



Predictive Power of CDS Spreads?

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CDS Markets

Data courtesy of GFIInet



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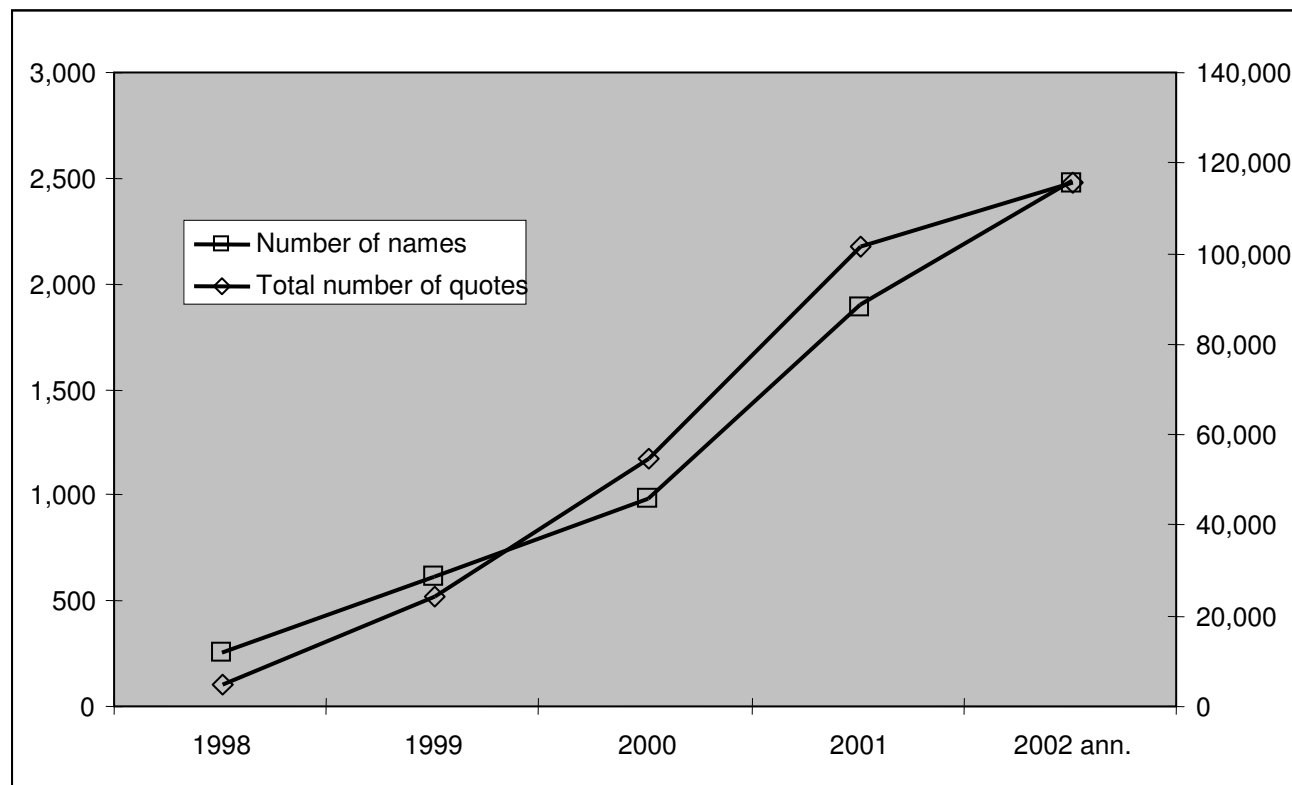
CDS Quotes

Date	Asset Name	CDS Life (Yrs)	Bid (bp)	Offer (bp)
11-Jan-02	Japan	10	37	42
11-Jan-02	Japan	5	21	28
11-Jan-02	Jefferson Smurfit Group plc	5		140
11-Jan-02	John Deere	5		80
11-Jan-02	John Deere	5	66	80
11-Jan-02	John Deere	5	65	80
11-Jan-02	JP Morgan Chase Corp	5	31	
11-Jan-02	JP Morgan Chase Corp	5	31	41
11-Jan-02	KDIC	2	90	



Market Development Volumes: 1998 - 2002

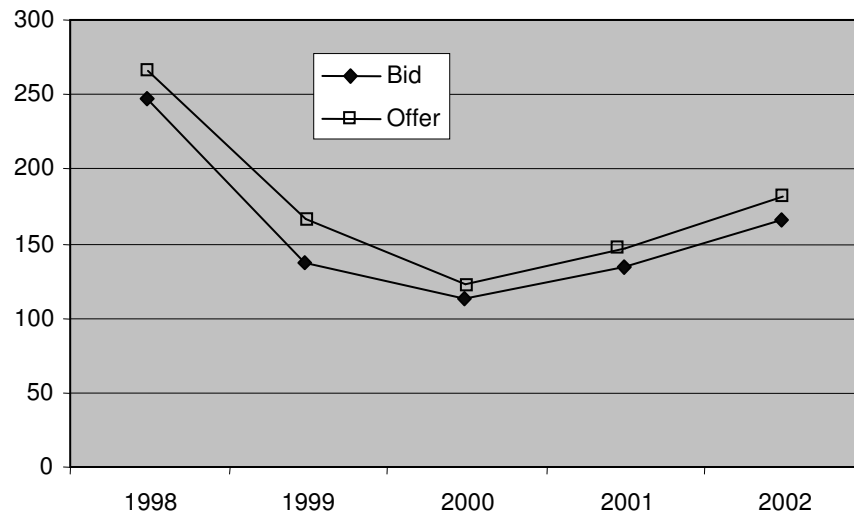
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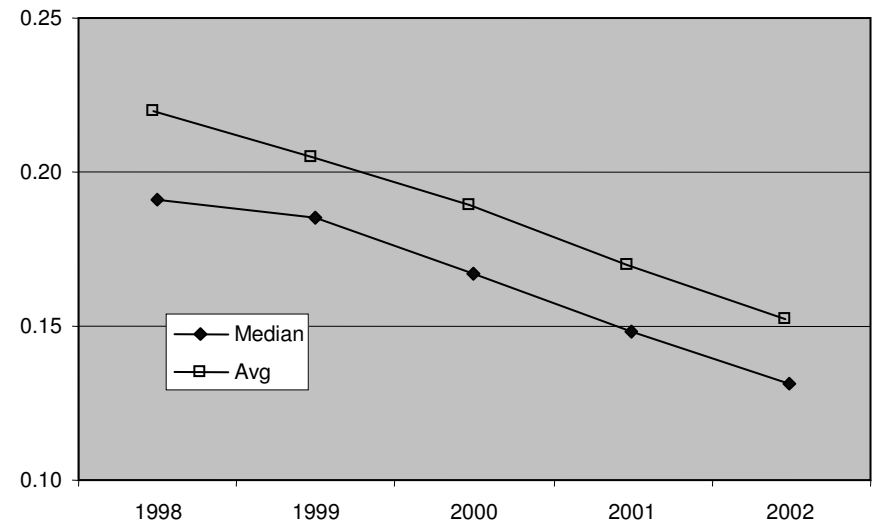
Market Development Prices: 1998 - 2002

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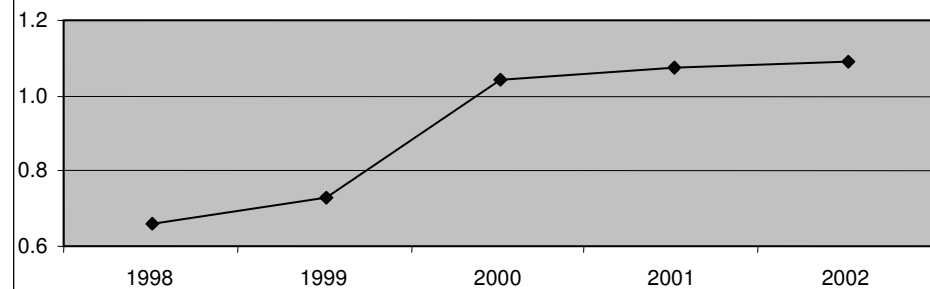
Average - All Quotes



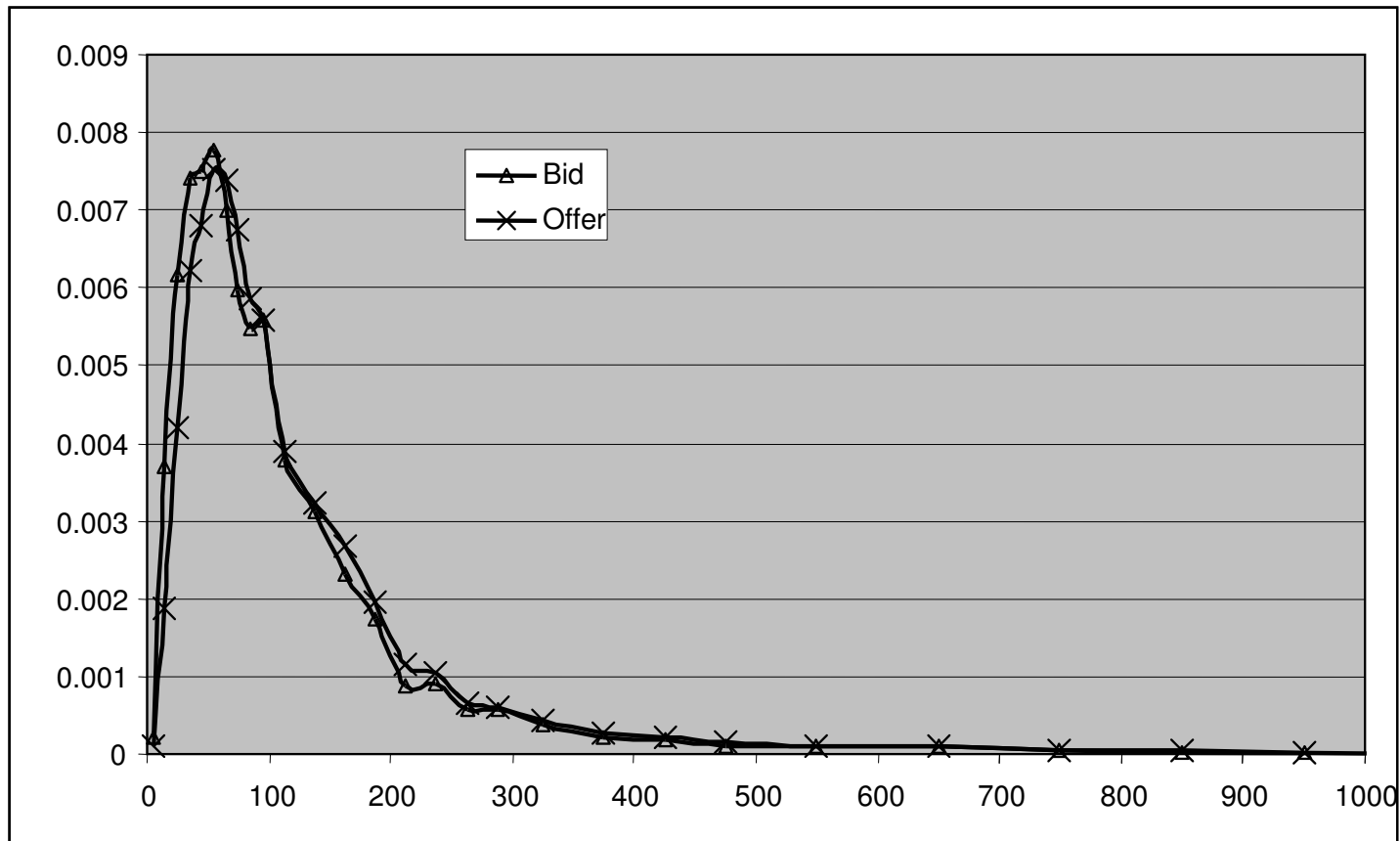
$(\text{Offer} - \text{Bid}) / (\text{Offer} + \text{Bid}) / 2$: Matched Quotes



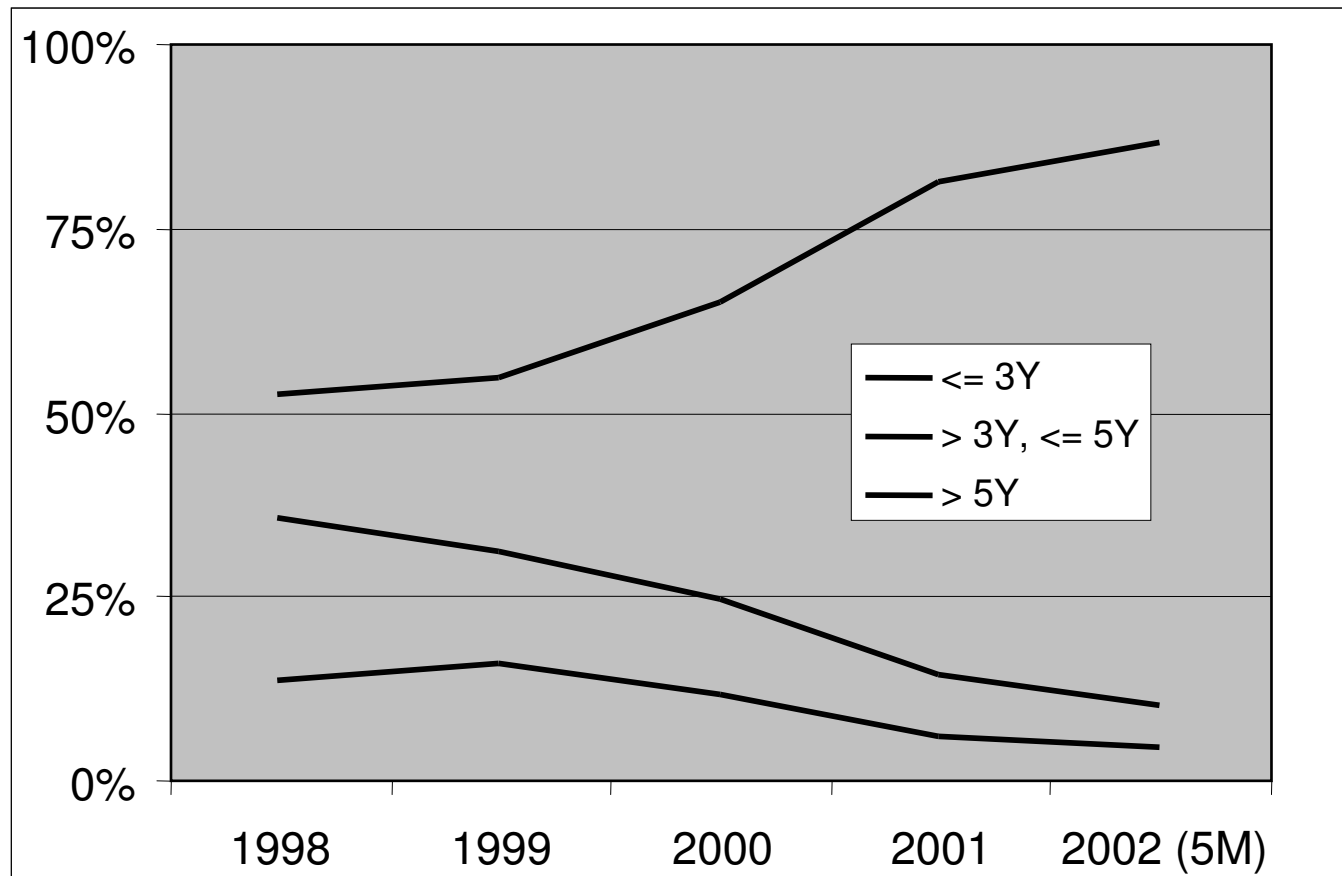
Ratio Number of Bids to Offers - All Quotes



Distribution of Quotes 2001



Distribution of Maturities





Credit Ratings

Data courtesy of
Moody's and S&P



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Rating Agencies

- Two dominant agencies: Moody's and S&P
- In the S&P rating system, AAA is the best rating. After that comes AA, A, BBB, BB, B, and CCC
- The corresponding Moody's ratings are Aaa, Aa, A, Baa, Ba, B, and Caa
- Bonds with ratings of BBB (or Baa) and above are considered to be "investment grade"





Rating Details

- Many rating classes are divided into 3 subclasses called rating notches
 - Moody's divides Aa into Aa1, Aa2, and Aa3
 - S&P divides AA into AA+, AA, and AA-
- Whenever a rating is changed the change is usually one notch
 - e.g., from Aa2 to Aa3



Meaning of Ratings

Bonds and preferred stock which are rated A possess many favorable investment attributes and are to be considered as upper-medium-grade obligations.

Factors giving security to principal and interest are considered adequate, but elements may be present which suggest a susceptibility to impairment some time in the future.

Moody's Investor Services





Rating Events

- Each rating agency releases a variety of pieces of information:
 - Rating change: an upgrade or downgrade, usually one notch
 - Review or WatchList: upgrade, downgrade or remove from review/watchlist
 - Outlook: positive, neutral or negative





Rating Event Study



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Do CDS Spreads Predict Rating Events?

- To what extent do CDS spreads anticipate rating events?
- Are upgrades and downgrades treated symmetrically?
- Are all credit events (rating change, watch list announcement, outlook) similarly anticipated?
- Does the rating at the time of the event matter?
- Does it matter how long since any previous credit event?



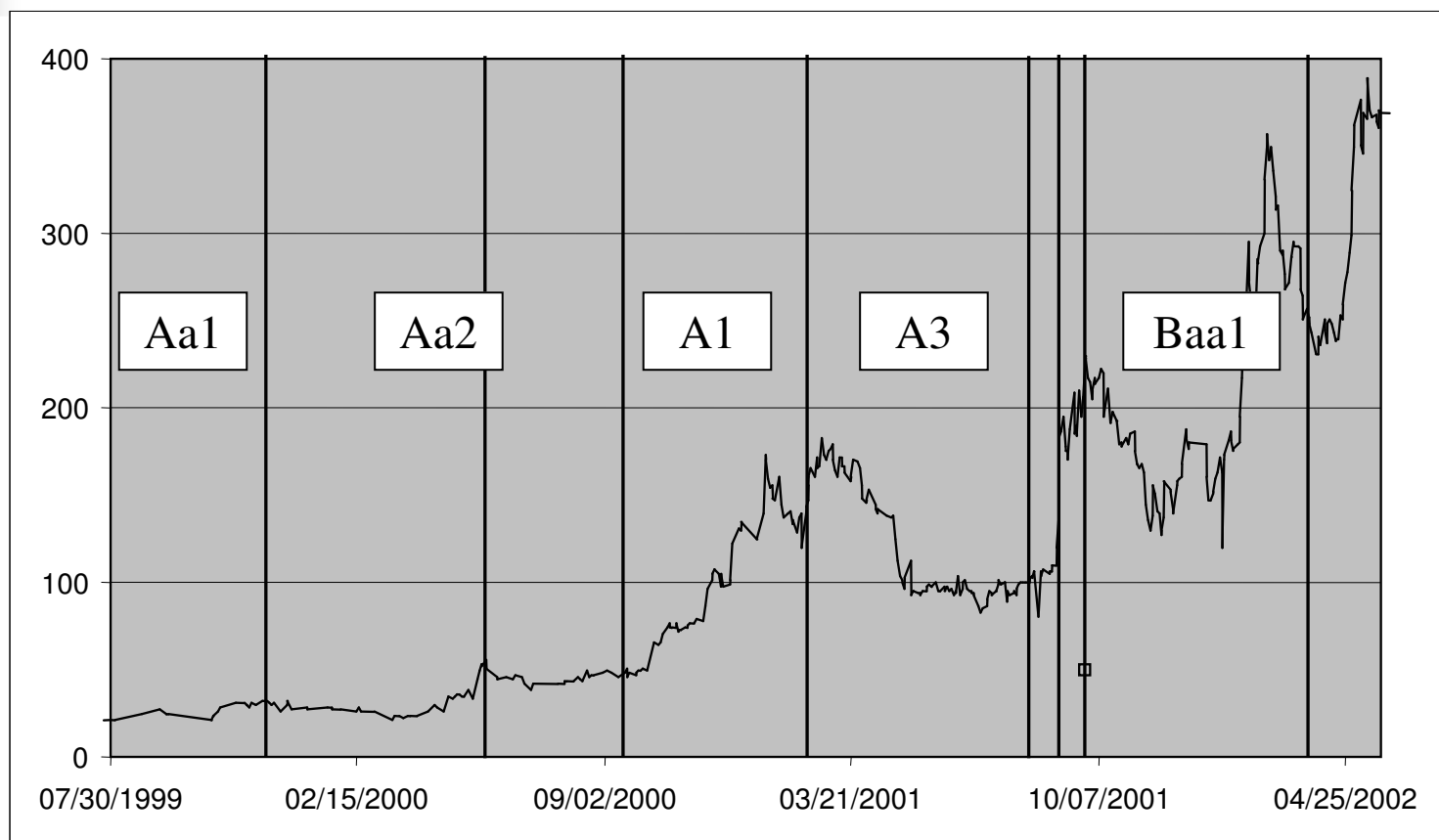


Rating Events

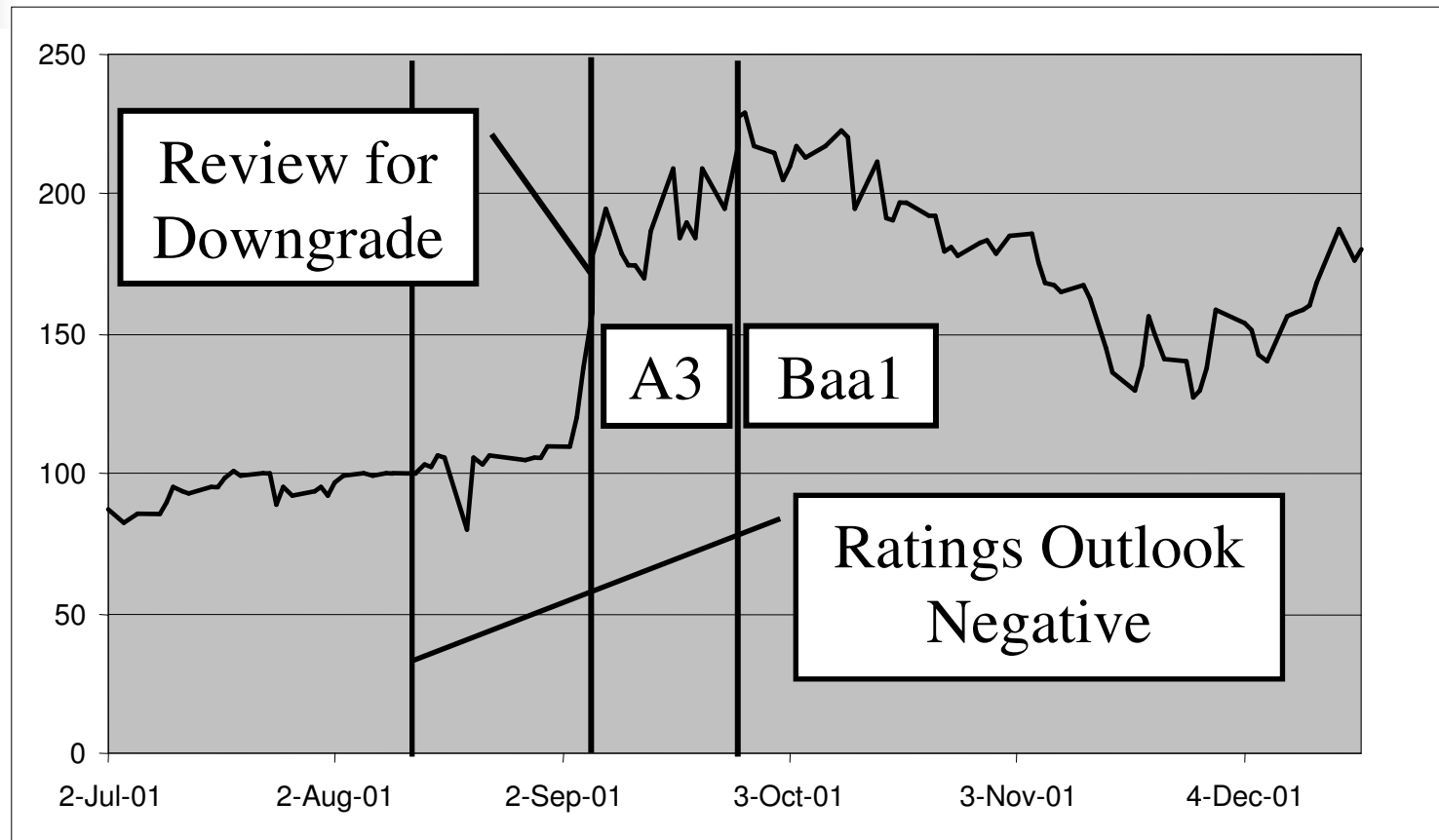
- Two anecdotal cases:
 - France Telecom
 - Enron
- A more formal event study



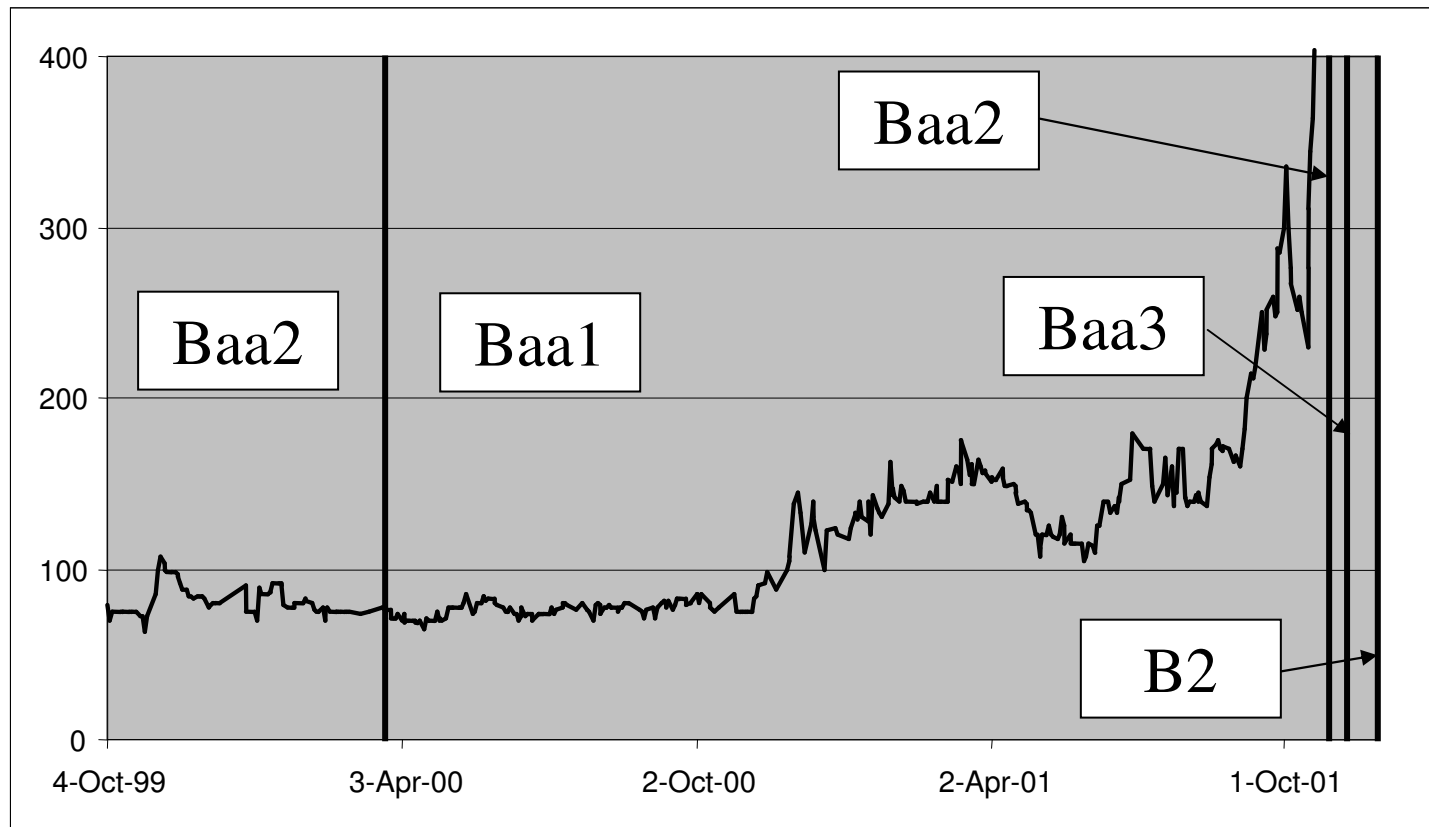
France Telecom



France Telecom



Enron

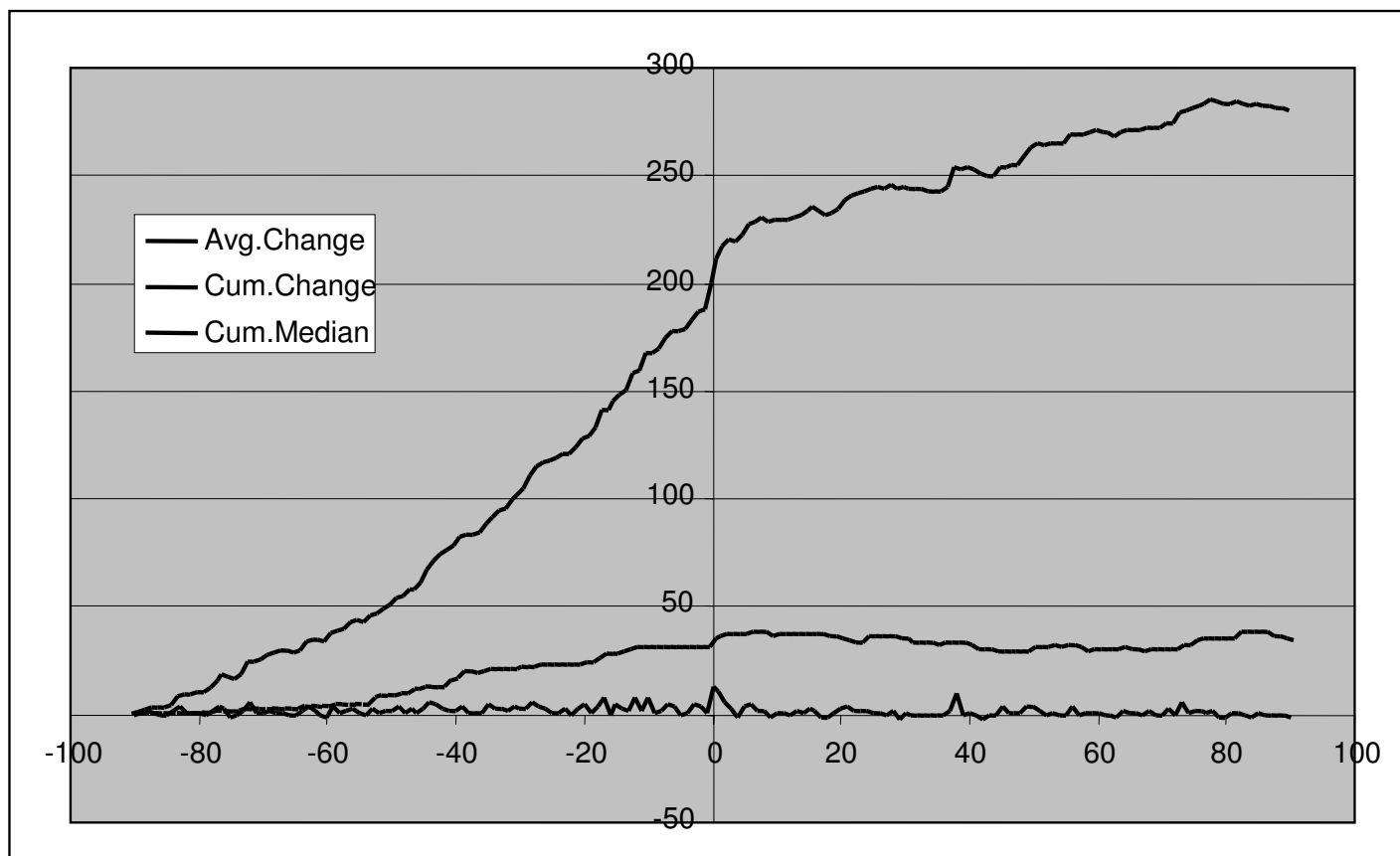


Standard Event Study Model

- A rating change event study examining changes in CDS spreads in a 90-day window around rating changes
- A_t = average change in CDS rate t days before or after a rating change. Averaging across names
- If no quote observed for a name on some day the change is assumed to be zero
- In some cases median daily changes were computed
- S_t = cumulative change in CDS rate from day -90 to t days before or after a rating change
- $S_t = A_{-90} + A_{-89} + \dots + A_t$

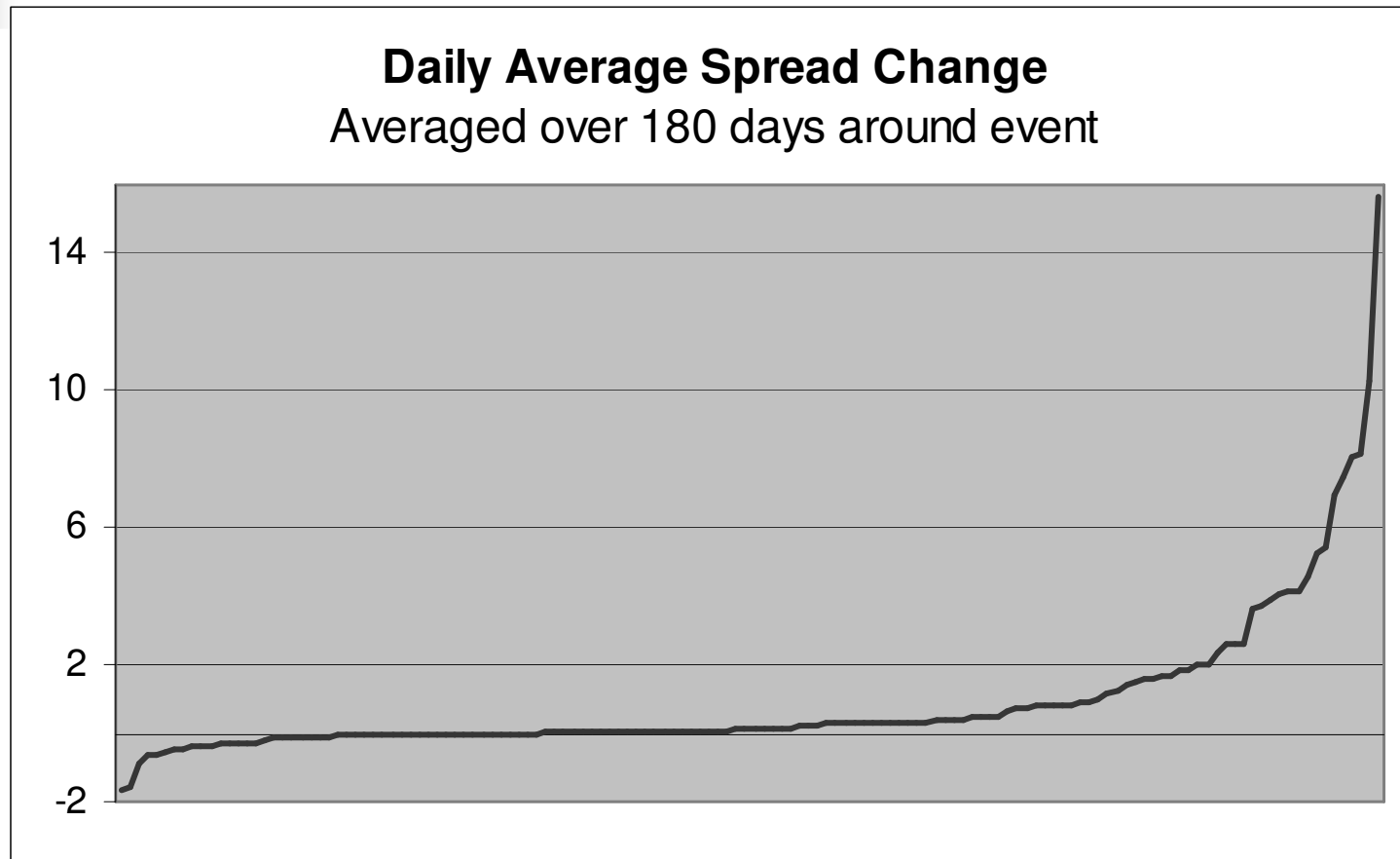


All Downgrades: 481 Events



Distribution of Spread Changes in Downgrades

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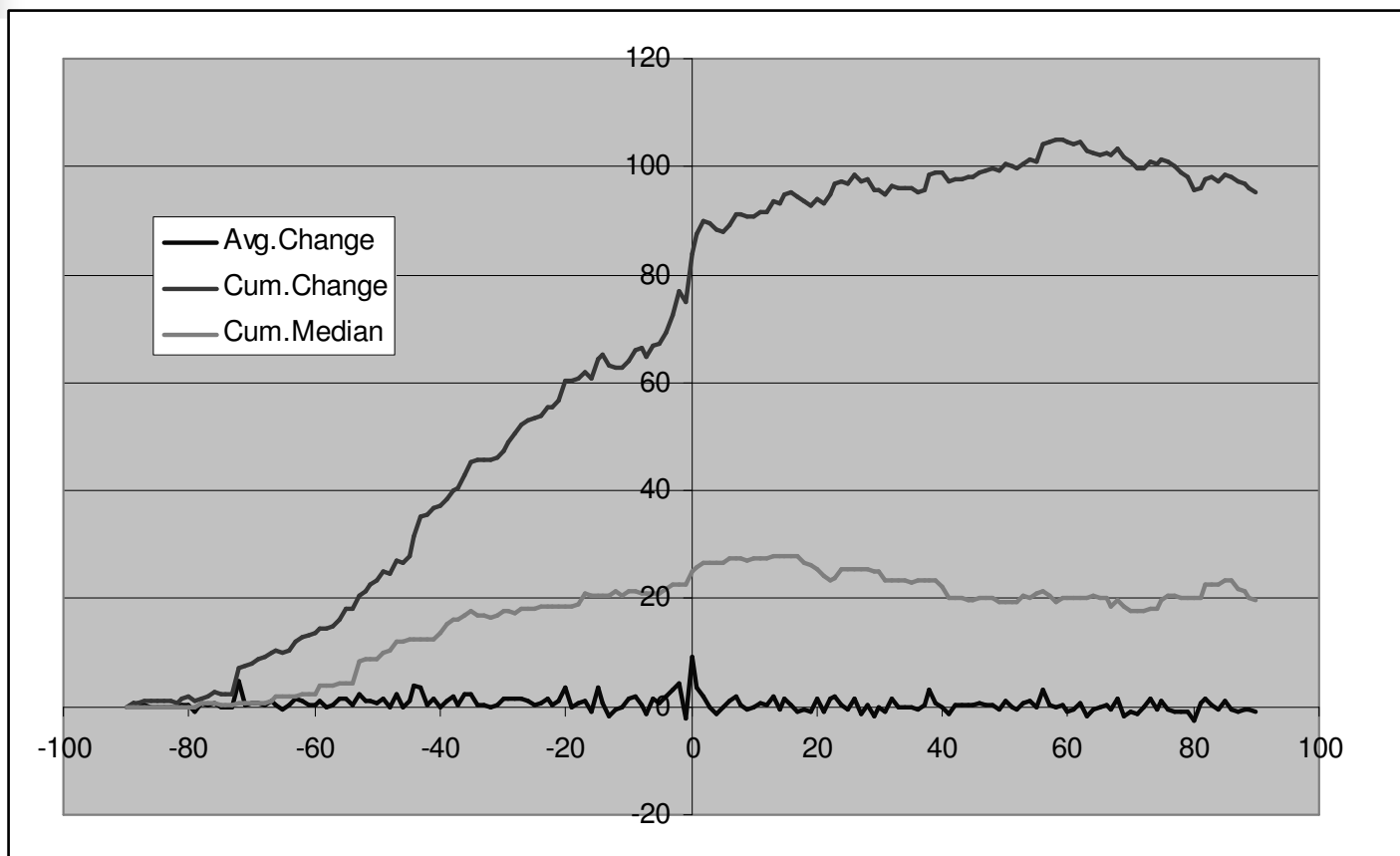


The Villains

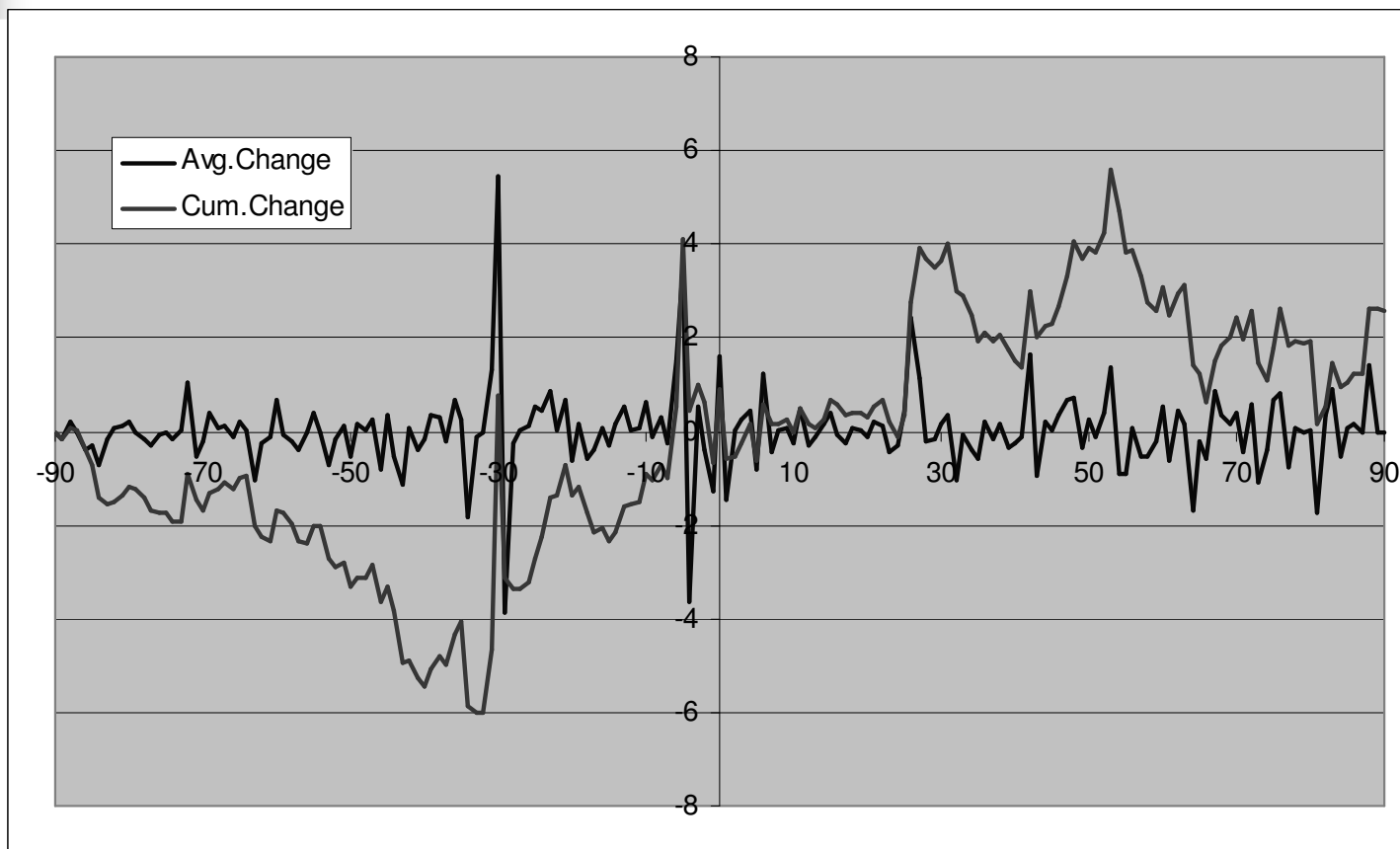
- **British Airways**
- **Invensys PLC**
- **Solutia Inc**
- **Gap Inc.**
- **Enron**
- **AMR Corp**
- **Worldcom**
- **Qwest Cap Funding**
- **Marconi**
- **Xerox**
- **Nortel Networks**
- **Lucent**
- **Kmart**



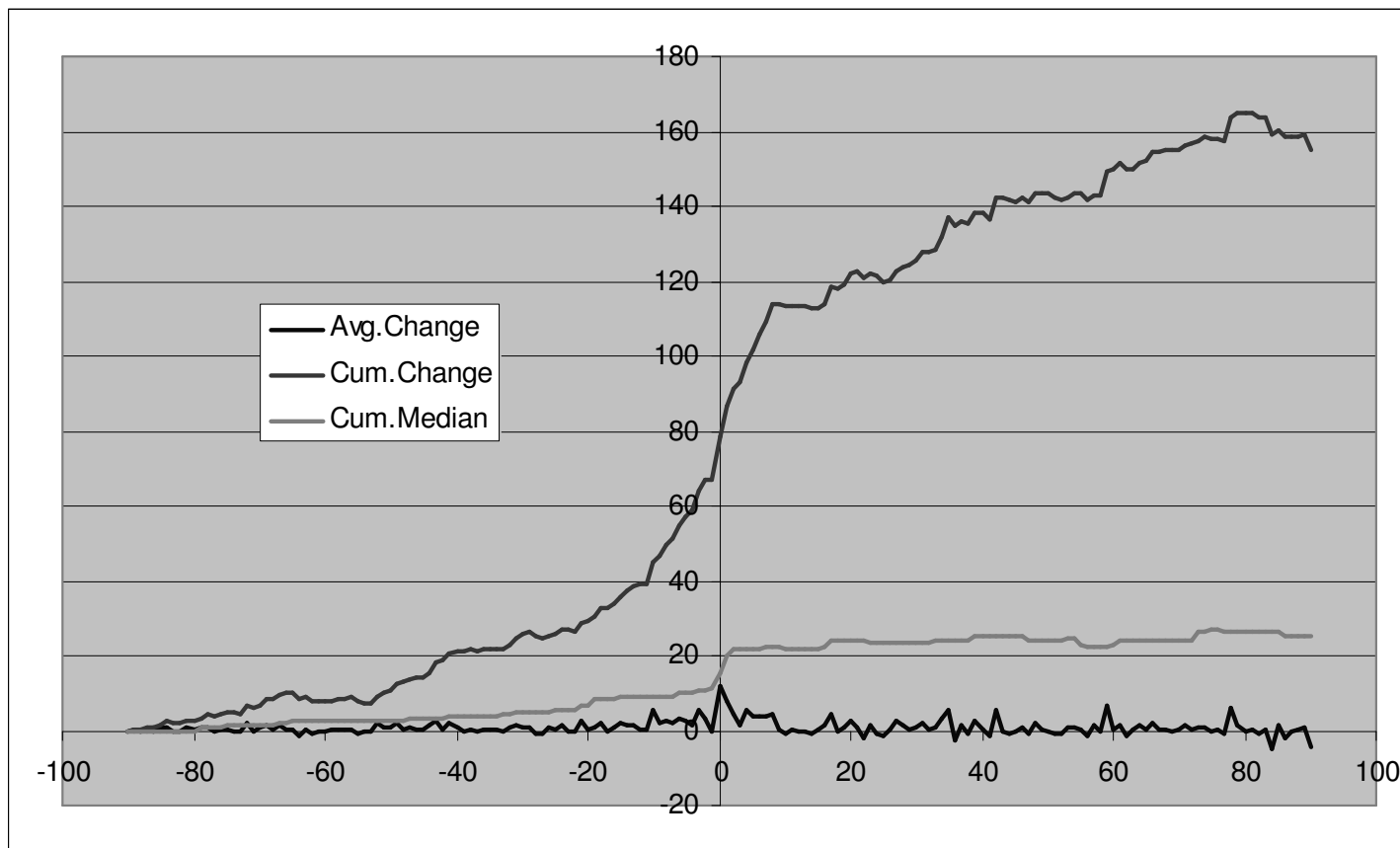
Downgrades without Outliers



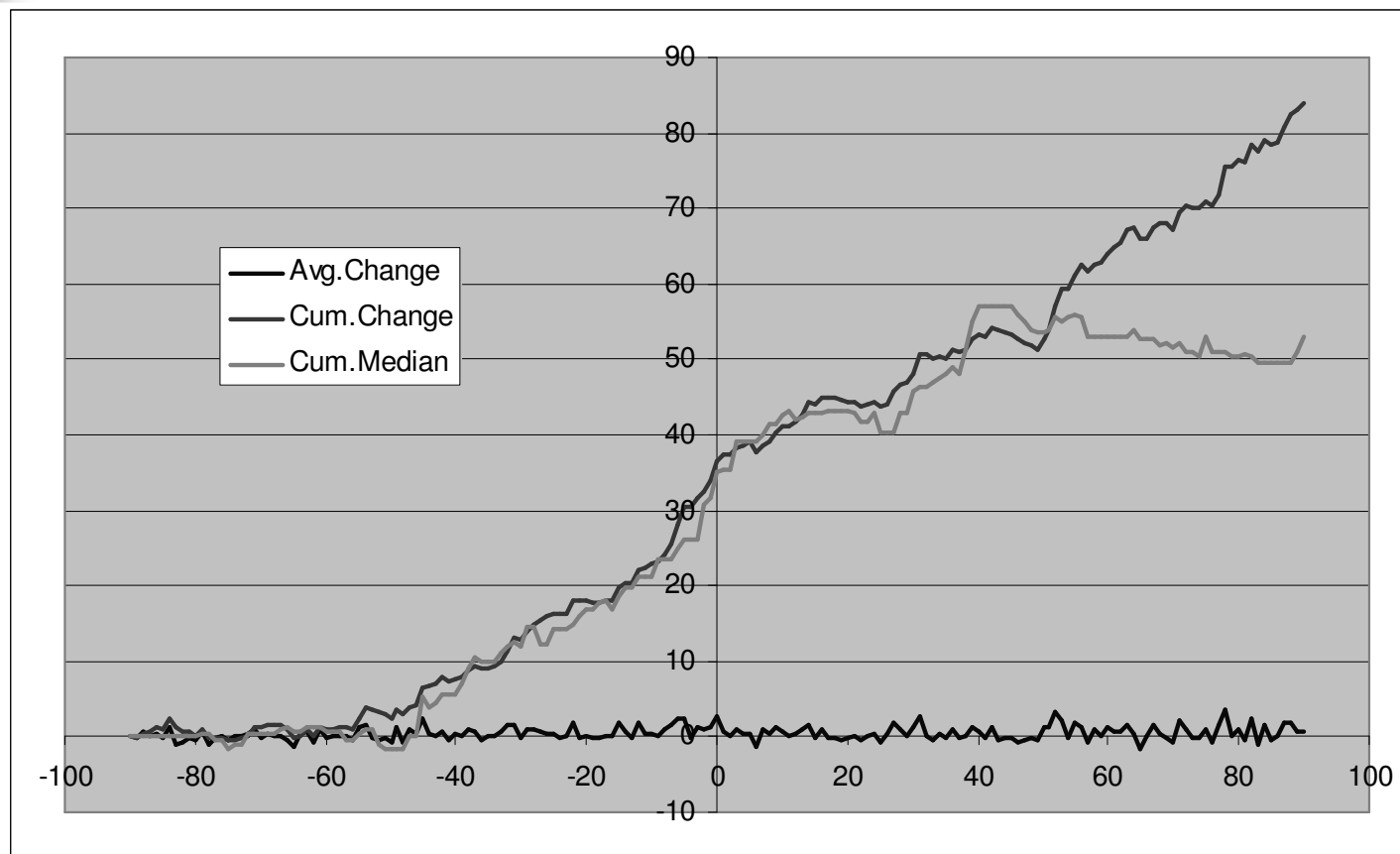
All Upgrades: 87 Events



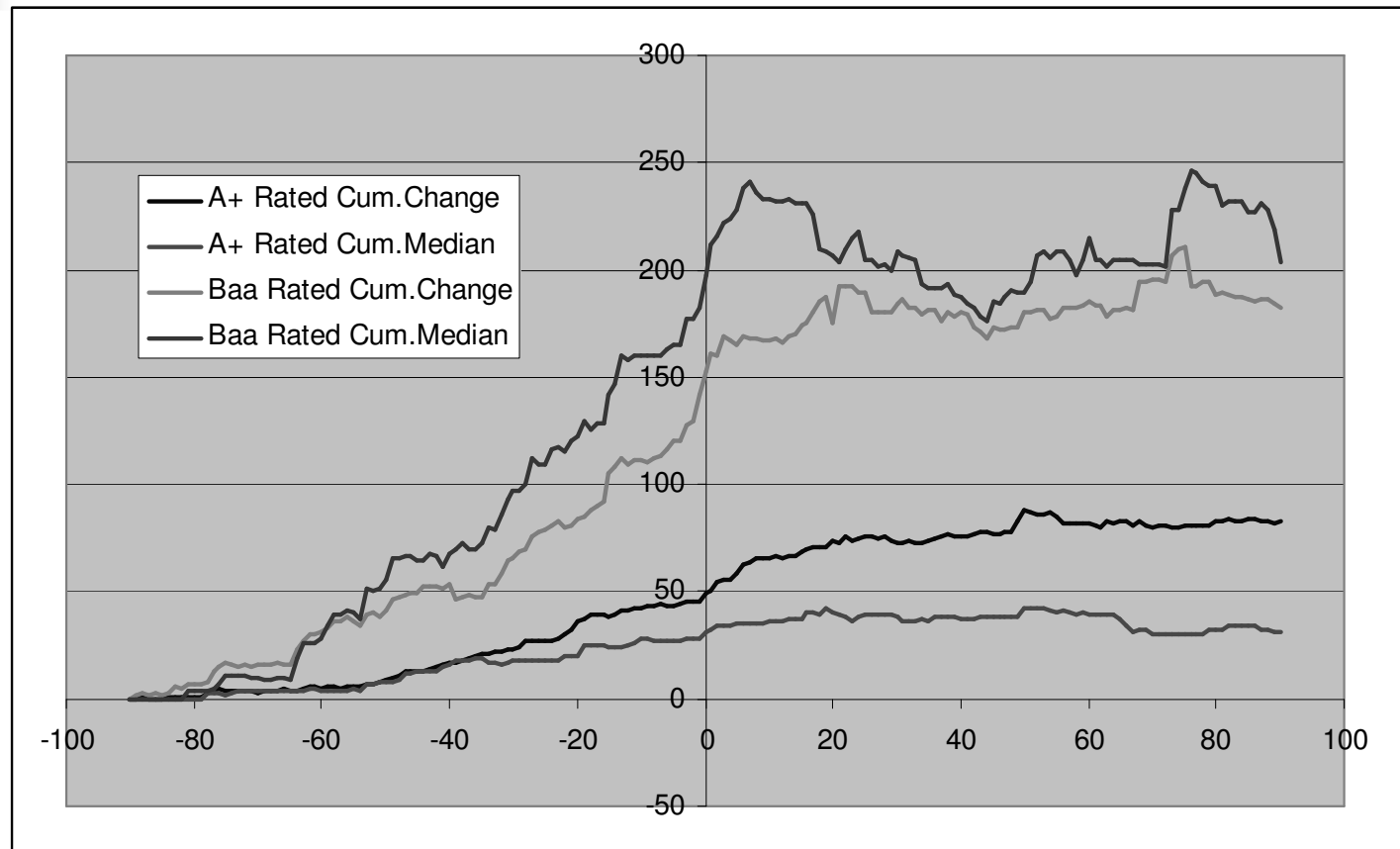
All Watch List Downgrades: ²⁵ 292 Events



All Outlook Negative: 177 Events

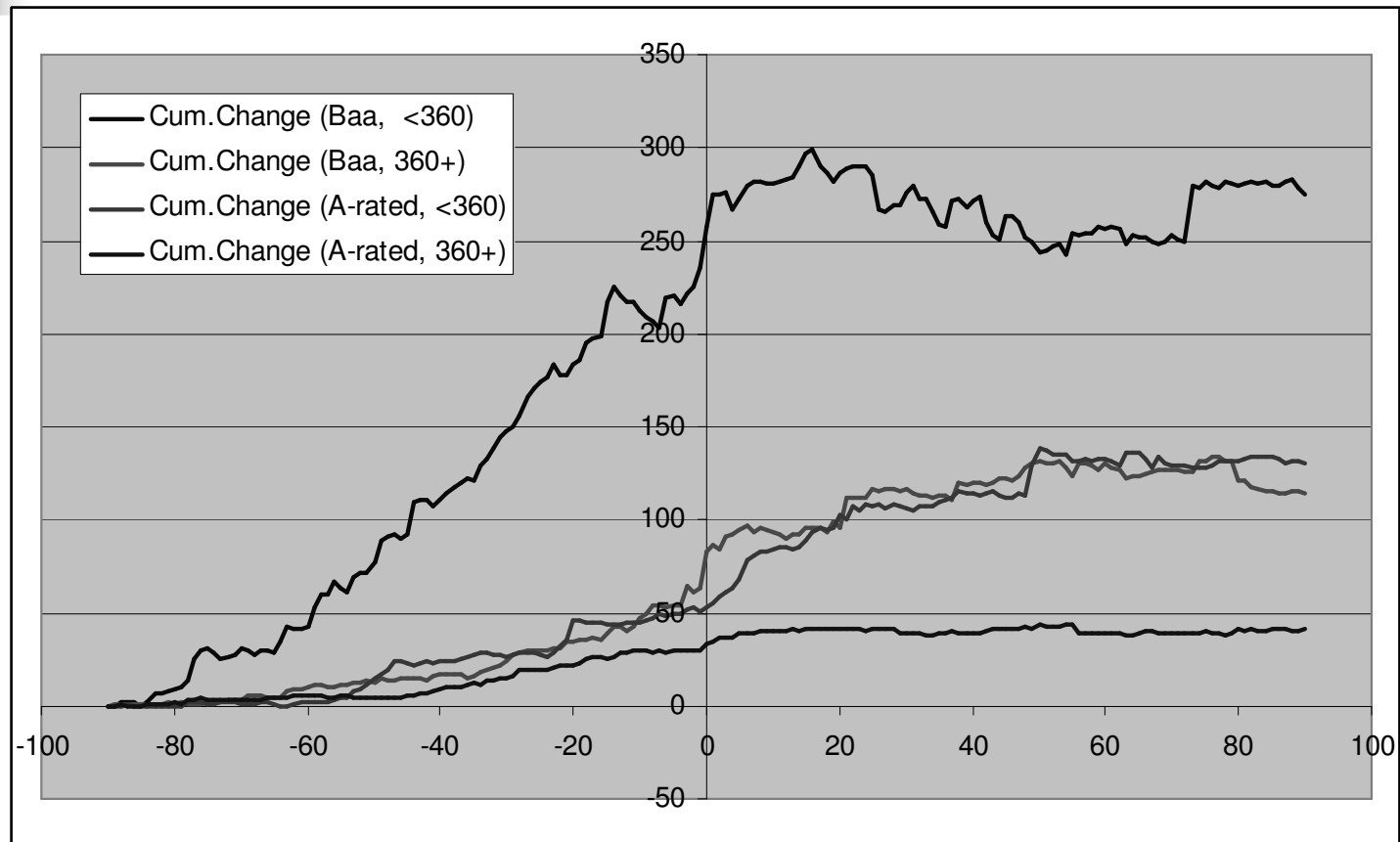


Effect of Prior Rating at Downgrade: Aaa, Aa and A vs. Baa²⁷



Effect of Time Since Previous Rating Changes

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Can Spreads Predict Rating Events?

Lorenz Curves and Gini Ratios



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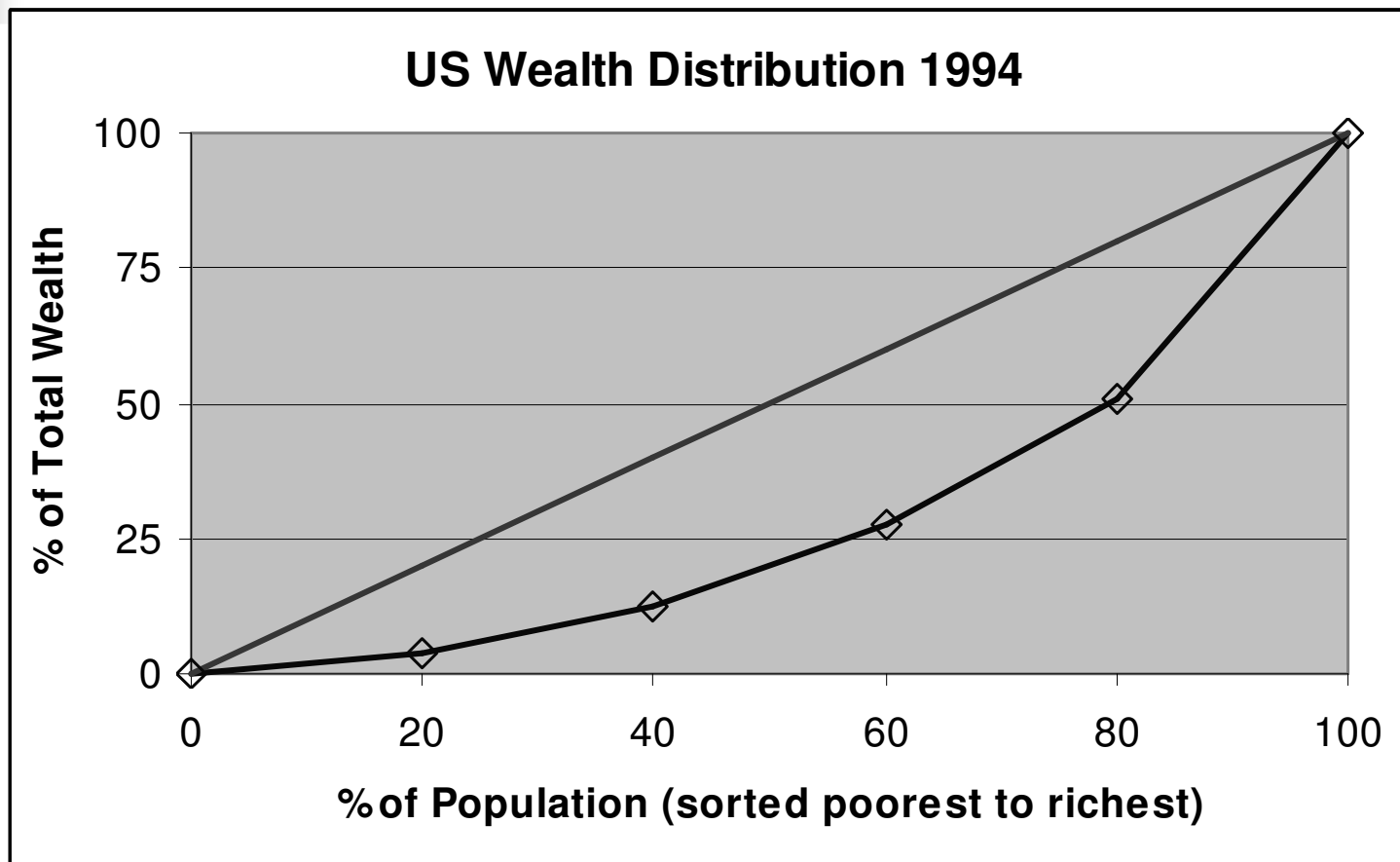


Lorenz Curves

- Rank a population in order of some variable
- Plot the percentiles of that variable against the percentiles of the population
 - If the variable is evenly distributed across the population the Lorenz curve will be a diagonal
 - If the variable is concentrated in one person the Lorenz curve will be a L-shaped
- Gini ratio is twice the area between the Lorenz curve and the diagonal ($0 < G < 1$)



Wealth Example



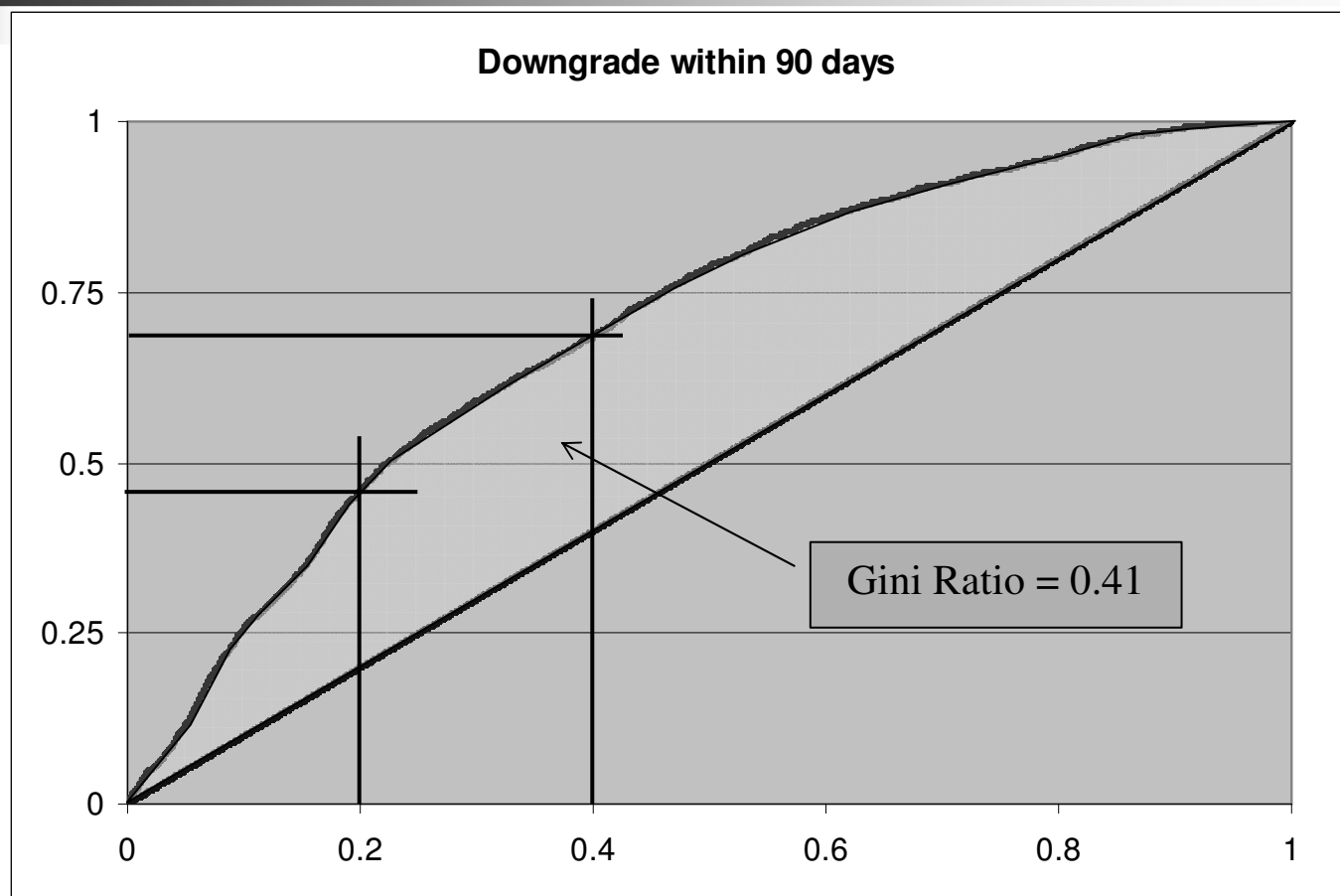


Our Lorenz Curve

- Adjust all observed spreads by subtracting the appropriate index level
- Sort all adjusted spreads from highest to lowest
- Choose a rating event, E , and a time interval, T .
- Plot the quantiles of the events E that occur within time T vs. quantiles of the adjusted spreads

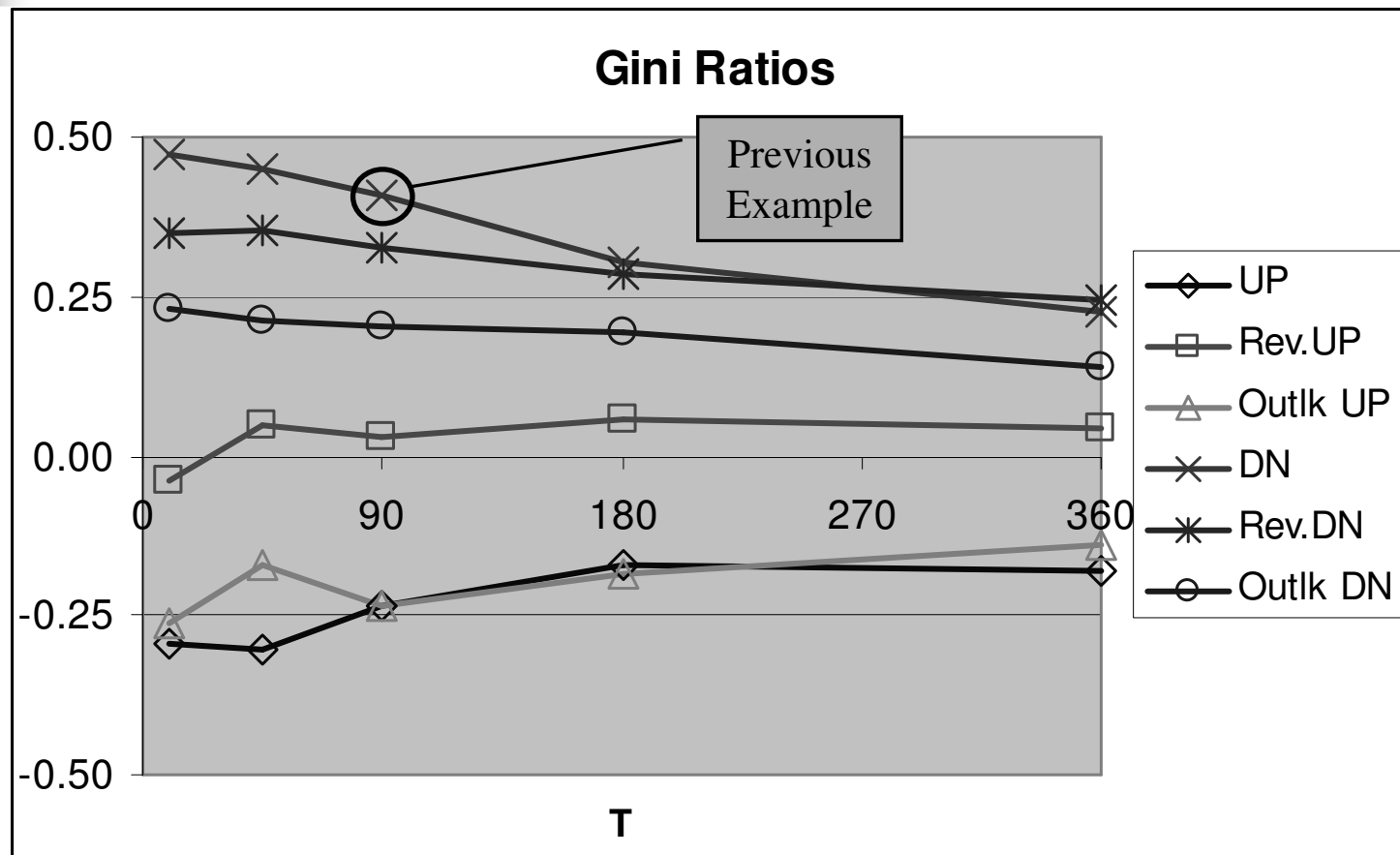


E = Downgrade, T = 90 days



Gini Values for Various Events and Times

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Properties of CDS Rates around Credit Events

- Upgrades do not appear to be anticipated or to affect CDS spreads
- Downgrades:
 - Appear to be anticipated
 - Exhibit large spread increases both before and after the event
 - Appear to exhibit announcement day effect
- Negative watch list and outlook announcements
 - Anticipated less strongly
 - Exhibit smaller spread increases both before and after the event
 - Announcement day effect seems stronger



Properties of CDS Rates 36

around Credit Events (continued)

- Size of average spread change seems disproportionately large since most rating changes are one or two notches
- Spreads on firms rated A or better show much less reaction than those for firms rated Baa
- The longer a firm has been in a rating class:
 - Anticipated of rating change is smaller
 - Size of change in credit spread is smaller



Properties of CDS Rates 37

around Credit Events (continued)

- Although not shown, equity returns:
 - Exhibit about same amount of rating event anticipation as CDS spreads for downgrades
 - Show no anticipation for upgrades and positive announcements
 - Show substantial response ex post to upgrades and positive announcements

