ABNORMAL RETURNS AFTER LARGE STOCK PRICE CHANGES: EVIDENCE FROM THE VIETNAMESE STOCK MARKET

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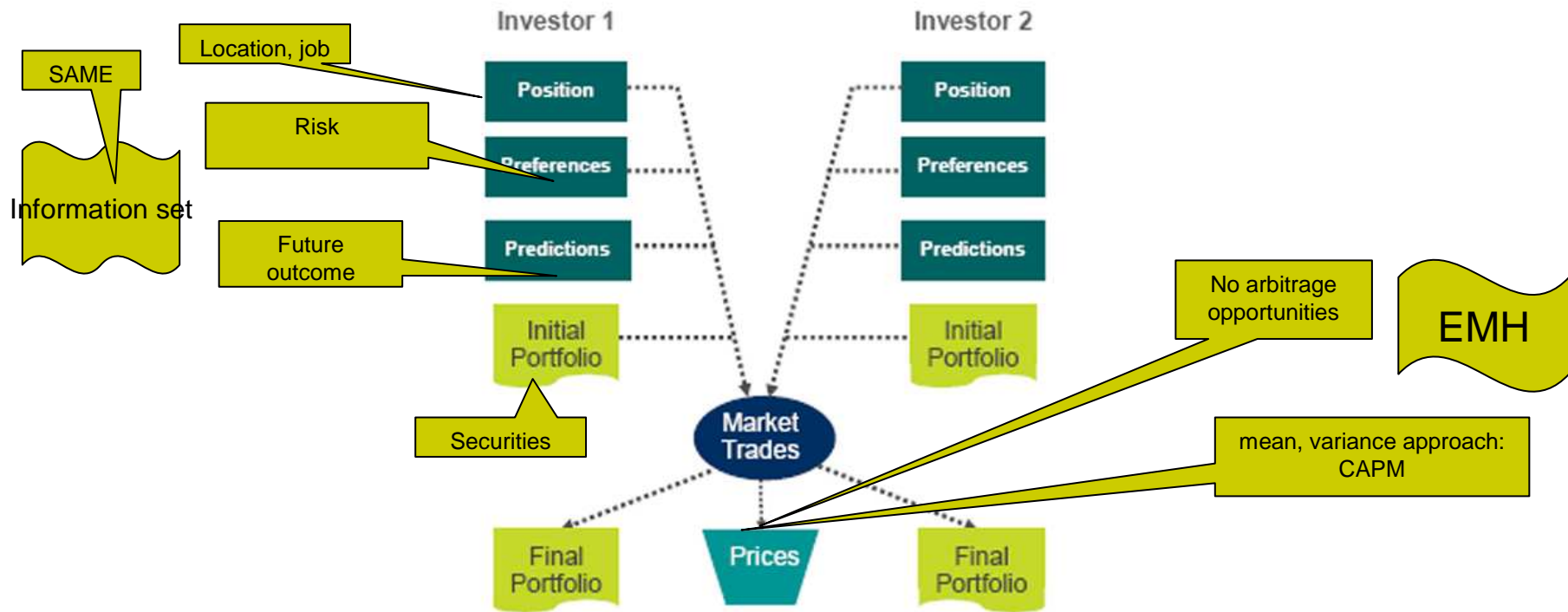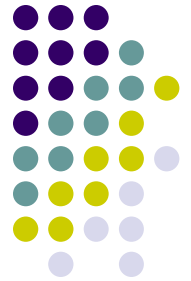# Determinants of stock prices at equilibrium – Traditional Finance
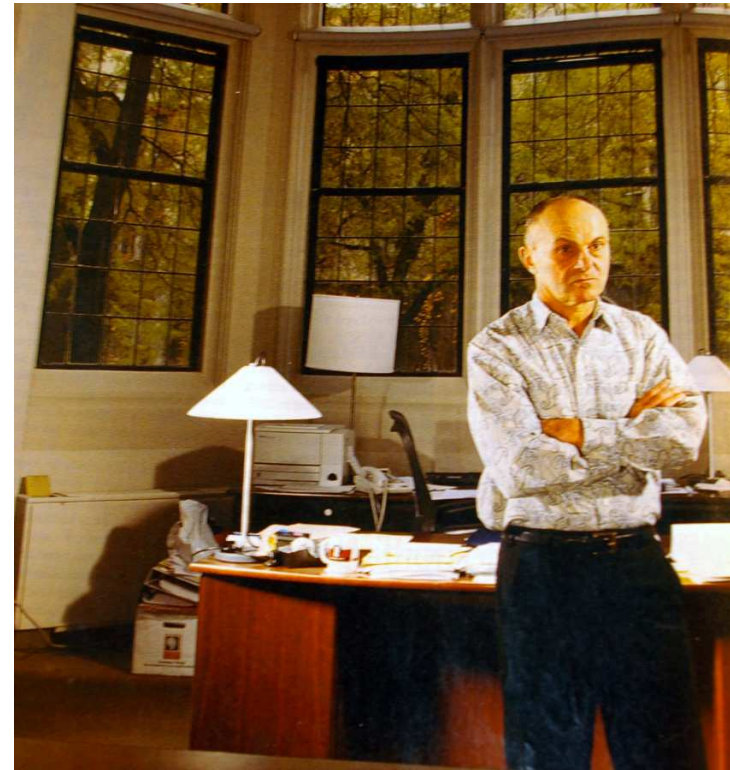
- A simple case: two investors in an exchange economy

(Nobel Laureate William F.Sharpe's Draft of Forthcoming Book: http://www.stanford.edu/~wfsharpe/)

Efficient Market Hypothesis (EMH)

- *"Stock prices at any time fully reflect all available information in the strong form, all public available information in the semi-strong form, and historical information in the weak form of EMH."* – Eugene **Fama**, Uni. of Chicago (1969)

- *"Future stock prices (following a random walk) are unpredictable & expected stock returns can only be determined by rational asset pricing models"*
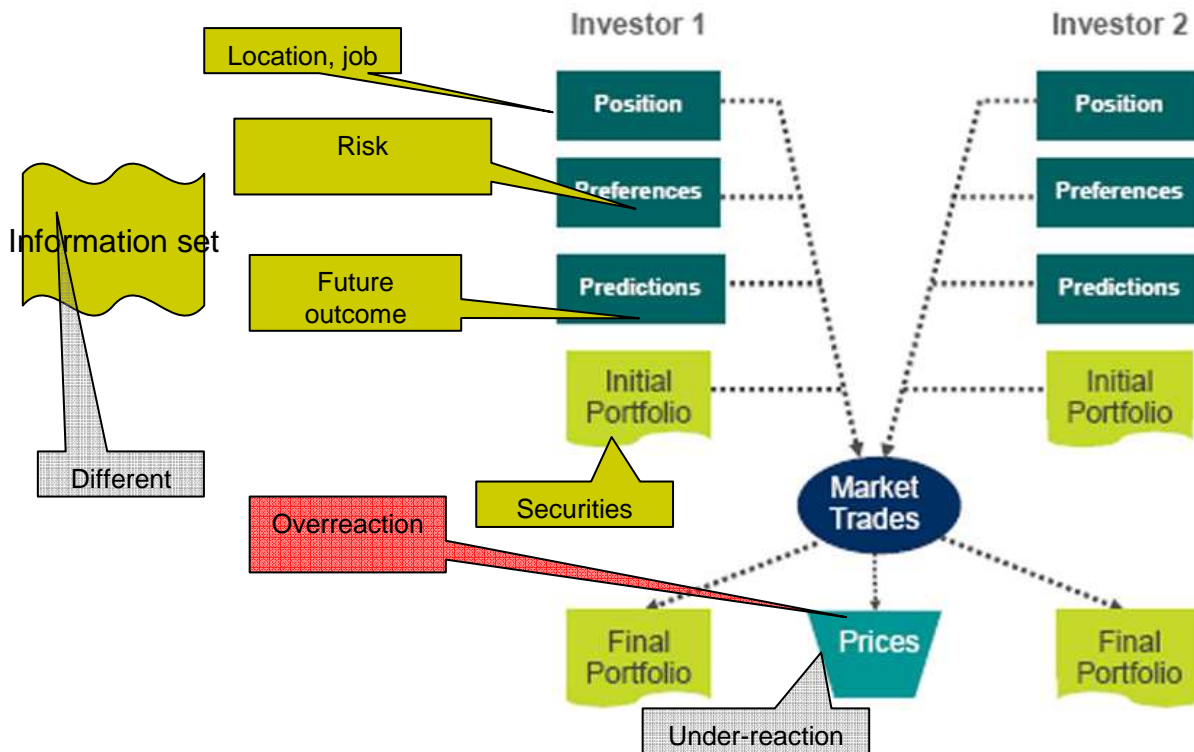

"The University of Chicago's Fama still teaches that market behave rationally. But his colleagues have grown skeptical" - FORTUNE

Determinants of stock prices at equilibrium – Behavioral Finance
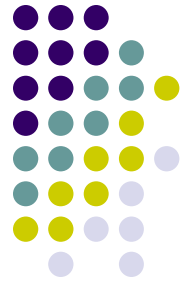
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Overreaction Hypothesis

- *"Most people overreact to unexpected and dramatic news"* - Experimental psychology

- *"Extreme movements in stock prices will be followed by subsequent price movements in the opposite direction"* & *"The more extreme the initial price movement, the greater will be the subsequent adjustment."* – Werner **De Bondt** , Depaul Uni. and Richard **Thaler**, Uni. of Chicago (1985, Journal of Finance)

"After decades in the academic wilderness, behavioralist Thaler is now big man on Chicago campus" - **FORTUNE**

Motivation

- Existing overreaction in Vietnamese stock market?

- Existing reversal patterns as suggested by overreaction hypothesis? (Debondt and Thaler, 1985)?

- Existing profit from contrarian investment?

- The market is efficient?

Mass Media

Mass Media (2)

VN-INDEX (28/7/00-27/2/07)

Number of Stocks Listed on HCMC STC
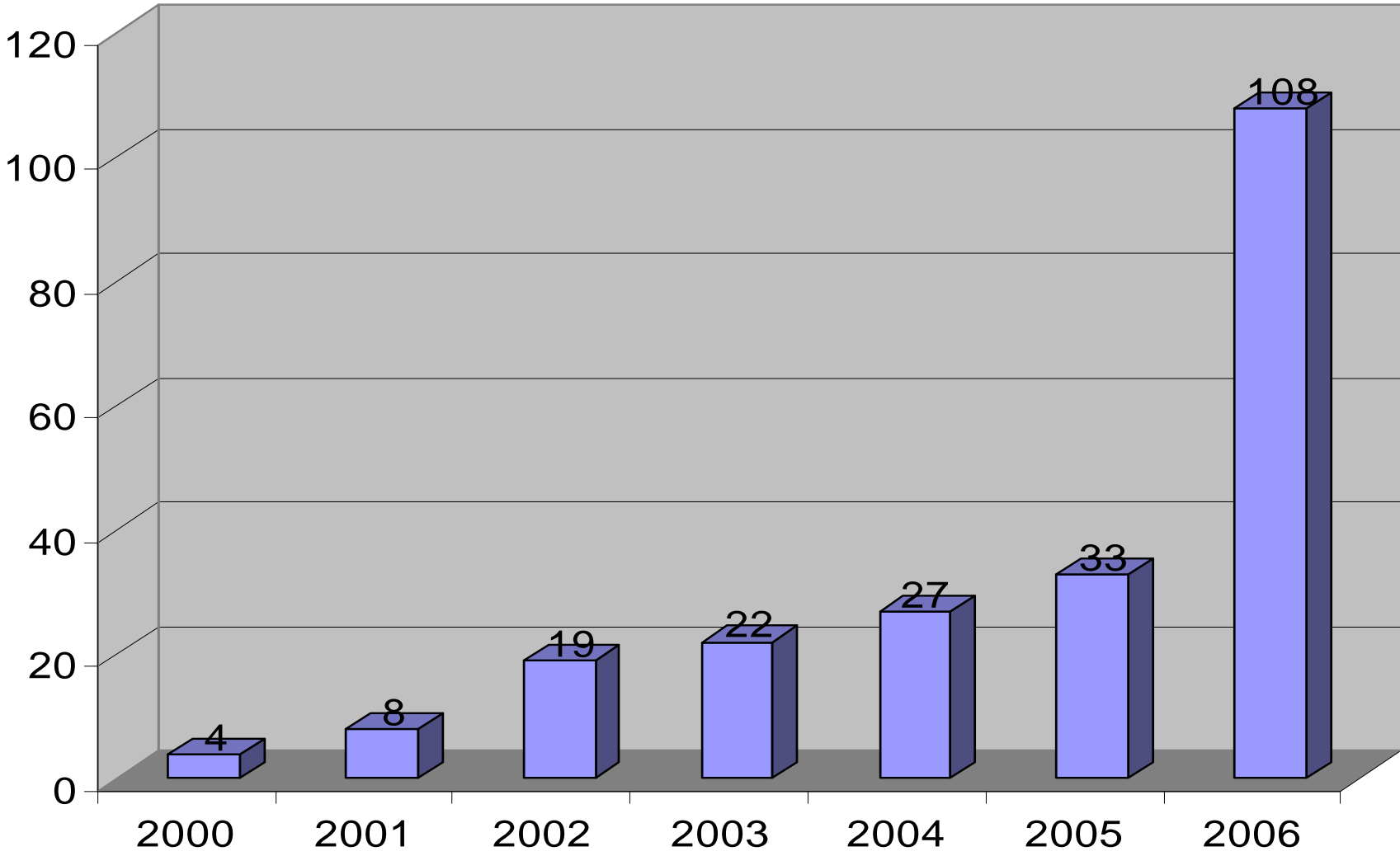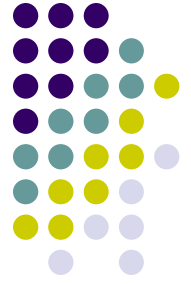
Correlations of monthly returns on stock market indices over the period 2001-2005

	VN-INDEX	ALL-ORDS	TOPIX
VN-INDEX	1.00		
ALL-ORDS	0.19	1.00	
TOPIX	0.27	0.48	1.00

HCMC STC (HOSTC) Trading Mechanism

- Method of matching orders
- Method of reaching agreement
- Thin trading (currently 3 times of matching orders)
- Daily price limitation: 5%

(Source: http://www.vse.org.vn/)

Data

- Vietnamese stock markets (HCMC STC)
  - Extreme daily returns (greater (less) than or equal to + (-) 5%)
  - 5 years of daily returns: Jan 2001 – Dec 2005 (BIDV)
  - All 33 listed firms
  - VN-Index $VN-INDEX = 100 \times \sum_{i=1}^{n} \frac{P_{it}Q_{it}}{P_{i0}Q_{i0}}$
  - Risk free (IMF)
- What determines level of daily extreme returns & Why + - 5%?
  - Daily price limitations
- Observations:
  - 153 (48) winners & 177 (66) losers

Methodology

- Abnormal returns: $AR_{i,\tau} = \tilde{R}_{i,\tau} - E\left(\tilde{R}_{i,\tau}\right)$

- Expected returns: $E\left(\tilde{R}_{i,\tau}\right) - R_f = \bar{b}_i\left[E\left(\tilde{R}_{M,\tau}\right) - R_f\right]$

- GMM estimations of expected returns

- Cross-sectional mean abnormal returns:

$$\overline{AR}_\tau = \frac{1}{N}\sum_{i=1}^{N} AR_{i,\tau}$$

- Cross-sectional average cumulative abnormal returns:

$$\overline{CAR}(\tau_1,\tau_2) = \sum_{\tau=\tau_1}^{\tau_2} \overline{AR}_t = \frac{1}{N}\sum_{i=1}^{N} CAR_i(\tau_1,\tau_2)$$

- Test statistics: $\theta_1 = \dfrac{\overline{AR}_\tau}{var(\overline{AR}_\tau)^{1/2}}$ $\qquad \theta_2 = \dfrac{\overline{CAR}(\tau_1,\tau_2)}{var(\overline{CAR}(\tau_1,\tau_2))^{1/2}}$

Why Generalized method of moments (GMM)?

Mean	0.0005
Max	0.07
Min	-0.07
Std.Dev	0.02
Skewness	-0.25
Kurtosis	10.17
Jarque-Bera	2434.68
Probability	0.00
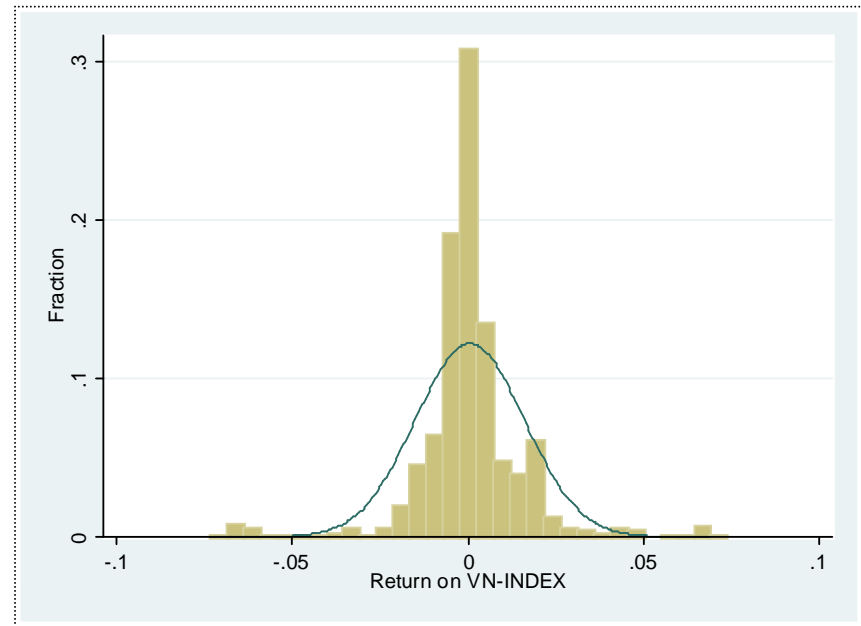
Abnormal returns for three days of after large stock price increases

Day	Abnormal Return	Test statistic
0	3.683	17.34***
1	0.160	0.63
2	0.146	0.51
3	-0.538	-1.98*
4	-0.641	-2.56**
5	-0.037	-0.15
1-5	-0.910	-2.05**

Cumulative abnormal returns around 20 days of 5% or greater price increases
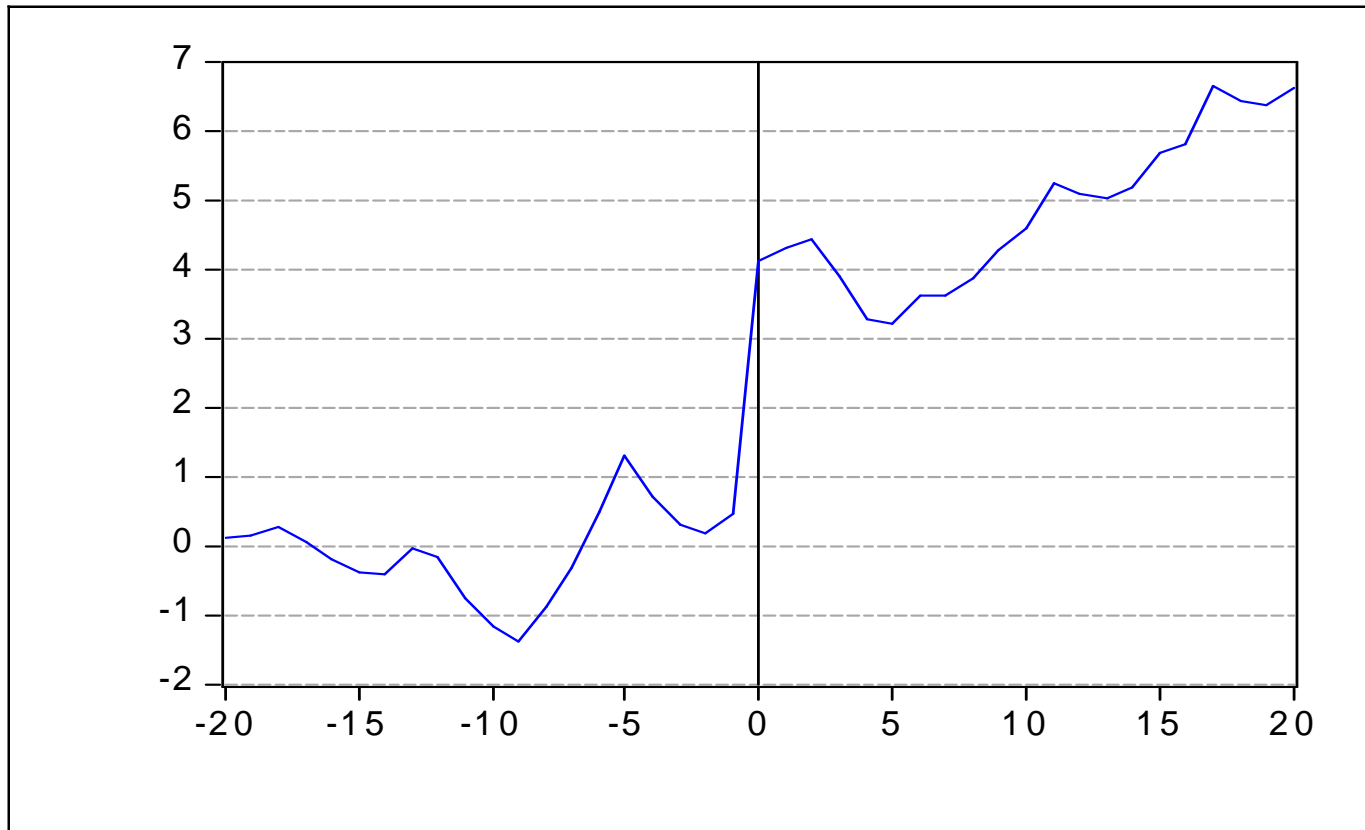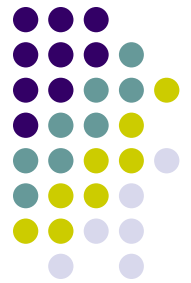
Mean abnormal returns for three days after large stock price decreases
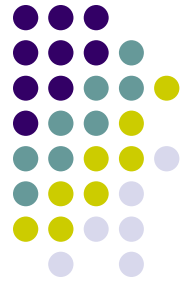
Day	Abnormal Return	Test statistic
0	-3.953	-26.29***
1	-0.345	-1.44
2	0.523	2.18**
3	0.634	2.67***
4	0.341	1.51
5	0.191	0.85
1-5	1.344	3.57***

Cumulative abnormal returns around 20 days of 5% or greater price decreases
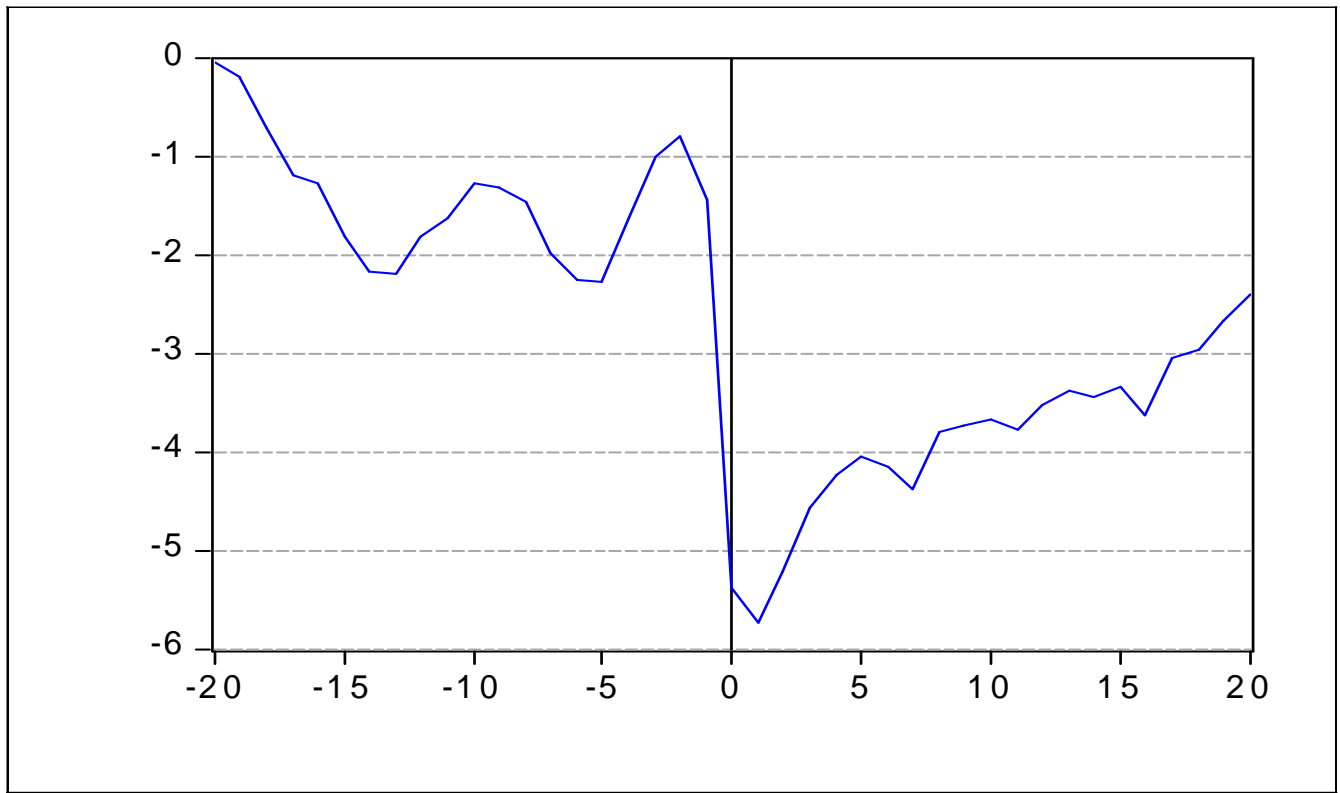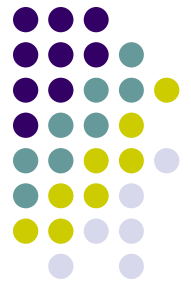
Potential explanations for price rebounds

- Market Overreaction
- Liquidity
- Bid-ask spread

Bid

Ask

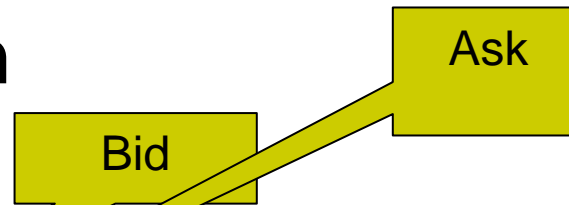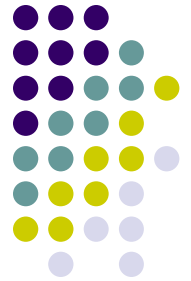| Stock	Last	B Vol	Buy	Sell	S Vol	Ceiling	Floor	Price	Total Shares	Value (1 VND)	Chart	History Price
AGF	72.0	505	69.00	70.00	94	75.50	68.50	70.0 ▼	236	165,200,000		
BBC	35.0	20	33.40	33.50	1	36.70	33.30	33.3 ▼	1,493	497,169,000		
BBT	15.2	266	14.60	14.80	50	15.90	14.50	14.6 ▼	4,950	722,700,000		
BID1_106	0.0	0	0.00	0.00	0	99999.99	0.10	0.0	0	0		
BID1_206	0.0	0	0.00	0.00	0	99999.99	0.10	0.0	0	0		
BMP	63.0	930	60.00	61.00	27	66.00	60.00	61.0 ▼	1,455	887,550,000		
BPC	23.5	10	22.50	22.60	25	24.60	22.40	22.6 ▼	46	10,396,000		
BT6	48.0	130	47.00	47.70	50	50.00	45.60	47.0 ▼	1,143	537,210,000		
BTC	16.0	0	0.00	15.50	210	16.80	15.20	16.0	65	10,400,000		
CAN	27.0	0	0.00	26.00	47	28.30	25.70	26.0 ▼	126	32,760,000		
CII	34.0	311	32.50	32.60	300	35.70	32.30	32.5 ▼	1,264	410,800,000		
DHA	61.5	0	0.00	58.50	67	64.50	58.50	58.5 ▼	1,460	854,100,000		
DPC	16.6	10	15.80	16.00	319	17.40	15.80	16.0 ▼	896	143,360,000		
GIL	41.1	60	39.70	40.00	6	43.10	39.10	39.7 ▼	1,098	435,906,000		
GMD	69.0	4950	67.50	68.00	375	72.00	66.00	68.0 ▼	2,899	1,971,320,000		

Cumulative abnormal returns around 20 days of 5% or greater price increases
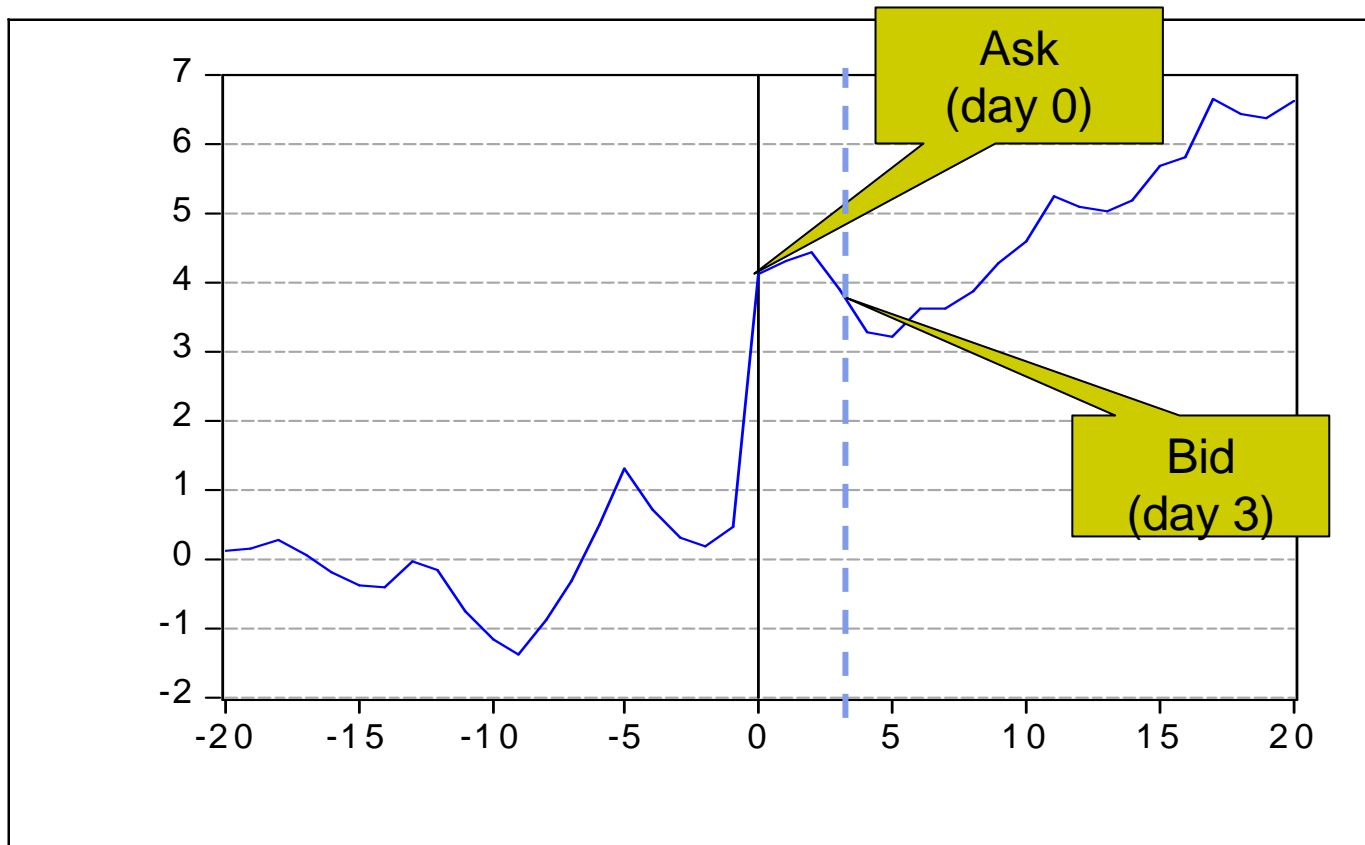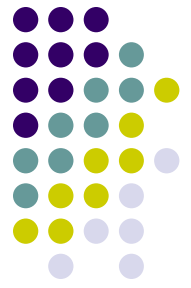
Cumulative abnormal returns around 20 days of 5% or greater price decreases
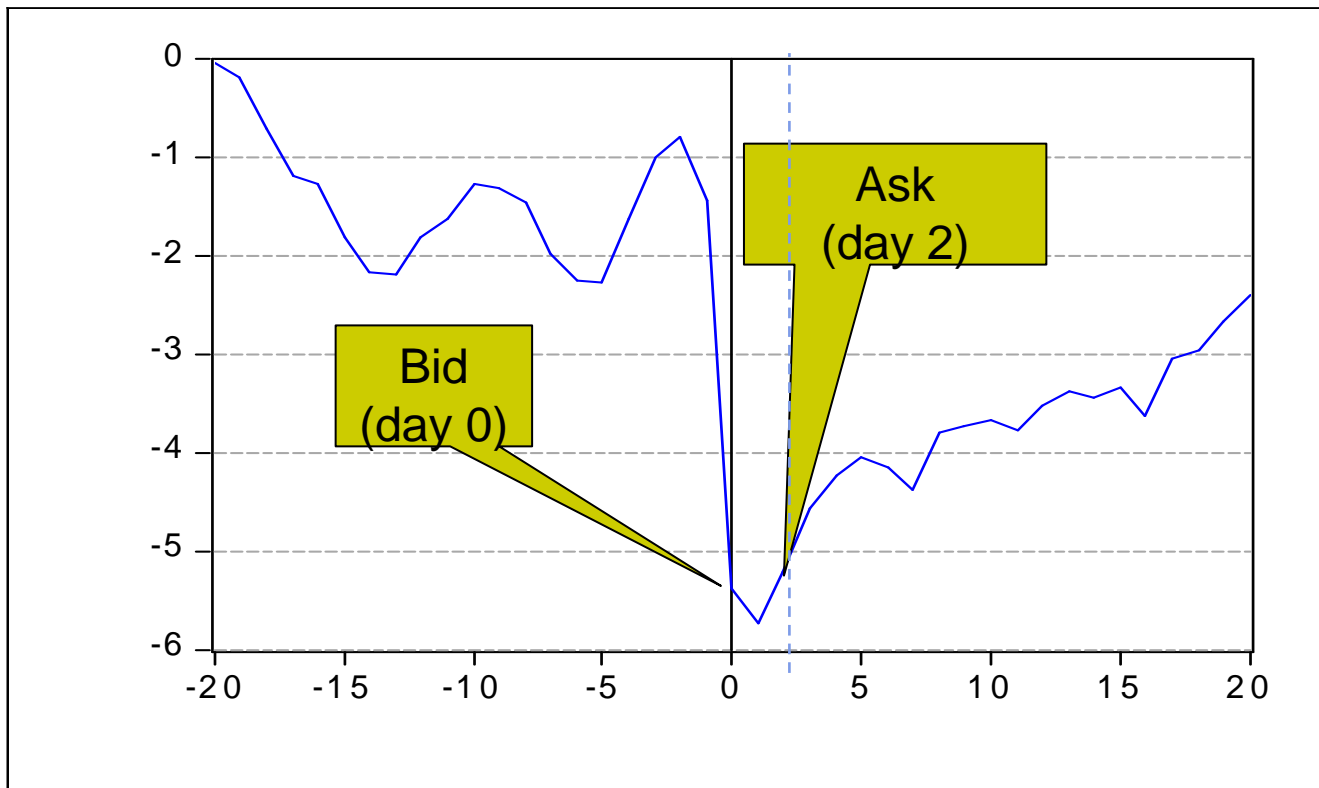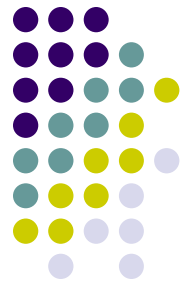
Example - REE
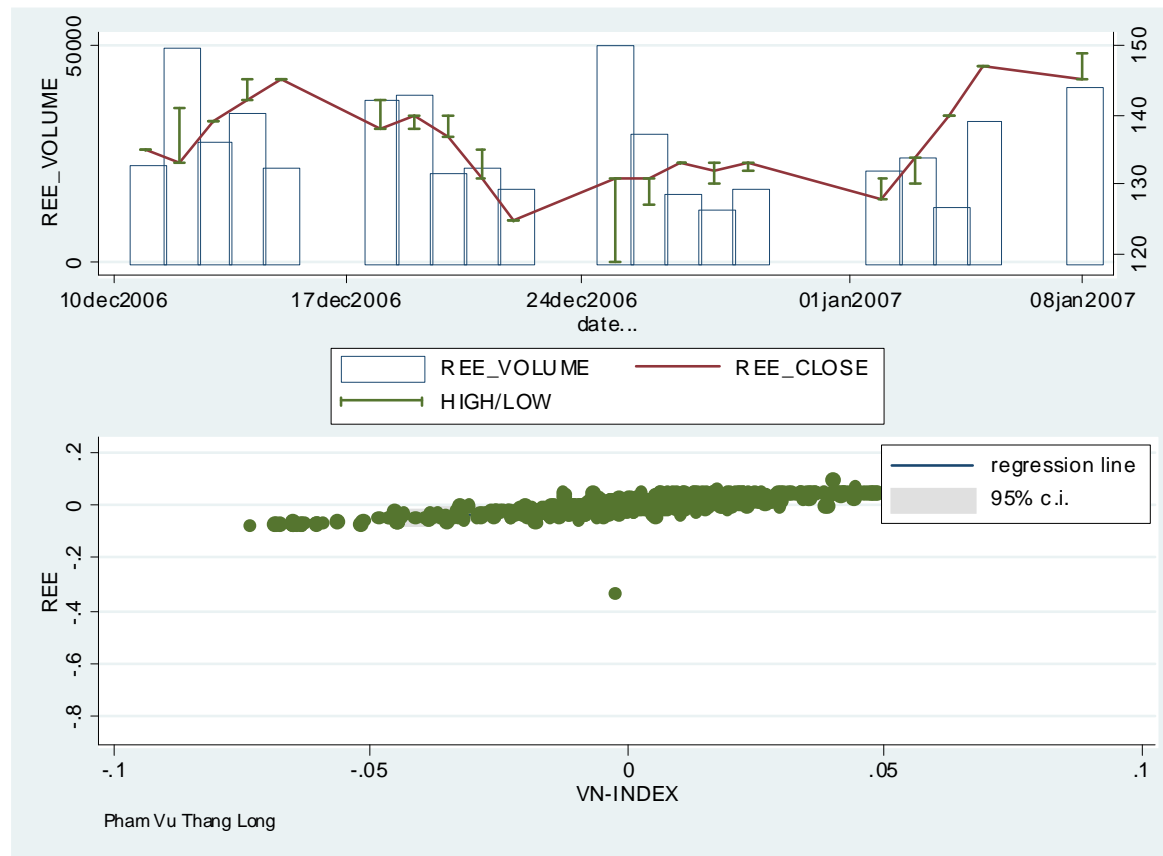
Is there any room for arbitrageurs?

- Geometric return for every 1 DONG of initial investment
  - Arbitrage strategy on price decreases:

$$ROI_{66} = \left[\prod_{i=1}^{66} (1 + r_i) - 1 \right]$$

  - i.e.: buy on day 0 and sell same stock on day 5 may earn extra **1.41 DONG** for every 1 DONG over 5 year periods

- Risk of lose everything
- What if considering transaction costs? What if considering passive investment?

Transaction costs

- Bid-ask spread, round-trip commission

- Average Bid-ask spread: 1.26%

- Average round-trip commission: 0.2%*

- Adjusted ROI=0.054 ($\rightarrow$ marginal contrarian profit)

*Information for commission fee is based on the information published on the website of Vietnam News Daily, http://www.vnexpress.net/Vietnam/Kinh-doanh/Chung-khoan/2006/02/3B9E70D5/

Passive Investment Strategy

- *"Buy and Hold Index"*
    - *i.e.: buy index portolio on 3, Jan 01 and sell on 30, Dec 05 day may earn extra **0.46 DONG** for every 1 DONG over this 5 year periods.*

- *→ Active management strategy by following contrarian investment may not outperform the **traditional advice**: "Buy and hold. Diversify. Put your money in index funds. Pay attention to the one thing you can control – COSTS – and keep them as low as possible".*
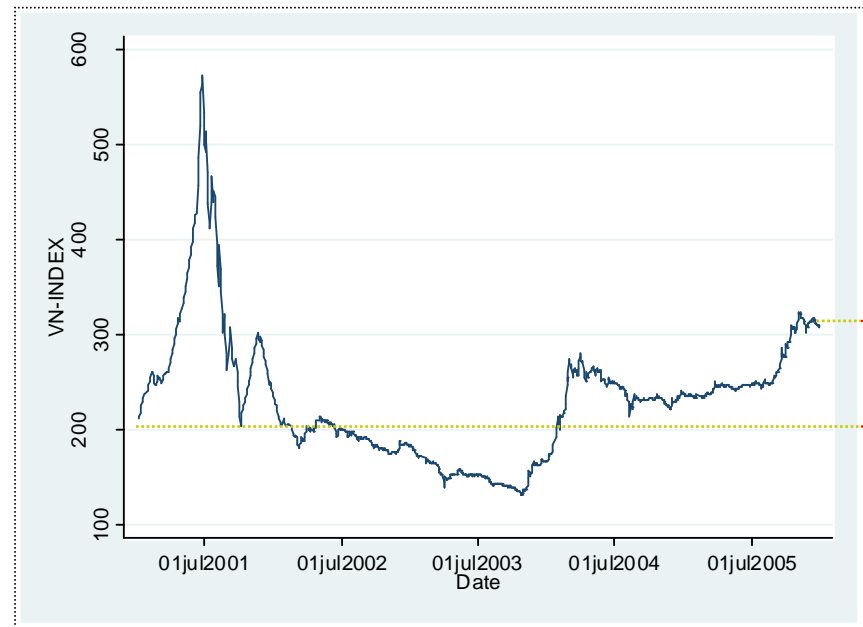
Concluding Remarks

YES

- Existing overreaction in Vietnamese stock market?

- Existing reversal patterns as suggested by overreaction hypothesis? (Debondt and Thaler (1985, 1987))? YES

- Evidence suggests market may be inefficient to certain extents (slow speed of price adjustment, potentials for arbitrage opportunities)

- Better firm's performance subsequent to five-days following extreme returns.

THANK YOU!!!