Trading, Fund Types and Cost of Active Investing

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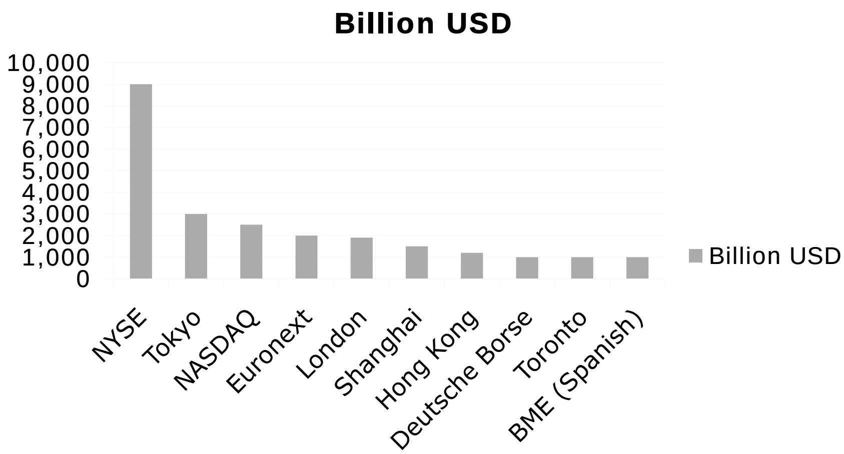
Agenda

- Stock trading environment
- Types of investment companies
- Cost of active investing

Market capitalization of major stock exchanges, 2008



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U.S. Stock exchanges

- Largest: New York Stock Exchange (NYSE)
  - Largest US market. 2009: $12 trillion in listed securities, daily trading vol. 5 billion shares in 2,800 firms
  - Acquired AMEX in 2008. Cooperates with India and Tokyo
  - 10 specialist firms act as brokers or dealers
  - Move to electronic trading system (SuperDot)
- Over-the-counter (OTC) dealer markets
  - US: 35,000 traded securities (mostly pink sheet)
  - NASDAQ – 3,200 firms, basically electronic market
  - NASDAQ acquired Sweden's exchange OMX in 2007
- Electronic Communication Networks (ECNs)
  - Private communication networks directly linking buyers and sellers (Nasdaq Market Center, ArcaEx, BATS,…
  - "Flash trading" (0.00025 seconds!), "naked access" to broker's computer code. 40% of U.S. stock-trade volume

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Other stock exchanges

- London Stock Exchange
  - Electronic trading system (SETS) similar to an ECN
  - Less liquid stock trade in a dealer market (SEAQ)
  - Purchased Milan SE in 2007
  - Daily trading volume in 2008: 3.3 billion shares
- Euronext
  - Paris-Amsterdam-Brussels merger in 2000
  - Merged with NYSE Group in 2007
  - Electronic trading system (NSC)
  - 2008 daily trading volume 550 million shares
  - Cross-trading agreements with Helsinki/Luxembourg
  - Purchased LIFFE in 2001 (futures and options exchange)
- Tokyo
  - 2,400 firms, all-electronic trading
  - NIKKEI 225 index, TOPIX index

Types of exchange orders

- Market orders
  - to be executed immediately at current market prices (buy at the “ask” price, sell at the “bid” price)
- Limit orders
  - specify a price at which customers is willing to trade
- Stop-loss (and stop-buy) orders
  - limit order in which clients sells if price falls below specified levels (or stops buying after a price increase)
  - Stop-loss orders often accompany short sales
- Orders open from “fill or kill” to six-month

Bid-Ask spreads

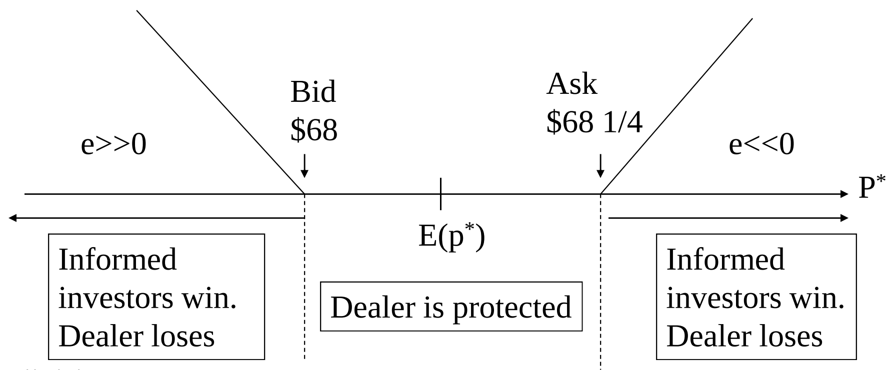
- Ask: price at which you can buy immediately
  - Lowest-priced seller is asking
- Bid: Price at which you can sell immediately
  - Highest-priced buyer is bidding
- Reasons for dealer's quoted spread:
  - Compensation for providing liquidity
  - Risk of adverse selection
- Spread valid only for limited number of shares

Dealer's quoted spread

- The dealer's spread is analogous to issuing two options simultaneously to all customers
  - The "ask" is a call option on true value
  - The "bid" is a put option on true value
- The spread thus depends on the volatility of the stock price
  - Greater volatility makes the options more valuable, which the dealer offsets in part by increasing the spread
  - Competition limits spread size
- Spread must also cover dealers' inventory costs

Dealer facing adverse selection

P^* = true per share value
$E(p^*)$ = expected true value
P = share's actual market price: $P = p^* + e$
e = random error term, known only to informed investors



Block trades

- Trades of at least 10,000 shares
- Roughly 50% of NYSE volume is done in block trades
- Block houses find counter-parties and then send trades to specialists to cross
- Block trades are executed at a discount from quoted exchange prices. However, virtually impossible for outsiders to profit from knowledge of block trade

Trading on margin

- Purchasing on margin means investor is borrowing part of the stock's purchase price from the broker ("broker's call loans")
  - Broker in turn borrows from bank at the call money rate
  - Charges the investor a service fee
  - US FED: min 50% of price must be cash
  - Margin call when reaching "maintenance margin" (minimum percentage equity in stock account, e.g. 30%)
  - Failure to put up margin triggers sale of stock by broker to cover margin call

Short sales

- You borrow a stock from a broker and sell it
  - Broker has inventory of clients' stocks, held in street name
  - Owner of stock not involved
  - Short sale proceeds kept in account with broker
  - Margin (collateral) required
  - If owner wants share, broker may borrow from another broker, or "squeeze" short seller
  - Short seller closes short position by purchasing the stock in the market and returning it to the broker
  - Must also replace any lost dividend
  - Uptick rule (US): Can only short if last recorded trade implied an increase in the stock's price

Transaction costs

- Explicit broker's commission
- Bid-ask spread
- Market impact for large orders
- Substantial evidence that less liquid stocks have higher expected return
- Eckbo-Norli (2003):
  - Measures of liquidity
  - Commonality of liquidity (later)
  - Price of liquidity risk (later)

Liquidity

- Definitions of liquidity
  - Spreads
  - Market depth
  - Volume
  - Price reversals
- Aggregate liquidity measures

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Investment companies

- Benefits
  - Diversification and lower transaction costs
- Unit investment trusts
  - Portfolio is fixed (non-managed) over life of fund
- Managed investment companies (funds)
  - Open-end (mutual) funds
    - Issue & redeem shares at net asset value (NAV)
  - Closed-end funds
    - Number of shares is fixed. Shares trade through brokers, typically at a discount from NAV
- Real Estate Investment Trusts (REITs)
  - Highly leveraged, closed-end funds

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Mutual Fund investment policies

- Money market funds
- Equity funds
  - Max cap gain; growth; income; security
- Fixed-income funds (incl. “junk”)
- Balanced and Income fund
  - Balances equity and fixed-income
  - Requires current income from investment
- Asset allocation funds
  - Balanced funds with active asset allocation
- Index funds
  - Replicates investment proportions of some index)

Exchange Traded Funds (ETFs)

- Allow investors to trade index funds on an exchange
  - SPDR – S&P Depositary Receipt
  - DIA – Dow Jones Industrial Average
  - QQQ – NASDAQ 100
  - WEBS – World Equity Benchmark Shares
  - OSE
- Typically, low expenses (less than 10 bpt)
- Potential tax advantage

U.S. Hedge Funds

- Fixed term (10yr) limited partnership with fewer than 100 investors and min investment of $250'+
  - Domestic funds exempt from the 1940 Investment Company Act
  - Offshore funds not subject to SEC regulations
  - Lack of regulations allows flexibility on investment policies
    - Short selling
    - Derivatives
    - Leverage
    - Need not diversify
  - Flexibility countered by advertising restrictions

Hedge Fund incentives

- Limited liquidity for investor
  - Initial lock-up period of one year
  - Subsequent withdrawals only quarterly
- Strong management performance incentives
  - 2% annual management fee
  - 20% bonus fee of annual profit (sometimes 30%!)
  - Bonus paid only if returns surpass some hurdle rate ("high water mark")
    - No incentive fee until the fund has recovered past losses
- Require fund managers to invest substantial amounts of their personal wealth in fund!

Some Hedge Fund strategies

- Event driven
  - Risk arbitrage; distressed securities
- Global
  - International; emerging; global macro
- Market neutral
  - Long-short stocks; convertible bond arbitrage; stock index arbitrage (using futures); fixed income arbitrage (T-bonds, tax-free munis)
- Fund of funds
  - Allocate capital among a number of hedge funds

Pension Funds

- Pool of pension assets
- Tax deferred
- Defined contribution plan ("innskuddsbasert")
  - Firm and employee make defined contribution into an individual investment account for the employee
  - The employer bears all the investment risk
  - At retirement he or she receives a lump-sum payment or an annuity funded by the account

Pension Fund - 2

- Defined benefit plan ("ytelsesbasert")
  - A formulae specifies the benefits to be paid after retirement
  - The benefits are typically non-linear in years of service, skewed towards last years
  - The employer funds a pension that will be used to pay the future benefits
  - The employer (called the plan sponsor) bears the investment risk
  - If pension underperforms, employer must make larger contributions in the future
- Still most prevalent plan type

Pension Funds - 3

- The funds are tax exempt
  - Thus pushes towards investing in bonds, where spread between pre- and post-tax returns should be largest
- Corporate boards tend to compare their fund's performance to the return on the stock market
  - This makes the market portfolio of stocks look like the risk-free asset
- Uncertainty about future funding
  - Leads to strategies such as immunization, where the duration of the pension portfolio matches the duration of the pension liabilities

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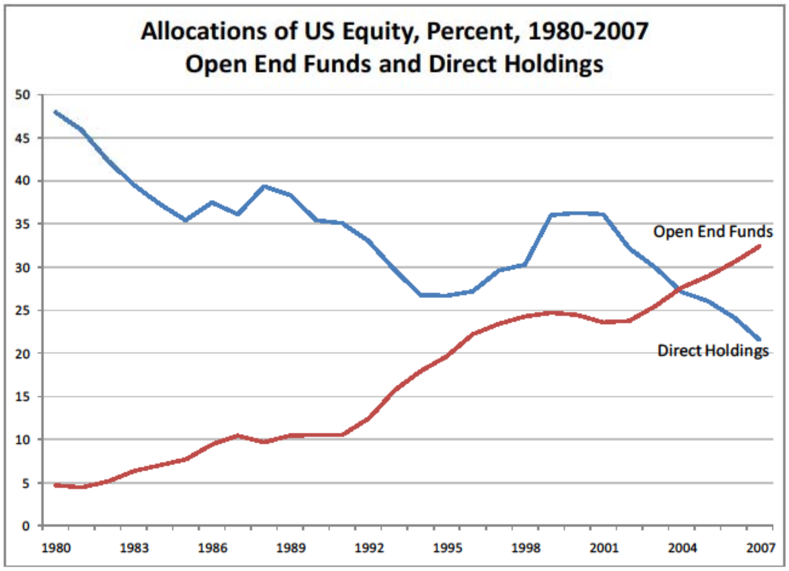
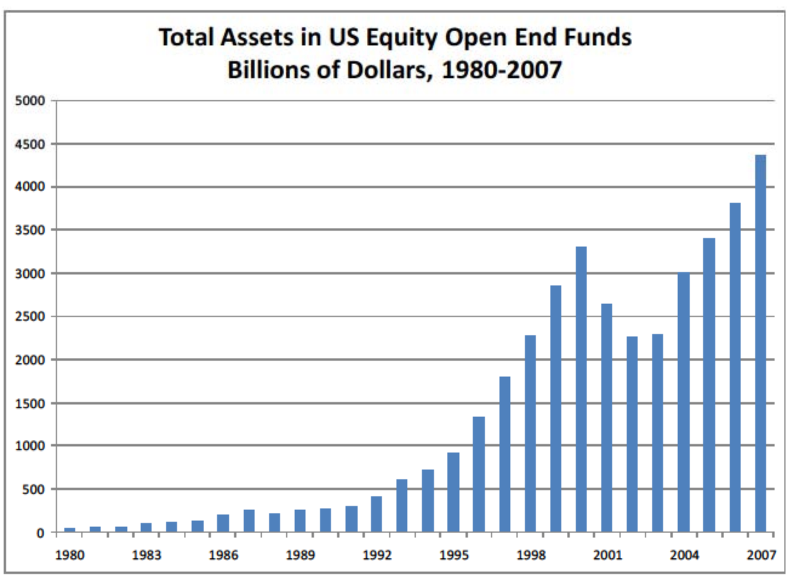
2006 US equity markets: $17 trillion

Holdings (%):	1980	2006
Direct holdings (individuals):	48	21
Open-end funds:	5	32
Pension plans and ESOPs:	25	16
Public funds and nonprofits:	13	13
Banks and insurance:	9	14
Hedge funds:	0	2
Foreign investors:	8	16
Foreign holdings by US investors	2	27



KRFrench 3.6 Investments



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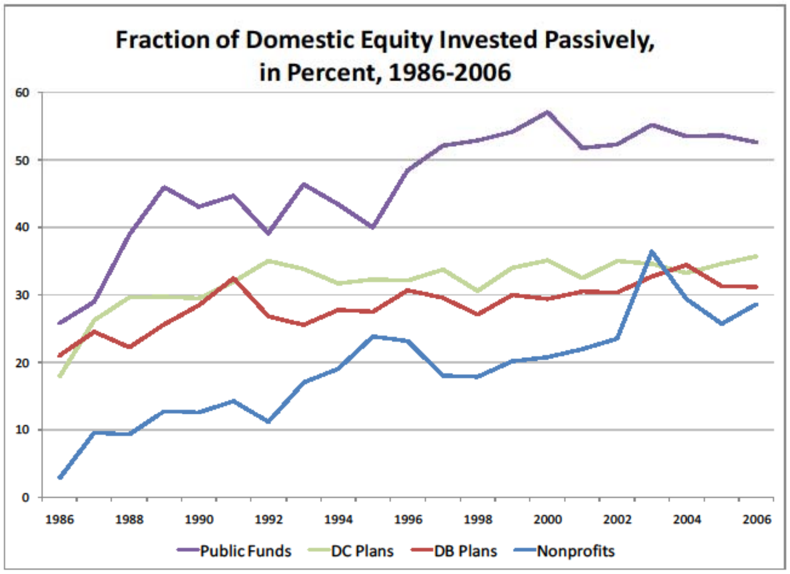
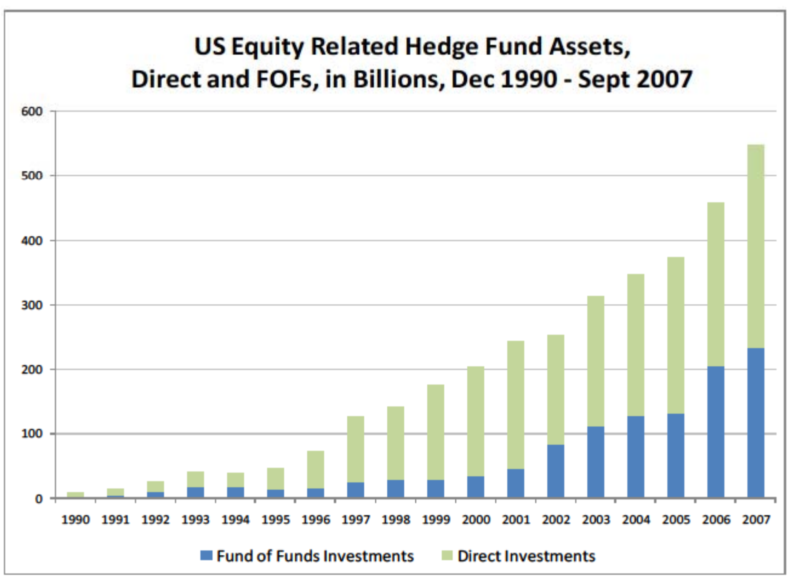
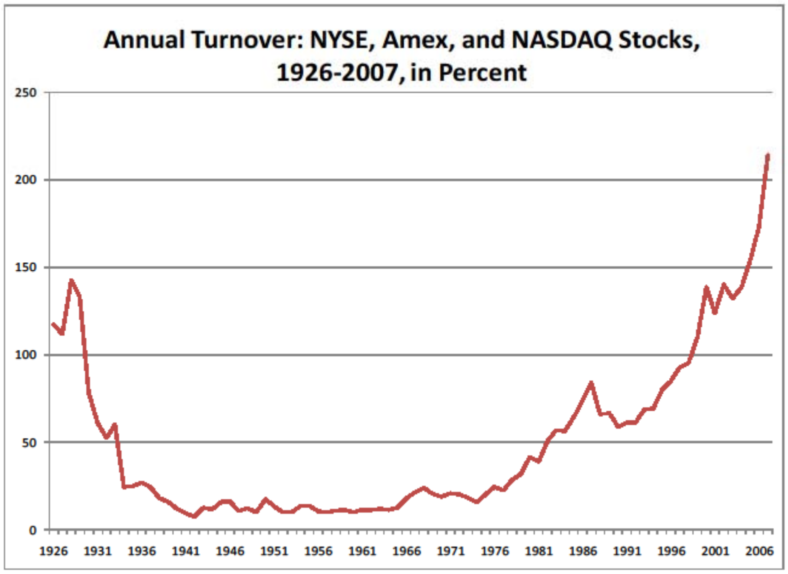


KRFrench 3.13 Investments



KRFrench 3.17 Investments



KRFrench 3.24 Investments

Systemic Perspective

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The Arithmetic of Active Management

- If passive investors do not lose to active investors when they trade, a passive market portfolio <u>must</u> have a higher return than the aggregate of all current (active and passive) portfolios.
- Active investing is a zero sum game before costs, and a negative sum game after costs

The question

- Suppose your investment is a portfolio, using value-weights, of all passive and active stock portfolios in the market
  - Equivalent to holding the market portfolio
  - Your return is the gross return on the market minus the value-weighted average of all investors' costs
- How would your return be affected if you switch to a passive market portfolio only?

The answer

- The net return on a passive market portfolio is the gross return minus the cost of investing passively
- A small investor switching to a passive market portfolio increases his return by the difference between the value-weighted costs of all investors' costs and the cost of investing passively
- How big is this cost differential?

Types of portfolio management costs

- Trading costs
  - French assumes passive investors trades 10% of market portfolio each year
- Management fees, and loads for mutual funds
- Fees are carry for hedge funds
- Funds of funds fees
- Costs of institutional investment

Costs not included by French

- Taxes
- Investment adviser fees
- Security lending revenue
- Margin income
- Most prime brokerage costs

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Fees and expenses for mutual funds (basis points)

	1980	2006
Open-end mutual funds	1980;	2006
• Expense ratio:	70;	85
• Annuitized load:	149;	15
• Total	219;	100
Percent passive (indexed):	1%;	13%
Closede-end funds		
• Expense ratio: (first in 2000)	96;	109
Exchange Traded Funds (EFTs)		
• Expense ratio: (first in 2001)	20;	21

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US Equity Hedge Funds Fees (%)

	1996;	2007
• Management fee	0.9;	1.3
• Performance fee (quoted)	18.2;	19.2
• Performance fee (actual)	3.8;	3.4
• Total	4.7;	4.7
■ Funds of Hedge Funds		
• Management fee	1.2;	1.1
• Performance fee (quoted)	9.5;	6.9
• Performance fee (actual)	3.4;	0.7
• Total	4.6;	1.8
■ Hedge funds plus FoF:	9.3;	6.5 ($25bill)

Institutional investments

	1986;	2006
■ Percent invested passively		
• DB plans	21;	31
• DC plans	18;	36
• Public funds	26;	53
• Nonprofits	3;	29
■ Investment management costs		
• Passive (first in 1991)	8;	3
• Active (first in 1991)	40;	36

Trading Revenues ($ bill.) received by brokers and dealers

	1980;	2006
▪ Comissions		
• From exchange trades	4.1;	12.2
• From OTC trades	1.0;	13.7
▪ Market making	1.0;	6.2
▪ Total	6.1;	32.2
▪ Costs/(dollar volume)		
• (basis points)	146;	11

Standardized total cost of investing (in basis points)

- Standardized by total market value of all NYSE, Amex and Nasdaq stocks

	1980;	2006
▪ Mutual Funds	11;	32
▪ Institutions	16;	9
▪ Hedge Funds (4 in 1996)	0;	13
▪ Trading costs	55;	21
▪ Total	82;	75

Incremental standardized cost of active investing (basis points)

	1980; 2006
■ Cost of passive inv.	
• Mutual funds	1.1; 6.6
• Institutions	3.6; 1.2
• Trading	13.3; 1.2
• Total cost:	18.0; 8.9
■ Incremental cost of active	
• Actual – passive:	64; 66
• Dollar cost of price discovery (act-pass)*makt cap ($bill)	7.0; 102.0

Conclusions (1980-2006)

- Investors spend 0.67% of the aggregate value of the market each year searching for superior returns
- This represents a capitalized cost of price discovery of at least 10% of the current market cap (15-20% with growth).
- Under reasonable assumptions, the typical investor would increase his average annual return by 67 basis points if he switched to a passive portfolio PLUS lower risk

So, why do investors chase returns?

- Confusion
- Overconfidence
- Skills?

Is your fund manager undervalued?

- Why should the best managers have the highest cost of capital?
  - The investors' expected return is the managers' cost of capital.
  - The scarce resource is extraordinary fund management, not capital.
- The investor's job is to identify not the best manager, but the most undervalued manager.