Lecture notes on risk management, public policy, and the financial system

Development of the contemporary financial system

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Broader postwar economic developments
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- Rapid growth of income and wealth
- The Great Inflation and the Great Moderation
- The decline in interest rates
Rise in world income

- Rapid rise in world income in postwar era
  - Approx. 4-fold rise since 1950
  - Compare to approx. 4-fold rise in preceding millennium
Growth in world real income 1950–2011

Growth in assets

- Rise in household wealth
  - In U.S. and other countries, recent volatility due to house prices
  - And even greater volatility in ratio to income (→ leverage)
- Rise of large capital pools (→ safe assets, international imbalances)
  - Hedge funds
  - International reserves and sovereign wealth funds
U.S. household net worth 1945–2015

Logarithm of household net worth, trillions of 2005 U.S. dollars (left y-axis) and ratio to disposable personal income (right y-axis), quarterly. Vertical shading represents NBER recession dates. Source: Federal Reserve Board, Financial Accounts of the United States (Z.1), Table B.101.
Hedge fund assets under management 1990–2013

Annual, last observation Q2 2013, $ bill. Source: HFR, BarclayHedge.
From postwar growth to Great Inflation

- Growth of GDP through 1960’s high by historical—and current—standards
- **Inflation**: rise in general price levels
  - Equivalently: decline in purchasing power of money unit
- Inflation rises from ca. 1965
  - “**Stagflation**”: high inflation together with low growth
- Collapse of Bretton Woods
  - **Gold-exchange standard** in place 1945–1971
- **Volcker disinflation** late 1979–1984
The Great Moderation

- Period of perceived success of monetary policy
- Ca. 1984 until outbreak of global financial crisis
- Sharp decline in volatility of GDP growth, level and volatility of inflation
- **Interest-rate smoothing:** gradual adjustment of target funds rate
- Policy below rule 2000–06
  - But inflation itself suppressed by low import prices
U.S. inflation 1960–2017

Annual percent change in the consumer price index–all urban consumers (CPI-U), all items less food and energy (Source: U.S. Bureau of Labor Statistics, series CUUR0000SA0L1E), and core Personal Consumption Expenditures price index (PCE) (Source: U.S. Bureau of Economic Analysis). The core PCE is a somewhat broader index and has different weights from CPI-U. Vertical shading represents NBER recession dates.
Explanations for low inflation

- Credibility of monetary policy after 1980
  - Realized inflation low because central banks expected to pursue low-inflation policy

- Real factors:
  - Increase in productivity from 1980 until crisis (technology)
  - International factors: increase in trade, competition

- Since crisis, **Neo-Fisherian** effect of low interest rates on realized inflation
  - Low interest rates inconsistent with high expected inflation, so latter adjusts

Percent change from preceding period in real gross domestic product, U.S. GDP growth, quarterly, percent, seasonally adjusted at an annual rate (black, left y-axis), and rolling standard deviation of the past 5 years growth rates in percent (red, right y-axis). Vertical shading represents NBER recession dates. Source: U.S. Bureau of Economic Analysis.
Behavior of U.S. interest rates

- **Nominal interest rates**: measured relative to money units
- **Real interest rates**: measured relative to purchasing power units

  **Equilibrium** or neutral or natural or **Wicksellian real interest rate**: the real rate that would prevail over the medium term if the economy were in equilibrium

  **Market real interest rate** is that currently prevailing

- Nominal rate can be decomposed into real rate plus *expected* inflation

- Three-decade decline in nominal rates and flattening of yield curve
  - Early manifestation: the Japan trap
  - **Conundrum** in U.S. rates 2004–2005: rising short-term rates, but steady or declining longer-term rates
  - Further decline during global financial crisis, policy response

- Both components of nominal rates falling
  - Expected inflation declining to below 2 percent
  - Real rate of interest declining to zero
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The decline in interest rates


On-the-run issues, Bloomberg tickers USGG2YR and USGG10YR Index; daily. Vertical shading represents NBER recession dates.
Why the decline in real rates?

- Real interest rates unobservable, must be estimated
  - Models of equilibrium real rate
    - Considerable uncertainty around estimates
  - Market real rate based on inflation-indexed bond yields
    - Doesn’t account for liquidity, inflation-risk premiums
- Possible explanations of low real rates:
  - **Global savings glut hypothesis:** rise in world saving (→ international imbalances)
    - Including demographic reasons: aging population motivates higher saving
  - Demand for safe assets
  - **Secular stagnation** driven by low aggregate demand or by slowing technical progress
  - **International balances:** capital flows from less-developed to more advanced countries
- Consistent with low growth of productivity, business formation, and private investment