

# European Corporate Bond Markets: Transparency, Liquidity, Efficiency



Richard Portes (London Business School and CEPR)

*27 November 2006*

*Brussels, DG ECFIN Workshop on The Future of Corporate  
Financing in an Integrating EU Financial Market*



# Road Map

---

- Transparency and market microstructure
- US experience
- European bond markets
- Empirical evidence from euro-area, sterling, and US corporate bond markets
- Policy implications



# Our study

---

- Interviews with about 30 market participants
- Theoretical modelling
- Empirical study of high-frequency quotes and trades data



# Transparency

---

- What is it?
  - pre-trade: quotes, limit-order book
  - post-trade: prices, quantities, transactors
- When does it matter?
  - When inventory positions can be worked out, *e.g.*, in a lumpy market with little activity
  - When order flow is informative and available to a select number of privileged participants, *e.g.*, when dealers have monopoly power or large client bases in which it is possible to internalise order flow



# MiFID and transparency

---

- Regulators favour more transparency
  - level playing field: competition, fairness
  - monitoring best execution: investor protection
- MiFID could require RMs and MTFs to communicate quotes and publish price and volume of transactions – for OTC trades too – under consideration in the Commission now, for decision in 2007



# Equity markets and bond markets

---

- The market microstructures differ
- Equity markets: asymmetry of information on cash flows
- Bonds: fixed and known cash flows, finite lives, more likely to be held for long run
- Hence many corporate bonds are illiquid
- Extensive empirical literature on stock market microstructure, very little on bonds



# How could there be *excessive* transparency?

---

- Opacity encourages participation by liquidity providers
- Transparency may reduce dealers' profits to the point where some exit, pushing spreads up – more likely for infrequently traded securities (where fixed costs are therefore relatively high)
- Too much B2B information could reduce incentive to acquire information, hence frequency of requests for quotes, so dealers might actually end up with *less* information
- 'Winner's curse'



# Electronic markets and transparency

---

- Real-time analysis of information from electronic trading platforms could enable market participants to infer impending trader-type and size, hence whether a trader has an unwanted inventory position (so affecting equilibrium amount of information communicated to market)
- Many electronic markets therefore provide less than full transaction information
- Though more opaque, voice communication in repetitive trading (OTC) can develop trust





# Undermining liquidity: the winner's curse

---

- suppose seller puts in RFQ in B2C market
- highest-bidding dealer secures the bonds
- successful dealer seeks to hedge position in B2B market
- underbidders know this and take up contrarian positions
- the more transparent the B2C market, the more difficult it is for successful bidder to hedge
- But high turnover can provide a 'natural veil' – whether it does is an empirical question



# US experience in corporate bond markets

---

- 2002: TRACE imposed post-trade transparency, initially for active bonds, then extended to others
- Reporting time: 15 min. (exception: high-yield bonds with less than 1 trade per day: 2 to 4-hour delay)
- Edwards, *et al.*: spreads drop by 5 to 10 cents.
- Goldstein, *et al.*: confirms Edwards *et al.* on 2 samples of BBBs: treatment sample post-trade transparent, control sample not. Spreads tighter in transparent sample, though number of trades not larger
- Spreads increase with maturity and default risk (consistent with theory) and bond complexity, decrease with trade size (unlike for stocks)



# European corporate bond markets

---

- OTC dealer market
- Institution wants to trade a bond:
  - Contact dealers (from 1 to 6)
  - Tell them what (kind of) bond, size and direction
  - RFQ (request for quotes), get quotes, pick the best
- Alternatively calls broker, who finds a match
- Telephone negotiations, complemented by Bloomberg
- Electronic platforms (promising but small market share)
  - Market Axess: replicates telephone system
  - Organizes sequence of mini auctions for customers
  - Reduces search cost and enhances competition

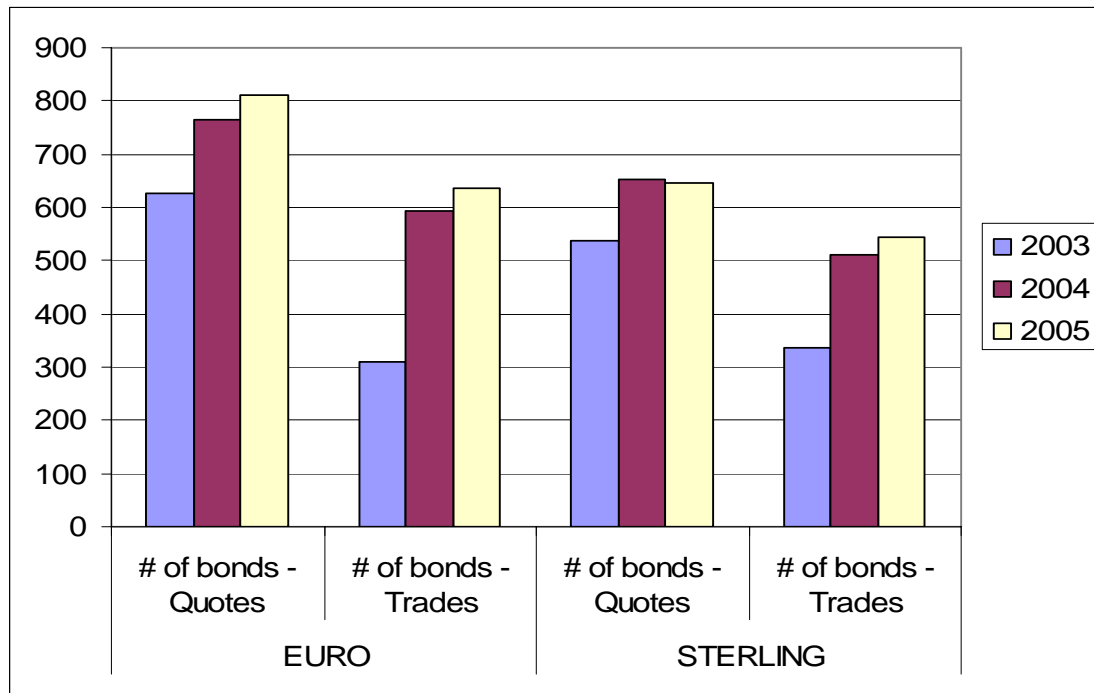


# Corporate bonds: data

---

- International Index Company (IIC)
  - > 600 € bonds, > 500 £ bonds, 2003-2005
  - AAA, AA, A and BBB bonds, all plain vanilla
  - Closing bid and ask quotes (average for 10 large dealers)
- TRAX (subset of IIC sample):
  - > 300 € bonds, > 300 £ bonds, 2003-2005
  - Discard bonds for which missing data on >15% of days
  - All trades: price, direction quantity, time
  - After eliminating outliers: 1,952,244 observations
  - Includes vast majority of professional market, only small fraction of retail trades

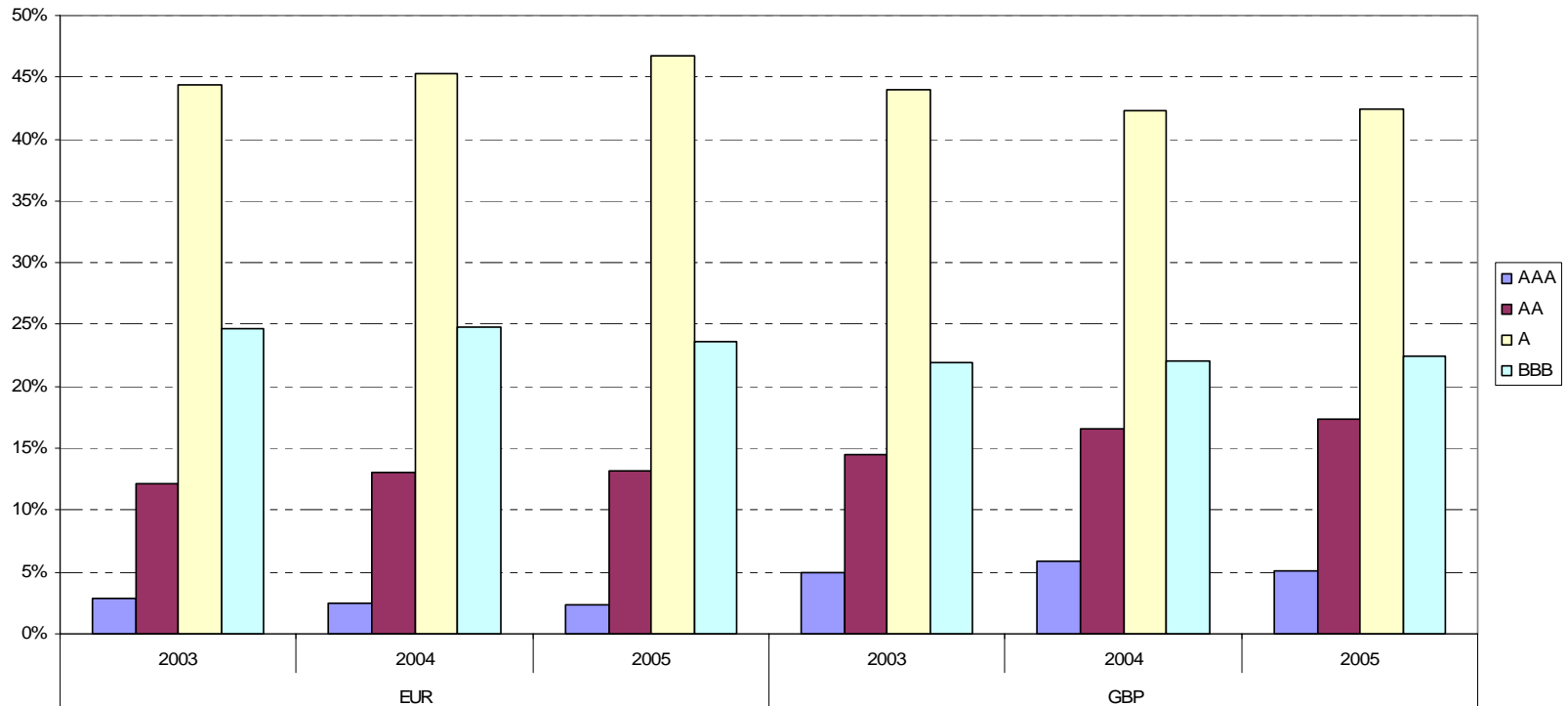
# Number of bonds per year and currency



- Started from IIC/Iboxx index in 2005
- This ruled out bonds issued maturing in 2003 or 2004
- Some bonds issued in 2004 or 2005, not present in 2003
- Hence fewer bonds in 2003.
- Bonds with trades are subsample of bonds with quotes

# Structure of sample by ratings

Quotes



- For all years & currencies, most frequent is A, second most frequent is BBB, very few AAA
- Similar in € and £, similar across years

# Trading activity

Figure 3, Panel A: Median number of trades per day, €

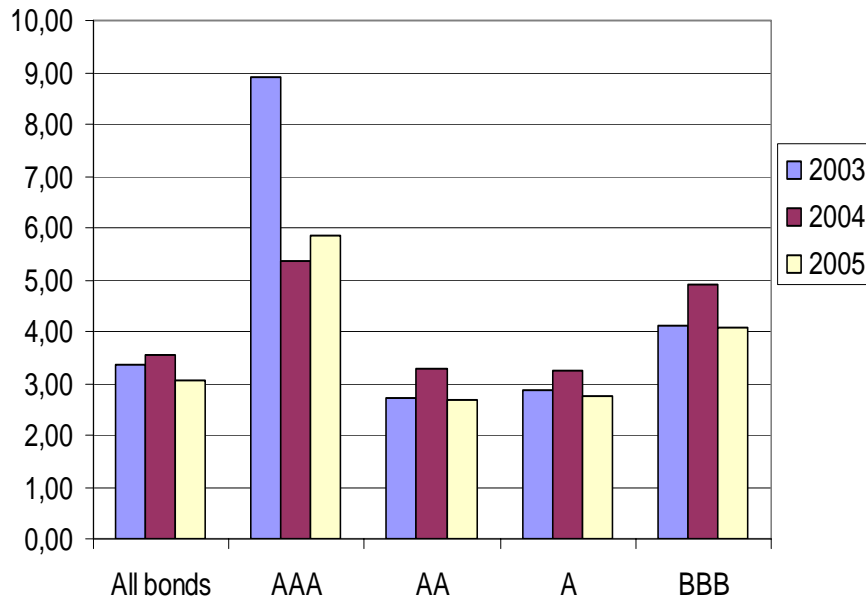
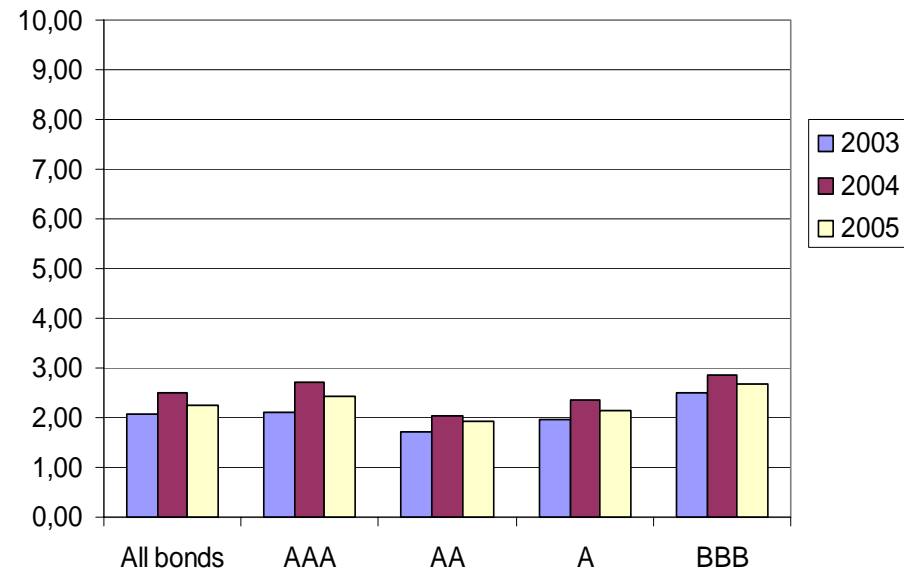
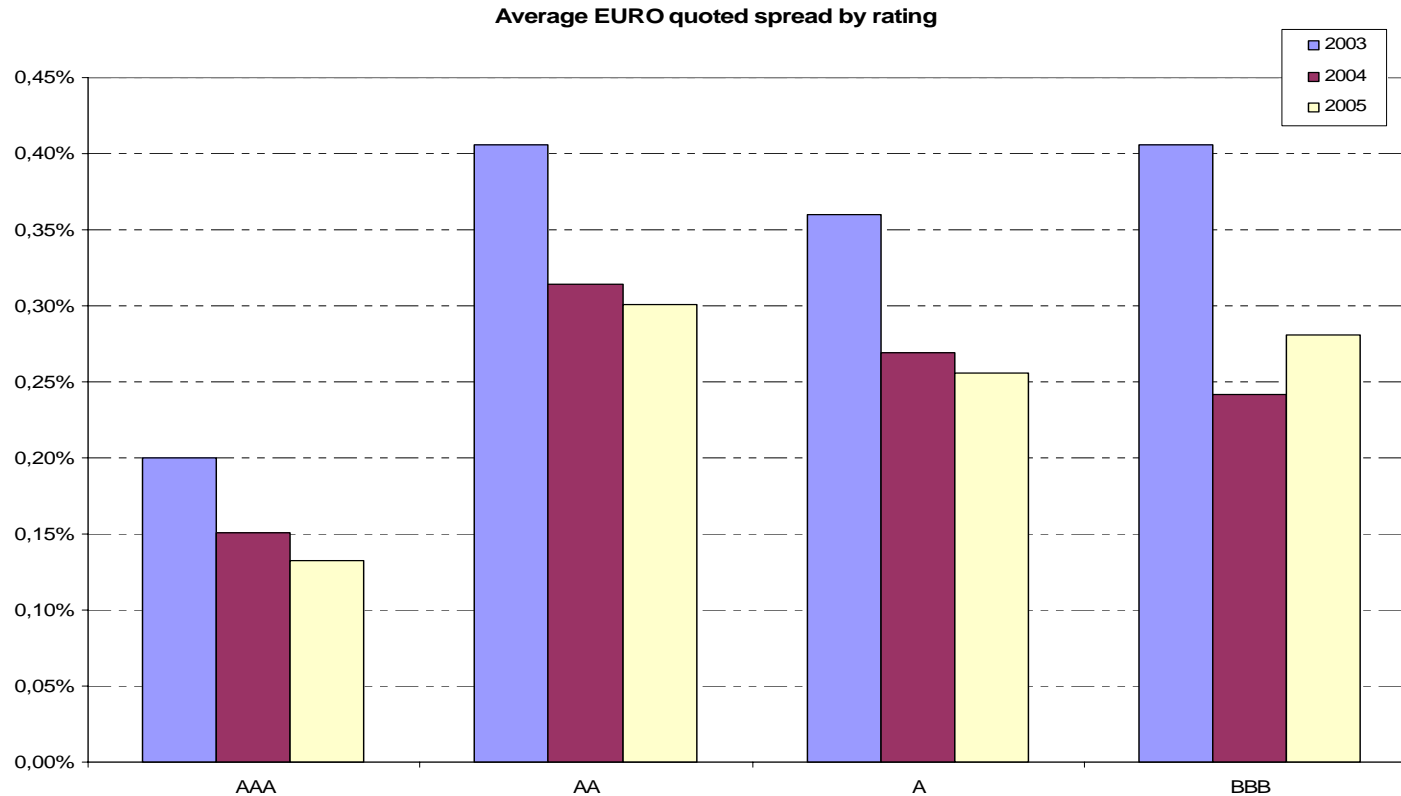


Figure 3, Panel B: Median number of trades per day, £



- Average daily number of trades/bond: 3 for €, 2 for £
- More trading than TRACE: for plain vanilla BBB, Goldstein *et al.* find 1 trade/day (and we don't have retail!)
- Average € or £ volume per bond greater for €-denominated

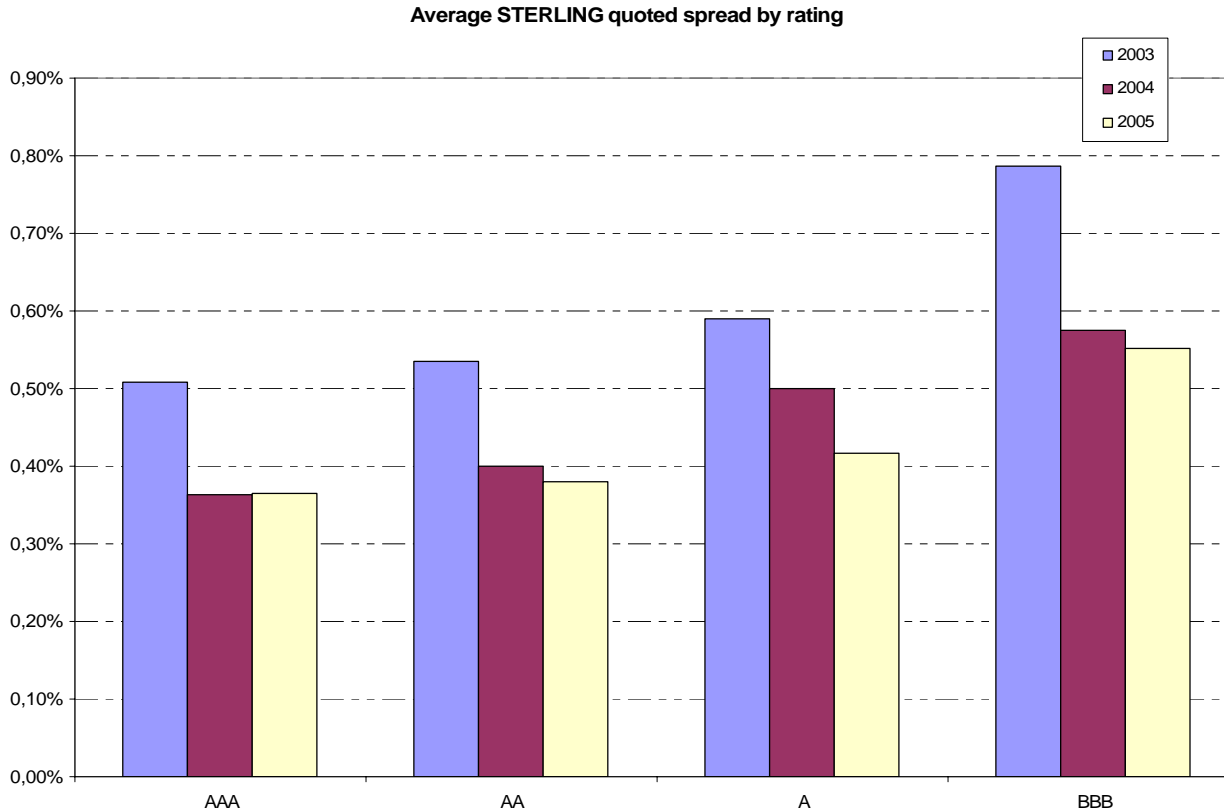
# Quoted spreads for €-denominated bonds



- Bid-ask spreads vary between 0.15% & 0.40%
- Spreads tighter in 2005 than 2003
- Spreads tighter for AAA than other ratings



# Quoted spreads for £-denominated bonds



- Bid-ask spreads vary between .35% & .80%
- spreads on £ bonds greater than for € bonds!
- Spreads tighter in 2005 than 2003
- Spreads increase with default risk



# Stylized facts on *quoted* spreads

---

- Typical bid-ask quote for €-denominated bond in 2005: € 99.87 to 100.13
- Wider for £ bonds, in part because of maturity, but not only
- Quoted spreads increase with credit risk, maturity (as in TRACE)
- Decrease in rating and increase in maturity
  - ⇒ increase in risk
  - ⇒ higher cost of market making: inventory bearing and adverse selection costs



# Tighter *effective* spreads

---

- Average effective spread for €-denominated bonds: 10 cents (i.e., half spread = .05%)
- Larger effective spreads for £: 20 pence
- Tighter than quoted spreads (which reflect average quotes, while effective spreads reflect inside quotes)
- Effective spreads tend to increase with credit risk and maturity and decrease with trade size (as in TRACE data)

# Effective spreads greater for £ (all ratings)

Figure 6, Panel A: Effective half spread, Euro

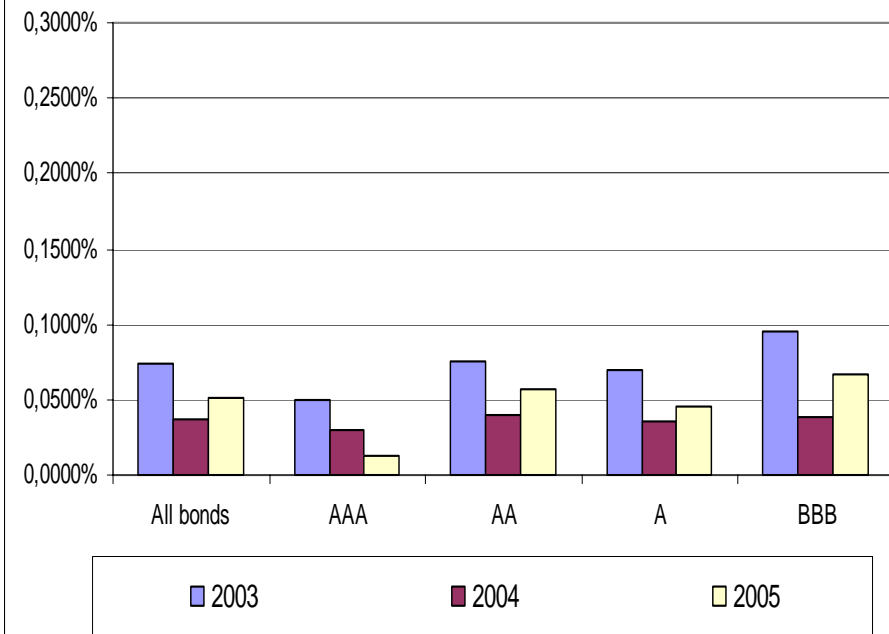
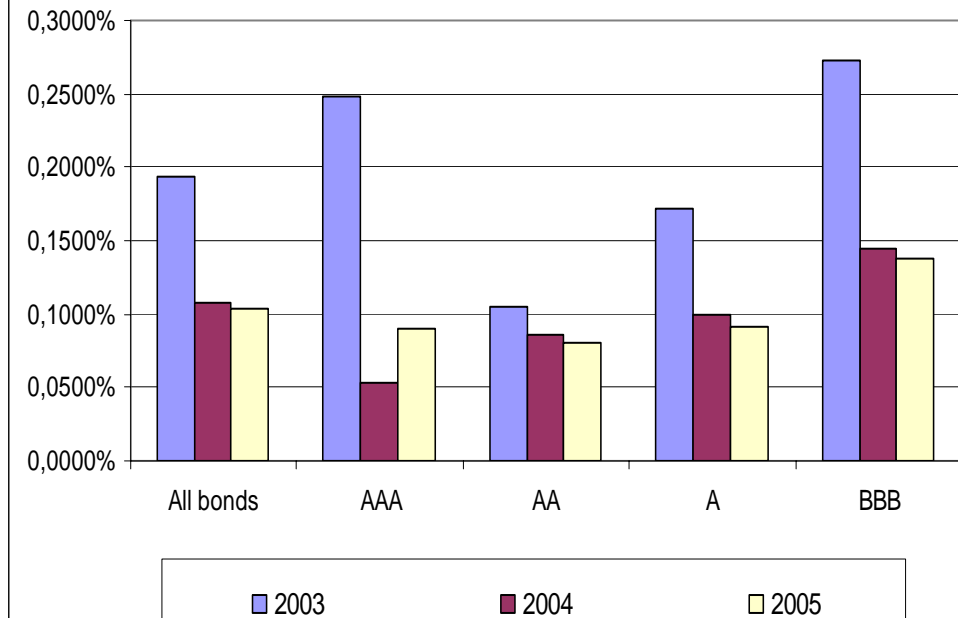
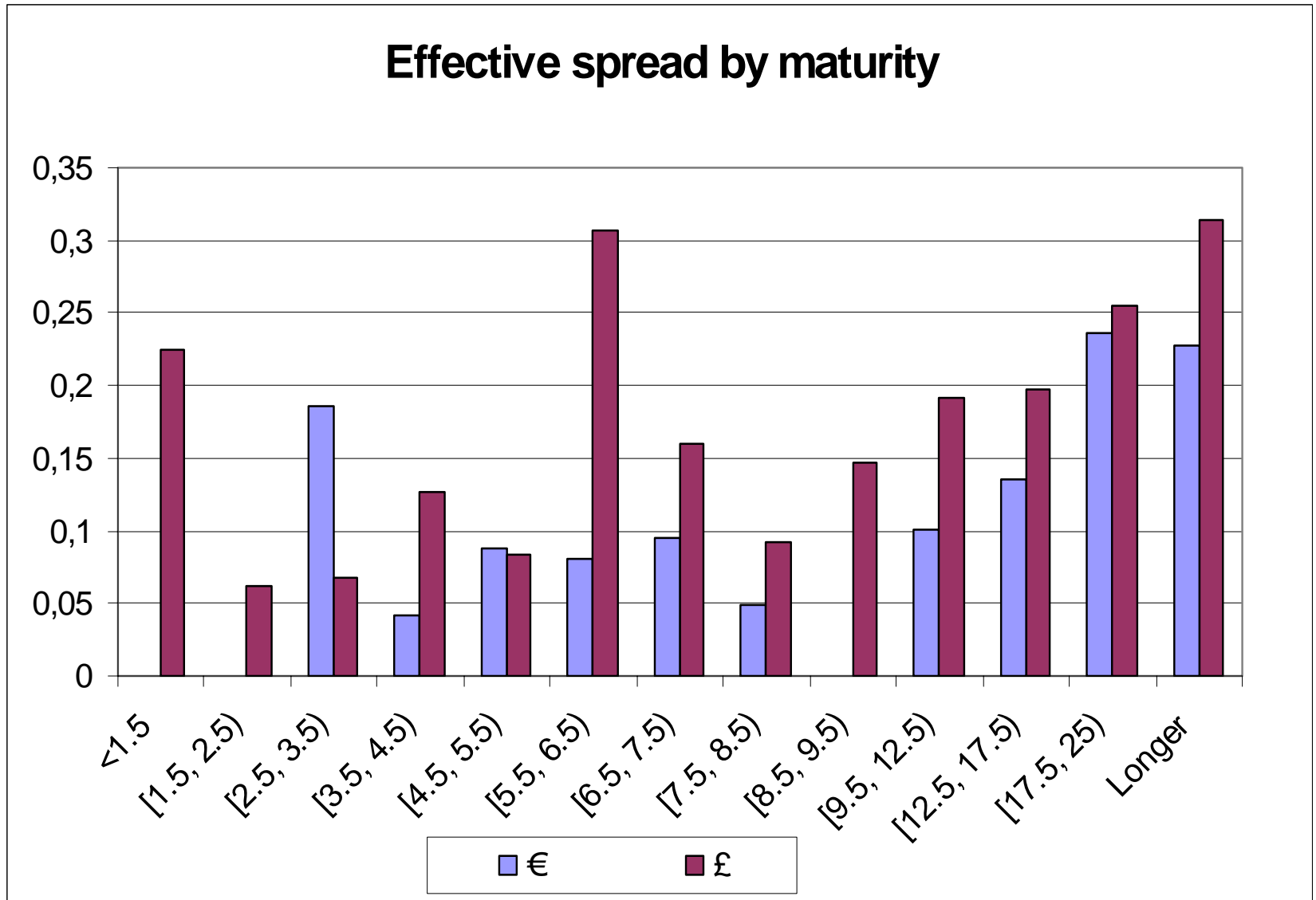


Figure 6, panel B: Effective half spread, Sterling



# Effective spreads greater for £ than for € bonds, for most maturities (2005 data)





# Why is £ market less liquid?

---

- Euro zone rather active
  - Foreigners invest in € zone: greater variety of bonds
  - Eurozone traders invest across € countries
  - Greater competition among traders (see below)
- £ bonds attract more limited number of investors, often buy and hold
  - UK investors in £ market are typically insurance or pension funds (foreign currency limits) or UCITS with buy and hold orientation
  - Limited trading activity/demand for liquidity
  - Limited supply of liquidity (few market makers)



# Comparison with US

---

- For \$ 250,000 to \$1,000,000 trade size, Goldstein *et al.* find half-spread 0.33% before TRACE, 0.18% after
- For size above \$1,000,000, half-spread is 0.22% before TRACE, 0.135% after
- In our sample of € bonds, same period (2003), effective half-spread for size between € 500,000 and € 1,000,000 is 0.053%
- Above one million euros, effective half spread is .049%.
- Controlling for period and ratings, *€ effective spreads substantially lower than for TRACE \$ bonds!*



# Competition to supply liquidity

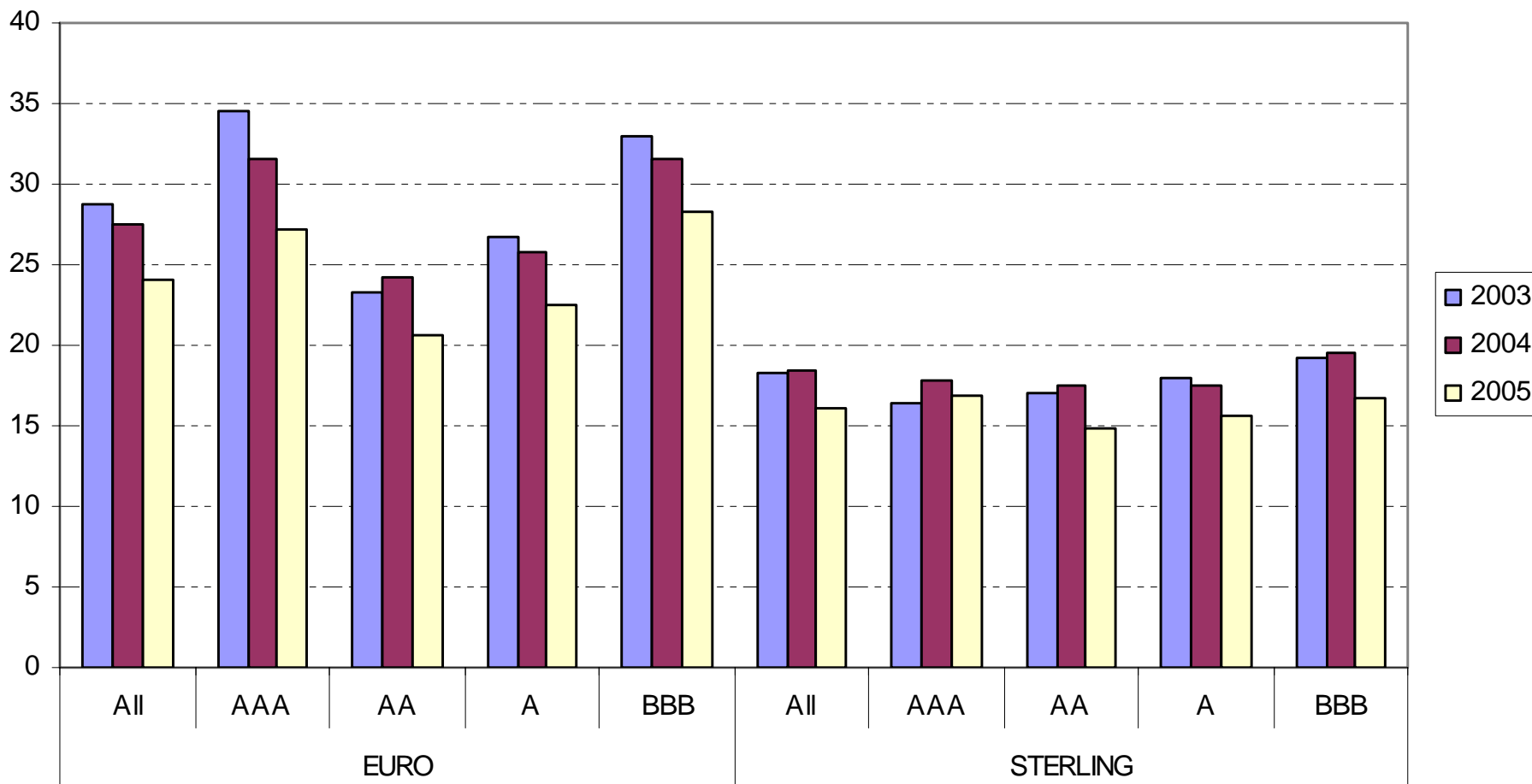
---

- Evidence on spreads and discussion with market participants suggest competition to supply liquidity stronger in € than in £ and in \$
- In the US, 6 banks make most of the market – in € zone, 20 large banks from different countries compete
- Evidence on €-£ comparison: compute for each bond
  - Number of dealers with at least 1 trade
  - Market share (in volume) of most active dealer
  - Market share (in volume) of 3 most active dealers
- We report the average across bonds



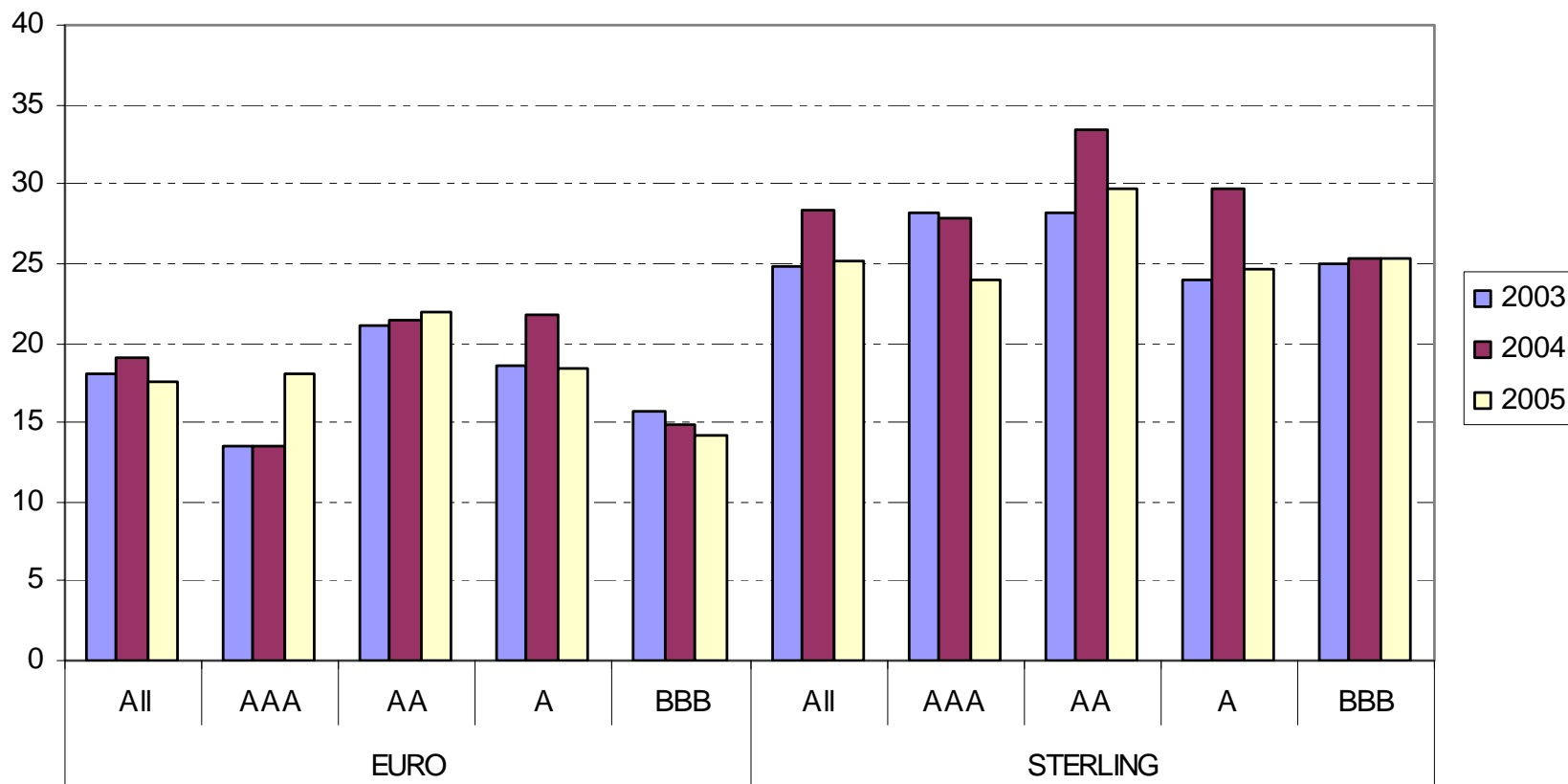
# Number of active dealers greater for €-denominated bonds (25 on average) than for £ (17 on average)

Figure 8: Number of market makers with at least one trade



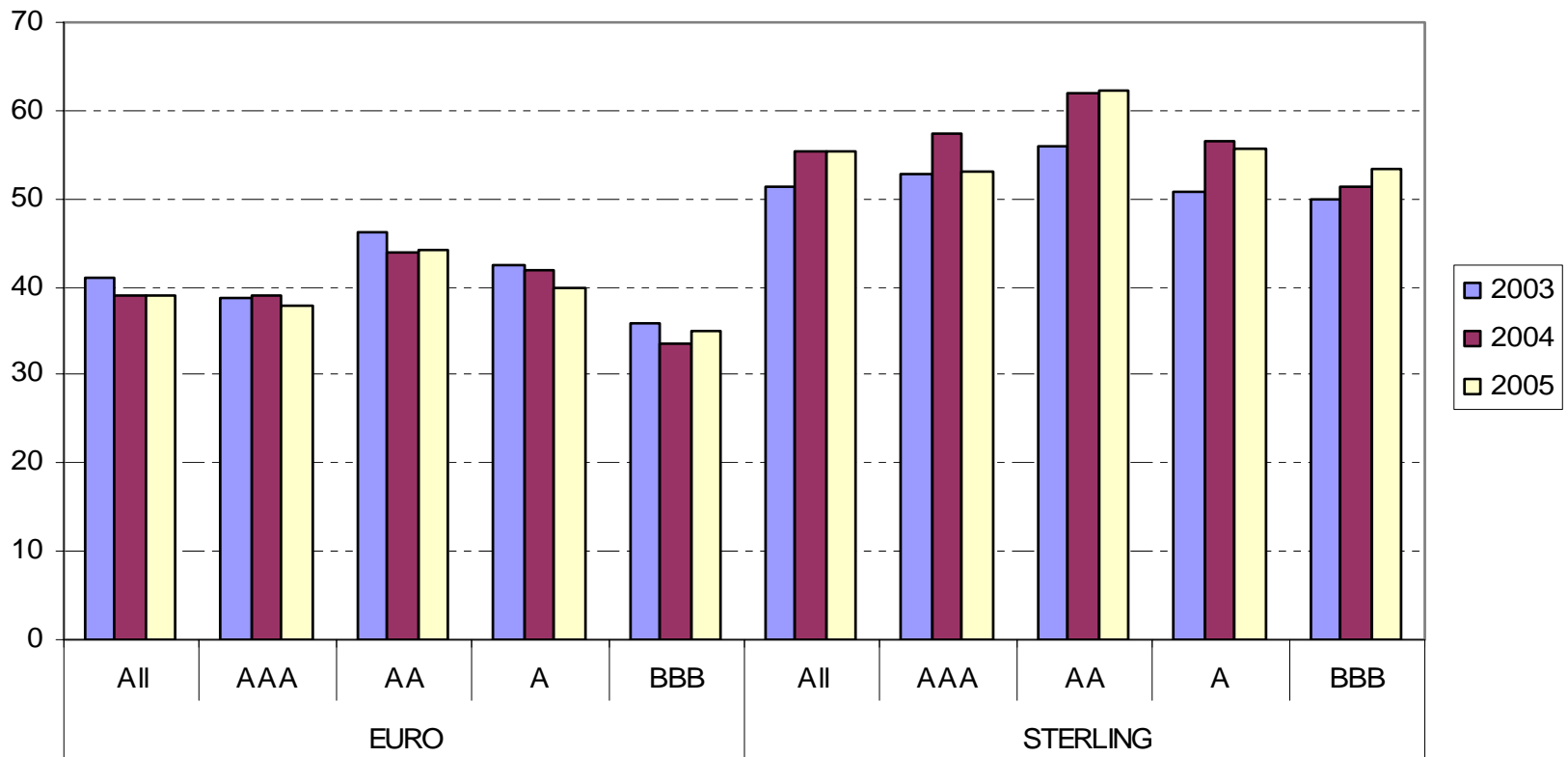
# Market share of most active dealer lower for € bonds (17% on average) than for £ (26.5% on average)

**Figure 9: Market share (%) of the most active dealer**



# Market share of 3 most active dealers lower for € bonds (40% on average) than for £ (53%)

**Figure 10: Market share (%) of 3 most active dealers**





# Information content of trades

---

- Estimate how much midquote increases after customer purchase and by how much it decreases after customer sale
- Average information content: 1 cent for €, 2.2 pence for £
- Significantly different from 0
- But small relative to magnitude of spreads



# Determinants of the information content of trades

---

- In line with theory, greater info content for lower ratings: 1.65 cent for €, 3 pence for £
- Info content greater for £: less activity => less research, fewer analysts following, less widely disseminated information, more information asymmetry



# Information content and transparency

---

- Information content of trades larger and more significant if measured with next day midquote than this day's midquote
- It takes more than one day for market prices to reflect information content of trade
- Likely to stem from limited post trade transparency

Figure 7, Panel A: Information content of trades by transaction size, euro

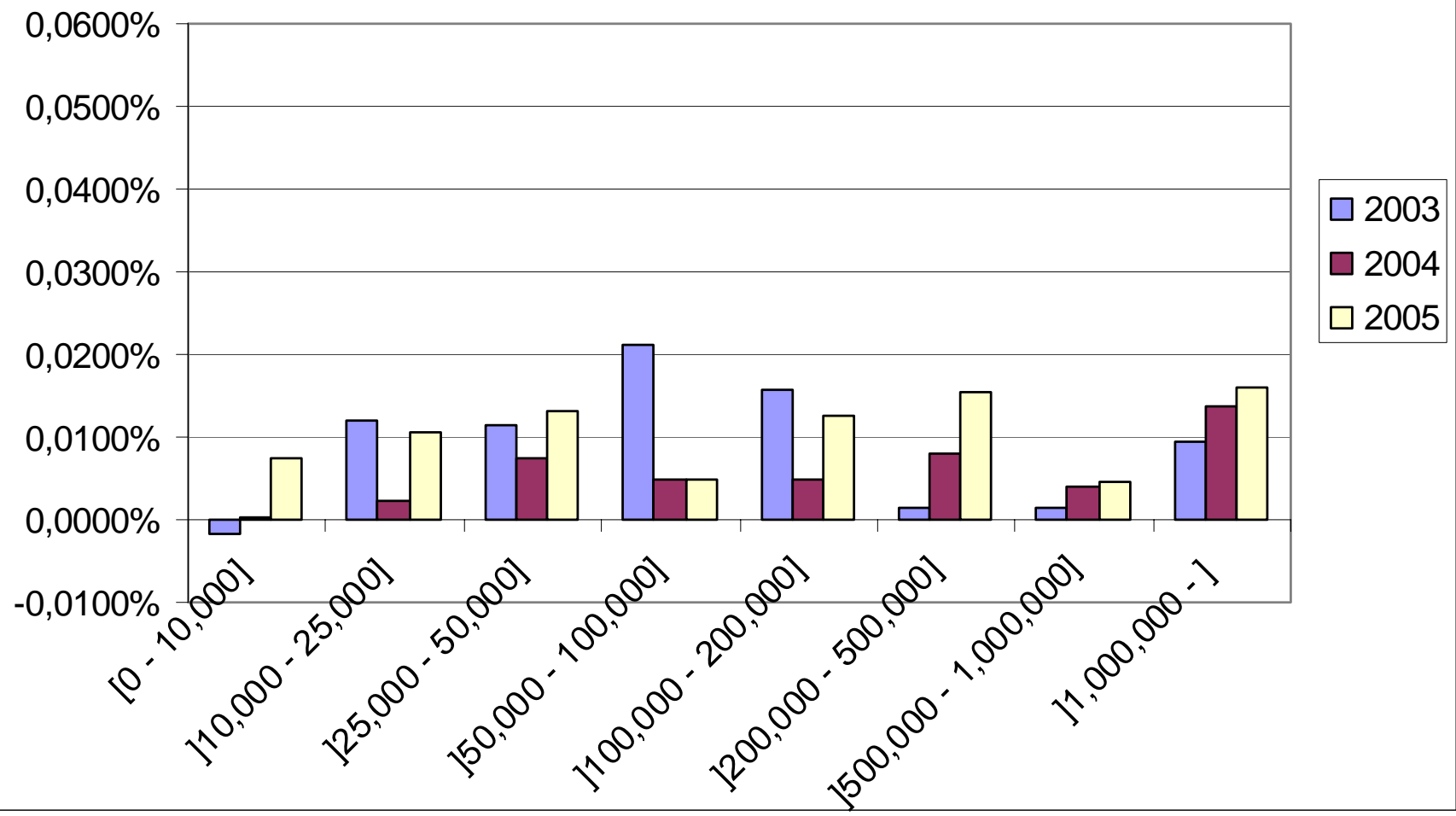
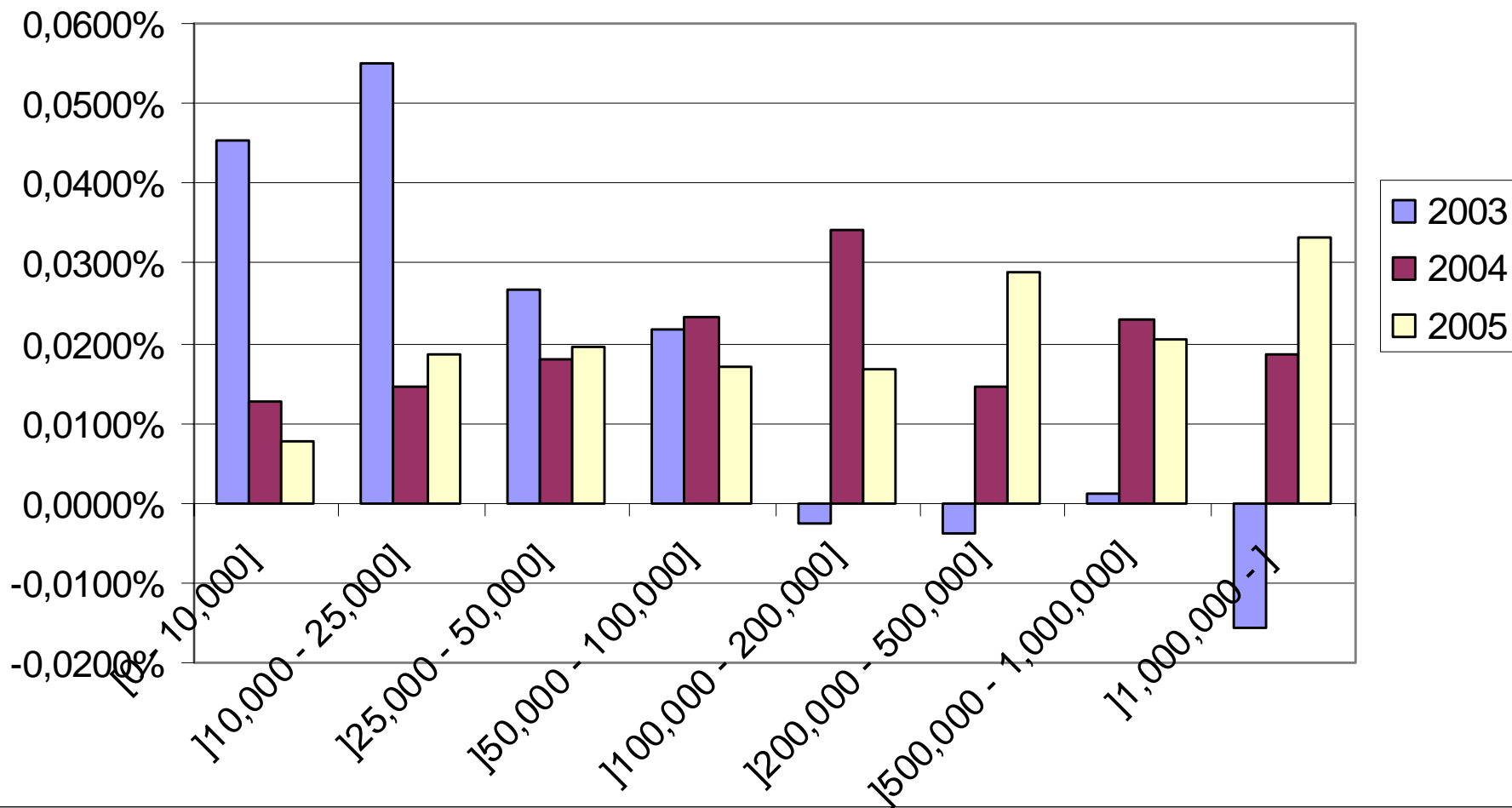


Figure 7, Panel B: Information content of trades, by transaction size, Sterling







# Conclusions: corporate bonds

---

- Determinants of spreads: Inventory risk (default rate, maturity), adverse selection risk (to a small extent), competition (to a large extent)
- More activity and tighter spreads in € than £: larger market, greater liquidity supply – a positive consequence of monetary unification
- Liquidity of euro market exceeds that of US market (even after TRACE): competition in liquidity supply
- Information content of trades impounded in prices after delay: likely stems from opacity



# Policy implications: corporate bonds

---

- UK should join EMU!
- Competition is good!
- Pre-trade transparency could be disruptive: current liquidity already good (in €). Pre-trade transparency would require radical change in market structure
- Post-trade transparency
  - could improve information dissemination and foster competition
  - Risk that dealers would withdraw not serious for relatively active issues and limited transparency
  - Could report yield spreads (but not identity nor size) after delay for small medium trades, longer delay for large trades
  - But impact on spreads not likely to be great