LIBOR, Screening & Reform

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Presentation Outline

- **The "Art" of Screening**
  - What is a Screen
  - Multiple Uses of Screens
  - Screens in Action
- **LIBOR Detection through Screening**
  - Price-fixing
  - Bid-rigging
- **LIBOR Reform**
  - CLIBOR – Committed LIBOR
  - Wheatley Review vs. CLIBOR

Experience: Conspiracies

- **Worked on and developed empirical screens for conspiracies such as:**
  - Bid-rigging, price-fixing and market allocation in pharmaceuticals, gasoline and oil, catering, construction, financial services, and other industries
  - Cheating involving business partners of major institutions
  - Cheating involving brokers and traders of large financial institutions

Experience: Manipulations

- **Worked on and developed empirical screens for manipulations such as:**
  - Inside spreads in major trading exchanges
  - Stock prices
  - Commodity price indices (Platts, NYMEX) and other major fixings
  - Gold, silver, platinum, palladium, and oil futures and spot prices
  - Hedge fund accounts
  - Interest rates
  - Accounting (revenue management, stock options backdating)
  - Insider trading

What is a Screen?

- **A screen is a statistical test designed to identify:**
  - Whether collusion, manipulation (or other type of cheating) may exist in a particular market
  - Who may be involved
  - When it may have occurred

- **Screens use commonly available data such as prices, bids, spreads, market shares or volumes. They compare suspected patterns against appropriate benchmarks**
  - Abrantes-Metz (2011a, 2011b), Abrantes-Metz and Bajari (2009, 2010), Harrington (2008, 2006), Proof of Conspiracy Under Federal Antitrust Laws, Chapter VIII, ABA Editions (2010)

Multiple Uses of Screens

- **Detection**
  - Competition authorities
  - Market regulators
  - Buyers

- **Litigation**
  - Effects analysis: evidence of collusion (or lack thereof)
  - Motions to dismiss, *Twombly*
  - Class certification
  - Damages estimation

Multiple Uses of Screens

- **Pre-Litigation**
  - Leniency application decision
- **Corporate counsel**
  - For internal monitoring, auditing and increased compliance robustness
  - For due diligence process, during mergers and acquisitions
- **Procurement Departments**
  - Monitoring and detection

Evidence *for* and *against*

- **When properly developed and implemented, screens can provide valuable evidence *against* the existence or materiality of alleged anticompetitive behavior, every bit as much as they can provide evidence *for* it**

Screening Strategies

1. **Improbable events**
   - Identify events that are highly unlikely to occur under competition

2. **Control group**
   - Compare a suspected firm's behavior against unsuspected benchmarks in the same or related markets, to identify deviations indicative of possible collusion

Properties of a Good Screen

1. Low false positives and negatives
2. Easy to implement
3. Costly to avoid
4. Empirical and/or theoretical support

Golden Rules of Screens

1. **One size does not fit all**
   - Screens should not be blindly applied in the same way to every industry at any moment in time

2. **If you put garbage in, you get garbage out**
   - Using a "good" demand equation for bread to estimate the demand for cars will likely be nonsensical
   - That is not a failure of "econometrics;" rather it is a failure of the particular design and implementation of the demand model for cars

Design & Implementation

- **To develop a proper screen requires:**

1. **An understanding of the market and industry at hand, including its key drivers and the nature of competition**

2. **A theory on the nature of the agreement among colluders or a theory of manipulation**

3. **A theory on how such agreement will affect observable market outcomes, for example, prices, bids or market shares**

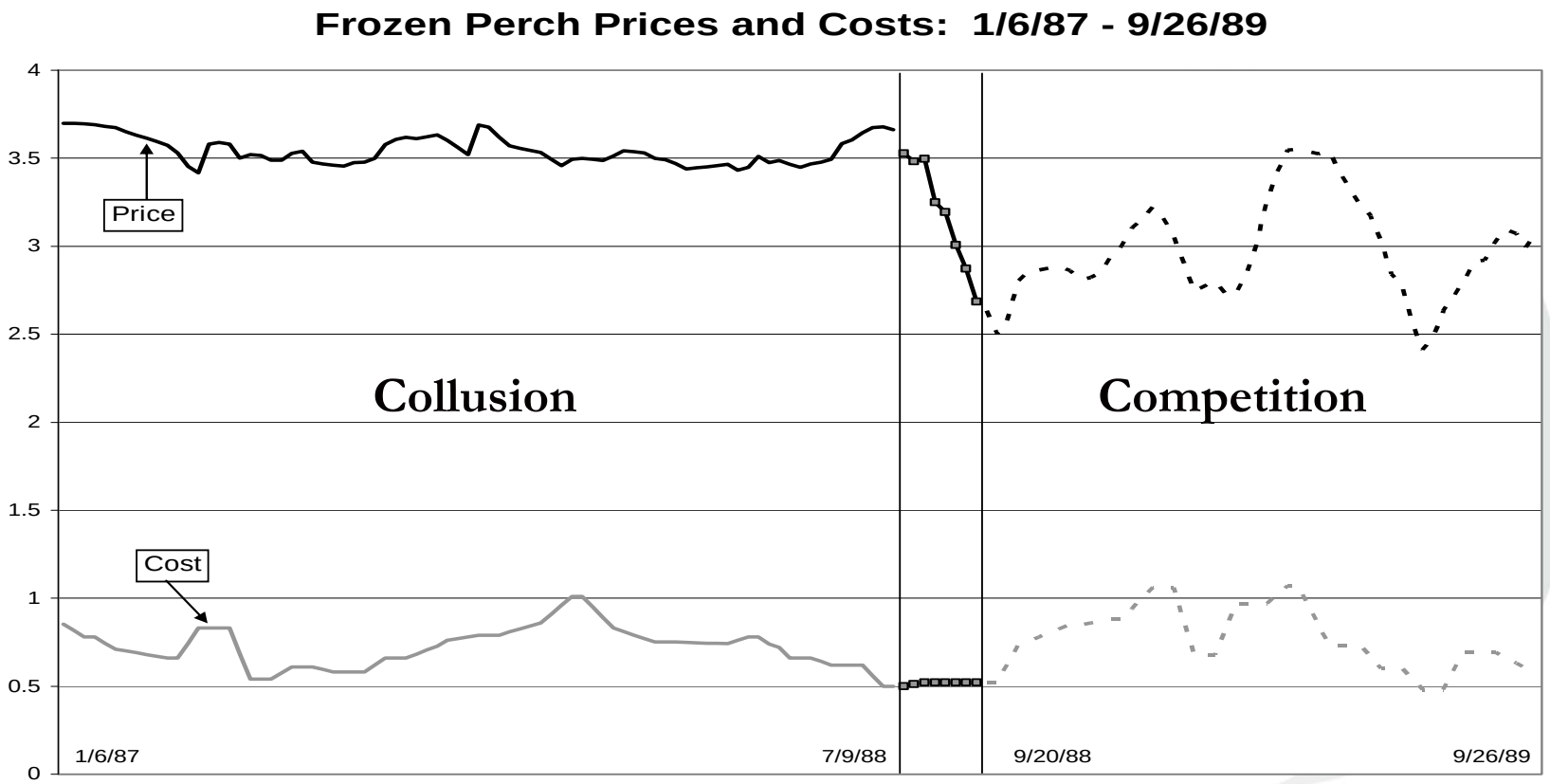
Design & Implementation

4. **Design of a statistic delivered by an econometric model capable of capturing the key market drivers and the key factors of the theory of collusion or manipulation, consistent with the market structure**

5. **Empirical and/or theoretical support for the screen**

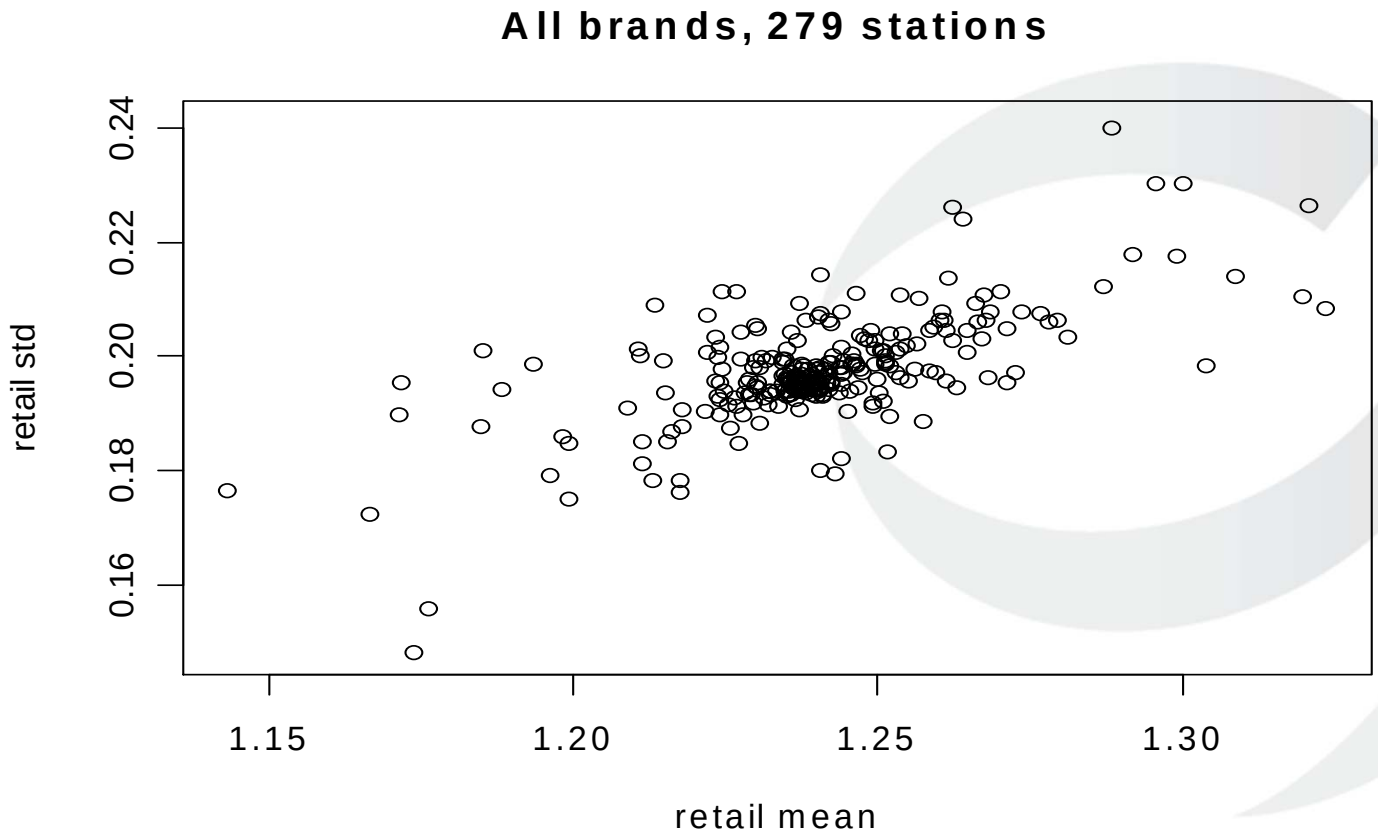
6. **Identification of an appropriate non-tainted benchmark against which the theory of collusion or manipulation and empirical results will be compared**

A Variance Screen for Collusion



(Abrantes-Metz, Froeb, Geweke and Taylor (2006))

FTC: Screening in Action



Variance Screen Validation: Italy

- **Italian Competition Authority – Esposito and Ferrero (2006) tested the power of the variance screen to detect explicit collusion in two well-known Italian cartel cases, with success:**
  - In the market for motor fuel (gasoline and diesel) and in the market for personal care and baby milk sold in pharmacies
  - Had the variance screen been used to detect these cartels, it would have correctly identified the participants and regions *before* the Competition Authority

Price Screens Validation: Germany

- **Hüschelrath and Veith (2011) ZEW, Germany, show the power of screens to detect explicit collusion by German cement producers if applied by buyers:**
  - Using a data set with 340,000 market transactions from 36 smaller and larger customers of German cement producers, the authors applied a screen for structural breaks in prices which correctly identified collusion
  - Had it been applied, this screen would have allowed customers to have detected the upstream German cement cartel *before* the Competition Authority

Screens in Action

- **Several countries have triggered investigations following economic and empirical screens, including:**
  - Screens on cross-country price benchmarking in the Italian baby milk market
  - Screens based on structural indicators in the Dutch shrimp market
  - Bid-rigging screening in Mexican pharmaceutical markets
  - Price variance screens and others to prioritize complaints in the Brazilian gasoline retail market and to uncover direct evidence
  - Screens on inside spreads flagged an alleged NASDAQ conspiracy among dealers, 1994
  - Screens on stock prices excess returns flagged stock options backdating and springloading cases in the US

Screens in Action

- **Canadian reporter:**

Montreal construction bids are paved with questions
Gazette investigation shows patterns that are "inconsistent with what one would expect to be normal competitive behavior"
By Linda Gyulai, Gazette civic affairs reporter September 15, 2012

available at
http://www.montrealgazette.com/news/Montreal+construction+bids+paved+with+questions/7248408/story.html

Among several interesting patterns, she found that: "independent bidders" submitting sealed bids and providing the same contact name in their contracts

The Mayor of the town has subsequently resigned…

Screens in Action: LIBOR

- **Most recently:**
  - The Alleged Manipulation and Conspiracy of the LIBOR
    - Wall Street Journal, April 2008
    - Abrantes-Metz, Kraten, Metz and Seow, "Libor Manipulation?," First Draft August 2008, Journal of Banking and Finance, 2012.
    - Abrantes-Metz, Judge and Villas-Boas, "Tracking the Libor Rate," Applied Economics Letters, 2011.
    - Abrantes-Metz & Metz, "How Far Can Screens Go in Distinguishing Explicit from tacit Collusion? New Evidence from LIBOR Setting," CPI Antitrust Chronicle, 2012
    - Other press coverage & academic work

NOTE: This presentation on LIBOR contains only publicly available findings

Largest Financial Scandal Ever?

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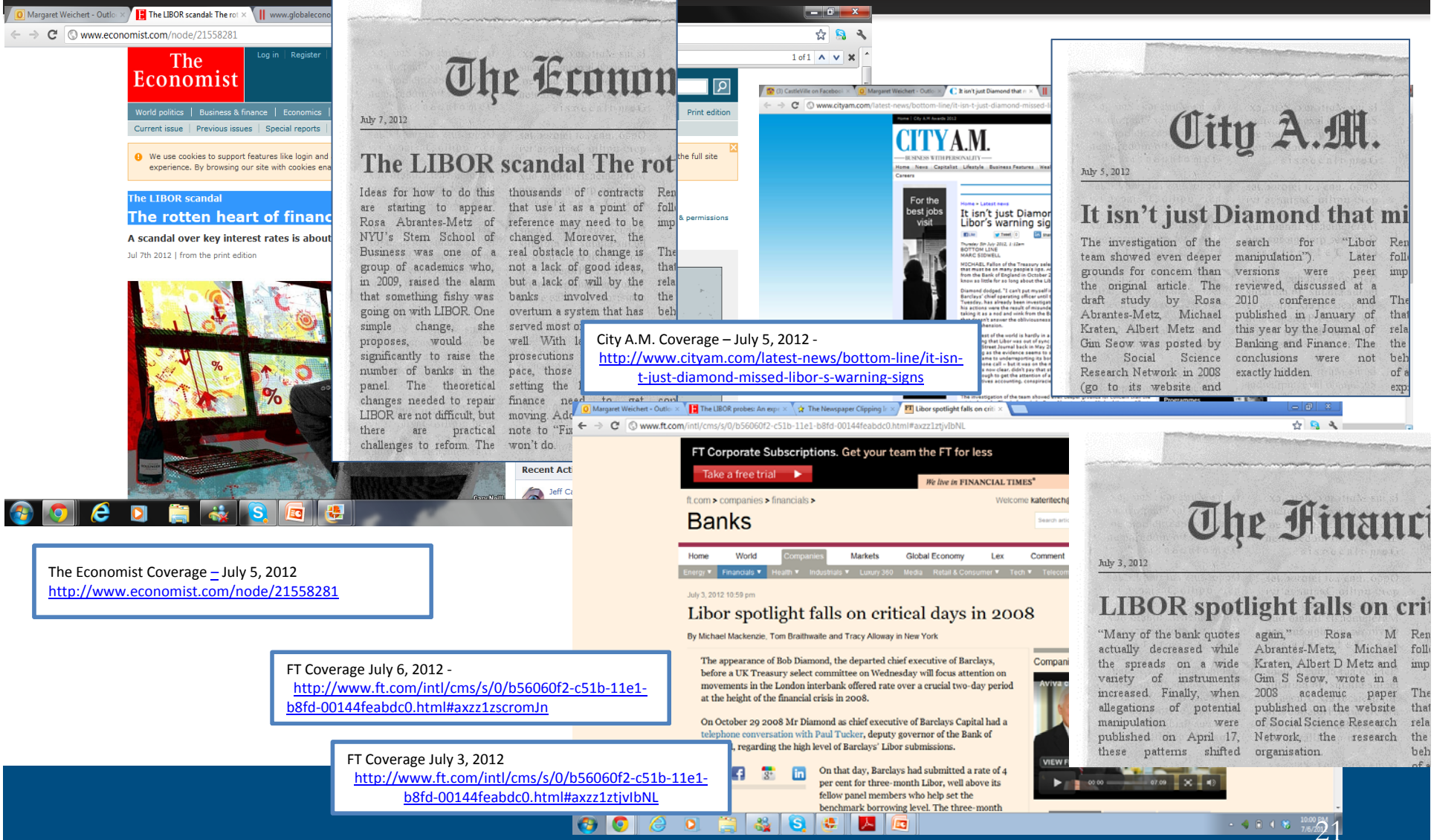


City A.M. Coverage – July 5, 2012 - http://www.cityam.com/latest-news/bottom-line/it-isn-t-just-diamond-missed-libor-s-warning-signs

The Economist Coverage – July 5, 2012 http://www.economist.com/node/21558281

FT Coverage July 6, 2012 - http://www.ft.com/intl/cms/s/0/b56060f2-c51b-11e1-b8fd-00144feabdc0.html#axzz1zscromJn

FT Coverage July 3, 2012 http://www.ft.com/intl/cms/s/0/b56060f2-c51b-11e1-b8fd-00144feabdc0.html#axzz1ztjvlbNL

Largest Financial Scandal Ever?

Citation in the UK Parliament

"28 Jun 2012: Column 480…

Ben Gummer (Ipswich) (Con): *The Chancellor will know that concerns about the setting of LIBOR go back some time. A paper circulated by New York University's Stern business school in 2008 raised the issue of the manipulation of LIBOR. Indeed, in that year the panel changed the criteria for and composition of the setting of LIBOR because of concerns about the fairness of the rate. What investigation will he undertake about the concerns raised at the time, whether they were picked up by the FSA, whether the American authorities passed any concerns to the Treasury and the FSA and, if so, what was done about them?"*

The Economist Coverage – April 14, 2012
http://www.economist.com/node/21552586

[http://www.publications.parliament.uk/pa/cm201213/cmhansrd/cm120628/debtext/120628-0002.htm].

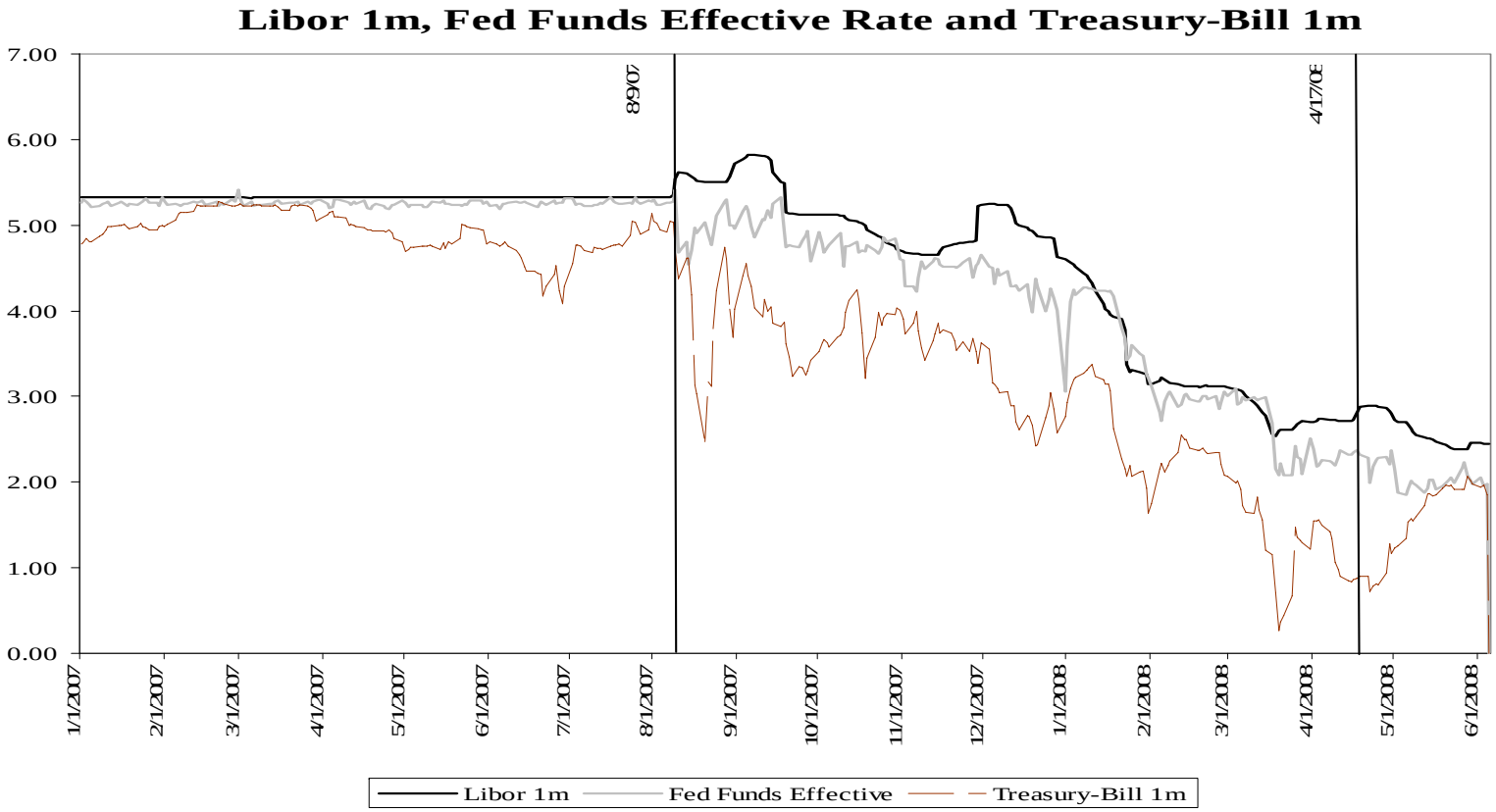
Screens in Action: LIBOR

- **What is the LIBOR**
  - The British Banker's Association (BBA)'s website states that the LIBOR is the primary benchmark for short term interest rates globally
  - It is used as the basis for settlement of interest rate contracts on many of the world's major futures and options exchanges, as well as most over the counter and lending transactions (at least $350 trillion worth of contracts referencing the LIBOR)

Screens in Action: LIBOR

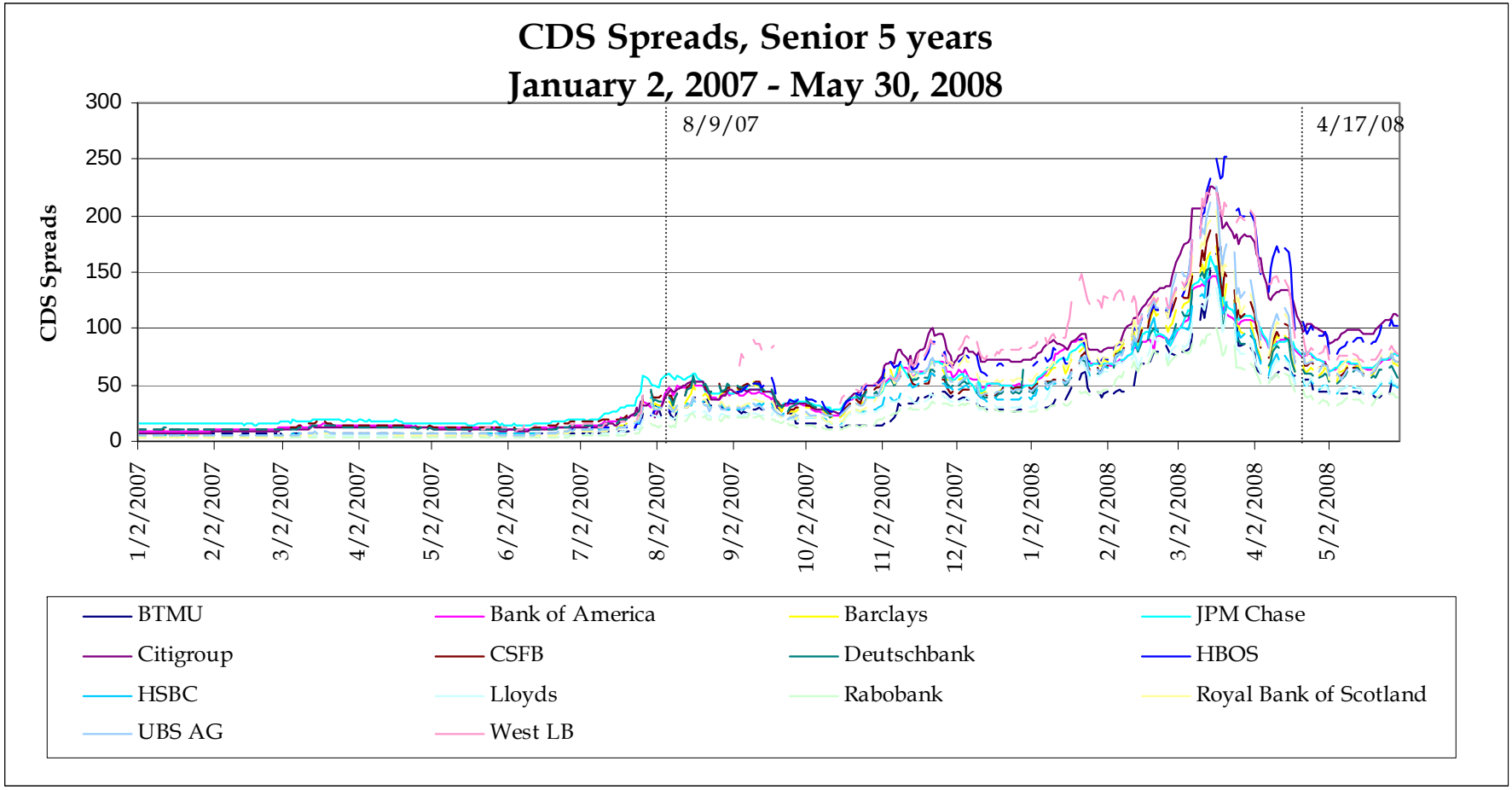
- **How it is set**
  - 16 banks (during the period of the allegations) provide sealed daily quotes on the LIBOR, and the "middle 8" quotes are converted into LIBOR through a simple arithmetic mean calculation
    - The LIBOR quotes are supposed to reflect the rate at which large banks can borrow unsecured funds from other banks, by answering the question "*At what rate could you borrow funds, were you to do so by asking for and then accepting inter-bank offers in a reasonable market size just prior to 11am London time?*"
    - Both LIBOR and individual banks' quotes are publicly disclosed daily

USD LIBOR: Price-Fixing?



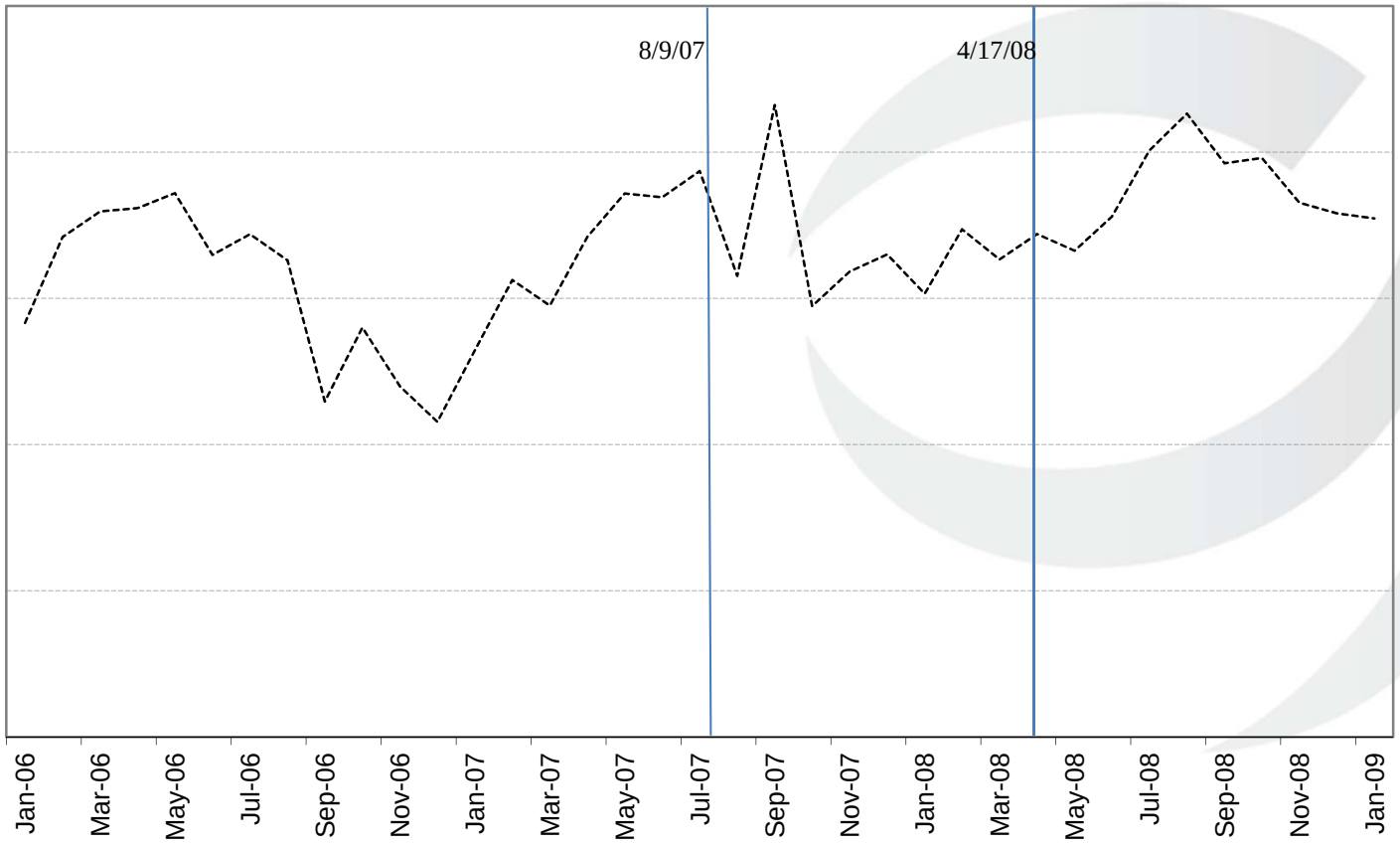
(Abrantes-Metz, Kraten, Metz and Seow (2008))

Credit Default Swaps: Evolution



Implied Market Bond Ratings

Coefficient of Variation of Market-Implied Bond Ratings
January 2006 to January 2009



USD LIBOR: Bid-Rigging?

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August 2006 Banks' Quotes

	2006				
	August 3	August 4	August 7	August 8	August 9
BTMU	5.410	*5.430*	5.370	5.370	5.330
Bank of America	*5.400*	5.420	*5.380*	5.370	*5.325*
Barclays	5.410	5.420	5.370	5.370	*5.340*
JPM Chase	5.410	5.420	*5.380*	5.370	5.330
Citi Bank	5.405	5.420	5.360	5.370	5.330
CSFB	5.405	5.420	5.360	5.370	5.330
Deutsche Bank	5.405	*5.415*	5.365	*5.365*	*5.325*
HBOS	5.410	5.420	*5.350*	5.370	5.330
HSBC	*5.400*	5.420	5.370	5.370	5.330
Lloyds	5.410	5.420	5.360	5.370	5.330
Norinchukin	5.410	5.420	5.370	5.370	*5.340*
Rabobank	5.405	*5.415*	5.370	5.370	5.330
Royal Bank of Canada	5.405	5.420	5.370	*5.368*	5.330
Royal Bank of Scotland	*5.400*	5.420	5.370	5.370	5.330
UBS AG	5.405	5.420	5.370	5.370	5.330
West LB	5.405	*5.460*	5.360	5.370	5.330

Exchanges of Information

- **Many exchanges of information are procompetitive**
- **But others may well not be!**
  - Watch out closely exchanges of information among competitors!
  - Certainly the LIBOR setting should have seemed suspicious a long time ago…

Easy to Cheat on?

- **Features of the LIBOR setting facilitating cheating:**
  - It is set by a small group of banks facilitating coordination
  - It is based on expected borrowing costs and not actual transacted prices, which are not verified against any actual transactions
  - Individual quotes are publicly released on a daily basis, allowing banks to detect and punish deviations from any agreements they may have reached and raising concerns to the banks on how they may be perceived
  - Banks have trading positions tied to LIBOR from which they could significantly benefit from its move in a particular direction or by simply having inside knowledge ahead of the market about what LIBOR will be
  - Several of the contributing banks were part of the institutions overseeing LIBOR

MEANS, MOTIVE AND OPPORTUNITY!

LIBOR Reform? YES!

- **Why an interbank lending rate is necessary**
  - LIBOR reflects costs for unsecured borrowing in the London interbank market for a small group of highly rated banks
  - These costs reflect compensation for the interest rate (the time value of money), credit premium (counterparty risk), and liquidity premium (market depth) that a bank with similar risk profile should expect to be offered by another highly rated bank
  - No other available indices can replicate these features of LIBOR
    - During normal economic times the LIBOR, T-Bill and OIS, for example, are all highly positively correlated, but during financial stress those relationships break
  - Many market participants, beyond LIBOR contributing banks, still believe LIBOR has value and continue adopting it

CLIBOR: Committed Quotes

- **A committed quotes system will allow for a more accurate, reliable and transparent measure of interbank lending**
  - Participating banks would submit bids and ask quotes for interbank lending and commit to transact within that range, if they were to transact
    - Transactions outside of this range would have to be justified and face a penalty
    - Multiple penalties during a short period of time would imply a closer look to the banks' submissions by the overseeing institutions

(Abrantes-Metz & Evans(2012a, 2012b))

CLIBOR: Committed Quotes

- Participating banks would submit interbank transactions to a clearing house
  - The data clearing house would use the actual transactions to verify the commitment of the banks to the submitted committed quotes
  - It would also report aggregate transactions data, keeping the identities of the submitters anonymous, with a necessary time delay
- A governing body would be established from the CLIBOR panel banks, representatives of CLIBOR users, and other independent parties such as academics
  - The governing body would enter into a long term contract, based on competitive solicitation, with a private sector entity to supervise the CLIBOR, operate the data clearing house, and disseminate information

The Need for Committed Quotes

- **A purely transactions based index is not robust to financial crises**
  - In normal economic times, a purely transactions based index would likely function well since there would be enough transactions volume on which to base it
  - But during times of financial stress such index may not be feasible
    - It may become significantly more volatile simply because the composition of the banks actually transacting may have significantly changed
    - There may be no actual transactions on which to base LIBOR
- **A committed quote system will ensure index continuity even through a financial crisis**

Wheatley Review Proposal

- **Good steps in the right direction, which we also proposed in our submission to the Wheatley Review**
  - Fixing LIBOR rather than replacing it
  - Significant reduction in the number of LIBOR denominations
  - LIBOR administration to be moved to a private entity selected through a tender by a committee consisting of several stakeholders and reporting to a regulator
  - LIBOR quotes to be related to actual transactions rather than simple representations of expected costs without any verification
  - Number of banks to significantly expand
  - Information identifying individual banks quotes wouldn't be released for 3 months

Wheatley vs. CLIBOR

- **Major point of disagreement**
  - The Wheatley review does not adopt the idea of a committed quote system or clearing house, but instead requires banks to document, whenever possible, the transactions supporting their LIBOR submissions and having banks follow submission guidelines on how their quotes should be formulated, put forward by a governance body

Wheatley vs. CLIBOR

- **Concern**
  - This would turn the LIBOR setting into a heavy and cumbersome process supervised by lawyers and compliance officers more worried about satisfying new regulations and in minimizing litigation risk (particularly criminal), instead of focusing on formulating a forecast as accurate as possible of its institution's borrowing costs

Wheatley vs. CLIBOR

- **LIBOR reliability?**
  - The risk aversion which is expected to dominate these officers minds, understandably, will reduce the power of LIBOR to adjust to predicted changes in the cost of borrowing today, which were not present at the time that the last transaction took place
  - The consequence is a reduction of the ability of LIBOR to vary over time in response to new and predicted market changes, which in turn could affect the LIBOR reliability as a prime indicator of the day's expected interbank borrowing cost

CLIBOR: Higher Reliability

- **CLIBOR would produce a more reliable, accurate and transparent benchmark than what the Wheatley has proposed**
  - By forcing banks to committee their quotes by actually trading on these when given the opportunity, banks will have the incentive to report more accurate quotes or risk transacting at disadvantageous prices. They would only need an army of lawyers if, on a given day, they decided to trade a price outside of the quoted range
  - By having a data clearing house, the market would learn about actual transactions (anonymously) quickly, which would provide an almost immediate way of detecting anomalies in LIBOR as well as a source of alternative benchmarks., ensuring transparency

CLIBOR vs Wheatley

- **Key difference**
  - The CLIBOR relies on setting the incentives for the banks to freely submit quotes which are representative of their actual borrowing costs
  - The Wheatley recommendations force banks to provide quotes according to particular guidelines set out by outside bodies and which, at the end of the day, may reduce the incentive to provide the most accurate quotes, and replace those with "the least risky quotes"

Concluding Remarks

- Economic analysis and empirical methods are playing ever increasing roles in conspiracy and manipulation cases
- Screens can provide valuable evidence on both sides of litigation, but they are not a panacea
- LIBOR is the most recent and largest example, I do not expect it to be the last
- LIBOR setting needs to be reformed in a way in which incentives are present for banks to provide the most accurate quote, while the means and the opportunity to cheat are significantly reduced

Thank you very much!

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Dr. Rosa M. Abrantes-Metz is a principal in the antitrust, securities and financial regulation practices of Global Economics Group based in New York. Her experience includes work in consulting and banking, as well as in government. Her main areas of specialization are econometrics, monetary and financial economics, and applied industrial organization. Dr. Abrantes-Metz is an adjunct associate professor at Leonard N. Stern School of Business, New York University, where she has taught money and banking, financial institutions, and industrial economics, and currently teaches empirical business strategies. She has taught econometrics at the department of economics at the University of Chicago, and various other fields of economics at Universidade Católica Portuguesa, in Lisbon, Portugal. Dr. Abrantes-Metz's work has been featured in the press such as the Wall Street Journal, Financial Times, The Economist, CNNMoney, CNBC, Crain's, Forbes, Bloomberg, BusinessWeek, Washington Post, Reuters, Risk Magazine, Investor's Business Daily, and BBC Radio.

After working as a staff economist at the Federal Trade Commission, Dr. Abrantes-Metz continued to serve as a consultant for special projects with the Commission's Bureau of Economics and she is also a consultant for the World Bank.

Dr. Abrantes-Metz is the author of several articles on econometric methods and screens, conspiracies and manipulations, gasoline, pharmaceuticals and health care, telecommunications, monetary policy, event studies, valuation, structured finance, credit default swaps, credit ratings and new statistical tests, representing some of the areas in which she has also worked as an economic consultant. Dr. Abrantes-Metz has published in various peer-reviewed journals and trade publications. She is a co-drafter of the chapter on the role of the economic expert in proving conspiracy cases under federal antitrust laws in a recent volume published by the American Bar Association. In addition she has contributed to other books on international arbitration with a focus on event studies, and is a co-author of the chapter on corporate governance and compliance forthcoming in the next Handbook on Antitrust Economics. She has developed numerous empirical screens for conspiracies and manipulations, and is a pioneer in the field, contributing to the further development and increased adoption of these methods. She has flagged potential anticompetitive behavior preceding large scale investigations, such on the alleged Libor conspiracy and manipulation, and has also used these methods to defend against allegations of such behavior. Her screens are used by competition authorities, defendants and plaintiffs worldwide.