



***500 Million Shares of Stock Are Missing:
A Report on the Impact of Allowing Stock Sales to Go Undelivered for Long Periods***

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Introduction

America's public companies and their shareholders face a dilemma. Last year, researchers determined that "naked short sales" -- when the buyer is credited with the shares that a short seller has, sold but failed to borrow and deliver -- occur on a large scale, in many cases extending for months at a time. Proper short sales improve the efficiency of financial markets, signaling investors that short sellers see such negative prospects for particular stocks that they are willing to pay to borrow the shares they sell short and to risk losses if they're wrong. But naked short sellers operating on a large scale can damage financial markets, since if they can sell shares short without ever borrowing them, there are no limits to the number of shares they can sell into the market. Moreover, new evidence now suggests that these "failures to deliver" shares sold short, or "fails," may be concentrated in a relative handful of companies, raising a prospect of naked short sales being used to manipulate some stock prices. Unless the SEC and the Depository Trust and Clearing Corporation (DTCC) crack down on large-scale extended fails, naked short sales could threaten public confidence in our financial markets.

It has been well established that every day, millions of shares of stock in U.S. companies that are sold go undelivered. In November 2004, an SEC visiting economist, Dr. Leslie Boni, reported that on any given day, there are some 120 million to 180 million shares of companies listed on the NYSE or NASDAQ and some 300 million to 420 million shares over-the-counter (OTC) or unlisted public companies -- a average total of 510 million shares -- that have been sold and gone undelivered for at least 3 days. Her conclusions came from official data of the DTCC, the organization that clears and settles all U.S. stock sales and purchases, and holds most of these assets in electronic form.

Dr. Boni found that on any given day, failures-to-deliver shares, or "fails," affect thousands of U.S. companies, with many of those fails persisting for weeks or months. On any given day, about 80 percent of NYSE and NASDAQ stocks and 58 percent of Over-the-Counter (OTC) unlisted stocks have undelivered shares. Moreover, more than 1,000 of about 6,100 listed stocks, some 17 percent, have fails at least one-month old (20 trading days); and more than 700 listed firms or 11.5 percent have fails at least two-months old. Similarly, more than 900 unlisted public companies, or more than 8

percent of a total 11,000, have fails that have persisted for at least one month; and more than 800 OTC companies, more than 7 percent, have fails at least two-months old.

Most of extended failures-to-deliver involve short sales, so that most of the fails represent naked short sales. The DTCC clearance and settlement process implicitly permits naked short sales by using bookkeeping entries and the holdings of members uninvolved in those sale, to “clear and settle” short sales even when the short seller persists in failing to deliver the shares he has sold short. At any time, the DTCC could fully clear and settle every extended naked short sale or failure-to-deliver by doing what it once did routinely in such cases: Buy the shares itself in the market (“buying in”) and charge the account of the naked short seller’s broker for the cost. By failing to do so or otherwise resolve the hundreds of millions of shares that are sold and go undelivered, the DTCC tacitly maintains the current proliferation of protracted failures-to-deliver.

Shortly after Dr. Boni published her findings, the SEC approved Regulation SHO to limit the extent of future failures-to-deliver. The regulation directs that any public company with outstanding fails of at least 10,000 shares and equal to 0.5 percent of its outstanding shares shall be designated a “threshold security.” In subsequent sales of shares in a threshold security, the seller’s broker must actually locate and provide the shares as a condition for the transaction. These rules, if enforced, should ensure that once a company is designated a threshold security, its outstanding fails cannot increase further.

Since stock manipulators have used large-scale naked shorts to artificially drive down the price of targeted stocks, Regulation SHO’s requirement that a company’s future fails not exceed one-half of one percent of its outstanding shares appears to be crafted to limit such fails to levels unlikely to affect the price of most stocks. As we will see, the evidence suggests that this approach may not be working very effectively.

The Unanswered Question: While Dr. Boni’s study established that on any given day, 500 million or so shares that have been sold remain undelivered, and large numbers of stocks have some outstanding fails, it did not examine whether the 500 million fails are still generally concentrated in a relatively small number of firms, or broadly distributed across the thousands of stocks with some fails. The one entity with the answer is the DTCC, which tracks the precise number of fails for every stock, including all threshold companies, yet refuses to release those data to anyone, even affected firms. The issue of how concentrated are the 500 million fails among certain threshold securities is a critical one for the integrity of the equity markets and the effectiveness of Regulation SHO. Recent scandals have shown that naked short sales are still used to flood the market with sell orders that are “cleared and settled” by the DTCC, yet go undelivered for days or months. If the hundreds of millions of documented fails on any day are concentrated in a small number of companies, it may point to new instances of stock manipulation.

This report begins to answer these questions by analyzing threshold securities on three randomly-selected days (February 15, 2005, March 22, 2005, and April 26, 2005). We

find evidence that the 500 million fails may well be concentrated among a relative handful of threshold securities.

Under the Freedom of Information Act, the SEC has released data on the aggregate number of fails each day, April 30, 2004 to April 30, 2005, covering NYSE and NASDAQ listed companies and unlisted OTC companies. As these data cover fails of 10,000 shares or more – the minimum for inclusion as a threshold security – they should approximate the total fails for companies on the threshold lists. Using the SEC data and stock exchange data on trading activity and outstanding shorts for NYSE and NASDAQ threshold companies, we find evidence that as few as 10 or less NYSE and NASDAQ threshold securities may account for as many as two-thirds of fails among exchange-listed threshold stocks, and 20 or fewer NYSE and NASDAQ threshold companies may account for as much as 75 percent of all fails among listed securities.

The evidence also suggests – though with less confidence -- that fails among OTC pink sheet and bulletin board stocks also are concentrated in a relative handful of threshold-list OTC stocks. Data on the outstanding shorts of OTC companies are not available, so any conclusions about the concentration of fails among unlisted firms must remain quite tentative. But data on trading activity suggest that as few as 10 OTC threshold stocks could account for a significant majority of the fails among unlisted securities.

This analysis points to the possible large-scale naked shorting of major U.S. corporations. For example, the analysis suggests that on March 22, 2005, five NYSE and NASDAQ companies had outstanding fails of 8 million shares to 12.5 million shares each, including the AMR Corporation, Delta Airlines, Tivo, and Krispy Kreme Donuts. Detailed data on the trading activity, outstanding shorts, and estimated fails for listed threshold securities on February 15, 2005, March 22, 2005 and April 26, 2005, are provided in appendices following the text of this report.

Summary of Findings

- *On any given day, about half of NASDAQ and NYSE threshold stocks – some 50 to 80 – may account for as much as 95 percent of all fails in listed firms, with average fails for these stocks of 1.5 million-to-2 million shares each.*
- *On any given day, about two-thirds of OTC threshold securities – 60 to 80 stocks – may account for the vast majority of fails in OTC companies, with average fails for these stocks of about 4.3 million-to-4.8 million shares each.*
- *Based on a combination of trading activity and outstanding shorts, we estimate that on any given day, 10 or fewer NYSE and NASDAQ threshold securities may account for as many as two-thirds of all fails in exchange-listed stocks, and 20 or fewer NYSE and NASDAQ threshold securities may account for as many as 75 percent of all fails in listed stocks.*

- *Based on these analyses, some 15 to 33 NYSE and NASDAQ threshold securities and some 27 to 45 OTC threshold securities may carry fails or naked shorts of more than 1,000,000 shares each, on any given day.*

Our analysis also found that SEC Regulation SHO has not resolved or significantly reduced the problem of large-scale, persistent fails. The total number of outstanding fails has not declined substantially since SHO was introduced. Nor does the regulation protect investors from circumstances in which companies remain on the threshold list month after month. There is even evidence that a threshold security's fails may rise over time, suggesting serious gaps in compliance and enforcement of the regulation.

- *Companies can remain on threshold lists for months: Of the 30 NASDAQ and NYSE threshold stocks listed on February 15, 2005 with the highest estimated fails, 12 or 40 percent were also listed on March 22, 2005 and April 26, 2005.*
- *Among the 30 most heavily-traded OTC threshold companies listed on February 15, 2005, nine or 30 percent were also listed on March 22, 2005; two of those nine were listed again on April 26, 2005*
- *Designation as a threshold security may not reduce subsequent short sales: Among the 12 cases of recurring NYSE and NASDAQ threshold securities, the number of outstanding shorts continued to rise in five cases or 42 percent. In the seven other cases, the shorts fell on average by less than 15 percent.*
- *Designation as a threshold security may not even reduce fails: In all 12 cases of persistent NYSE or NASDAQ threshold securities from the top 30, the estimated fails rose from February to March; in five of the 12 cases (42 percent), estimated fails also were greater in April than in February.*

These estimates rely on assumptions about links between trading volume, outstanding shorts and fails. While these factors are certainly correlated, their exact relationship or the role of other factors in the incidence of fails in specific stocks cannot be established with any certainty until more extensive data on fails for specific securities are available. At this time, those data are held by the DTCC, which will not release them. So while we are confident that the evidence points to significant concentration of fails among relatively small numbers of threshold stocks, our quantitative estimates must remain tentative.

Procedure and Aggregate Analysis

Total Numbers of Fails and Threshold Securities. We analyzed the NYSE, NASDAQ and OTC threshold security lists for three days chosen at random – February 15, 2005, March 22, 2005, and April 26 2005 – along with the SEC data on total failures-to-deliver for threshold securities on the same three days. Table 1, below, summarizes the numbers

of exchange-listed and OTC threshold companies on those three days and their total numbers of outstanding fails.

Table 1. Failures-to-Deliver and Threshold Securities, Exchange-Listed and OTC

	OTC	NYSE-NASDAQ	TOTAL
February 15, 2005			
<i>Aggregate Fails</i>	411.2 million	136.8 million	548.0 million
<i>Threshold Companies</i>	160	159	319
March 22, 2005			
<i>Aggregate Fails</i>	394.1 million	132.7 million	526.8 million
<i>Threshold Companies</i>	133	143	276
April 26, 2005			
<i>Aggregate Fails</i>	358.8 million	131.6 million	490.4 million
<i>Threshold Companies</i>	116	125	241

These aggregate data show that on any given day, outstanding fails total some 500 million shares or more -- *greater* than the total for the three randomly-chosen days in 2004 reported by Dr. Boni, before Regulation SHO was in place. Fails also occur in much greater numbers among OTC stocks than listed stocks: While the number of NYSE and NASDAQ threshold securities are roughly comparable to those for the OTC markets, OTC threshold stocks consistently have nearly three times as many fails, in the aggregate, as NYSE and NBASDAQ threshold stocks.

Average Number of Fails, Per-Threshold Security

All threshold securities are not equal in their trading activity. For example, some are very thinly traded, such as a number of limited warrants, while others are very heavily traded. Based on the proposition that securities that trade few shares are not likely to account for large numbers of shares traded but undelivered, we identified threshold securities trading so lightly as to constitute “statistical outliers.” With both the NASDAQ-NYSE threshold list and the OTC threshold list, we calculated the average trading volume for all threshold securities during the month that included the threshold list in question (February, March and April of 2005) and eliminated stocks with trading volume equal to less than 10 percent of the average. To ensure that very heavily-traded stocks (statistical outliers in the other direction) did not distort the averages on which we based those exclusions, the calculation of those averages did not include companies with trading volume of 10 times or more the initial monthly average.

Using this approach, we can exclude as statistical outliers between 31 percent and 41 percent of the original OTC threshold companies, reducing the number of OTC threshold securities to 94 companies on February 15, 2005, 91 companies on March 22, 2005, and 75 companies on April 26, 2005. We further calculated that these statistical outliers accounted for less than one percent of total monthly trading in all OTC threshold stocks. After adjusting the total number of fails reported by the SEC for OTC threshold securities, by the percentage of total trading represented by the excluded outliers, we can

estimate that non-thinly traded OTC threshold stocks had average failures-to-deliver of 4.3 million shares to almost 4.8 million shares each on the three days (Table 2, below).

With regard to NYSE and NASDAQ threshold securities, we identified two groups of companies that were very thinly traded. First, NASDAQ reports that its National Market stocks (NM) account for 95 percent of all trading in NASDAQ-listed companies, with small-cap stocks accounting for the remaining 5 percent of trades. Based on those data, we excluded NASDAQ small-cap threshold securities from our dataset. We also identified other very lightly-traded NYSE and NASDAQ threshold securities using the same analysis of statistical outliers applied to OTC threshold stocks. We then calculated the share of all trading in NYSE and NASDAQ threshold securities accounted for by NASDAQ small cap threshold stocks and the statistical outliers – less than 3 percent – and adjusted the aggregate fails reported by the SEC to reflect their exclusion from our analysis.

After setting aside those low-trading stocks, the number of NYSE and NASDAQ threshold securities declined to 89 companies on February 15, 2005, 70 companies on March 22, and 64 companies on April 26. These companies account for some 97 percent of all trading in NYSE and NASDAQ threshold stocks. Based on this analysis, we can estimate that on any given day, the more active NYSE and NASDAQ threshold securities averaged 1.5 million to 2 million fails each (Table 2, below).

Including both listed and unlisted threshold securities, those actively traded had average failures-to-deliver of 3.0 million shares to 3.5 million shares each on the three days.

Table 2. Average Fails Among NYSE, NASDAQ and OTC Threshold Stocks

	OTC	NYSE-NASDAQ	TOTAL
February 15, 2005			
<i>Total Threshold Companies</i>	160	159	319
<i>Non Thinly-Traded Threshold Companies</i>	94	89	183
<i>Fails, Adjusted for Excluded Companies</i>	408,954,140	132,811,617	541,765,757
<i>Average Fails per Threshold Company</i>	4,350,576	1,492,265	2,960,469
March 22, 2005			
<i>Total Threshold Companies</i>	133	143	276
<i>Non Thinly-Traded Threshold Companies</i>	91	70	161
<i>Fails, Adjusted for Excluded Companies</i>	391,708,369	126,041,445	517,749,814
<i>Average Fails per Threshold Company</i>	4,304,488	1,800,592	3,215,837
April 26, 2005			
<i>Total Threshold Companies</i>	116	125	241
<i>Non-Thinly Traded Threshold Companies</i>	75	64	139
<i>Fails, Adjusted for Excluded Companies</i>	357,563,717	127,964,806	485,528,523
<i>Average Fails per Threshold Company</i>	4,767,516	1,999,451	3,493,011

Estimating Fails for Individual Companies

In addition to estimating the average fails for non-thinly traded threshold securities, we constructed a model to roughly estimate the fails for individual threshold securities, based on the trading volume and outstanding shorts of each threshold stock relative to the trading volume and outstanding shorts of all threshold stocks. These estimates are based on the proposition that within the set of threshold securities, the relative number of shares traded and the relative number of shares sold short should be correlated with the relative number of shares that have been sold short and gone undelivered.

We collected the trading data and short interest for each NYSE and NASDAQ threshold security and calculated its share of all trading in threshold securities and its share of all outstanding shorts among threshold securities, for the appropriate month. Using these data on each NYSE and NASDAQ threshold company's share of both the total trading volume for threshold securities and total short interest for threshold securities, we distributed the aggregate fails reported by the SEC and calculated each threshold stock's share of those fails. The results suggest that fails in listed companies may well be highly concentrated in a relative handful of threshold securities. On any given day, as few as five NYSE and NASDAQ threshold stocks may account for an estimated 57.5 percent of fails among exchange-listed threshold stocks, as few as 10 companies may account for more than 68 percent of those fails, and as few as 20 threshold companies may account for more than 80 percent of those fails (Table 3). If these estimates are generally accurate, it raises a prospect of naked short sales sufficiently large and concentrated to affect the prices of a dozen or more potentially-targeted stocks. The tabulations of estimated fails, trading volume and short interest for NYSE and NASDAQ threshold stocks on February 15, March 22 and April 26, 2005 are provided in Appendices 1-3.

Table 3. Estimated Share of All Failures-to-Deliver in Listed Stocks Accounted for by Top NYSE and NASDAQ Threshold Securities

	2/15/2005	3/22/2005	4/26/2005	Average
Top 5 Threshold Companies	63.1%	38.2%	71.2%	57.5%
Top 10 Threshold Companies	71.8%	54.0%	79.6%	68.5%
Top 20 Threshold Companies	81.7%	71.6%	88.0%	80.4%
Companies with 1,000,000 + Fails	21	33	15	19.3

We cannot use the same model to estimate the distribution of fails for OTC threshold securities, because reliable data on outstanding shorts in OTC companies are not publicly available. We do know that certain trading features are not distributed proportionately among OTC threshold stocks. As with the NYSE and NASDAQ threshold stocks, OTC threshold securities vary greatly in trading activity, with the five most actively-traded OTC threshold securities in February 2005 trading more than ten times the average shares of all other (non-thinly traded) OTC threshold securities. While some relationship certainly exists between overall sales of OTC threshold securities (trading volume) and

their number of uncovered short sales, trading volume and aggregate fails alone are insufficient to credibly estimate the distribution those fails, once sold.

The DTCC alone has reliable data on the outstanding fails and naked short sales of all listed and OTC companies, including those designated as threshold securities, but will not release them. The DTCC’s lack of transparency in this area undermines the efficiency of U.S. equity markets and could damage investor confidence. The DTCC should release those data promptly and on a regular basis so the SEC, market participants and independent analysts can evaluate the incidence and distribution of naked short sales and the implications for specific companies and investment strategies.

Regulation SHO and Companies’ Persistent Status as Threshold Securities

Our analysis also found strong evidence that Regulation SHO has not resolved or significantly reduced the problem of widespread or large-scale fails. SEC data show that the total number of outstanding fails has not declined significantly since the introduction of Regulation SHO (see Table 2, above). Regulation SHO also has not protected investors from circumstances in which companies remain on the threshold list month after month, often with their short interest increasing from month to month (see Table 4).

NYSE and NASDAQ Companies. Persistent status as a threshold security, month after month, is especially evident among exchange-listed threshold companies. Among the top 30 NYSE and NASDAQ threshold securities from the February 15, 2005 list, 12 or 40 percent were also designated threshold securities on March 22, 2005 and April 26, 2005; another five securities appear on the March 22, 2005 list but not on the list for April 26, 2005, bringing the total of recurring NYSE and NASDAQ threshold securities to 17 out of 30 or 57 percent. This analysis further found that the outstanding shorts against a threshold stock increased from month to month in five of the 12 instances of the recurring NYSE or NASDAQ threshold securities – 16.7 percent of the total sample of 30 and 41.7 percent of the sample of recurring threshold companies. Finally, there is evidence suggesting that the number of fails can rise while a stock is on the threshold list: Using the combination of trading activity and outstanding shorts to estimate fails for NYSE and NASDAQ threshold securities, we estimated that those fails increased from February 15, 2005 to March 22, 2005 in all 12 cases of firms near the top of the February 15th list that remained on the list until at least March 22nd. However, this pattern did not hold into late-April: Estimated fails continued to rise through April 26, 2005 for only one exchange-listed threshold stock from the top 30 of the February 15, 2005 list – Napster.

Table 4. Recurring Threshold-Security Status among the Top 30 NYSE-NASDAQ Threshold Companies, with their Outstanding Shorts and Estimated Fails

	<i>Outstanding Shorts</i>			<i>Estimated Fails</i>		
	Feb 15	March 22	April 26	Feb 15	March 22	April 26
DAL	50,160,000	39,730,000	39,230,000	5,639,996	9,991,193	4,654,519
TASR	22,064,356	18,984,274	17,213,876	5,304,344	8,884,041	4,622,377

KKD	27,900,000	29,910,000	30,620,000	4,420,437	8,112,966	3,498,712
NFLX	15,531,946	14,110,024	14,005,403	1,942,257	3,408,439	1,812,003
ALD	16,100,000	15,030,000	14,950,000	1,647,017	2,971,582	1,513,811
MSO	7,240,000	7,160,000	6,710,000	1,428,802	3,637,788	928,872
NFI	7,330,000	8,560,000	8,430,000	1,255,012	1,966,687	911,897
GLBC	10,806,027	10,782,624	10,392,037	1,140,023	1,986,729	1,013,162
OSTK	4,889,912	5,276,868	5,444,496	1,089,032	1,659,032	892,807
NAPS	6,259,615	7,964,105	6,561,601	984,754	2,775,107	1,260,220
AGEN	7,927,845	8,853,204	7,976,018	892,855	1,872,102	827,297
CALM	7,332,628	6,727,729	4,697,713	799,065	1,359,500	548,209

At a minimum, these findings suggest that Regulation SHO has not created the market conditions or regulatory requirements needed to ensure that naked short sellers (and others) resolve any large, outstanding fails.

OTC Companies. We further found that OTC companies also persist as threshold securities with some frequency, although they are less likely than their NYSE and NASDAQ counterparts to remain on the threshold list over the three-month period. Of the 30 most actively-traded OTC companies from the February 15, 2005 threshold list, nine or 30 percent were still threshold securities on March 22, 2005 (Table 5). However, only two of those nine recurring threshold companies were also listed on April 26, 2005.¹ While there are no data on the outstanding shorts of OTC companies, and we have not estimated the fails for particular OTC threshold companies, it is clear that Regulation SHO does not necessarily reduce sales (long and short, delivered or not) of OTC threshold stocks: Three of the nine OTC companies on the threshold lists for both February 15, 2005 and March 22, 2005 also had rising sales from February to March.

Table 5. Recurring Threshold-Security Status among the 30 Most Actively-Traded OTC Threshold Securities, with their Trading Volume

<i>Shares Sold</i>			
	Feb 2005	March 2005	April 2005
TNOG.PK	292,000,000	--	848,000,000
GLKC.PK	208,000,000	32,300,000	10,500,000
TWRAQ.PK	98,600,000	22,200,000	--
FNIX.OB	59,600,000	81,000,000	--
IFLBE.OB	53,400,000	30,500,000	41,000,000
DRDF.OB	53,200,000	47,700,000	--
SPRL.PK	39,100,000	--	18,500,000
GMTH.OB	26,700,000	15,100,000	--
GADZQ.PK	16,600,000	3,830,000	--
HESG.OB	16,300,000	--	7,870,000
CWPC.OB	13,100,000	17,300,000	--

¹ In addition, three highly-traded OTC threshold companies on the February 15, 2005 list also appear on the list for April 26, 2005, but not on the list of March 22, 2005: Titan Oil and Gas (TNOG.PK), Strat Petroleum (SPRL.PK), and Health Sciences Group (HESG.OB).

TKER.OB	11,700,000	17,100,000	--
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Conclusion

This analysis found that the 500 million or so shares of stock that on any given day have been sold but not delivered in a timely fashion – principally, naked short sales -- are most likely fairly concentrated in a relatively small number of threshold securities, not distributed across thousands of firms and their stocks. The evidence of the concentration of these fails raises the prospect that large-scale, persistent naked shorts may be used to manipulate the prices of some of those stocks. Regulation SHO, as currently applied and enforced, has not resolved the large-scale outstanding fails affecting many companies on the threshold security lists. At this time, the DTCC alone has accurate, hard data on the numbers of outstanding fails for every U.S. stocks, including each particular threshold securities. Moreover, only the SEC and the DTCC have the means to require or force the prompt resolution of all long-standing fails. The SEC should direct the DTCC to release those data to investors and affected companies, and the SEC and DTCC should end all instances of large-scale, persistent naked short sales by reinstating mandatory buy-ins in all cases of extended failures-to-deliver.

About the Author

Robert J. Shapiro is the co-founder and chairman of Sonecon, LLC, a private firm that advises U.S. and foreign businesses, governments and non-profit organizations on market conditions and economic policy. Dr. Shapiro has advised, among others, U.S. President Bill Clinton and British Prime Minister Tony Blair; private firms such as MCI, Inc., New York Life Insurance Co., SLM Corporation, Nordstjernan of Sweden, and Fujitsu of Japan; and non-profit organizations including the American Public Transportation Association, the U.S. Chamber of Commerce, and the Investors Action Alliance. He is also Senior Fellow of the Progressive Policy Institute and a director of the Ax:son-Johnson Foundation in Sweden, the Center for International Political Economy in New York, and USA for Innovation in Washington, D.C. From 1997 to 2001, Dr. Shapiro was U.S. Under Secretary of Commerce for Economic Affairs. In that position, he directed economic policy for the Commerce Department and oversaw the Nation's major statistical agencies, including the Census Bureau while it carried out the 2000 decennial census. Prior to that appointment, he was co-founder and Vice President of the Progressive Policy Institute and the Progressive Foundation. He also was principal economic advisor in Governor Bill Clinton's 1991-1992 presidential campaign and senior economic advisor to Vice President Albert Gore and Senator John Kerry in their 2000 and 2004 presidential campaigns. Dr. Shapiro also served as Legislative Director for Senator Daniel P. Moynihan, Associate Editor of *U.S. News & World Report*, and economic columnist for *Slate*. He has been a Fellow of Harvard University, the Brookings Institution, and the National Bureau of Economic Research. He holds a Ph.D. from Harvard University, a M.Sc. from the London School of Economics and Political Science, and an A.B. from the University of Chicago.

Appendix I

Trading Activity, Outstanding Shorts and Estimated Fails for NYSE and NASDAQ Threshold Securities, February 15, 2005

NYSE and NASDAQ Threshold Securities, February 15, 2005. Table 6 presents data on the level and share of trading activity, outstanding shorts, and estimated fails-to-deliver for each NYSE and NASDAQ threshold security listed on February 15, 2005 (excluding small-cap stocks and thinly-traded “statistical outliers”). All categories are dominated by QQQQ, the NASDAQ-run index fund for the NASDAQ 100, which investors were aggressively shorting in expectation of a bear market. QQQQ accounted for 39 percent of the volume of all threshold securities, and 27.5 percent of all outstanding shorts in threshold securities. In terms of both volume and short interest, the other dominant threshold company was Level 3 Communications (LVLT), accounting for 16.6 percent of trading volume and 16 percent of thresholds shorts. LVLT was followed by American Italian Pasta Company (PLB), a NYSE company which had more than 10 percent of all threshold-security shorts; followed in turn by Delta Airlines (DAL) and Taser International (TASR). We estimate that 21 NYSE and NASDAQ companies on the February 15, 2005 threshold list had fails of 1,000,000 shares or more.

**Table 6. Estimated Fails for NYSE and NASDAQ Threshold Securities,
February 15, 2005**

Firm	Trading Volume	Share of Volume	Outstanding Shorts	Share of Shorts	Estimated Fails	Share of Est Fails
QQQQ	618,402,355	39.13%	213,499,418	27.50%	44,272,059	33.32%
LVLT	262,442,717	16.60%	124,633,352	16.06%	21,700,986	16.33%
PLB	4,413,800	0.28%	80,060,000	10.31%	7,038,123	5.30%
DAL	32,032,300	2.03%	50,160,000	6.46%	5,639,996	4.24%
TASR	81,249,773	5.41%	22,064,356	2.84%	5,304,344	3.99%
KKD	48,343,600	3.06%	27,900,000	3.59%	4,420,437	3.33%
NFLX	14,577,158	0.92%	15,531,946	2.00%	1,942,257	1.46%
GG	30,234,900	1.91%	5,740,000	0.74%	1,762,398	1.33%
CYBX	29,858,073	1.89%	5,229,254	0.67%	1,702,839	1.28%
NLY	9,604,900	0.61%	14,740,000	1.90%	1,665,435	1.26%
ALD	6,397,900	0.41%	16,100,000	2.07%	1,647,017	1.24%
MSO	19,245,900	1.22%	7,240,000	0.93%	1,428,802	1.08%
HOFF	27,918,673	1.77%	2,604,028	0.34%	1,396,605	1.05%
SGI	21,281,000	1.35%	5,820,000	0.75%	1,392,817	1.05%
ARP	9,041,600	0.57%	10,675,000	1.38%	1,293,818	0.97%
NFI	15,156,600	0.96%	7,330,000	0.94%	1,264,589	0.95%
WTSLA	21,740,408	1.38%	3,984,341	0.51%	1,255,012	0.95%
FCEL	14,825,151	0.94%	6,595,499	0.85%	1,187,787	0.89%
GLBC	5,116,582	0.33%	10,806,027	1.39%	1,140,023	0.86%
OSTK	15,948,616	1.01%	4,889,912	0.63%	1,089,032	0.82%
FRP	16,898,800	1.07%	4,300,000	0.55%	1,078,486	0.82%

NAPS	10,679,560	0.68%	6,259,615	0.81%	984,754	0.74%
SNDA	16,331,663	1.03%	3,075,306	0.40%	949,818	0.72%
NGEN	11,454,903	0.73%	5,041,824	0.65%	913,116	0.69%
AGEN	5,097,176	0.32%	7,927,845	1.02%	892,855	0.67%
CCJ	18,498,700	1.17%	1,270,000	0.16%	886,400	0.67%
SUP	7,585,600	0.48%	6,610,000	0.85%	884,672	0.67%
AWA	7,246,200	0.46%	6,500,000	0.84%	860,988	0.65%
CALM	4,078,064	0.26%	7,332,628	0.95%	799,065	0.60%
BLTI	2,170,493	0.14%	7,686,822	0.99%	749,186	0.56%
INFY	6,133,240	0.39%	5,514,696	0.71%	729,864	0.55%
AAH	3,407,581	0.22%	6,187,584	0.80%	672,870	0.51%
PPD	2,429,300	0.15%	6,570,000	0.85%	664,474	0.50%
BSTE	3,472,978	0.2.2%	5,766,270	0.74%	639,558	0.48%
TZOO	13,272,474	0.8.4%	938,198	0.12%	638,286	0.48%
PCU	6,242,300	0.40%	4,210,000	0.54%	622,776	0.47%
CREO	12,952,844	0.82%	822,212	0.11%	614,921	0.46%
IASG	2,318,085	0.15%	5,795,636	0.75%	593,519	0.45%
NFLD	6,281,653	0.40%	3,621,918	0.47%	574,095	0.43%
MCHX	6,013,090	0.38%	2,932,555	0.38%	503,800	0.38%
GIVN	2,942,333	0.19%	4,000,976	0.52%	466,153	0.35%
ULTEQ	4,320,563	0.27%	2,667,206	0.34%	409,933	0.31%
VLTR	6,829,473	0.43%	1,233,321	0.16%	392,679	0.30%
NETL	5,817,435	0.37%	1,546,563	0.20%	376,943	0.28%
VLCCF	6,814,054	0.43%	873,099	0.11%	361,198	0.27%
ECST	5,401,736	0.34%	1,482,872	0.19%	354,016	0.27%
FICC	7,420,777	0.47%	253,450	0.03%	333,668	0.25%
VPHM	2,371,609	0.15%	2,622,101	0.34%	324,137	0.24%
SFP	2,540,300	0.16%	2,410,000	0.31%	313,075	0.24%
BVSN	1,654,798	0.11%	2,745,538	0.35%	304,567	0.23%
ERF	4,898,700	0.31%	929,000	0.12%	285,460	0.2.2%
XING	2,322,081	0.15%	2,066,630	0.27%	274,511	0.21%
TORCQ	2,033,081	0.13%	2,025,775	0.26%	258,864	0.20. %
IPS	5,147,400	0.33%	350,000	0.05%	246,358	0.19%
PRKR	1,269,661	0.08%	2,249,853	0.29%	245,949	0.19%
ELOS	3,271,652	0.21%	1141875	0.15%	235,279	0.18%
ACTT	5,071,104	0.32%	200,180	0.03%	230,326	0.17%
BKHM	5,236,698	0.33%	113,856	0.02%	229,899	0.17%
FDG	4,976,700	0.32%	240,000	0.003%	229,766	0.17%
EDR	3,617,700	0.23%	710,000	0.09%	212,861	0.16%
NAT	2,908,100	0.18%	1,030,000	0.13%	210,419	0.16%
INSM	2,304,016	0.15%	1,299,791	0.17%	208,115	0.16%
IFNY	3,315,675	0.21%	746,811	0.10%	203,315	0.15%
BPT	3,405,800	0.22%	621,000	0.08%	196,335	0.15%
VOCL	3,954,447	0.25%	211,297	0.03%	184,333	0.14%
SRA	2,922,700	0.19%	580,000	0.08%	172,516	0.13%
EMIS	3,231,080	0.20%	410,939	0.05%	171,010	0.13%
EMT	1,528,600	0.10%	979,900	0.13%	148,136	0.11%
GIL	1,010,600	0.06%	1,150,000	0.15%	140,918	0.11%

NMGC	2,777,153	0.18%	31,494	0.004%	119,449	0.09%
IMCO	2,038,535	0.13%	388,848	0.05%	118,984	0.09%
ICTS	2,710,552	0.17%	28,106	0.004%	116,359	0.09%
SGH	528,600	0.03%	1,000,000	0.13%	107,816	0.08%
SIZ	963,700	0.06%	480,000	0.06%	81,599	0.06%
MHM	1,770,700	0.11%	69,000	0.009%	80,347	0.06%
CHRT	1,455,192	0.09%	188,956	0.02%	77,350	0.06%
CHN	689,100	0.04%	500,000	0.06%	71,767	0.05%
KOR	1,558,300	0.10%	19,000	0.002%	67,138	0.05%
ENT	532,600	0.03%	500,000	0.06%	65,187	0.05%
OTIV	1,088,746	0.07%	157,362	0.02%	59,241	0.05%
EDP	446,000	0.03%	442,000	0.06%	56,582	0.04%
DVM	531,000	0.03%	376,250	0.05%	54,528	0.04%
DVF	508,300	0.03%	376,250	0.05%	53,574	0.04%
LCM	487,900	0.03%	376,250	0.05%	52,716	0.04%
AEPPRA	471,500	0.03%	376,250	0.05%	52,026	0.04%
SMTX	1,096,457	0.07%	1,197	0.0002%	46,198	0.04%
ATTU	870,582	0.06%	10,200	0.001%	37,473	0.03%
SDA	512,300	0.03%	20,000	0.003%	23,249	0.02%
YZC	421,800	0.03%	43,000	0.006%	21,413	0.02%
Total	1,580,394,600	100%	776,242,438	100%	132,881,617	100%

Appendix 2

Trading Activity, Outstanding Shorts and Estimated Fails for NYSE and NASDAQ-NM Threshold Securities, March 22, 2005

NYSE and NASDAQ Threshold Securities, March 22, 2005. Table 8 presents data on the level and share of trading activity, outstanding shorts, and estimated fails-to-deliver for each NYSE and NASDAQ threshold company listed on March 22, 2005. The two dominant securities from the February 15th list, the QQQQ Fund and Level Three Communications, do not appear on the list for March 22, 2005. This time, the list is led by AMR Corporation (AMR), an NYSE company with an estimated 9.9 percent of all fails, based on its position as the most heavily-shortened and third-most heavily-traded exchange-listed threshold security in March. The threshold securities with the second and third largest estimated fails on March 22, 2005 were Delta Airlines (DAL) with 7.9 percent of all fails, and Taser International (TASR) with 7 percent of fails; DAL and TASR ranked number four and five in the February 15, 2005 threshold list. Completing the top five for March 22, 2005 were TIVO (TIVO) and Krispy Kreme Donuts (KKD), accounting for an estimated 6.8 percent and 6.4 percent of fails, respectively. We estimate that 33 NYSE and NASDAQ threshold securities had fails of more than 1,000,000 shares on March 22, 2005.

**Table 7. Estimated Fails for NYSE and NASDAQ Threshold Securities,
March 22, 2005**

Firm	Trading Volume	Share of Volume	Outstanding Shorts	Share of Shorts	Estimated Fails	Share of Fails
AMR	72,482,000	7.85%	4,6720,000	12.00%	12,511,638	9.93%
DAL	52,137,400	5.65%	3,9730,000	10.21%	9,991,193	7.93%
TASR	85,119,671	9.22%	18,984,274	4.88%	8,884,041	7.05%
TIVO	91,111,971	9.87%	14,184,719	3.64%	8,516,071	6.76%
KKD	47,912,400	5.19%	29,910,000	7.68%	8,112,966	6.44%
CTIC	56,690,164	6.14%	19,752,391	5.07%	7,067,696	5.61%
MSO	36,309,500	3.93%	7,160,000	1.84%	3,637,788	2.89%
NFLX	14,110,024	1.53%	15,103,805	3.88%	3,408,439	2.7%
NLY	14,155,600	1.53%	12,540,000	3.22%	2,996,481	2.38%
ALD	7,885,500	0.09%	15,030,000	3.86%	2,971,582	2.36%
NAVR	22,300,844	2.42%	8,308,392	2.13%	2,867,427	2.26%
NAPS	21,764,968	2.36%	7,964,105	2.05%	2,775,107	2.20%
HOFF	33,929,047	3.68%	2,457,561	0.63%	2,713,986	2.15%
IMAX	15,275,973	1.66%	6,879,009	1.77%	2,156,473	1.71%
XOMA	25,419,850	2.75%	2,212,238	0.06%	2,093,401	1.66%
GLBC	3,531,470	0.38%	10,782,624	2.77%	1,986,729	1.58%
NFI	8,509,100	0.92%	8,560,000	2.20%	1,966,687	1.56%
SUP	8,188,100	0.89%	8,410,000	2.16%	1,920,490	1.52%
AGEN	6,428,147	0.70%	8,853,204	2.27%	1,872,102	1.49%

LF	10,485,000	1.14%	6,750,000	1.73%	1,808,538	1.44%
MT	14,010,200	1.52%	5,110,000	1.31%	1,783,672	1.42%
AWA	10,441,500	1.13%	6,520,000	1.68%	1,768,333	1.40%
FLYI	18,040,632	1.95%	3,061,691	0.79%	1,727,192	1.37%
OSTK	11,788,589	1.28%	5,276,868	1.36%	1,659,032	1.32%
AAII	9,394,799	1.02%	5,369,985	1.38%	1,510,699	1.20%
NGEN	8,399,193	0.91%	5,457,226	1.40%	1,456,859	1.16%
IDBE	4,881,912	0.53%	6,693,276	1.72%	1,416,868	1.12%
NANO	18,433,138	0.20%	900,993	0.23%	1,404,179	1.11%
CALM	3,959,819	0.43%	6,727,729	1.73%	1,359,500	1.08%
STTS	13,509,045	1.46%	2,586,372	0.66%	1,340,898	1.06%
PCU	7,505,200	0.81%	4,480,000	1.15%	1,237,624	0.98%
NTES	9,443,321	0.10%	3,461,402	0.89%	1,205,020	0.96%
MDG	10,652,300	0.12%	2,370,000	0.61%	1,110,856	0.88%
PLAY	7,422,029	0.80%	2,756,534	0.71%	952,925	0.76%
NTOP	9,719,064	0.11%	1,624,794	0.42%	926,505	0.74%
BEXP	9,548,840	0.10%	1,531,321	0.39%	899,752	0.71%
EDGR	10,027,829	0.11%	794,923	0.20%	813,230	0.65%
MVIS	2,369,283	0.26%	3,946,032	1.01%	800,581	0.64%
PWI	10,480,900	0.11%	486,000	0.13%	794,145	0.63%
GIVN	2,452,361	0.27%	3,851,175	1.00%	790,895	0.63%
HYF	5,628,700	0.61%	2,485,000	0.64%	786,545	0.62%
NFJ	5,553,600	0.60%	2,485,000	0.64%	781,419	0.62%
NRD	5,553,400	0.60%	2,920,000	0.75%	851,830	0.58%
LPL	5,731,000	0.62%	2,050,000	0.53%	723,104	0.57%
GMTN	3,769,572	0.41%	2,163,747	0.56%	607,625	0.48%
MBAY	7,217,822	0.78%	534,745	0.14%	579,287	0.46%
ASX	3,529,000	0.38%	1,990,000	0.51%	563,074	0.45%
XING	3,542,355	0.38%	1,958,073	0.50%	558,817	0.44%
BKHM	7,456,418	0.81%	225,551	0.06%	545,517	0.43%
OXPS	5,427,825	0.59%	794,776	0.20%	499,193	0.40%
CKCM	4,856,320	0.53%	520,764	0.13%	415,819	0.33%
TARR	3,006,788	0.33%	1,249,922	0.32%	407,611	0.32%
ECST	3,140,123	0.34%	1,187,821	0.31%	406,659	0.32%
ELANZ	4,834,020	0.52%	76,927	0.02%	342,442	0.27%
XNVA	4,134,435	0.45%	133,263	0.03%	303,806	0.24%
BPT	3,162,300	0.34%	533,000	0.14%	302,160	0.24%
SIZ	2,484,700	0.27%	818,000	0.21%	302,045	0.24%
ACTT	2,874,676	0.31%	180,213	0.05%	225,411	0.18%
IIF	2,047,600	0.22%	464,000	0.12%	214,896	0.17%
AGCC	1,940,102	0.21%	457,469	0.12%	206,500	0.16%
STKR	2,073,671	0.23%	384,503	0.10%	203,805	0.16%
EVG	1,811,000	0.20%	464,000	0.12%	198,745	0.16%
TKS	868,600	0.01%	635,000	0.16%	162,097	0.13%
OTIV	1,765,592	0.19%	67,553	0.02%	131,462	0.10%
CHN	688,600	0.08%	421,500	0.11%	115,245	0.09%
FEZ	632,500	0.07%	421,500	0.11%	111,416	0.09%
ATTU	1,343,237	0.15%	27,152	0.01%	96,090	0.08%

RSA	1,125,100	0.12%	110,000	0.03%	94,612	0.08%
TKP	768,600	0.08%	208,000	0.05%	86,142	0.07%
SHMR	2,613	0.0003%	1,800	0.001%	470	0.0004%
Total:	923,196,952	100%	389,267,922	100%	126,041,445	100%

Appendix 3

Trading Activity, Outstanding Shorts, and Estimated Fails for NYSE and NASDAQ Threshold Securities, April 26, 2005

NYSE and NASDAQ Threshold Securities, April 26, 2005. Table 10 presents data on the level and share of trading activity, outstanding shorts, and estimated failures-to-deliver for each NYSE and NASDAQ threshold security listed on April 26, 2005. As with the February 15, 2005, threshold list, the NASDAQ-100 Index Fund, QQQQ, is the dominant security, accounting for more than half of all trading volume in non-thinly traded NYSE and NASDAQ threshold securities and for one-quarter of all outstanding shorts for those securities. The threshold company with the second-largest estimated fails on April 26, 2005 was Calpine (CPN), which did not appear on the threshold-security lists for February 15, 2005 or March 22, 2005. On April 26, 2005, Calpine had the second highest volume of any exchange-listed threshold security and the largest number of outstanding shorts. The other three securities in the top five for estimated fails were all also in the top six of the lists for both February 15, 2005 and March 22, 2005: Delta Airlines (DAL), Taser International (TSR), and Krispy Kreme Donuts (KKD). We estimate that that 15 NYSE and NASDAQ threshold securities had fails of more than 1,000,000 shares on April 26, 2005.

**Table 8. Estimated Fails for NYSE and NASDAQ Threshold Securities,
April 26, 2005**

Firm	Trading Volume	Share of Volume	Outstanding Shorts	Share of Shorts	Estimated Fails	Share of Fails
QQQQ	860,988,048	52.38%	195,114,270	26.45%	50,440,289	39.42%
CPN	186,934,400	11.37%	237,730,000	32.23%	27,897,199	21.80%
DAL	32,156,500	1.96%	39,230,000	5.32%	4,654,519	3.64%
TASR	80,386,528	4.89%	17,213,876	2.33%	4,622,377	3.61%
KKD	21,650,100	1.32%	30,620,000	4.15%	3,498,712	2.73%
CHTR	83,063,262	5.05%	96,414,67	0.01%	3,241,841	2.53%
SGI	23,747,000	1.45%	17,330,000	2.35%	2,427,591	1.90%
NFLX	14,005,403	0.85%	14,604,923	1.98%	1,812,003	1.42%
CTIC	12,633,470	0.77%	14,466,244	1.96%	1,746,568	1.37%
ALD	5,576,400	0.34%	14,950,000	2.03%	1,513,811	1.18%
MT	19,684,100	1.20%	6,200,000	0.84%	1,304,037	1.02%
NAVR	10,595,724	0.65%	9,971,531	1.35%	1,277,380	1.00%
NAPS	17,752,806	1.08%	6,561,601	0.89%	1,260,220	0.99%
XOMA	26,666,518	1.62%	2,418,469	0.33%	1,247,845	0.98%
GLBC	2,871,382	0.18%	10,392,037	1.41%	1,013,162	0.79%
GNLB	21,034,284	1.28%	1,486,762	0.20%	947,779	0.74%
PCLN	6,847,505	0.42%	7,849,071	1.06%	947,372	0.74%
MSO	8,910,300	0.54%	6,710,000	0.91%	928,872	0.73%
NFI	4,641,800	0.28%	8,430,000	1.14%	911,897	0.71%

OSTK	10,918,721	0.66%	5,444,496	0.74%	897,288	0.70%
INFY	11,430,716	0.70%	4,932,480	0.67%	872,807	0.68%
TZOO	17,858,165	1.09%	1,595,827	0.22%	833,600	0.65%
AGEN	3,480,086	0.21%	7,976,018	1.08%	827,297	0.65%
MMR	5,942,600	0.36%	5,970,000	0.81%	749,159	0.59%
PLAY	10,102,517	0.62%	3,822,391	0.52%	724,817	0.57%
TSA	8,774,700	0.53%	4,410,000	0.60%	724,095	0.57%
IOTN	6,308,792	0.38%	5,038,763	0.68%	682,640	0.53%
NTES	10,395,163	0.63%	3,160,207	0.43%	678,772	0.53%
PCU	6,724,900	0.41%	4,550,000	0.62%	656,444	0.51%
BBD	8,943,700	0.54%	3,130,000	0.42%	619,650	0.48%
CALM	3,615,366	0.22%	4,697,713	0.64%	548,209	0.43%
JOR	11,524,500	0.70%	291000	0.04%	473,865	0.37%
SPIL	5,600,625	0.34%	2,805,686	0.38%	461,380	0.36%
GIVN	1,553,689	0.10%	4,415,424	0.60%	443,467	0.34%
MVIS	3,065,521	0.19%	3,715,775	0.50%	441,633	0.35%
HAWK	7,058,035	0.43%	1,413,242	0.19%	397,336	0.31%
MDTL	1,232,573	0.08%	3,966,432	0.54%	392,022	0.31%
LPL	5,551,900	0.34%	1,890,000	0.26%	380,059	0.30%
DIGI	8,871,021	0.54%	51,867	0.01%	349,829	0.27%
FFH	2,526,400	0.15%	2,760,000	0.37%	337,744	0.26%
NCRX	2,403,873	0.15%	2,384,868	0.32%	300,437	0.24%
ENWV	3,880,288	0.24%	1,657,339	0.23%	294,806	0.23%
RITA	4,450,748	0.27%	1,356,665	0.18%	290,933	0.23%
CEDC	4,081,027	0.25%	1,508,541	0.21%	289,714	0.23%
VLCCF	4,904,535	0.30%	1,020,559	0.14%	279,445	0.22%
WPTE	3,008,468	0.18%	1,789,457	0.24%	272,327	0.21%
GMS	1,957,100	0.12%	1,730,213	0.24%	226,261	0.18%
EMT	1,864,600	0.11%	1,648,437	0.22%	215,567	0.17%
CNVX	2,499,479	0.15%	1,257,165	0.17%	206,344	0.16%
NVAX	1,632,380	0.10%	1,293,281	0.18%	175,722	0.14%
ATPL	3,203,436	0.20%	154,943	0.02%	138,142	0.11%
OTIV	2,689,078	0.16%	106,719	0.02%	113,937	0.09%
RWF	949,100	0.06%	839,071	0.11%	109,726	0.09%
BFBC	2,568,136	0.16%	68,429	0.01%	105,908	0.08%
ACTT	2,355,434	0.14%	121,805	0.02%	102,257	0.08%
STKR	1,850,677	0.11%	344,068	0.05%	101,887	0.08%
NINE	2,348,703	0.14%	96,020	0.01%	99,759	0.08%
DPHPRA	847,700	0.05%	749,426	0.10%	98,003	0.08%
XNVA	2,113,898	0.13%	12,440	0.002%	83,369	0.07%
BEP	675,400	0.04%	594,669	0.08%	77,872	0.06%
CHN	636,500	0.04%	562,711	0.08%	73,586	0.06%
BZL	438,200	0.03%	387,399	0.05%	50,660	0.04%
BME	435,100	0.03%	383,092	0.05%	50,166	0.04%
FJCPRA	193,800	0.01%	171,156	0.02%	22,390	0.02%
Totals	1,643,612,880	100%	737,650,993	100%	127,964,806	100%

