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March 19, 2012

Investment Industry Regulatory Organization of Canada
British Columbia Securities Commission
Alberta Securities Commission
Saskatchewan Financial Services Commission
Manitoba Securities Commission
Ontario Securities Commission
Autorité des marchés financiers
New Brunswick Securities Commission
Registrar of Securities, Prince Edward Island
Nova Scotia Securities Commission
Superintendent of Securities, Newfoundland and Labrador
Superintendent of Securities, Northwest Territories
Superintendent of Securities, Yukon Territory
Superintendent of Securities, Nunavut

Attention: James E. Twiss
Vice President, Market Regulation Policy
Investment Industry Regulatory Organization of Canada
121 King Street West, Suite 2000
Toronto, Ontario M5H 3T9
e-mail: jtwiss@iiroc.ca

SUBMISSION RE: REQUEST FOR COMMENT CANADIAN SECURITIES ADMINISTRATORS / INVESTMENT INDUSTRY REGULATORY ORGANIZATION OF CANADA JOINT NOTICE 23-312 TRANSPARENCY OF SHORT SELLING AND FAILED TRADES

In recent years, there have been numerous international developments in regulation of short sales and failed trades. A working group ("Working Group"), comprised of staff from the Canadian Securities Administrators ("CSA") and the Investment Industry Regulatory Organization of Canada ("IIROC"), has been monitoring these developments and reviewing regulatory approaches to issues arising from short selling and failed trades. The Working Group is of the view that it may be appropriate to consider whether additional measures are warranted to: (i) enhance the regulatory reporting and transparency of short sales; and (ii) introduce some transparency of failed trades in Canadian markets. OpsRisk Limited is pleased to have the opportunity to contribute to the discussion of enhancing reporting and transparency in short selling and failed transactions, and its importance to formulating financial policies and regulations.

Introduction

Capital market settlement processes convert market liquidity ("virtual", bookkeeping-based, unrealized gains and losses - collateral and entitlements when booked) into actual market liquidity ("actual", cash-based, realized gains and losses - collateral and entitlements when delivered).

Processes and dispensations designed to encourage market liquidity which delay this conversion raise questions for the investor, such as:

- Does inability to find securities to complete settlement, in the nanosecond trading environment, cast doubt on "best-price" and "actual market liquidity" for securities;
- Do fails in concentrated securities groups produce "false positives" or "false negatives" in regulatory compliance, risk and management systems, and trade and decision support data?
- Do the reported quality and quantity of collateral held in the accounting records require closer inspection given the inability to find securities for settlement?
- Do custodian banks, acting as agents for clients, providing contractual settlement accounting service (they debit or credit the client account with cash or securities on settlement date regardless whether settlement actually occurred – Attachment 1 Pg16) distort the amount of actual cash liquidity in the capital market?

Operational processes in the capital market continuously reflect non-compliant events. A fail-to-deliver or a fail-to-receive is a non-compliant event that creates a systemic operational Unrealized Risk®. Accounting reconciliation and netting of outcomes mask for the regulator and investor the operational information necessary to comprehend and monitor the actual magnitude of Unrealized Risk®.

Approach

Continuous operational measurement and monitoring of the capital markets at both macro- and micro-levels are critical to:

- Verify the robustness, efficiency and transparency of financial processes to ensure integrity;
- Express results in a normalized way to attribute and quantify operational risk;
- Facilitate "circuit warnings" or "circuit breakers" to keep risk within acceptable levels;
- Assure effective, dynamic focus of financial market governance on areas of operational risk and to move economic policy timely and true; and
- Promote cross-jurisdiction consistency of economic policies to discourage jurisdiction-specific regulatory shopping by global institutions seeking to avoid imposed disclosures or restrictions.

To accomplish this continuous measurement and monitoring, data from existing capital market processes and sources is essential and, of great importance, and as demonstrated below, is already available and cost-effectively.

Equities and Exchange Traded Funds Securities

The U.S. Securities and Exchange Commission ("SEC") requires and receives data twice a month that reports all equity securities with a total fails-to-deliver balance as of a particular settlement date. The data comes from the National Securities Clearing Corporation's ("NSCC") Continuous Net Settlement (CNS) system aggregated over all NSCC members. The published data includes the

settlement date, CUSIP numbers, ticker symbols, issuer name, price, and total number of fails-to-deliver (i.e., the balance level outstanding). The description of the data provided by the SEC is included with this submission (Attachment 2).

NASDAQ OMX Group, Inc., using a symbol lookup, provides the short-interest data for the particular security extractable by settlement date, short interest, average daily share volume, and days to cover.

Data from these readily available sources provides the information necessary for on-going monitoring and analysis of operational risk, such as that which is included with this submission (Attachment 3). This also enables essential academic and market research, and comment, based upon such data. The recent report, "*Asymmetries in Short Selling of Exchange Traded Funds and the Potential for Systemic Risk*" by Andrew Bogan, Brendan Connor, Thomas R. Bogan, and Elizabeth C. Bogan is an example (Attachment 4).

The Canadian Depository for Securities Limited ("CDS") provides links through two channels to effect Canada-U.S. cross-border transactions:

- DTC Direct Link settles on a trade-for-trade basis using the custodial and institutional clearing and settlement services of The Depository Trust Company (DTC).
- New York Link clears and settles over-the-counter (OTC) trades with U.S. broker-dealers through NSCC.

Both DTC and NSCC are subsidiaries of The Depository Trust & Clearing Corporation (DTCC), the U.S. holding company that provides clearance, settlement, depository and data information services for a range of securities. This established, reliable CDS data link and source provides the operating base and data source from which both U.S. and Canadian short selling and fails data can be accessed, extracted and made available in Canada.

Fixed Income Securities

Primary dealers serve as trading counterparties to the New York U.S. Federal Reserve Bank ("New York Fed") in its implementation of U.S. monetary policy. This role, as outlined on the New York Website, includes the obligations to: (i) participate consistently in open market operations to carry out U.S. monetary policy pursuant to the direction of the Federal Open Market Committee (FOMC); and (ii) provide the New York Fed's trading desk with market information and analysis that impacts in the formulation and implementation of monetary policy. Primary dealers are also required to participate in all auctions of U.S. government debt and to make available markets for the New York Fed when it transacts on behalf of its foreign official account-holders.

Of the 21 primary dealers (Attachment 5), currently 3 Canadian organizations are primary dealers:

- Bank of Nova Scotia, New York Agency
- BMO Capital Markets Corp.
- RBC Capital Markets, LLC

CIBC World Markets Corp. also served as a primary dealer through February 2007.

The New York Fed publishes each Thursday a package of trading, financing, and fails data derived from the primary dealers. An example of the package is included with this submission (Attachment 6). This data has been published by the New York Fed since 1990. The history is available on-line from the New York Fed for:

- U.S. Treasury Securities
- Federal Agency and Government Sponsored Enterprise Securities
- Mortgage-backed Securities
- Corporate Securities

Data from this readily available public source provides the necessary information to conduct on-going monitoring and analysis of operational risk such as that which is attached (Attachment 3). The data has been referenced by RBC Capital and commented on by the international press (Attachment 7). This data also facilitates academic and market research, and commentary such as the report by the U.S.-based Kauffman Foundation of Kansas City, Missouri, entitled "*Canaries in the Coal Mine: How the Rise in Settlement "Fails" Creates Systemic Risk for Financial Firms and Investors*" (Attachment 8).

CDS provides participants with a centralized counterparty netting and real-time settlement service of eligible fixed income trades in Canada. The following types of securities are serviced:

- Government of Canada bonds and treasury bills
- Provincial bonds, treasury bills and notes
- Canada Mortgage Bonds

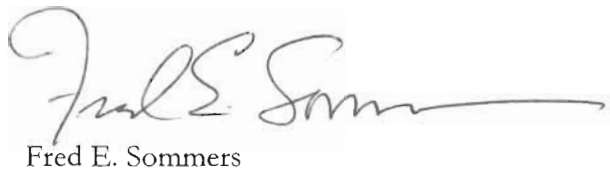
Four Canadian organizations have regularly produced a package of data to the New York Fed; a package that includes both fails-to-receive and fails-to-deliver data. The type and nature of fixed income services provided by and fixed income securities serviced by CDS is comparable to that reported on the New York Fed. The large Canadian financial institutions have experience to meet timely reporting requirements necessary to monitor rapid development and reliability of a trading financing, and fails reporting.

Conclusion

Regulatory and contractual compliance, corporate governance, and investor confidence rely on an efficient, cost effective, reliable actual exchange of cash and securities. Continuous operational measurement and monitoring of capital markets at macro- and micro-levels is critical and an expected role of regulatory institutions. The magnitude, volatility and pattern of the short-selling and fails record is a continuing expression either of a broken "shadow banking" system, or of an insufficient incentive to settle, fueling an operational risk overhang that effectively "kicks leverage up another notch (unobserved?)".

I would be pleased to answer any questions you may have on the submission. I can be reached by telephone at 647.351.2043 or by e-mail at fred.sommers@opsrisklimited.com.

Yours truly,

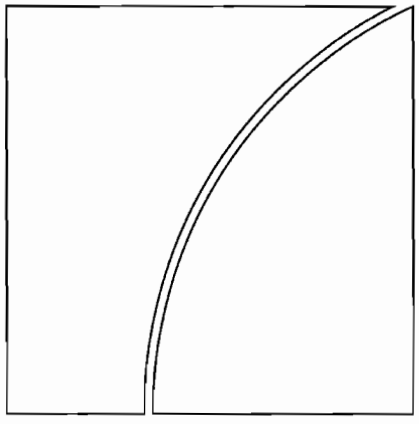


Fred E. Sommers
President
OpsRisk Limited

ATTACHMENT 1

Bank for International Settlements

Committee on Payment and Settlement Systems



A glossary of terms used in payments and settlement systems

March 2003

BANK FOR INTERNATIONAL SETTLEMENTS

Term	Definition	Source
contract for difference	a financial contract in which the difference between the agreed fixed price of an asset and its prevailing market price is periodically credited to the counterparty in the money. Since there is no transfer of principal, a CFD covers hedging or speculative needs.	**SLT**
contract law	body of law concerned with making and enforcing arrangements.	**Core Principles**
contractual income collection	a contractual commitment by a custodian to credit a customer's cash account with interest, dividend or tax refund payments on the date on which the payments are scheduled, regardless of whether the custodian has actually received the payment. Usually such credits are provisional and are reversed if the custodian does not receive the payment within an interval established by the custodian.	**x-border**
contractual settlement date accounting	a contractual commitment by a custodian to credit and debit a customer's cash and securities accounts, as appropriate, on the date on which the customer's contract with its counterparty provides for settlement (the contractual settlement date), regardless of whether settlement has actually occurred. Usually these credits and debits are provisional and are reversed if settlement does not occur within an interval established by the custodian.	**x-border**
correspondent banking	an arrangement under which one bank (correspondent) holds deposits owned by other banks (respondents) and provides payment and other services to those respondent banks. Such arrangements may also be known as agency relationships in some domestic contexts. In international banking, balances held for a foreign respondent bank may be used to settle foreign exchange transactions. Reciprocal correspondent banking relationships may involve the use of so-called nostro and vostro accounts to settle foreign exchange transactions.	**Red Book** *Retail*
counterparty	the opposite party to a financial transaction such as a securities trade or swap agreement.	**Red Book** Blue Book *Retail*
counterparty credit limits	limits set by a trading party to restrict the largest amount of its credit exposures to different counterparties.	**SLT**
CPU	see central processing unit.	
credit caps	see caps.	**Red Book** Blue Book
credit card	a card indicating that the holder has been granted a line of credit. It enables the holder to make purchases and/or withdraw cash up to a prearranged ceiling; the credit granted can be settled in full by the end of a specified period or can be settled in part, with the balance taken as extended credit. Interest is charged on the amount of any extended credit and the holder is sometimes charged an annual fee.	**Red Book** Blue Book EM-CPSS *Retail*
credit card company	a company which owns the trademark of a particular credit card, and may also provide a number of marketing, processing or other services to its members using the card services.	**Red Book** Blue Book Retail

ATTACHMENT 2

U.S. Securities and Exchange Commission

U.S. Securities and Exchange Commission

Frequently Requested FOIA Document: Fails-to-Deliver Data

What You Should Know About the Data

This text file contains the date, CUSIP numbers, ticker symbols, issuer name, price, and total number of fails-to-deliver (i.e., the balance level outstanding) recorded in the National Securities Clearing Corporation's ("NSCC") Continuous Net Settlement (CNS) system aggregated over all NSCC members. Data prior to September 16, 2008 include only securities with a balance of total fails-to-deliver of at least 10,000 shares as of a particular settlement date. Data on or after September 16, 2008 include all securities with a balance of total fails-to-deliver as of a particular settlement date. The data include fails-to-deliver in equity securities.

The values of total fails-to-deliver shares represent the aggregate net balance of shares that failed to be delivered as of a particular settlement date. If the aggregate net balance of shares that failed to be delivered is less than 10,000 as of a particular settlement date prior to September 16, 2008, then no record will be present in the file for that date even if there are fails in that security. If the aggregate net balance of shares that failed to be delivered is zero as of a particular settlement date on or after September 16, 2008, then no record will be present in the file for that date. Fails to deliver on a given day are a cumulative number of all fails outstanding until that day, plus new fails that occur that day, less fails that settle that day. The figure is not a daily amount of fails, but a combined figure that includes both new fails on the reporting day as well as existing fails. In other words, these numbers reflect aggregate fails as of a specific point in time, and may have little or no relationship to yesterday's aggregate fails. Thus, it is important to note that the age of fails cannot be determined by looking at these numbers. In addition, the underlying source (s) of the fails-to-deliver shares is not necessarily the same as the underlying source(s) of the fails-to-deliver shares reported the day prior or the day after.

Data Prior to July 2009

Prior to July 2009, the files contain each settlement date over a calendar month. The monthly files are archived in a zipped file for each calendar quarter. We cannot guarantee the accuracy of the data.

Data Starting July 2009

Starting July 2009, each month is contained in two files. The first half of a given month is available at the end of the month. The second half of a given month is available at about the 15th of the next month. We cannot guarantee that the data will be posted by a particular date. We cannot guarantee the accuracy of the data.

The price field includes the closing price of the security on the previous day as long as the price is available and is greater than one penny. When the price is not available or is less than a penny, the field is filled with a ".". Even when prices are included in the data, we cannot guarantee that this price matches closing prices available from other sources.

Please note that fails-to-deliver can occur for a number of reasons on both long and short sales. Therefore, fails-to-deliver are not necessarily the result of short selling, and are not evidence of abusive short selling or "naked" short selling. For more information on short selling and fails-to-deliver, see http://www.sec.gov/spotlight/keyregshoissues.htm, http://www.sec.gov/divisions/marketreg/mrfaqregsho1204.htm, and http://www.sec.gov/rules/final/34-50103.htm.

What You Should Know About the Data File

The information in this file is raw data — data that are meant to be used as input to another program. The data items are provided as a "pipe delimited" text file. Although the file can be viewed in any program that accepts ASCII text (for example, a word processor), the data fields are best viewed when imported into a program that accepts delimited data, such as a spreadsheet or a statistical application. The record layout and maximum field sizes are shown below for those who want to process the data into another form.

Field Name	Field Description	Maximum Size
SETTLEMENT DATE	SETTLEMENT DATE	Number - 8 digits
CUSIP	CUSIP	9 characters
SYMBOL	TICKER SYMBOL	10 characters
QUANTITY (FAILS)	TOTAL FAILURE-TO-DELIVER SHARES	Number - unlimited
DESCRIPTION	COMPANY NAME	30 characters
PRICE	CLOSING PRICE ON PREVIOUS DAY	Number - unlimited

For technical questions regarding the website, send an e-mail message to webmaster@sec.gov. For additional information about the data, call the SEC's Office of Freedom of Information and Privacy Act Operations at (202) 551-7900.

Current Data

Download the Current Fails-to-Deliver Data
Report for the second half of May 2010

Archive Data

http://www.sec.gov/foia/docs/failsdata.htm

Home | Previous Page

Modified: 06/16/2010

ATTACHMENT 3

Settlement Phenomenon - Unrealized Systemic Operational Risk

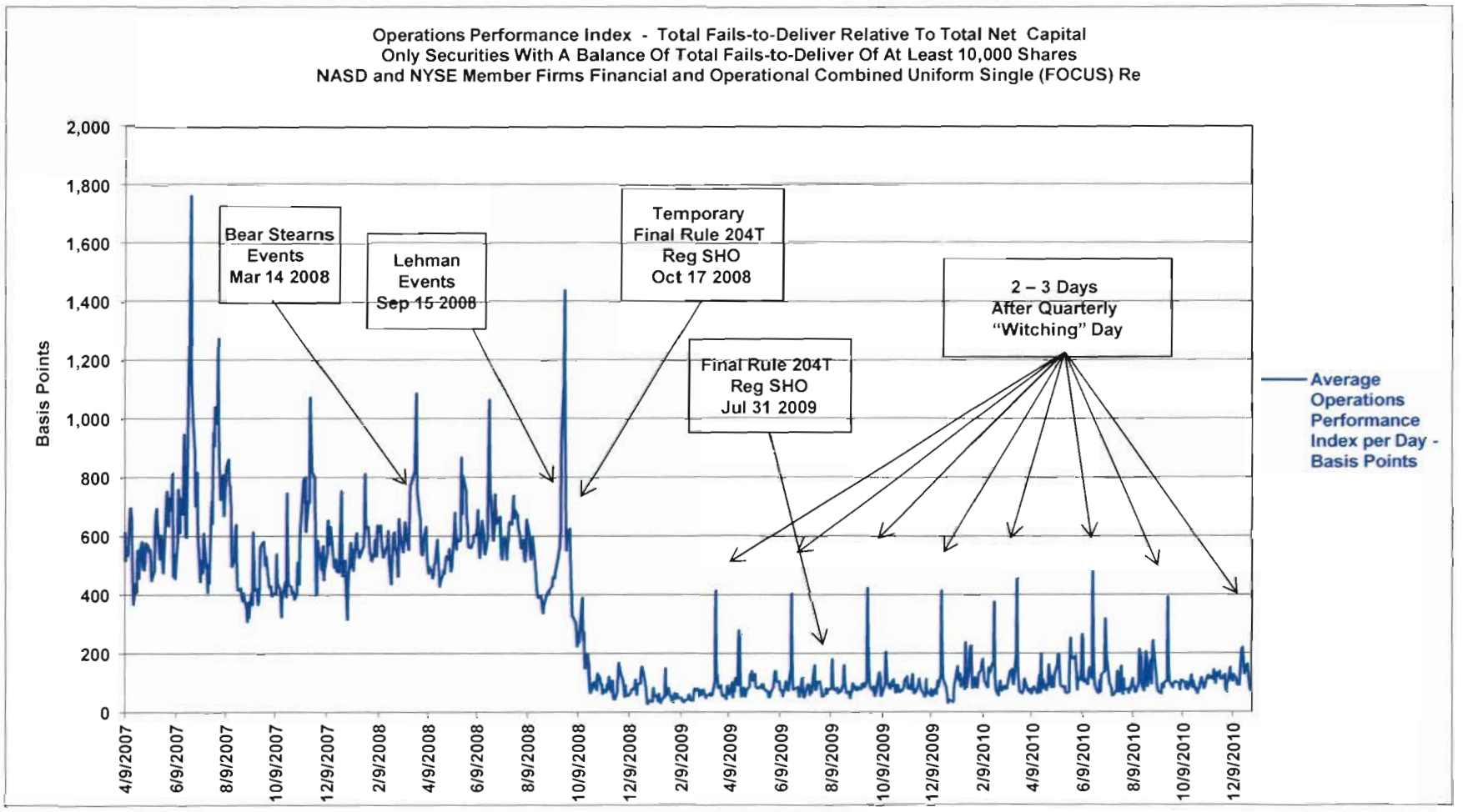
OpsRisk Limited
January 2012

Settlement Phenomenon - Unrealized Systemic Operational Risk

January 2012

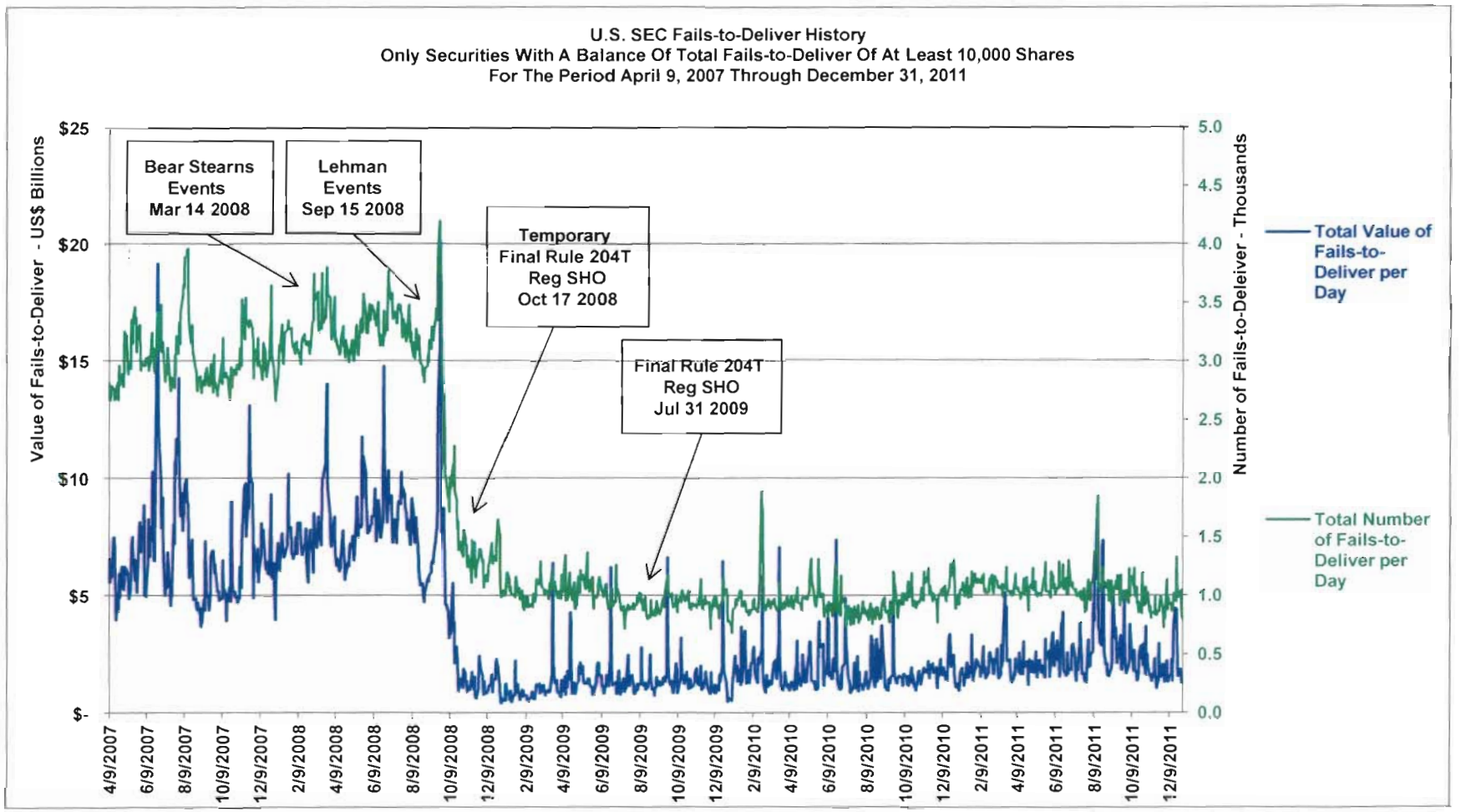
OpsRisk Limited

U. S. TOTAL NET CAPITAL OPERATIONAL RISK METRIC - HISTORY



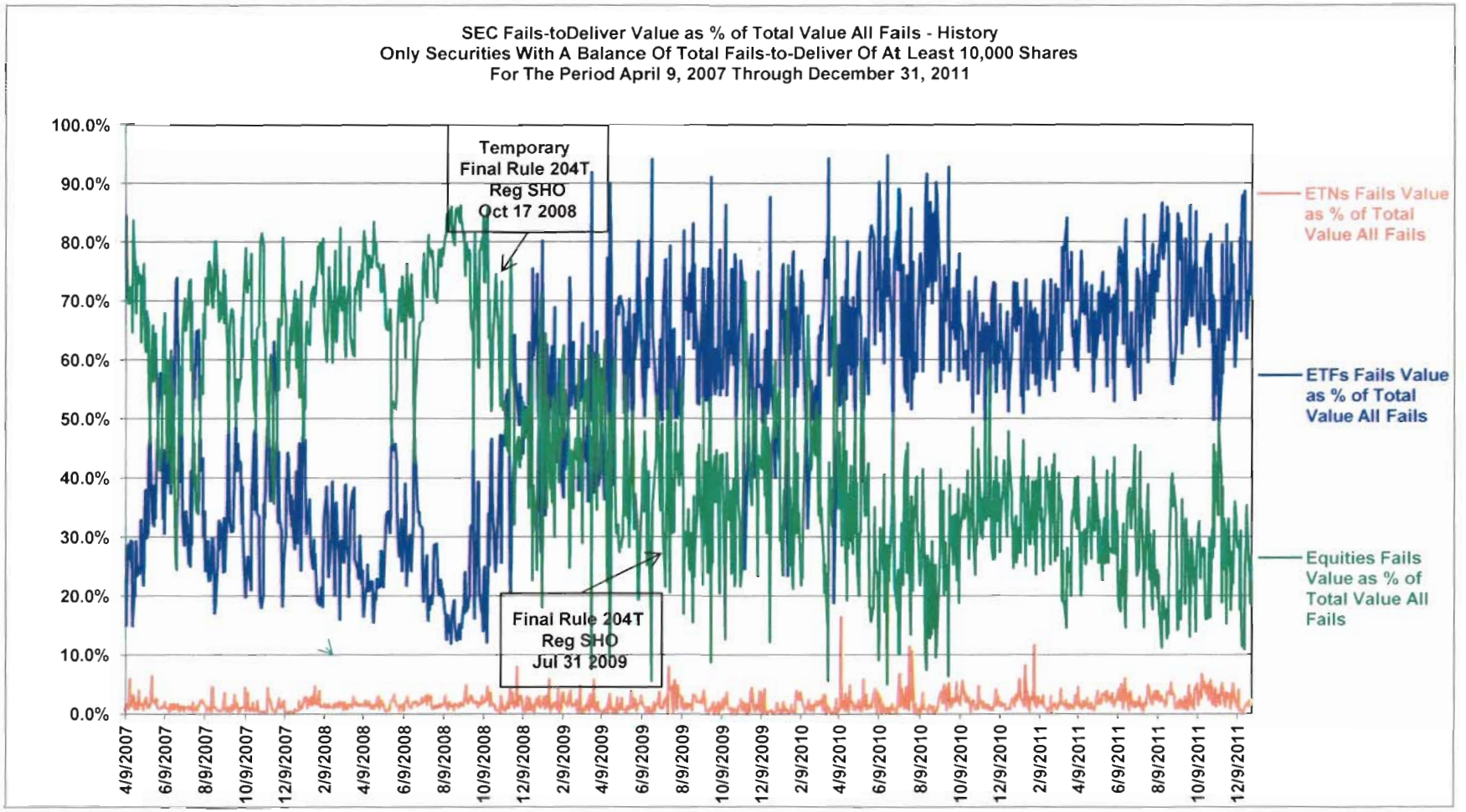
Source: U.S. Securities and Exchange Commission, SIFMA

U. S. SEC FAILS-TO-DELIVER VALUE AND NUMBER - HISTORY



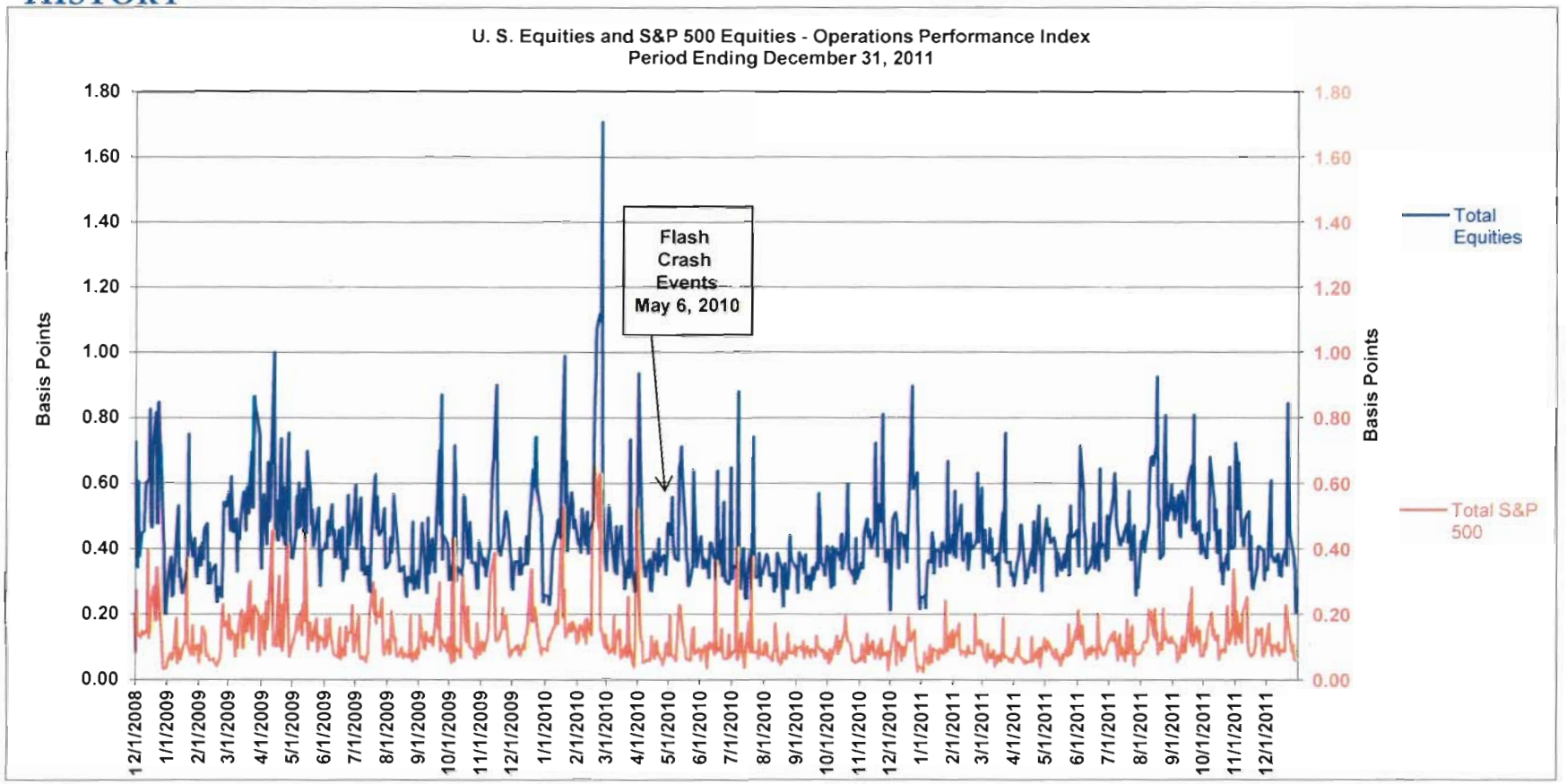
Source: U.S. Securities and Exchange Commission

U. S. SEC FAILS-TO-DELIVER BY TYPE – PERCENT HISTORY



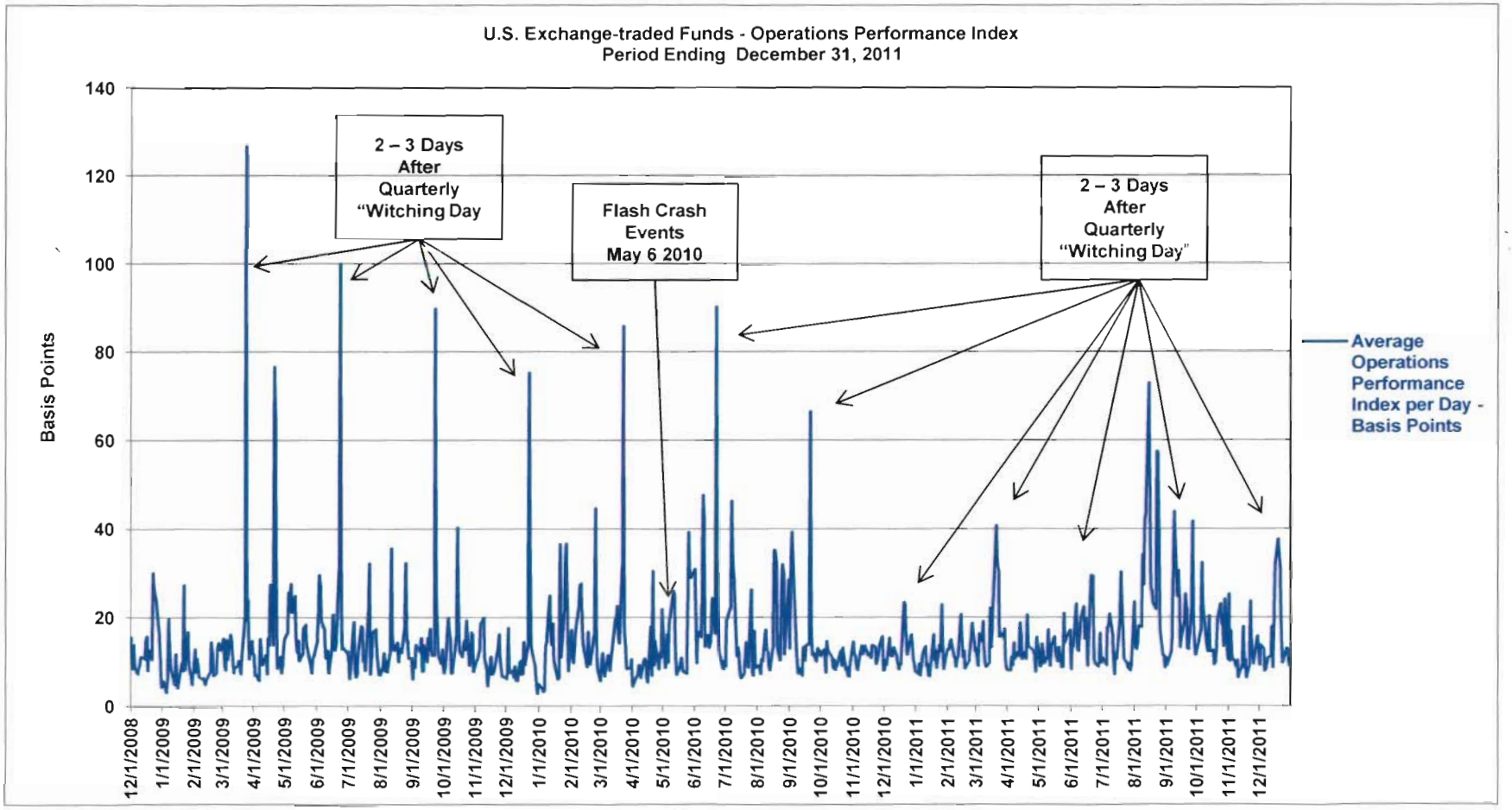
Source: U.S. Securities and Exchange Commission

U. S. TOTAL EQUITIES AND S&P 500 EQUITIES OPERATIONAL RISK METRICS - HISTORY



Source: U.S. Securities and Exchange Commission, New York Stock Exchange, The Depository Trust and Clearing Corporation, World Federation of Exchanges

U. S. EXCHANGE-TRADED FUNDS OPERATIONAL RISK METRIC - HISTORY



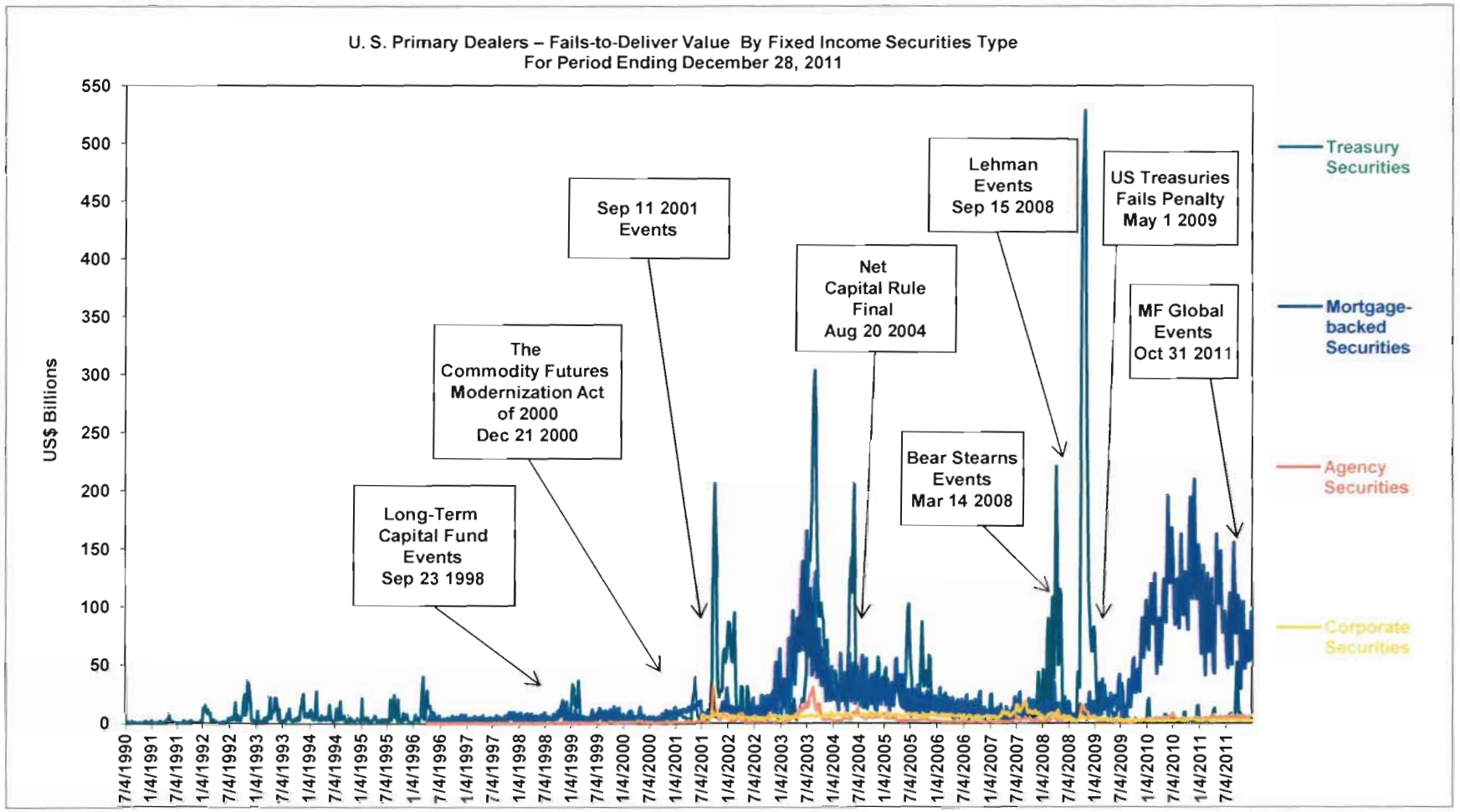
Source: U.S. Securities and Exchange Commission, New York Stock Exchange, The Depository Trust and Clearing Corporation, Investment Company Institute

U. S. EQUITIES AND EXCHANGE-TRADED FUNDS – 2011 TOP 10 SETTLEMENT FAILS

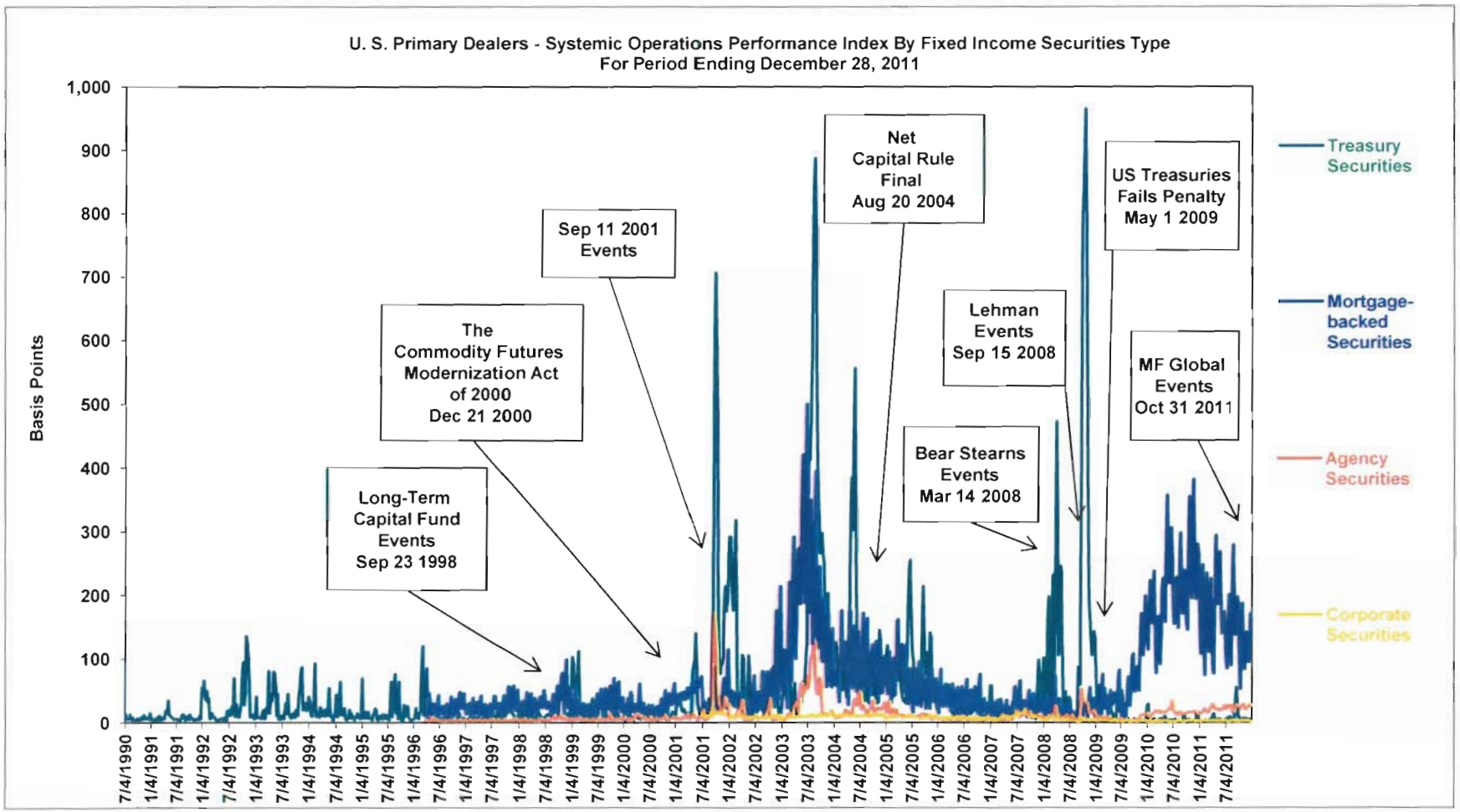
Security Type	Symbol	Description	Total Value of Fails Reported - US$	# of Days Fails Reported	Value of ETF Fails as % of Total Value of All Fails	Value of Equity Fails as % of Total Value of All Fails	Value of Top 10 Fails as % of Total Value of All Fails
ETF	SPY	SPDR S&P 500 ETF TR	81,286,914,821.10	248	13.1%	0.0%	13.1%
ETF	IWM	ISHARES RUSSELL 2000 INDEX	43,281,564,356.84	247	7.0%	0.0%	7.0%
ETF	FAZ	DIREXION DAILY FINANCIAL BEAR	11,639,470,043.11	246	1.9%	0.0%	1.9%
ETF	FAS	DIREXION DAILY FINANCIAL BULL	10,727,054,724.10	243	1.7%	0.0%	1.7%
ETF	XLE	ENERGY SECTOR SPDR	8,492,420,456.22	241	1.4%	0.0%	1.4%
ETF	TNA	DIREXION DAILY SMALL CAP BULL	7,484,620,497.74	242	1.2%	0.0%	1.2%
ETF	EEM	ISHARES MSCI EMERGING MARKETS	6,900,461,486.92	224	1.1%	0.0%	1.1%
ETF	TZA	DIREXION DAILY SMALL CAP BEAR	6,423,999,827.93	245	1.0%	0.0%	1.0%
ETF	MDY	SPDR S&P MIDCAP 400 ETF TR UTS	5,901,754,834.79	226	1.0%	0.0%	1.0%
ETF	XRT	SPDR SERIES TR SPDR S&P RETAIL	5,692,617,701.95	244	0.9%	0.0%	0.9%
		Total Value of Fails of Top 10 Securities Reported - US$	187,830,878,750.70				
		Total Value of Fails of All Securities Reported - US$	619,823,262,929.48				
		Value of Top 10 Fails as % of Total Value of All Fails			30.3%	0.0%	30.3%
		Total Number of Different Securites Reported	17,735				

Source: U.S. Securities and Exchange Commission

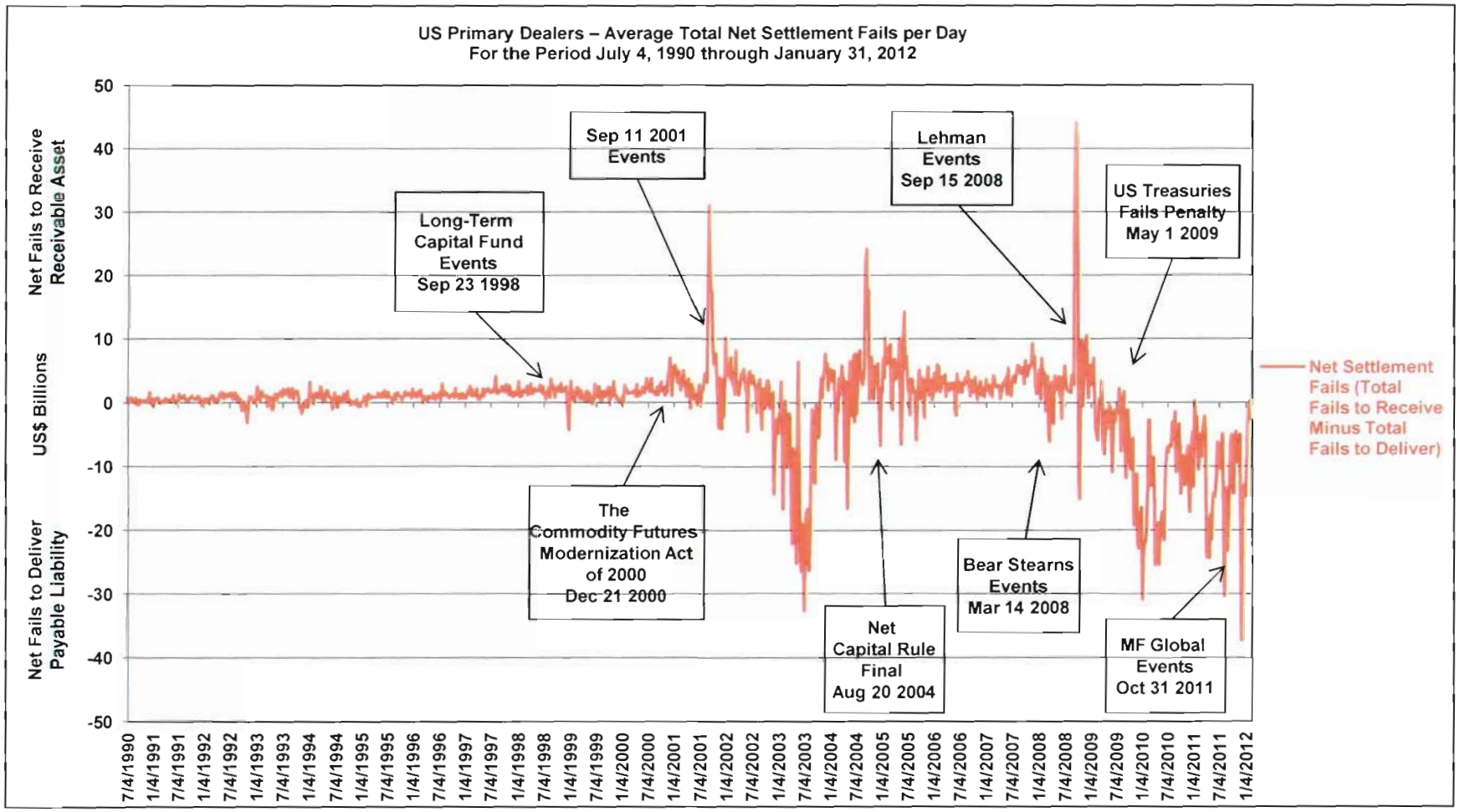
U. S. PRIMARY DEALERS FAILS-TO-DELIVER VALUE - HISTORY



U. S. PRIMARY DEALERS OPERATIONAL RISK METRICS - HISTORY

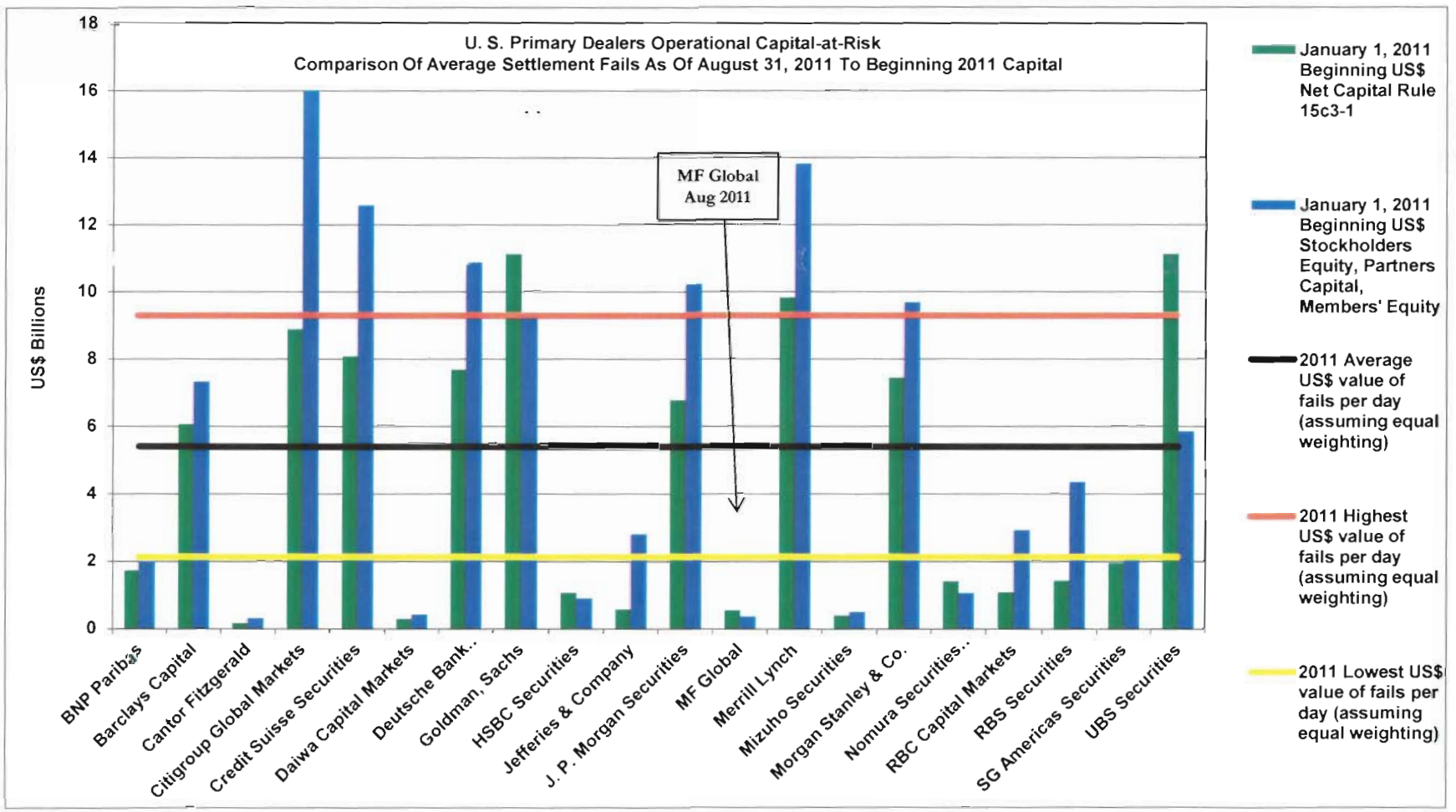


U . S. Primary Dealers Net Settlement Fails - History



Source: Federal Reserve Bank of New York, U.S. Treasury

U. S. PRIMARY DEALERS OPERATIONAL CAPITAL-AT-RISK



ATTACHMENT 4

Asymmetries in Short Selling of Exchange Traded Funds
And the Potential for Systemic Risk
Andrew Bogan, Brendan Connor, Thomas R. Bogan, and Elizabeth C. Bogan
The Journal of Index Investing
Spring 2012
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Asymmetries in Short Selling of Exchange-Traded Funds and the Potential for Systemic Risk

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Exchange-traded funds (ETFs) are investment companies that are similar to mutual funds but listed on a securities exchange like a stock, providing intraday liquidity not available to traditional, open-ended, mutual funds. In the past decade, ETFs have become extremely popular among investors in the U.S. and, increasingly, in international markets. ETF trading now makes up more of the average daily turnover on American stock exchanges than do equities. The average daily dollar turnover of the five largest ETFs in the United States was $11 billion in 2008, roughly three times that for the top stocks according to NYSE Euronext [2009].

Many investors in ETFs appreciate the funds' relatively low management costs and intraday liquidity, but ETFs are also frequently used to hedge equity exposures by short selling ETF shares to generate short positions on entire indices through a single transaction. Because it is not possible to sell short shares of a traditional open-ended index mutual fund, this relatively new mechanism for easy shorting of entire indices using ETFs has become extremely popular with hedge fund managers and other investors and traders looking for ways to mitigate market risk, or neutralize beta, in their portfolios without the complexity of selecting individual stocks to short.

The rapid proliferation of ETFs representing nearly every index of equities around the world raises important questions about the mechanics of how ETF short-selling transactions work in practice and what their implications may be for long-only investors in ETFs, investors in the equities underlying the ETFs, and equity markets in general. When an ETF is created, the issuer and ETF fund operator (often a large ETF firm such as BlackRock's iShares or State Street Global Advisors' SDPRs) buys and holds a basket of equities and offers shares in the ETF, which initially consists of those purchased equities, for sale on a securities exchange. The size of the ETF, and thus the number of shares offered, is not limited like a closed-end mutual fund. Instead, creation units, typically of 50,000 ETF shares or more, can be issued by delivering cash or, more often, the appropriate number of underlying equities from each of the positions in the ETF portfolio. Inversely, an ETF owner that aggregates 50,000 shares of an ETF can redeem those shares through an authorized participant for cash, or, more often, for the underlying equities. In this regard, an ETF can, in theory, expand or contract in total size (i.e., shares outstanding) without limitation based on demand from authorized participants (typically large institutions) capable of buying these large blocks of new ETF shares or creation units. Structurally, this means that ETFs have exchange-traded characteristics reminiscent of listed closed-end mutual funds (a relatively rare type of investment company today) and the ability to expand or contract in size similar to an unlisted open-ended mutual fund. Strictly

speaking, ETFs exist as something of a hybrid between open- and closed-end funds and thus require the SEC to provide an exemption from some of the specifics of the Investment Company Act of 1940 to operate, but in practice the SEC has freely given these exemptions for many years and ETFs continue to proliferate rapidly in the United States (SEC [2008]). ETFs are also among the fastest growing segments of many capital markets around the globe, including in Hong Kong, India, various European equity markets, and Brazil.[1]

Despite the apparent appeal of ETFs to both investors and short sellers, a recent cover story in *Bloomberg Businessweek* titled "Amber Waves of Pain" [2010] revealed serious issues with the trading mechanics and poor performance of commodity-linked ETFs, which often fail to track their commodity benchmarks. The authors did not, however, discuss the popularity of short selling equity index ETFs and the similarly serious issues that arise from it.

THE MECHANICS OF SHORT SELLING ETFs

The process of short selling an ETF is not unlike shorting any listed stock: a broker locates shares held in a margin account by an owner of the ETF, the broker lends those ETF shares to the borrower (typically a hedge fund), and the borrower sells the borrowed ETF shares into the open market to a new owner. As with any short sale of a security, the math is a little fuzzy because the result of the transaction is that *one* ETF share is owned by a margin account holder (from whom it is borrowed by a broker and sold by a short seller) and the same *one* ETF share is owned by the new buyer. In effect, one share has two owners, one of whom is dependent on the credit-worthiness of the short seller or the short seller's prime broker who has promised to deliver the hypothecated shares should the original owner wish to sell them in the future.

This makes for two owners and one share, a classic 1 + 1 = 1 problem. However, market participants, at least in equity markets like those in the U.S. and elsewhere that allow short selling under most conditions, are quite familiar with the underlying mechanics of this sort of short sale of a share of common stock with the broker as a de facto counterparty to the original owner whose stock is held in a margin account. However, at any given point in time (barring a new issue of shares by a listed company that would require SEC registration and board approval), the total inventory of shares outstanding of a stock is finite. Usually, a small fraction of the shares of a single company's stock are sold short at a given time (as of July 15, 2010, the percentage shares sold short for NASDAQ-listed companies averaged less than 5%). Short squeezes occur when there is a rush to deliver the finite supply of shares with very few willing sellers in the market. During a short squeeze, prices of equities can increase very rapidly. For example, shares of Volkswagen jumped to €1005 during an October 2008 short squeeze that briefly gave the heavily shorted automobile firm the world's largest market capitalization when short sellers were forced to cover. Porsche unexpectedly revealed a controlling stake in Volkswagen and a rapidly shrinking free float of Volkswagen shares on the Xetra exchange in Germany combined with large short positions in Volkswagen stock triggered the massive short squeeze.

However, in the case of an ETF, the supply is not finite, because creation units are readily available. This creation and redemption mechanism is credited with ETFs historically tracking their net asset values (NAV) more closely than other listed funds (Engle and Sarkar [2006]), but it also creates potentially serious problems with the mechanics of short selling ETFs. Any short seller needing to deliver borrowed ETF shares can simply create them without having to purchase them from a willing seller, which is highly unusual and could have a very large impact on the perceived risks that a short seller is taking when shorting an ETF as opposed to a stock with limited supply.

STRUCTURAL PROBLEMS WITH ETF SHORT POSITIONS

Another confusing reality of short selling ETFs is what actually happens to the underlying equities in the ETF's portfolio. One might imagine that shorting an ETF is the same as shorting correctly weighted amounts of each constituent stock in the ETF's portfolio, but this is not the case. Although the ETF itself must (in theory) be located, borrowed, and sold short, that does not apply to the underlying shares of stock in the ETF portfolio. In essence, the transaction has an inherent asymmetry. When a buyer purchases an ETF, the buyer likely believes it represents ownership of all the underlying positions held by the ETF operator, and under normal circumstances it would (and when an ETF is first launched, before any short selling of the ETF shares, it does). However, there is no such related transaction when an ETF is sold short: the underlying positions held by the ETF operator are not located, borrowed, or sold—only the ETF share itself transacts.

One could argue that such an asymmetric transaction was tolerable in the market if the ETF itself accurately represented the underlying equity positions and implied that the equities "moved" with the ETF shares themselves in the short sale transaction, but they do not. In fact, most major ETF operators make significant profits by lending out the underlying securities held in their ETFs. Thus, the ETF could theoretically be up to 100% short (or more through serial shorting) while the underlying shares were also up to 100% short from the ETF operator's stock loan desk (although, in practice, some ETF operators limit their stock loan to 33% of their underlying positions). Obviously, this creates a complicated situation and a potentially serious problem: limitless short selling of a security representing a basket of stocks when the underlying basket itself is also partially sold short. In effect, this appears to be a de facto naked short (where a share that either was not borrowed, or does not exist, is sold short) on each underlying share lent out by the ETF operator. Because naked short selling is prohibited in many markets, including the U.S., and is a criminal felony in some, like Hong Kong, this raises some potentially serious questions.

SHORT INTEREST IN ETFs

We hypothesized that there might be very large short interest in some ETFs due to their popularity as systematic shorting vehicles to control beta in hedge fund portfolios without having to individually locate, borrow, and short every stock in an index, which is tedious, costly, and often impossible. In fact, many hedge funds today own a portfolio of selected equities long, but short primarily ETFs to hedge their market exposures and reduce beta, resulting in ETF short positions being large and held continuously for long periods of time. ETFs also tend to have relatively high interest rates when borrowed from prime brokers, further suggesting strong demand from short sellers for ETFs.

We analyzed several ETFs to see if there were significant percentages of outstanding shares sold short in these vehicles. As Exhibit 1 shows, many ETFs have alarmingly high short interests as compared to traditional equities, which rarely have more than 5%–10% of their shares outstanding short. Even more concerning is that as of the end of June 2010, several ETFs actually had more shares sold short than shares outstanding, several significantly exceeding 100%! These massive short interests of greater than 100% of shares outstanding imply

EXHIBIT 1
Shares Short and Shares Outstanding of Selected ETFs as of June 30, 2010

ETF	Ticker	Shares Short (in millions)	Shares Outstanding (in millions)	% Short
SPDR S&P Retail ETF	XRT	94.9	16.9	562
Retail HOLDRs Trust	RTH	7.4	4.7	157
SPDR KBW Regional Banking ETF	KRE	42.4	31.4	135
iShares Russell 2000 Index Fund ETF	IWM	230.2	203.3	113
iShares Dow Jones U.S. Real Estate Index	IYR	57.7	52.5	110
SPDR S&P Oil & Gas Explor. & Prod. ETF	XOP	16.3	15.1	108
SPDR S&P 500 ETF Trust	SPY	314.4	712.2	44
Financial Select Sector SPDR Fund	XLF	140.7	432.9	33
PowerShares QQQ Trust	QQQQ	120.9	407.3	30
Technology Select Sector SPDR Fund	XLK	22.1	196.4	11
SPDR S&P Biotech ETF	XBI	0.9	8.8	10
iShares MSCI Emerging Markets Index	EEM	65	909.5	7
iShares S&P Global Infrastructure Index	IGF	0.1	13.6	1

Note: Data compiled from Factset Research Systems, NYSE, NASDAQ, and ShortSqueeze.com.

that shares in the ETF are serial short (and, in some cases, may be naked short). Shares have been borrowed, sold short, re-borrowed from the new owner, and sold short again in a cascading series of short sales that generates more short interest than there are shares outstanding. Or, the shares may be naked short (not borrowed at all), in which case one might expect to see many ETFs on the SEC's Regulation SHO Threshold Securities List for multiple consecutive days of significant numbers of fails to deliver, which is indeed the case (Angel [2008] and NYSE [2010]). However, one can imagine that because ETFs can be created without limitation by purchasing creation units, some market participants might be comfortable with short interest exceeding shares outstanding, because ETF shares that have not yet been created at a given point in time can be created with the purchase of creation units in the future, so long as market mechanisms continue to operate smoothly.

Using the example of the SPDR S&P Retail ETF (NYSE: XRT), which was over 500% short as of July 2010 (Exhibit 1), there must be short sellers (and evidently a lot of them) who are being allocated a return roughly opposite the performance of the equities in that index without having ever located or borrowed any of the index shares. It appears to be a large artificial short on the entire index. An ETF operator certainly does not have inventory of any more than 100% of the underlying positions for the shares outstanding in the ETF and quite often has less than 100%, because stock lending of their underlying equity portfolios by ETF operators is both common and lucrative. The performance on the short side for at least 78 million shares of the SPDR S&P Retail ETF (the number of shares short minus the shares outstanding for the ETF) is being delivered artificially (Exhibit 1).

ETF SHORT SELLING TO AVOID REGULATORY RULES

Other examples of asymmetric and possibly abusive use of ETFs are when an ETF is used to short sell a basket of equities in which some or all of the underlying equities are not allowed to be sold short. A historical example is the short selling of financial sector index ETFs, such as the Financial Select Sector SPDR ETF (NYSE: XLF) during the period in late 2008 when the SEC briefly banned short selling of most of the stocks in the index tracked by the ETF. The SEC short-selling ban went into effect on September 18, 2008, and included the securities of 799 financial companies, but did not include the Financial Select Sector SPDR ETF or other financial sector ETFs (SEC [2008]). Clearly, if a short seller can be delivered the return of being short a basket of stocks that it is actually illegal to be short, something unusual has happened.

Another example is short selling of Chinese A-share ETFs on the Hong Kong Stock Exchange (and more recently in the U.S. as well). Before April 2, 2010, China did not allow any short selling of A-shares on either the Shanghai or Shenzhen exchanges because no margin accounts or stock lending was allowed in China before that date. However, Hong Kong–listed A-share ETFs, such as iShares FTSE/Xinhua A50 China Index ETF (HKEx: 2823), were very popular among global short sellers looking to profit from declines in Chinese domestic equity prices before the lifting of the ban on short selling domestic Chinese A-shares (which for years have been restricted to ownership only by domestic Chinese investors and a select few approved foreign institutions). In effect, the ETF acts as an artificial way to simultaneously short 50 different major A-shares on the domestic Chinese markets without a single real A-share being sold short. In other words, it behaves as a synthetic derivative instrument, delivering the performance of a trade that was never made and would have been illegal to make in China until April 2, 2010 (even if one was legally allowed to trade in domestic A-shares, which most foreign investors still are not). Just like with other synthetic instruments and derivative trades, the complexity of counterparty risk here is quite severe. If short sellers of the China A-shares ETF are being delivered the performance of being short the A-share index, while nobody has shorted a single underlying stock, where does the return actually come from? Who is the counterparty and do the retail and institutional investors who own the ETF shares long know that such potentially infectious counterparty risk is present in their ETF investment?

The prospectus for this fund contains a daunting bullet point explaining the risks associated with its portfolio being entirely composed of A-share swap derivatives called China A-share Access Products, because the ETF does not hold any equities whatsoever. On its front page, the iShares FTSE/Xinhua A50 China Index ETF prospectus states

> The A50 China ETF is subject to counterparty risk associated with each China A-share Access Product (CAAP) issuer and may suffer losses potentially equal to the full value of the CAAPs issued

by a CAAP issuer if such CAAP issuer fails to perform its obligations under the CAAPs. Any loss would result in a reduction in the net asset value of the A50 China ETF and impair the ability of the A50 China ETF to achieve its investment objective to track the relevant index. In the event of any default by a CAAP issuer dealing may be suspended and the A50 China ETF may not continue to trade.

It is important to note that although most investors assume an ETF owns the underlying equities in its index directly on behalf of the ETF investor, this is not always the case. The iShares FTSE/Xinhua A50 China Index ETF is an extreme example consisting of 100% derivatives, but many ETFs have the ability to use synthetic instruments to replicate the holdings of the underlying index, including the purchase or sale of derivatives of all shapes and sizes (e.g., swaps, options, swaptions, futures). Some can even use repo agreements to invest in assets otherwise legally prohibited for a traditional mutual fund structure under the Investment Company Act of 1940.

If ETFs actually represent ownership of their underlying portfolios, then surely shorting an ETF must represent being short the underlying portfolio positions. But if it does, then it is likely illegal to have been short an A-share ETF early in 2011 or a financial sector ETF in late 2008. If the ETF does not actually represent being short the underlying securities, then the entire concept of being short an ETF is artificial and suspect.

ETFs AS DERIVATIVES

Although some ETFs, such as the iShares FTSE/Xinhua A50 China Index ETF in Hong Kong; its newly launched American equivalent, the Market Vectors China A Shares ETF (NYSE: PEK); and many European equity ETFs are entirely synthetic derivative instruments that hold no equities at all, most investors in traditional index-tracking ETFs have not perceived ETFs to be much different from other mutual funds and certainly would not consider them to be derivatives. However, because ETFs derive their value from the values of their underlying index stocks but trade independently of those stocks on the secondary market (with both long and short positions in the ETFs themselves), their behavior is actually much more similar to derivatives than traditional equity or fund investment vehicles. Many ETF industry insiders have long resisted this notion, but the SEC and CFTC cleared up the controversy in their final report on the Flash Crash dated September 30, 2010, where they state: "The E-Mini and SPY [the SPDR S&P 500 Index ETF] are the two most active stock index instruments traded in the electronic futures and equity markets. Both are derivative products designed to track stocks in the S&P 500 Index ..." (SEC and CFTC [2010]).

Although classifying ETFs as derivative instruments does not necessarily imply any type of deficiency (derivatives have traded both on exchanges and over-the-counter for decades with relatively few market failures), it does highlight the unique characteristics of ETFs and how they differ materially from both equities and traditional mutual funds. For example, derivatives characteristically have significant counterparty risks associated with them, where a zero-sum side bet between sophisticated investors pays out only if the losing party has sufficient capital to deliver. This type of financial derivative counterparty risk is present in ETFs with significant short interests (whether or not the ETF itself uses derivatives in its portfolio) and we discuss this further later in the article.

One important difference between ETFs and traditional derivatives is that a derivative does not typically have any underlying assets associated with it and is usually a zero-sum bet, not any kind of fund structure. ETFs are a complicated hybrid of both. They have some fund-like characteristics, for example, most U.S. ETFs hold at least some portion of the underlying index stocks in the ETF Trust, but ETFs also have some derivative characteristics, such as deriving their value from a basket of separate securities and allowing short sellers to enter into zero-sum bets at the ETF level in the secondary market without having to borrow or sell the underlying index stocks.

It is noteworthy that most national financial regulators have strict qualification requirements for participating in derivatives markets, such as options trading risk disclosures and qualifications for sophisticated investors to participate in futures markets. No such rules have been applied to trading in ETFs, despite their inherent derivative characteristics and that many ETFs use complicated derivatives in their underlying holdings. These structures can present significant counterparty risks, like those revealed when ETFs sponsored by ETF Securities Limited halted trading on the London Stock Exchange in September 2008. These ETFs were suspended briefly because their underlying assets included swap agreements with AIG, whose creditworthiness had unexpectedly

collapsed. (The Federal Reserve's controversial bailout of AIG prevented catastrophe in this specific case.)

Just because derivatives typically trade smoothly does not mean that they are without unique risks. The Flash Crash showed the dangers of futures and ETFs behaving as derivatives that influenced the prices of the very securities (S&P 500 Index stocks) from which they are supposed to derive their value—a case of the tail wagging the dog—that was partly caused by derivatives trades in the index futures market and massive intraday short selling of the SPDR S&P 500 Index ETF (NYSE: SPY) (SEC and CFTC [2010]). Similarly in 2008, it was the complicated and infectious counterparty risks that spread from one financial firm to the next through credit default swaps (another type of derivative used to insure bonds) that contributed to the financial panic and liquidity crunch of 2008 and led the world into the Great Recession.

ETFs BECOME FRACTIONAL RESERVE STOCK OWNERSHIP SYSTEMS

The unique structure of ETFs, which allows for massive short positions to build up with little regard to the shares outstanding, creates a fractional reserve stock ownership system. As short interest builds in the ETF shares themselves, the underlying index equities held by the ETF operator become a fraction of the implied ownership of the ETF in the market—the rest is promised back by borrowers (short sellers through their prime brokers in this case). The market value of the total ownership of the ETF far outstrips the underlying assets held in index stocks by the ETF operator. The difference between the value of the total ownership of the ETF and the value of the underlying assets is promised back in the future by a series of unknown short-selling counterparties (myriad hedge funds) that post collateral, of unknown composition, against all their short positions (traditional or serial) in the ETF. Only a fraction of the ETF owners' underlying index shares are actually available from the ETF fund operator, the rest are effectively loaned out. The ETF, through short selling of the ETF securities, becomes a fractional reserve system for owning the underlying index shares.

To illustrate this fractional reserve behavior, consider the SPDR S&P Retail ETF (NYSE: XRT). On June 30, 2010, it had 16.9 million shares outstanding and index stocks underlying those shares outstanding worth approximately $600 million held by the ETF trust. However, the total ownership on June 30 of XRT was approximately 112 million shares (because 94.9 million shares were sold short in addition to the 16.9 million shares outstanding). That means the total value of the long positions at XRT's price of $35.65 on June 30, 2010 was $4 billion. The ETF operator only held 15% of the implied ownership in underlying assets (actual shares of the index equities)—it held a 15% fractional reserve of the S&P Retail Index stocks it tracks. The remaining 85% ($3.4 billion) was promised back, should it be needed, by short sellers who posted collateral with their prime brokers. To the long holder of XRT, there was no transparency whatsoever as to which hedge funds were short, which prime brokers were holding collateral, or what the composition of the collateral was.

Because ETFs are redeemable through authorized participants and they are fractional reserve in nature once short selling occurs in the ETF securities themselves, it would appear that a run on an ETF might be possible: that possibility is discussed along with other potential risks in the next section of this article. As the long history of fractional reserve banking has taught us, fractional reserve systems work well under normal conditions, but are very fragile in extreme conditions or panics. That is why the U.S. has the FDIC to insure small depositors, reserve requirements for banks, and a lender of last resort capable of printing money, the Federal Reserve, to backstop the banking system. Other countries around the world have similar safeguards and institutions to protect fractional reserve banking. There are currently no equivalent safeguards for ETFs, even though the aggregate short interest in these securities in the U.S. was worth more than $100 billion as of September 2010.

It is important to note that none of these characteristics of a fractional reserve system apply to either a traditional listed stock or to a traditional stock mutual fund (or to most derivatives). In the case of the stock, it is not redeemable at all by anyone, so there can be no rush to redeem with inadequate assets available—no assets are available: one holds a share ownership of a business that can be sold but not redeemed. In the case of a stock mutual fund that is redeemable, the fund manager typically holds 100% of the redeemable assets and they can be delivered as cash or in kind depending on the liquidity in the underlying positions, irrespective of the financial health of various counterparties or borrowers. That is very different from an ETF, and this difference is very poorly understood by many retail and professional ETF owners.

POTENTIAL SYSTEMIC RISKS OF SHORT SELLING ETFs

Do the asymmetric characteristics, artificial short positions, the potential to circumvent existing regulations, and fractional reserve stock ownership systems stemming from ETF short selling create systemic risks to the financial system? As with any risk analysis, it depends on the stability of the markets, the confidence and creditworthiness of counterparties to these trades (both knowing and unknowing counterparties), and how many ETFs become significantly short (and to what extent).

One potential failure mode for ETF shorting that may have already been witnessed is the destruction of the value of an ETF by unlimited short selling in a short period of time. It is a simple rule of economics that a market price fluctuates in response to the balance between the supply and demand. If it is possible to sell short an unlimited supply of an ETF (as appears to be the case in Exhibit 1), then clearly the price can theoretically be driven to zero, because demand will be finite, at least temporarily. During a rapid and sharp decline in equity prices, one would expect that equity ETFs would be especially attractive to sell short. If supply of ETFs to sell short were unlimited, then prices could be driven near zero very suddenly and those extraordinarily low prices would be independent of the net asset value of the ETF's underlying positions. This possible outcome would be of grave concern for retail and institutional investors that owned shares in the ETF as well as for the ETF issuer and operator. It could also potentially transfer (through arbitrage) a portion of the price collapse in the ETF shares to the underlying index securities themselves, allowing an index tracking product to affect the price of the very securities from which it is supposed to derive its value.

Interestingly, this is precisely what investors saw during the Flash Crash on May 6, 2010, when an oddly disproportionate number of the securities that briefly traded near zero values were ETFs. According to the CFTC and SEC preliminary joint report on the Flash Crash, 70% of all trades in securities with declines of 60% or more below their 2:40 p.m. price from that same day were in ETFs. Because ETFs made up only 10.6% of all U.S.-listed securities at the time, it is a staggering percentage of irregular and massive price declines that were in ETFs (these broken trades were subsequently canceled by the exchanges). As an example, on the afternoon of May 6, 2010, the iShares Russell 1000 Growth Index Fund ETF (NYSE: IWF) briefly collapsed in price to $0.01 and the Vanguard Total Stock Market Fund (NYSE: VTI) fell to $0.15.

On the face of it, that makes little financial sense, because an ETF, even in a sharply down and crashing market, should have superior diversification to any single equity and therefore be at much lower risk of total collapse. But the Flash Crash revealed otherwise. In practice, ETFs were the worst affected category of securities—in part because they can have almost unlimited supply of shares sold short and behave as derivatives (SEC and CFTC [2010]). It also illustrated a very serious problem with ETFs in general, which is that their prices may suddenly diverge massively from the net asset value of the underlying equities they are meant to represent at the worst possible time: during a crash.

In fact, the final SEC and CFTC joint report on the market events of May 6, 2010, shows the specific linkage between a single large trade in S&P 500 Index futures contracts triggering the crash by causing arbitrageurs to buy the futures contracts as their prices abruptly fell and hedge their positions with sudden waves of massive short selling of the SPDR S&P 500 ETF (NYSE: SPY). This, in turn, negatively impacted the prices of many of the individual index component stocks. The most irregular trades from the Flash Crash (70% of which were trades in ETFs) were subsequently canceled, and circuit breakers installed to halt trading of securities when prices make large sudden changes, but these reactive regulatory interventions do not address the fundamental problems of asymmetry in short selling ETFs and likely would not withstand a sustained equity market crash.

It is also worth considering what might happen to ETFs under the opposite scenario of a flash spike in equity prices. Unfortunately, there has not been such an event in equity markets since the rapid proliferation of ETFs began about a decade ago, so there is little data to consider. One can speculate that in a sudden upward equity price spike, large numbers of ETF short sellers could decide to cover their positions simultaneously. Under normal conditions, this might cause a short squeeze, but because the short seller need not find a willing seller to cover their ETF short (they can simply generate creation units instead of buying shares in the open market from a willing seller) the ETF itself is unlikely to respond as a typical equity would in a short squeeze. However, if the buying was aggressive enough and large amounts of ETF short positions (potentially outstripping the actual supply of ETF shares

outstanding at a given point in time, as seen in Exhibit 1) needed to create shares all at once, the buying demand on the underlying index's shares could be spectacular, because issuers of the ETFs would likely require underlying shares in the ETF's portfolio positions, not cash, to be delivered for creation units under such a circumstance—possibly creating an index-wide short squeeze.

In a recent study of ETFs and high frequency trading, Harold Bradley and Bob Litan of the Kauffman Foundation show the scale of the existing short interests in certain ETFs (based on our research) and how it could affect market prices for the securities in their index (Bradley and Litan [2010]). Using 30-day trailing average dollar volume for the Russell 2000 index constituent stocks and limiting buying to 10% of average daily volume for each stock, they demonstrate in the case of a single large ETF, the iShares Russell 2000 Index Fund ETF (NYSE: IWM), that

> Based on thirty days of average daily trading volume for each security (for the period ending September 1, 2010), the sponsor would be able to purchase constituent stocks for inclusion in the IWM index at the same percentages as the current portfolio in only two of roughly 2,000 securities on day one, in only twelve stocks in two days, twenty-three stocks in three days, forty-eight stocks in four days, and seventy-four stocks in five trading days.
>
> Said another way, the sponsor could purchase only 3 percent of the constituent stocks in one week without a significant impact on the price of the underlying securities, if one considers orders of more than 10 percent to be potentially disruptive to price, as was implied in the Flash Crash report.
>
> It would take roughly forty-one days of trading volume (two trading months) to purchase sufficient shares in underlying securities to offset 90 percent of the short interest in the IWM on June 30th. Needless to say, the evidence of such accumulation would lead to sharply higher prices in a large number of the underlying securities.
>
> The sheer magnitude of the short interest in the Russell 2000 Index ETF suggests that capital that should be finding its way to small capitalization companies in the public market is instead trapped in the ETF "shadow securities system."

Clearly, if a single ETF with a large short interest, such as IWM at 113% net short (Exhibit 1), would take over 40 trading days at 10% of average daily volume in the underlying index stocks to unwind the existing short interest in the ETF, then the possibility of an index wide short squeeze is very real. After all, a single trade in S&P 500 Index futures contracts on May 6, 2010 at the same 10% of volume level was the initiating event of the Flash Crash, according to the SEC's final report (SEC and CFTC [2010]). In essence, the 113% short interest in IWM alone represents a $14 billion open interest in the Russell 2000 stocks that cannot, in practice, be purchased quickly without significantly impacting prices of the underlying index constituents. That is to say, $14 billion has been lent by buyers of the ETF to hedge funds and other short sellers instead of being invested in the Russell 2000 stocks, thus artificially depressing the price of every stock in the index. This creates a shadow banking system that allows short sellers to borrow cash from retail and institutional investors. The capital is invested as the short sellers see fit, instead of the money flowing directly into the intended index of stocks, as it would for a traditional index mutual fund.

Would there be implications for the solvency of the ETF issuer, or other counterparties, under extreme market conditions? Any time one sees poorly understood and asymmetric transactions in financial markets, concern about counterparty risk and ultimately potential failure mechanisms is warranted. Because ETF trading turnover already exceeds trading in the equities that underlie them in some markets (i.e., NYSE), one cannot ignore the large and expanding role that ETFs play in the global financial markets. If there were, under extreme market conditions, mechanisms for an ETF catastrophe related to the asymmetries of short selling these instruments, surely the market will find them.

The asymmetries in short selling ETFs could create complicated counterparty risks with the potential for systemic failure under extreme market conditions. For example, the prospectus of the iShares Russell 2000 Index Fund ETF (IWM) includes a section on redemption requests that specifically states the special conditions and requirements that would be applied by the ETF operator to redemption requests from authorized participants if "the short interest of the Fund in the marketplace is greater than or equal to 150%." Evidently, some ETF operators are aware of the potential for short positions exceeding 100% of the ETF shares through serial shorting. A mechanism to halt or slow redemptions in a crisis might protect the ETF operator, but it would leave

many ETF owners dependent on the creditworthiness of myriad short sellers and their prime brokers to make them whole and might cause a panic to spread to other ETFs. It would also risk breaking the symmetry of the arbitrage mechanisms that allow ETFs to keep tracking their NAV. If redemptions were unexpectedly halted, the NAV arbitrage process would likely fail because it is dependent on freely creating and redeeming ETF shares through authorized participants.

Could a large and sudden spike in the volume of ETF redemption requests lead to a run on an ETF, similar to what investors witnessed in money market mutual funds in late 2008? If the typical orderly relationship between holders of an ETF, authorized participant institutions, and ETF providers were to break down, a sudden rush for the exits by ETF owners could create chaos if a fund were significantly net short (as many already are, as shown in Exhibit 1), because redemption requests could then outstrip the total supply of underlying stock actually held by an ETF provider. For every ETF share sold short, there is an ETF owner who bought that share and expects the underlying securities to be deliverable through the ETF redemption mechanism if necessary.

For example, if an ETF were 400% net short and half of the owners suddenly made redemption requests through their authorized participant brokers, would an ETF operator be able to deliver the underlying shares? Since this would represent redemption requests for 200% of the shares held by the ETF operator, insolvency of the ETF operator seems quite plausible unless redemptions were halted by the mechanisms described earlier or rejected while myriad short selling counterparties were forced to unwind the massive short interest. As fund management firms rarely have significant capital reserves on the books of the operating entity (i.e., outside of the funds they manage on behalf of others), the system is dependent on all the short sellers being able to deliver (or create) the ETF shares they have borrowed. Under normal market conditions, they should be able to do so, since, in theory, all these trades net to zero and are properly collateralized. In practice, however, the same market conditions that could cause a panic and a run on an ETF in the first place might very well leave a major counterparty in this complex web of short sellers, prime brokers, NAV arbitrageurs, authorized participants, and ETF operators in a situation akin to AIG's in late 2008. In that situation, their original collateral posted for the serial short sales of the ETF shares was either illiquid or of inadequate value at that time to allow for delivery of the ETF or for its creation in a timely fashion to smoothly unwind the run. Furthermore, the unwinding of large ETF short interests cannot be done rapidly without significant and likely disruptive effects on the underlying index stocks' prices, as we demonstrated in the case of IWM (Bradley and Litan [2010]).

CONCLUSION

Although the asymmetries of ETF short selling require further academic study, more awareness from market participants, and better regulation in the future, it appears that the systemic risks might be more symmetric with failure mechanisms capable of driving the ETF prices to near zero or the prices of their underlying equity positions sky high. They also present potentially serious implications with respect to the possibility of a run on an ETF under extreme market conditions and raise the question of what safeguards are in place to prevent failure of this fractional reserve stock ownership system?

ENDNOTE

[1]According to investor relations materials from Hong Kong Exchanges and Clearing in China, the National Stock Exchange of India, Deutsche Börse in Germany, London Stock Exchange Group in the United Kingdom, NYSE Euronext (which has operations in various European countries), and BM&FBOVESPA in Brazil.

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ATTACHMENT 5

U.S. Primary Dealers List

Primary Dealers List

Primary dealers serve as trading counterparties of the New York Fed in its implementation of monetary policy. This role includes the obligations to: (i) participate consistently in open market operations to carry out U.S. monetary policy pursuant to the direction of the Federal Open Market Committee (FOMC); and (ii) provide the New York Fed's trading desk with market information and analysis helpful in the formulation and implementation of monetary policy. Primary dealers are also required to participate in all auctions of U.S. government debt and to make reasonable markets for the New York Fed when it transacts on behalf of its foreign official account-holders.

E-mail alert

Primary Dealers | **Additions and Removals** | **Name Changes**

Bank of Nova Scotia, New York Agency
BMO Capital Markets Corp.
BNP Paribas Securities Corp.
Barclays Capital Inc.
Cantor Fitzgerald & Co.
Citigroup Global Markets Inc.
Credit Suisse Securities (USA) LLC
Daiwa Capital Markets America Inc.
Deutsche Bank Securities Inc.
Goldman, Sachs & Co.
HSBC Securities (USA) Inc.
Jefferies & Company, Inc.
J.P. Morgan Securities LLC
Merrill Lynch, Pierce, Fenner & Smith Incorporated
Mizuho Securities USA Inc.
Morgan Stanley & Co. LLC
Nomura Securities International, Inc.
RBC Capital Markets, LLC
RBS Securities Inc.
SG Americas Securities, LLC
UBS Securities LLC.

New primary dealers will begin transacting with the New York Fed upon completion of legal, operational and technical setup.

Designation of an entity as a primary dealer by the New York Fed in no way constitutes a public endorsement of that entity by the New York Fed, nor should such designation be viewed as a replacement for prudent counterparty risk management and due diligence.

Administration of Relationships with Primary Dealers »
FR 2004 OFFSITE

ATTACHMENT 6

U.S. Primary Dealers
Weekly Release of Primary Dealer
Positions, Transactions, and Financing

For Release 4:15
March 15, 2012

Table I

Primary Dealer Transactions in U.S. Government, Federal Agency, Government Sponsored Enterprise, Mortgage-backed, and Corporate Securities by Type of Counterparty [1,2]

For week ended March 07, 2012
(Daily Average Figures; In Millions of Dollars)

U.S. Government Securities		Outright Transactions	Change from Previous Week
With Inter-Dealer Brokers		222,670	-39,506
With Others		289,780	-56,510
	TOTAL	512,450	-96,016
Federal Agency and Government Sponsored Enterprise Securities (excluding Mortgage-backed securities)			
With Inter-dealer Brokers		2,131	-641
With Others		36,262	1,107
	TOTAL	38,393	466
Mortgage-backed Securities			
With Inter-dealer Brokers		169,738	76,636
With Others		346,390	189,612
	TOTAL	516,129	266,248
Corporate Securities			
With Inter-dealer Brokers		1,104	0
With Others		104,247	12,164
	TOTAL	105,351	12,164

Notes: 1. The figures represent purchases and sales in the market by the primary U.S. government securities dealers reporting to the Federal Reserve Bank of New York. Outright transactions include all U.S. government, federal agency, government sponsored enterprise, mortgage-backed, and corporate securities scheduled for immediate and forward delivery, as well as U.S. government securities traded on a "when-issued" basis between the announcement and issue date. Data do not include transactions under repurchase and reverse repurchase (resale) agreements. Averages are based on the number of trading days in the week.

2. These reports are based on data voluntarily submitted by primary dealers to the Federal Reserve Bank of New York (FRBNY) pursuant to forms and instructions available at: http://www.newyorkfed.org/markets/primarydealers.html. FRBNY expects primary dealers to submit accurate data, but FRBNY does not itself audit the data.

Figures may not add due to rounding. Data may reflect revisions since prior publication.

Government Securities Dealer Statistics Unit, Federal Reserve Bank of New York

For Release 4:15
March 15, 2012

Table II

Primary Dealer Transactions in U.S. Government, Federal Agency, Government Sponsored Enterprise, Mortgage-backed, and Corporate Securities [1,2,3]

For week ended March 07, 2012
(Daily Average Figures; In Millions of Dollars)

Type of Security	Outright Transactions	Change from Previous Week
U.S. Government Securities		
Treasury Bills	91,316	7,045
Coupon Securities		
due in 3 years or less	131,897	-45,252
due in more than 3 years but less than or equal to 6 years	112,890	-19,541
due in more than 6 years but less than or equal to 11 years	133,192	-30,309
due in more than 11 years	32,759	-4,487
Treasury Inflation Index Securities (TIIS)	10,396	-3,472
Total U.S. Government Securities	512,450	-96,016
Federal Agency and Government Sponsored Enterprise Securities		
Discount Notes	28,537	2,812
Coupon Securities		
due in 3 years or less	5,972	-462
due in more than 3 years but less than or equal to 6 years	2,794	-1,976
due in more than 6 years but less than or equal to 11 years	679	105
due in more than 11 years	411	-14
Total Federal Agency and Government Sponsored Enterprise Securities (excluding Mortgage-backed securities)	38,393	466
Mortgage-backed Securities	516,129	266,248
Corporate Securities		
due in 1 year or less	76,751	5,072
due in more than 1 year	28,601	7,092
Total Corporate Securities	105,351	12,164

Notes: 1. The figures represent purchases and sales in the market by the primary U.S. government securities dealers reporting to the Federal Reserve Bank of New York. Outright transactions include all U.S. government, federal agency, government sponsored enterprise, mortgage-backed, and corporate securities scheduled for immediate and forward delivery, as well as all U.S. government securities traded on a "when-issued" basis between the announcement and issue date. Data do not include transactions under repurchase and reverse repurchase (resale) agreements. Averages are based on the number of trading days in the week.

2. Outright TIIS transactions are reported at principal value, excluding accrued interest, where principal value reflects the original issuance par amount (unadjusted for inflation) times the price times the index ratio.

3. These reports are based on data voluntarily submitted by primary dealers to the Federal Reserve Bank of New York (FRBNY) pursuant to forms and instructions available at: http://www.newyorkfed.org/markets/primarydealers.html. FRBNY expects primary dealers to submit accurate data, but FRBNY does not itself audit the data.

* Data are not published if fewer than three dealers report transactions in this category.
Figures may not add due to rounding. Data may reflect revisions since prior publication.

Government Securities Dealer Statistics Unit, Federal Reserve Bank of New York

For Release 4:15
March 15, 2012

Table III

Primary Dealer Positions in U.S. Government, Federal Agency, Government Sponsored Enterprise, Mortgage-backed, and Corporate Securities[1,2]

As-of close of Trading March 07, 2012
(In Millions of Dollars)

Type of Security	Net Outright Position	Change from Previous Week
U.S. Government Securities		
Treasury Bills	27,559	11,524
Coupon Securities		
due in 3 years or less	52,694	97
due in more than 3 years but less than or equal to 6 years	3,369	2,011
due in more than 6 years but less than or equal to 11 years	-11,276	3,632
due in more than 11 years	8,841	271
Treasury Inflation Index Securities (TIIS)	4,109	-19
Total U.S. Government Securities	85,296	17,516
Federal Agency and Government Sponsored Enterprise Securities		
Discount Notes	20,056	9,636
Coupon Securities		
due in 3 years or less	34,167	352
due in more than 3 years but less than or equal to 6 years	5,259	-1,157
due in more than 6 years but less than or equal to 11 years	5,090	228
due in more than 11 years	3,450	391
Total Federal Agency and Government Sponsored Enterprise Securities (excluding Mortgage-backed Securities)	68,022	9,450
Mortgage-backed Securities	74,974	-1,111
Corporate Securities		
due in 1 year or less	27,001	2,747
due in more than 1 year	44,921	2,527
Total Corporate Securities	71,922	5,274

Notes: 1. The net outright position includes all U.S. government, federal agency, government sponsored enterprise, mortgage-backed and corporate securities scheduled for immediate and forward delivery, as well as U.S. government securities traded on a "when-issued" basis between the announcement and issue date.

2. These reports are based on data voluntarily submitted by primary dealers to the Federal Reserve Bank of New York (FRBNY) pursuant to forms and instructions available at: http://www.newyorkfed.org/markets/primarydealers.html. FRBNY expects primary dealers to submit accurate data, but FRBNY does not itself audit the data.

* Data are not published if fewer than three dealers report positions in this category.
Figures may not add due to rounding. Data may reflect revisions since prior publication.

Government Securities Dealer Statistics Unit, Federal Reserve Bank of New York

For Release 4:15
March 15, 2012

Table IV

Financing by Primary U.S. Government Securities Dealers[1,2,3]

Amount Outstanding as of March 07, 2012
(In Millions of Dollars)

Type of Financing	Overnight & Continuing	Term Agreements	Total	Change From Previous Week
Securities In				
U.S. Treasury Securities	1,055,020	987,823	2,042,843	32,392
Federal Agency and Government Sponsored Enterprise Securities	91,472	64,595	156,067	12,188
Mortgage-backed Securities	88,278	443,666	531,944	9,959
Corporate Securities	70,769	36,921	107,690	-603
Securities Out				
U.S. Treasury Securities	1,323,732	591,709	1,915,441	36,122
Federal Agency and Government Sponsored Enterprise Securities	148,514	78,099	226,613	17,441
Mortgage-backed Securities	524,386	351,976	876,362	-2,160
Corporate Securities	89,777	54,752	144,529	187
Memorandum				
Reverse Repurchase Agreements	874,984	1,338,278	2,213,262	50,596
Repurchase Agreements	1,859,085	968,988	2,828,073	39,877

Notes: 1. Financing data are reported by the primary U.S. government securities dealers reporting to the Federal Reserve Bank of New York. Figures cover financing involving U.S. government, federal agency, government sponsored enterprise, mortgage-backed and corporate securities.

2. Financing transactions for Treasury inflation index securities (TIIS) are reported in actual funds paid or received, except for pledged securities. TIIS that are used as pledged securities are reported at par value, which is the value of the security at original issuance (unadjusted for inflation).

3. These reports are based on data voluntarily submitted by primary dealers to the Federal Reserve Bank of New York (FRBNY) pursuant to forms and instructions available at: http://www.newyorkfed.org/markets/primarydealers.html. FRBNY expects primary dealers to submit accurate data, but FRBNY does not itself audit the data.

* Data are not published if fewer than three dealer report financing in this category.
Figures may not add due to rounding. Data may reflect revisions since prior publication.

Government Securities Dealer Statistics Unit, Federal Reserve Bank of New York

For Release 4:15
March 15, 2012

Table V

Fails by Primary U.S. Government Securities Dealers[1,2]
For week ended March 07, 2012
(In Millions of Dollars)

Type of Security[3]	Fails to Receive[4]	Change from Previous Week	Fails to Deliver	Change from Previous Week
U.S. Treasury Securities	34,510	8,124	30,733	8,687
Federal Agency and Government Sponsored Enterprise Securities	7,013	889	7,940	613
Mortgage-backed Securities[5]	16,415	-37,679	20,548	-44,588
Corporate Securities	9,444	1,196	12,188	1,824

Notes: 1. Delivery Fails occur when a trade fails to settle on schedule. There are two parties to every fail: one party fails to receive the security (fails to receive) and one party fails to deliver the security (fails to deliver). Outright purchase and sale transactions can result in a fail. Financing transactions (securities borrowed or securities lent, also known as the market for collateral) may also result in a fail.

2. These reports are based on data voluntarily submitted by primary dealers to the Federal Reserve Bank of New York (FRBNY) pursuant to forms and instructions available at: http://www.newyorkfed.org/markets/primarydealers.html. FRBNY expects primary dealers to submit accurate data, but FRBNY does not itself audit the data.

3. Aggregated fails data are aggregated across four distinct securities categories: Treasury Securities, Agency Securities, Mortgage-Backed Securities, and Corporate Securities. While fails are reported separately for these four categories, there is no defined breakdown within each category. For example, fails for Treasury bills are not reported separately from fails for Treasury notes.

4. Fails data reflect cumulative weekly aggregated 'fails to receive' and 'fails to deliver' for the primary dealer community. Aged fails are not reported separately from overall fails. Fails are reported at the amount that was to be paid or received on the day the failed trade was to settle.

5. Fails in Mortgage-Backed securities include 'to be announced' securities where the settlement date is beyond the contractual settlement date.

* Data are not published if fewer than three dealer report financing in this category.
Figures may not add due to rounding. Data may reflect revisions since prior publication.

Government Securities Dealer Statistics Unit, Federal Reserve Bank of New York

ATTACHMENT 7

Awaiting the MBS Settlement Fail Fee
Financial Times
ft.com/alphaville
January 27, 2012

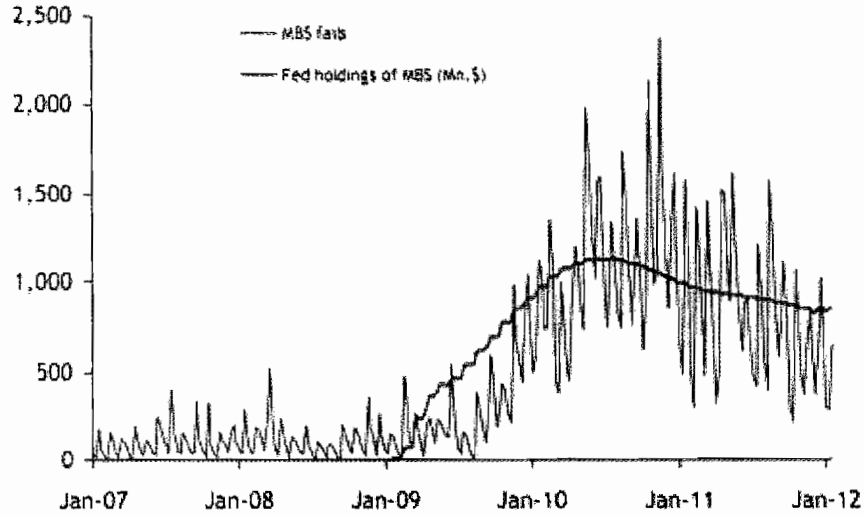
FINANCIAL TIMES
ft.com/alphaville

Awaiting the MBS settlement fail fee

Posted by **Izabella Kaminska** on Jan 27 10:30.

It's been a while since FT Alphaville looked at settlement fails, but the following chart from RBC Capital Markets did catch our eye this week:

Exhibit 3: One of the hurdles for QE3 are high levels of fails in the MBS market, which have closely tracked Fed MBS holdings. A new fails fee going into effect on February 1st may help this problem, and thus lower the hurdle for a potential QE3. The latest set of data on fails shows some improvement, however due to monthly patterns of deliveries on MBS trades we cannot be definitive. Further improvement will be needed before the door is fully open to an MBS QE3, but at the very least the data appears to be trending in the right direction.



Source: RBCCM US Market Economics, Federal Reserve, Haver

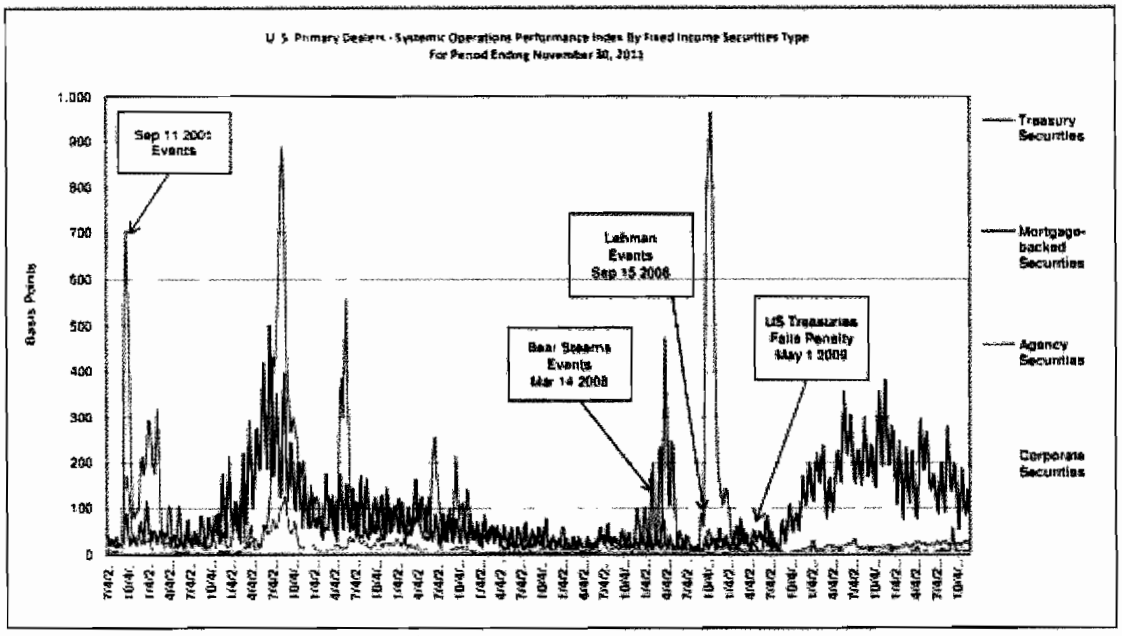
As RBC notes, there's a new settlement failure fee coming into force in the US for MBS securities on February 1, which hopes to discourage the current rate of failure.

A fail is registered when one market party fails to deliver the security or cash it had promised to send to another entity within the specific time frame as agreed in the terms and conditions of the deal.

It's worth pointing out that when a similar fine was applied to the Treasury Security market back in May 2009 it suppressed fails almost immediately. Problem is, it also seemed to drive them into the MBS market instead.

Note the following chart from Fred Sommers over at the Basis Point Group, a market operations consulting group:

US PRIMARY DEALERS OPERATIONAL RISK METRICS HISTORY



Source: Federal Reserve Bank of New York, U.S. Treasury, SIFMA.

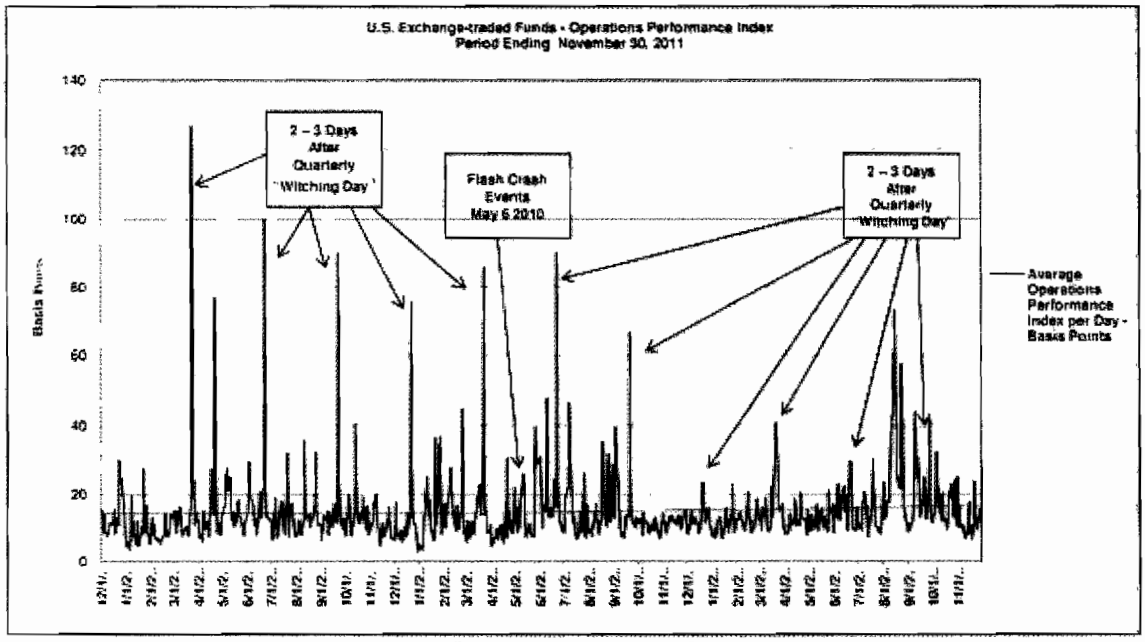
The timing of the rise in MBS settlement fails is interesting.

So may there be unintended consequences of the new (MBS) failure fee this time round too? And in this case, where might they bleed into?

One market that's been behaving erratically for a while in terms of settlement fails, of course, has been the exchange traded fund market.

Sommers has been tracking things here as well:

US EXCHANGE-TRADED FUNDS OPERATIONAL RISK METRICS HISTORY



Source: U.S. Securities and Exchange Commission, New York Stock Exchange, The Depository Trust and Clearing Corporation, Investment Company Institute

Could we see an increased rate of failure here, instead?

Related links:
What's the ETF settlement fail issue? – FT Alphaville
To (settlement) fail, or not to fail – FT Alphaville
Why $200bn in US trades are failing each day – FT
(Settlement) failure is an option – FT Alphaville

This entry was posted by Izabella Kaminska on Friday, January 27th, 2012 at 10:30 and is filed under Capital markets. Tagged with etfs, MBS, settlement fails, Treasuries.

Comments

No comments yet

ATTACHMENT 8

Canaries in the Coal Mine: How the Rise in Settlement "Fails" Creates Systemic Risk for Financial Firms and Investors
Ewing Marion Kauffman Foundation
Kansas City, Mo U.S.A.
March 1, 2011

CANARIES IN THE COAL MINE

How the Rise in Settlement "Fails" Creates Systemic Risk for Financial Firms and Investors

March 2011

Ewing Marion
KAUFFMAN
Foundation

CANARIES IN THE COAL MINE

How the Rise in Settlement "Fails" Creates Systemic Risk for Financial Firms and Investors

March 2011

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Canaries in the Coal Mine: How the Rise in Settlement "Fails" Creates Systemic Risk for Financial Firms and Investors

Harold Bradley, Robert Fawls, Robert E. Litan, and Fred Sommers[1]

Executive Summary

Financial plumbing is taken for granted, except when things go wrong. It was only a few years ago, for example, that the Federal Reserve Bank of New York saw the mess in the derivatives market, where transactions were recorded on slips of paper and sometimes misplaced before the Fed forced the major banks that were part of that market to clean up their act.

In this essay, we focus on other parts of the financial plumbing that now must be fixed, sooner rather than later. In particular, we address:

- extremely high and rising number and frequency of "fails to deliver" in mortgage-backed securities transactions (MBS) and in exchange traded Funds (ETFs);
- the sheer size of the outstanding trades agreed to by counterparties that do not settle on time in relation to the liquidity and capitalization of banks and intermediary firms; and
- the scale of the systemic risk posed by securities that fail to deliver, and how this activity steals value from investor portfolios.

Our central conclusion is this: Every fail introduces a cumulative and potentially compounding liquidity risk into the orderly process of settling the $7.5 trillion of security transactions completed each day, which could be especially dangerous during times when financial institutions are short of liquidity (as was true during the financial crisis of 2008).

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[1] Harold Bradley is Chief Investment Officer of the Kauffman Foundation, where Robert E. Litan is Vice President for Research and Policy. Robert A. Fawls and Fred E. Sommers are partners in Basis Point Group, a capital markets operations research consulting firm. This essay extends the earlier work of Bradley and Litan in *Choking the Recovery: Why New Growth Companies Aren't Going Public and Unrecognized Risks of Future Market Disruptions*, November 12, 2010, available at www.kauffman.org. Fawls and Sommers have conducted and published many analyses of capital markets operations risk, including contributing monthly operational and systemic risk indices to Institutional Investor's *Wall Street Letter* news website and Incisive Media's *Operational Risk & Regulation* magazine. This essay extends their earlier work on *Operations Performance Measurement, a Framework for Success*, first published in the Citigroup *Investment Management Review* (February 2006), describing an effective framework for measuring the integrity of financial processes. Fawls and Sommers were issued a patent on this methodology in August 2009.

The settlement fails problem is readily resolvable. Both the Federal Reserve and the Securities and Exchange Commission (SEC) have penalized fails in the U.S. Treasury and equities markets with successful outcomes. The appropriate federal regulators therefore should:

- Impose penalties or fees for all transaction fails on all securities types that will offset financial gains derived from late settlement of trades, usually at investor expense;

- Broaden the reporting of transactions where counterparties fail to deliver on time, and include all transaction activity for all major organizations; and

- Improve the analytic framework required to understand how markets are operationally connected and the potential failure points in today's tightly coupled systems.

Background: Settlement and Settlement "Failures"

Securities markets work only when the parties to transactions—buyers and sellers—honor their commitments. Buyers pay cash, sellers give securities. This is called settlement. Fails introduce significant additional unplanned manual effort to correct errors and complete transactions in this highly automated clearing and settlement process. Fails draw operational focus away from other mission-critical oversight and administrative tasks, increasing the risk in other processes that may have no relationship to the fail.

This is so fundamental that everyone assumes that all of this works flawlessly, and we all take timely settlement for granted. The vast majority of applications used in front office operations to analyze, track, and trade securities operate solely on a trade date basis. Trade-date based systems assume that all transactions complete successfully on the settlement date. These include all high-frequency trading systems and complex hedging models. For instance, the Depository Trust and Clearing Corporation (DTCC), which is owned by its customers, who are members of the financial community such as banks, broker/dealers, and mutual funds, takes for granted efficient settlement and often reports trades as "settled" to retail and institutional customers on the settlement date when the securities may not yet have arrived in the customer's account. DTCC assumes things ultimately will work out.

Unfortunately, transactions often do not settle on time—they fail because one of the parties doesn't honor the transaction. Fails happen because one party wants to delay settlement to engineer an economic reward and the authorities appear to be letting this happen.[2] Or, alternatively, a delay or outright failure to settle a transaction occurs

[2] Dividends, stock voting, and very high interest rates earned for lending securities all are economic rewards that can be engineered by customers of custody firms who fail to deliver securities on the expected date.

because one or both parties has financial difficulties that force a delay or failure (they can't come up with the cash to buy, or they don't have or can't borrow the securities to deliver).

More specifically, an investment firm's portfolio manager or, indeed, a broker-trader may buy or trade a security with the belief that they effectively hold it in their portfolio or inventory because it appears as a settled trade on customer records or is due from another firm on or before settlement date but does not arrive. Alternatively, the firm may trade a security with the belief that it easily could acquire it before the settlement date based on pre-trade requirements to "locate" an owner who promises to lend the shares but subsequently finds out the shares are not available to borrow. Counterparties to a securities trade who choose not to deliver often do so because there is "insufficient incentive not to fail" and the firm can earn an incremental fee using the security to collateralize a repo or other structured transaction.[3] On rare occasions, administrative or operational issues may cause a fail, but these are infrequent in relation to the other causes.

A complicating matter for both institutional and retail investors in almost all securities classes is that the DTCC, the broker-owned clearing house, reports failed trades to buyers as "security entitlements" and buyers therefore believe they have the securities free to sell, such as with some heavily shorted ETFs. This happens even though the DTCC's own books show that trades are outstanding, in a "failed" condition. If sellers have not yet delivered the securities to the custody agent, this leaves institutional and retail buyers unaware of the actual ownership status of the securities in question. The language of the trade intentionally masquerades failed-to-deliver securities, or IOUs in the common vernacular, as something that is neither menacing nor contrary to the economic interests of institutional or retail investors.

With respect to ETFs in particular, two of the authors of this paper addressed the problem of ETF fails to deliver in a previous paper, where we raised concerns about Susquehanna Financial Research Group's assertion that "a redeeming Authorized Participant must be able to represent that the shares tendered for redemption are in fact in a deliverable state."[4] Given the imprecise regulatory requirements governing DTCC's required disclosures of failed trades, this creates both a regulatory and retail investor problem during times of great systemic stress when the deliverable state of an ETF may be impossible to determine in the short run.

As we discuss in more detail below, the ultimate effect of all of these actions, omissions, or errors is the same: *every fail introduces a cumulative and potentially compounding liquidity risk into the orderly process of settling the $7.5 trillion of security transactions completed each day.*

---

[3] Michael J. Fleming and Kenneth Garbade, "Explaining Settlement Fails," *Current Issues in Economics and Finance* 11, no. 9 (New York: Federal Reserve Bank of New York, September 2005).
[4] See Bradley and Litan, *Choking the Recovery*, 55.

Even under normal trading conditions, the more benign explanations for fails should not satisfy regulators. If the failed trades result from intentional failures to settle, then the authorities are letting parties game the system at the expense of the beneficial securities owners such as state pension funds, mutual funds, and retail investors, who all suffer economically as a result of this behavior. If counterparty risk or financial solvency leads to failures, and especially at the currently high and rising rate of failures in mortgage securities and ETF transactions discussed in greater detail, this should warn regulators that markets might be showing signs of duress that can lead to systemic crisis such as that experienced in 2008. Already, some may be forgetting that large and sophisticated investors were harmed seriously in the aftermath of the 2008 financial crisis when they learned that large custody agent pools lent their shares to failed hedge funds, collateralized by Lehman Brothers and Bear Stearns securities that became virtually worthless, and ultimately left the pension funds and endowments as unwilling creditors in bankruptcy proceedings. Fails thus represent a true canary in the coal mine of the financial markets.

The Disturbing Rise in Settlement Fails in Mortgage Securities and Exchange Traded Funds

There have been worrying patterns of settlement fails in equity and Treasury securities in the past. Regulators and industry organizations investigated the reasons for these failures and imposed solutions that greatly reduced the fail rate, eliminated the ability to "game the system," and dramatically reduced risks in these asset classes.

The Fed, through the Treasury Market Practices Group (TMPG), imposed a 3 percent fails charge on all Treasury settlement failures. Likewise, the SEC in 2008 and 2009 also heavily penalized the practice by requiring failing brokers in equities transactions to purchase or borrow the securities by the morning of the fourth day after the transaction (T+4). If brokers did not fulfill this obligation they were required to pre-borrow securities on all future short transactions, which gave brokers very strong incentives to settle up.[5] Both the Fed and SEC actions reduced fails substantially in Treasury markets and in individual equity securities, indicating that traders in financial markets had previously been gaming the system. For years, Wall Street trading interests had lobbied against such penalties, attributing such failures to technical problems and record-keeping glitches. History shows this was not an accurate representation of failed trades.

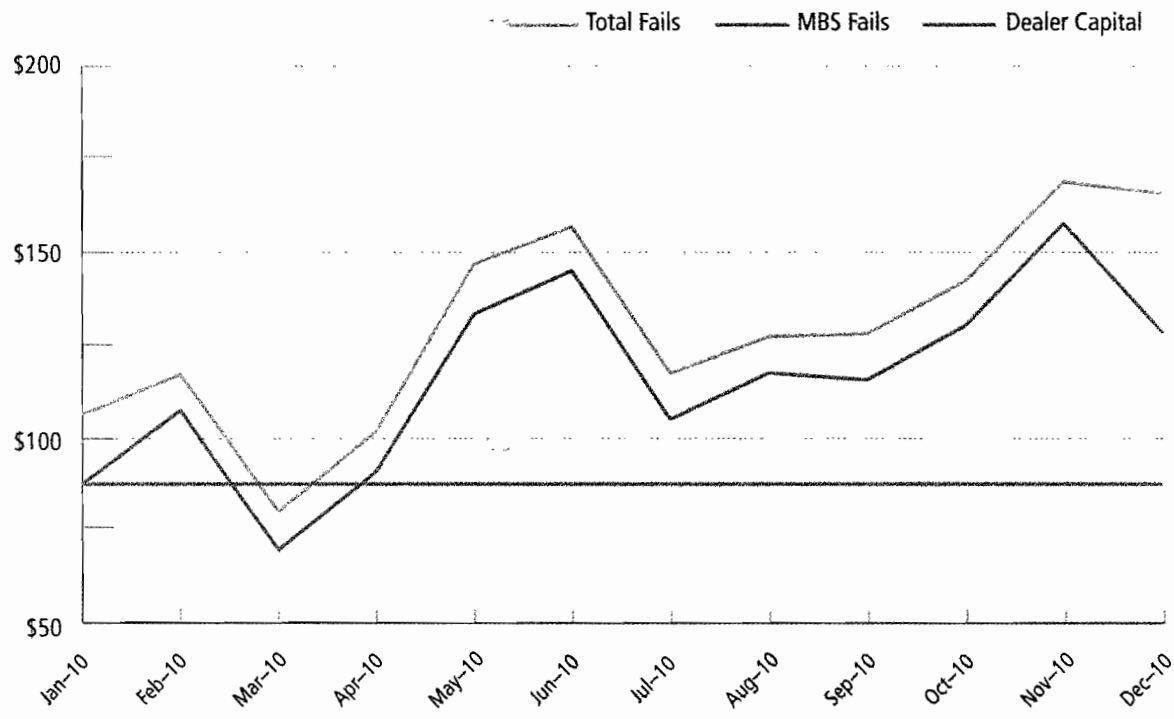
Unfortunately, like squeezing a balloon, the fails problem has not gone away. It simply has moved to markets where fails are not punished. For example, the Treasury Department's primary dealers reported that in all but five weeks during 2010, sellers of Treasury, MBS, agency, and corporate fixed income securities failed to deliver each day

[5] In October 2008, the SEC adopted temporary Rule 204T of Regulation SHO, and made the rule permanent effective July 31, 2009. As the Commission states in its final rule, "Where a seller of securities fails to deliver securities on settlement date, in effect the seller unilaterally converts a securities contract ... into an undated futures-type contract, to which the buyer might not have agreed, or that might have been priced differently."

an average of $130 billion of securities on the expected settlement date, a number so large that it exceeds the combined $89 billion regulatory capital of these institutions. During the week of November 24, 2010, daily fails of these securities exceeded primary dealer regulatory capital by more than two-and-a-half times.

In the same week, the primary dealers reported to the Federal Reserve that total MBS fails exceeded $1.3 trillion, an amount never before recorded in the more than fifteen years the Fed has collected data. This is the third time fails exceeded $1 trillion in less than six months during 2010, which continues a pattern of increasing MBS fails that has evolved since May 2009 when a penalty was put in place to stop persistent fails of Treasury securities.

Figure 1: MBS and Total Fails vs. Primary Dealer Capital ($s in Billions)



It is impossible to know without more compulsory data reporting by the primary dealers and custodians exactly what accounts for these patterns, or whether regulators even are aware of the problem or its causes. The systemic risk to these dealers' liquidity is evident from the sheer size of the numbers and the potential impact on any firm's ability to continue operations if it were forced to honor commitments in these transactions during another crisis in either liquidity or counterparty confidence.

Another major liquidity problem may be simmering given the rising frequency of fails in ETF securities. Currently, ETF fails account for approximately 60 percent of the nearly $2 billion of daily equity trading fails reported to the SEC, and on some days they account for 90 percent of all exchange traded fails. Understanding the cause of ETF

fails is even more complex given the number of intermediaries involved in the creation, marketing, sale, pricing, and safekeeping of ETF securities. Mandatory reporting for each of six legal entities[6] involved in the daily maintenance of each ETF security would assure that investors understand the inherent risks in the wide range of ETF construction and trading strategies.[7]

As we discuss further below, it is anomalous that ETF fails apparently are not subject to the same kinds of penalties that the SEC has imposed on settlement failures for equities (the SEC's rule 204T discussed in footnote 5 makes no specific mention of ETFs, implying that they are exempt from the rule). Promoters of ETFs liken them to stocks since they easily can be traded and sold at all times like stocks (even though in their portfolio composition ETFs more closely resemble mutual funds, which are not tradable and rely on basket creation and destruction, which may be difficult in a liquidity crisis). It is somewhat surprising to us that in addressing settlement failures for all equities, the SEC has not yet insisted on including ETF fails within its current rules. We suggest below ways of fixing that particular problem.

In short, except for the fees for Treasury security fails and the SEC's requirements relating to equity fails, dealers are not required to take any charge against fails for other financial instruments until five days after settlement. All money market, fixed income, and equity trades are mandated to settle at the trade date plus one, two, or three days. Only after T-plus-eight days does the SEC specify that "*...a government securities interdealer broker shall deduct from net worth ¼ of 1 percent of the contract value of each government securities failed-to-deliver contract which is outstanding 5 business days or longer. Such deduction shall be increased by any excess of the contract price of the failed-to-deliver contract over the market value of the underlying security.*"[8] The regulatory capital charge on a primary dealer for a failed MBS and ETF transaction is thus negligible. Custodians, the other major players in the game, suffer no penalties or charges against capital for any form of fails. Consequently, the regulatory treatment of failed-to-deliver securities today creates a system whereby Wall Street trades for free while the parties to securities transactions unwittingly finance the Street's highly profitable trading activities.

Putting Settlement Fails in Perspective

There are several ways to assess the significance of the current volume of fails. None are comforting.

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[6] These include fund sponsors, fund distributor, custodian, authorized participant, investment managers, and transfer agents.

[7] This issue takes on added urgency in the wake of media reports that the SEC is investigating hedge funds for portfolio "stripping" or hiding insider trading through use of ETF securities. See http://seekingalpha.com/news-article/575004-of-etfs-and-stripping.

[8] The level was set in 1987. See 15 U.S.C. 78o–5(b)(1)(A), (b)(4).

As just noted, the daily level of fails during 2010 exceeded the combined regulatory capital for all of the U.S. government's primary dealers as well as the total shareholder equity of the major custodian banks in that year.

Another way to understand the impact of fails is through the dynamics of the transaction markets. We conduct this analysis by reviewing, in turn, data on both the amounts of securities outstanding and then their transactions volumes.

Securities outstanding: The latest data from globalcustody.net (www.globalcustody.net) shows that the total value of assets in custody accounts for the fifty-four reporting custodians is $108 trillion. The market values for each of the major underlying U.S. capital markets by asset type, as of September 2010, are as follows:

Table 1: Market Values by Asset Class

	Market Value
Treasury Securities	$ 8.5 trillion
MBS Securities	$ 5.5 trillion
Agency Securities	$ 2.7 trillion
Municipal Securities	$ 2.8 trillion
Exchange Traded Funds (ETFs)	$ 1.0 trillion
U.S. Corporate Bonds	$ 10.7 trillion
U.S. Equities	$ 15 ± trillion

Table 1 shows that core U.S. securities markets total just over $46 trillion in assets. Foreign equity markets constitute another $ 27 trillion in assets. The remaining $35 trillion of assets consists of foreign fixed income and OTC equities.

Securities Transactions: In 2009, the last period for which figures currently are available, there were a minimum of $1.48 quadrillion in security transactions. This activity includes trades and financing transactions completed through DTCC, which does not capture all transaction activity. Treasury and agency securities totaled $905 trillion ($0.9 quadrillion)[9] or 61 percent of this total volume. The 2009 activity level declined 18 percent from 2008, the year of the market crash, when DTCC processed $1.88 quadrillion.

[9] The value of U.S. fixed income securities transactions is reported quarterly by SIFMA (Securities Industry and Financial Markets Association). The World Federation of Exchanges (WFE) reports the value of equity transactions monthly. Depository Trust Clearing Corporation (DTCC) publishes transaction volume figures in its annual report.

How significant are these trading levels? Using DTCC's activity levels as a conservative estimate, the total value of issued Treasury and agency securities turned over ninety-four times during 2009. This means that the issued securities changed hands at least once every 2.6 business days. This is an extraordinary transaction flow for securities that generally are held in portfolio long term by foreign treasuries, institutional investors, and pension funds. Generally, the faster a system or process moves, the higher the probability that a disruption will cause a catastrophic breakdown.

Table 2 shows the 2009 transaction activity and turnover rates for each of the major securities markets. The total issued value of Treasury and agency securities turned over every two to three days during the period 2005–9. Mortgage securities turned over every three trading weeks and equities, corporate bonds, and ETFs turned over every five trading weeks. The extraordinary velocity of assets flowing through trading intermediaries heightens concerns about systemic risk during periods of duress and any corresponding liquidity crises.

Table 2: Transaction Volumes and Asset Turnover

	Annual Transaction Volumes	Total Issued turns over every
Treasury & Agency Securities	$ 905 trillion	2–3 days
Mortgage Back Securities	$ 95 trillion	14–15 days
Equities, Corporate Bonds and ETFs	$ 209 trillion	27–28 days

Note: DTCC reports the Treasury and agency market and the equity, corporate bond, and ETF market activity combined together so the table derives turnover by combining the total market values in the same manner.

Market Activity and Settlement Failures: With these baseline figures in mind, it now is useful to return to settlement failures, which are delinquent obligations that one party has to another party. Outstanding fails to deliver for both the average and worst days in 2010 are shown in the following table:[10]

[10] "Fails to deliver" are reported weekly to the Fed (FRBNY) and biweekly to the SEC by market participants.

Table 3: Fails—2010 Daily Average and Worst With Comparison to Market Value

	Average Daily Fails	Average Fails Compared to Market Value	Worst Day Fails	Worst Day Compared to Market Value
Treasury Securities	$ 4.1 billion	10.0 bps	$ 21.3 billion	52.0 bps
MBS Securities	$ 114.4 billion	185.4 bps	$ 210.3 billion	340.8 bps
Agency Securities	$ 4.5 billion	15.6 bps	$ 9.4 billion	32.6 bps
U.S. Corporate Bonds	$ 2.8 billion	2.6 bps	$ 4.1 billion	3.8 bps
U.S. Equities	$ 0.4 billion	0.4 bps	$ 1.3 billion	1.3 bps
U.S. ETF Fails	$ 1.0 billion	15.3 bps	$ 7.0 billion	107.1 bps

The first column in Table 3 is the average daily failure rate for each asset type expressed in basis points of the total issued value reported for that asset type. Assuming 250 trading days per year, this index allows us to calculate the total value of all fails in each particular market for the year. The results are illustrated in Table 4.

Table 4: Average Daily Fails as a Percent of Issued Value

	Average Daily Fails (bps)	Annual Fails (% of Issued)
Treasury Securities	10.0 bps	2.5%
MBS Securities	185.4 bps	46.4%
Agency Securities	15.6 bps	3.9%
U.S. Corporate Bonds	2.6 bps	0.7%
U.S. Equities	0.4 bps	0.1%
U.S. ETF Fails	15.3 bps	3.8%

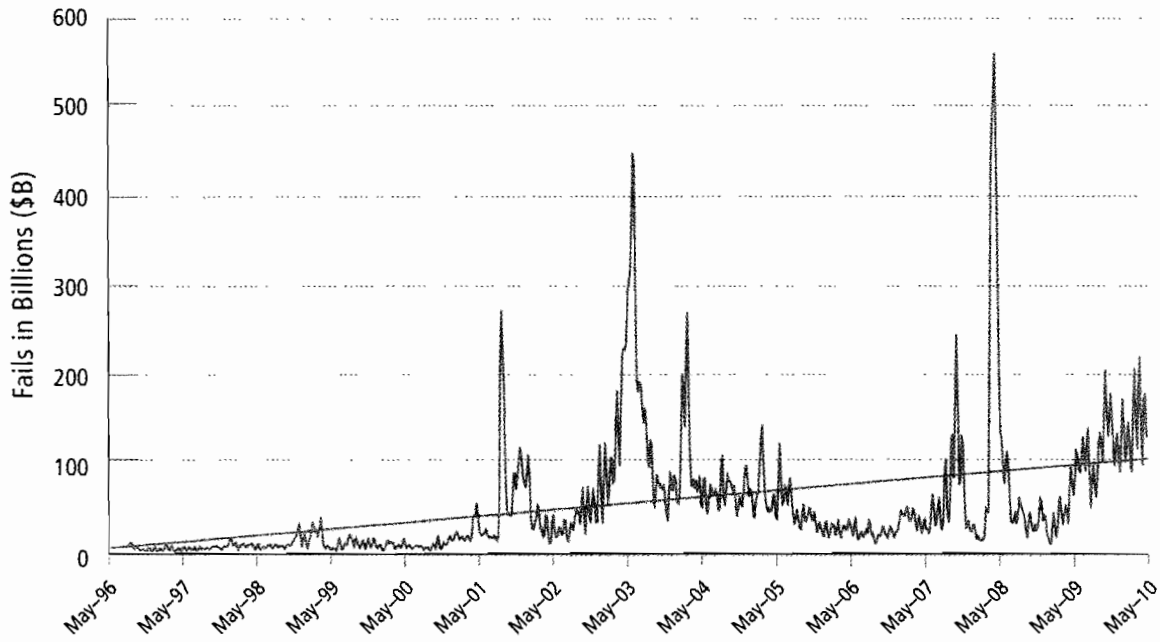
Failed mortgage trades stand out as the major problem, accounting for more than 46 percent of the total mortgage-backed securities issued. In absolute value, $2.6 trillion in mortgage securities failed during 2010. ETFs also stand out because they fail at a rate that is forty times higher than other exchange traded equities (3.8 percent vs. 0.1 percent for equities). This may imply that the main trading firms, which act as agents or intermediaries, are making money on fails of assets owned by others.

Basis Point Group's (BPG) research shows that the delays caused by settlement failures and other accounting recognition delays result in hidden costs to beneficial owners of assets of as much as twenty-seven basis points every day, or about $300 billion in assets that cannot be reinvested. At a conservative annual interest rate of 3 percent, this estimate implies that currently, underfunded pension funds and other

institutional investors are losing $9 billion annually to settlement failures. Investors are underwriting this transfer to trading profits on Wall Street as one part of this endemic fail-to-deliver problem being overlooked by regulators.

Basis Point Group tracks market fails using publicly available data going as far back as 1990 for some markets. Figure 2 shows that the trend in fails of all asset types has been steadily increasing since mid-1996. Until recently, Treasuries dominated the fail-to-deliver reports.

Figure 2: Capital Market Fails June 1996 to December 2010



Two things are obvious from this graphic: The pattern of fails is volatile and the level of fails has gotten worse. The grey line shows the trend.[11] Whether the rise in fails is driven by increased trading, collateralization, short-term financing, or simple bad behavior is unknown. We suggest that failures now are at a level that presents significant systemic risk to all investors in the event of another market shock. The Fed, which has the detailed fails data for each primary dealer, does not appear to be using available tools to mitigate this financial risk to the nation's capital markets.

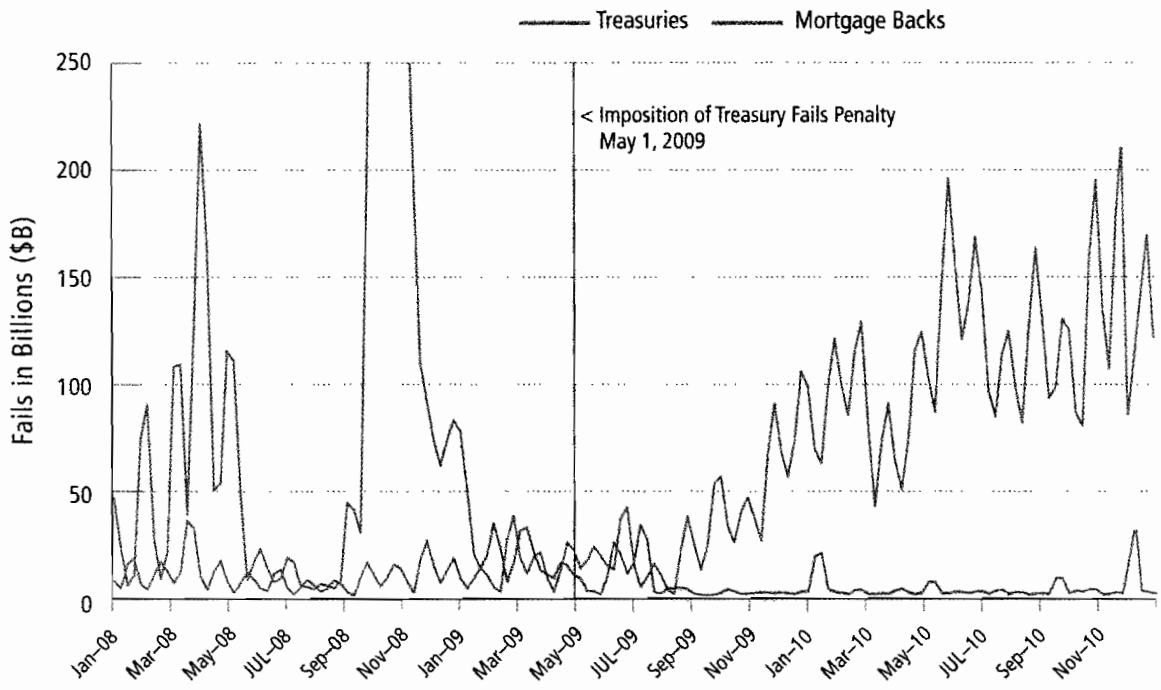
Fails Shift from Stocks and Treasury Bonds to MBS and ETFs

In May 2009, the Federal Reserve placed a penalty on settlement fails of Treasury securities. Figure 3 shows that failures in this market have been virtually eliminated since then.

[11] The trend is calculated as a straight line using standard regression techniques.

Not so with mortgage securities. To the contrary, since 2008, when mortgage failures averaged $10.6 billion per day, failures in this market have climbed steadily, reaching $115 billion per day in 2010.

Figure 3: 2008–2010 Treasury and Mortgage Back Securities Fails



With no penalty for failing MBS securities and with the government takeover of Fannie Mae and Freddie Mac effectively guaranteeing the principal risk by the Treasury, there is little incentive to correct a fail quickly. The Treasury (and by extension the taxpayer) will be obligated to intervene again in the event of another liquidity crisis. Investors and taxpayers who are unaware the game is being played with their funds will be the ultimate losers.

While ETF failures are magnitudes of order smaller than MBS failures, they have the possibility of being the first in a string of dominoes to fall in a crisis. ETFs are highly visible but their failures provide one of the best examples of "things not being as they seem." ETFs are marketed and sold as exchange traded equity securities that have all the diversification advantages of a mutual fund with unlimited supply and they can be traded (and shorted) throughout the day. Investors have been lulled into the belief that ETFs are just like equities through repeated assurances from brokers and the issuers.

As an example, illiquid small cap companies are being repackaged in index ETFs such as the IWM, which derives its value from the stocks in the Russell 2000 index. Unfortunately, just because they are a component of a heavily traded ETF, the

underlying securities do not suddenly become liquid. The situation is analogous to the packaging of substandard MBS and asset-backed pools in more easily traded securities, which did not magically transform bad mortgages into high quality paper. Wall Street instead obfuscated the risk in a manner that was nearly impossible for the reasonable professional investor to discover. Some ETFs may be manifesting the same problem in a different way. This is the fatal assumption in tightly coupled systems.

Recent events—notably ongoing concerns about sovereign debt in Greece, Ireland, and possibly other European countries and the unrest in the Middle East—reinforce concerns about potential systemic risk. Investors have been sold an idea that they need only hit the "eject" button to escape bad news in the market by selling highly liquid ETFs. As the May 6, 2010 "Flash Crash" demonstrated, selling of ETFs mutates rapidly into the destruction of the value of underlying stocks. The financial crisis of 2008 convincingly demonstrated that risk is contagious: markets with an unexpected failure quickly infect other markets and other asset categories.

We are not the first to highlight the ETF fails problem. Roughly a year before the financial crisis, Professor Jim Angel of Georgetown University warned the SEC that "as of this writing, over 100 ETFs and ETNs are on [the] Regulation SHO Threshold List."[12]

Table 5: U.S. Exchange-Traded Funds—Top 10 ETF Fails (Full Year 2010)

Symbol	Description	Total Value of Fails Reported	# of Days Fails Reported	% Value of ETF Fails	% Value of All Fails
SPY	SPDR S&P 500 ETF TR	$74,770,649,095	248	27.4%	15.3%
IWM	ISHARES RUSSELL 2000 INDEX	$27,542,976,085	249	10.1%	5.6%
QQQQ	POWERSHARES QQQ TR UNIT SER 1	$9,726,205,729	247	3.6%	2.0%
FAZ	DIREXION DAILY FINANCIAL BEAR	$8,917,534,272	247	3.3%	1.8%
FAS	DIREXION DAILY FINANCIAL BULL	$8,615,461,265	245	3.2%	1.8%
XLF	FINANCIAL SECTOR SPDR	$6,316,149,807	240	2.3%	1.3%
XRT	SPDR SERIES TR SPDR S&P RETAIL	$5,645,840,903	240	2.1%	1.2%
XLE	ENERGY SECTOR SPDR	$4,491,801,629	241	1.6%	0.9%
IYR	ISHARES DJ US REAL EST IDX FD	$3,805,037,250	240	1.4%	0.8%
XLI	INDUSTRIAL SECTOR SPDR	$3,762,812,985	233	1.4%	0.8%
	Fails of Top 10 ETFs Reported:	**$153,594,469,019**		**56.3%**	**31.5%**
	Fails of All ETF Securities Reported	**$272,767,713,480**			
	Fails of All Securities Reported	**$488,297,395,379**			

[12] Regulation SHO is a government-mandated report on "hard to borrow" stocks that might command rates as high as 30 percent interest charges per year for a common stock, as in the Tesla Motors example previously cited (see Bradley and Litan, *Choking the Recovery*), before a short seller can transact in the security.

Table 5 shows that in 2010 some of the largest ETFs (SPY, XLF, and XLI) had the highest failure rates, often exceeding 240 out of 250 trading days.[13]

In normal trading environments, liquidity risk is invisible and the instability caused by fails remains unseen below the surface of markets operations. Liquidity risk in equities markets is evident from the extremely high rate at which settlement of ETF buy transactions fail because the stock is not delivered to the owners. Whether failures occur because insufficient units are created or because the short sellers cannot locate someone willing to lend them stock for the trade is irrelevant. Investors have been promised that they can claim their money at a reasonable and immediate value. This may be a promise markets can't keep when the plumbing breaks.

Why Fails to Receive and Fails to Deliver Don't Match

One other consideration should give pause to regulators who might naively assume that market participants are sufficiently well capitalized with access to sufficient liquidity. There is a widely held belief by both audit firms and regulatory officials that failures to receive securities offset failures to deliver. These parties take for granted that the financial system plumbing is in good condition and that all actors in the game behave responsibly and ethically.

This assumption is simplistic and poses potentially dangerous systemic risks. To understand why, consider first two key points that have come out of Basis Point Group's research and other academic research.[14] The first is that the average time to cure a fail is approximately fifteen days. The second is that only 35 percent of fails to deliver are offset by a failure to receive.[15]

The systemic risk issues should be obvious. If dealers fail to settle $130 billion to $253 billion per day and the normal time required to resolve failures is fifteen days, then the Treasury must stand ready to supply $2 trillion or more to the securities markets to keep markets liquid and buy time for market intermediaries to acquire and deliver against their commitments if one or more major counterparties fail, as occurred with Lehman Brothers.

Treasury security fails exceeded 50 percent of the total issuance at the peak of the crisis in 2008. MBS fails are harder to correct, and it is reasonable to expect that in any crisis fails will spike and the liquidity of specific firms may be seriously affected. Equally disturbing is evidence from BPG's research that shows MBS failures persist longer than most other asset types because of the complexity of MBS settlement. BPG analyzed the

[13] "Fails-To-Deliver Data" reported to the SEC by the National Securities Clearing Corporation.
[14] Thomas J. Gjerde, "Naked Short-Selling and Delivery Failure in U.S. Equity Markets" (paper presented at the 66th International Atlantic Economic Conference, Montreal, Canada, October 12, 2008, which found that fails persisted for sixteen days).
[15] BPG's analysis used the criteria that a receive and deliver fail offset each other if they were for the same security, the same par, or shares on the same day.

trading books of one major financial organization and documented that mortgage fails averaged sixty-three days despite firm risk summaries that showed the weighted average settlement delay for fails at only fifteen days.

The foregoing receive-deliver fails offset figures also are concerning because they mean that 65 percent of transactions are 'naked fails.'[16] Institutional Investors have pulled back from securities lending, making it harder for market makers to acquire securities that may have been easily borrowed in the past. Increased trading and financing activity associated with high frequency trading and derivative hedge strategies only worsens the high-quality security supply problem, decreasing the resiliency of the markets and increasing the overall risk to the system.

Finally, there is a lopsided risk-reward dynamic embedded in the structure of current fails regulations. Capital markets firms can increase profits while laying off the risk associated with these profits to investors, the Treasury, and ultimately the taxpayers.

Implications for Regulators

We do not know if regulators are aware of these specific market failure patterns, or their potential causes. It also is unclear which regulators have responsibility for assessing the impact of fails on a firm's liquidity and stability. Consistent with the analysis above, there are two alternative possibilities, or some combination of the two:

1. Regulators are either unintentionally or intentionally allowing parties, most likely sellers of securities, to game the system and squeeze out extra earnings. Failing to deliver a security to one party and re-hypothecating it to another party for a short period of time is one method of generating additional returns. In the case of mortgage securities in particular, it is necessary to ask if this approach might be a deliberate tactic employed by the Fed to allow banks to reflate their balance sheets.

2. Alternatively, rising fails could be canaries in the coal mine of financial markets, telegraphing that parties to ETFs and mortgage-backed securities transactions are having problems completing their trades. Markets for borrowing securities, especially mortgages and those supporting small cap ETFs, may be drying up.

In either case, the regulatory establishment must gain control over Wall Street's hyperkinetic trading interests and stiffly fine traders who do not meet their contractual and legal obligations to settle trades on time.

[16] While the data supporting the 35 percent number is narrow (one month of months data for one anonymous dealer), the analysis included more than 795,000 transactions totaling $7.8 trillion dollars in notional value.

Recommendations

Fortunately, there are several clear and obvious remedies to the fails situation. The appropriate regulatory authorities should:

- Impose substantial penalties or fees for all transaction fails.
  - It worked in equities and for Treasuries: make all financial instruments, and especially mortgage securities and ETFs, face large fines for settlement failure;
  - Put the regulatory onus on the custody banks, the top five of whom control 60 percent of $67 trillion in client assets;
  - Make custody banks post capital sufficient to cover all failed client trades every day;
  - Make penalties sufficiently large that they more than offset any gains parties may realize from not delivering securities or not paying for them by the settlement due date; and
  - Make penalties take varying forms, such as stiff or increasing fines for every day an MBS trade or ETF trade fails to deliver. It is possible that the SEC (for ETFs) and the Fed (for MBS) already may have legal authority to implement appropriate penalties, but if each agency does not believe it does, it should immediately ask Congress for that authority. The rules that govern the timely settlement of securities trades are clear; the enforcement mechanisms appear quite muddy.

- Establish broader fails reporting, and include all transaction activity for systemically important financial institutions, especially primary custody banks, in a manner similar to that required by U.S. Federal Reserve Bank of New York from U.S. primary dealers:
  - Report aggregate dollar value of securities lending pools by asset class on a monthly basis so that investors and regulators might anticipate shifts of the security supply and its implications for market stability (as customers often quit lending at the beginning of serious liquidity crises);
  - Report fails-to-receive securities and stratify by customer segment;
  - Report fails-to-deliver securities and stratify by customer segment;
  - Delineate fails data according to custody bank business lines, e.g. trading, securities lending, and financing (repurchase service); and

Time to Change the Framework for Analyzing Systemic Risk in Financial Markets

There are sufficient data available at the clearing organizations to create a new analytic framework and structure for assessing systemic risk implications of new instruments or trading strategies. Consultants for BPG understand that operations staff at major financial firms have long counseled against many of the more complex, multileg deal

structures. The operational complexity of tightly coupled systems depends on a daisy chain of intermediaries doing the right thing at the right time. This does not often happen during market crisis. Most front office and senior managers may not understand and often ignore the extent of incremental manual labor required to settle complex trades, as in mortgage securities.

Accordingly, regulators must initiate an analysis to determine how transaction fails propagate through the system and how the volumes of collateralization, repo financing, and capitalization affect market prices. Regulators serve an important role in safeguarding investor confidence in capital markets. Today we know that bad behavior and gaming the system based on operational deficiencies imposes a performance penalty on institutional investors and on the nation's taxpayers. We cannot afford to wait until the next crisis to resolve these dangerous and leaky pipes in our financial system.