# It's Not What You *Don't* Know that Hurts You—
# It's What You Know For Sure that Just Ain't So.
# Revisiting *Stocks for the Long Run*

*Selected Slides*

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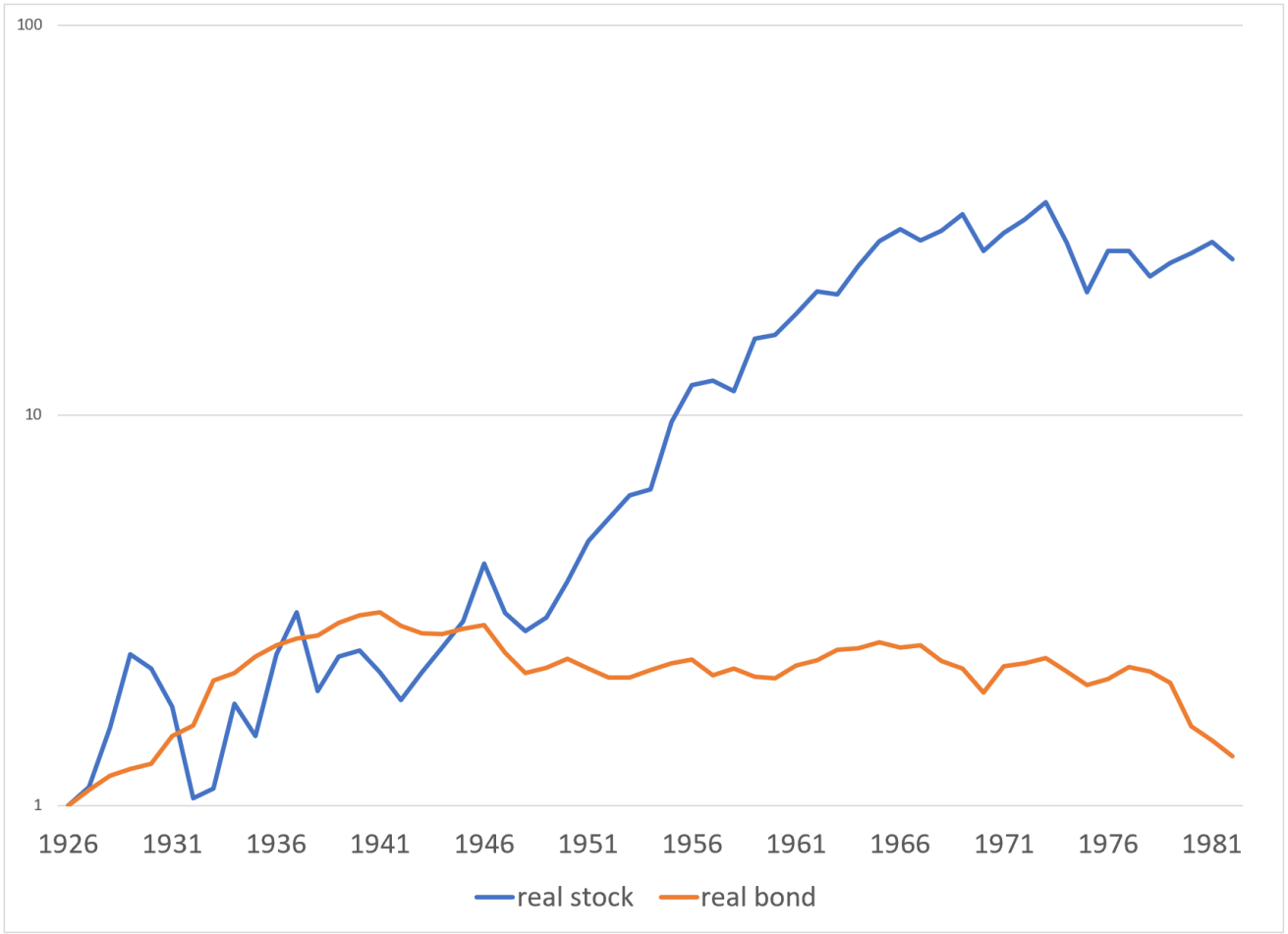
# The talk has three parts

1. The US historical record
2. The international evidence, stocks versus bonds
3. Enduring "equity premium"—or one-time bond deficit?

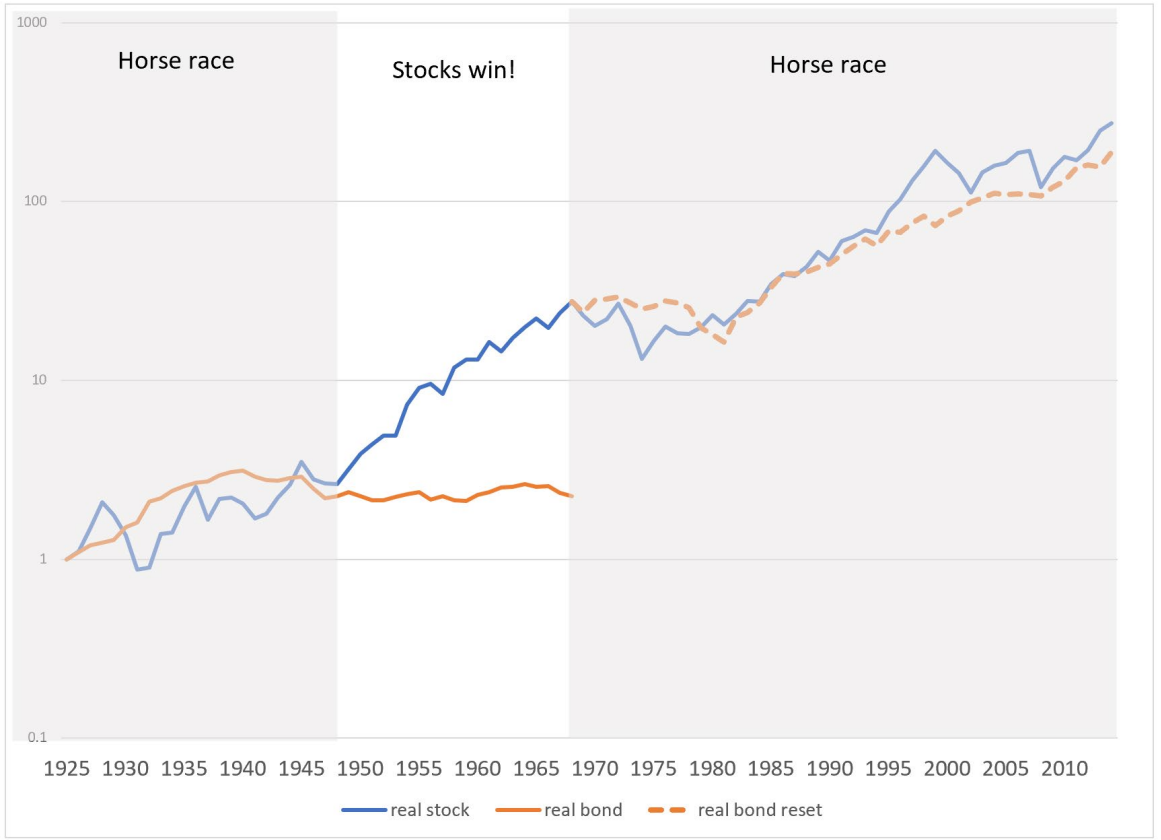
*Note: only a fraction of the slides in the presentation have been printed. These are intended for your reference and review. Charts where I could not claim some kind of copyright are not reproduced. There are also a few additional slides in this handout that are not shown on screen.*

*For more detail, see my papers at ssrn.com. Caution: work-in-progress. Results preliminary.*

# At the dawn of the Ibbotson SBBI, circa 1982



# A closer look post-1925: Three periods



# Looking at the US historical record as a whole

## Stocks and bonds about the same:

- 1802 – 1861
- 1873 – 1896
- 1926 – 1948
- 1969 – 2012

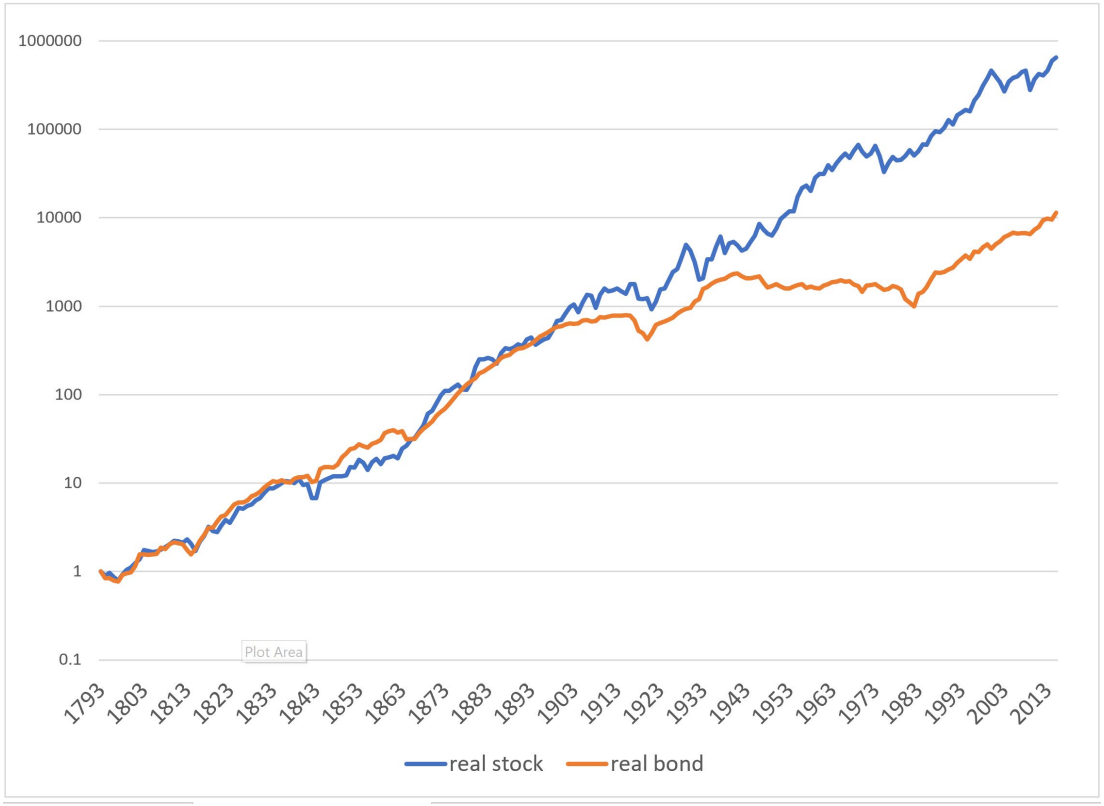
*… ~150 years*

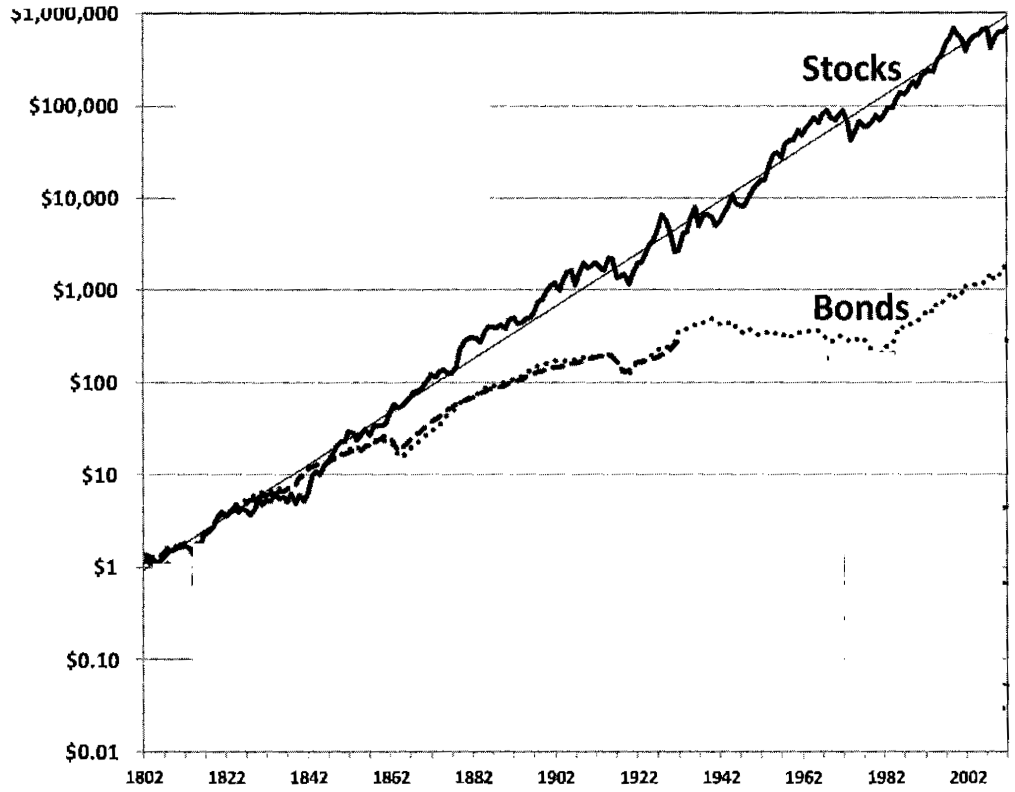
## Stocks beat bonds:

- 1862 – 1872
- 1897 – 1925
- 1949 – 1968

*… ~60 years*

# The emerging historical record: McQuarrie compared to Siegel



# Net of new data, relative to Siegel

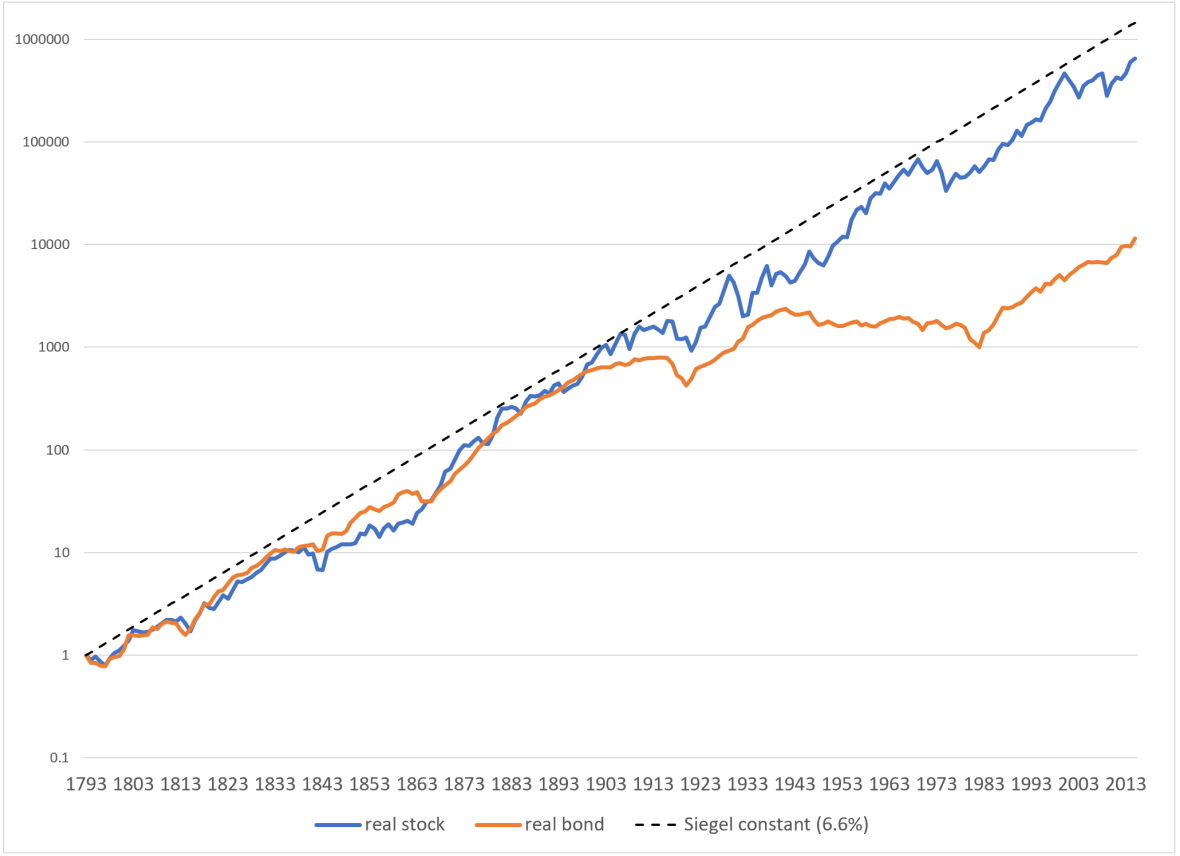
**BONDS**

- An extra 60 bp in real return (1/1802 – 1/1871)
  - Aggregate bond index not the minimum yield from Homer (1963, Table 38) & corporate only from 1857
- An extra 105 bp real (1/1871 – 1/1926)
  - Not my data—relies on Snowden (1990), who recast Macaulay's railroad bonds into holding period returns
- An extra 42 bp real (1926 – 2012)
  - Not my data collection: swapped Ibbotson SBBI Corporate for SBBI Long Government

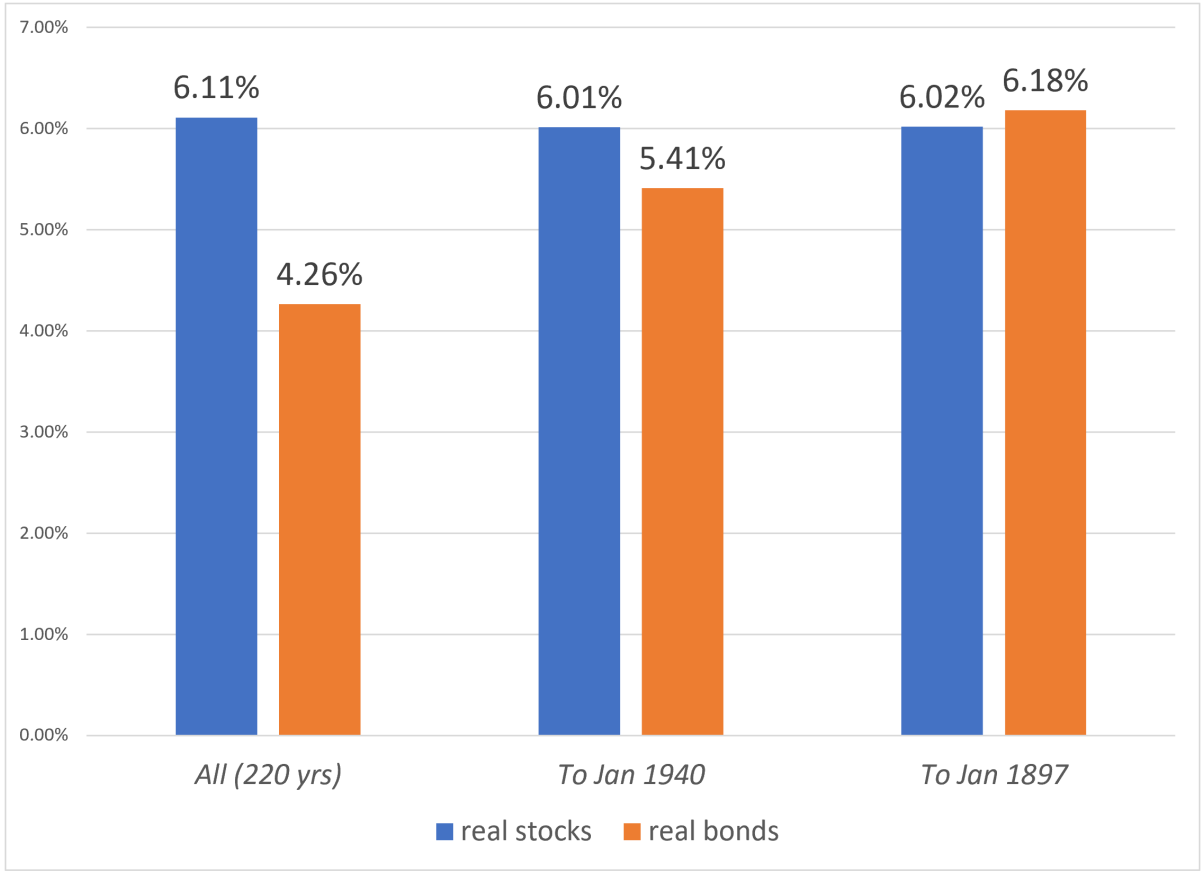
**STOCKS**

- A reduction of 64 bp in real return (from 1/1802 – 1/1871)
  - Observing dividends + including Philadelphia banks + including 1st & 2nd BUS (cap weights)
- A reduction of 20 bp real (from 1871 – 1925)
  - Using same underlying data (Shiller → Cowles → Macaulay), but annual re-investment
- A reduction of 19 bp real (from 12/1925 to 12/2012)
  - Using CRSP total market rather than Ibbotson S&P & applying annual rather than monthly re-investment

# Siegel's constant of 6.6% real?
# That's now a peak return, not the average expectation



# As the endpoint is moved back, the bond return improves



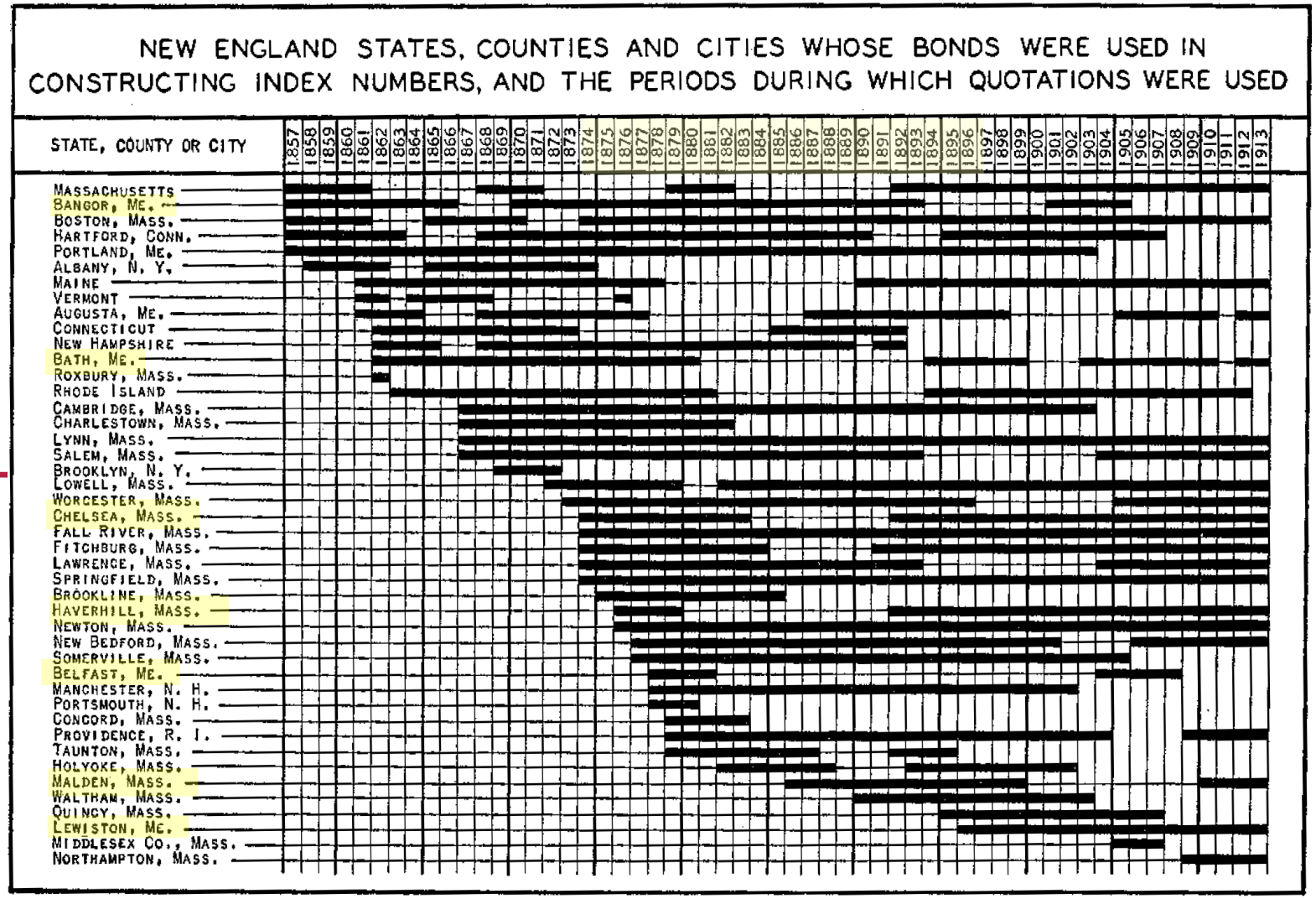
# McQuarrie improvements* summarized

- Bonds
  - Much greater coverage prior to 1926
  - Focus on holding period return experienced by the average bond investor
    - Rather than a search for the risk-free rate
- Stocks
  - Much greater coverage prior to 1871 & capitalization-weighted
  - Complete dividend record observed
    - In the early years dividends accounted for ~100% of total return

*(with grateful acknowledgement to the data collection effort led by Richard Sylla at NYU)

# Siegel's Achilles heel (bonds):

- Used < 1/100 of bonds traded (face amount)
- Tiny issues from small towns in Massachusetts and Maine 1865 - 1914
- Omitted most Federal bonds trading before 1835



# Or as Siegel's source puts it→

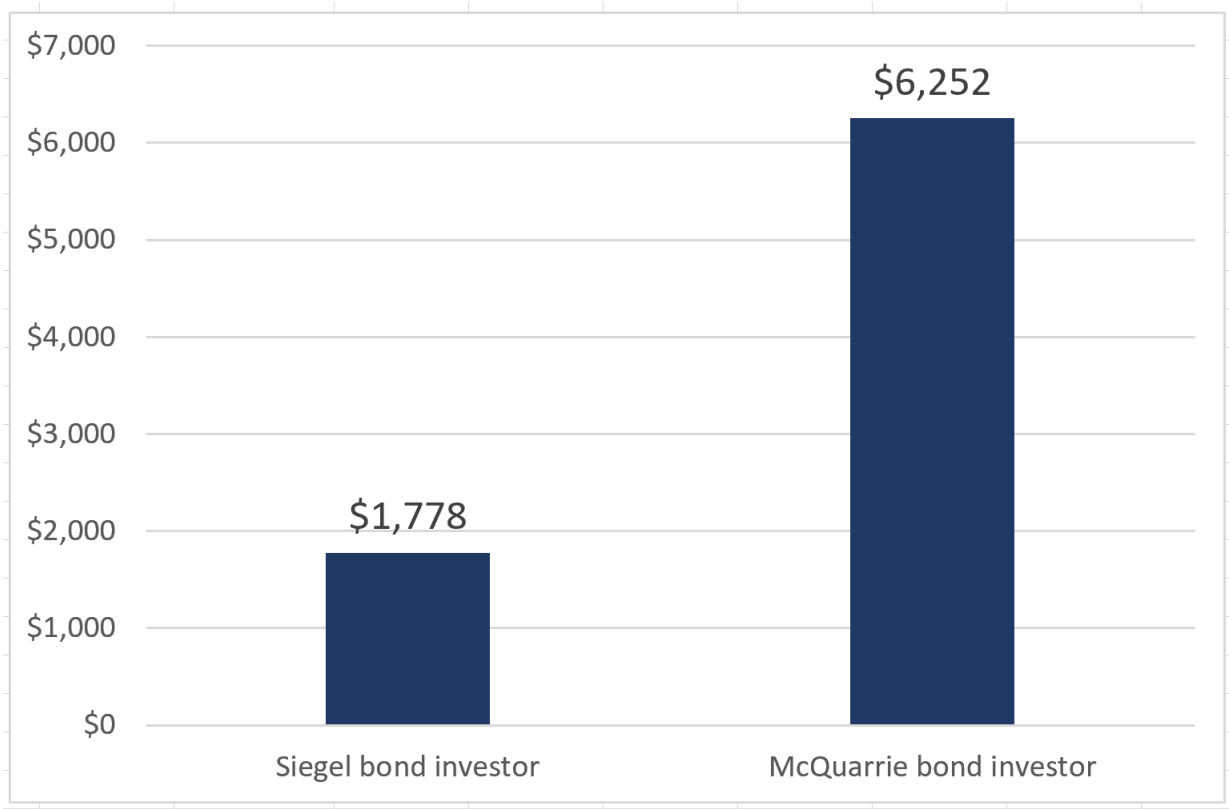
- I use the railroad bond index
- Professor Siegel, committed theoretically to the risk-free rate, uses the bonds of Chelsea, Malden, Bath, Lewiston, etc.

- "We have used index numbers based on the yield of New England municipal bonds as a check on the results… We did not consider using such indexes as a substitute for the railroad indexes… The accuracy and adequacy … are not to be compared with the accuracy and adequacy of the railroad quotations. Available quotations were neither very good nor very numerous"
- "Moreover … the holder of municipal bonds has always had certain tax exemptions … [which] made such bonds poor material for our purposes."

Macaulay (1938), p. 74

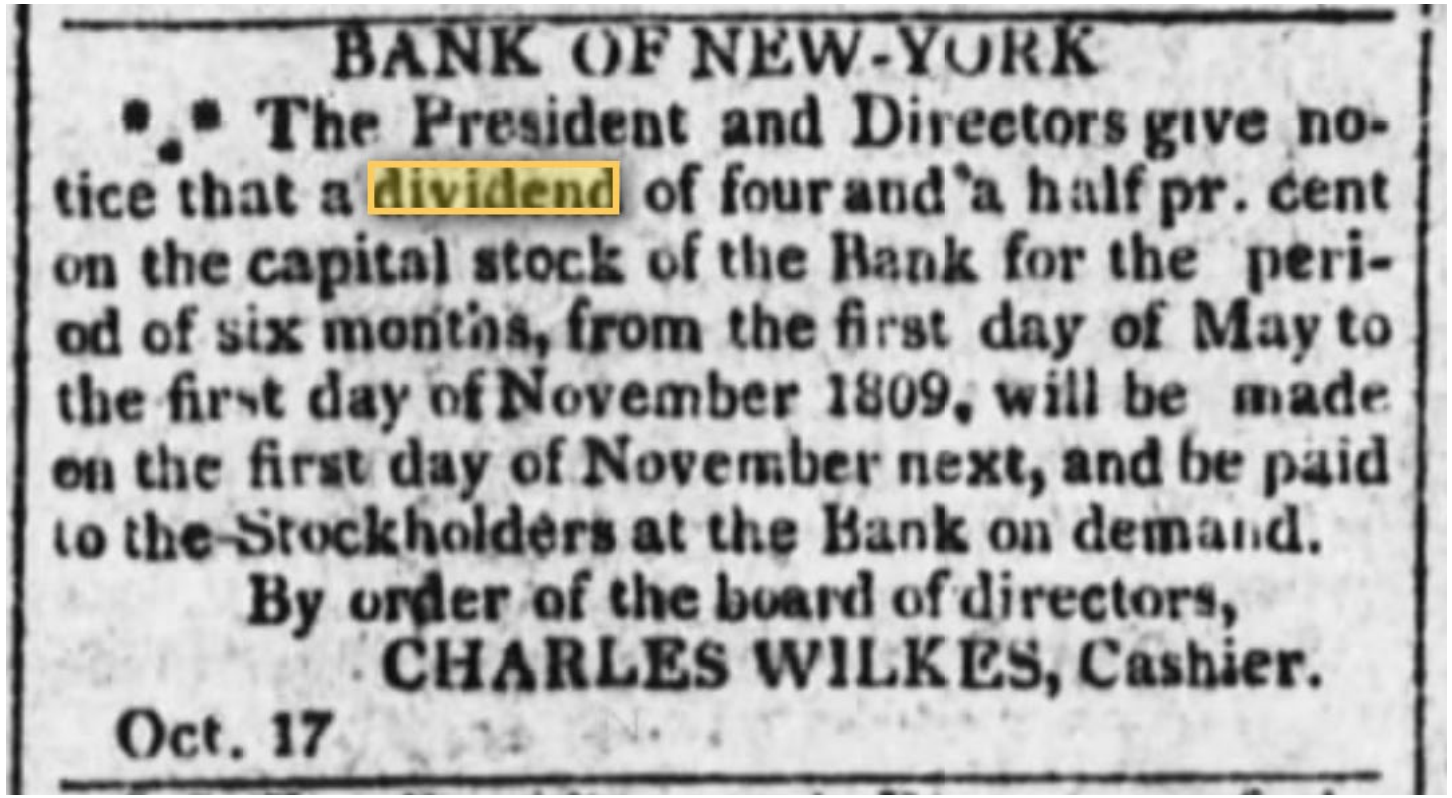
## Over Siegel's period 1802 to 2012:

My bond investor ends with a portfolio 3.5X greater than Siegel's bond investor



# My authority (stocks):

- I found the dividends
- Dividends accounted for 100% of total return, more or less, in these early years
- Without observed dividends, estimates of total return are just guess work



BANK OF NEW-YORK

*** The President and Directors give notice that a dividend of four and a half pr. cent on the capital stock of the Bank for the period of six months, from the first day of May to the first day of November 1809, will be made on the first day of November next, and be paid to the Stockholders at the Bank on demand.

By order of the board of directors,

CHARLES WILKES, Cashier.

Oct. 17

To compile my dividend record I tapped a wide variety of sources

- Legislative records
- Early compilers (next page)
- Miscellaneous, including corporate biographies

Early State Records Onl

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MSA SC M 3198, Page 1113 View image  << PREVIOUS NEXT >>

8 VOTES AND PROCEEDINGS, NOVEMBER SESSION, 1809.

nagers and company, of the Baltimore and Frederick-town turnpike road company, for dividends on stock, £28 2 6; from Benjamin Harwood, trustee, for dividends of interest and reimbursement of principal on stock, £9,119 9 2½; from William Marbury, for a balance due from him on the auditor's books, £5,054 7 10; from the United States, for dividends of interest and reimbursement of principal on stock transferred to the treasurer of the western shore, in behalf of, and for the use of, the state of Maryland, £20,656 10 4; from the United States, it being for so much eight per cent. stock redeemed, £28,687 10 0; and from Robert Wright, Esquire, late governor of Maryland, the sum of £450 9 0.

It appears to your committee, that in conformity to a resolution of November session, 1808, the treasurer has invested, in behalf of the state of Maryland, 70,000 dollars in stock of the Farmers Bank of Maryland, 30,000 dollars in stock of the Mechanics Bank of Baltimore, 5,000 dollars in the Baltimore and York-town turnpike road stock, and 5,000 dollars in the Baltimore and Frederick-town turnpike road stock, amounting, in the whole, to the sum of 110,000 dollars.

# STATISTICAL VIEW

## OF THE MONIED INSTITUTIONS OF THE CITY OF NEW-YORK,

(PREPARED FOR THE NEW-YORK DAILY ADVERTISER,)

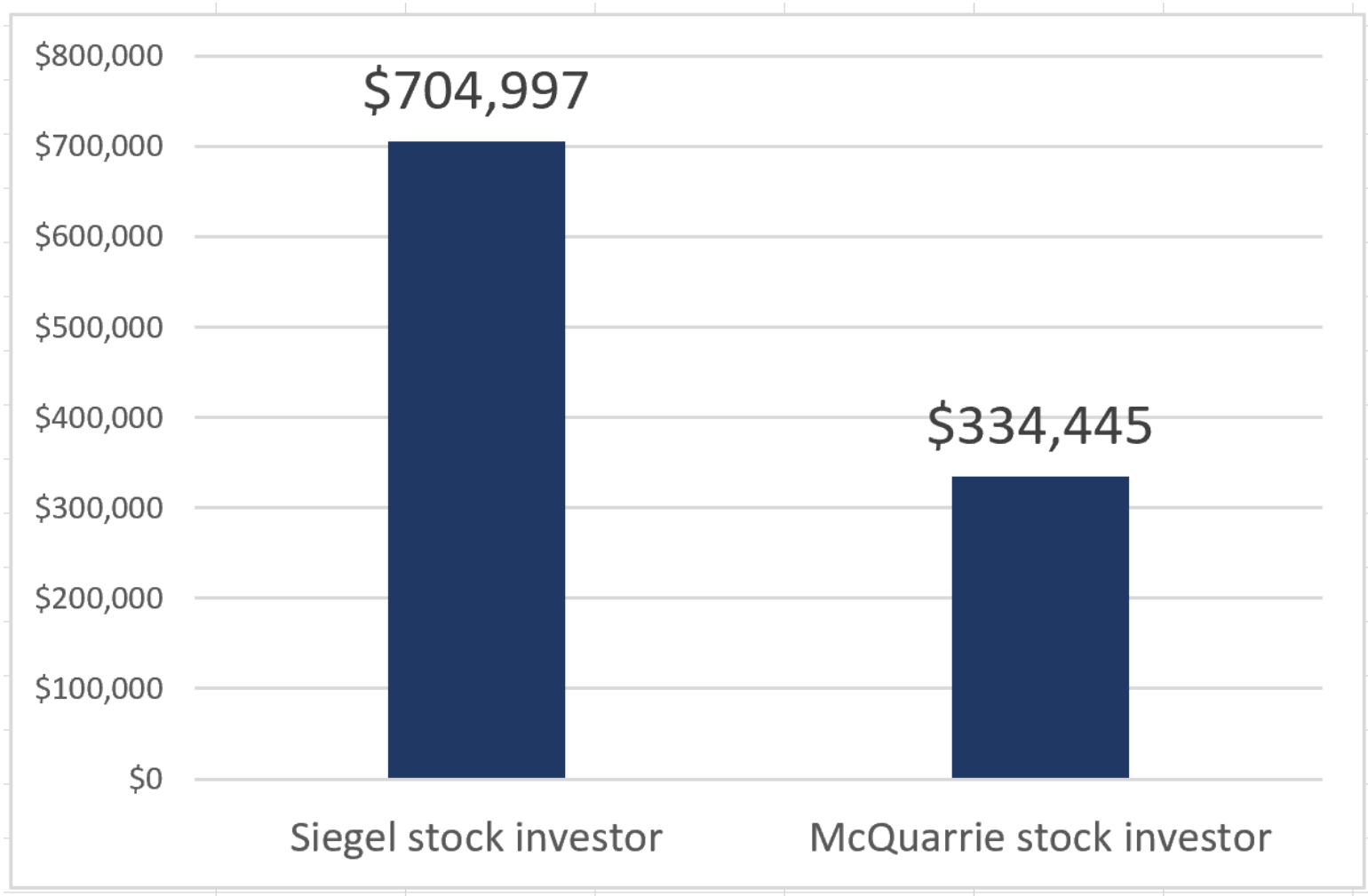
*Shewing the Number of Shares of Stock, the Amount of each Share, and the Product of each Institution, from the 1st day of January, 1825, to the 1st day of January, 1826.*

BY THOMAS H. GODDARD, ACCOUNTANT.

| BANKS. | Number of Shares. | Am't of each. | Whole Capital. | Time & Rate of Dividend. | Am't of Dividnd |
|---|---|---|---|---|---|
| UNITED STATES. Situated at Philadelphia, with branches in the different States, incorporated by an act of Congress in April, 1816, to endure 35 years, with a capital of $35,000,000, divided into shares of $100 each. The Branch at New-York is supposed to employ a capital of ..... The parent bank has a surplus capital of two hundred thousand dollars to meet losses. Discount days: Wednesdays and Saturdays. | 200,000 | 100 | 2,000,000 | Jan...2½<br>July..2½ | 50,000<br>55,000 |
| AMERICA. Incorporated 1812, for 20 years. Discount days: Tuesdays and Fridays..... | 20,000 | 100 | 2,000,000 | Jan...2½<br>July..2½ | 50,000<br>50,000 |
| MECHANICS'. Incorporated 1810, capital $1,500,000, and in 1811 extended 2,000,000, to remain till 1832 Discount days: Wednesdays and Saturdays... | 80,000 | 25 | 2,000,000 | Jan...3½<br>July..3½ | 70,000<br>70,000 |
| MANHATTAN COMPANY. Incorporated 1799, to supply the city with water, charter unlimited, including banking privileges. Discount days: Tuesdays and Fridays | 41,000 | 50 | 2,050,000 | Jan...3½<br>July..3½ | 71,750<br>71,750 |
| UNION. Incorporated 1811, to endure till 1831. Discount days: Tuesdays and Fridays ..... | 20,000 | 50 | 1,000,000 | May..2½<br>Nov..2½ | 25,000<br>25,000 |

## Over Siegel's period 1802 to 2012:

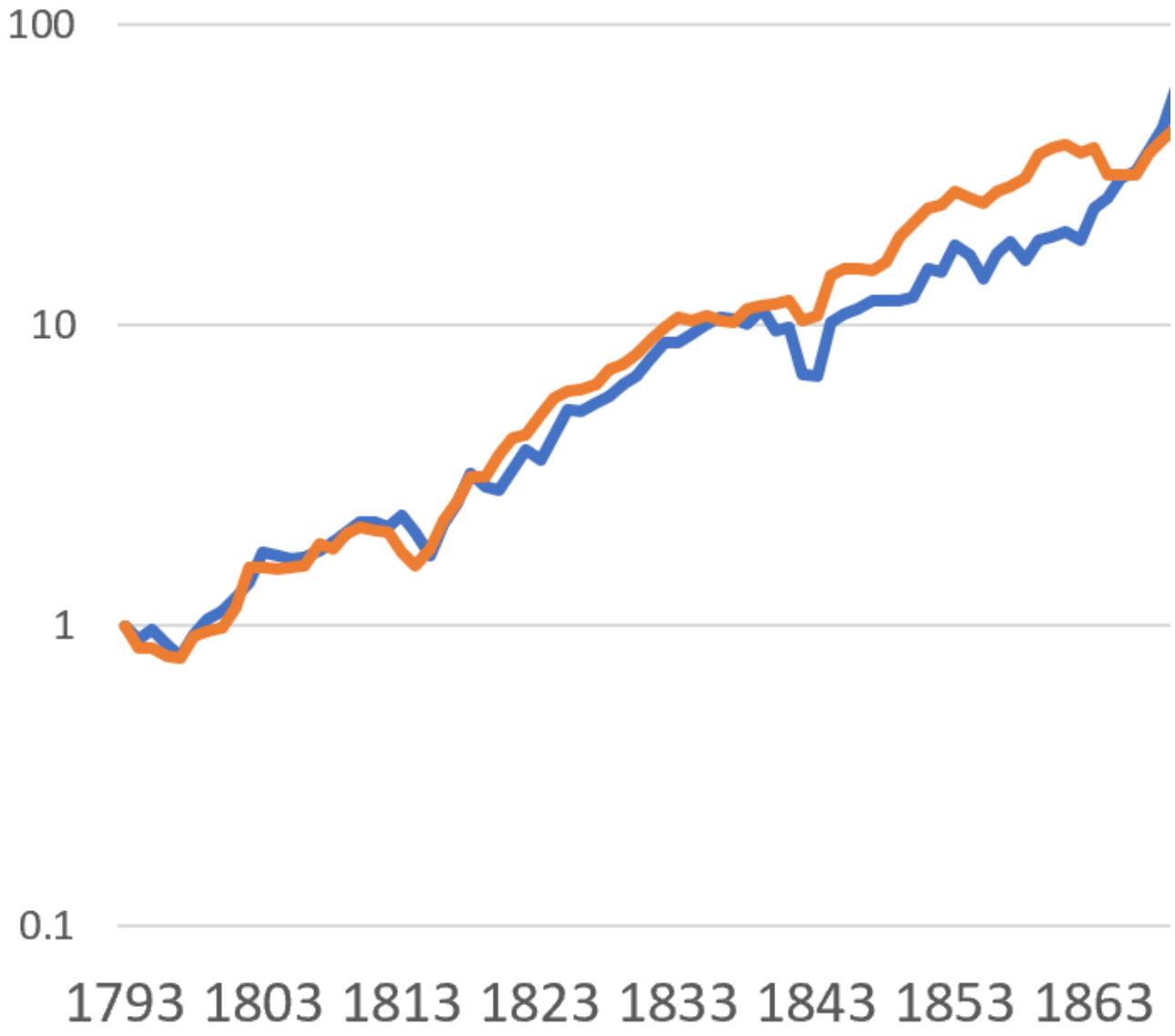
My stock investor ends with a portfolio 50% smaller than Siegel's stock investor



Can *US* bonds beat *US* stocks over the long run?

As of 1862 they had!

- $1 invested in bonds in 1793 produced $37.38
- $1 invested in stocks in 1793 produced $19.02



# How often do bonds beat stocks?
# 20 year rolling, difference > |0.50%|

| | **Bonds win** | **Stocks win** | **Neither** |
|---|---|---|---|
| 19th century (from 1813) | 46 | 26 | 17 |
| 20th century (thru 2013) | 6 | 91 | 15 |
| ***Totals*** | ***52*** | ***117*** | ***32*** |

# Big picture: The Siegel gambit fails

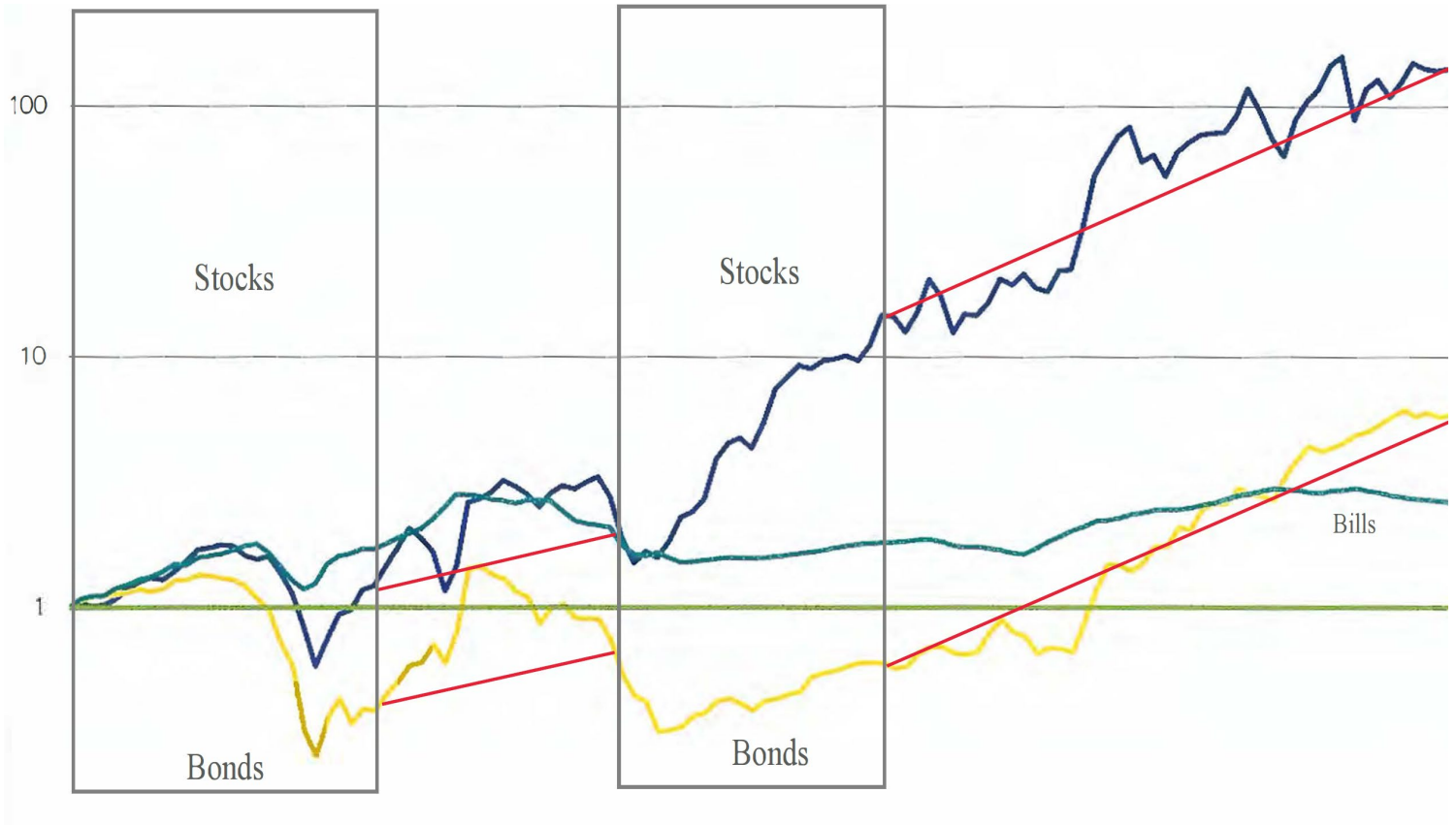
- The 19th century in the US does *NOT* replicate the 20th century
  - US stock and bond returns show a different relationship
- Going forward, 21st century returns now more uncertain
  - Will it resemble the 20th century? Revert to the 19th century pattern? Be different still?
- No certainty that stocks will beat bonds over multi-decade intervals
- Unlikely stocks will return 6.6% real, over any lengthy planning interval

# #3
# What you know ('cause theory says so)

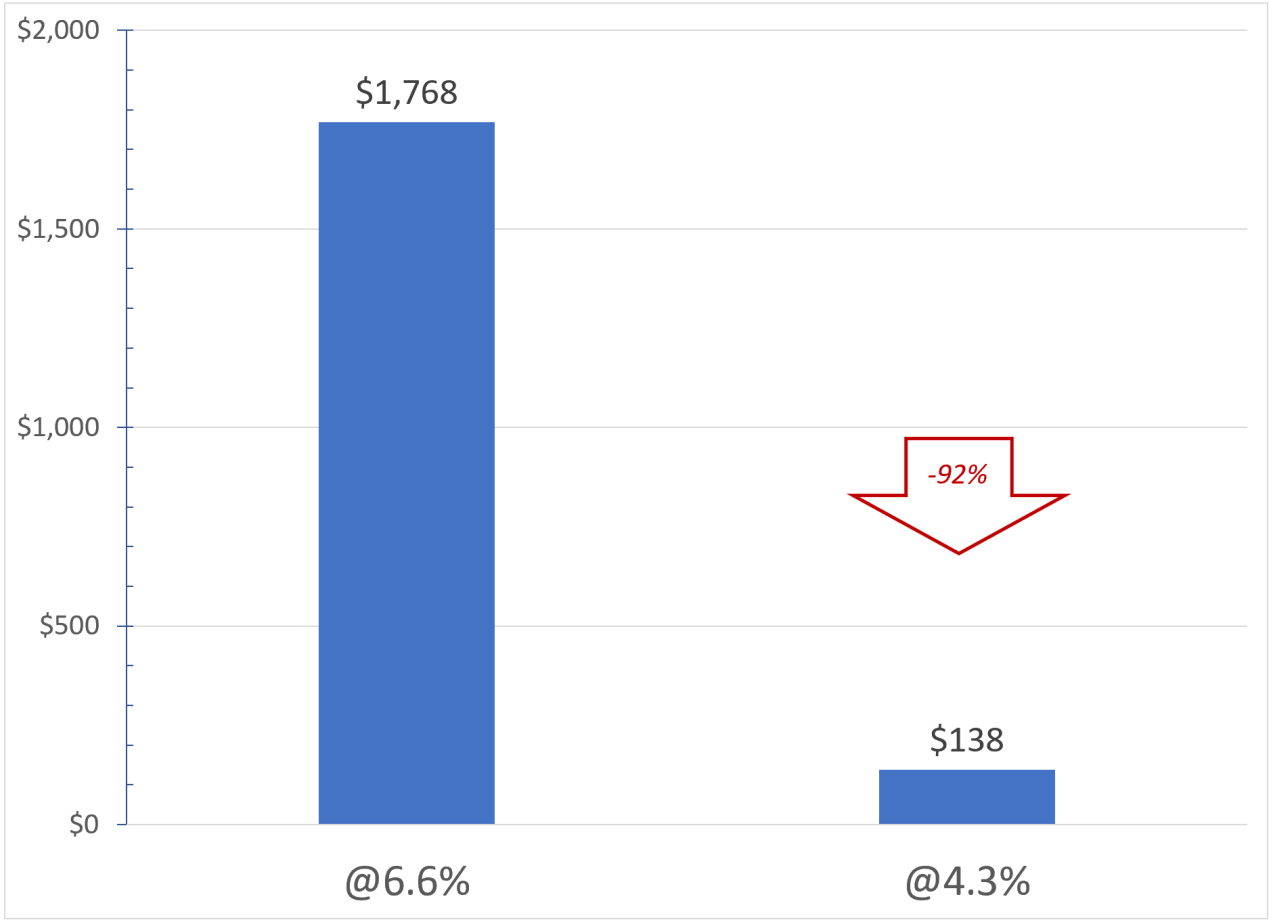
- International stocks and bonds will show the same pattern as the US
  - Natural law: US & International returns just different samples drawn from one population of stock (bond) returns
- Professor Siegel believes the international data to be supportive:
- "[beginning in 1900 these world markets] would have produced a compound real return of 5.4 percent, very close to the 6.2 percent found in the United States … the average equity premium [was] actually higher"

--Siegel, 5th edition, p. 90, citing Dimson Marsh & Staunton book *Triumph of the Optimists*

# Same pattern as post-1925 US data: horse race here, stock advantage there



# Value of $1 invested for 117 years, at Siegel hypothesized constant vs. all-World ex-USA actual

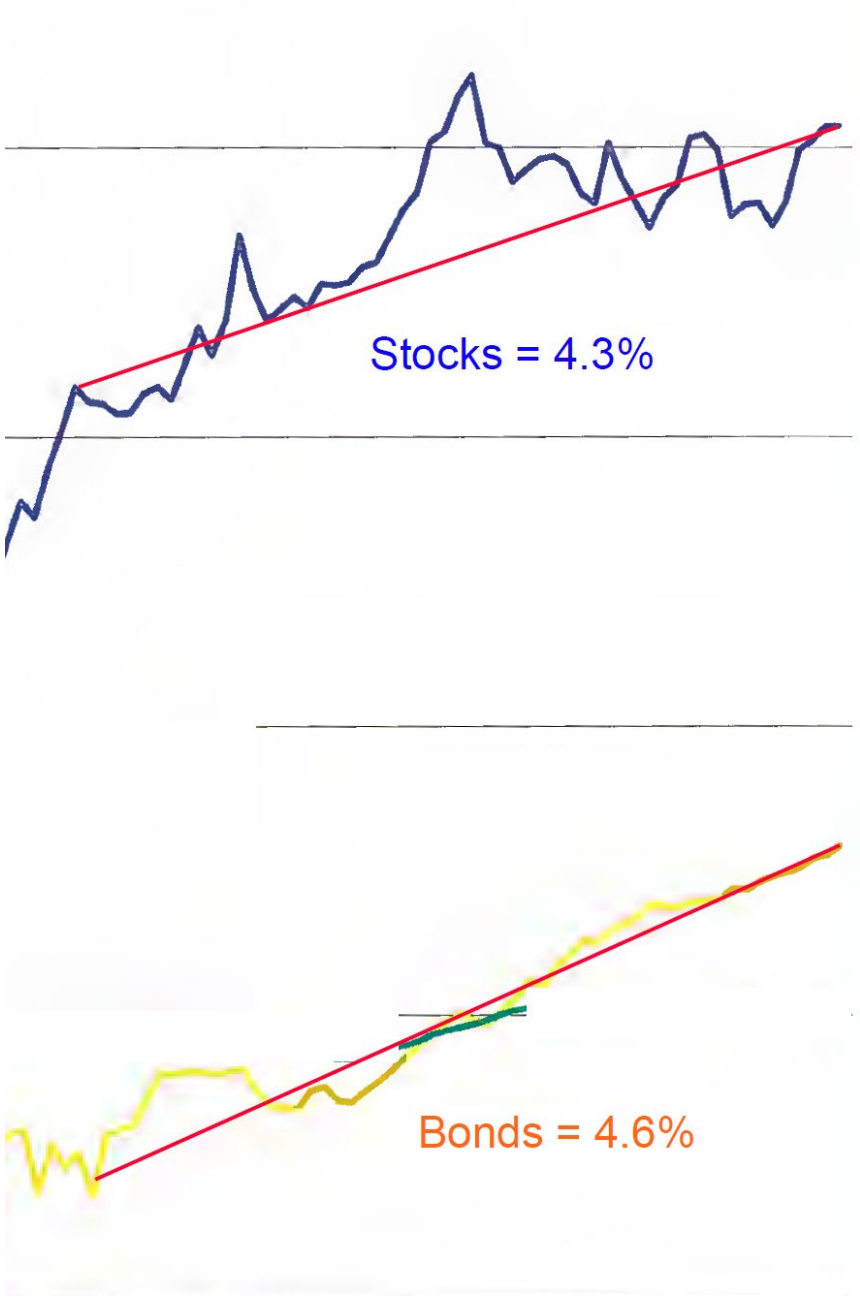


# Detail #2: Japan

- Japanese government bonds have beaten Japanese stocks since 1960
- Fifty-seven years

*[DMS / Credit Suisse yearbook 2017, real returns, p.146, with white out]*

*Compare Siegel's comments, 5th edition, p. 200, bottom*



# Dismiss Japan as a special case?
# International examples could be multiplied …

| Notable equity deficits over periods of 20+ years | | | | |
|---|---|---|---|---|
| ***Nation*** | ***Period*** | ***Stocks*** | ***Bonds*** | ***Deficit*** |
| France | 1960 – 2017 | 4.6% | 5.6% | -1.0% |
| Portugal | 1900 – 1950 | 2.5% | 3.5% | -1.0% |
| Sweden | 1910 – 1950 | 1.6% | 3.3% | -1.7% |
| Switzerland | 1900 – 1940 | 1.8% | 2.8% | -1.8% |

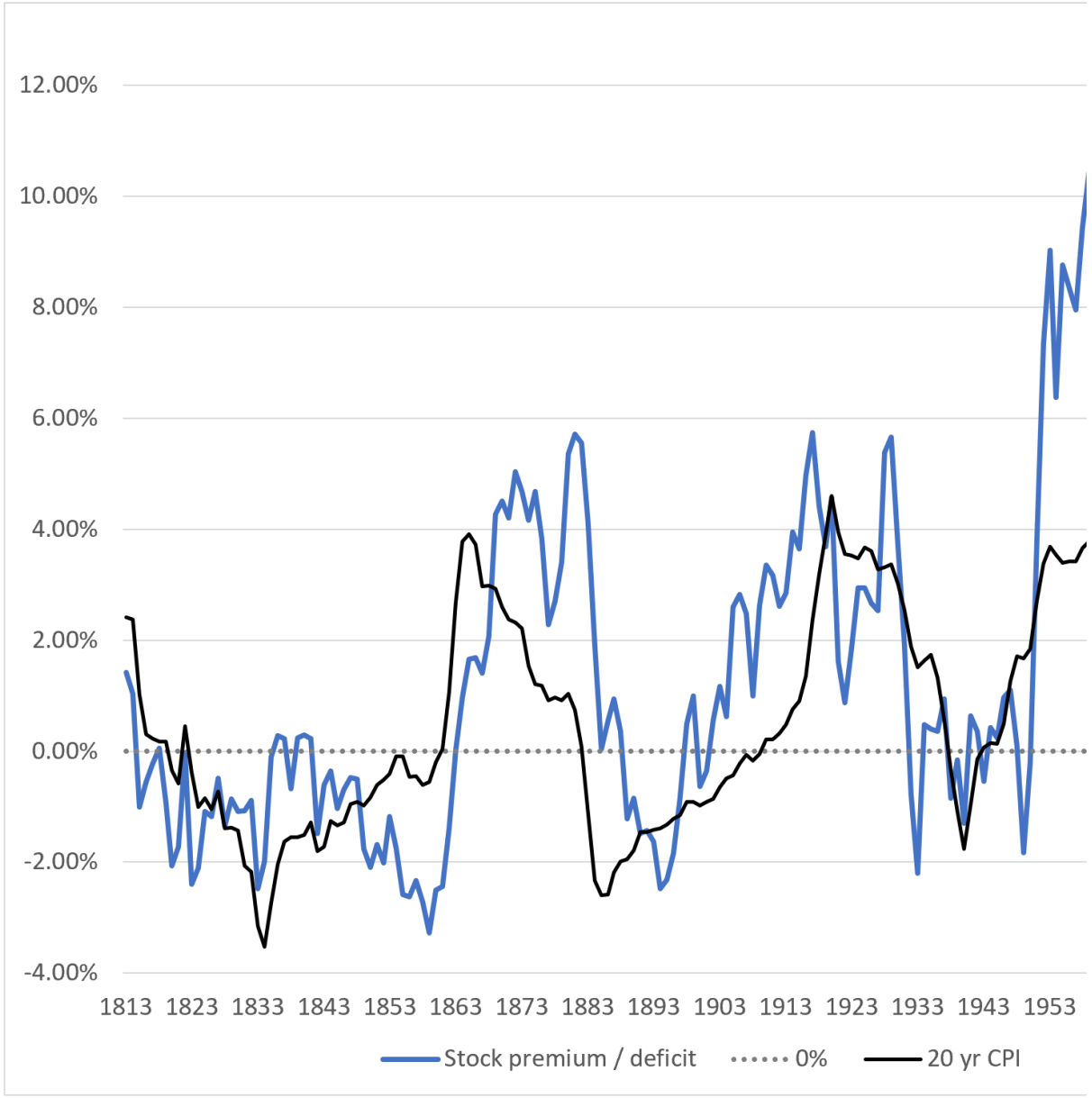
Source: DMS / Credit Suisse Global Investment Returns Yearbook 2017
Real returns from beginning to beginning of stated years
See McQuarrie, "Stock Market Charts You Never Saw," at ssrn.com, for additional examples

# Summary: The evolving historical record

- International results (DMS), updated beyond the peak of the 90s boom, and including poor performers initially excluded, show:
  - How poorly stocks can perform over multi-decade intervals
  - How frequently, and for how long, bonds can beat stocks
- US results, taken back to 1793, and with more complete data, show:
  - How different the 19th century pattern was
  - Long periods in which stocks failed to beat bonds & one lengthy period in which bonds beat stocks

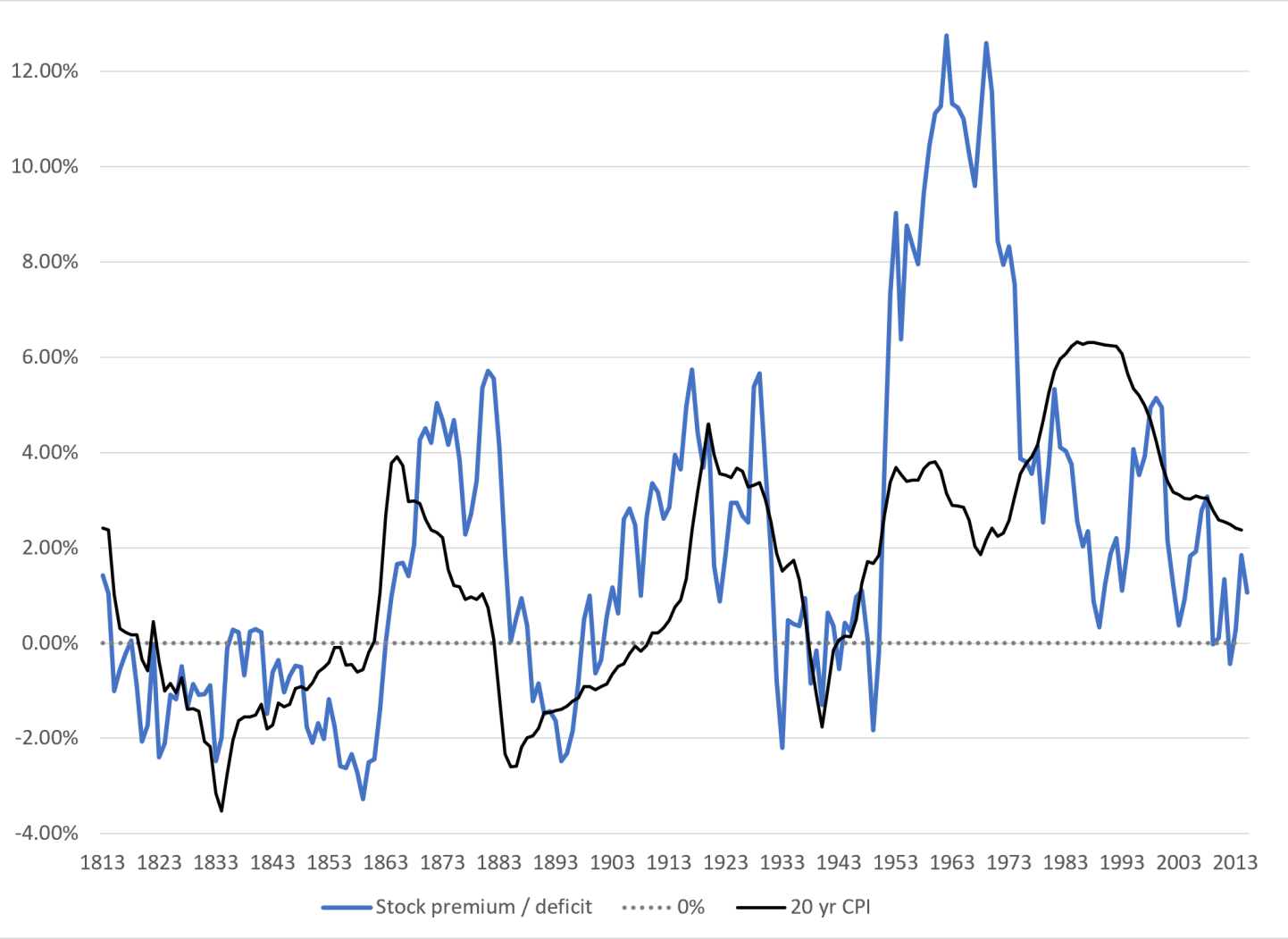
# Does wartime inflation and its aftermath explain it?

- 20 year annualized CPI in black
- → Milton Friedman explanation

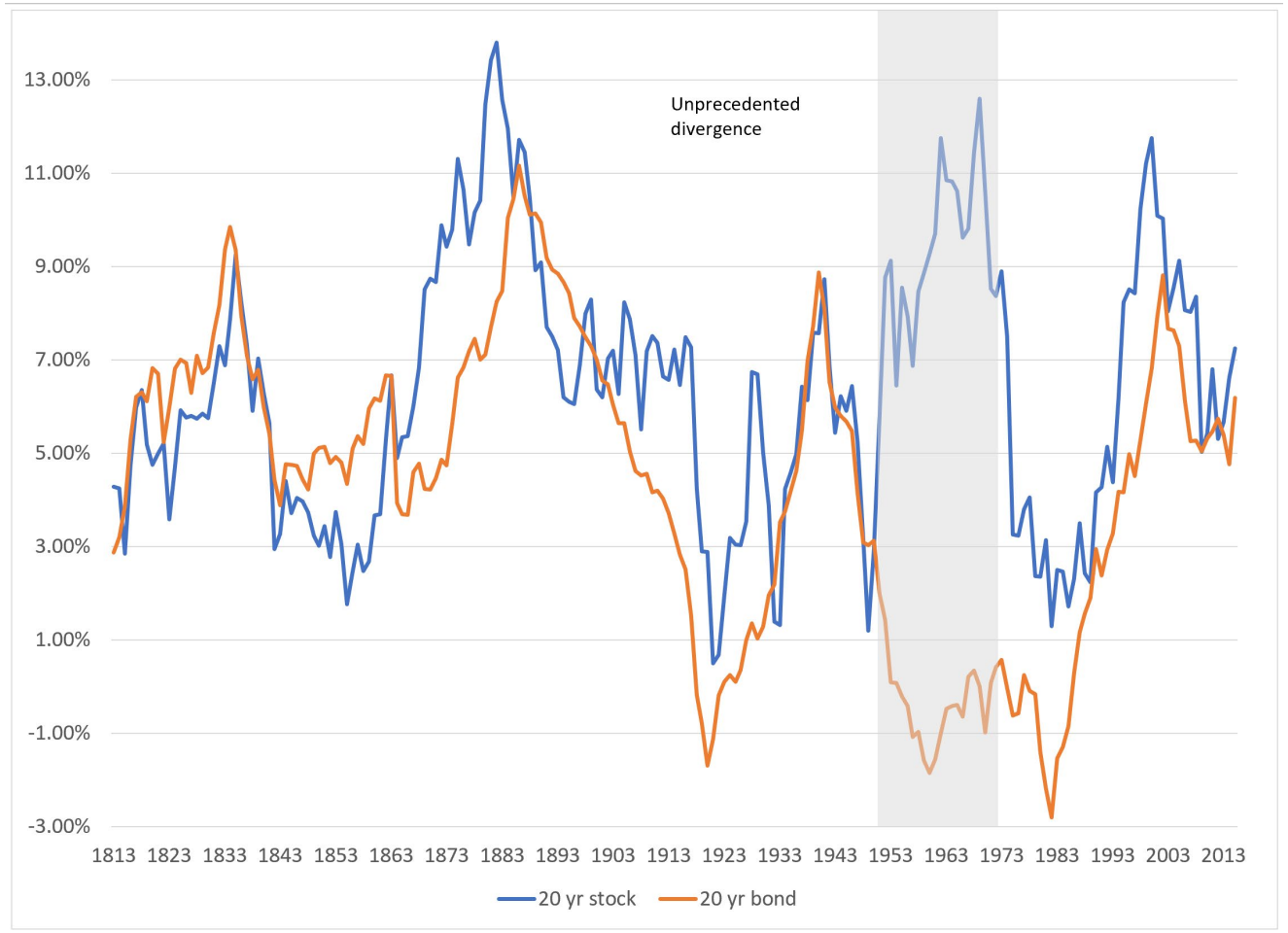


# Just one problem …

When I remove the truncation the pattern falls apart



# The underlying 20 year rolls highlight the divergence



# Take away:

- Might the Ibbotson SBBI dataset comprise a short period biased by a huge outlier—a unique, unprecedented, one-off event?
- An outlier so big that it has distorted all returns data, whether mean, standard deviation, or correlation, estimated on post-1925 US data
- Producing a misleading and unreliable projection of the investment returns to be gained from stocks versus bonds—or any allocation between them

# Implications for 21st century investors

- What if …
  - You could not assume that stocks will out-perform bonds over your planning horizon?
- What if …
  - The Ibbotson SBBI data were *not* a good guide to asset allocation?
- What if …
  - Asset returns—stocks, bonds, whatever—do follow a random walk?
    - Absent systematic biases (e.g., war time inflation) &
      one time shocks (e,g., going off the gold standard for good)