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Federated
WORLD-CLASS INVESTMENT MANAGER®

December 2, 2010

Mr. David A. Stawick
Secretary of the Commission
Commodity Futures Trading Commission
Three Lafayette Centre
1155 21st Street, N.W.
Washington, D.C. 20581

COMMENT

Re: RIN 3038-AC15—Proposed Rulemaking Regarding Investment of Customer Funds under Regulation 1.25 (the “Proposed Rulemaking”)

Dear Mr. Stawick:

This letter will serve as a supplement to the comments submitted by Federated Investors, Inc. and its subsidiaries (“Federated”) on the Commission’s Proposed Rulemaking dated November 30, 2010, and sent by overnight service for delivery on December 1, 2010. In the Commission’s request for comments in the Federal Register, Vol. 75, No. 212, dated November 3, 2010, page 67649, section entitled “C. Money Market Mutual Funds,” fourth paragraph, is the following language:

The Commission requests comment on whether MMMF investments should be limited to Treasury MMMFs, or to those MMMFs⁶⁵ that have portfolios consisting only of permitted investments under Regulation 1.25.

⁶⁵ A “Treasuries fund” must have at least 80 percent of its assets invested in U.S. treasuries at all times, as required by 17 CFR 270.35d-1.

In response to that specific request, kindly refer to the enclosed piece entitled *Eligible Securities for Customer Segregated Accounts*, which was commissioned by Federated and prepared by John F. O. Bilson, professor of finance at the Illinois Institute of Technology in Chicago, in which Professor Bilson compares the risks associated with owning a money market mutual fund consisting exclusively of Treasury bills with a so-called Prime fund consisting of commercial paper and similar securities. On page 41, Professor Bilson concludes that:

... Treasury bonds held in customer segregated accounts embody a higher degree of market risk than money market deposits. The statistical results reported in this paper demonstrate that Treasury only funds generally have higher risk than Prime money market

funds. This may be due to insufficient diversification or maturity mismatching. In either case, an investor in a Treasury only fund will typically face a wider range of possible outcomes at the one year horizon than an identical investor in a Prime money market fund.

Based on the foregoing, we would be opposed to the Commission's proposal to limit eligible money market mutual funds to those whose portfolio securities consist of 80 percent of its assets being invested in U.S. treasuries at all times.

Sincerely,



Eugene F. Maloney
Executive Vice President and
Corporate Counsel

lmc

Enclosure *Eligible Securities for
Customer Segregated Accounts*

cc w/enc.:

Ananda Radhakrishnan, Director
Division of Clearing and Intermediary Oversight
Commodity Futures Trading Commission
Three Lafayette Centre
1155 21st Street, N.W.
Washington, D.C. 20581

Eligible Securities for Customer Segregated Accounts

John F. O. Bilson*

Bank versus Money Market Fund
Treasury yields - risk?

Credit Quality Comparison

15C3-3

Designated Fund

AAA

Summary

The U.S. Congress and the Securities and Exchange Commission (SEC) are reviewing regulations pertaining to eligible securities held in customer segregated accounts by SEC regulated broker/dealers. The primary issue to be addressed concerns the eligibility of highly rated, non-Treasury, money market funds as eligible securities. Given the highly competitive nature of the capital markets, both within the U.S. and internationally, regulations which limit competitiveness can have a major impact on the size and growth of the regulated market. In this paper, I demonstrate that prime money market funds offer higher returns and less risk than either Treasury securities or bank deposits, the two currently eligible asset classes. On the basis of this evidence, I conclude that the current regulations inhibit market efficiency in SEC regulated markets relative to other markets both in the U.S. and abroad and that the prohibition on the use of prime money market funds for customer segregated accounts should be lifted.

*John F. O. Wilson is a professor of finance at the Illinois Institute of Technology in Chicago. He is the director of the IIT masters programs in finance and mathematical finance, and is the associate director of the doctoral program in management science. Professor Wilson has previously served on the faculties of Northwestern University and the University of Chicago.

The "financial responsibility rules" of the Securities Exchange Act of 1934 embody two important provisions. The first, referred to as the "customer protection rule," requires that the funds of customers of SEC regulated broker/dealers be segregated in special reserve accounts that are independent of the assets of the broker/dealer. The customer protection rule ensures that the bankruptcy or default of the broker/dealer does not impair the customer's access to his or her segregated funds. The concept of customer segregated funds is widely accepted as beneficial to customers interests and has been adopted by other regulatory authorities both in the United States and abroad. The second feature of the financial responsibility rules is that customer segregated funds be held in either bank deposits or Treasury Securities. While this provision may have been adequate when the rules were written, they fail to recognize the developments in capital market products that have occurred since the rules were introduced. In particular, the development of money market mutual funds has provided an alternative instrument for customer segregated funds which is, in many ways, superior to the original menu of assets in terms of returns, risk, and liquidity.

In recognition of these developments, members of the broker/dealer and investment management communities have proposed revising the financial responsibility rules in order to allow broker/dealers to use AAA rated money market funds in the following ways:¹

- i. As "qualified securities" that are eligible for deposit in the Special Reserve Account under Rule 15c3-3.
- ii. As collateral for fully-paid or excess margin securities under Rule 15c3-3.
- iii. As capital eligible to receive a zero per cent haircut under Rule 15c3-1, and
- iv. As securities eligible to be held in a separate or escrow account in accordance with Rule 15c2-4.

In response to this petition, the SEC has suggested that it would be prepared to consider revising the menu of eligible securities to include "Treasury-only" money market funds. The issue, therefore, that will be addressed in this paper is whether the restriction to "Treasury-only" money market funds is harmful to the market relative to a restriction to AAA rated (or "Prime") money market funds. For the purpose of the future discussion, the acronym TMMF will be used to denote Treasury

¹ See Federated Rule Petition, submitted to Ms. Nancy M. Morris, Secretary, SEC, May 1, 2007.

only funds and the acronym PMMF will be used to denote AAA prime money market funds. There are three primary ways in which TMMF accounts may be less desirable than PMMF funds:

- i. TMMF funds will generally offer a lower total rate of return on capital. This is not due to the lower risk of these funds, but because of the regulatory demand for Treasury securities by banks and other financial entities.
- ii. TMMF funds may be riskier than PMMF funds because their restricted menu of constituent securities offers less room for diversification, and because the average maturity of TMMF accounts may be longer than the average maturity of PMMF funds.
- iii. TMMF funds may face higher operational risks because of the need to buy and sell a limited list of Treasury securities.

While these points have been made in several petitions to the Commission, there has been relatively little empirical evidence to support the conjectures offered by the petitioners. The objective of this paper is to draw upon recent academic research that indicates that the total return on Treasury securities is typically below the total return on comparable 'risk-free' assets. This research has been based upon a comparison of corporate bond yields insured against credit risk using credit derivatives with Treasury securities of comparable maturity. While these studies offer convincing evidence of a Treasury premium in price, and subsequently discount in yield, at longer maturities, they do not address the question as it pertains to the short end of the maturity spectrum. In order to do so, this paper will examine the performance of a large number of PMMF and TMMF funds over the period from 1997 to 2007 (ytd.) Our findings support the academic studies in their conclusion of a Treasury yield and total return discount, and we also find that TMMF funds are generally riskier than the PMMF equivalents. This study is based upon a statistical survey of total returns by Crane Data, LLC, publisher of Money Fund Intelligence, and is used with the permission of the publishers.²

The finding that TMMF funds are riskier than PMMF funds is counterintuitive since Treasury securities are generally considered to be default free. The absence of credit risk, however, does not mitigate exposure to market risk. An investor who requires money in six month's time takes a risk when he invests in three month Treasury bills, since the yield on the Treasury bills could fall in three

² See <http://www.cranedata.us>

months time for the second leg of the investment. Similarly, an investor requiring money in three months time will take a risk if she invests in a six month Treasury bill, since an increase in interest rates will lower the value of the bill when it is liquidated. At the mutual fund level, TMMF funds invest in Treasury securities with a variety of maturities. Depending upon the investors time horizon, the average maturity of the fund may or may not be at the lowest risk point for the investor. In this study, we assume a one year time horizon for the investor and we measure risk using the distribution of returns for all funds at that horizon. We find that TMMF funds are typically more risky than PMMF funds at this horizon. In other words, an investor with a one year horizon would face a wide range of possible investment outcomes with regard to the total return on capital if he invested in a randomly selected TMMF fund rather than a randomly selected PMMF fund.

The topic that we will address in this paper – eligible securities for customer segregated accounts - may be considered as a minor skirmish in the battle for reform of the financial system. However, in the highly competitive world of global capital markets, even minor regulatory burdens may be sufficient to shift customers to a more friendly environment. A good example is the reaction to Regulation Q in the 1960's. Regulation Q was a Federal Reserve regulation that placed a limit on interest paid on bank deposits. Demand deposits were required to pay no interest and the interest on time deposits was restricted to be less than 1%. As market interest rates rose, the cost of these restrictions became increasingly onerous. Investors shifted their assets to a less restrictive regulatory environment in the United States, giving rise to the money market fund industry regulated by the SEC, and to dollar denominated foreign bank deposits in London and other offshore financial centers.

This situation is very similar to the current environment. As explained in more detail below, an SEC rule requires that customer segregated funds be held in bank deposits or U.S.-backed securities, such as U.S. Treasury securities.. These asset classes are more risky, in the case of bank deposits, and lower yielding, in the case of Treasuries, than alternatives like money market mutual funds. Furthermore, there is an alternative regulatory environment, in this case the CFTC, that does allow customer segregated funds to be invested in money market funds³, and foreign regulatory authorities in London permit an even wider menu of instruments. The problem with this situation is that

³ Section 5(d)(2) of the Commodity Exchange Act and Rule 1.25 thereunder.

an increase in the spread between the SEC permitted securities and the alternatives could induce a wave of substitution from the SEC regulated environment to the alternatives. It is a simple fact that most common investment strategies can now be implemented through futures and options markets, foreign markets, and electronic markets, in addition to traditional exchanges. This means that the primary difference between the alternatives is the regulatory environment, and that the failure of the authorities to create a competitive, as well as fair, environment has the potential to cause significant damage to U.S. equity markets. While the purpose of the customer protection rules is to ensure that customer funds are held in secure and stable instruments, the fact, which is documented in this study, is that alternative instruments like money market funds are superior in terms of both risk and return. Consequently, the SEC rules are penalizing American investors with offering any compensating benefit.

The situation is currently being addressed through two important initiatives. The SEC itself is proposing changes to the financial responsibility rules that would somewhat expand the menu of assets available for customer segregated funds.⁴ For reasons that will be explained below, the SEC's proposed changes do not meet the needs of the marketplace, and do not promote an integrated regulatory environment in the United States. In addition, Congressman Gregory Meeks (D-NY) has sponsored legislation to require the SEC to revise the rules to provide for comparable treatment and expanded use of qualified money market funds for broker-dealer financing.⁵ The objectives of this paper are to:

- i. explain the rationale for these initiatives;
- ii. examine how the implementation of the revisions to the SEC rule would affect the competitive structure of the U.S. financial services business; and
- iii. demonstrate that there is a clear and economically significant difference between Treasury-only and Prime (AAAm) money market funds.

⁴ Release 34-55431 (March 9, 2007) 72 Fr 12862 (March 19, 2007)

⁵ HR 1171: Money Market Fund Parity Act of 2007, 110th Congress, 1st Sess. Congressman Meeks introduced the legislation on February 16, 2007.

The Customer Protection Rule

Rule 15c3-3 under the Securities Exchange Act establishes a set of requirements for protecting customers' funds and securities. To protect customers' cash⁶

- Every broker or dealer shall maintain with a bank or banks at all times when deposits are required or hereinafter specified a "Special Reserve Bank Account for the Exclusive Benefit of Customers", and it shall be separate from any other bank account of the broker or dealer.
- Such broker or dealer shall at all times maintain in such Reserve Bank Account, through deposits made therein, cash and/or qualified securities in an amount not less than the amount computed in accordance with the formula set forth in Rule 15c3-3a.

The first part of the rule requires that the broker-dealer hold separately or segregate customer funds from the assets of the broker-dealer. The segregation requirement is clearly beneficial to the customers and it has been adopted by all modern regulatory authorities both in the United States and in other developed countries. The main advantage of the segregation requirement is that customer funds would not be affected by the bankruptcy of the broker-dealer. In the 2005 bankruptcy of Refco, Inc., customer segregated funds held in the United States were rapidly transferred to alternative solvent dealers. In contrast, customers funds held in some offshore subsidiaries of the firm were treated as general liabilities of the corporation and were held back from customers for a number of years. The offshore customers suffered a significant financial loss in the eventual settlement.

The second section of the Rule specifies how the broker-dealer is to calculate the amount that it must deposit in the Reserve Bank Account. According to the SEC:

Under the formula, the broker-dealer adds up various credit and debit line items. The credit items include cash balances in customer accounts and funds obtained through the use of customer securities. The debit items include money owed by customers (e.g. from margin lending), securities borrowed by the broker-dealer to effectuate customer short sales, and required margin posted to certain clearing agencies as a consequence of customer securities

⁶ Rule 15c3-3 also includes protections for customer's full paid and excess margin securities. Rule 15c3-3(b)(1) provides that the broker-dealer "shall promptly obtain and shall thereafter maintain the physical possession or control of all fully-paid securities and excess margin securities carried by a broker or dealer for the account of customers." Rule 15c3-3(d) further provides, in part, that:

Not later than the next business day, a broker or dealer, as of the close of the preceding business day, shall determine from his books or records the quantity of fully paid securities and excess margin securities in his possession or control and the quantity of fully paid securities and excess margin securities not in his possession or control.

transactions. If, under the formula, customer credit items exceed customer debit items, the broker-dealer must maintain cash or qualified securities in that net amount in a "Special Reserve Bank Account for the Exclusive Benefit of Customers."⁷

The reference in the Rule to "qualified securities" refers to the type of securities that the broker-dealer may deposit in the Reserve Bank Account. Rule 15c3-3(a)(6) defines the term "qualified securities" as a "security issued by the United States or a security in respect of which the principal and interest are guaranteed by the United States." The original purpose of this restriction was presumably to restrict qualified securities to those securities with sufficient liquidity and low risk that would allow them to be liquidated in times of financial stress. While bank deposits and Treasury securities were probably the best instruments available for this purpose at the time that the rules were written, this is no longer the case. There are now a wide variety of alternative instruments that can be used to satisfy the requirements of liquidity and safety.

To fix ideas, it is worthwhile to compare the menu of qualified securities resulting from Rule 15c3-3 with the menu published by the The Clearing Corporation, an independent clearing house for futures markets in the United States.⁸

⁷ SEC Release at 12862.

⁸ The Clearing Corporation is a Delaware Corporation owned by 50 stockholders, many of whom represent futures markets participants and market makers. It is formerly known as the Board of Trade Clearing Corporation. <http://www.clearingcorp.com/clearingmembers/RiskMargin/CCorpAcceptableCollateral.pdf>

Table 1: Qualified Securities for Margin Purposes

SEC Rule 15c3-3	The Clearing Corporation
Cash	Cash (0.0%)
Treasury Securities	Treasury Securities (0.2% to 6.0%) Government Sponsored Enterprise Debt (0.5%-6.0%) Foreign Sovereign Debt (3.0% to 6.0%) Municipal Securities (1.5% - 9.0%) Corporate Debt (2.0% - 15.0%) Commercial Paper (4.0%) Money Market Funds (2.0%) Common Stock (30%) (Haircut Rate in brackets after Instrument)

Source:<http://www.clearingcorp.com/clearingmembers/RiskMargin/CCorpAcceptableCollateral.pdf>

The Clearing Corporation, as a privately run, customer owned, business, provides an excellent benchmark for the discussion of eligible assets in customer segregated accounts. The Clearing Corporation offers a wide range of eligible securities including foreign government bonds, municipal securities, money market funds and common stock. Since these securities differ in their liquidity and risk, the Clearing Corporation assesses a haircut rate on the securities that reflects the characteristics of the asset. The haircut rate represents a premium on the value of the security that must be covered in the calculation of a margin requirement. For example, if a security bears a 10% haircut, the customer must deposit 110% of the margin value in that security. For some instruments, like Treasury Securities, the haircut rate is predominantly determined by the maturity of the asset since the risk of a bond is positively related to its maturity. In other cases, the haircut reflects credit risk and the market risk of the security.

The Clearing Corporation currently charges a 2% haircut on money market funds. This haircut reflects the fact that the securities held are ownership shares in money market funds. Since the Clearing Corporation does not have direct access to these funds, it is only using the funds as a margin

security to ensure compliance with the requirements of the contract. Under the proposed revision to Rule 15c3-3, the broker-dealer would have direct access to the money market funds so that the liquidity of these instruments would be equivalent to cash. For this reason, the petition to revise Rule 15c3-3 proposes a zero haircut on money market funds. This proposal reflects the fact that funds can be withdrawn from a money market fund as quickly and as easily as from a bank deposit.

Federated Investors, Inc. (Federated) is one of the nation's largest institutional money market fund managers. Federated has filed an amended petition with the SEC requesting that Rule 15c3-3 be amended to include certain types of money market funds in the definition of qualified securities. In particular, Federated's petition recommends that the definition of a "qualified security" be extended to include "redeemable securities issued by a Designated Fund." For the purpose of this extension, Federated recommends the following definition of a Designated Fund.

"The term "Designated Fund" shall mean an open-end investment management company registered under the Investment Company Act of 1940 whose assets consist of cash or money market instruments and which is generally known as a "money market fund", and which:

- i. has received the highest money market fund rating from a nationally recognized statistical rating organization;
- ii. has agreed to redeem fund shares in cash, with payment being made no later than the business day following a redemption request by a shareholder, except in the event of an unscheduled closing of Federal Reserve Banks or the New York Stock Exchange; and
- iii. has adopted a policy that it will notify its shareholders (a) of any change in its rating; or (b) 60 days prior to any change in its policy to redeem fund shares in cash no later than the business day following a redemption request by a shareholder, with limited exceptions for unscheduled closings of Federal Reserve Banks or the New York Stock Exchange."

In its response, the Commission has proposed extending the definition of qualified securities to include money market funds that invest only in securities meeting the existing definition of a qualified security, i.e. Treasury securities.⁹ The proposed amendment to Rule 15c3-3(a)(6) would provide, in part, that the term "qualified security" would mean:

⁹ SEC Release at 12894.

- (ii) A redeemable security of an unaffiliated investment company registered under the Investment Company Act of 1940 and described in §270.2a-7 of this chapter that:
- (A) Has assets consisting solely of cash and securities issued by the United States or guaranteed by the United States with respect to principal and interest.¹⁰

The SEC explains that:

We believe expanding the definition to include money market funds that invest only in securities meeting the definition of "qualified security" in Rule 15c3-3 would be appropriate. The assets held by such a money market fund would be the same as those a broker-dealer can hold directly in its customer reserve account. Consequently, a broker-dealer might choose to deposit qualifying money market fund shares into the customer reserve account based upon operational considerations such as avoiding the need to actively manage a portfolio of U.S. Treasury securities.¹¹

From the broker-dealer's perspective, the proposed restriction to Treasury-only securities may involve a substantial reduction in the yield on margin funds. High quality money market funds may hold a diversified portfolio of short term money market instruments including commercial paper issued by financial and non-financial corporations, certificates of deposit at commercial banks, and other instruments. In the following table, the yields on some of these instruments are listed based upon market conditions on May 11, 2007.¹²

¹⁰ SEC Release at 12894. We refer to such funds as Treasury-only money market funds. (TMMF)

¹¹ SEC Release at 12865.

¹² Board of Governors of the Federal Reserve System. <http://www.federalreserve.gov/releases/h15/Update>

Table 2: Selected Interest Rates, May 11, 2007

	Yield
Federal Funds (effective)	5.25%
Non-financial Commercial Paper, 3 month.	5.18%
Financial Commercial Paper, 3 month.	5.23%
Certificates of Deposit, 3 month	5.31%
Eurodollar Deposits, 3 month	5.34%
Treasury Bills, 3 month	4.73%

The average yield on the commercial money market instruments in this sample is 5.27% compared to 4.73% on Treasury Bills. While the 0.54% difference in yield may not appear to be extremely large, it could be sufficient to make a Treasury only fund uncompetitive with a less restricted money market account. In its amended petition to the Commission, Federated reports that their broker-dealer customers were not interested in Treasury only funds, presumably because of the lower yield offered by these funds.

The lower yield on Treasuries does not necessarily reflect their lower risk relative to other short term money market instruments. Hull, Predescu and White (2005) give three reasons why Treasury yields tend to be lower than rates on other low risk financial instruments:¹³

1. "Treasury bills and Treasury bonds must be purchased by financial institutions to fulfill a variety of regulatory requirements. This increases the demand for these Treasury instruments, driving the price up and the yield down.
2. The amount of capital a bank is required to hold to support an investment in Treasury bills and bonds is substantially smaller than the capital required to support a similar investment in other very low risk instruments.
3. In the United States, Treasury instruments are given a favorable tax treatment compared with most other fixed-income investments because they are not taxed at the state level."

During the past decade, the demand for U.S. Treasury securities by foreign central banks, particularly in China and Japan, has been growing extremely rapidly. Central banks are required to keep their

¹³ John Hull, Mirela Predescu and Alan White, "Bond Prices, default probabilities and risk premiums," *The Journal of Credit Risk* (Spring, 2005) pp. 53-60.

foreign currency reserves in U.S. Treasury securities. The expansion of the market economy in China has led to an extraordinary growth in the demand for money which in turn has led to an increase in the demand for U.S. Treasury securities. As the price of these securities has risen, the yield has fallen below the yield on comparable non-government low-risk financial instruments. The result, as Duffie has argued, is that "since the early 1980's, Treasury bill yields have become increasingly irrelevant as a benchmark."¹⁴ Hull, Predescu and White suggest that "risk free" rates be calculated from money market swap rates rather than Treasury bill rates.¹⁵

If the higher yields on non-Treasury instruments was purely a reflection of the probability of default, then there would not be any financial advantage to holding these instruments relative to Treasuries. However, there is a great deal of empirical evidence that demonstrates that this is not the case. Altman (1989) was one of the first academics to demonstrate that Treasury yields were "too low" relative to non-Treasury yields adjusted for default probabilities.¹⁶ More recently, Hull, Predescu and White (2005) have calculated default adjusted spreads on corporate bonds relative to treasuries. They use credit derivatives like credit default swaps to remove the credit risk from non-Treasury instruments. This allows them to compare yields on Treasury and non-Treasury instruments on a comparable risk basis. The following results are taken from their paper.¹⁷

Table 3: Excess Expected Returns on Corporate Bonds

Rating	Yield Spread (bp)	RiskFree Spread (bp)	Historical Default Spread (bp)	Additional Risk Premium (bp)
Aaa	83	43	2	38
Aa	90	43	4	43
A	120	43	8	69
Baa	186	43	28	115
Ba	347	43	144	160
B	585	43	449	93
Caa and lower	1321	43	1014	264

¹⁴ Duffee, G. R., "Idiosyncratic variation of Treasury bill yields," *Journal of Finance* 51 (1985).

¹⁵ Hull, Predescu and White (2005), p.55.

¹⁶ Altman, E. I., "Measuring corporate bond mortality and performance," *Journal of Finance* 44 (1989)

¹⁷ Hull, Predescu and White, (2005), Table 2, p. 56.

Yield Spread: Corporate Bond Yield over Treasuries, December 1996 – July 2004

Risk Free Spread: Estimate of the spread on a risk free non-Treasury relative to a Treasury security.

Historical Default Spread: Spread to compensate for historical default rate based upon 40% recovery rate.

Additional Risk Premium: Additional spread over Treasuries for each credit class.

Source: Hull, Predescu and White (2005)

Consider the highest quality credit class, Aaa. Over the period from December, 1996 to July, 2004, the average bond in this class traded at a spread of 83 basis points over Treasuries. This spread can be decomposed into three important elements:

- i. Risk free spread of 43 basis points. The Aaa bond can be insured against default for 40 bp, so that there is a 43 basis point spread between Aaa “risk-free” and Treasuries.
- ii. Historical default spread of 2 bp. This is the spread that is required to compensate for the historical frequency of default by Aaa issuers.
- iii. Additional Risk Premium of 38 bp. This is the additional premium demanded by the market for non-insured Aaa issuers.

Together, the three elements add up to an average 83 bp premium of Aaa issuers over Treasuries over the period from December, 1996 to July, 2004. Unfortunately, the authors do not break down their analysis of the credit spreads by maturity. Since it is reasonable to suppose that credit spreads are smaller at the short end of the maturity spectrum, it is difficult to ascertain the extent to which these results pertain to the money market debate. For this reason, this study examines an alternative data set that generally supports the Hull, Predescu and White conclusions at the short end of the curve.

The Relative Performance of Treasury and Prime Money Market Funds.

The Money Fund Intelligence report is published by Crane Data, LLC as a service to the institutional investment community. It provides surveys of the performance of money market funds and rates the various funds by investment strategy based upon their expense ratios – individual versus institutional – and allowable investments. The survey provides annual returns on the funds for the past ten years and includes all major U.S. money market funds. For this study, the total returns on two fund categories are examined: Institutional Prime and Institutional Treasury. The members of both fund categories are rated AAAM by Standard and Poor's Corporation (S&P) when a rating is available, and the primary difference between the two families is that the Institutional Treasury funds are only permitted to hold U.S. Treasury securities. For these reasons, the two fund categories are excellent examples of the comparison required by the Congressional debate on eligible securities.¹⁸

Table 4: Reporting Funds.

	Prmlnst	Trslnst	Total	% Prmlnst
1997	48	18	66	73%
1998	52	20	72	72%
1999	54	20	74	73%
2000	58	20	78	74%
2001	63	21	84	75%
2002	72	22	94	77%
2003	78	22	100	78%
2004	82	22	104	79%
2005	78	19	97	80%
2006	123	39	162	76%
2007	145	50	195	74%

Source: Money Fund Intelligence, July 7, 2007

Prmlnst = Prime Institutional fund category

Trslnst = Treasury Institutional fund category.

¹⁸ A complete listing of the funds used in the study is provided in Appendix A of this paper.

As Table 4 demonstrates, the total number of funds reporting in the two categories has increased from 66 funds in 1997 to 165 in 2007. On average, about 75% of the sample were prime funds and 25% were Treasury-only funds. The difference between the two fund categories is that the Prime funds can hold high quality commercial paper from corporations, banks, insurance companies and quasi-government entities. Adding up the total number of funds reporting in the sample, we obtain a total sample size of 1126 observations. Associated with each observation, Crane Data reports the total return on the fund for the year. The total return includes both interest payments and capital gains/losses (of which there were none).

The issue to be examined is whether there is a significant difference between the PMMF and TMMF funds regarding both the average total return and the average risk. In other words, would an investor selecting an MMF fund at random from the sample experience significantly different performance depending upon whether the fund selected was a PMMF or a TMMF? We can examine this question by estimating the following regression equation:

$$R_{nt} = \sum_{t=1}^{10} \beta_t X_{nt} + \sum_{t=1}^{10} \delta_t D_{nt} + u_{nt}$$

In this regression equation, X represents a dummy variable representing the year of the observation.¹⁹ The D variable is a dummy variable identifying the TMMF funds. D takes a value of 1 if the year is the target year and the fund is a TMMF fund. Otherwise the value of D is zero. When the regression equation is estimated, the beta coefficients are estimates of the average return on the PMMF funds in each year and the delta coefficients are estimates of the return discount on the Treasury funds in the year. The residual, u_{nt} , represents that part of the total return that is not related to the year or the fund category. The dispersion of these residuals within a given category is a measure of the risk of the category.

Since we are also interested in the relative risk of the two fund families, we specify that the intra-family variance of the return is also determined by the same structure.

¹⁹ A dummy variable is a variable that takes a value of 1 if the condition is satisfied, and 0 elsewhere. It is used to identify the return on the asset in the conditional state.

$$\sigma_{nt}^2 = \sum_{n=1}^{10} \gamma_n X_{nt} + \sum_{n=1}^{10} \phi_n D_{nt}$$

Under the assumption that the transformed residuals in the model are normally distributed, the parameters of the model can be estimated using the maximum likelihood principle. Specifically, the parameters are chosen to maximize:

$$\ln(L) = -.5 * \left[\ln(\sigma_{nt}^2) + \frac{(R_{nt} - E(R_{nt}))^2}{\sigma_{nt}^2} \right]$$

The standard likelihood ratio test can then be used to test the two core hypotheses:

1. Expected returns on TMMF funds are the same as expected returns on PMMF funds. If this is the case, the δ_i coefficients should not be significantly different from zero.
2. The expected risks on TMMF funds are the same as the expected risks on PMMF funds. If this is the case, the ϕ_i should not be significantly different from zero.

In Table 5, the estimated parameters of the mean equation are reported.

Table 5: Average Total Returns and Spreads

Year	PMMF	TMMF	Difference	T-Stat
1997	5.57	5.36	-0.21	7.7
1998	5.51	5.26	-0.25	9.7
1999	5.14	4.78	-0.36	13.9
2000	6.40	6.04	-0.37	14.5
2001	4.13	3.89	-0.24	9.6
2002	1.72	1.60	-0.12	5.1
2003	1.04	0.93	-0.11	4.6
2004	1.24	1.10	-0.14	5.9
2005	3.14	2.90	-0.23	9.2
2006	4.97	4.76	-0.21	11.8
2007*	2.59	2.48	-0.11	6.5
(2007 year to date:		(June		

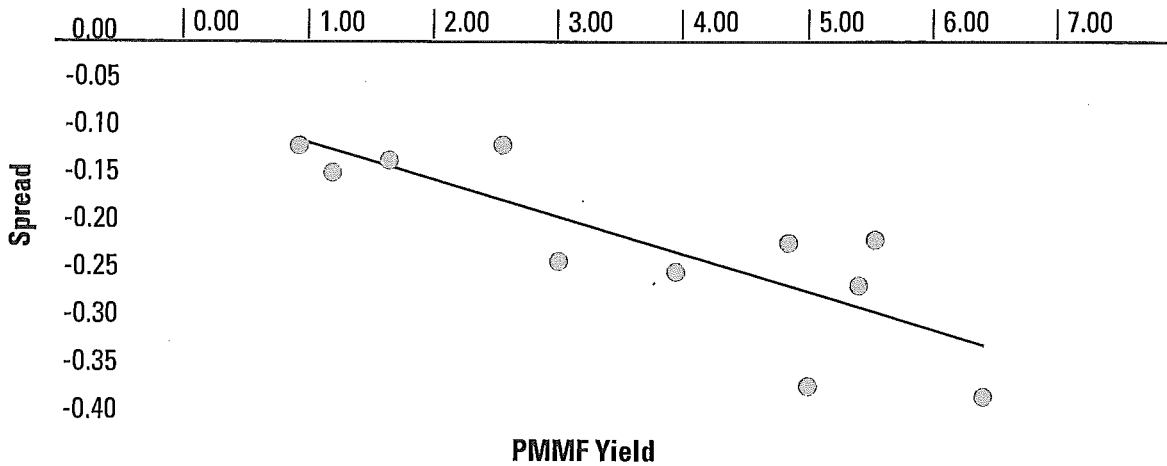
The results in Table 5 demonstrate that there is, on average, a 21 basis point differential between the total return on PMMF and TMMF funds. The differential is significantly different from zero in every year on the basis of the T-statistics reported in Table 5. The differential varies from 11 bp in 2003 to 37 bp in 2000. The main determinant of the spread appears to be the level of interest rates, as described in the following regression.

Table 6: Regression of Spread on PMMF Return

	Constant	Slope
Coefficient	-0.0639	-0.0397
StdError	0.0376	0.0089
T-Stat	1.69	4.41
R-Square	0.68	

The relationship between the spread and the yield on PMMF funds is illustrated in Figure 1. At a PMMF yield of 1%, the spread is around 10 bp, but when the PMMF yield is 6%, the spread widens to a value of around 30 bp.

Figure 1: Yields vs Spread



A spread of 10 to 30 bp may not appear to be financially significant from the perspective of the overall economy. In order to assess the economic impact of the regulatory demand for Treasury only money market funds, it is necessary to take account of the size of the funds that are influenced. According to Money Fund Intelligence, there are approximately \$200 billion held in individual and institutional Treasury only money market funds in July, 2007. The loss on these holdings, relative to Prime funds, would be \$200 million per year if the spread was 10 bp and \$600 million per year based upon a spread of 30 bp.

These results explain why the SEC's proposal to allow Treasury only money market funds was not well received in the industry. Based upon current short term interest rates of around 5%, the spread between PMMF and TMMF funds is currently estimated to be around 26 bp. There is

consequently a substantial benefit to investors from being able to hold customer segregated funds in non-Treasury instruments.

The higher yield on PMMF funds can be explained in terms of two basic theses: first, that PMMF funds are riskier than TMMF, and second, that TMMF funds have a lower yield because of the regulation induced demand for Treasury securities. In order to explore this issue, it is necessary to investigate the relative risk of the two fund families. Following standard financial industry practice, the risk of an investment is measured by its variance. For this purpose, the variance is defined as:

$$\sigma_{nt}^2 = E(R_{nt} - E(R_{nt}))^2$$

where the expected return on the fund is based upon the previous analysis. The variance is the expected squared deviation from the mean. This measure of variance assumes that all funds within the same family have the same expected return. Investors cannot tell which funds will outperform during the coming year and pick randomly from the funds in the family. So the risk is measured by the dispersion of returns – the variance – within the fund family. We can measure this dispersion for funds drawn from the prime and treasury families, using the results from the maximum likelihood procedure that was employed for the average return.

Table 6: Average Volatility and Spreads

Year	PMMF	TMMF	Difference	T-Stat
1997	0.10	0.14	-0.04	1.17
1998	0.09	0.14	-0.05	1.51
1999	0.09	0.15	-0.07	2.09
2000	0.10	0.17	-0.07	2.32
2001	0.12	0.15	-0.03	1.03
2002	0.11	0.08	0.02	-0.60
2003	0.09	0.08	0.01	-0.12
2004	0.09	0.08	0.01	-0.24
2005	0.08	0.15	-0.07	2.04
2006	0.11	0.13	-0.02	0.79
2007*	0.05	0.06	-0.01	0.13
(2007 year to date:		June)		

As one would expect, neither the PMMF or the TMMF funds are particularly volatile. The standard statistical rule of thumb is that the T-statistic should be greater than 2 if the null hypothesis is to be rejected. This condition is satisfied in 1999, 2000, and 2005 and in each of these cases, the TMMF funds are more volatile than the PMMF funds. In fact, in seven out of ten years, TMMF funds are more volatile than PMMF funds. In the three years where this condition is reversed – 2002, 2003, and 2004 – U.S. short term interest rates were very low because of Fed easing after the September 11 crisis.

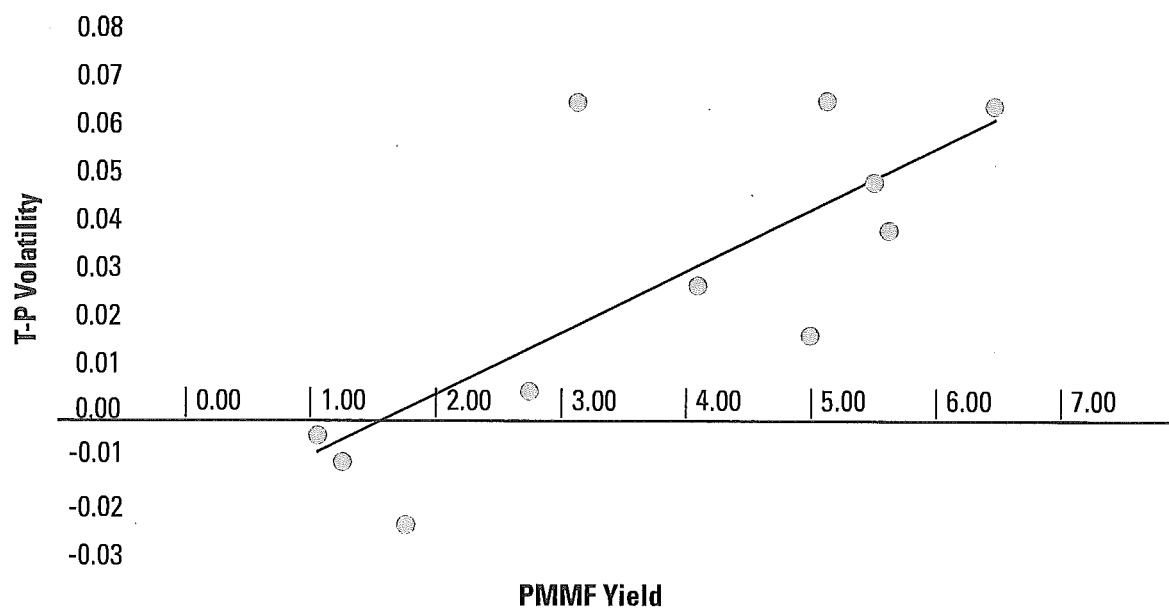
This suggests that the volatility differential between TMMF and PMMF funds is, like the average return, related to the total return. The following regression equation supports this hypothesis.

Table 6: Volatility Spread on PMMF Return

	Constant	Slope
Coefficient	-0.0232	0.0134
StdError	0.0147	0.0035
T-Stat	1.57	3.82
R-Square	0.61	

The regression results demonstrate that the volatility of TMMF accounts, relative to PMMF, increases with the return on PMMF. This relationship is illustrated in Figure 2:

Figure 2: Relative Volatility and Yield



As the average yield on PMMF funds increases, there is a predictable tendency for the volatility of TMMF funds to increase relative to the volatility of PMMF funds. This implies that a high yield

environment favors PMMF funds both in terms of higher relative returns and lower relative risk.

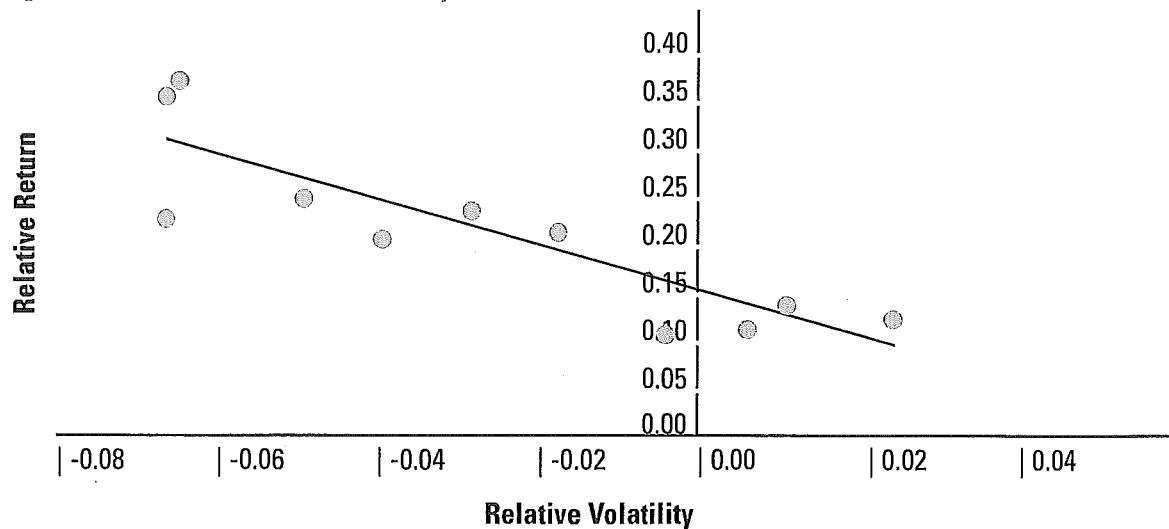
This conjecture is supported by the regression results reported in Table 7.

Table 7: Relative Return on Volatility Spread

	Constant	Slope
Coefficient	0.1447	-2.4148
StdError	0.0187	0.4493
T-Stat	7.76	-5.38
R-Square	0.61	

In this case, the regression relative to the total return on PMMF funds relative to TMMF funds to the differential between the volatility of PMMF funds and TMMF funds. If the differential return was due to a risk premium, then one would expect a positive relationship between the two series since higher relative risk would have to be compensated for with a higher relative return. In fact, the relationship is predictably negative, as is demonstrated in the following chart.

Figure 3: Relative Return and Volatility



If PMMF funds were exactly as volatile as TMMF funds, they would trade at a 10 bp premium to the Treasury funds. As the average yield on money fund deposits increases, the relative volatility of PMMF funds declines and the relative return on these funds increases. If the PMMF funds enjoyed a 6 bp volatility advantage, this would translate into an approximately 30 bp increase in volatility yield.

This is exactly the opposite relationship that one would expect if the higher yield on PMMF funds was due to the higher risk of these funds. It is consistent with the view developed by Hull, Predescu and White that suggests that Treasuries have a particular demand function, related to regulatory demand and tax considerations, which causes their yield to be lower than private sector risk free assets. Even when Treasuries exhibit a volatility advantage relative to PMMF funds – a situation which only occurred in the very low yield environment of the 2002-2005 period – the TMMF funds still sold at a return discount relative to PMMF funds.

In order to complete this analysis, it is finally necessary to examine the few occasions in which the money market funds fell substantially below their benchmark returns. In his recent book, Nassim Taleb refers to this type of event as a “Black Swan” in reference to the idea that it only takes one black swan to disprove the thesis that all swans are white.²⁰ Similarly, our analysis of fund averages may hide the fact that there are a small number of funds that have experienced catastrophic losses and that the premium on PMMF events is reflecting the markets anticipation of this type of event.

Table 8 lists the characteristics of the 10 funds whose annual performance exhibited the greatest deviation from their benchmark (average) performance. For example, observations #1 and #2 represent the two most extreme examples of fund underperformance in a give year.²¹

²⁰ Nassim Taleb, *The Black Swan*, (Random House, 2007)

²¹ Each observation represents the performance of a particular fund in a particular year. The sample consists of 1126 fund years. For reasons of privacy and legal liability, the actual names of the funds may been withheld.

Table 8: The Bottom Ten Performers.

Fund		StdError	Return	Benchmark	Treasury	Diff-1	Diff-2
#1	Prime	-8.35	2.16	2.59	2.48	-0.43	-0.32
#2	Prime	-7.92	4.11	4.97	4.76	-0.86	-0.65
#3	Prime	-4.06	4.53	4.97	4.76	-0.44	-0.23
#4	Prime	-3.95	1.30	1.72	1.60	-0.42	-0.30
#5	Prime	-3.79	2.83	3.14	2.91	-0.31	-0.08
#6	Prime	-3.79	2.83	3.14	2.91	-0.31	-0.08
#7	Treasury	-3.58	0.83	1.10	1.10	-0.27	-0.27
#8	Treasury	-3.49	4.32	4.76	4.76	-0.44	-0.44
#9	Treasury	-3.41	0.66	0.93	0.93	-0.27	-0.27
#10	Prime	-3.25	0.96	1.24	1.10	-0.28	-0.14
					Average	-0.40	-0.28

StdError: Expresses the deviation of the actual return from the benchmark in units of standard deviation.

Return: Return on the fund in the specified year.

Benchmark: Predicted return on the fund based upon year and category.

Treasury: Total return on Treasury only funds in the same year.

Diff-1: Difference between fund and benchmark return.

Diff-2: Difference between fund and Treasury return.

The performance of the two most extreme funds in the year covered in Table 8 was about 8 standard deviations below the benchmark. If the distribution of relative returns was normal, the probability of observing a result that was 8 standard deviations below zero is around .000000000000062%. This suggests that these results can indeed be classified as potential black swans in Taleb's terminology. However, while the difference is extreme in statistical terms, it is less outrageous in financial terms. Fund #1 had a total return of 2.16% relative to its benchmark of 2.59% and relative to a Treasury benchmark of 2.48%. Fund #2 experienced a total return of 4.11% relative to a benchmark return of 4.97% and a Treasury benchmark of 4.76%. On average the bottom ten funds underperformed their benchmarks (Diff-1) by 40 bp, and underperformed the Treasury benchmark (Diff-2) by 28 bp.

Seen in the light of these results, the black swans in the sample are not really a reflection of extreme, catastrophic, losses. Instead, the results reflect the skill with which the average fund manager has tracked the benchmark portfolio. Because of the high level of accuracy by the average managers, performance deficiencies which would hardly be noticeable to a non-industry observer appear in the statistical model to be extreme events. The evidence from the tails of the distribution is not sufficient to overcome the substantial outperformance of Primes over Treasuries in normal circumstances.

Having statistically established the value of PMMF funds over their TMMF equivalents, it is now time to widen the discussion to include the alternative instruments allowed in the eligible funds regulations: money market deposit accounts and U.S. Treasury securities. It is not possible to undertake a similar analysis for these instruments since money market deposit rates are negotiated individually between the client and the bank and because the regulations do not specify a particular maturity of Treasury securities for eligibility. However, we can discuss some of the general features and risks of the two alternative instruments.

Money Market Deposit Accounts and Treasury Securities.

In the following discussion, the risk characteristics of money market funds will be compared to the currently acceptable alternatives for 15c3-3 Special Reserve Bank Accounts. The alternative instruments are basically money market deposit accounts (MMDAs) and U.S. Treasury Securities. These instruments differ from money market mutual funds (MMMFs) in terms of credit risk, market risk, and operational risk exposures. For the purpose of this discussion, the discussion of money market mutual funds will be restricted to those funds rated AAAm by S&P.

In practice, brokers invest approximately 30% of their 15c3-3 funds in U.S. Treasury securities. The remaining funds are most commonly placed in bank MMDA accounts through direct deposit or indirect deposit via a trust ledger account. In the case of a direct deposit, the MMDA account is established in the broker's name with the counterparty bank. In a trust ledger account, the funds of all participating brokers are pooled into an aggregate deposit and each broker has an account with the trust ledger account. Trust ledger accounts are generally preferred by banks to direct deposit accounts, since they have lower turnover volatility, and by brokers, since they tend to offer higher yields.²²

The primary difference between a bank deposit and a money market mutual fund is that the bank deposit is a liability of the bank whereas the money market fund represents a direct ownership of a pool of securities. For this reason, the risk of the bank deposit must be assessed in terms of the credit quality of the bank whereas the risk of the money market mutual fund must be assessed in terms of the credit quality of the instruments held in the fund portfolio. The case for allowing funds in the Reserve Bank Account to be held in money market funds is fundamentally that the credit quality of a Aaa rated money market mutual fund is generally superior to the credit quality of major U.S. banks. The following table demonstrates this important result.

²² Anthony Carfang and Cathy Greg, "Assessing the Risks of 15c3-3 Investment Options," Treasury Strategies, Inc., (January, 2007)

Table 9: Credit Ratings of Financial Institutions

AAAm Money Market Mutual Funds	AAAm
Citibank	AA
Bank of America	AA
State Street Bank	AA
WFC Holdings (Wells Fargo)	AA
ABN Amro NV	AA-
Bank of New York	AA-
Deutsche Bank AG	AA-
JP Morgan Chase Bank	AA-
Mellon Bank	AA-
SunTrust Bank	AA-
Wachovia Bank	AA-
PNC Bank	A+

Source: Standard and Poors

The S&P ratings incorporate a thorough analysis of corporate structure, markets and strategy, credit risk, diversification risk, funding and liquidity, capital and earnings. The recent turmoil in the sub-prime mortgage market, in which the large banks were involved as both syndicators and investors, provides immediate justification to the lower credit ratings for banks relative to money market mutual funds.

To understand the difference in credit quality between banks and triple-A rated money market mutual funds, it is useful to delineate the assets in the respective portfolios. In Table 5, the financial structure of a representative triple-A rated money market fund – Federated Prime Obligations Fund – is compared with the financial structure of U.S. commercial banks as described in the U.S. Federal Reserve Bulletin:

Table 10: Financial Structure

Federate Prime Obligations Fund		U.S. Commercial Banks	
Highly Rated Assets		Highly Rated Assets	
Treasury/Agency/Repo	9%	Treasury/Agency	13%
A-1+ Securities	72%	Other Securities	11%
A-1 Securities	19%	Interbank Loans	3%
Sub-Total	100%	Cash	3%
		Sub-Total	30%
Non-Prime Assets		Non-Prime Assets	
	0%	Real Estate Loans	33%
		Commercial Loans	12%
		Other Loans/Leases	9%
		Consumer Loans	8%
		Other Assets	8%
		Sub-Total	70%
Total	100%	Total	100%

Sources: Federated Prime Obligations Fund

U.S. Federal Reserve Bulletin

Treasury Strategies, Inc.

Table 10 demonstrates that the typical U.S. commercial bank has approximately 70% of its assets in non-prime securities. However, the table does not adequately describe the full risk profile of a large commercial bank since it does not include off-balance sheet derivative transactions. Banks engage in billions of dollars of currency, interest rate and equity derivative contracts. They also are intimately involved with hedge funds and private equity funds that also engage in highly leveraged, and consequently risky, transactions. The example of Long Term Capital Management and the recent experience of hedge funds holding mortgage backed securities are immediate examples of the risks involved in these activities.

If banks are riskier than triple-A money market mutual funds, one would expect to find a higher probability of default in the banking industry relative to the money market fund industry. This is indeed the case, as is demonstrated in Table 11.

Table 11: Failures of Financial Institutions

Year	Money Market Funds	Commercial Banks
1991	0	127
1992	0	122
1993	0	41
1994	1	13
1995	0	6
1996	0	5
1997	0	1
1998	0	3
1999	0	7
2000	0	6
2001	0	3
2002	0	10
2003	0	3
2004	0	3
2005	0	0
Total	1	350

Source: U.S. Federal Reserve Bulletin

Treasury Strategies, Inc.

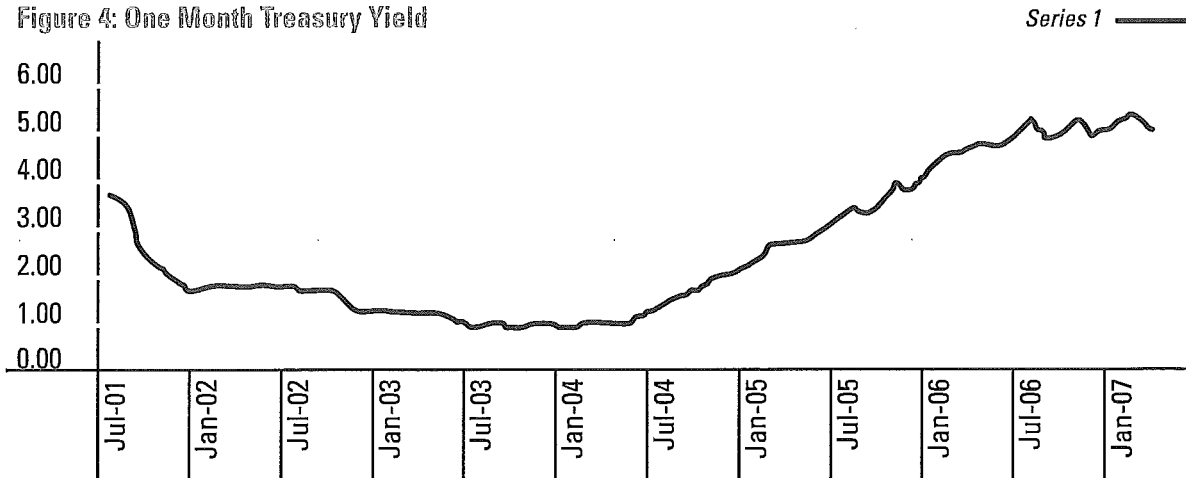
Over the 15 year horizon, there have been 350 commercial bank failures. While federal deposit insurance protects small depositors with less than \$100,000 in funds, this protection is irrelevant to broker/dealer deposits which are typically in the millions or billions of dollars. Furthermore, since the banks' capital constitutes the first line of defense against the default of a borrower from the bank, the

interest paid on deposit accounts is less than would be paid on an account in which the shareholders are openly carrying the portfolio's credit risk. As a result, banks typically pay rates on segregated funds that are close to the federal funds rate, rather than rates on AA rated corporate debt.

While most of the bank failures listed in Table 6 refer to smaller financial institutions, the credit ratings of major banks demonstrate that they are not immune to the possibility of default. The failure of Barings Bank, Long Term Capital Management, and the current concern with losses associated with mortgage backed securities provides ample evidence that large banks are also subject to substantial risk. Furthermore, bank dealings in derivatives and other exotic instruments are often treated as "off balance sheet items" that do not appear in the bank's financial statements. In contrast, money market funds are prohibited from holding derivative instruments and their financial statements are generally recognized to be accurate representations of their financial condition.

While Treasury securities are not subject to credit risk, they can be subject to substantial market or interest rate risk. Treasury securities offer a fixed set of cash payments, and the present value of these payments is determined by the appropriate discount rate. Market discount rates are influenced by monetary policy, macroeconomic conditions, and inflationary expectations. As the following chart illustrates, there have been substantial variations in Treasury yields over the past few years.

Figure 4: One Month Treasury Yield



In Figure 4, the one month constant maturity Treasury yield has risen from a low near 1% in July, 2003 to its current level of 5%. As Treasury yields rise, the price of the bonds decreases and bond holders face a capital loss if they sell prior to maturity. The relationship between price and yield can be approximately measured by the duration of the bond, which is a value weighted average of the term to maturity of the cash flows. In the following Table, the capital loss arising from a 1 point increase in yield is calculated.

Table 12: Capital Gain/Loss based upon Duration.

Duration	Increase in Yield	Capital Loss
1	1%	-1%
5	1%	-5%
10	1%	-10%
20	1%	-18%

Note: Capital loss calculated using duration and convexity adjustment. The Capital Loss is the mark to market change in the value of the bond resulting from a 1% change in yield.

As a further example, consider a Treasury Bond with a duration of 10 Years. If the yield on the bond rises from 1% to 5%, the value of the bond will fall by approximately 32%. This point is important because Rule 15c3-3 does not specify that customer segregated funds must be held in short maturity debt. It is possible to hold 30 year Treasury bonds in customer segregated accounts and still satisfy the requirements of the regulation. However, these long maturity instruments are extremely sensitive to the interest rate environment and are subject to very substantial market risk.

A broker-dealer may use a Treasury security of any maturity as eligible securities for the Reserve Bank account. The failure to specify eligible maturities in the Rule is again a result of historical origins of the Act: at the time the Rules were written, long dated Treasury securities were rare. In the modern world, however, the U.S. government issues Treasury bonds with maturities of 10, 20 and 30 years duration. While these long duration bonds may be attractive to broker-dealers because of their generally higher yields, these bonds are subject to substantial variation in their mark to market value because of variations in bond yields. There have been significant variations in interest rates during the past decade because of changes in expected inflation, variations in the economic cycle from boom to recession, and because of Federal Reserve monetary policy. As a result, allowing broker-dealers to use long-term Treasuries in the Special Reserve Account is not a risk free proposition. Even though the quality of the credit is beyond reproach, the value of the Treasury will change depending upon the remaining length, or maturity, of the bond and size of the variation in interest rates.

In contrast, money market mutual funds are required to have a weighted average portfolio maturity (or duration) of less than 90 days, and may not hold any instrument with an outstanding maturity greater than 397 days. AAAM money market mutual funds have an even stricter standard: the weighted average portfolio maturity cannot exceed 60 days. Many AAAM funds are even more conservative. The Federated Prime Obligations Fund, for example, has a weighted average maturity of less than 40 days. The short average maturity of these funds insulates their holders against fluctuations in the general level of interest rates. For example, a 1% increase in yield on a portfolio with a weighted average maturity of 40 days would result in a capital loss of approximately -0.43%. Since the average absolute change in short term interest rates over a one month horizon is around 15 basis points, the market risk of money market funds is negligible.

Money market funds further reduce their market risk by diversifying across issuers. The SEC regulations require that money market funds limit their exposure to issuers by requiring that no more than five per cent of total assets be invested in the securities of a single issuer.²³ In practice, most money market funds diversify their holdings across companies, geographic regions, industries and other risk factors in order to limit market risk exposure. This is in contrast to the banking industry where banks hold 50% of their assets in loans and 33% in real estate. As the recent experience with sub-prime mortgages has demonstrated, this concentration of assets greatly increases the risk of bank debt relative to money market funds.

²³ Rule 2a-7©(4) under the Investment Company Act of 1940 provides, in part, with regard to taxable and national funds: immediately after the Acquisition of any security, a money market fund other than a Single State Fund shall not have investment more than five per cent of its Total Assets in securities issued by the issuer of the security.

Conclusions

An effective regulatory environment is a necessary foundation for efficient financial markets. Modern capital markets were built upon the doctrine of limited liability, which was introduced in the U.K. in the 1850's and the United States in the 1860's. The doctrine stated that the liability of an investor was limited to the amount that was invested in the corporation or partnership. By allowing individual investors to diversify their portfolios over a large number of assets, the doctrine allowed investors to lower their financial risk. By lowering the cost of capital, the doctrine encouraged investment and increased productivity and employment. There is no doubt that this legal structure, along with some others, played an important part in the economic success of the Western world. Governments play a crucial role in capital markets by providing a safe legal structure and regulatory environment.²⁴

On the other hand, excessive and unnecessary regulations can be harmful. In 1964, future Nobel laureate George Stigler wrote an important and controversial article on the regulation of securities markets.²⁵ Stigler argued that government regulations should be evaluated in terms of both their objectives and their policies. The objectives of securities regulation are generally agreed to center on the dissemination of truthful information in a timely manner and the prevention and punishment of fraudulent activity. These objectives are uncontroversial. The controversy arises when we attempt to evaluate whether a specific policy or regulation is successful in promoting the objective, and whether the economic costs of the regulation outweigh the benefits of achieving the objective. Stigler argued that much of the regulation in securities markets did not promote the agreed upon objectives, but that it was successful in increasing the costs of participating in the capital markets.

The arguments developed by Stigler are at the heart of the current debate relating to the Sarbanes-Oxley Act of 2002.²⁶ Sarbanes-Oxley was a bi-partisan response to scandals involving corporate governance by public corporations like Enron, WorldCom, and Tyco International. The Act requires, among other things, that management and the external auditor report on the adequacy of the company's internal control over financial reporting and imposes possible criminal penalties for directors of public companies. The economic analysis of the Act attempts to judge whether the costs of compliance outweigh the benefits of the additional disclosure. For a well diversified

²⁴ See LaPorta, Lopez-de-Silanes, Shleifer and Vishny (1997). They demonstrate that countries with poor investor protection have smaller and narrower debt and equity markets.

²⁵ Stigler, "Public Regulation of Securities Markets," *Journal of Business* 37:2 (April, 1964).

²⁶ Also known as "Sarbanes-Oxley Act of 2002."

individual investor, the costs of a catastrophic loss like Enron are small. On the other hand, the costs of compliance with the Act affect all companies and impose a deadweight loss on the economy as a whole.²⁷

The debate over the Sarbanes-Oxley has become more urgent because of recent developments in the structure of the capital markets. In the United States, there has been rapid consolidation within both of the two primary regulatory environments: the stock markets regulated by the Securities and Exchange Commission (SEC) and the futures markets regulated by the Commodity Futures Trading Commission (CFTC). In the stock markets, the New York Stock Exchange merged with Archipelago, the rapidly growing electronic exchange, which in turn merged with Euronext, a European stock and futures exchange. In the futures markets, the Chicago Mercantile Exchange merged with its cross-town rival, the Chicago Board of Trade. It is widely recognized that the United States must move towards a single regulatory environment since the activities of the stock and futures exchanges are closely integrated. A hedge fund holding individual stocks on margin while hedging with stock index futures must currently hold margin on both positions. Since margin must be held in low yielding instruments offering a degree of safety that is far higher than that required by the investors, the margin is a significant cost of the hedge fund. It is also a cost that can be avoided by shifting the positions to an offshore market like London, Sydney, or Singapore.

During the past year, academic and political interest in Sarbanes-Oxley has shifted from an assessment of its impact on the profitability of public corporations to its impact on capital market development in the United States. Mayor Michael Bloomberg of New York City and Senator Chuck Schumer (D-NY) recently commissioned a report relating to the impact of Sarbanes-Oxley and other regulations on the financial services industry, an industry, they report, that employs 5% of the U.S. workforce.²⁸ The percentage is, of course, considerably higher in the major financial centers of New York, Chicago, and Boston. In their introduction, Bloomberg and Schumer write:

Our regulatory framework is a thicket of complicated rules, rather than a streamlined set of commonly understood principles, as is the case in the United Kingdom and elsewhere. The flawed implementation of the 2002 Sarbanes-Oxley Act (SOX), which produced far heavier

²⁷ Financial Executives International conducts an annual survey of Sarbanes-Oxley compliance costs. The survey reports section 404 compliance costs averaged \$2.9 million in 2006. See <http://www.fei.org/404survey>

²⁸ "Sustaining New York's and the US' Global Financial Services Leadership" New York, June, 2007.

costs than expected, has only aggravated the situation, as has the continued requirement that foreign companies conform to U.S. accounting standards rather than the widely accepted – some would say superior – international standards. The time has come not only to reexamine implementation of SOX, but also to undertake broader reforms, using a principles based approach to eliminate duplication and inefficiencies in our regulatory system. And we must do both while ensuring that we maintain our strong protections for investors and consumers.

The U.S. Chamber of Commerce has also produced a report calling for reform and rationalization of U.S. capital market regulation.²⁹ The report emphasizes the decline in the number of foreign companies listing in the United States, and the increase in the number of U.S. corporations who are listing their initial public offerings (IPOs) in foreign markets. The Chamber of Commerce also stresses that the Congress and the SEC must balance the appropriate concern with investor protection against the rising cost of regulatory compliance.

This paper has reached two solid conclusions:

1. The limitation of eligible securities embodied in the customer protection rule has lowered the competitive status of the U.S. capital markets. This is based upon the finding, common in the academic literature, that Treasury yields are typically below risk-free rates. The research reported in this paper extends earlier academic studies regarding the spread between Treasury securities and "risk-free" interest rates to the short term maturity relevant to money market funds. The results demonstrate that there is a sizeable and statistically significant spread between Prime (AAA) money market funds and Treasury only funds.
2. There is no evidence that the restriction of eligible securities lowers the risk of customer segregated funds. The facts are the opposite. Bank deposits are investments in institutions that have lower credit ratings than money market funds, and there is ample evidence that banks have a higher probability of failure than money market funds. Furthermore, Treasury securities are subject to market risk which is related to the average maturity of the instrument. Since the regulations do not specify that customer segregated

²⁹ "Commission on the Regulation of U.S. Capital Markets in the 21st Century," Washington, D.C., March 2007.

funds be invested in short maturity Treasury bonds, it is possible that Treasury bonds held in customer segregated accounts embody a higher degree of market risk than money market deposits. The statistical results reported in this paper demonstrate that Treasury only funds generally have higher risk than Prime money market funds. This may be due to insufficient diversification or maturity mismatching. In either case, an investor in a Treasury only fund will typically face a wider range of possible outcomes at the one year horizon than an identical investor in a Prime money market fund.

These conclusions are important because of the increase in the integration of the world's capital markets. Even within the United States, the Commodity Futures Trading Commission already permits the use of money market funds for customer segregated accounts in the futures markets. Since an investor can use futures and options contracts to duplicate many equity investments, the investor has an interest in trading in the market in which his or her assets earn a higher yield with a higher degree of safety. The same point can be made with respect to international markets, since an investor can now purchase shares in most large global companies in London, Tokyo and other regional financial centers.

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Appendix A: Mutual Funds Covered in This Study

This appendix lists all of the money market funds that are included in the statistical analysis, the fund type, assets under management, credit rating, and the starting and ending dates for the total returns. For 2007, the data covers the first six months up to June 30, 2007. Data starting in 2007 generally refers to the first six months of the year.

Source: Crane Data, LLC, Money Fund Intelligence, June 30, 2007.

www.cranedata.com.

Money Fund (as of June 30, 2007)	Type	Assets	S&P	Start	End
ABN AMRO Instit Prime MMkt Y^	Prmlnst	1,718	AAAm	2000	2007
AIM ATST Premier Inst^	Prmlnst	2,704		1997	2007
AIM ATST Premier Investor^	Prmlnst	117		2006	2007
AIM STIT Liquid Assets Cash Mg^	Prmlnst	3,058	AAAm	1997	2007
AIM STIT Liquid Assets Corp^	Prmlnst	545	AAAm	1997	2007
AIM STIT Liquid Assets Inst^	Prmlnst	14,544	AAAm	1997	2007
AIM STIT STIC Prime Cash Mgmt^	Prmlnst	1,505	AAAm	2006	2007
AIM STIT STIC Prime Corp^	Prmlnst	290	AAAm	2006	2007
AIM STIT STIC Prime Inst^	Prmlnst	3,923	AAAm	1997	2007
AIM STIT STIC Prime Resource^	Prmlnst	555	AAAm	1997	2007
Allegiant Advant Instit MMF I^	Prmlnst	2,055	AAAm	1997	2007
American Beacon MM Cash Mg^	Prmlnst	620	AAAm	2006	2007
American Beacon MM Inst^	Prmlnst	224	AAAm	2006	2007
American Beacon MM Select^	Prmlnst	10,251	AAAm	1997	2007
American Perform Cash Mg Inst^	Prmlnst	462	AAAm	2003	2007
Barclays Instit MMF Aon	Prmlnst	78		2007	2007
Barclays Instit MMF Inst	Prmlnst	5,390		2000	2007
Barclays Instit MMF Premium	Prmlnst	1,820		2003	2007
Barclays Prime MMF Inst^	Prmlnst	7,510	AAAm	2004	2007

Barclays Prime MMF Premium^	Prmlnst	1,820	AAAm	2004	2007
Barclays Prime MMF Select^	Prmlnst	76	AAAm	2005	2007
BBH Prime Institutional MMkt^	Prmlnst	214	AAAm	1997	2007
BlackRock Lq TempCash Inst	Prmlnst	7,392		1997	2007
BlackRock Lq TempFund Ad^	Prmlnst	1,865	AAAm	2003	2007
BlackRock Lq TempFund In^	Prmlnst	22,041	AAAm	1997	2007
BNY Hamilton MF Agency^	Prmlnst	49	AAAm	2007	2007
BNY Hamilton MF Hamilton^	Prmlnst	4,624	AAAm	1997	2007
BNY Hamilton MF Instit^	Prmlnst	2,515	AAAm	2006	2007
Calvert Cash Res Inst Prime Port	Prmlnst	92		2007	2007
Citi Institutional Cash Reserves L^	Prmlnst	689	AAAm	1998	2007
Citi Institutional Cash Reserves O^	Prmlnst	5,059	AAAm	2006	2007
Citi Institutional Liquid Reserves A	Prmlnst	16,975		1997	2007
Columbia Cash Reserves Capital	Prmlnst	10,601		1997	2007
Columbia Cash Reserves Inst	Prmlnst	6,663		2001	2007
Columbia Cash Reserves Trust	Prmlnst	2,604		2000	2007
Columbia Cash Reserves Z	Prmlnst	709		2006	2007
Columbia MM Reserves Capital^	Prmlnst	7,622	AAAm	1997	2007
Columbia MM Reserves G Trust^	Prmlnst	683	AAAm	2007	2007
Columbia MM Reserves Instit^	Prmlnst	2,980	AAAm	2001	2007
Columbia MM Reserves Retail A^	Prmlnst	96	AAAm	2007	2007
Columbia MM Reserves Trust^	Prmlnst	37	AAAm	2007	2007
Columbia Prime Reserves Cap	Prmlnst	7,237		1998	2007
Columbia Prime Reserves Inst	Prmlnst	559		2006	2007
Credit Suisse Inst MMF Prime A^	Prmlnst	22,620	AAAm	2002	2007
Credit Suisse Inst MMF Prime B^	Prmlnst	180	AAAm	2002	2007
Dreyfus Cash Mgmt Admin^	Prmlnst	281	AAAm	2006	2007
Dreyfus Cash Mgmt Institutional^	Prmlnst	11,044	AAAm	1997	2007
Dreyfus Cash Mgmt Plus Admin	Prmlnst	1,768		1997	2007

Dreyfus Cash Mgmt Plus Instit	Prmlnst	6,922		1997	2007
Dreyfus Instit Cash Adv Admin^	Prmlnst	790	AAAm	2006	2007
Dreyfus Instit Cash Adv IA^	Prmlnst	22,527	AAAm	2003	2007
Dreyfus Instit Cash Adv Plus IA	Prmlnst	2,135		2003	2007
DWS CAT Prem MM Sh MMP Inst	Prmlnst	69		2006	2007
DWS Deutsche Cash Mgmt In^	Prmlnst	2,269	AAAm	2006	2007
DWS Deutsche Cash Res In	Prmlnst	5,265	AAAm	1997	2007
DWS MM Series Instit^	Prmlnst	20,512	AAAm	1998	2007
DWS MM Series Managed^	Prmlnst	692	AAAm	2006	2007
DWS MM Series Premium S^	Prmlnst	711	AAAm	2006	2007
DWS MM Series Prime Res S^	Prmlnst	110	AAAm	2006	2007
Evergreen Institutional MM AD	Prmlnst	109		1997	2007
Evergreen Institutional MM I	Prmlnst	13,940		1997	2007
Evergreen Institutional MM IN	Prmlnst	139		2006	2007
Evergreen Prime Cash Mgmt I^	Prmlnst	4,228	AAAm	1997	2007
Evergreen Prime Cash Mgmt IN^	Prmlnst	115	AAAm	2007	2007
Excelsior MMF Inst	Prmlnst	599		2006	2007
Federated Liquid Cash Trust IS	Prmlnst	99		2007	2007
Federated Master Trust	Prmlnst	227		2007	2007
Federated Prime Cash Oblig IC^	Prmlnst	832	AAAm	1997	2007
Federated Prime Cash Oblig IS^	Prmlnst	5,541	AAAm	1997	2007
Federated Prime Manage Oblig IC	Prmlnst	1,087		2005	2007
Federated Prime Manage Oblig IS	Prmlnst	1,724		2006	2007
Federated Prime Obligations IS^	Prmlnst	15,501	AAAm	1997	2007
Federated Prime Value Oblig IC	Prmlnst	2,295		1997	2007
Federated Prime Value Oblig IS	Prmlnst	11,090		1997	2007
Fidelity Instit MM: MM Port I	Prmlnst	31,120		1997	2007
Fidelity Instit MM: MM Port Select	Prmlnst	729		1997	2007
Fidelity Instit MM: Prime MMP I^	Prmlnst	9,710	AAAm	1997	2007

Fidelity Instit MM: Prime MMP Sel^	PrmInst	446	AAAm	1997	2007
Fifth Third Inst MMF Inst^	PrmInst	1,520	AAAm	2006	2007
First American Prime Obligs Z^	PrmInst	9,002	AAAm	2006	2007
Goldman Sachs FS MM Inst^	PrmInst	15,530	AAAm	1997	2007
Goldman Sachs FS MM Pref^	PrmInst	107	AAAm	2007	2007
Goldman Sachs FS MM Select^	PrmInst	143	AAAm	2007	2007
Goldman Sachs FS Prm Ob Ins^	PrmInst	23,306	AAAm	1997	2007
Goldman Sachs FS Prm Ob Pre^	PrmInst	1,299	AAAm	2006	2007
Goldman Sachs FS Prm Ob Sel^	PrmInst	244	AAAm	2007	2007
HSBC Inv Money Market Fund I^	PrmInst	1,630	AAAm	2005	2007
HSBC Inv Money Market Fund Y^	PrmInst	861	AAAm	2007	2007
Janus Instit Cash Mgmt Inst	PrmInst	4,110		2003	2007
Janus Institutional MMF Inst^	PrmInst	5,810		1997	2007
JPMorgan Liquid Assets Agen	PrmInst	283		2006	2007
JPMorgan Liquid Assets Capit	PrmInst	1,954		1997	2007
JPMorgan Liquid Assets Instit	PrmInst	1,722		1997	2007
JPMorgan Prime MM Agency^	PrmInst	10,035	AAAm	1997	2007
JPMorgan Prime MM Capital^	PrmInst	38,524	AAAm	1997	2007
JPMorgan Prime MM Institution^	PrmInst	24,138	AAAm	1997	2007
Lehman Brothers Cash Mg MMP^	PrmInst	163	AAAm	2001	2007
Lehman Brothers Cash Mg Prm^	PrmInst	862	AAAm	2001	2007
Lehman Brothers ILF MMP Inst^	PrmInst	186		2007	2007
Lehman Brothers ILF Prime Inst^	PrmInst	4,614	AAAm	2007	2007
Lehman Brothers Prime Reserv^	PrmInst	4,085	AAAm	2005	2007
Marshall Prime MMkt Fund I^	PrmInst	2,128		2006	2007
Merrill Lynch Institutional Fund^	PrmInst	21,228	AAAm	1997	2007
Merrill Lynch Premier Institutional	PrmInst	19,863		1998	2007
Monarch Daily Assets Cash Pref^	PrmInst	64	AAAm	2002	2007
Monarch Daily Assets Cash Univ^	PrmInst	104	AAAm	2002	2007

Morgan Stanley Act As Instit^	Prmlnst	1,605	AAAm	2001	2007
Morgan Stanley Inst Liq MMP Inst	Prmlnst	8,948		2004	2007
Morgan Stanley Inst Liq Prime Inst^	Prmlnst	26,871	AAAm	2005	2007
Morgan Stanley Inst Liq Prime Inv^	Prmlnst	103	AAAm	2007	2007
Morgan Stanley Inst Liq Prime Svc^	Prmlnst	474	AAAm	2006	2007
Munder Instit MMF Comerica Y^	Prmlnst	1,070		1999	2007
Neuberger Berman Inst Cash Tr	Prmlnst	1,952		2006	2007
Neuberger Berman Prime MF Tr^	Prmlnst	842	AAAm	2006	2007
Northern Instit Prime Oblig Sh^	Prmlnst	5,323	AAAm	2004	2007
Oppenheimer Institutional MM E	Prmlnst	5,039	AAAm	2007	2007
Payden Cash Reserves	Prmlnst	502		2006	2007
Phoenix Insight MMF E^	Prmlnst	477	AAAm	2002	2007
Phoenix Insight MMF I^	Prmlnst	2,560	AAAm	2002	2007
Prudential Instit Liq Port MM Ser A^	Prmlnst	1,042		2007	2007
Prudential Instit Liq Port MM Ser I^	Prmlnst	890		2007	2007
Putnam Prime Money Market I^	Prmlnst	5,891	AAAm	2005	2007
Reserve Liquid Performance 15	Prmlnst	39		2006	2007
Reserve Primary Fund 15^	Prmlnst	828	AAAm	2002	2007
Reserve Primary Fund 20^	Prmlnst	296	AAAm	2002	2007
Reserve Primary Fund 25^	Prmlnst	601	AAAm	2002	2007
Reserve Primary Fund Inst^	Prmlnst	15,396	AAAm	2006	2007
Russell Money Market Fund S	Prmlnst	5,170		1997	2007
Schwab Value Adv MF Inst	Prmlnst	3,793		2006	2007
Schwab Value Adv MF Inst Prm	Prmlnst	3,330		2007	2007
SEI Daily Inc Trust MMF A^	Prmlnst	530		2006	2007
SEI Daily Inc Trust Prime Oblig A^	Prmlnst	3,318	AAAm	1997	2007
SSgA Prime Money Market Fund^	Prmlnst	14,165	AAAm	1997	2007
State Street Inst Liquid Reserves^	Prmlnst	5,171	AAAm	2005	2007
STI Classic Inst Cash Mg MM Inst^	Prmlnst	3,572	AAAm	1997	2007

Tamarack Inst Prime Money Mkt	Prmlnst	1,460		2007	2007
TDAM Institutional MM Inst^	Prmlnst	59	AAAm	2007	2007
TIAA CREF Inst MMkt Fund	Prmlnst	978		2007	2007
Touchstone Institutional MMF	Prmlnst	257		2007	2007
UBS Select Money Market Fund^	Prmlnst	9,610	AAAm	1999	2007
Vanguard Prime MMF Instit	Prmlnst	9,607		1997	2007
Victory Institutional MM Inv	Prmlnst	1,490		1997	2007
Wells Fargo Adv Cash Inv Inst	Prmlnst	8,489		1997	2007
Wells Fargo Adv Cash Inv Select	Prmlnst	1		2007	2007
Wells Fargo Adv Heritage I^	Prmlnst	543	AAAm	2006	2007
Wells Fargo Adv Heritage Sel^	Prmlnst	1	AAAm	2006	2007
Wells Fargo Adv Prm Inv MM I^	Prmlnst	8,501	AAAm	2000	2007
Western Asset Instit MMkt A	Prmlnst	5,300		1997	2007
ABN AMRO Treasury MM I^	Trslnst	52	AAAm	2007	2007
AIM STIT Treasury Cash Mgmt^	Trslnst	2,146	AAAm	2006	2007
AIM STIT Treasury Corp^	Trslnst	449	AAAm	2007	2007
AIM STIT Treasury Inst^	Trslnst	1,891	AAAm	1997	2007
AIM STIT Treasury Resource^	Trslnst	531	AAAm	2006	2007
American Perform US Treas Inst^	Trslnst	374	AAAm	2002	2007
Barclays Treasury MMF Inst^	Trslnst	100	AAAm	2005	2007
Barclays Treasury MMF Select^	Trslnst	1	AAAm	2005	2007
BlackRock Lq T-Fund Inst^	Trslnst	4,415	AAAm	1997	2007
BlackRock Lq Treas Tr Admin^	Trslnst	113	AAAm-G	2007	2007
BlackRock Lq Treas Tr Inst^	Trslnst	976	AAAm-G	2006	2007
BNY Hamilton Treasury MF Ham^	Trslnst	599	AAAm	2006	2007
BNY Hamilton Treasury MF Inst^	Trslnst	487	AAAm	2007	2007
Citi Institutional Treasury Reserv A^	Trslnst	1,716	AAAm	2006	2007
Columbia Treasury Reserves Cap^	Trslnst	2,620	AAAm	1997	2007
Columbia Treasury Reserves Inst^	Trslnst	1,800	AAAm	2001	2007

Columbia Treasury Reserves Tr^	TrsInst	570	AAAm	2006	2007
Dreyfus Treas Cash Mgmt Admin^	TrsInst	305	AAAm	2007	2007
Dreyfus Treas Cash Mgmt Inst^	TrsInst	4,988	AAAm	1997	2007
Dreyfus Treas Prime Cash Mg Ad^	TrsInst	68	AAAm	2007	2007
Dreyfus Treas Prime Cash Mg Ins^	TrsInst	1,343	AAAm	2006	2007
DWS Treasury Money Fund Inst^	TrsInst	755	AAAm	2006	2007
Evergreen Institutional Treas I^	TrsInst	2,210		2006	2007
Federated Treasury Oblig IC^	TrsInst	870	AAAm	1998	2007
Federated Treasury Oblig IS^	TrsInst	7,034	AAAm	1997	2007
Federated US Trs Cash Res IS^	TrsInst	1,663	AAAm	1997	2007
Fidelity Instit MM: Treas Only I	TrsInst	1,290		1997	2007
Fidelity Instit MM: Treas Port I^	TrsInst	6,010	AAAm	1997	2007
Fidelity Instit MM: Treas Port Sel^	TrsInst	361	AAAm	2006	2007
First American Treas Oblig Z^	TrsInst	1,560	AAAm	2006	2007
Goldman Sachs FS Trs Ins Ins^	TrsInst	2,609	AAAm	1998	2007
Goldman Sachs FS Trs Ins Pre^	TrsInst	160	AAAm	2007	2007
Goldman Sachs FS Trs Ins Sel^	TrsInst	28	AAAm	2007	2007
Goldman Sachs FS Trs Obl Inst^	TrsInst	2,189	AAAm	1997	2007
Goldman Sachs FS Trs Obl Pre^	TrsInst	114	AAAm	2006	2007
JPMorgan 100% US Trs MM Agen^	TrsInst	1,285	AAAm-G	1997	2007
JPMorgan 100% US Trs MM Cap^	TrsInst	2,178	AAAm-G	1997	2007
JPMorgan 100% US Trs MM Instit^	TrsInst	3,413	AAAm-G	1997	2007
JPMorgan US Trs Plus MM Agen^	TrsInst	898	AAAm	2006	2007
JPMorgan US Trs Plus MM Inst^	TrsInst	1,138	AAAm	1997	2007
Lehman Brothers ILF Treas Inst^	TrsInst	258	AAAm	2007	2007
Merrill Lynch Treasury MF^	TrsInst	1,414	AAAm-G	1997	2007
Milestone Treasury Oblig Inst^	TrsInst	1,120	AAAm	2006	2007
Morgan Stanley Inst Liq Treas Inst	TrsInst	93	AAAm	2007	2007
Reserve Treasury Inst	TrsInst	60		2007	2007

SSgA US Treasury Money Market^	TrsInst	1,152	AAAm	1997	2007
STI Classic Inst US Trs Sec Inst^	TrsInst	901	AAAm	1997	2007
UBS Select Treasury Fund^	TrsInst	918	AAAm	2005	2007
Vanguard Admiral Treasury MIM	TrsInst	17,935		1997	2007
Wells Fargo Adv Trs Plus In^	TrsInst	1,835	AAAm	1997	2007