Lecture 6: Liquidity

In this lecture, we will discuss liquidity, namely

- what determines asset liquidity
- trading costs
- effect of liquidity on the profitability of investment strategies, such as the momentum strategy
- effect of liquidity on asset prices
- time variation in liquidity, including flights to liquidity
- liquidity risk
- strategies for dealing with illiquidity

What is Liquidity?

- Liquidity = Ability to trade large quantities quickly and at low cost
  - Liquid assets: Treasury bills, on-the-run Treasury bonds, large-cap stocks, U.S. dollar, cash
  - Illiquid assets: small stocks, real estate, machines, works of art, your umbrella, human capital
- *Liquidity = Immediacy*
  - When you demand liquidity, you demand the ability to trade the asset immediately, without searching to find the best deal.
- Who helps people trade?
  - Brokers: Will arrange the trade for you.
  - Dealers: Will trade with you directly.
    - Also called "*market makers*"
    - Their business is to provide immediacy/liquidity
- You can trade with the market maker immediately or search to find a better deal. Searching involves
  - Search costs: You have to spend money and effort to find a trading partner.
  - Risk: While you are looking for a better offer, the asset price may move against you.

- Market makers get paid to provide liquidity.
  - What are DFA's trading costs in small stock buys?

- Why do market makers require compensation?
  - They give you an option to trade with them
  - To accomodate trades of others, market makers often develop inventory imbalances, which exposes them to price risk (*inventory risk*).
- As a market maker, you face two types of inventory risk, which differ depending on whether future price changes are correlated with inventory imbalances
  1. *Adverse selection*
     - If you trade with someone better informed than yourself, you will probably lose money
       * What does DFA do to mitigate this problem?

     - High information asymmetry $\Rightarrow$ Low liquidity

  2. *Diversifiable inventory risk*
     - If you trade with an uninformed trader, you neither gain nor lose, on average
     - But you still deviate from your desired position
       * What is DFA's "inventory risk"?

- Instead of trading large blocks of shares, traders can split orders into many smaller pieces
  - Orders are often sent to multiple trading venues, such as exchanges and 'dark pools'
  - What are *dark pools?*
  - What is the role of *high-frequency traders?*

- Liquidity varies across assets because demand and supply for immediacy vary across assets.
  - Housing market is relatively illiquid; why?
    * Low demand for immediacy. Housing prices change slowly. Not much price risk in waiting.
    * Costly to supply immediacy. One has to gather a lot of information about the specific house.

      $\Rightarrow$ There are few market makers in housing
  - Stock and bond markets are relatively liquid; why?
    * High demand for immediacy. High risk that price will change over the next hour.
    * Cheap to supply immediacy. Less asymmetric information compared to valuing a specific house. Easy for liquidity suppliers to hedge out risk of holding inventory (e.g., using derivatives)

      $\Rightarrow$ There are many market makers

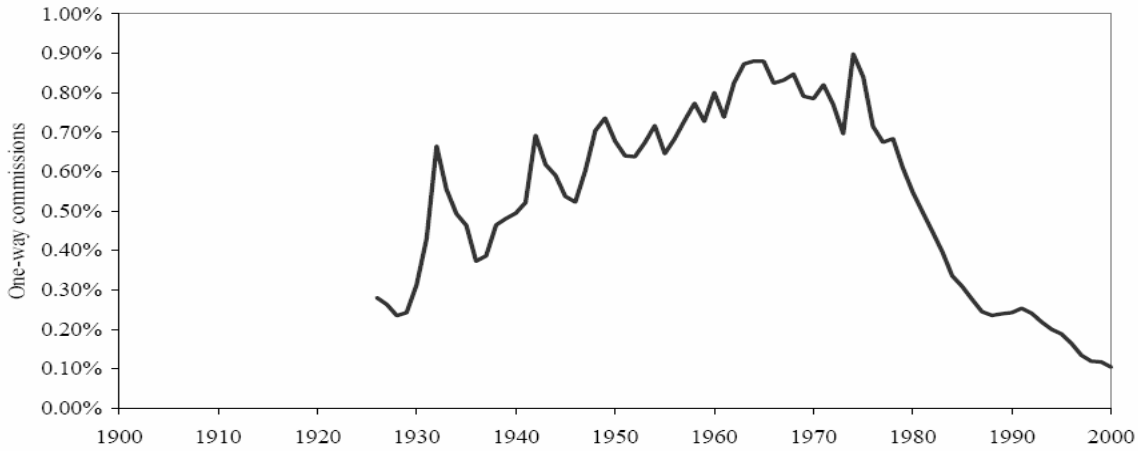
- Liquidity is a multidimensional concept.
  - E.g., immediacy (trading "quickly"), depth (trading "large quantities"), width (trading "at low cost")
- No single measure fully captures liquidity. Some of the most useful measures:
  - Volume of trading (trading activity)
    - Share volume
      = Number of shares traded
    - Dollar volume
      = Share volume times share price
    - Turnover
      = Share volume divided by shares outstanding
      = Dollar volume divided by market cap
  - Cost of trading
    1. Commision
    2. Bid-ask spread
    3. Price impact
    4. Opportunity cost
    5. Short-sale costs

Trading Costs

1. Commissions

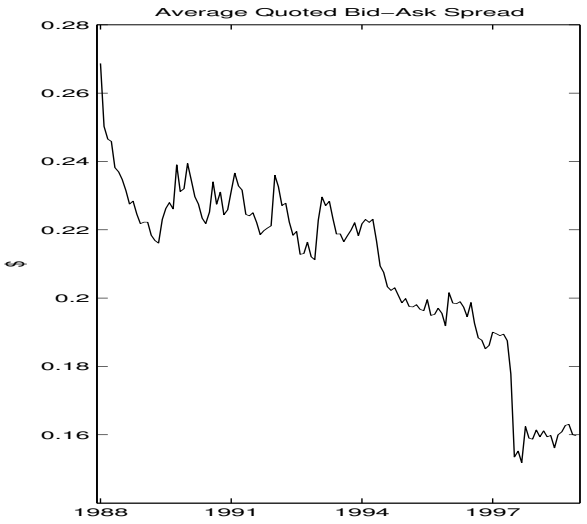
- Main source of revenue for brokers
  - Full service brokers: high commisions
  - Deep discount brokers: low commisions
- Commissions have been falling steadily over time. Prior to May 1975, regulated commissions ranged from 1.3% to 0.4%, plus additional fees and taxes.
  - Commissions have been deregulated in the U.S. (1975), UK (1987), Japan (1999), etc.
  - Example: Ameritrade charges $9.99 per internet order; $44.99 for broker-assisted order (2016)
- 20th-century U.S. commissions from Jones (2002):

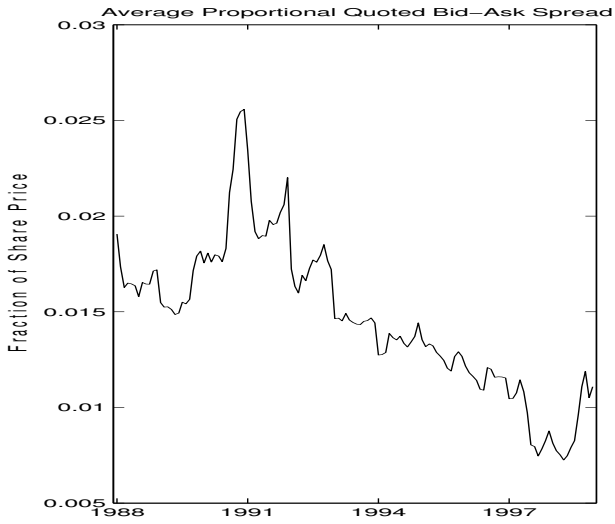
Figure 3. Average commissions on round-lot transactions in NYSE stocks
(based on fixed schedule pre-1968 and member commission revenue thereafter)



2. **Bid/Ask Spread**

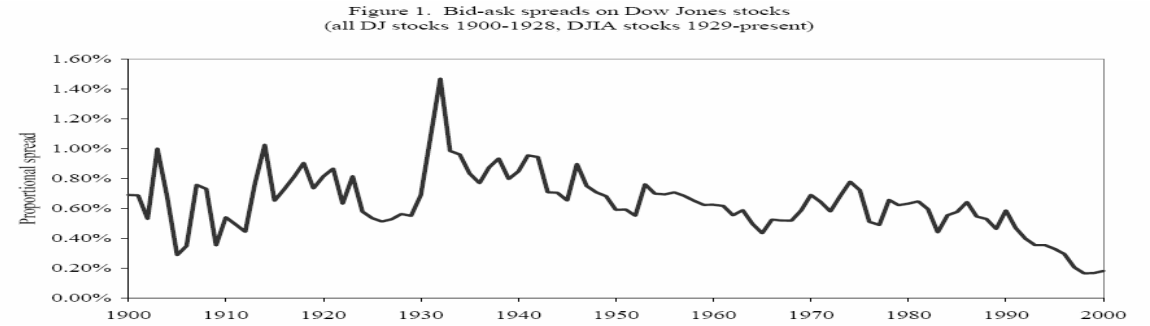
- Bids and asks are prices posted by the dealer at which one can trade a given number of shares
- You can buy from a dealer at the ask (e.g., \$51) and sell to the dealer at the bid (e.g., \$49)
  - Sometimes you can even trade inside the spread; this is called *price improvement*
- Bid-ask spreads for stocks have been falling steadily
  - Average bid-ask spreads across all NYSE stocks (Chordia, Roll, and Subrahmanyam, 2000):



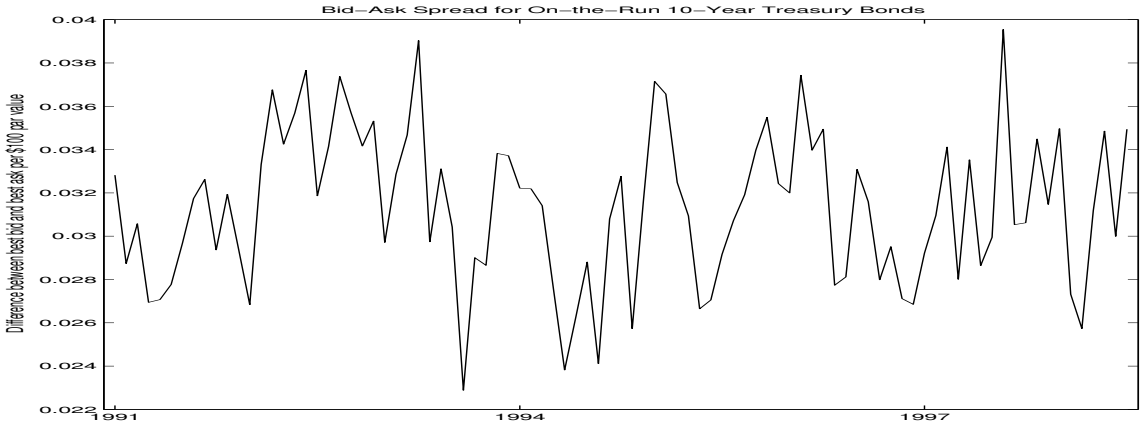


  - The sharp fall in 1997: Trading in sixteenths (instead of eighths) began on June 24, 1997.
  - Another sharp fall in 2000/2001: Trading in decimals began on August 28, 2000, and was fully implemented on January 29, 2001.
  - On both occasions, quoted depth dropped, too

- 20th-century stock spreads from Jones (2002):



- The bid-ask spread today is typically less than 0.1% of price for the average stock
  - This is a "round-trip" cost: the cost of buying the stock and then selling it again
- What determines % bid-ask spreads for stocks?
  - Price (-), Volume (-), Volatility (+)
  - Small stocks have bigger spreads than large stocks
- Treasury bond bid-ask spreads are lower (from Chordia, Sarkar, and Subrahmanyam, 2005):



  - 1-year T-bill is even more liquid: average bid-ask spread in 1996-2000 was 0.52bp (0.0052%)

3. **Price Impact**

- If you trade only a small amount (smaller than quoted depth), you can trade at the bid or ask
- Bigger trades change the bid/ask spread
  - Pushing the price up when buying
  - Pushing the price down when selling
- Facing a large order, the market maker may
  1. think you have private info about the stock
  2. face imbalance in his/her inventory.

  Thus, the market maker will change the price to be rewarded for bearing these two risks. Price impact is like a "hidden" bid/ask spread for large orders.
- Price impact is often followed by a *price reversal*
  - This is how the market maker is rewarded for supplying liquidity. The extent of the reversal depends on whether the trade was motivated by private info that later becomes public.
- Primary determinant of market liquidity. When people say "liquidity has dried up", they mostly mean price impact has gone up.
- Small players care mostly about commissions and bid-ask spread; large players about price impact

4. **Opportunity Cost**

- To mitigate price impact, you can patiently trade in small increments instead of one big trade
- But while waiting, the price can turn against you
  - If you are trying to buy because you think the stock is cheap, it may no longer be cheap by the time you buy the desired amount
- The opportunity cost can be large, especially for strategies based on private information

5. **Short sale costs**

- To short a stock, you borrow it and then sell it.
- You can't use all of the short sale proceeds; some stay deposited with your broker as collateral.
- The interest rate that you earn on that deposit is called the *rebate rate*. This rate is essentially the price that equilibrates supply and demand in the securities lending market.
- If the stock is easy to borrow, the rebate rate is a few basis points below the Fed funds rate.
- If the stock is difficult to borrow, the rebate rate can even be negative (i.e., instead of earning interest on your deposit, you pay a daily fee).
- Stocks that are expensive to borrow are said to be "hot", or "on special."

Effect of Liquidity on Investment Strategies

- Strategies that look good on paper may be worthless in reality because of trading costs
- For example, returns on the winer-minus-loser momentum strategy (WML) do not take into account
  - Commissions paid to brokers
  - Differences between closing prices and trading prices
    - Bid/ask spread
    - Price impact
  - Cost of shorting loser stocks
  - Cost of running the operation (e.g. paying traders)
- The gap between the pre-cost hypothetical return and the actual return earned by a strategy can be large
  - This gap is called the *implementation shortfall*
- As a rough calculation, your return is reduced by turnover times total roundtrip trading cost per trade
- How are **momentum** profits affected by liquidity?
  - Are past winners less liquid than past losers?
    - No. Winners tend to be bigger and more liquid.
  - Momentum profits are actually larger when the long-short position is constructed among more liquid stocks (Lee and Swaminathan, 2000)

    - * So momentum is not a simple liquidity effect
    - * See later how momentum relates to liquidity risk
  - Grundy and Martin (2001) compute the break-even level of round-trip transaction costs at which momentum profits drop to zero: 1.77%
  - Korajczyk and Sadka (2004) estimate the price impact induced by trading on long-only momentum
    - * For each stock/month, they estimate price impact from two different regression models using intra-day data, and adjust momentum profits
    - * Find that up to $5 billion could be invested in some momentum strategies before profits vanish
    - * Their estimates seem conservative because they assume all rebalancing is done at once (i.e., zero patience in executing trades)
  - Frazzini, Israel, and Moskowitz (2015) argue that momentum's capacity is much larger: $56 billion
    - * Analyze in-house trade-by-trade cost data
    - * Find that optimized trading costs are much smaller than previously estimated

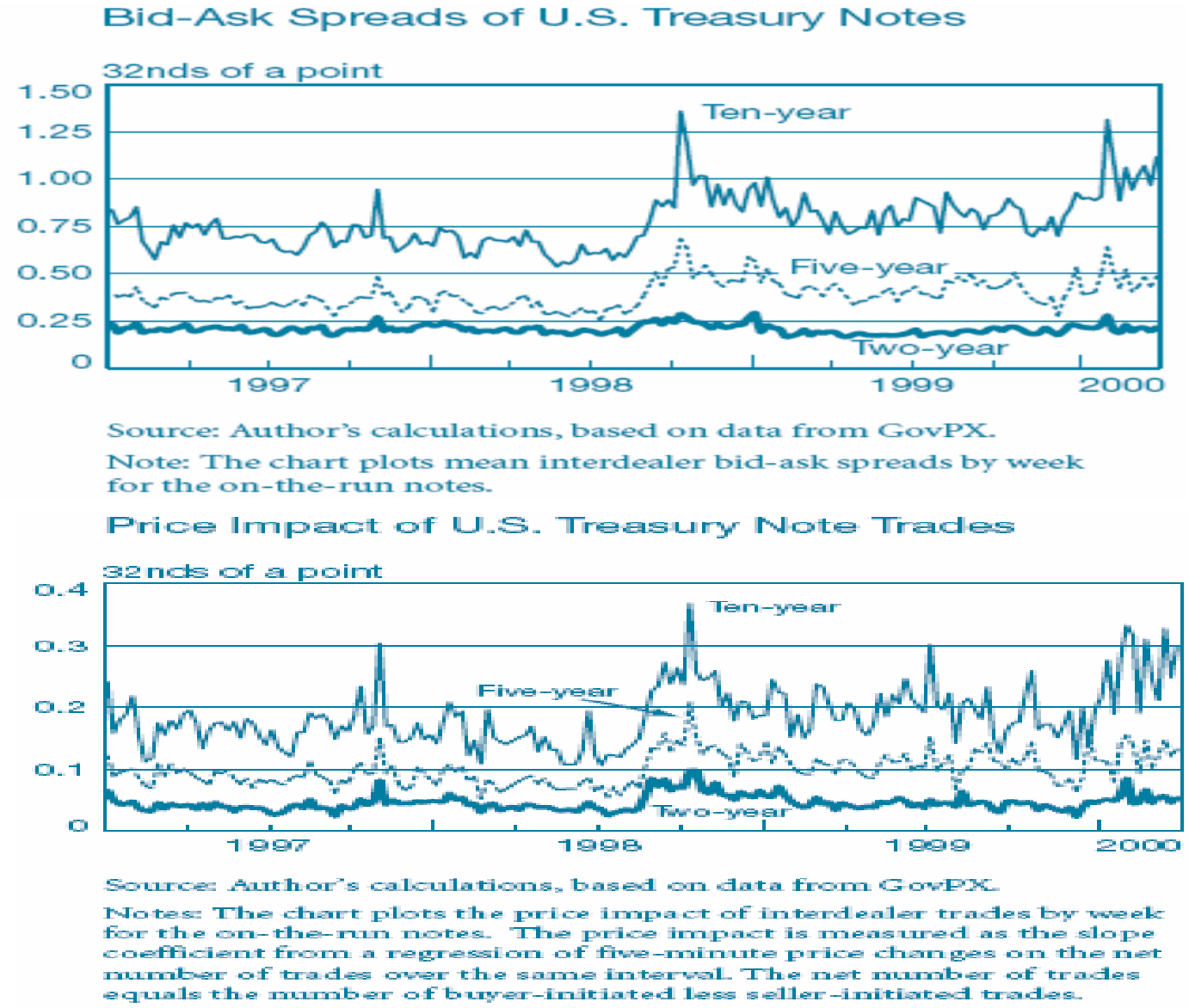
- Case study:
  Yale University Investments Office: February 2011

Effect of Liquidity on Asset Prices

- Liquidity is an attractive feature. You pay for it.
  - Demanders of liquidity pay a premium.
  - Suppliers of liquidity earn a premium.
- Liquid assets have higher prices and lower expected returns than otherwise identical illiquid assets. The difference in expected returns is a *liquidity premium*.
  - In the bond market, on-the-run Treasurys have lower yields than off-the-run Treasurys (by 1-25bp)
    - On-the-run: newly issued, e.g. 10-year bond
    - Off-the-run: previously issued, e.g. 9.5-year bond
    - Average yield spread in 1996-2000: 5.6bp
  - In the stock market, least liquid stocks have higher average returns than most liquid ones (by 1-4%)
    - Empirically shown by Amihud and Mendelson (1986), Brennan and Subrahmanyam (1996), etc.
    - Size effect is to some extent a liquidity effect
- Who should hold illiquid assets?
  - Long-term investors. Short-term investors should hold liquid assets. (Amihud and Mendelson, 1986)
- Back to the case study

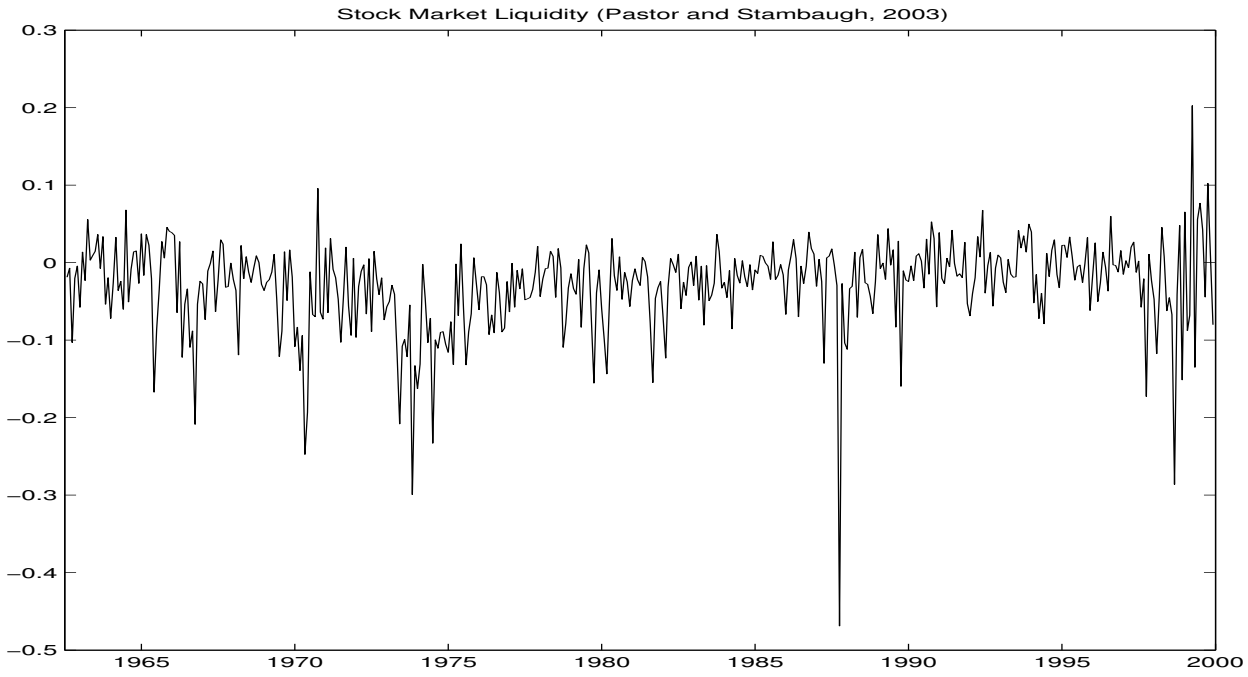
Time Variation in Liquidity

- How does **bond market liquidity** vary over time?
  - Treasury bond liquidity from Fleming (2003):



  - Note the decline in bond market liquidity in the fall of 1998 – we'll get back to it soon

- How does **stock market liquidity** vary over time?
  - Pastor and Stambaugh (2003) measure temporary price impact associated with large trades
  - For each stock, regress tomorrow's excess return on today's excess return times signed trading volume
  - Average the slope coefficients across all stocks



  - Biggest liquidity shocks: Oct 1987 and Sep 1998
    - Extended data show big shocks in 2007 and 2008
  - When stock prices fall, liquidity falls as well
  - Low liquidity often coincides with high volatility
    - Correlation between stock market return volatility and innovations in liquidity is negative

  - ∗ When market risk goes up, market makers may become less willing to trade with you (less willing to hold inventory, and more worried about asymmetric information), so liquidity declines
- Explore the properties of time-varying liquidity in more detail in Assignment 6!

• **Example:** October 19, 1987 stock market crash

	S&P	% Change	NYSE Share Volume	Signed Volume
15-Oct-87	298.08	-2.3%	263 million	-263
16-Oct-87	282.70	-5.2%	339 million	-339
19-Oct-87	224.84	-20.5%	604 million	-604
20-Oct-87	236.83	5.3%	608 million	608
21-Oct-87	258.38	9.1%	449 million	449
22-Oct-87	248.25	-3.9%	392 million	-392
23-Oct-87	248.22	-0.0%	246 million	-246

- Liquidity evaporated as prices were falling.
  - ∗ One story is that market makers stopped providing liquidity after they ran out of capital.
- High trading volume. Large price impact.
  ⇒ High volume does not mean high liquidity!
- "On the futures exchange, order flows that might have moved the market by at most a tick or two the week before were moving the market by 10 or 20 times that amount." (Grossman and Miller, 1988)

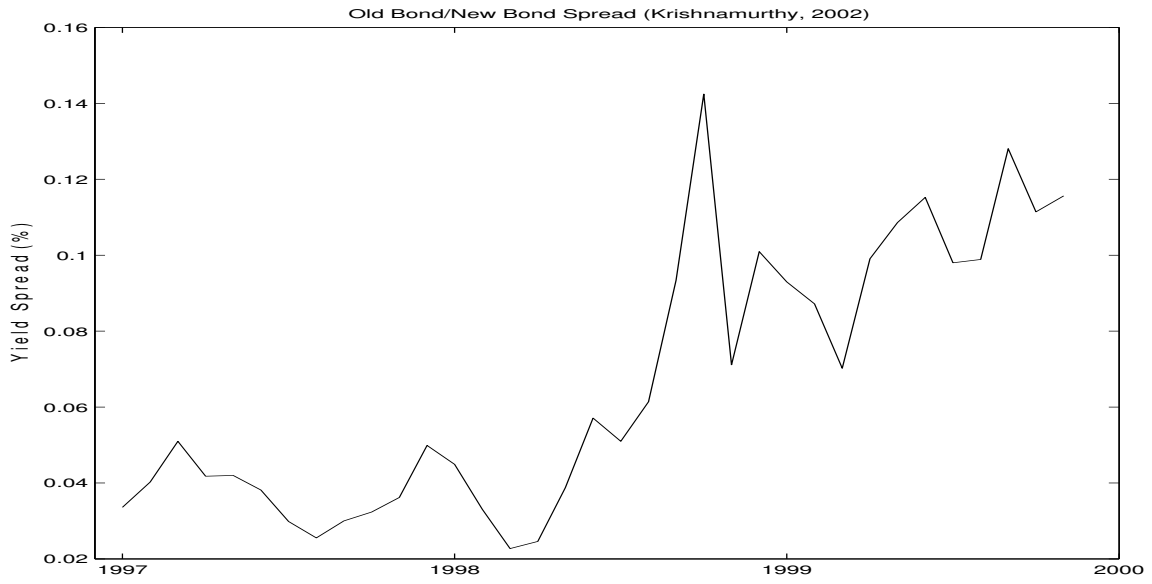
- Volume as an indicator of price impact
  - If you see high volume while the price is going up, this could mean temporary price impact due to a lot of buying. The market makers ran out of inventory, did not wish to take a large short position against the buyers, so the price rose to induce some existing holders to sell.
  - Liquidity-supplying trading strategy:
    Buy when volume is high and price declines.
    Sell when volume is high and price rises.
  - Campbell, Grossman, and Wang (1993) show that there is a tendency for the market to reverse itself the next day when volume is high today.
  - Chordia, Roll, and Subrahmanyam (2002) show that this tendency for the market to reverse is especially strong after days in which prices fall and there are more sell orders than buy orders

- **Example:** May 6, 2010 "flash crash"

- Chordia, Sarkar, and Subrahmanyam (2005) show that the liquidities of the stock and bond markets as a whole are significantly correlated

Flight to Liquidity

- Occasionally, investors suddenly prefer to hold highly-liquid securities rather than less-liquid securities
- In these so-called *flights to liquidity*, some assets (e.g., emerging market bonds) lose value and liquidity, while safe havens such as T-bills gain value
- **Example:** "In August 1998, after the Russian government had defaulted on its debts, liquidity suddenly evaporated from many financial markets, causing asset prices to plunge." (The Economist, Sep 25, 1999)
  - The spread between the yields of the on-the-run and off-the-run 30-year Treasury bonds:



  - These are monthly averages; within October 1998, the yield spread briefly touched 0.25%!

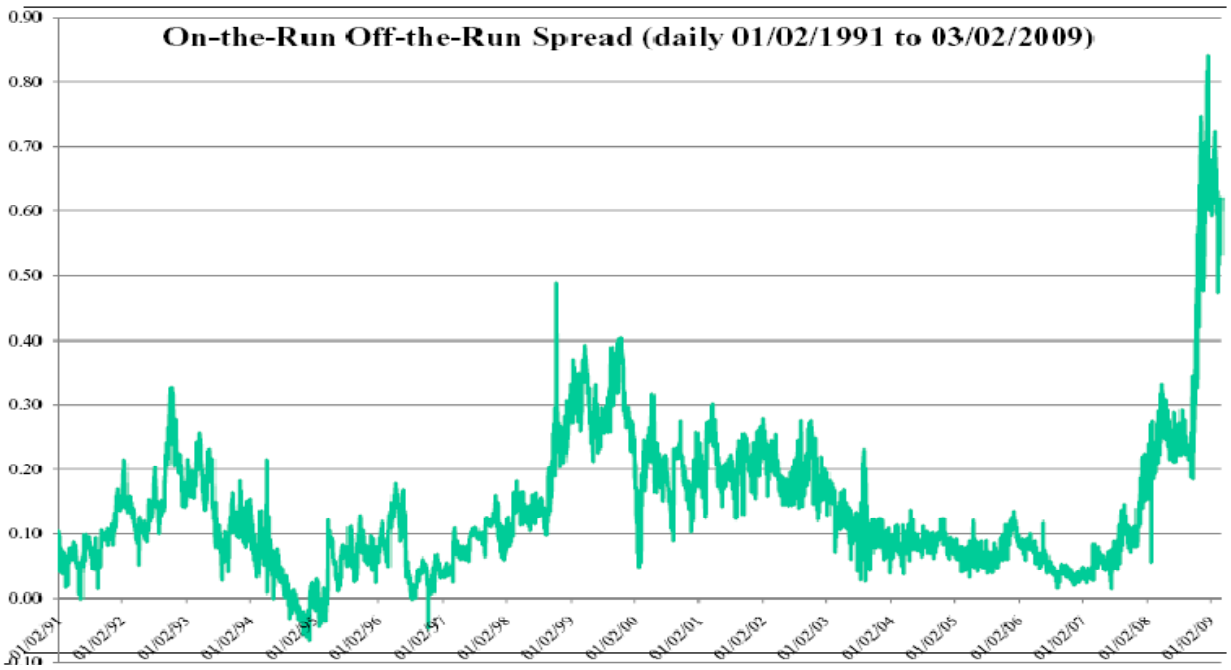
  - Bid-ask spreads and price impact rose dramatically, too (see the Fleming (2003) figures earlier)

- The 1998 crisis showed that not only the level of liquidity but also its fluctuations matter!

> "The possibility that liquidity might disappear from a market, and so not be available when it is needed, is a big source of risk to an investor." (The Economist, Sep 25, 1999)

The liquidity crisis of 2007–2008

- The on/off spread for 10-year Treasurys:



- Makes the 1998 crisis look tame!

- Liquidity premia went up sharply during the crisis
  - **Example:** Munis versus Treasurys
  - **Example:** Goldman's government-guaranteed bonds
  - **Example:** TIPS versus Treasurys
- Liquidity improved in Q1 2009
- Many market participants underestimated liquidity risk prior to the crisis
- Popular strategies: Long something illiquid, short something liquid, earn the liquidity premium
  - **Example:** SIVs
    - Assets less liquid than liabilities
  - **Example:** Deutsche Bank
    - Buy corporate bonds, hedge with CDS
- Such investment strategies are fragile and particularly vulnerable to systematic liquidity shocks
  - Selling beta as alpha

- Case study: Fixed Income Arbitrage in a Financial Crisis: U.S. Treasuries in 2008

Liquidity Risk

- When liquidity evaporates from the market, stocks as a group are hit, but some stocks are hit more than others ⇒ Different stocks face different *liquidity risk*
- Can we diversify liquidity risk?
  - No. Liquidity exhibits *commonality*. (Liquidity is correlated across stocks.) When one stock becomes illiquid, many other stocks become illiquid at the same time. Liquidity risk is *systematic*.
  - Commonality in liquidity was first documented by Chordia, Roll, and Subrahmanyam (2000)
- A *liquidity factor* (Pastor and Stambaugh, 2003):

$$R_{i,t} - R_f = \alpha_i + \beta_i^M MKT + \beta_i^S SMB + \beta_i^H HML + \\ + \beta_i^L LIQ + \epsilon_{i,t}$$

- In this four-factor model (FF+liquidity),

$$\mathrm{E}(R_{i,t}) = R_f + \beta_i^M \lambda_{MKT} + \beta_i^S \lambda_{SMB} + \beta_i^H \lambda_{HML} + \\ + \beta_i^L \lambda_{LIQ}$$

- Question: Is the liquidity factor priced? Is $\lambda_{LIQ} \neq 0$?
  - Do stocks with higher liquidity betas (β_i^L) have higher expected returns?

– Yes! Stocks whose returns are more sensitive to aggregate liquidity have higher average returns, even after controlling for FF factors and momentum

Results for Value-Weighted Portfolios Sorted on Predicted Liquidity Betas

	1	2	3	4	5	6	7	8	9	10	10–1
					Jan 1966 – Dec 1999						
Liquidity beta	-5.75	-6.54	-4.66	-3.16	0.90	-0.63	-0.86	0.68	2.44	2.48	8.23
	(-2.22)	(-2.98)	(-2.59)	(-2.18)	(0.69)	(-0.54)	(-0.68)	(0.52)	(1.77)	(1.35)	(2.37)
CAPM alpha	-5.16	-1.88	-0.66	-0.07	-1.48	1.48	1.22	1.38	1.68	1.24	6.40
	(-2.57)	(-1.24)	(-0.56)	(-0.08)	(-1.80)	(1.93)	(1.52)	(1.72)	(1.93)	(1.01)	(2.54)
FF alpha	-6.05	-3.36	-2.15	-1.23	-2.10	0.78	0.86	1.41	1.90	3.18	9.23
	(-3.77)	(-2.47)	(-1.93)	(-1.37)	(-2.61)	(1.08)	(1.11)	(1.76)	(2.22)	(2.82)	(4.29)
4-factor alpha	-5.11	-1.66	-1.02	-0.76	-1.61	0.91	0.76	1.55	1.34	2.36	7.48
	(-3.12)	(-1.23)	(-0.91)	(-0.83)	(-1.96)	(1.22)	(0.96)	(1.88)	(1.54)	(2.06)	(3.42)

- What kind of stocks have high liquidity betas?
  - E.g., the smallest and least liquid stocks

Portfolios Sorted on Market Capitalization

	1	2	3	4	5	6	7	8	9	10	1-10
Market cap ($m)	13.00	23.85	38.13	57.34	84.98	129.90	206.61	373.89	837.34	17068	
Liquidity	-3.35	-3.16	-1.47	-1.87	-1.48	-1.14	-0.92	-0.46	-0.19	-0.01	
Liquidity beta	5.26	3.84	1.95	-0.42	0.34	-1.13	-0.48	-1.02	-1.60	0.17	5.09
	(2.57)	(2.46)	(1.52)	(-0.43)	(0.37)	(-1.25)	(-0.54)	(-1.04)	(-1.66)	(0.67)	(2.51)
4-factor alpha	3.01	1.09	0.57	-0.67	-0.75	-0.91	-0.33	-1.05	-0.81	0.50	2.51
	(2.34)	(1.12)	(0.71)	(-1.07)	(-1.30)	(-1.64)	(-0.61)	(-1.73)	(-1.34)	(3.14)	(1.96)

- Since PS, others have found liquidity risk being priced in various markets using various measures of liquidity
  - Acharya and Pedersen (2005), Bekaert, Harvey, and Lundblad (2005), Liu (2006), Sadka (2006), Korajczyk and Sadka (2008), etc.

  - Sadka (2010) finds a positive relation between hedge fund returns and liquidity betas
  - Franzoni, Nowak, and Phalippou (2012) find evidence of liquidity risk in private equity returns
  - Lou and Sadka (2011) find liquidity risk mattered more than liquidity per se during the 2008 crisis
- Who cares the most about liquidity risk?
  - Short-term investors, who often trade
- Who should hold stocks with high liquidity betas?
  - Long-term investors, who rarely trade

Dealing with Illiquidity

- Strategies to minimize transaction costs
  - Stick to a consistent trading strategy
    * Style switching increases turnover
  - Estimate the cost of waiting (trading slowly)
    * Be patient when following a contrarian strategy or a strategy based on public information
  - Consider alternatives to the exchange floor
    * E.g., dealer markets, dark pools, etc.
  - Minimize the number of orders
  - Do post-trade analysis, see if you could do better

  - Don't let your portfolio grow too big

- Earn the liquidity and/or liquidity risk premiums
  - If you have a long horizon, consider holding illiquid stocks and stocks with high liquidity betas

- Manage liquidity risk carefully
  - Example: If the bond market tanks, bonds with the thinnest market (emerging market bonds, junk bonds, etc.) will become less liquid. If your fund is hit with redemptions, you may have to incur high costs selling these bonds.
  - Hold illiquid assets for a long time, and meet selling needs with liquid assets. When hit with redemptions, sell Treasurys, hold on to illiquid bonds.
  - Problem: doing so will change your liquidity profile. Having sold your liquid assets, you are now even more exposed to liquidity risk than before.
  - One solution: recognize the difference between a bond's *characteristic* of liquidity and its liquidity *beta* (the covariance of its return with macro liquidity). E.g., a bond issued by a financial firm may be relatively liquid but be exposed to liquidity risk because the financial firm is more likely to default during a liquidity crisis. Sell this bond first – doing so is low-cost but reduces your liquidity exposure.

- Read about the liquidity crisis from 1998 and note the many similarities with the recent liquidity crisis

Illiquidity Is Crippling Bond World
The Wall Street Journal
By Greg Ip
10/19/1998

The bond market's biggest worry these days isn't default or interest rates. It's illiquidity that is crippling the very workings of the market.

Illiquidity means it has become more difficult to buy or sell a given amount of any bond but the most popular Treasury issue. The spread between prices at which investors will buy and sell has widened, and the amounts in which Wall Street firms deal have shrunk across the board for investment grade, high yield (or junk), emerging market and asset-backed bonds.

This illiquidity was a big motivator in the Federal Reserve's surprise decision Thursday to trim its target for the federal funds rate by one-quarter percentage point. Bonds rallied Thursday on the move, but declined Friday. The 30-year Treasury bond fell $2.50 per $1,000 face value, pushing up the yield, which moves opposite to price, to 4.978%. The spread between its yield and that on other, riskier bonds narrowed a bit. Liquidity improved only slightly, and will likely take a long time to return to normal, analysts say.

The sharp reduction in liquidity has preoccupied the Fed because it is the lifeblood of markets. A security's value can only be determined if it is readily traded. When it isn't, a self-reinforcing cycle can occur: the less a bond trades, the less willing an investor is to buy it because he's less confident of selling it to someone else, and thus it trades even less. Illiquid bonds must offer extra return as compensation.

Liquidity is primarily provided by Wall Street "market makers" who commit their own capital to buy or sell bonds from customers, charging a spread between the bid and offer price as compensation for the risk they assume while looking for an offsetting customer.

In recent weeks, many Wall Street desks have been cutting back on the size of the trades they'll make, are quoting much wider bid-offer price spreads, or are not quoting markets at all, institutional investors say.

"There clearly is a weakness in terms of making markets," says Helen Peters, head of Scudder Kemper Investments' global bond group. "I'd have to assume that, given the losses of various firms, they're not willing to put their capital at risk and thus they're less likely to be taking large positions."

Harry Resis, a high-yield bond fund manager at Scudder Kemper, says many dealers have stopped quoting both bids and offers in high-yield or "junk" bonds.

"If you called them before the Fed cut, they'd sell what they were long and bid only for what they were short." A short position means borrowing and then selling a bond, expecting to replace it later at a lower, profitable price. "Some firms will quote two-sided markets," but the bid-offer spreads are very wide, he says. "In fairness to the dealers, to make a tight, low-margin market when risk is so enormous is not something you see very often."

Jude Driscoll, head of high-yield bond trading at Conseco Capital Management, said Friday that while junk-bond yields had not fallen noticeably relative to Treasury-bond yields since Thursday's

rate cut, "I'm seeing more bids. A lot of days all you see is the offering." But he said investors may sell into any rally.

Mr. Driscoll says his desk has seen trading volumes fall 70% or more from normal levels in investment grade, high-yield and asset-backed bonds. Meanwhile, bid-offer spreads have widened drastically, especially on high-yield bonds. For example, Mr. Driscoll says when MacSaver Financial Services, a unit of furniture retailer Heilig-Meyers Co., issued a 10-year bond to yield 1.6 percentage points over Treasury bonds last year, dealers typically quoted bids and offers that were 12.5 cents apart per $100 face value. Mr. Driscoll says when he last checked, with the bond yielding more than nine percentage points more than Treasurys, the bid-offer spread was $10 per $100 face value.

Joe Ballestrino, who manages investment grade corporate bonds for Federated Investors, says typical bid-ask spreads on those bonds have doubled to $1.50 per $100 face value from several months ago, while transactions have dropped to between $3 million and $5 million commonly, from between $10 million and $20 million. There are "lots of offers, not too many bids you'd want to entertain," says Mr. Ballestrino.

The most striking sign of illiquidity is the unprecedented spread between "on-the-run," or most recently issued, Treasury bonds, and those issued just slightly earlier, or "off-the-run." Their credit risk is identical and negligible. The widening thus reflects investors' willingness to accept the on-the-run bond's lower return in exchange for its liquidity. According to Salomon Smith Barney, the 29-year bond has gone from yielding less than 0.05 percentage point more than the current 30-year bond in early August to 0.27 point now, a spread the firm has never seen before. A similar spread has opened up for most Treasury maturities.

This suggests the bond market may have experienced more of a flight to liquidity than a flight to safety. Fed Chairman Alan Greenspan said Oct. 7 that investors snapping up the on-the-run bonds "are basically saying, 'I want out. I don't want to know anything about whether a particular investment is risky or not. I just want to disengage.' And the reason you go into these liquid instruments is that that is the vehicle which enables one to disengage as quickly as possible."

The on-the-run bond's liquidity premium hurts all other markets because dealers typically sell that bond short to hedge other bond holdings. The benchmark's rising premium has made such hedging riskier and dealers all the more reluctant to commit capital. Also, investors fear that hedge funds, such as Long-Term Capital Management, may have owned a lot of off-the-run bonds that they now might sell.

Thursday's Fed move trimmed the on-the-run bond's liquidity premium a tiny amount. Janet Showers, Salomon's government bond strategist, says, "I don't think the Fed easing 0.25 percentage point will make dealers less risk-averse. But it makes the longer-term money in the market feel more comfortable that the Fed is not going to sit by and let things deteriorate. It gives them confidence they can start returning to the market. If that type of customer does return to the market, that will help flows, and if flows get better, dealers will be more likely to take risk and position more securities."

Dealing with illiquidity takes creativity. Ms. Peters said one portfolio manager recently suggested rather than going through Wall Street, Scudder go to another fund manager and say, "We'd like to buy or sell a large block, what do you have?" Muses Ms. Peters, "We're getting to a barter economy."

Fund managers report that in many cases, Wall Street has gone from trading as principal to trading as agent, much as listed stocks typically do. Rather than buy bonds from a client, they offer to "work the order" over several days, matching seller to buyer. ♠