

APPLIED ECONOMETRICS (MACRO MODULE)

James Morley

COURSE OUTLINE

- Time Series
- Models
- Inference
- Forecasting
- Structural Analysis

PART I: "TIME SERIES"

OUTLINE

- Macroeconomic Data
- Serial Correlation
- Trends and Breaks
- Methodology

READINGS AND MATERIALS

- Stock and Watson, C. 12
- Hansen, JEP
- Hoover, Ch.5
- Sims, JEP
- HW# 1 posted (due Tuesday, March 23)
- GAUSS lite

TIME SERIES?

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- collection of observations for a variable (e.g., aggregate output) over time

$$\{y_1, y_2, \dots, y_T\}$$

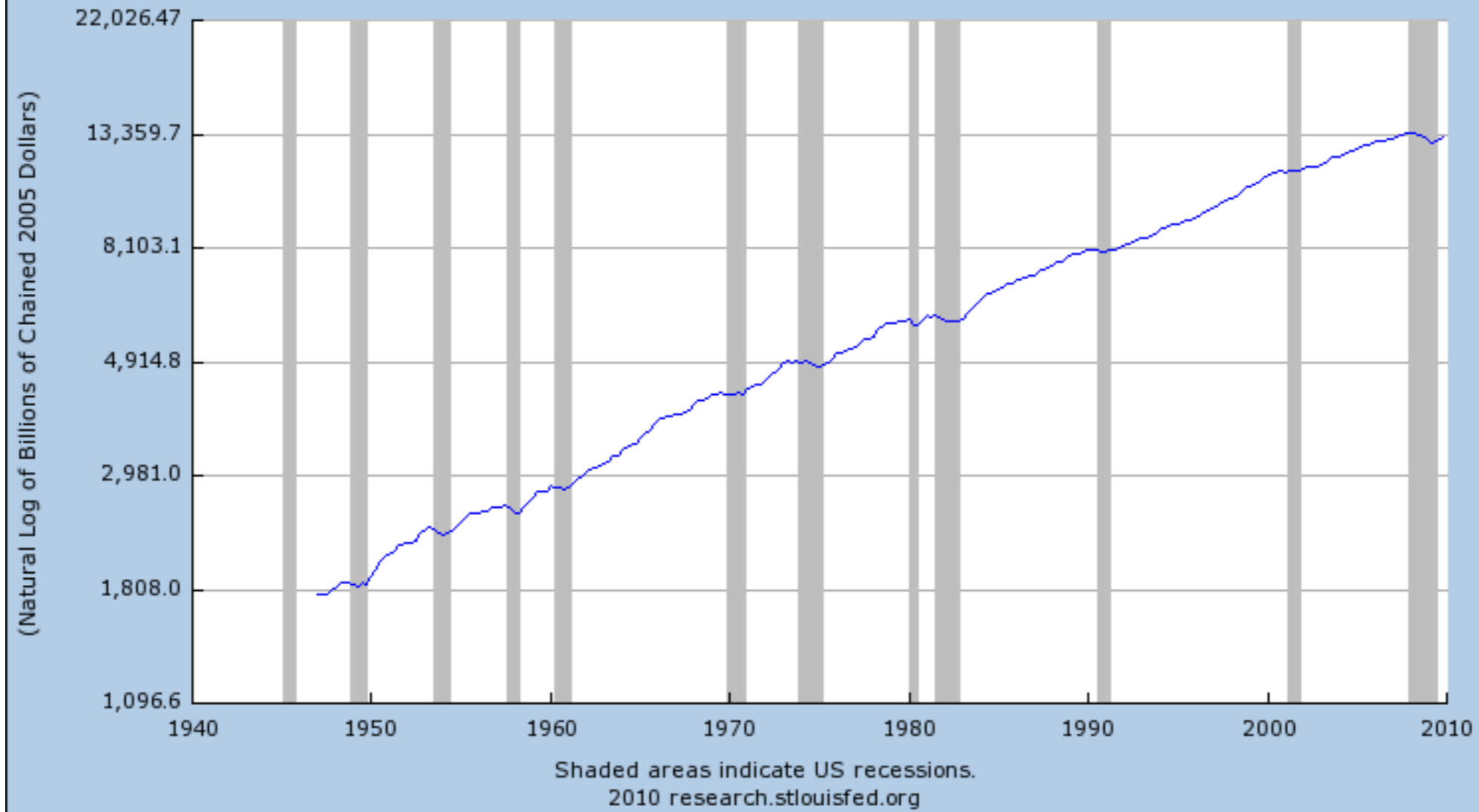
MACRO DATA

- Aggregate (Normality)
- US (availability, quality)
- FRED, BEA, SourceOECD, WRDS

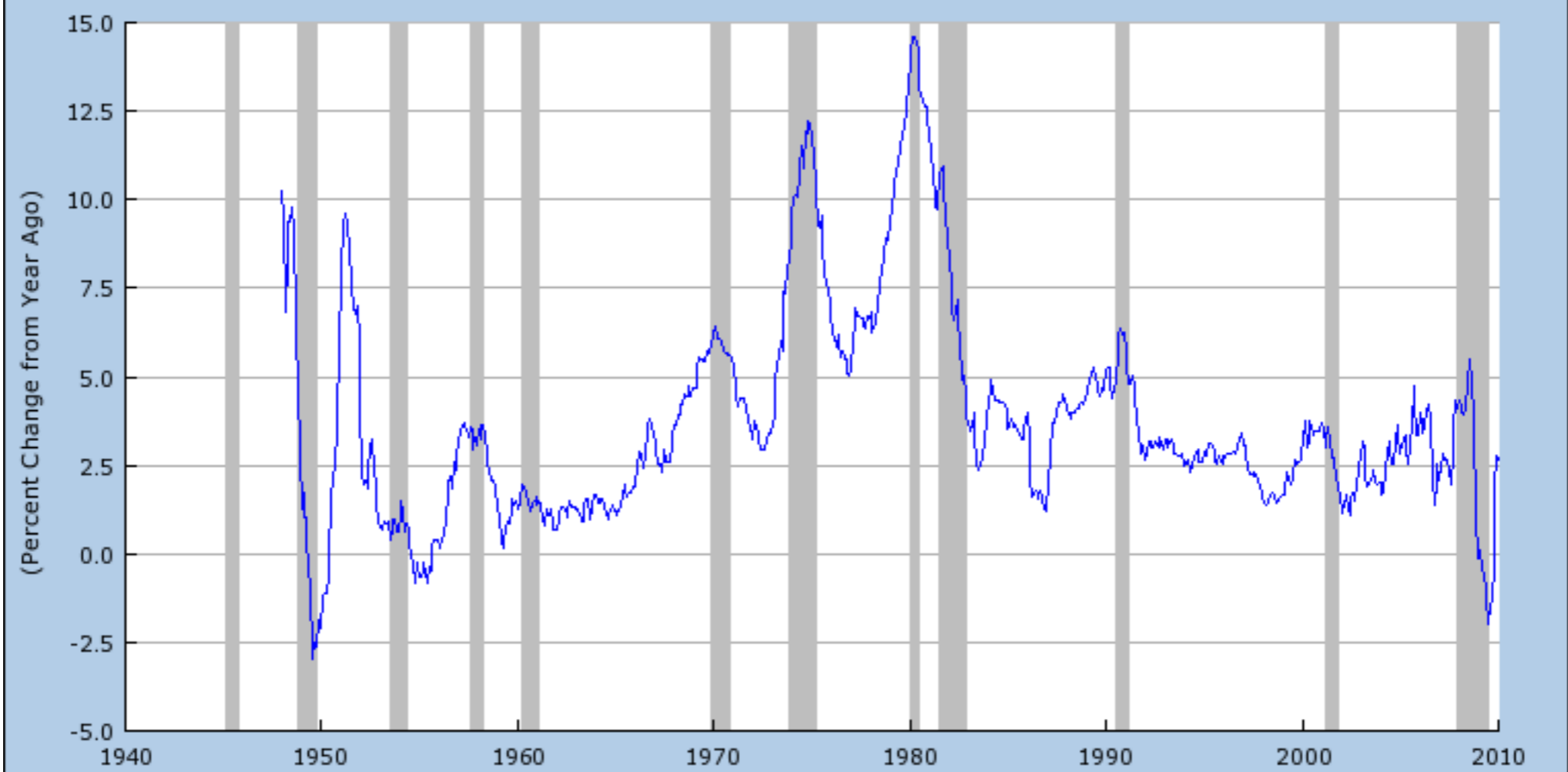
KEY SERIES (I)

- Real GDP, Components, Population
- Inflation (GDP Deflator, PCE Deflator, CPI)
- Unemployment Rate

Real Gross Domestic Product, 1 Decimal (GDPC1)
Source: U.S. Department of Commerce: Bureau of Economic Analysis

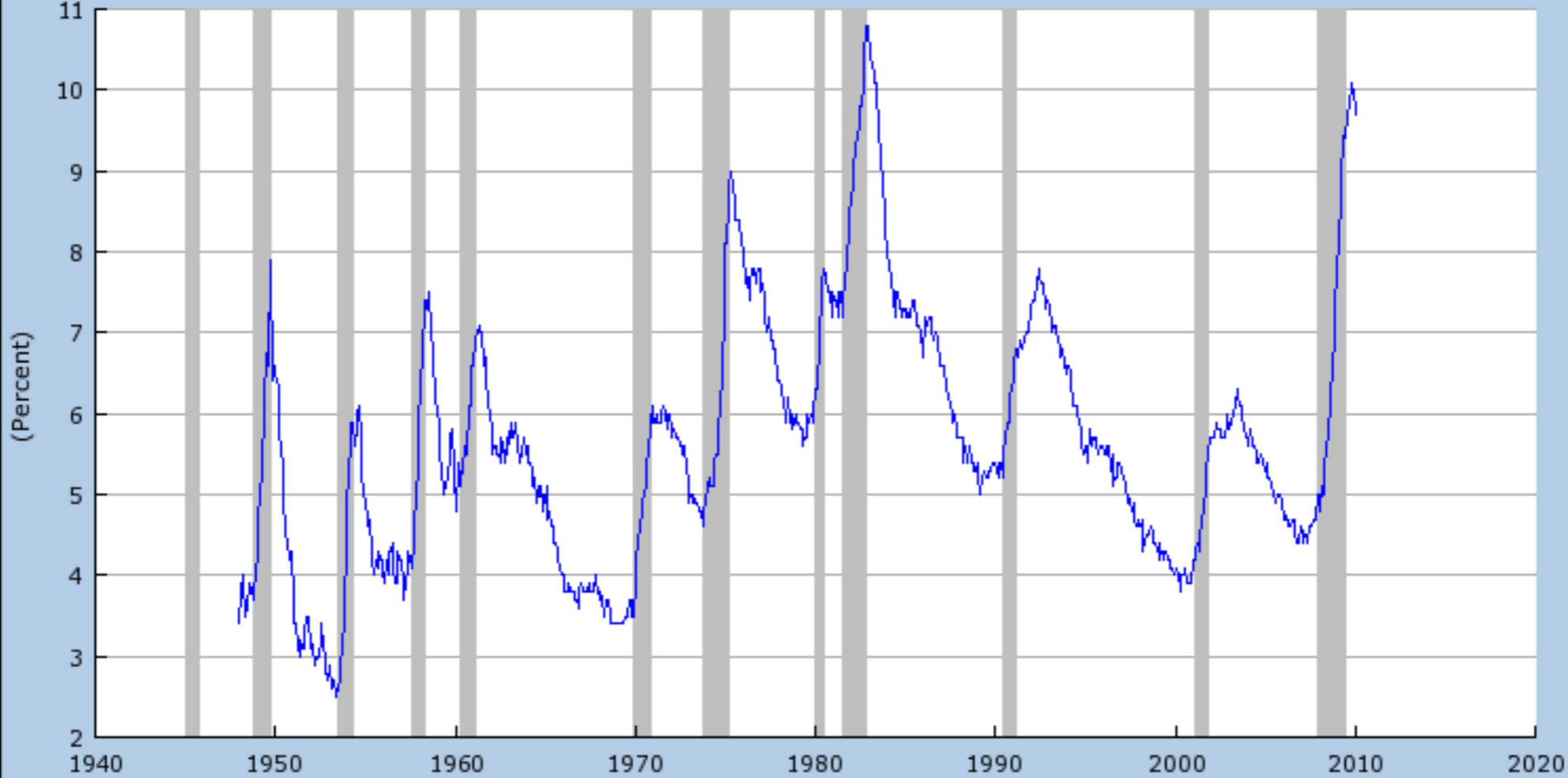


Consumer Price Index For All Urban Consumers: All Items (CPIAUCSL)
Source: U.S. Department of Labor: Bureau of Labor Statistics



Shaded areas indicate US recessions.
2010 research.stlouisfed.org

Civilian Unemployment Rate (UNRATE)
Source: U.S. Department of Labor: Bureau of Labor Statistics



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2010 research.stlouisfed.org

KEY SERIES (II)

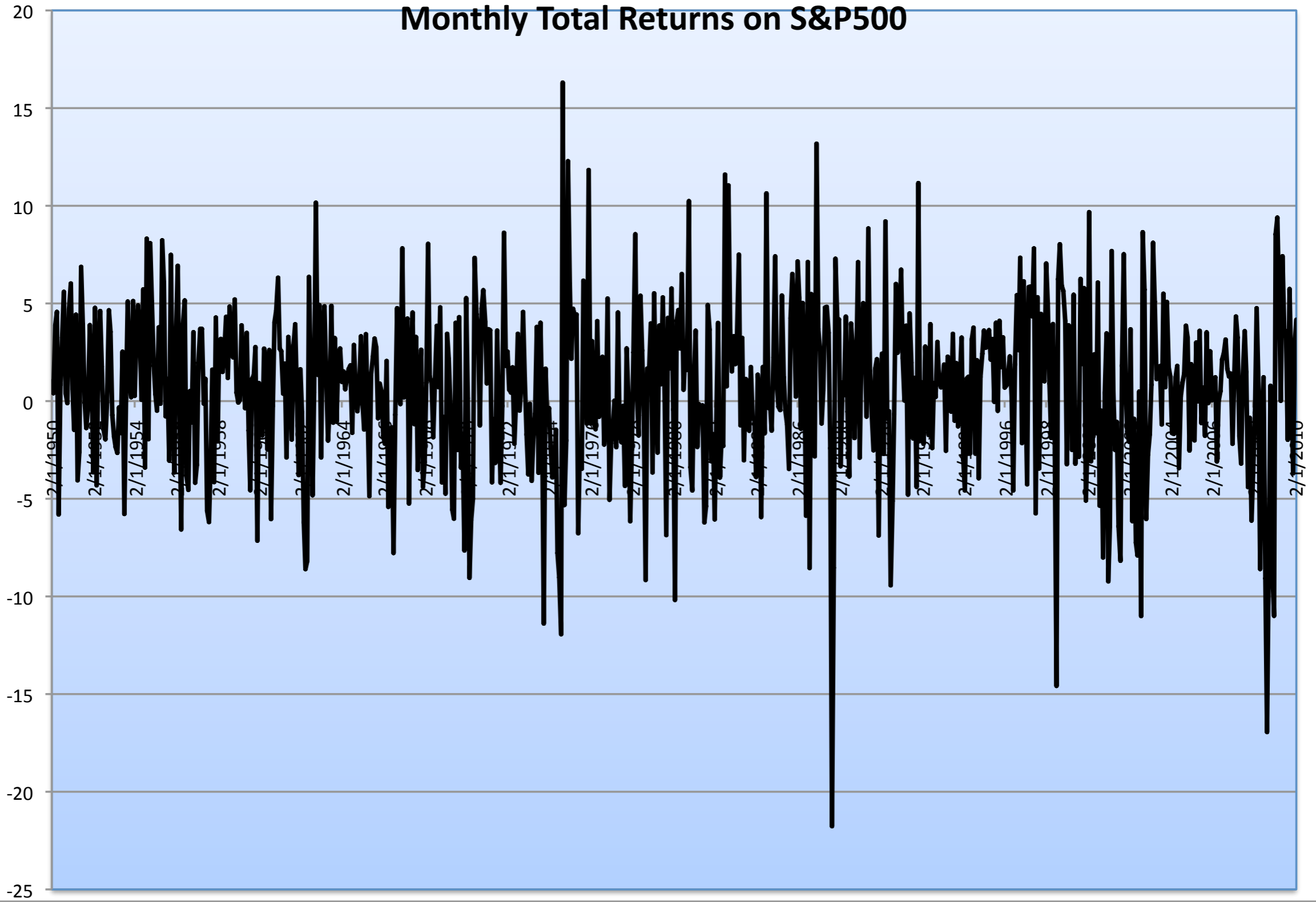
- Deficits/Debt
- Interest Rates
- Exchange Rates
- Stock Returns

Canada / U.S. Foreign Exchange Rate (DEXCAUS)
Source: Board of Governors of the Federal Reserve System



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Monthly Total Returns on S&P500



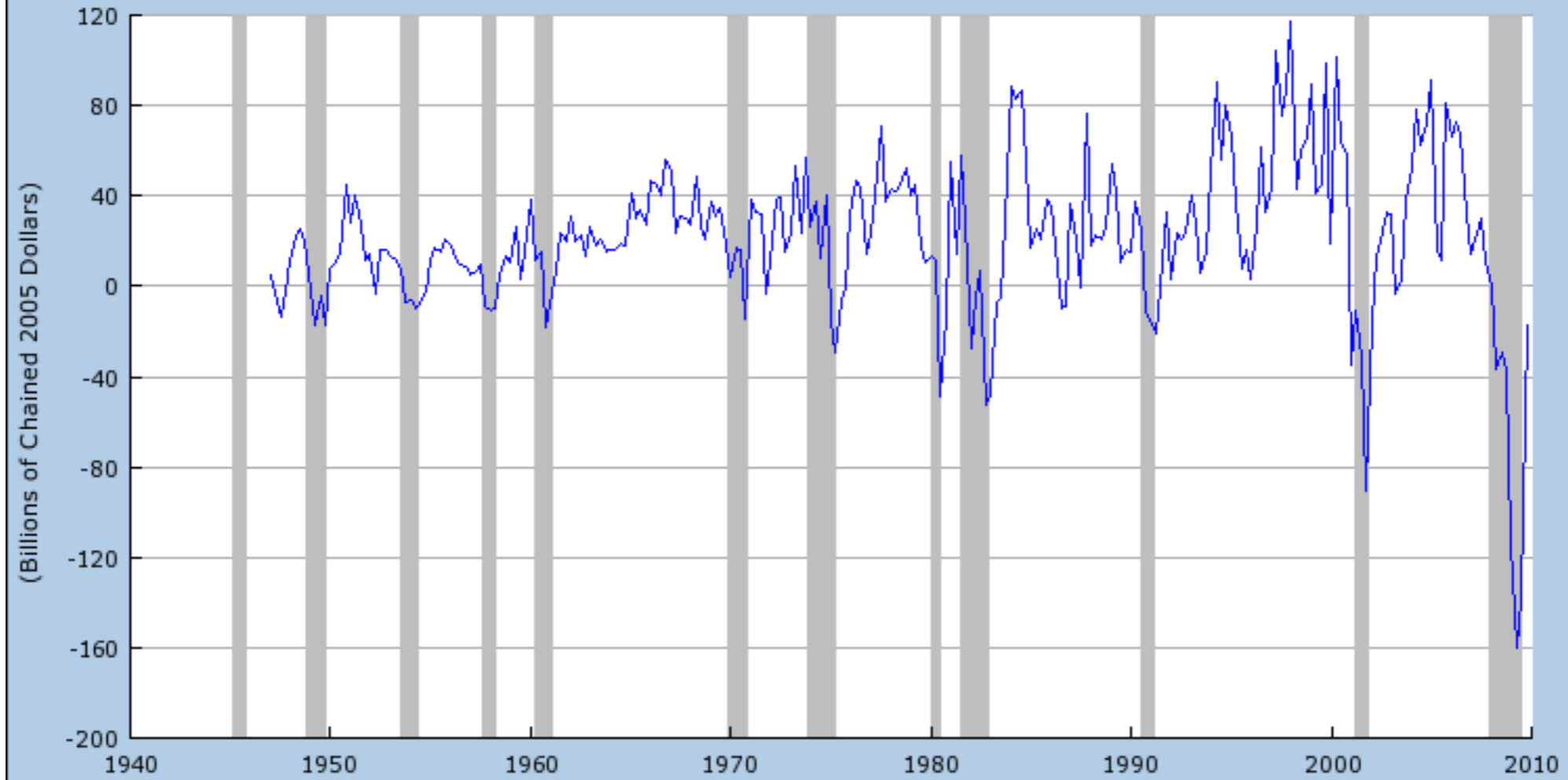
DATA ISSUES

- Seasonality
- Revisions
- Measurement Error
- Chain Weighting

SERIAL CORRELATION

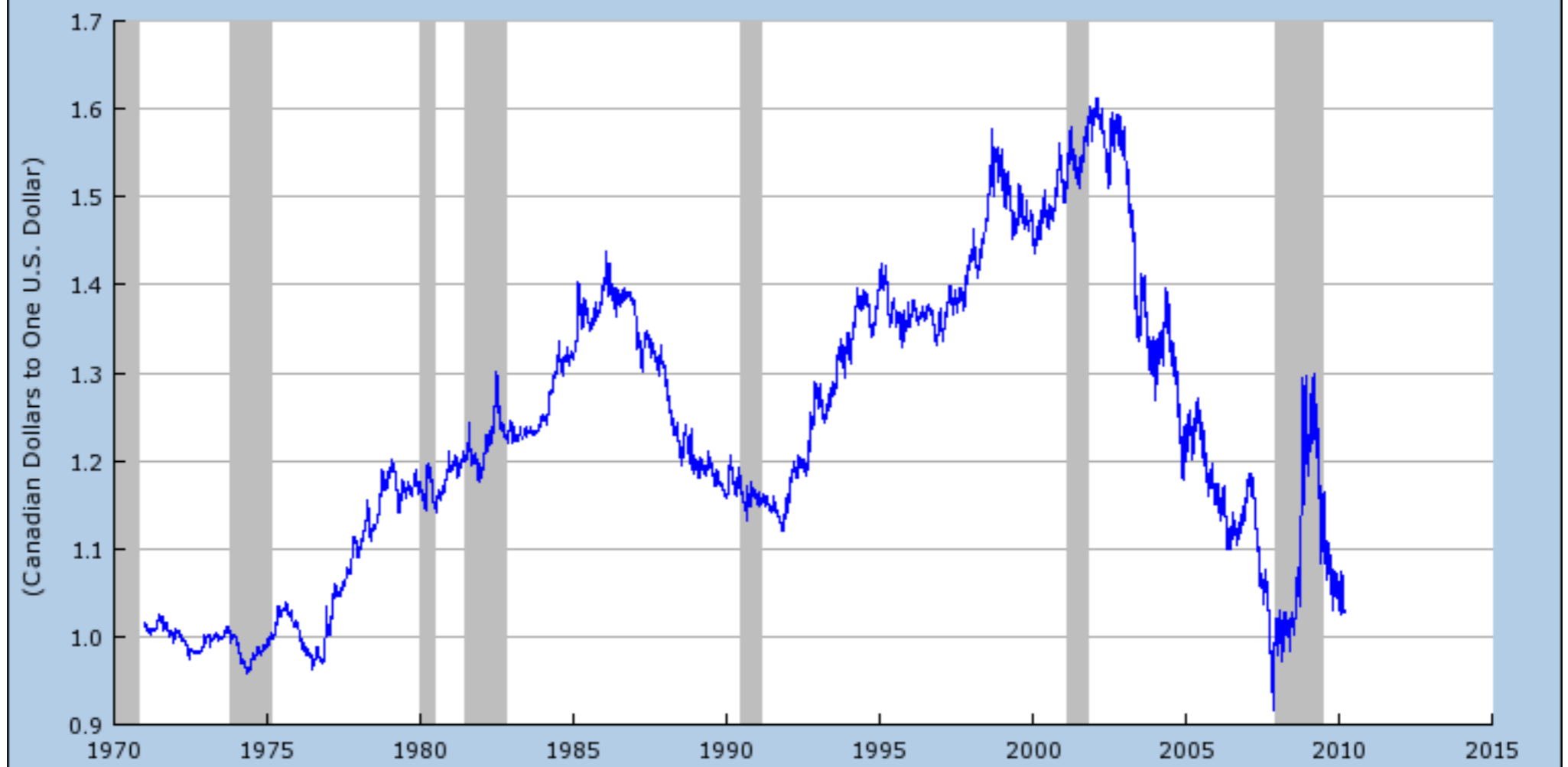
- persistence in time series
- less independent information
- potential for forecasting

Real Change in Private Inventories, 1 Decimal (CBIC1)
Source: U.S. Department of Commerce: Bureau of Economic Analysis



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2010 research.stlouisfed.org

Canada / U.S. Foreign Exchange Rate (DEXCAUS)
Source: Board of Governors of the Federal Reserve System

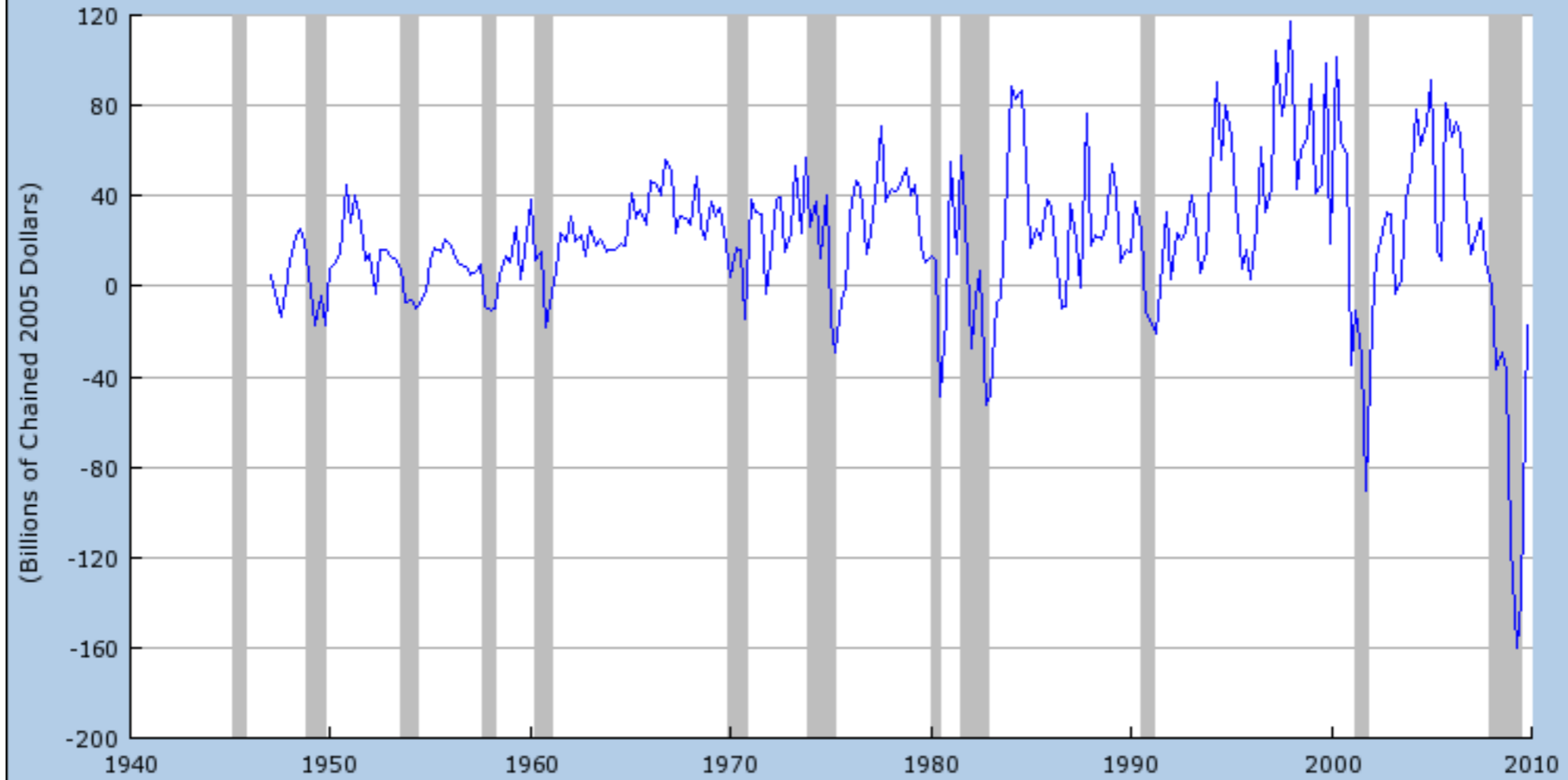


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WHY DOES SERIAL CORRELATION MATTER?

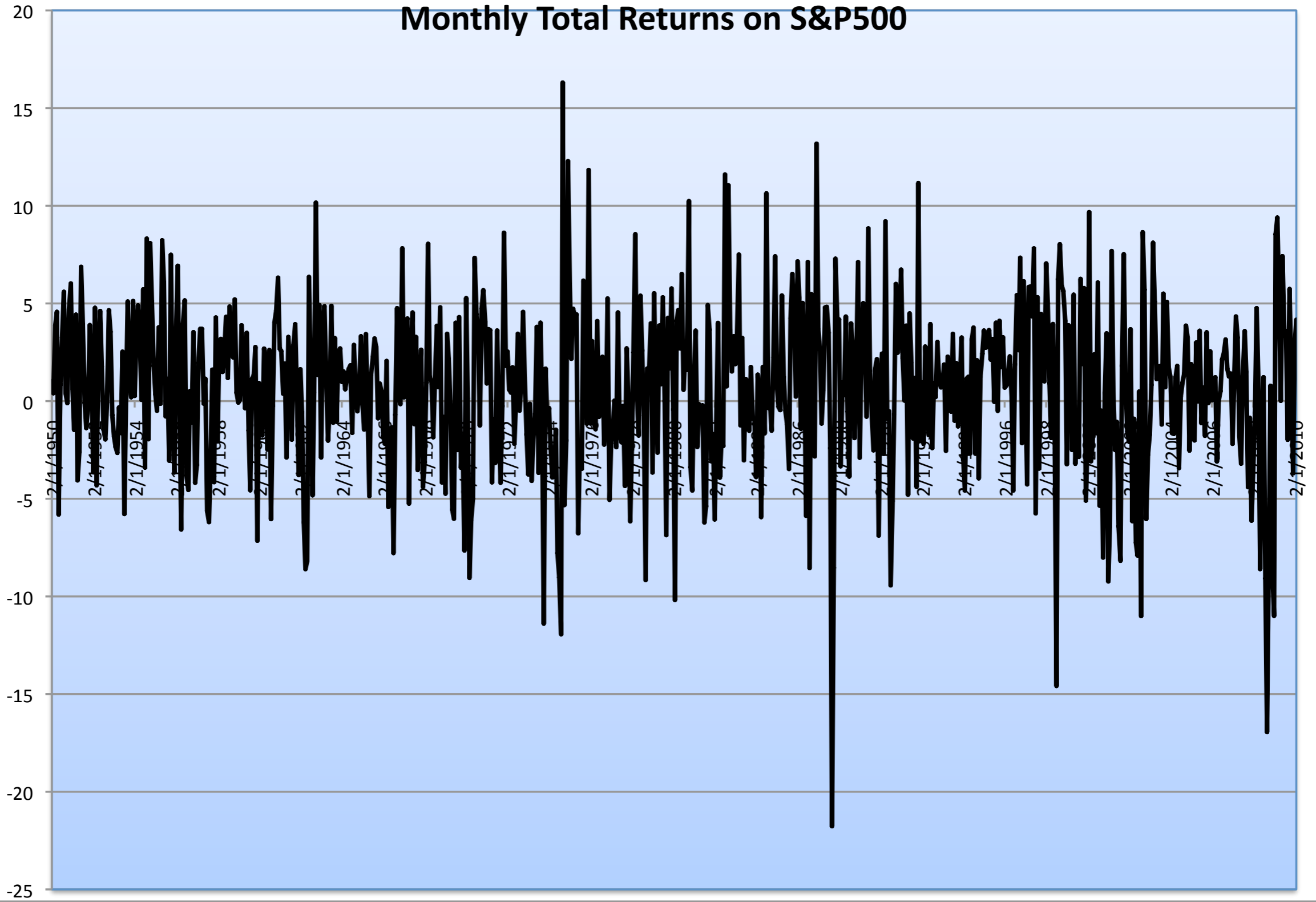
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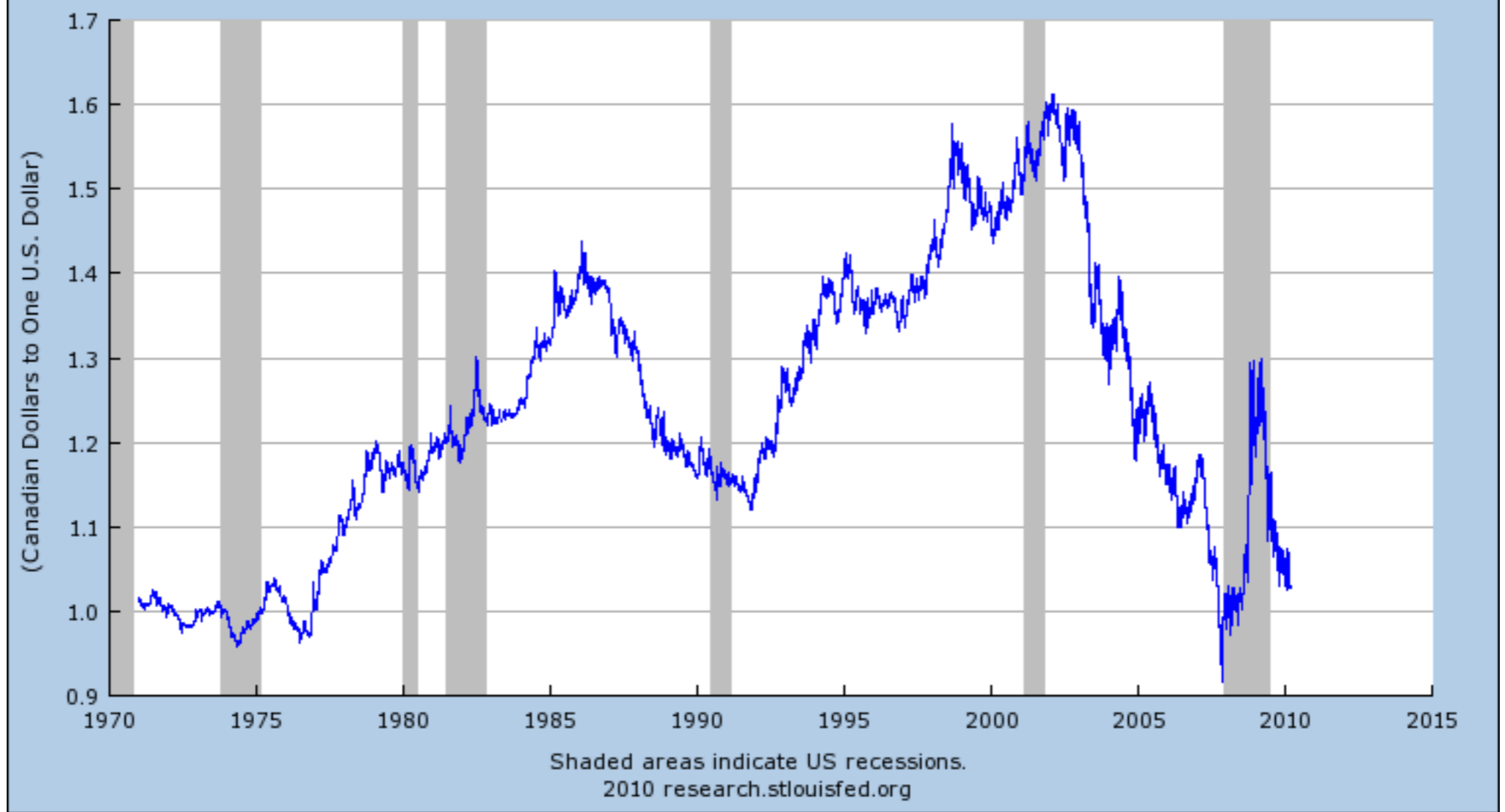


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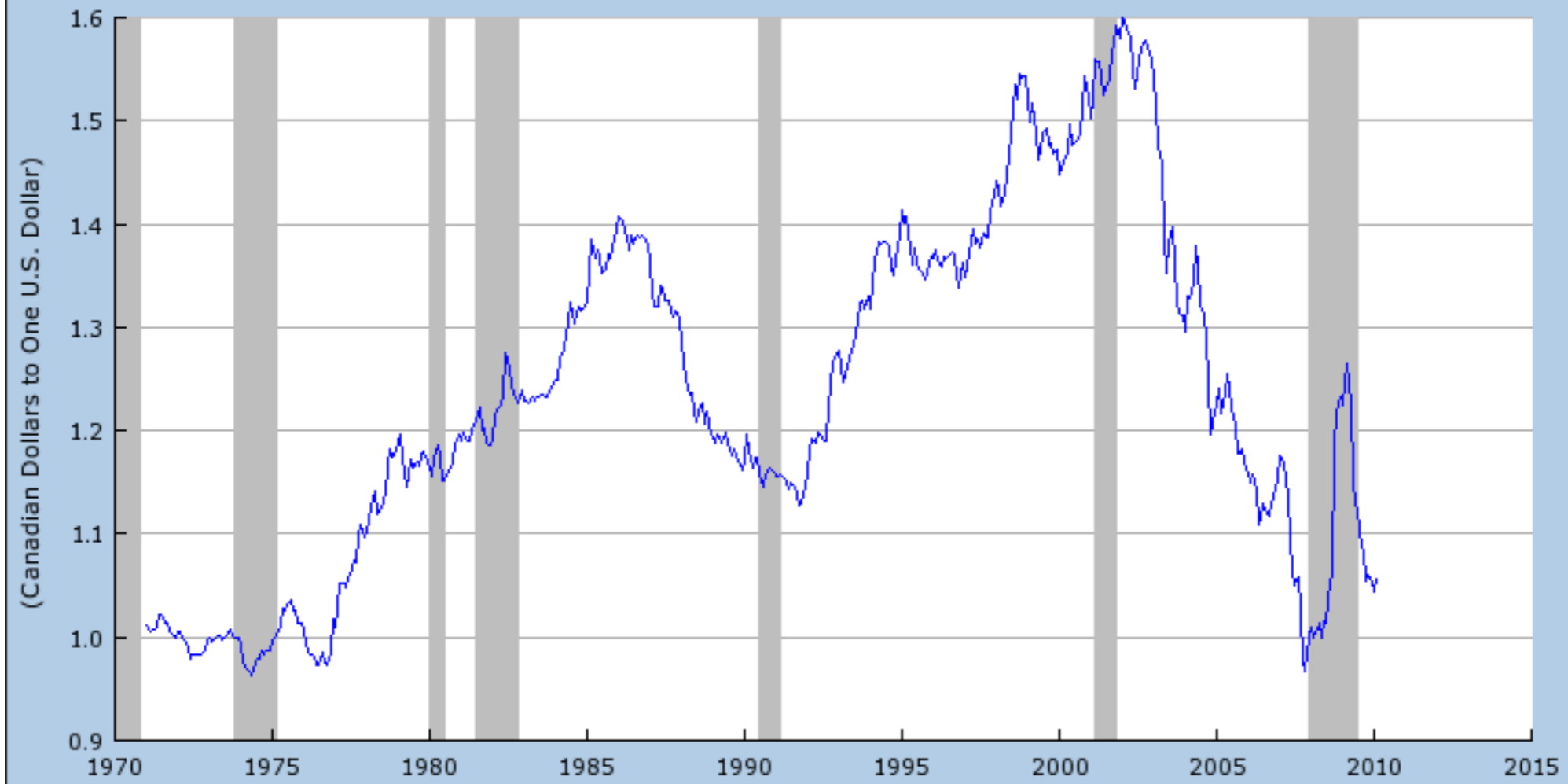
Monthly Total Returns on S&P500



Canada / U.S. Foreign Exchange Rate (DEXCAUS)
Source: Board of Governors of the Federal Reserve System



Canada / U.S. Foreign Exchange Rate (EXCAUS)
Source: Board of Governors of the Federal Reserve System



Shaded areas indicate US recessions.
2010 research.stlouisfed.org

SUMMARY

- Start with data
- Provides context
- First issue: serial correlation