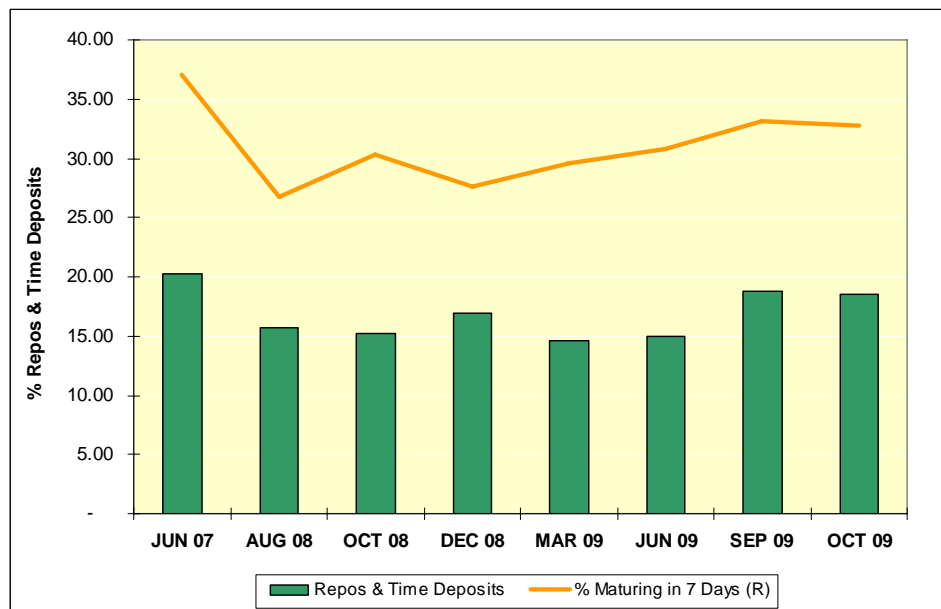


As a side note, average fund asset levels fell in the weeks immediately after the crisis. Levels have since recuperated and have edged out the pre-crisis asset level of \$34.5 billion to \$38.0 billion as of October 2009.

Liquidity Risk: For portfolio liquidity assessment, we are interested in the portion of the average portfolio convertible to cash in 1 and 7 days. Because of the lack of standardized reporting, we use the combined repo and time deposit positions as a proxy for overnight liquidity, as most of these mature overnight.

As Figure 2 below indicates, 1-day liquidity has been in a tight range between 15% and 20%, and there does not appear to be a discernable pattern over time. The 7-day liquidity line shows a noticeable drop *prior to* the Lehman crisis, indicating lower portfolio liquidity. Since then, the trend generally has been on an upward swing to levels above 30%, a common threshold that suggests adequate liquidity. Note that even though overnight liquidity has been relatively stable, its directional movements track closely to that of the 7-day line with a correlation coefficient of 0.76 (on a scale of -1.00 to 1.00). Both data series seem to satisfy the recent draft SEC liquidity rule of 15% overnight liquidity and 30% 7-day liquidity for institutional funds.

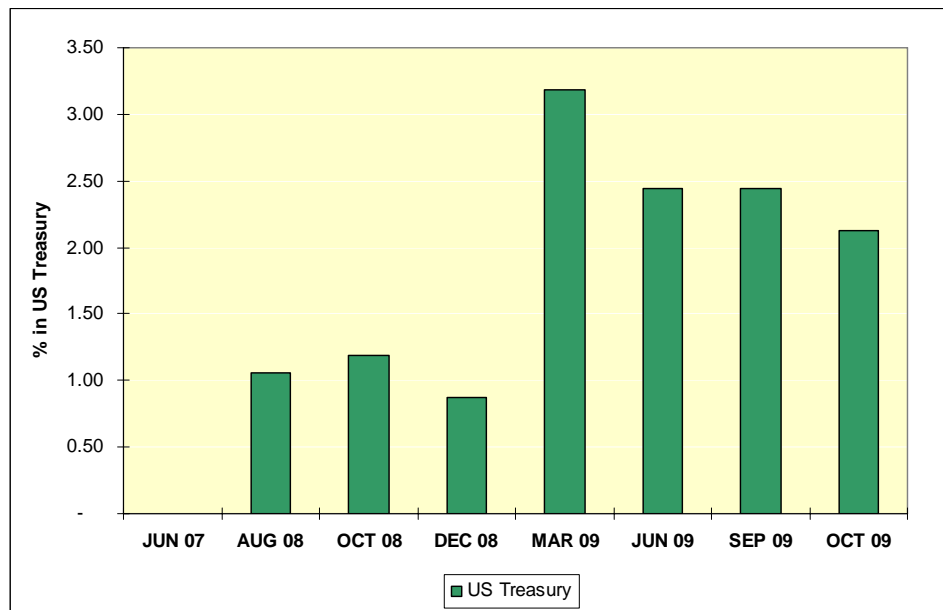
Figure 2: Average overnight and 7-Day Maturity



Key Thought: The average large prime fund has had adequate liquidity under normal market conditions. Since August 2008, the trend has been towards higher liquidity buffers.

Credit Risk: The challenge in a time-series study on aggregate credit risk is the lack of relevant information. None of the rated prime funds could invest in securities rated below A-1/P-1 so a trend study on credit ratings is not helpful. The only relevant group-level credit comparison is the increased use of U.S. Treasuries, as shown in Figure 3 below. Note that the overall allocation is still quite low.

Figure 3: Average Holdings in U.S. Treasury Securities

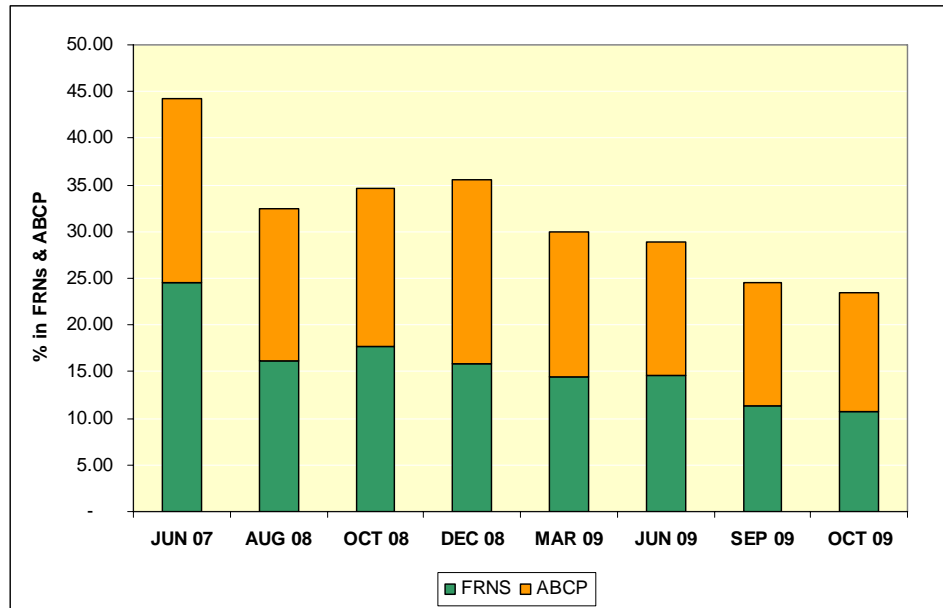


Structural Risk: Figure 4 on page 6 shows the combined exposure to FRNs and ABCP. FRNs refer to securities with long-term maturities (still within Rule 2a-7 limits) but with interest rates which are reset to short benchmark rates. The latter are generally special financing vehicles of various banks backed with collateral assets. Note that these are often legitimate money market investments of very high quality; however, their security selection and concentration decisions can have a significant impact on portfolio safety. Funds typically do not release summary information on callable and extendible securities, so statistics are not readily available.

As Figure 4 indicates, the use of both types of securities has been reduced as FRNs represented 25% of the average portfolio in June 2007, but only 11% in October 2009. Similarly, the use of ABCP dropped from 20% to 13% over the same span of time.

Key Thought: *Portfolio structural risk improved in general, although this risk is typically more difficult to quantify.*

Figure 4: Concentration in FRNs and ABCP



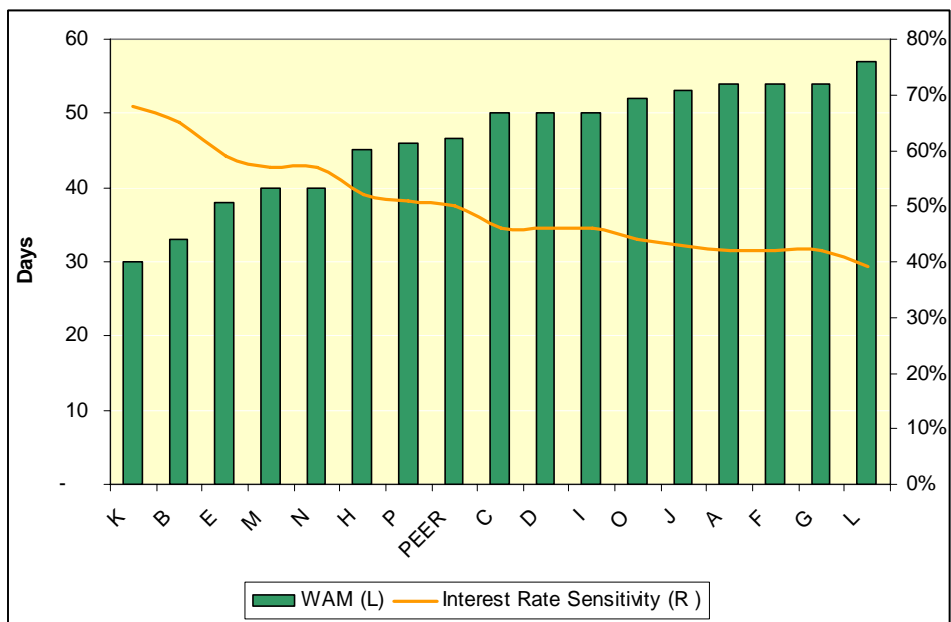
Conclusion: The general risk profile of the large prime fund group has improved since our last publication of *How Safe Are Money Market Funds*. The average fund now has better liquidity, better credit quality, and lower structural complexity. Higher interest rate sensitivity, as measured by portfolio WAM, is a factor that requires close monitoring, especially when a tightening interest rate cycle approaches.

CROSS SECTIONAL ANALYSIS – ARE ALL FUNDS ALIKE?

Having gained the knowledge of a reduced risk profile in the large prime fund group, we wanted to gain more insight into individual fund behaviors. With data collected on individual fund holdings on or near September 30, 2009, we evaluated the same four risk categories among CAG’s 16 money fund constituents. Note that specific fund names are not used in this presentation, instead names are replaced with an identifying letter, A-P.

Interest Rate Risk and Stress Testing: Figure 5 below shows that relative to the average WAM of 47 days, there is a spread of 27 days between individual WAMs ranging from 30 to 57 days. This divergence is startling, since the longest WAM is almost twice as long as the shortest. Our analysis of specific portfolios unveils an interesting relationship between WAM and portfolio credit quality: funds with a higher concentration in government issuers tend to be more aggressive with their WAMs. Conversely, funds with higher bank and commercial paper exposures tend to have shorter WAM.

Figure 5: Portfolio WAM & Interest Rate Sensitivity



With this WAM distribution, we performed a stress test of the portfolios’ interest rate sensitivity by assuming an instant 2.00% increase in interest rates across the yield curve. We further assumed that the funds allow redemptions at 100 cents on the dollar despite the unrealized losses from higher interest rates, thereby trapping proportionally larger losses to remaining shareholders. The resulting sensitivity figure represents the percentage of a fund redeemed at which its marked-to-market NAV falls to 99.49 cents and thus breaking the dollar.

The line graph in Figure 5 provides the test results. As can be expected, it is almost a mirror image of the bar graph in that funds with lower WAMs can withstand much larger shareholder

redemptions before the NAV is at risk. Note that even the worst fund in this category will need to lose 39% of its assets to cause an NAV to break.

Key Thought: Divergence is apparent in the funds’ different appetites for WAM risk. However, WAM does not appear to be a major contributor of risk today.

SWAM Risk and Stress Testing: Looks can be deceiving. Current regulations allow funds to use interest rate reset dates of FRNs to compute WAM, instead of their stated maturity dates. In addition to misstating expected portfolio liquidity, WAM fails to account for the fact that risky assets of longer maturities tend to lose more value (yields rising higher) than shorter ones in a credit event, all else being equal. To compensate for this risk, a spread WAM (SWAM), or weighted average final maturity (WAFM), was introduced by the industry and adopted by the SEC in its draft rule that, when measured with individual securities’ stated maturity dates, the SWAM must not exceed 120 days.

Figure 6: Sensitivity to Interest Rate Risk

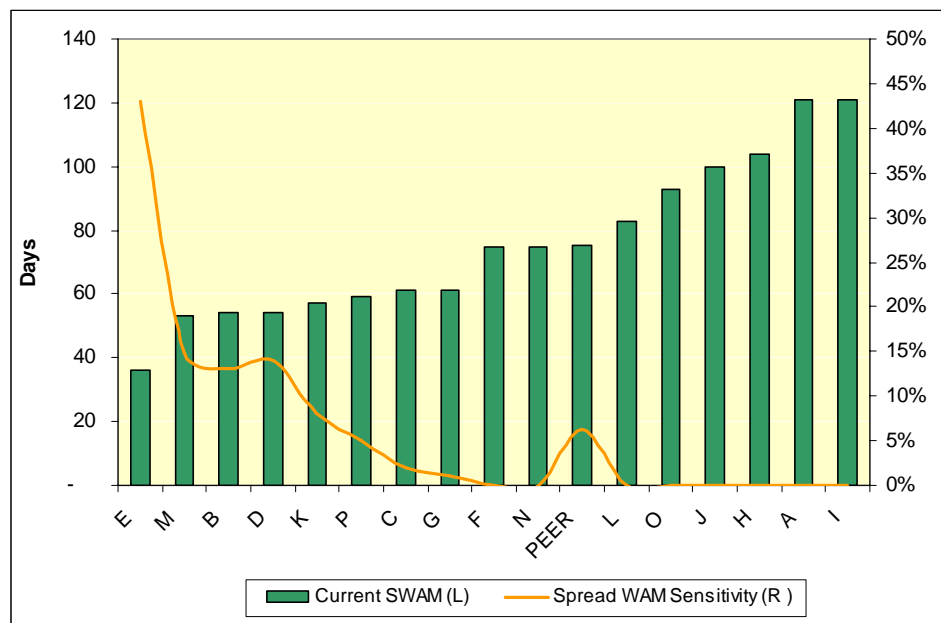


Figure 6 shows the SWAM distribution based on our calculations of public holdings reports. We assigned a SWAM of 121 days to two funds that failed to produce maturity information on their month-end holdings.

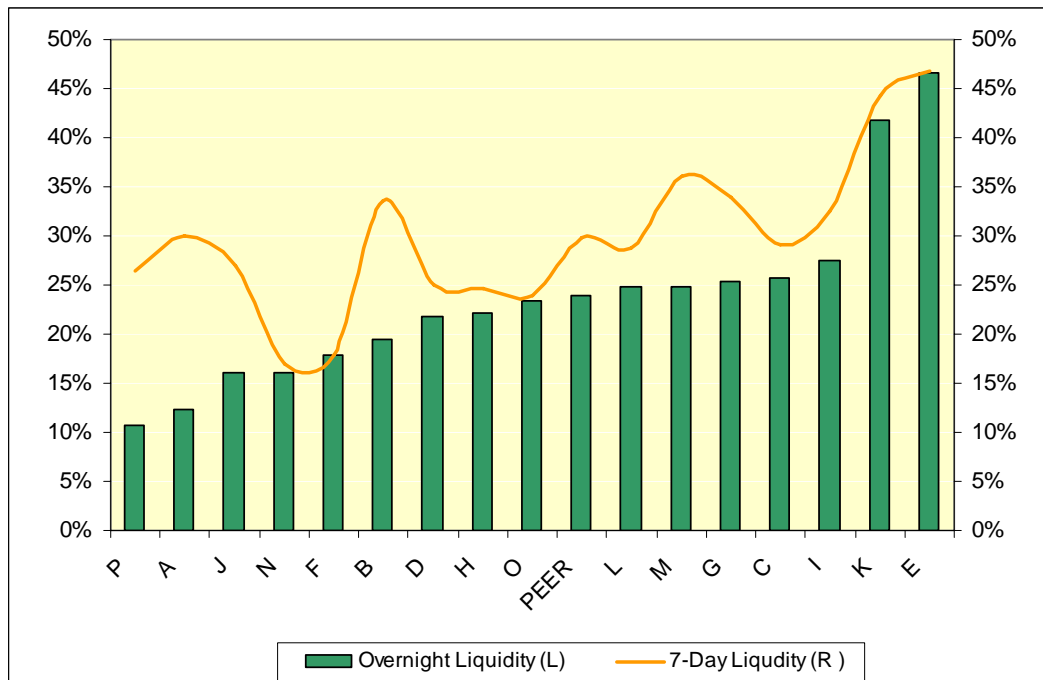
Our SWAM stress test assumes a steepening credit curve, meaning that we hold rates on overnight securities and Treasury securities the same but assign progressively higher rate increases by maturity to other investments by up to 3.00% for a 12-month bond. The result, as presented in the line graph in Figure 6, provides a stark contrast to the previous graph. 8 of the 16 funds would see their NAV drop to 99.49 cents or below in our scenario without external

support. On the other end of the spectrum, Fund E can tolerate losing 43% of its assets before its NAV is at risk.

Key Thought: Most funds are managing their SWAM inside of the SEC draft rule, but maturity structures will not protect some funds from breaking the dollar in a severe credit downturn.

Liquidity Risk: According to our own calculations, the group’s overnight and 7-day liquidity positions are 24% and 30% respectively. The majority of the funds keep roughly 25% overnight liquidity positions, but individual positions span between 11% and 47%. Seven-day liquidity seems to be more volatile from fund to fund, with a peak-to-trough difference of roughly 20%.

Figure 7: Overnight and 7-Day Liquidity

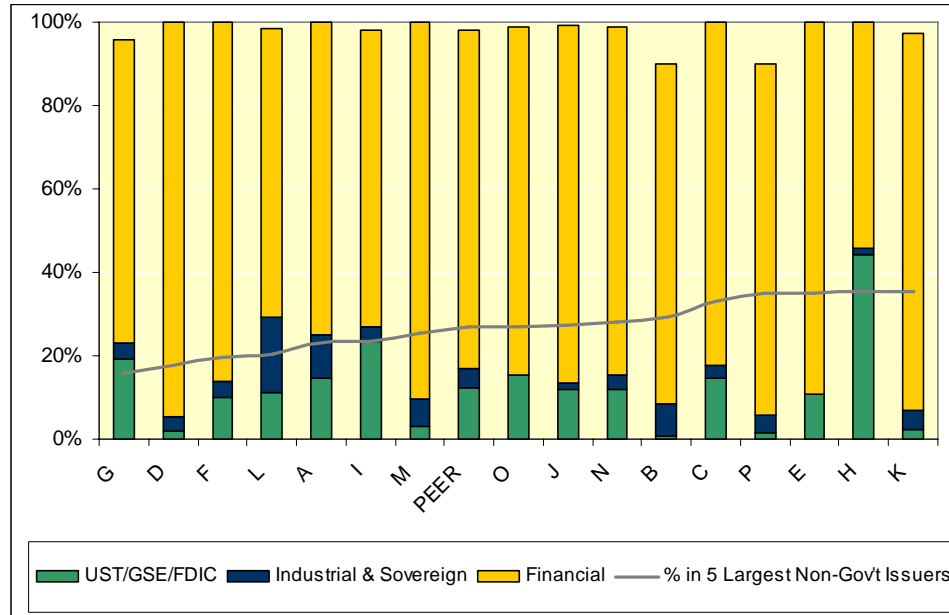


Key Thought: All 16 funds meet the draft SEC rule of 10% 1-day liquidity. Given market uncertainty and lingering credit concerns, some funds lag their peers in reserving for contingent liquidity.

Credit Risk: For credit risk analysis, we were interested in the funds’ diversification away from financial institution debt to include U.S. Treasury, Agency and FDIC-guaranteed debt as well as industrial debt and/or debt supported by high-grade sovereign entities. Within financial debt, we were interested in the aggregate issuer exposures, defined as the ultimate credit support entities for bank certificates of deposits, commercial paper, asset-backed securities, repurchase agreements, and municipal debt supported by bank lines of credit and so on. All of these characteristics need to be analyzed on a security by security basis before combined to form the aggregate exposure.

A cursory look at Figure 8 confirms a well-known fact that prime funds are essentially lenders of short-term credit to financial institutions. The funds on average lend 81% (dispersion: 54% to 91%) of their portfolios to financial institutions. These include 4% in U.S. banks, 52% in non-U.S. banks and foreign branches of U.S. banks, 11% in repos, and 13% in ABCP. The graph also shows several funds improved their risk diversification by investing in higher percentages of U.S. agencies and industrial debt.

Figure 8: Credit Risk Concentration and Diversification



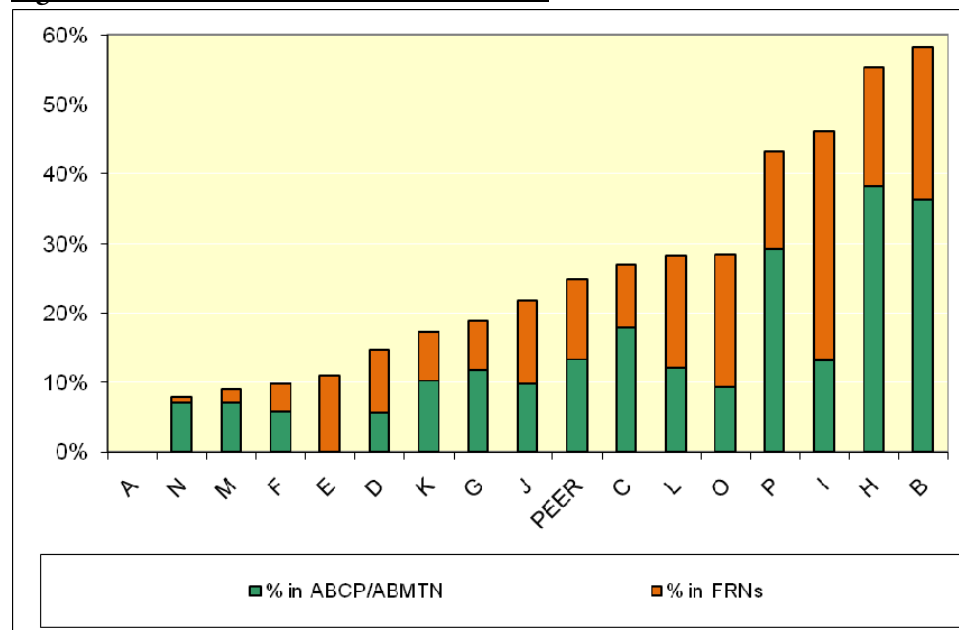
The line graph also shows our calculations of each fund’s aggregate issuer exposure to Top 5 non-government issuers. With a group mean of 27%, concentration risk ranges between 15.9% for Fund G to 35.3% for Fund K. For funds that rank high (for example >20%) on this test, concentration comes from funds purchasing from multiple affiliated entities of the same “economic” issuers.

Key Thought: *The typical prime fund remains a weathervane for financial institution risk, although some funds have reduced their exposure significantly. Large single name exposure may be a source of concern for some funds.*

Structural Risk: Figure 9 below shows the cross-sectional combined exposure to FRNs and ABCP. Note that this is an imperfect proxy of structural risk, as not all risks are captured by the use of the two instruments.

Earlier in Figure 4, we showed reduced exposure to FRNs and ABCP by the average fund since 2007. In Figure 9, we see that the shift in concentration clearly has been uneven. For example, 13% of the average fund is in ABCP, but funds B and H continue to keep more than one third of their portfolios there. At the other end of the spectrum, Fund A and Fund E avoid ABCP altogether. Similarly, compared to the average fund that invests 11% in FRNs, Fund I has one third of its portfolio in it, while fund A has none.

Figure 9: Concentration in FRNs and ABCP



Key Thought: For investors concerned with structural risk, there are choices available as portfolio strategies differ greatly among peers.

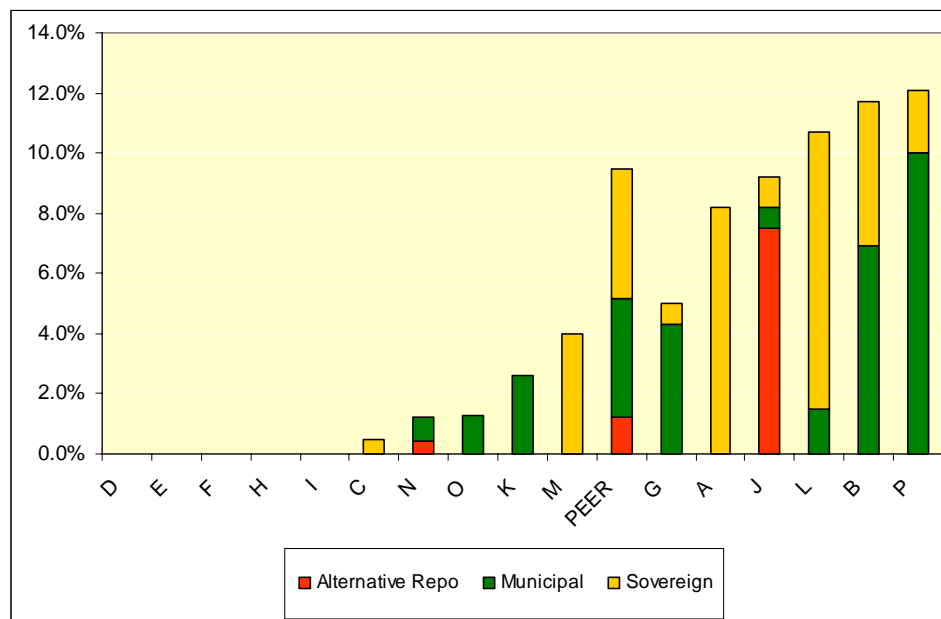
Alternative Investments – Muni, Repo and Sovereign Exposures: The last noticeable difference we detect is that, compared to the cookie cutter styles before the crisis, more funds are leaving the pack and pursuing their niche investment opportunities, either for risk management or for yield enhancement. Examples of these are highlighted in investments in municipal securities, alternative repurchase agreements and foreign sovereign credits. Figure 10 below indicates that some funds devote 10% or more of their portfolios to these alternative investments.

Alternative repos refer to non-overnight repurchase agreements, or repos backed by non-government collateral. Since disclosures on repo policies are universally inadequate in our opinion, alternative repos present additional liquidity and credit risk.

Municipal securities in prime funds, either taxable or tax-exempt, are generally long-maturity floating rate securities with short-dated guarantees (generally 7 days) from financial institutions that qualify them as money market eligible securities. These bonds can be worthwhile risk diversifiers, but a major source of risk remains to be the banks that provide the guarantees. We note that not all funds disclose the identity of supporting banks, making credit assessment more difficult for the fund investor.

In response to the recent credit crisis, significant amounts of non-U.S. sovereign debt, either from national governments or guaranteed bank debt in their jurisdictions, became available to money funds. Some funds also bought debt from international organizations, such as the World Bank, where national governments are shareholders and sometimes debt guarantors. These new investments introduce a new dimension of sovereign risk and liquidity risk.

Figure 10: Alternative Investments



Key Thought: *Alternative investments may be beneficial in risk diversification and yield enhancement. They also could become sources of risk if not managed appropriately.*

CONCLUSION

In summary, our time-series study shows that liquidity has gotten better and structural risk has declined further in the typical large prime fund since our last study. Interest rate risk was lower immediately after the crisis, but is now on the upswing. Our cross-sectional analysis indicates that there is wide dispersion among funds in each of the four major risk categories. The use of alternative investments also has been uneven among funds. In short, clear delineation in risk profiles among large prime funds has been the most obvious discovery of our study.

With little doubt, the prime money fund industry is facing daunting challenges today. More regulatory scrutiny, near zero yield opportunities, and the shift in institutional investors' risk tolerance are but a few of the obstacles hindering the long-term health of this industry. We are confident that stable NAV and daily liquidity are very important fund features that will remain available to institutional investors. The real challenge to an average investor is to understand the risk dynamics of prime funds and to reward managers with sound risk management and a proven track record. The Reserve example shows that rewarding questionable risk management practices by chasing yield, ultimately hurts all parties involved.

Endnote:

¹ Peer group selection data comes from iMoneyNet's "Domestic MarketShare" and Crane Data's "Money Fund Intelligence XLS" reports as of June 30, 2009. Both services require subscription. All time-series sectional data comes from iMoneyNet's "Money Fund Analyzer" reporting system. Cross sectional data comes from CAG's compilation of individual funds' holdings lists on or near 9/30/09 on the funds' respective public websites. Additional aggregate industry information comes from Investment Company Institute's "Weekly Total Net Asset (TNA) and Number of Money Market Mutual funds" report available at <http://ici.org/research#statistics>.

APPENDIX - List of Covered Prime Funds

TICKER	RATING	NAME
N/A	AAA/Aaa	AIM STIT Liquid Assets - Institutional
TMPXX	AAA/Aaa	BlackRock TempFund - Institutional
NRXX	AAA/Aaa	Columbia MM Reserves - Institutional
DICXX	AAA/Aaa	Dreyfus Cash Management - Institutional Shares
ICAXX	AAA/Aaa	DWS MM Series - Institutional
POIXX	AAA/Aaa	Federated Prime Obligations - Institutional Shares
FIPXX	AAA/Aaa	Fidelity Institutional Prime Money Market Portfolio
FPZXX	AAA/Aaa	First American Prime Obligations Class Z
FPOXX	AAA/Aaa	Goldman Sachs Financial Square Prime Obligations - Institutional
HSIXX	AAA/Aaa	HSBC Investor Prime Money Market - Institutional
JINXX	AAA/Aaa	JPMorgan Prime Money Market Institutional
MPFXX	AAA/Aaa	Morgan Stanley Institutional Liquid Prime Fund
SVPXX	AAA/Aaa	SSGA Prime Money Market Fund
SELXX	AAA/Aaa	UBS Select Prime Money Market - Institutional
PIIXX	AAA/Aaa	Wells Fargo Advantage Prime Investor MM - Institutional
CFRXX	AAA/Aaa	Western Asset Citi Institutional Cash Reserve

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