

NASDAQ OMX Economic & Statistical Research

NIRI Capital Region

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Volatility and the Economy

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Volatility and Why it Matters to Listed Companies

Stock price volatility is important to all listed companies because volatility is used both as a proxy for stock's trading costs and also by investors. Different measures of volatility are used for each.

➤ Long-Term Volatility is used by investors in assessing risk-reward opportunities.

- Long-Term Volatility stems primarily from
 - Overall economic environment,
 - Industry conditions, and
 - Company specific factors.
- Long-term volatility is also used for expensing employee stock options.
- Effective monitoring and transparency policies can mitigate volatility from external factors, particularly misinformation.

➤ Short-term volatility is used to measure execution quality and trading costs

- Trading cost differences stem primarily from
 - Competition
 - Market structure
- On a variety of measures NASDAQ's trading costs are lower than any other exchange

Volatility is Company Specific

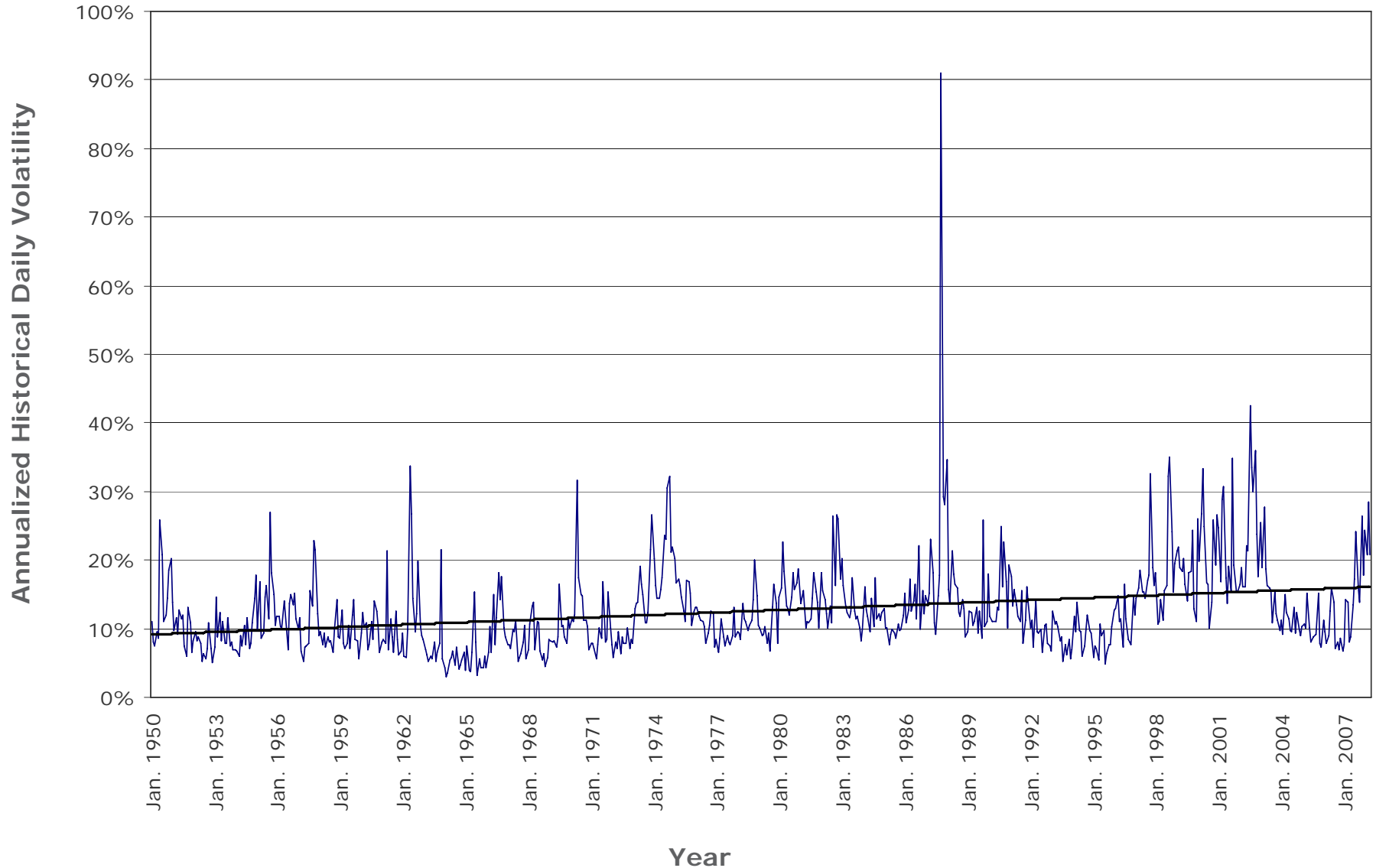
A stock's volatility is typically driven by events such as earnings surprises, industry news and trends, and changing economic conditions. Below are some factors that affect a particular company's volatility.

Factors of Volatility

Company Level	Trading Level	Macro-Economic Level
Earnings	Derivatives and Options	Growth
News (expected and unexpected)	Peer Performance	Taxes and Policy
MarketCap	Index performance	Interest Rates
Volumes (interest in stock)	Trading Rules/Regulation	Global Events
Float	Enforcement	National Events
IR Program	Market Structure	Local Events
Business Model	Transaction costs and spreads	Legislation / Policies
Industry / Sector	Increased frequency of trading/expansion of volume	Sentiment
Brand Strength	Rumors	24 Hr News Channels
Dividends		401Ks, Popularity of mutual funds
Leverage (Debt-to-Equity and operational)		
Revenue Cyclically		

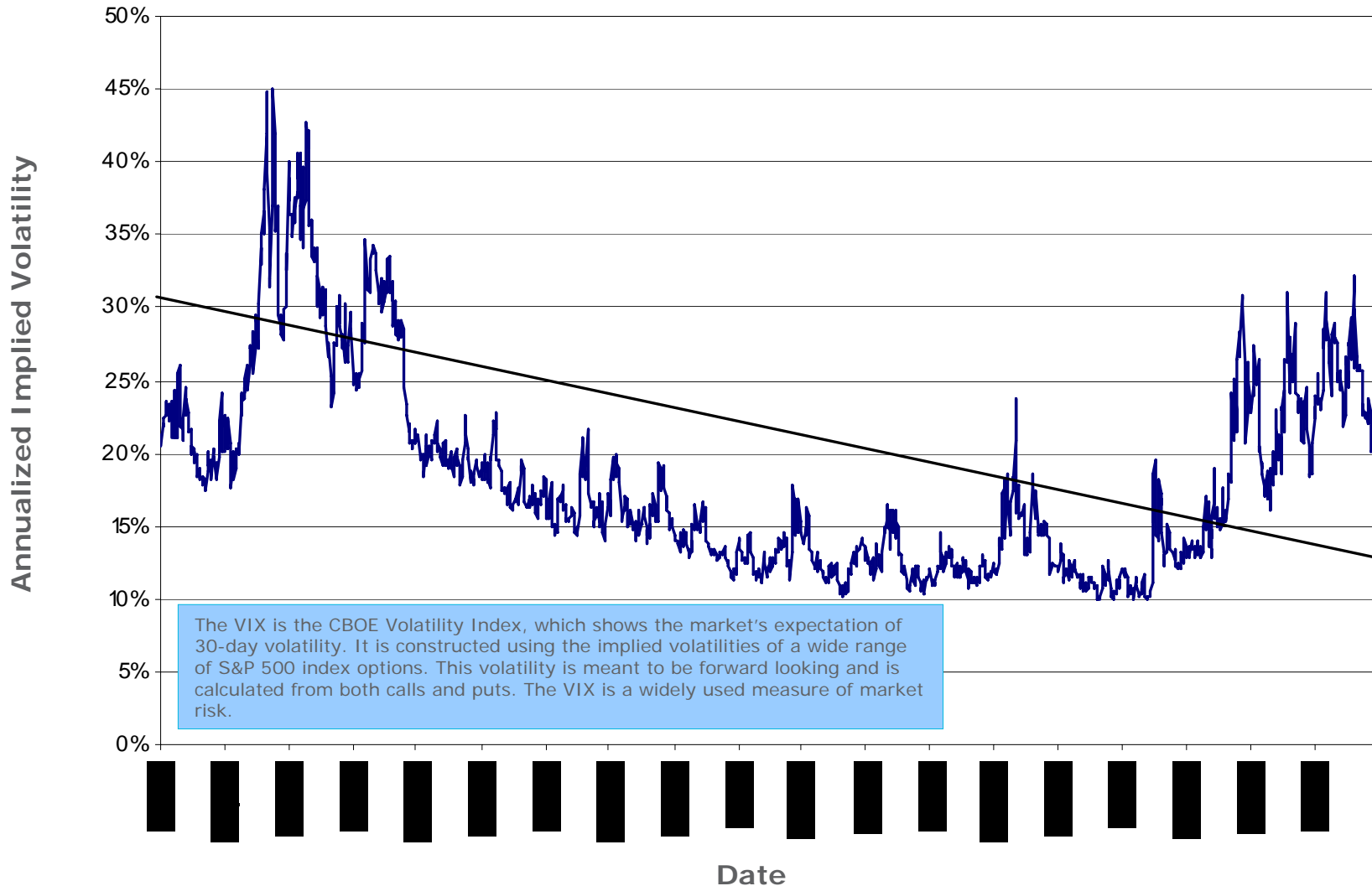
S&P 500 Index Volatility (1950 – present)

By historic standards, volatility in 2008 is high but not exceptionally so.



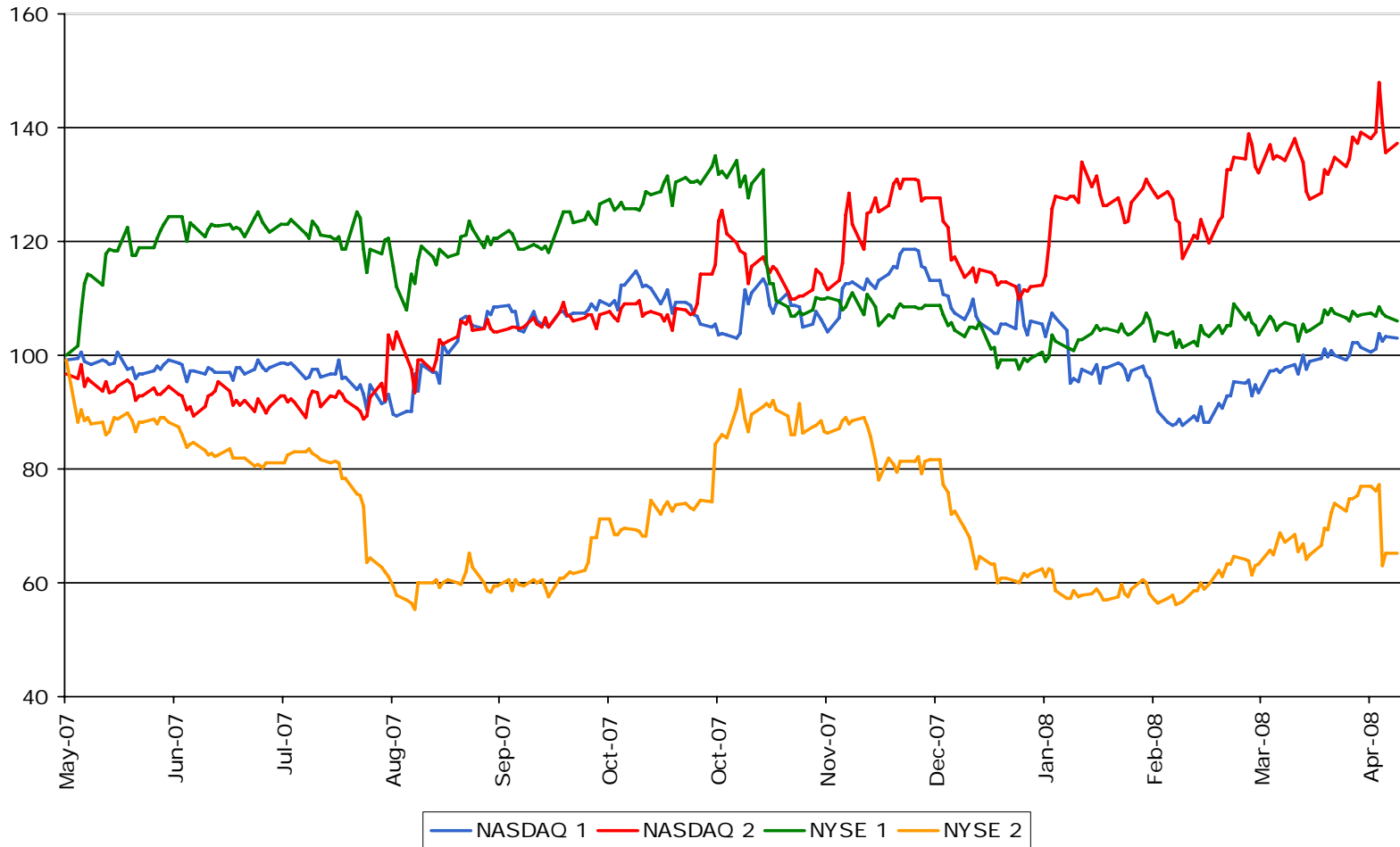
VIX Market Volatility Index 2002-2008

In Q3 2007 and again in Q1 2008 market volatility hit levels not seen since 2003.



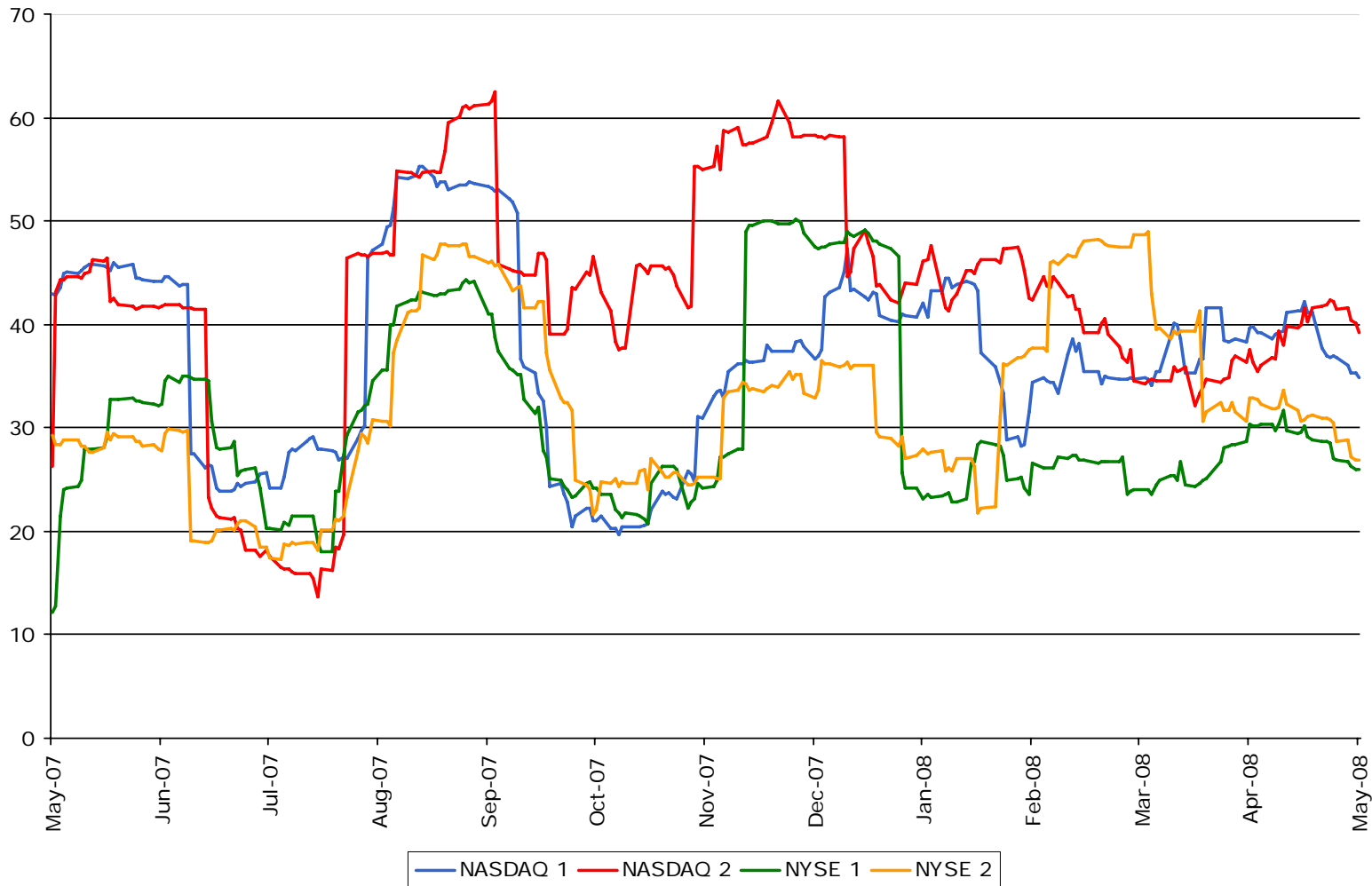
YTD Indexed Price Comparison – Peer prices move together

Selected Info Tech Stocks: Indexed Price as of 04 May 07



Like prices, historical volatility is driven by both common and firm specific factors

Selected Info Tech Stocks: 30-Day Price Volatility



Short Selling and Regulation SHO

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Short Selling

- Short Selling and Short Interest
- Fails-to-deliver
- Market Volatility and Short Selling

Short Selling

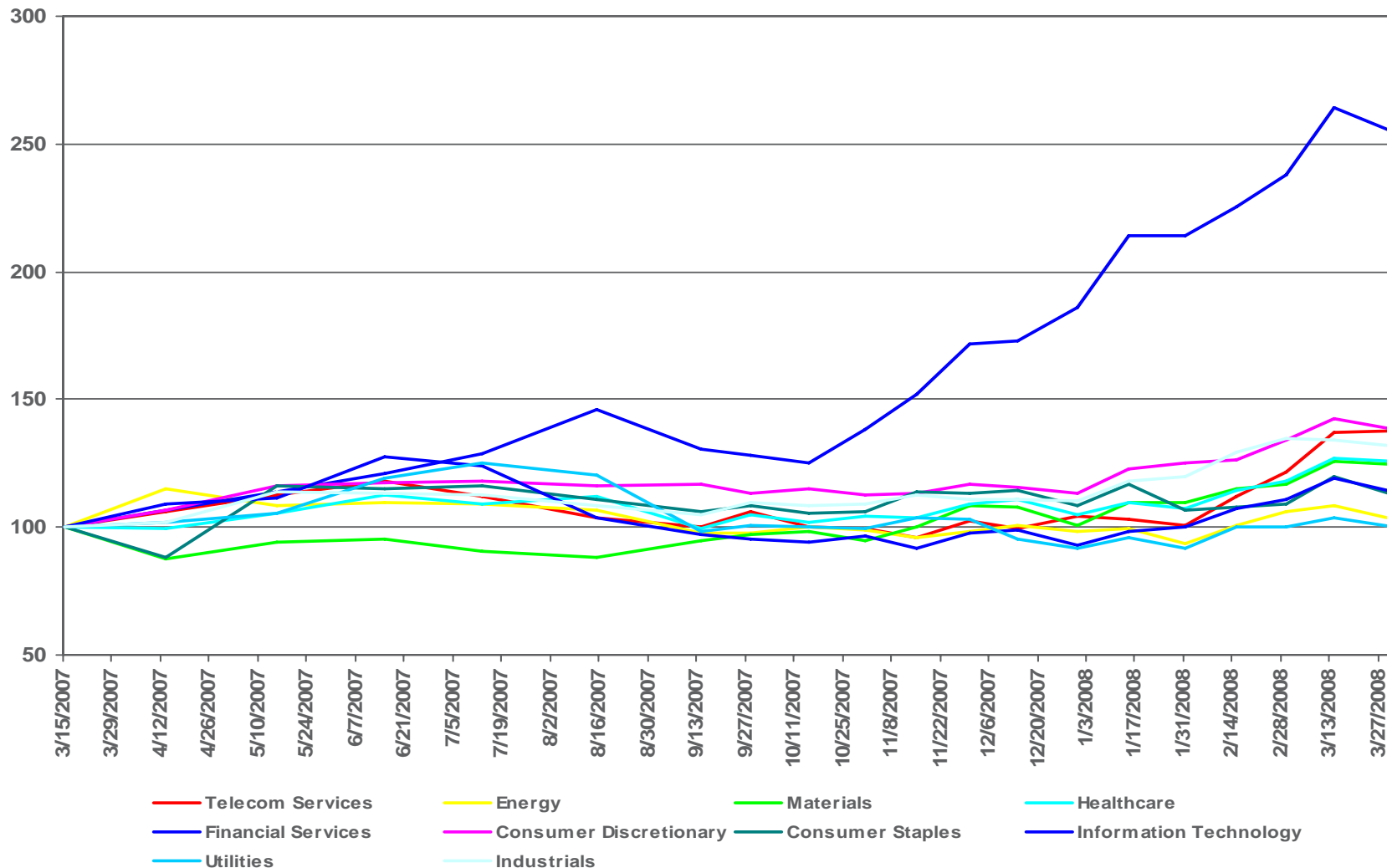
- Short selling is selling a stock one does not own
 - > A trader then borrows the shares to cover the position.
- Motivations include:
 - > Speculation: the hope that the stock drops, so she can buy it back later at a lower price, locking in a profit;
 - > Hedging and arbitrage,
 - > Liquidity provision by market-makers and specialists.
- More controversial is naked short-selling, which is when a trader never intends to borrow shares to cover her position.
 - > Naked short-selling is illegal in most instances, except when done by a specialist or market-maker to maintain liquidity in a stock.

Short Interest

- Short interest is the number of shares borrowed in a stock in order to settle short sales.
- Short interest data is released every two weeks.

Short Interest among Sectors

Short interest has risen over the past year, particularly in the financial services sector.



Source: FactSet Research Systems

The back office side of short selling

Settlement Rules: Locate and Close Out designed to prevent naked shorting.

- **To ensure that a short seller can deliver shares, the SEC has Locate rules:**
 - > A broker-dealer has to have reasonable grounds to believe that the security can be borrowed before effecting a short sale order in any equity security. This **Locate** must be made and documented prior to effecting the short sale.
 - > If a stock is a **Threshold Security** these requirements are tightened.
- **To ensure that traders do deliver shares the SEC has Close Out rules:**
 - > A **Fail to Deliver** occurs when a broker-dealer fails to deliver securities on settlement date.
 - > If Fails to Deliver equals or exceeds $\frac{1}{2}$ of 1% of TSO or 10,000 shares for five consecutive days, the stock becomes a **Threshold Security**.
 - > Further fails to deliver are avoided because any fails to deliver existing 13 days after settlement date must be **Closed Out** by either buying back the stock for cash or guaranteed delivery.

One intent of Reg SHO is to eliminate extended delivery failures.

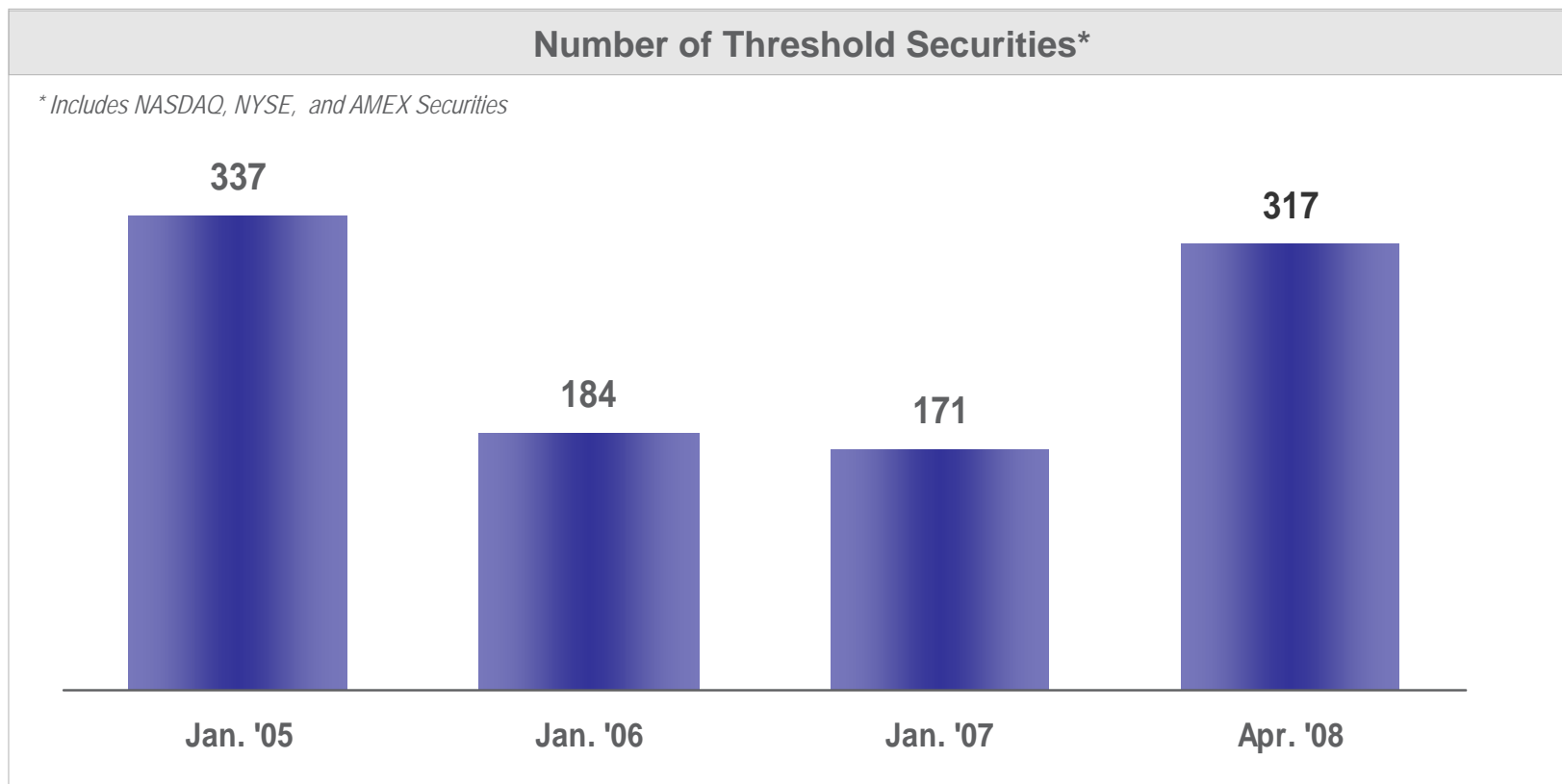
Regulation SHO Threshold Securities: What Causes Fails-to-Deliver?

- Under Regulation SHO stocks with significant fails-to-deliver, either from naked short selling or other reasons, are called threshold securities.
- Legitimate frictions in the delivery process such as sales of restricted stock
- Illegitimate, Naked, Short Selling
- Sales under the Option Market Maker Exemption

One intent of Reg SHO is to eliminate extended delivery failures.

Threshold Securities

Until recently, the number of threshold securities decreased since Reg SHO's inception



A threshold security is any equity security of an issuer that is registered under Section 12, or that is required to file reports pursuant Section 15(d) of the Exchange Act where, for 5 consecutive settlement days: (1) there are aggregate fails to deliver at a registered clearing agency of 10,000 shares or more per security; (2) the level of fails is equal to at least one-half of one percent of the issuer's total shares outstanding; and (3) the security is included on a list published by an SRO

Source: nasdaqtrader.com, nyse.com/threshold and amex.com. Dates used 1/31/05, 1/31/06, 1/31/07, 12/31/07 and 4/30/08

Recent Additional Actions against Fails-to-Deliver

The SEC continues to take incremental steps to eliminate naked short selling and protracted failures in the delivery process

Public disclosure of failure data

- The SEC has long believed that disclosure benefits investors and public companies.
- The SEC has also received numerous Freedom of Information Act (FOIA) requests for fail-to-deliver data.
- Beginning in August 2007 the SEC began releasing on a delayed basis daily failure-to-deliver data on every stock with total fails-to-delivery of over 10,000 shares.
- The data is released on a quarterly basis with a one-quarter lag. The most recent data is for Q4 2007.

Proposed anti-Fraud rules with respect to naked short selling

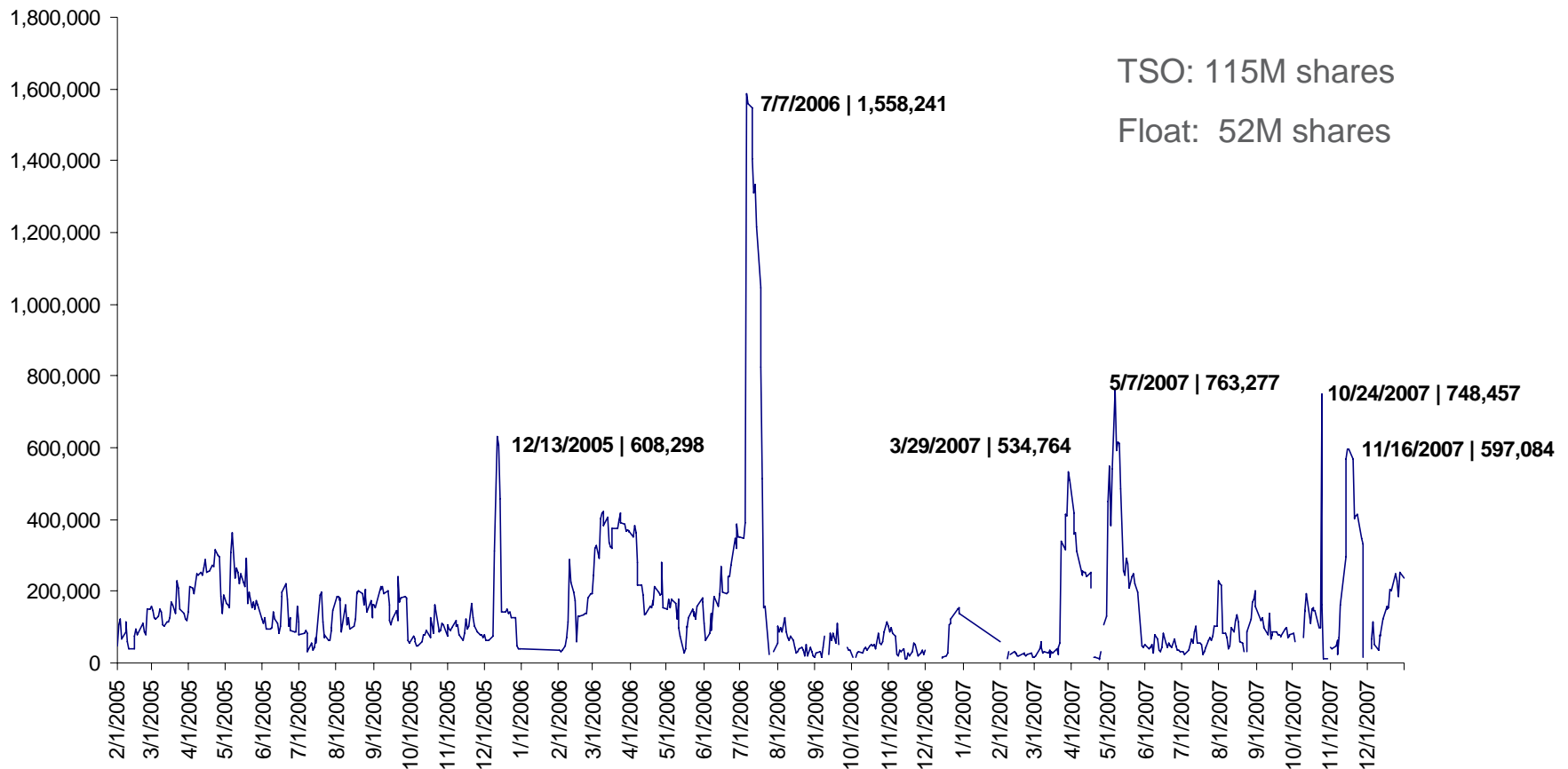
- On March 17, 2008 the SEC proposed new rule 10b-21 which specifically extends the anti-fraud provisions of Section 10b-5 to cover actions related to naked short selling.
- Specifically, it defines certain types of misleading or false conduct around the locate provisions as fraud.

One intent of Regulation SHO is to eliminate extended delivery failures.

Fails-to-Deliver: An example from SEC data

Because most failures-to-deliver are driven by market frictions they are very short lived and do not result in a company being a threshold stock.

Example: Shares Failing to Deliver
Feb 2005 - December 2007



Source: <http://www.sec.gov/foia/docs/failsdata-archive.htm>

Volatility and Short Selling

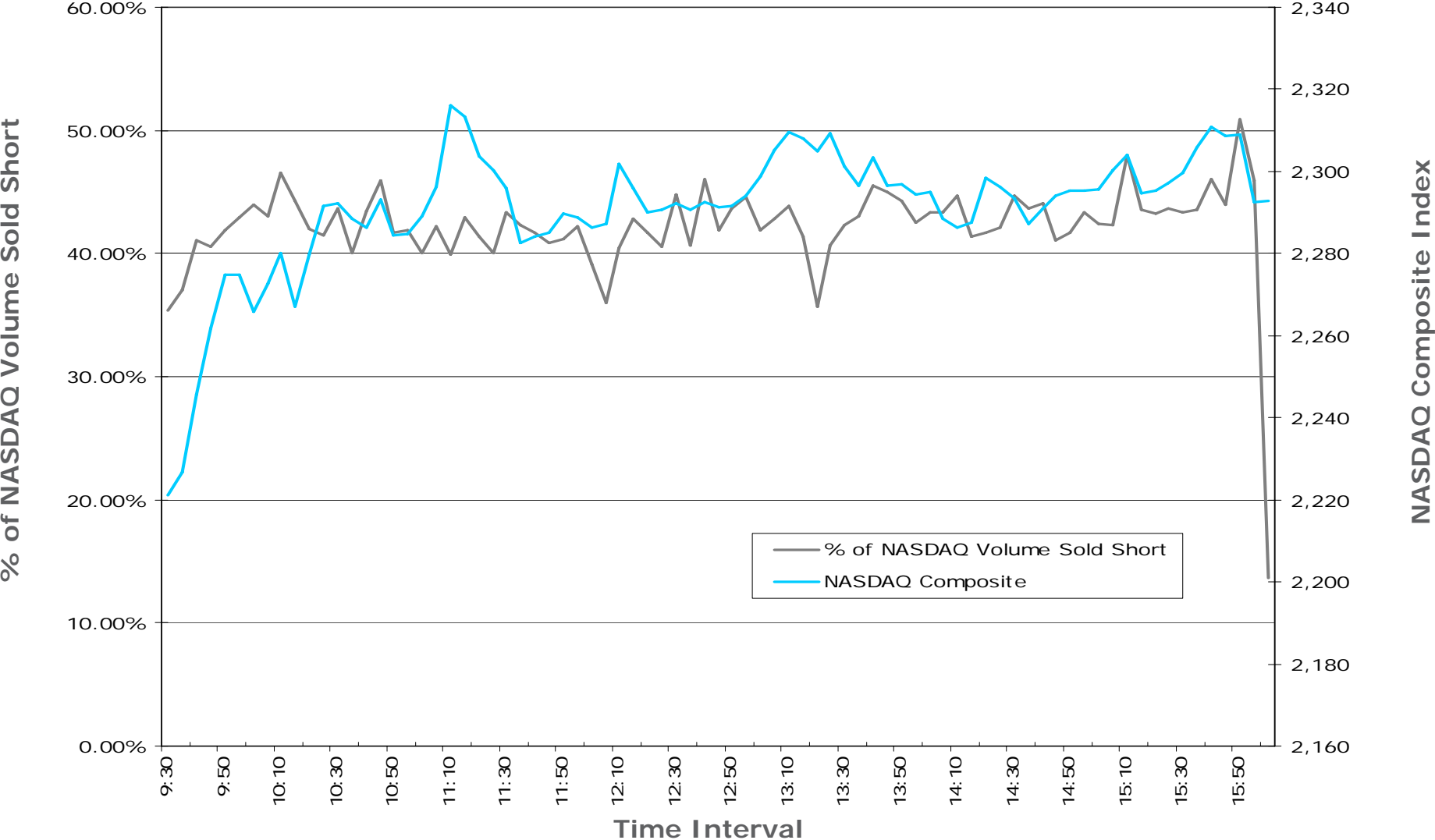
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Volatility and Short Selling – Summer 2007

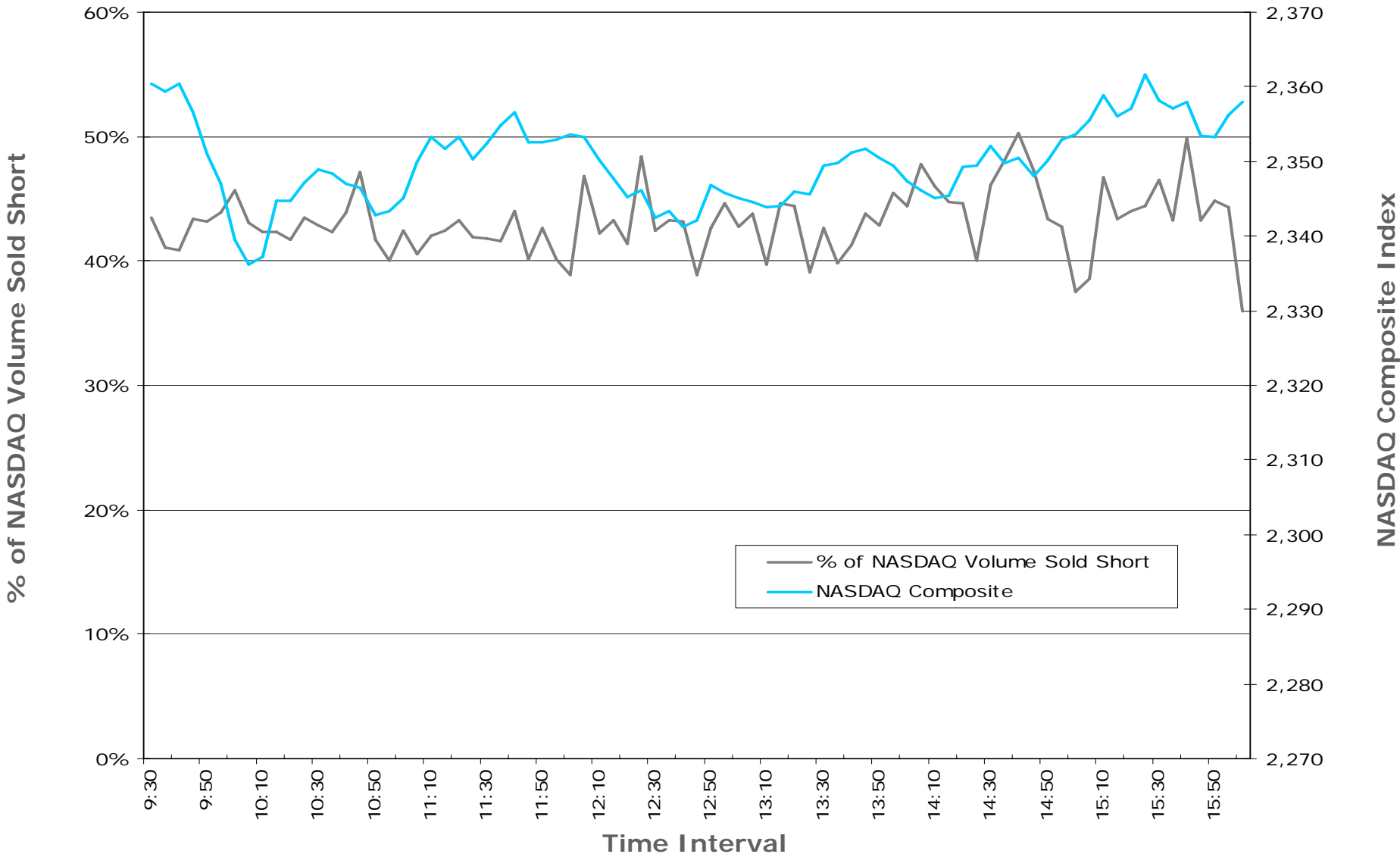
Price tests for short selling were eliminated on July 9, 2007. By the end of the month stock market volatility was at levels not seen for four years. Is there a relationship?

- Equity prices dropped due to concerns about credit markets.
- Record setting U.S. trading volumes exceeded 10 billions shares.
- By any one of a number of measures, volatility spiked higher.
- A number of active investors reportedly needed to liquidate positions.

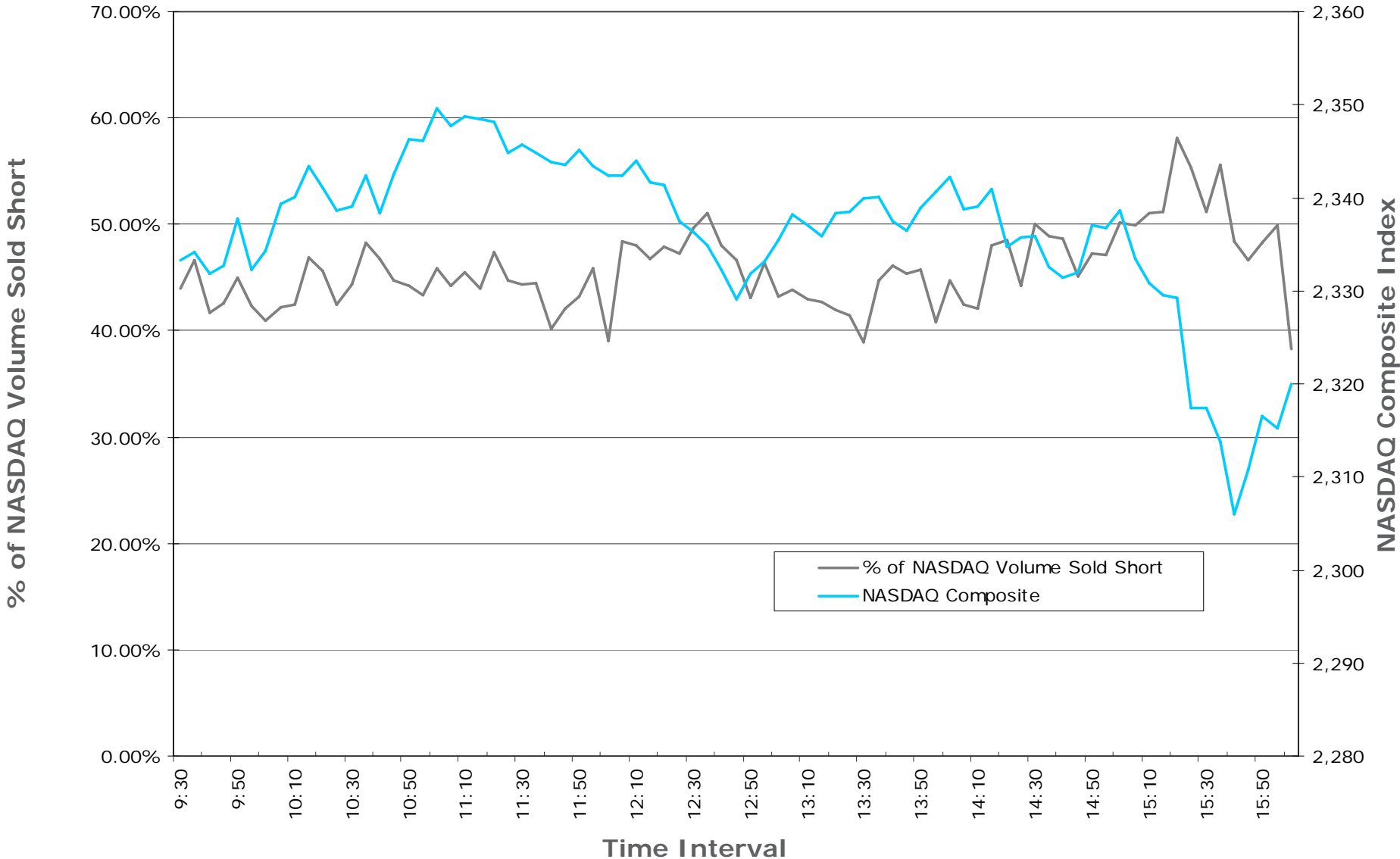
Short Selling in a Rising Market: January 22, 2008



Short Selling in a Lateral Market: January 29, 2008



Short Selling in a Declining Market: February 12, 2008



Conclusions

- Short interest has risen over the past year, particularly in the financial services sector.
- Fails-to-deliver remain an issue for the industry and the SEC.
- Short selling appears higher on high stress days.
- Investigations are ongoing about the role played, if any, by the elimination of the price tests in the market volatility of this Summer.