

Economically irrational pricing of 19th century British government bonds

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- British economy, finance, institutions
- British financial markets
- gilts (British government bonds) pricing anomalies

Origins of modern corporate capitalism:

Corporate capitalism was invented in nineteenth-century Britain; most of the market institutions that we take for granted today – limited [liability] companies, shares, stock markets, accountants, financial newspapers – were Victorian creations. So were the moral codes, the behavioural assumptions, the rules of thumb and the unspoken agreements that made this market structure work.

Paul Johnson, *Making the Market*, 2010

Britain post-1815:

- victorious in Napoleonic wars
- financial system widely credited for victory
- saddled with crushing national debt

- interesting issues, still inadequately explored so far:
liquidity traps, fiscal repression, extensive corruption,
flowering of the Industrial Revolution, ...

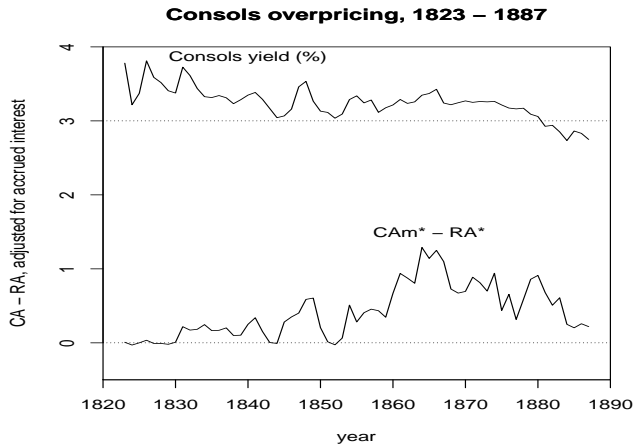
- British railway mania of the mid-1830s: equivalent to about \$2,000 billion of real capital investment for U.S. today as fraction of GDP
- British Railway Mania of the mid- and late-1840s: equivalent to about \$4,000 billion
- mania of the 1860s: equivalent to about \$2,000 billion (mostly in railways)
- mania of the mid-1830s: the only episode in history of gigantic and wildly speculative frenzy that was successful

British economy and national debt, 1840–1880:

All figures in millions of pounds sterling.

year	GDP	debt	CA	RA	NR
1840	566	798	362.2	126.1	-
1850	593	798	374.2	121.3	247.8
1860	828	802	400.6	115.0	246.2
1870	1153	748	393.6	102.7	220.1
1880	1379	738	390.9	92.3	204.2

Consols (CA) overpricing, 1823–1887:



Major gilts (CA, RA, NR):

- primarily book entry securities, at Bank of England
- perpetual, could be redeemed at par by government, could not be cashed in by investors
- Consols (CA) and RA: from 1750s to 1888–89
- NR: from 1844 to 1888
- 3% rate (1.5% twice a year) (with NR at 3.25% in 1844–54)

London Stock Exchange (LSE) and gilts:

- established to trade gilts
- around 1820, gilts about 2/3 of world's tradeable securities
- in mid-19th century, about 1,000 members (brokers, jobbers, speculators)
- quite sophisticated (options, ...), but poorly documented

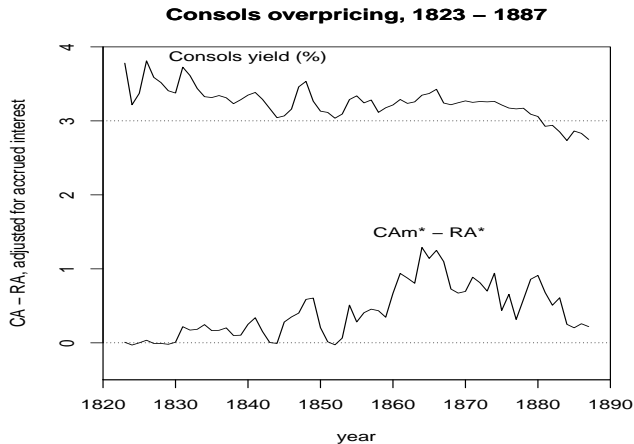
Major gilts at LSE:

- quoted in units of £100.00
- cash settlement (only CA available for “account”)
- standard broker commission and jobber “turn” (bid-ask spread) each £0.125
- no taxes, transfer fees, ...
- shares very different: only for bi-weekly “account,” high commission, high spread, transfer fees, stamp tax of about 0.5%, ...

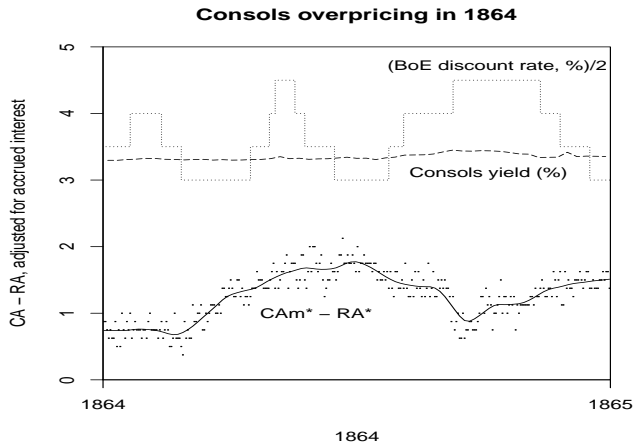
Major gilts:

- interest (“dividends”) paid 5 Jan. and 5 July for CA, 5 April and 10 Oct. (later 5 Oct.) for RA and NR
- prices quoted with accrued interest
- expect CA approximately £0.75 below RA in Jan.–March, £0.75 above in April–June, ...
- known to be a “good enough” approximation to contemporaries
- $C_{Am} = CA$ “for money,” $C_{Am}^* = C_{Am}$ minus accrued interest, $C_{Am}^* - RA^* =$ difference C_{Am} and RA plus or minus 0.75

Consols (CA) overpricing, 1823–1887:



Increase in Consols overpricing, 1864:



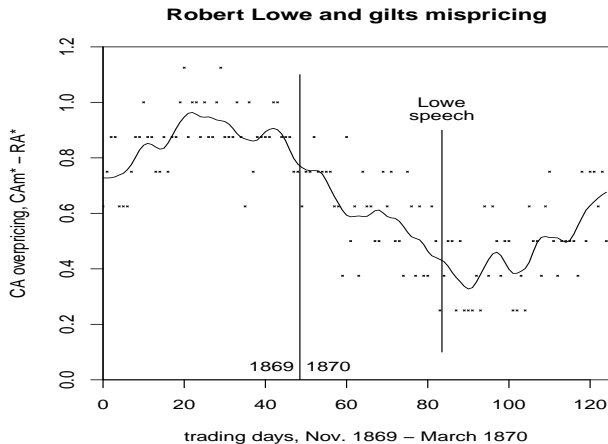
Information:

- almost all newspapers carried gilts prices
- mostly very unsophisticated investors
- development of financial journalism and financial analysis
- technology limitations: “pigeon expresses,” ...
- very high quality data at Bank of England, almost completely unexplored

Redemption rules and market realities:

- large size of major gilts forced strategic bargaining:
in 1844 conversion, investors got 2–3% over par;
in the Goschen 1888 conversion, about 1%
- legal rules: CA and RA required 1-year notice,
NR could be redeemed immediately
- in Goschen 1888 conversion, CA and RA investors
received £0.25 more than NR holders

Lowe conversion proposal of 1870:



Contemporary reactions to Consols overpricing:

- wide recognition of anomaly: “the public mind has been sorely puzzled ...” (newspaper, 1860)
- several long campaigns by newspapers alerting readers to arbitrage opportunity
- acceptance (from 1872 textbook on arithmetic): “the price of [RA and NR] ought therefore to be always the same, but ought to differ from that of [CA] either in excess or defect by [£0.75]: but owing to the comparative scarcity of [CA] on the Stock Exchange, their price is adventitiously higher than that of [NR and BA]”

Theoretically it may be said a stock of one or two hundred millions must be as easily dealt in as a larger one. But the fact is different. The jobbers prefer the larger article, and the stock of [£390 million] is preferred to the smaller though still bulky competitors.

Economist, 19 February 1870

Liquidity excuse inadequate:

- many long-term investors (especially trusts)
- jobber quotes binding for £1,000
- prices not affected by deals for tens of thousands of pounds
- average size of account around £3,000
- bid-ask spread occasionally wider by £0.125 for RA and NR than for CA

Heterogeneous beliefs: Post Office Savings Bank customer investments in gilts, 22 Nov. 1880 to 31 March 1881:

gilt	number of investments	aggregate investments
CA	3,202	£173,133
RA	481	26,301
NR	3,291	187,309

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or just google/bing “odlyzko”

Supplementary slides