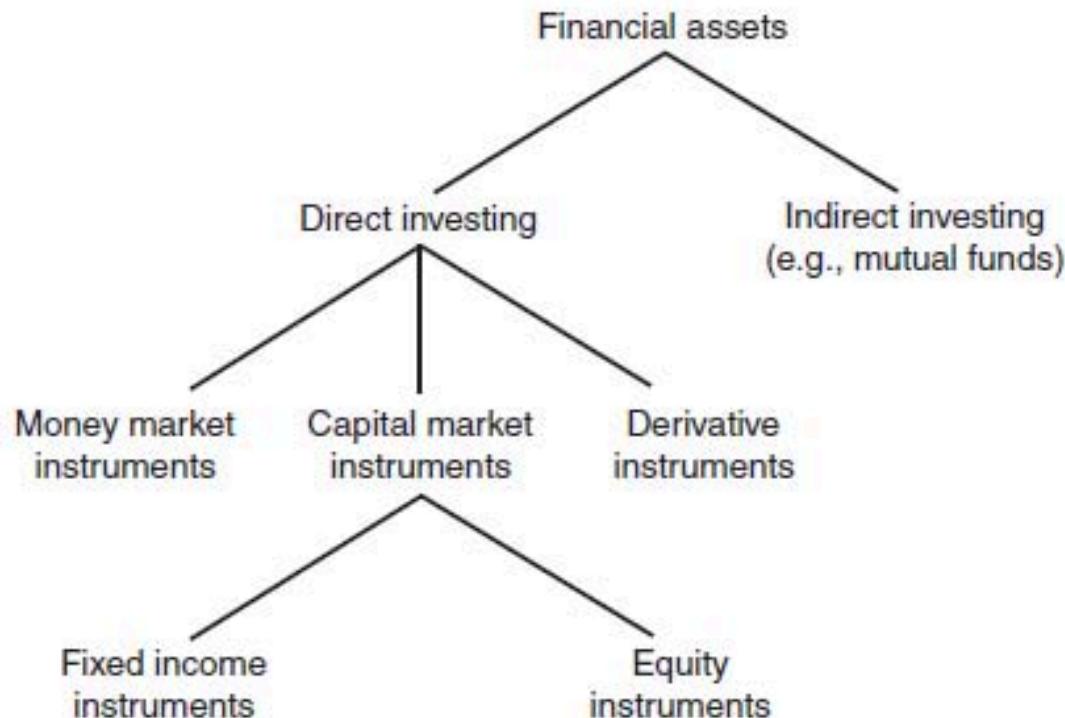


# Financial Market and Securities

# Financial Securities

- Many ways to categorize financial securities



# Types of Marketable Financial Securities

- Money Market Securities
  - Treasury Bills
  - Repurchase Agreements (Repos)
  - Negotiable Certificate of Deposit (CDs)
  - The London Interbank Offered Rate (LIBOR)

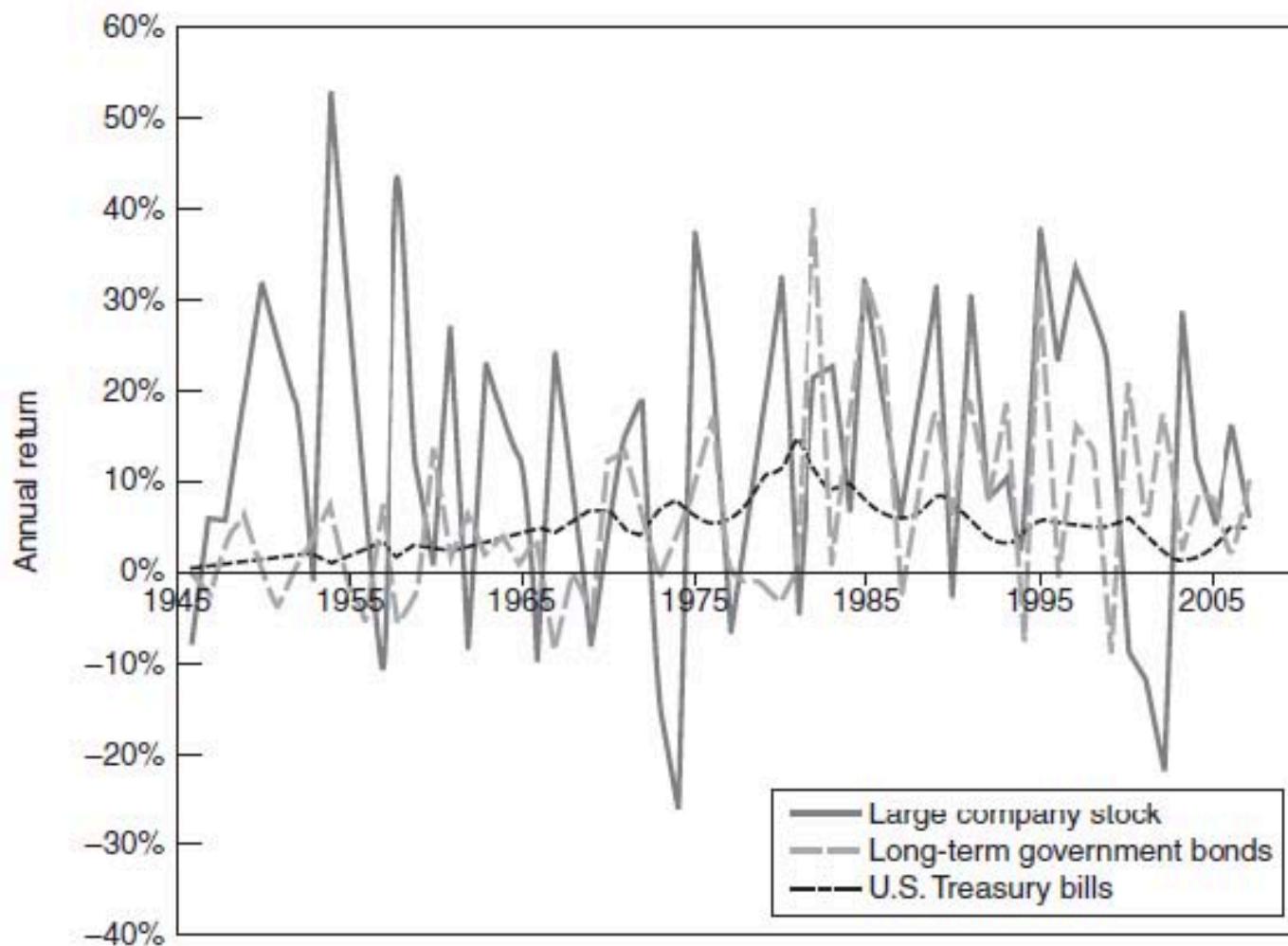
# Types of Marketable Financial Securities (cont.)

- Capital Market Securities
  - Fixed Income Securities
    - Treasury Notes and Bonds
    - Municipal Bonds
    - Corporate Bonds
  - Not-So-Fixed Income Securities
    - Preferred Stock
    - Mortgage-Backed Securities

# Types of Marketable Financial Securities (cont.)

- Capital Market Securities (cont.)
  - Other Asset-Backed Securities
  - Common Stock (Equity)
- Derivative Instruments
- Indirect Investing

**Figure 2.1 Rates of returns versus time for major security types.**



# Indexes

- Stock Market Indexes

The oldest continuously quoted index of stock price performance in the U.S. is the Dow Jones Industrial Average Index (DJIA).

- Bond Market Indexes

Although almost all of the major stock market indexes exclude dividends are thus are not total return indexes, the major bond indexes are total return indexes, for they include interest payments as well as capital gains

# Financial Markets

- The mechanics of trading of a security
- Margin
- The nature and structure of markets
- Trade Types and Costs

# Trading Mechanics

The order must specify

- 1. The name of the issuer of the security and the type of security the investor wishes to trade (e.g., a 20-year U.S. government bond or General Motors common stock).
- 2. Whether the order is a purchase or sale.
- 3. Order size.
- 4. Types of orders
- 5. The length of time the order is to be outstanding.

# Trading Mechanics

- Order Size
- Types of Orders
  - Market Orders
  - Limit Orders
  - Short Sale
  - Stop Orders
- Length of Time an Order is Outstanding

# Margin

- Margin Long Purchase
- Initial Margin Long Purchase
- Maintenance Margin Long Purchase
- Effect of Margin on Return
- Margin Requirements for Short Sales

# Markets

- Characteristics of Markets
  - Primary markets vs. secondary markets
  - Call vs. Continuous Markets
  - Broker vs. dealer market
- Major Markets
  - Stock Markets
    - National stock exchanges
    - Regional stock exchanges
    - Over-the-Counter Market
    - Computerized Markets
  - Bond Markets

# Recommendation

- **Trading and Exchanges**, by Larry Harris, Oxford University Press (*recommended book*)
- **A Review of Stock Market Microstructure**: A study of market microstructure in eighteen of the world's largest and most influential stock markets *by Carole Comerton-Forde , and James Rydge*

## **Major Types of Orders**

### **Market orders**

The most frequent type of order

Buy or sell at the best current price

Provides immediate liquidity

Assume you are interested in General Electric (GE) and you call your broker to find out the current “market” on the stock.

The quotation machine indicates that the prevailing market is 45 bid — 45.25 ask. This means that the highest current bid on the books of the specialist is 45; that is, \$45 is the most that anyone has offered to pay for GE. The lowest offer is 45.25, that is, the lowest price anyone is willing to accept to sell the stock.

If you placed a market buy order for 100 shares, you would buy 100 shares at \$45.25 a share (the lowest ask price) for a total cost of \$4,525 plus commission. If you submitted a market sell order for 100 shares, you would sell the shares at \$45 each and receive \$4,500 less commission.

## Two Quotes

### Bid

The price at which **dealers** offer to buy

Bids are offers to buy.

In dealer markets, the bid price is the price at which the dealer is willing to buy.

Investors “sell to the bid”.

Bid-Asked spread is the profit for making a market in a security.

### Ask

The price at which **dealers** offer to sell

Asked prices represent offers to sell.

In dealer markets, the asked price is the price at which the dealer is willing to sell.

Investors must pay the asked price to buy the security.

### Bid < Ask in terms of price

## Limit orders

Order specifies the buy or sell price

Time specifications for order may vary

Instantaneous - “fill or kill”, part of a day, a full day, several days, a week, a month, or good until canceled (GTC)

You might submit a bid to purchase 100 shares of Coca-Cola stock at \$50 a share when the current market is 60 bid–60.25 ask, with the expectation that the stock will decline to \$50 in the near future.

### **Special Orders: Stop loss and Stop buy**

#### **Stop loss**

Conditional order to sell stock if it drops to a given price

Does not guarantee price you will get upon sale

Market disruptions can cancel such orders

Assume you buy a stock at 50 and expect it to go up. If you are wrong, you want to limit your losses. To protect yourself, you could put in a stop loss order at 45.

In this case, if the stock dropped to 45, your stop loss order would become a market sell order, and the stock would be sold at the prevailing market price.

#### **Stop buy order**

Investor who sold short may want to limit loss if stock increases in price

Assume you sold a stock short at 50, expecting it to decline to 40. To protect yourself from an increase, you could put in a stop buy order to purchase the stock using a market buy order if it reached a price of 55.

This conditional buy order would hopefully limit any loss on the short sale to approximately \$5 a share.

**Ex Type of orders:** The stock of the Michele Travel Co. is selling for \$28 a share.

You put in a limit buy order at \$24 for one month. During the month, the stock price declines to \$20, then jumps to \$36. Ignoring commissions, what would have been your rate of return on this investment?

What would be your rate of return if you had put in a market order?

What if your limit order was at \$18?

Answers:

Limit order @ \$24: When market declined to \$20, your limit order was executed \$24 (buy), then the price went to \$36.

Rate of return =  $(\$36 - \$24)/\$24 = 50\%$ .

Assuming market order @ \$28: Buy at \$28, price goes to \$36

Rate of return =  $(\$36 - \$28)/\$28 = 28.57\%$ .

Limit order @ \$18: Since the market did not decline to \$18 (lowest price was \$20) the limit order was never executed.

**Short Sales:** Purpose: to profit from a decline in the price of a stock

Mechanics

- Borrow the stock from another investor (through your broker)
- Can only be made on an uptick trade
- Must pay any dividends to lender
- Margin requirements apply

A short sale can be made only on an **uptick** trade, meaning the price of the short sale must be higher than the last trade price.

- This is because the exchanges do not want traders to force a profit on a short sale by pushing the price down through continually selling short. Therefore, the transaction price for a short sale must be an uptick or, without any change in price, the previous price must have been higher than its previous price (a zero uptick).
  - For an example of a zero uptick, consider the following set of transaction prices: 42, 42.25, 42.25. You could sell short at 42.25 even though it is no change from the previous trade at 42.25 because that prior trade was an uptick trade.

## **Buying on Margin**

- Borrowing part of the total purchase price of a position using a loan from a broker.
- Investor contributes the remaining portion.
- Margin refers to the percentage or amount contributed by the investor.

You profit when the stock appreciates

- Initial margin is set by the Fed
  - Currently 50%
- Maintenance margin
  - Minimum equity that must be kept in the margin account
  - Margin call if value of securities falls too much

On any type of order, an investor can pay for the stock with cash or borrow part of the cost, **leveraging the transaction**.

**Leverage** is accomplished by buying on margin, which means *the investor pays for the stock with some cash and borrows the rest through the broker; putting up the stock for collateral.*

<b>Margin rate = equity in account / value of stock</b>
---

**Ex leverage:** The initial margin requirement is 60 percent. You have \$40,000 to invest in a stock selling for \$80 a share. Ignoring taxes and commissions, show in detail the impact on your rate of return if the stock rises to \$100 a share and if it declines to \$40 a share assuming

- (a) You pay cash for the stock, and
  - (b) You buy it using maximum leverage.
- (a). Assume you pay cash for the stock: Number of shares you could purchase = \$40,000/\$80 = 500 shares.

$$= \frac{\$50,000 - \$40,000}{\$40,000} = 25.00\%$$

- (1) If the stock is later sold at \$100 a share, the total shares proceeds would be \$100 x 500 shares = \$50,000. Therefore, the rate of return from investing in the stock is as follows:
- (2) If stock is later sold at \$40 a share, the total shares proceeds would be \$40 x \$500 shares = \$20,000. Therefore, the rate of return from investing in the stock would be:

$$= \frac{\$20,000 - \$40,000}{\$40,000} = -50.00\%$$

- (b). Assuming you use the maximum amount of leverage in buying the stock, the leverage factor for a 60 percent **margin requirement is = 1/percentage margin requirement** =  $1/0.60 = 5/3$ .

Thus, the rate of return on the stock if it is later sold at \$100 a share =  $25.00\% \times 5/3 = 41.67\%$ . In contrast, the rate of return on the stock if it is sold for \$40 a share: =  $-50.00\% \times 5/3 = -83.33\%$ .

**Ex. Maintenance Margin Long:** Share price \$100

60%	Initial Margin
40%	Maintenance Margin
100	Shares Purchased

Initial Position

Stock	\$10,000	Borrowed	\$4,000
		Equity	\$6,000

Stock price falls to \$70 per share

New Position

Stock	\$7,000	Borrowed	\$4,000
		Equity	\$3,000

Margin% =  $\$3,000/\$7,000 = 43\%$

How far can the stock price fall before a **margin call**? Let maintenance margin =

30%

Equity =  $100P - \$4000$

Percentage margin =  $(100P - \$4,000) / 100P$

$(100P - \$4,000) / 100P = 0.30$

Solve to find:

$P = \$57.14$

Change in Stock Price	End-of-Year Value of Shares	Repayment of Principal and Interest*	Investor's Rate of Return
30% increase	\$26,000	\$10,900	51%
No change	20,000	10,900	-9
30% decrease	14,000	10,900	-69

**Table 3.4**

Illustration of buying stock on margin

\* Assuming the investor buys \$20,000 worth of stock, borrowing \$10,000 of the purchase price at an interest rate of 9% per year.

### **Ex. Maintenance Margin Short**

- Dot Bomb 1000 Shares
- 50% Initial Margin
- 30% Maintenance Margin
- \$100 Initial Price
- Sale Proceeds \$100,000
- Margin & Equity \$50,000
- Stock Owed 1000 shares

If Dot Bomb falls to \$70 per share...

Assets:

\$100,000 (sale proceeds)

\$50,000 (initial margin)

Liabilities : \$70,000 (buy shares)

Equity

\$80,000

Profit = ending equity – beginning equity

= \$80,000 - \$50,000 = \$30,000

= decline in share price x number of shares sold short

If Stock Price Rises to \$110

Sale Proceeds	\$100,000
Initial Margin	50,000
Stock Owed	110,000
Net Equity	40,000

Margin %  $(40000/110000)$  36%

How much can the stock price rise before a margin call?

$$(\$150,000^* - 1000P) / (1000P) = 30\%$$

$$P = \$115.38$$

\* Initial margin plus sale proceeds

**Ex Effect of Margin Long on Return:** Suppose you buy 100 shares of Maginn Industries stock **on 55 percent margin** when the stock is selling at \$20 a share.

The broker charges a 10 percent annual interest rate, and commissions are 3 percent of the total stock value on both the purchase and sale. A year later, you receive a \$0.50 per share dividend and sell the stock for 27.

What is your rate of return on the investment?

Answers: Profit = Ending Value - Beginning Value + Dividends - Transaction Costs  
- Interest

Beginning Value of Investment =  $\$20 \times 100$  shares = \$2,000

$$\begin{aligned} \text{Your Investment (your cash)} &= \text{margin requirement} + \text{commission.} \\ &= (.55 \times \$2,000) + (.03 \times \$2,000) \\ &= \$1,100 + \$60 \\ &= \$1,160 \end{aligned}$$

$$\begin{aligned} \text{Ending Value of Investment} &= \$27 \times 100 \text{ shares} \\ &= \$2,700 \end{aligned}$$

$$\text{Dividends} = \$.50 \times 100 \text{ shares} = \$50.00$$

$$\begin{aligned} \text{Transaction Costs} &= (.03 \times \$2,000) + (.03 \times \$2,700) \\ (\text{Commission}) &= \$60 + \$81 \end{aligned}$$

$$= \$141$$

$$\text{Interest} = .10 \times (.45 \times \$2,000) = \$90.00$$

$$\begin{aligned}\text{Therefore: Profit} &= \$2,700 - \$2,000 + \$50 - \$141 - \$90 \\ &= \$519\end{aligned}$$

The rate of return on your investment of \$1,160 is:

$$\$519/\$1,160 = 44.74\%$$

**Ex Effect of Margin short on Return:** You decide to sell short 100 shares of Charlotte Horse Farms when it is selling at its yearly high of 56.

Your broker tells you that your margin requirement is 45 percent and that the commission on the purchase is \$155.

While you are short the stock, Charlotte pays a \$2.50 per share dividend.

At the end of one year, you buy 100 shares of Charlotte at 45 to close out your position and are charged a commission of \$145 and 8 percent interest on the money borrowed. What is your rate of return on the investment?

- . Profit on a Short Sale = Begin. Value - Ending Value - Dividends -Trans. Costs - Interest

*Do you see the difference between this example and the previous one?*

Beginning Value of Investment =  $\$56.00 \times 100 \text{ shares} = \$5,600$  (sold under a short sale arrangement)

Your investment = margin requirement + commission

$$= (.45 \times \$5,600) + \$155 = \$2,520 + \$155 = \$2,675$$

Ending Value of Investment =  $\$45.00 \times 100 = \$4,500$   
(Cost of closing out position)

Dividends =  $\$2.50 \times 100 \text{ shares} = \$250.00$

Transaction Costs =  $\$155 + \$145 = \$300.00$

$$\text{Interest} = .08 \times (.55 \times \$5,600) = \$246.40$$

$$\begin{aligned}\text{Therefore: Profit} &= \$5,600 - \$4,500 - \$250 - \$300 - \$246.40 \\ &= \$303.60\end{aligned}$$

The rate of return on your investment of \$2,675 is:

$$\$303.60/\$2,675 = 11.35\%$$

# The Margin trading in China

- Show the development of margin trading program using the Chinese data from CSMAR.
- Discussion: what do you think of margin trading and short selling?

# Case: Luckin Coffee (瑞幸咖啡)

# History

- Luckin Coffee was incorporated in October 2017, and by January 2018 had opened its first shops in Beijing and Shanghai. The company announced the completion of Series A financing to a total of US\$200 million in July 2018.
- The company continued its rapid growth—by October 2018, Luckin Coffee had opened 1300 stores, surpassing the number of Costa Coffee stores to become the second-biggest coffee brand in China.
- In January 2019, Luckin Coffee announced that they planned to open 2500 new stores and surpass Starbucks to become the biggest coffee brand in China. Luckin also gained exposure in the US stock market, starting to trade on [Nasdaq](#) at \$17 a share. After reaching \$25.96 on the first day, the stock dropped to \$16 on its second day of trading.
- By the end of September 2019, Luckin Coffee had opened 3,680 stores, and had recorded a net loss of \$75 million in the third quarter of 2019.

# Scandal

- On 31 January 2020, short-selling firm [Muddy Waters Research](#) published an anonymous 89-page report on [Twitter](#), claiming that Luckin Coffee had falsified financial and operational figures.
- The report claimed that the number of items sold per store was inflated by at least 69% in the third and by 88% the fourth quarter of 2019, supposedly backed by 11,200 hours of video footage.
- Before the U.S. stock market opening on 3 February 2020, Luckin Coffee responded by categorically denying all allegations made in the report. The company argued that the report raised malicious accusations and false allegations with unsubstantiated evidence and flawed methodology.

# Scandal

- On 2 April 2020, Luckin Coffee announced that an internal investigation found that its chief operating officer, Jian Liu, had fabricated the company's 2019 sales by "around RMB2.2 billion" (US\$310 million).
- The next day, the [China Securities Regulatory Commission](#) said that it would investigate the company for fraud. On April 8, the U.S. stock market halted trading on all Luckin shares over the fraud probe. In the month of April, the company's stock fell by over 80%.
- On May 12, 2020, CEO Jenny Zhiya Qian and COO Jian Liu were relieved of their positions, while Reinout Schakel remained as CFO. On May 15, the company received a [delisting notice](#) from Nasdaq.

## Luckin Coffee Inc. (LK)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

**1.3800 -1.6200 (-54.00%)**

At close: June 26 4:00PM EDT

Indicators Comparison Events 

Date Range 1D 5D 1M 3M **6M** YTD 1Y 2Y 5Y Max 1D   



yahoo!finance



# How Constraining Are Limits to Arbitrage?

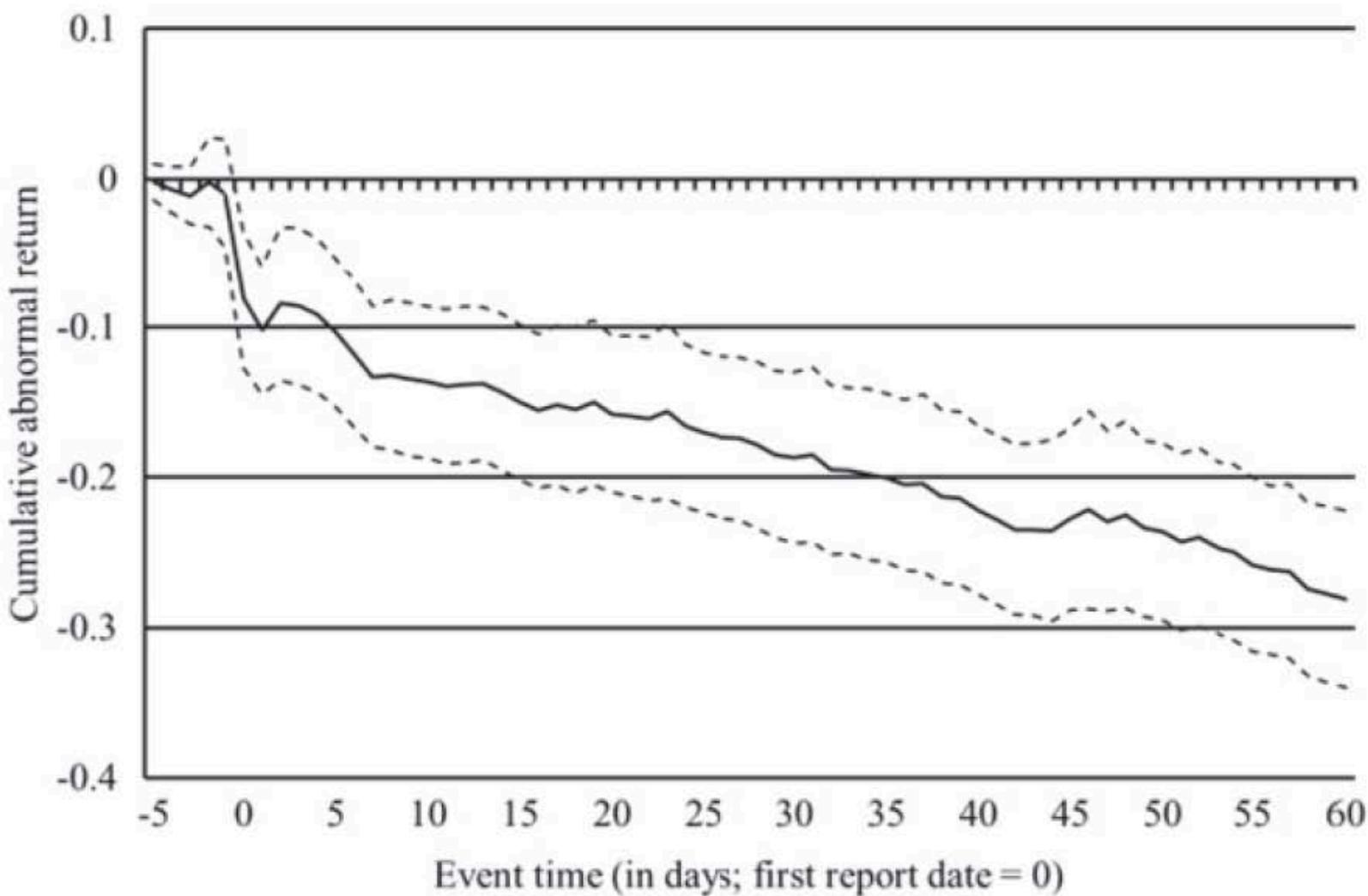
- “ How Constraining Are Limits to Arbitrage ?”
- Review of Financial Studies, 2016
- By Ljungqvist, Alexander and Wenlan Qian
- Using data for 124 short-sale campaigns in the United States between 2006 and 2011, we show that investors respond strongly to the information, with spikes in SEC filing views, volatility, order imbalances, realized spreads, turnover, and selling by the longs. Share prices fall by an aggregate \$14.8 billion.

	Year started	Number of first reports	Number of firms covered	Total number (first reports only)	Mean abnormal return on report date	Mean CAR from report date to trading day (first 60 reports only)	Mean cumulative abnormal profit from trading day -5 to trading day 60 (first reports only)	Fraction of all reports coded as "more credible" %
Citron Research	2001	43	46	106	-7.2	-27.4	23.5	87
Bronte Capital	2008	9	12	33	-5.8	7.4	-5.2	0
GeoInvesting	2011	8	10	16	-12.1	-46.9	48.2	56
Ian Bezek	2009	7	9	14	0.5	-27.3	28.9	57
Shareholder Watchdog	2009	7	8	9	-6.0	-38.9	30.4	44
Alfred Little	2010	6	13	37	-17.9	-28.5	29.7	73
Muddy Waters	2010	5	6	13	-17.3	-20.1	19.2	54
Kerrisdale Capital	2009	4	8	11	-7.5	-28.9	34.9	73
Asensio & Co.	1994	4	5	34	-9.3	-42.2	42.8	76
Spruce Point	2010	4	4	6	-2.7	-40.5	42.8	50
Chimin Sang	2009	3	9	18	1.0	-8.6	21.2	61
Prescience Investment	2011	2	4	5	-14.5	13.9	-25.4	20
Absaroka Capital Management	2011	2	4	6	-5.5	-48.1	40.2	33
Chinese Company Analyst	2010	2	4	11	1.0	-10.4	9.2	18
The Forensic Factor	2011	2	2	6	-10.4	-28.6	11.6	33
Glaucus Research	2011	2	3	4	-5.0	-0.5	1.7	0
OLP Global	2010	2	2	3	-3.9	-12.6	14.3	n/a
Average (across the 17 repeat arbs)		7	9	20	-7.2	-22.8	21.6	46
14 one-time arbs		14	14	26	-9.5	-31.8	28.3	n/a

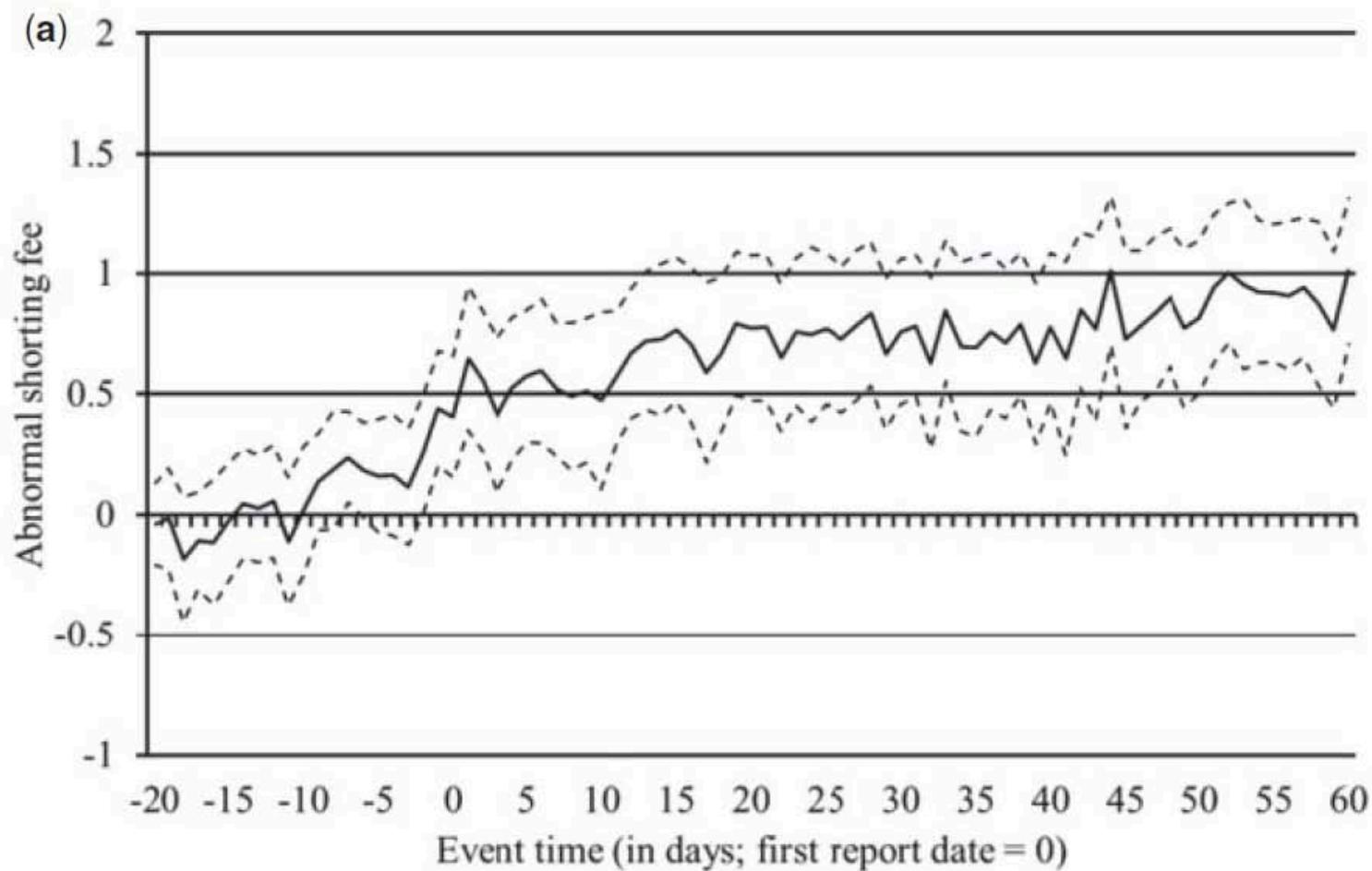
# Making their case

- Once an investigation is completed, the evidence is assembled into a detailed report that is subsequently disclosed to the investing public. To attract investors' attention, reports often have catchy titles such as "*Credibility is like virginity; once you lose it, you can never get it back.*"
- Each report prominently discloses that the arb has a short position in the target stock. Effectively, therefore, arbs (legally) front run the publication of their reports. However, given how costly the targets are to arbitrage, there is a substantial risk that the arbs' short positions are insufficient to correct the mispricing on their own—and thus that prices will move against the arbs, resulting in potentially unlimited losses.
- We argue that to counteract this risk, the arbs share their information with the market in an effort to convince the long investors to sell.

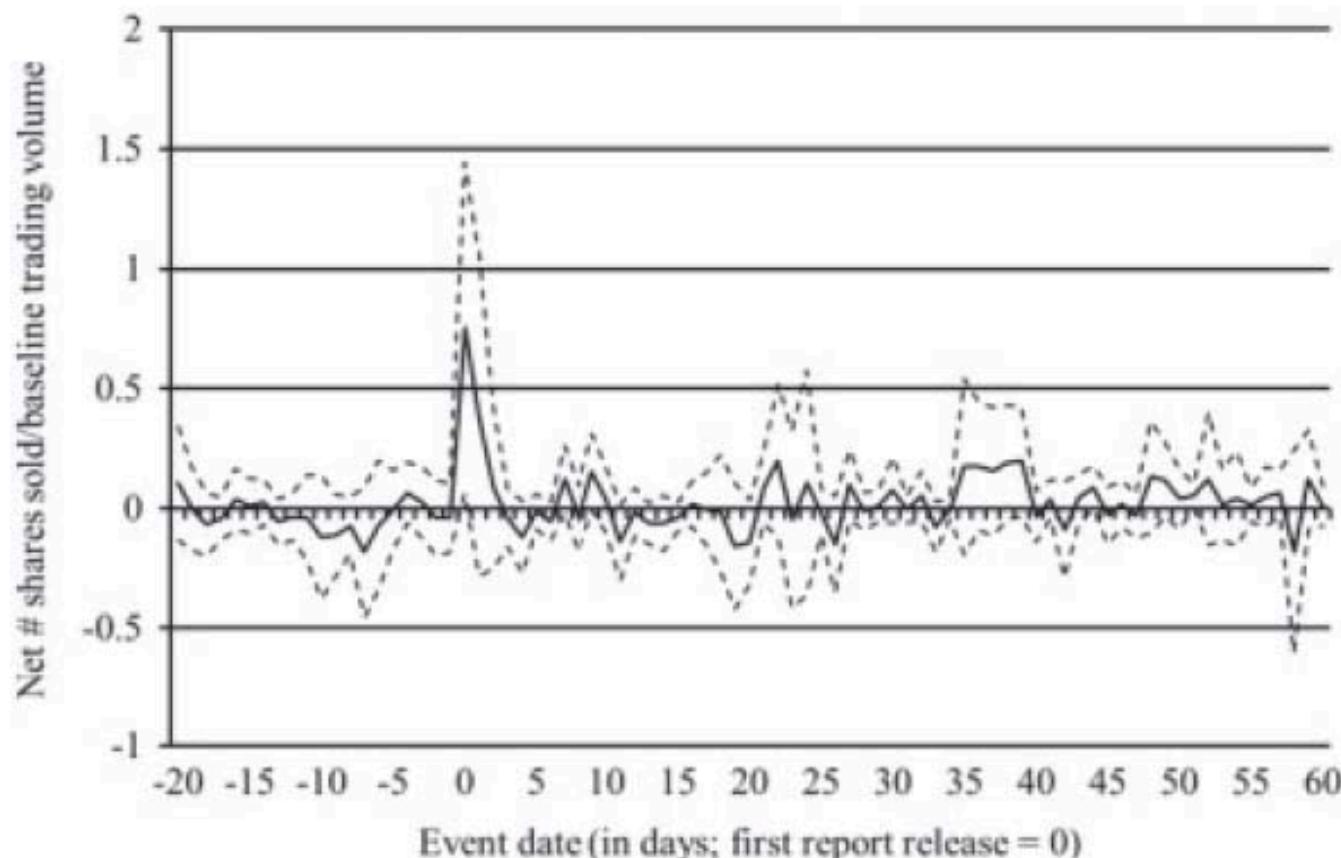
# CARs around report releases



# Average abnormal shorting fee



# Average abnormal daily net sales



# How accurate are the reports?

- By the end of October 2015, 69% of targeted companies are involved in class-action lawsuits; 50% are delisted by an exchange; and 36% are formally investigated by the SEC or the Department of Justice.

## Timing of subsequent events

Calendar days since first report

	percentile				
	Mean	Std. dev.	25th	50th	75th
Regulatory intervention	733	602	231	640	1,177
Delisting	680	594	208	533	1,034
Class-action lawsuit	540	669	265	457	845
Bankruptcy	1,409	770	609	1,415	2,169

# Do the arbs make money on their information production?

- The strategy makes an average return of 7.8% on the report day and a cumulative abnormal profit of 24.1% over 3 months.
- This implies dollar gains of \$241,000 on a short position of \$1m, \$482,000 on a short position of \$2m, and so on—plus whatever profits the arbs can make through option-trading strategies.
- Anecdotally, the arbs tell us that an investigation typically costs between around \$10,000 and \$100,000.

# Credibility

## Abnormal returns and trading by type of report

	More credible (n=202)	Less credible (n=35)	Difference in means
Panel A:			
Abnormal return on report date (first reports only)			
Based on four-factor CARs	-9.0***	-2.2	-6.8*
Based on DGTW-adjusted returns	-9.3***	-2.3	-7.0**
Based on calendar-time abnormal portfolio returns	-9.3***	-2.1	-7.2***
Abnormal return on report date (all reports)			
Based on four-factor CARs	-5.3***	-1.4	-3.9**
Based on DGTW-adjusted returns	-5.2***	-1.5	-3.7**
Based on calendar-time abnormal portfolio returns	-5.3***	-1.6	-4.4***
3-month abnormal borrow-and-hold shorting profit			
Based on four-factor CARs	16.5***	6.6	9.9
Based on DGTW-adjusted returns	18.1***	9.8*	8.3
Based on calendar-time abnormal portfolio returns	14.5**	10.3	10.3
Disaggregating shorting profits			
Four-factor CARs (days -5,+60, not annualized)	-23.3***	-10.4*	-12.9**
Cumulative shorting fees (days -5,+60, not annualized)	6.8***	3.9***	2.9**
Abnormal turnover			
Total	1.156***	0.950***	0.205
Long side	1.578***	0.923***	0.655*

# Report content

	Evidence-based reports (n = 295)	Opinion-based reports (n = 63)	Difference in means
Panel B:			
Abnormal return on report date (first reports only)			
Based on four-factor CARs	-9.0***	-2.2	-6.8***
Based on DGTW-adjusted returns	-9.7***	-2.5*	-7.2***
Based on calendar-time abnormal portfolio returns	-9.8***	-2.0	-6.4***
Abnormal return on report date (all reports)			
Based on four-factor CARs	-5.1***	-2.6**	-2.5
Based on DGTW-adjusted returns	-5.1***	-2.6**	-2.5*
Based on calendar-time abnormal portfolio returns	-5.1***	-1.7	-3.9***
3-month abnormal borrow-and-hold shorting profit			
Based on four-factor CARs	18.8***	9.5*	9.2*
Based on DGTW-adjusted returns	19.2***	10.8**	8.4*
Based on calendar-time abnormal portfolio returns	23.0***	3.9	20.1**
Abnormal turnover			
Total	1.081***	0.682***	0.399**
Tong side	1.357***	1.142***	0.215

# Informational spillovers

- The arbs' reports may have changed sentiment about China stocks more generally.

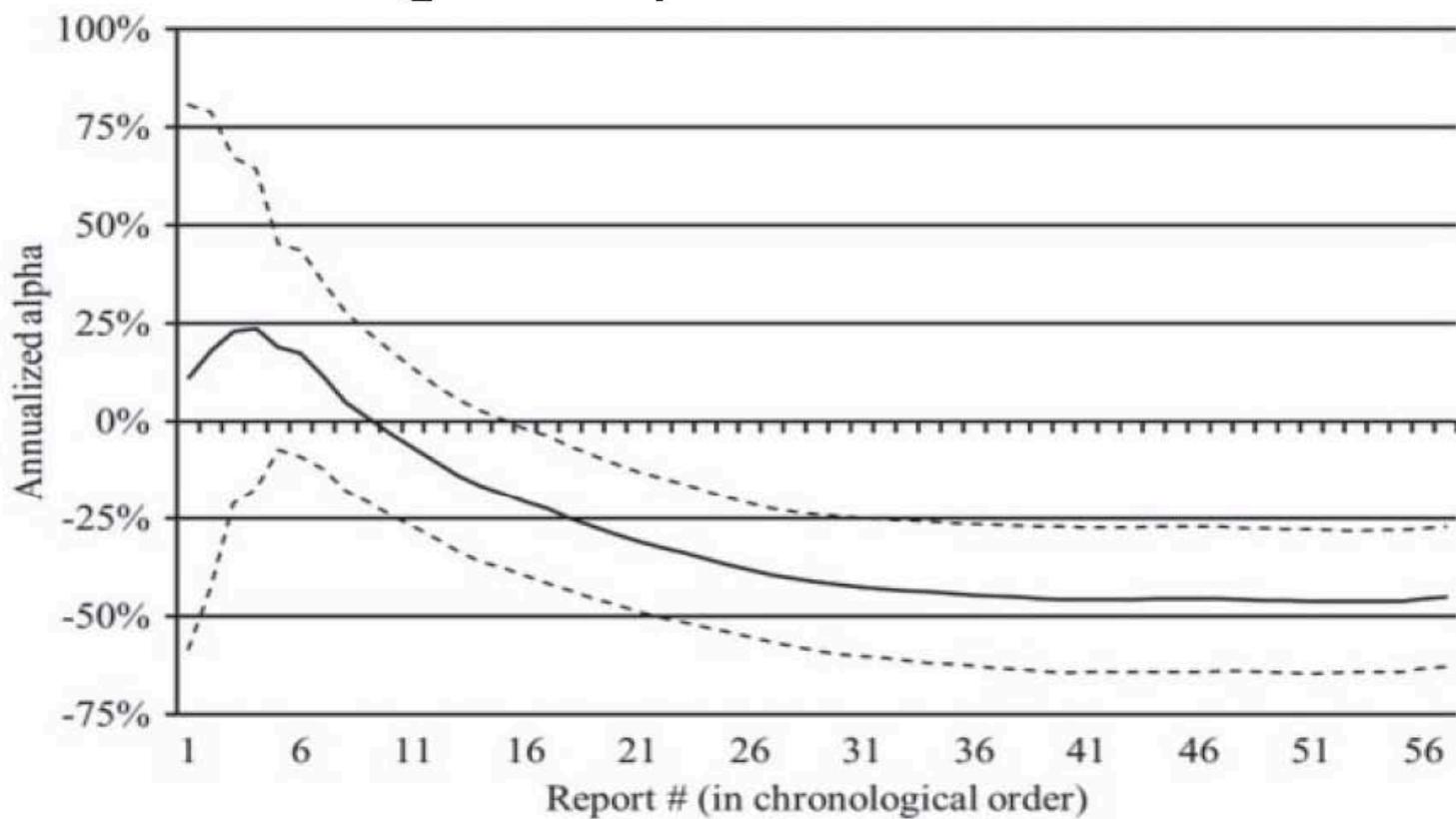


Figure 19

Calendar-time portfolio alphas going long non-target China stocks