

Where will aging populations take us from here?

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Overview

- **Humility in long-term economic and demographic forecasts**
- **Setting a reasonable time frame**
- **Medium term outlook**
- **Comparative statics approach to demographics using academic literature and stylized facts; no fan of simplistic bestsellers on the topic**



Predicting long-run growth

- Workforce training and education
- Optimal capital stock
- Technological change
- Institutional reform
- yes, also demographics
- Uncertainty in growth literature belies the certainty of some demographers, economists & others



Key events of the 20th century that were tough to predict - Part I

- **The first radio broadcast - 1906**
- **The Federal Reserve Act - 1913**
- **Federal Income Tax Act - 1913**
- **Henry Ford's mass production - 1913**
- **The Great Crash of 1929**
- **The Great Depression - 1930s**
- **US Social Security Act - 1935**
- **Bretton Woods - 1944-1971**



Key events - Part II

- **The GATT - 1947**
- **First credit card - 1958**
- **The Pill - 1960**
- **US Medicare Act - 1965**
- **Stagflation - 1970s**
- **First Web browser - 1994**
- **De facto or de jure inflation targets - 1990s**



Key events - Part III

- **Asia - 1997 - ?**
- **Glass-Steagall Act/Gramm-Leach-Bliley Act - 1933/1999**
- **The 1990s...**
- **Bankers and real estate/oil/LDC debt**
- **etc.**
- **etc.**



Demographics

- **Demographic variables are tough to predict; extraordinarily poor track record**
- **Drawing economic inferences from demographic change is even tougher**
- **Microeconomic influences are often clearer**



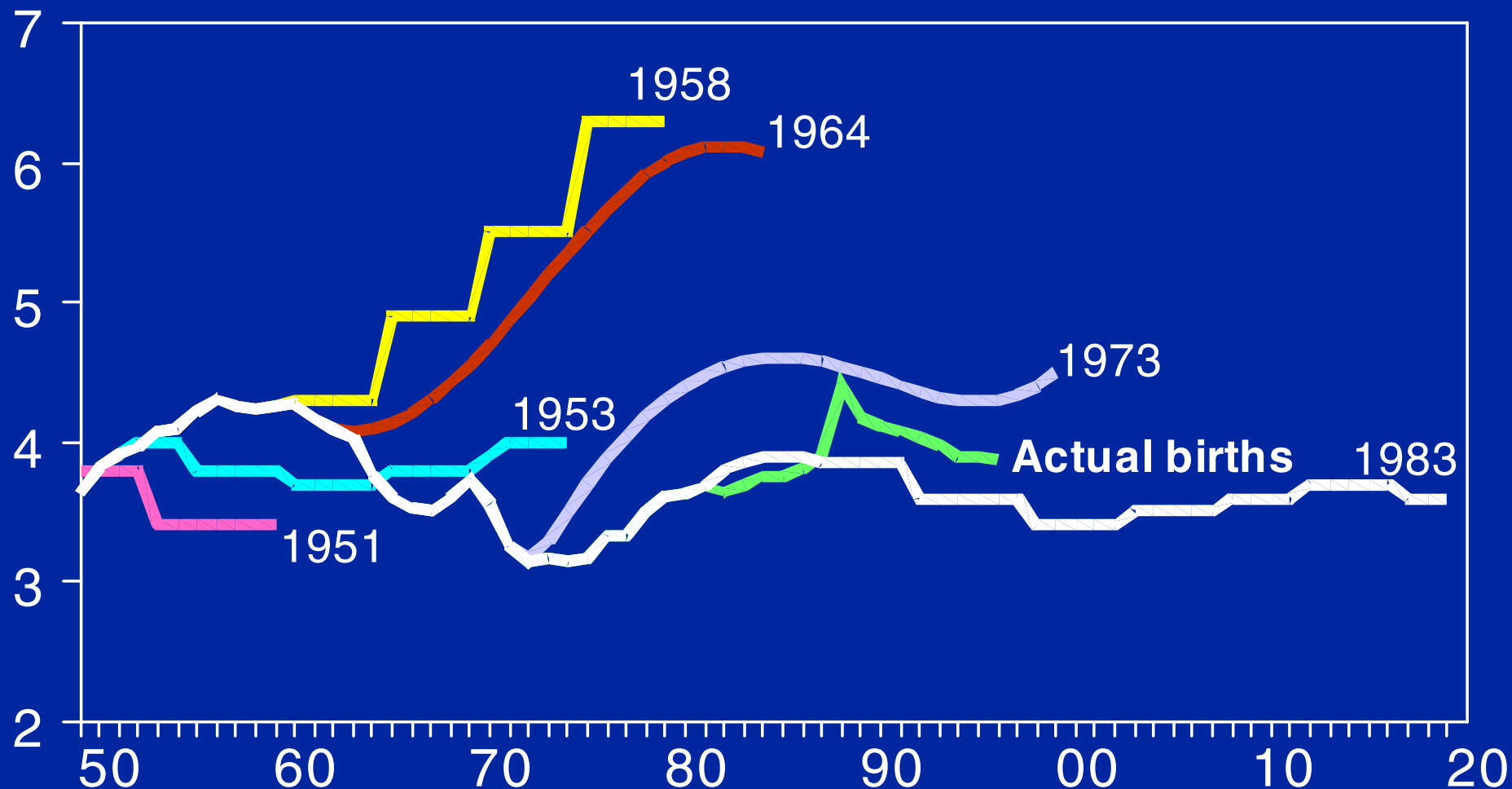
Population forecasts

- **Missed North America's baby boom and the post-WWII immigration wave**
- **Recent population forecasts close only because big fertility and immigration errors cancelled out**
- **HUGE variances for future forecasts**
- **Little cause to believe we can predict who will enter housing/consumer markets decades from now**



US births

millions per year



Source: US Bureau of the Census
Replicated from Mankiw & Weil study

US population forecasts



millions

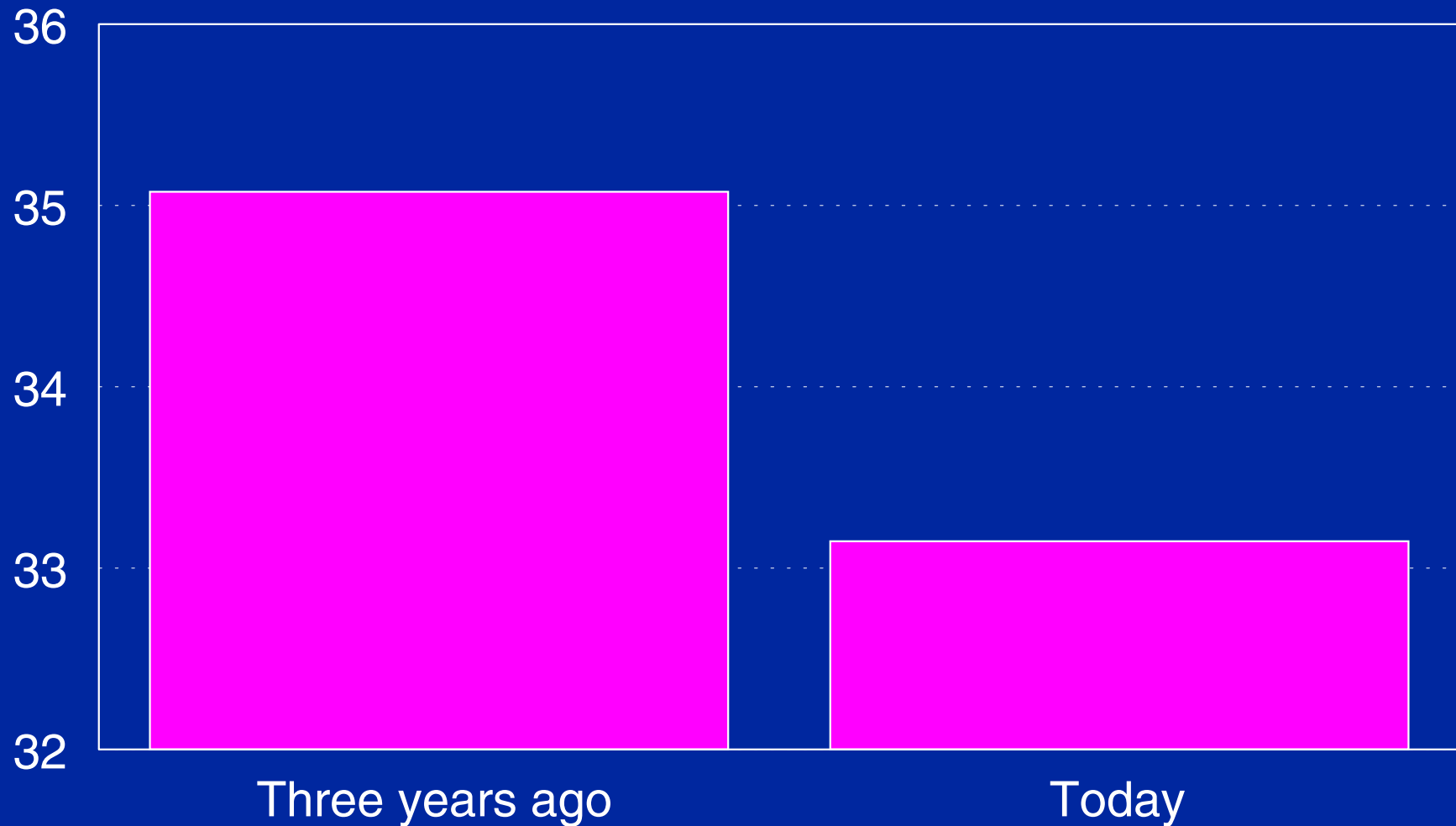


Source: US Census Bureau

Population forecasts for 2010



Difference of two million people in forecasts spread three years apart



Source: Statistics Canada, projection 2



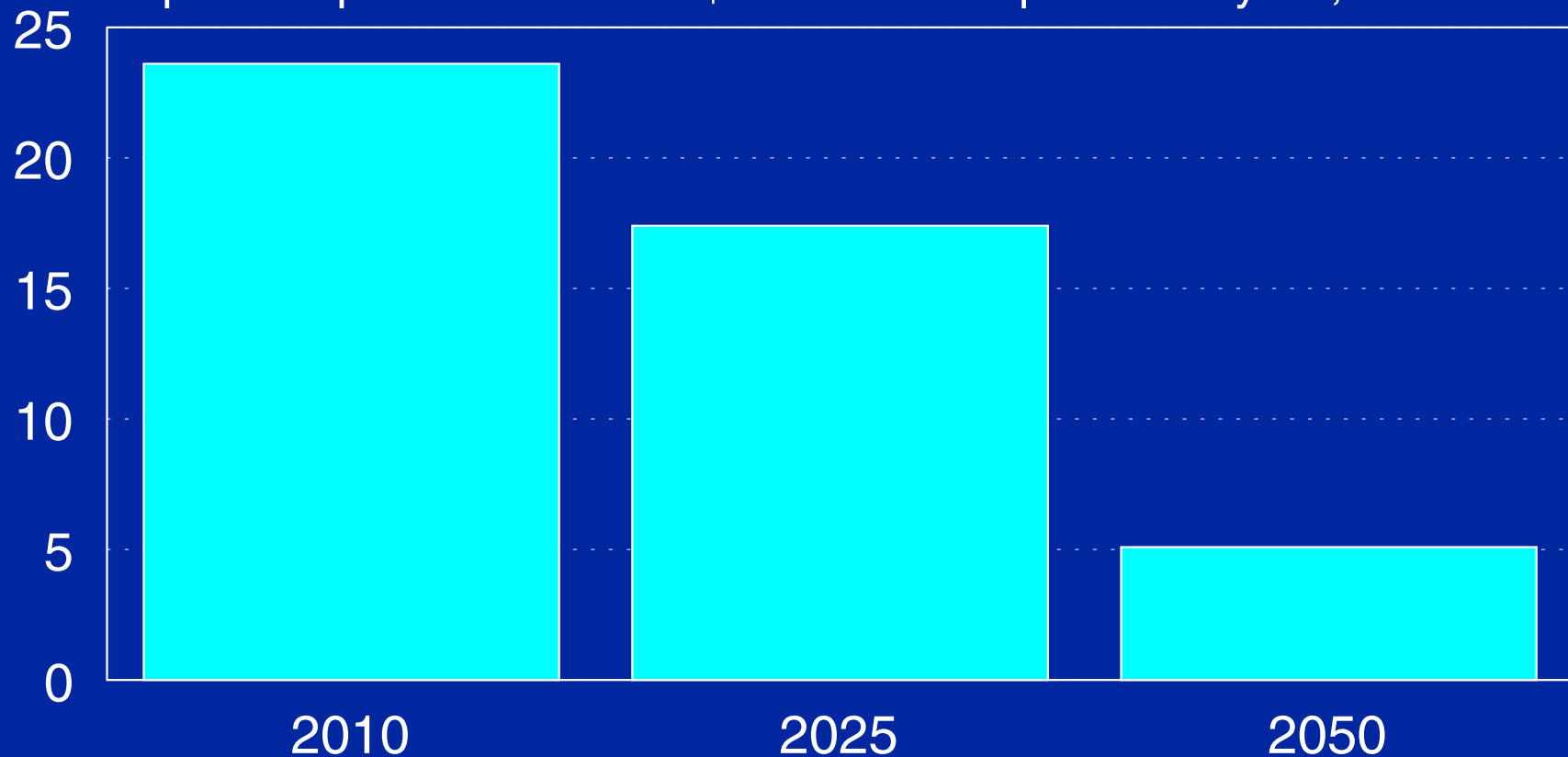
What is a reasonable time frame?

- **Getting it right to 2010 counts far more than being horribly wrong until 2050**
- **Don't need to make policy changes today for the next fifty years**
- **Pay off for the CPP to focus on next 5-10 years instead of five decades of economic, social and demographic predictions should be apparent**

What if we were off by a factor of two in our nominal discount rate?



impact on present value of \$1 received in particular year, cents



Note: Scenario considers actual average nominal rate of 12% compounded annually versus forecast of 6%.



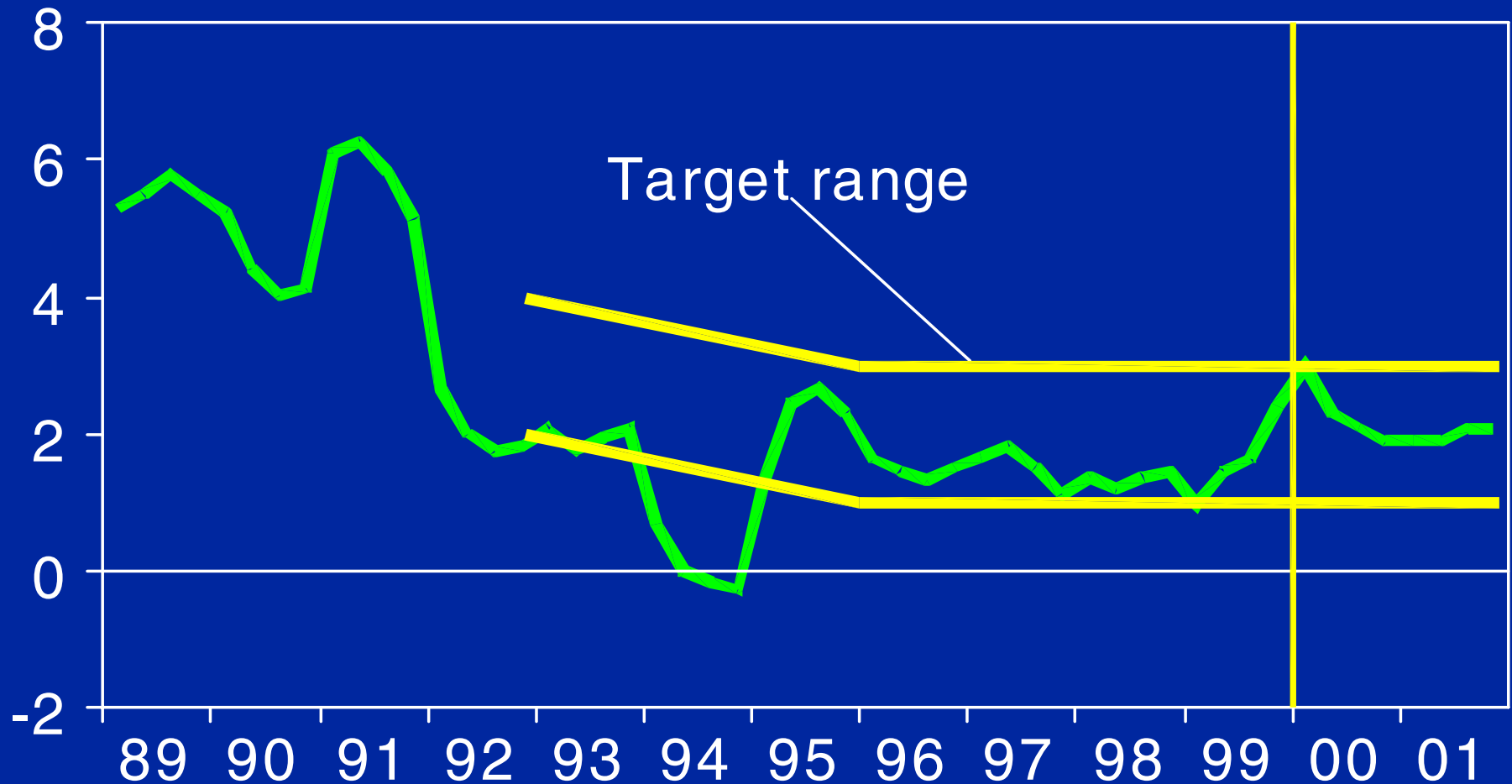
Medium term themes

- Inflation
- Public finances
- Long bond yields
- Growth prospects
- Global macro policy convergence
- Risks

CPI and Bank of Canada inflation target range



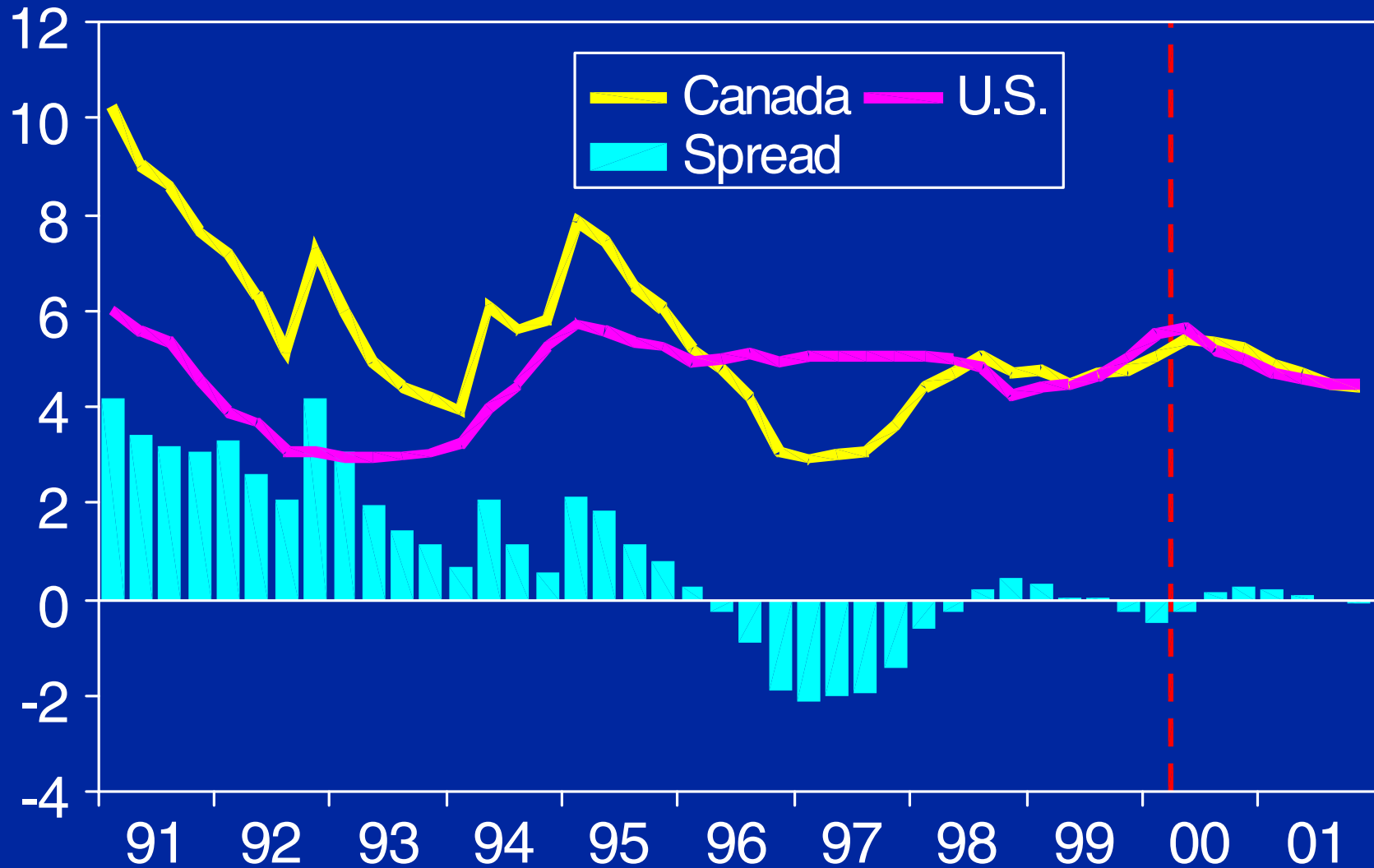
% change, year-over-year



Three-month Treasury bill



%, end of quarter

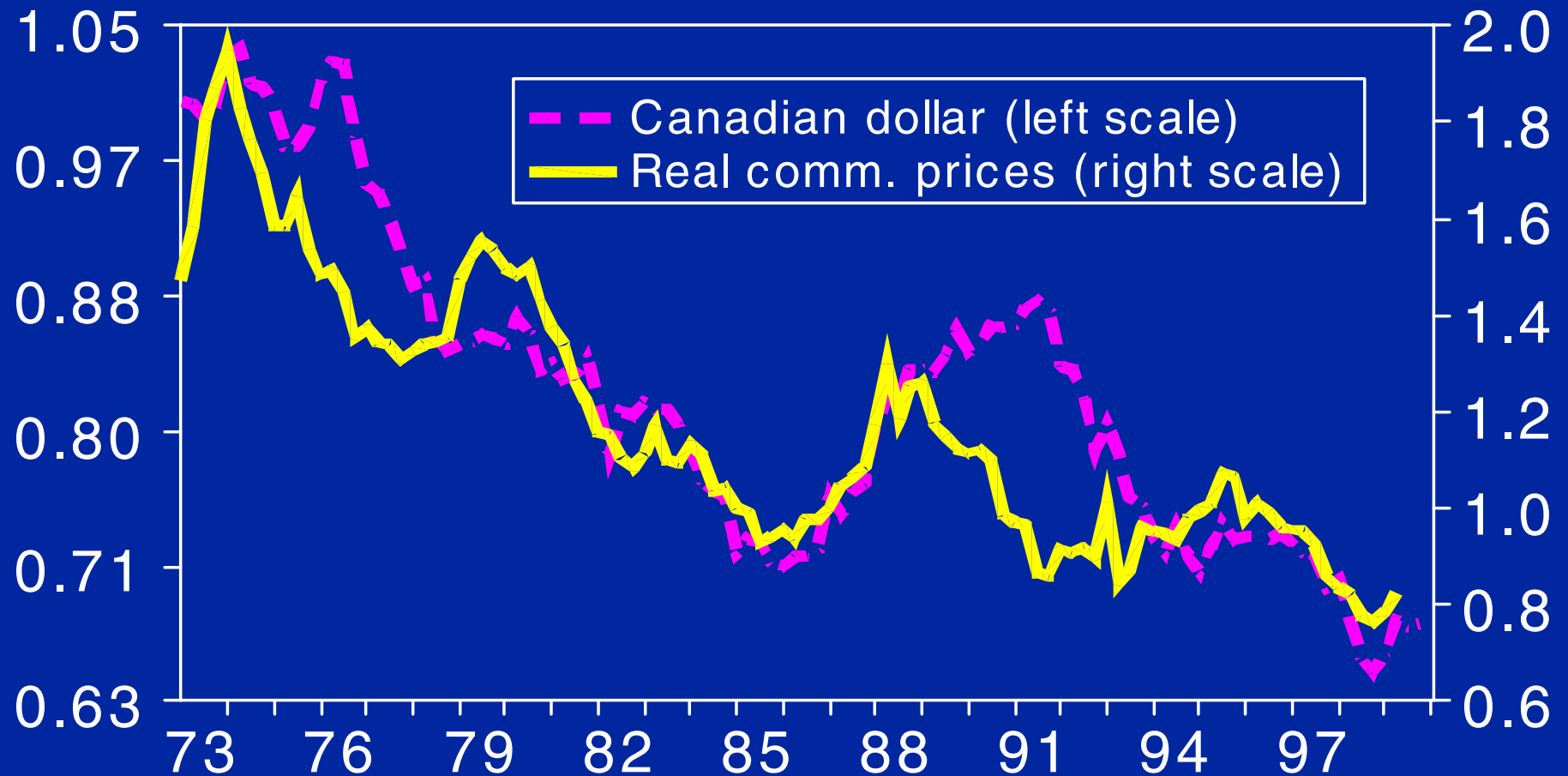




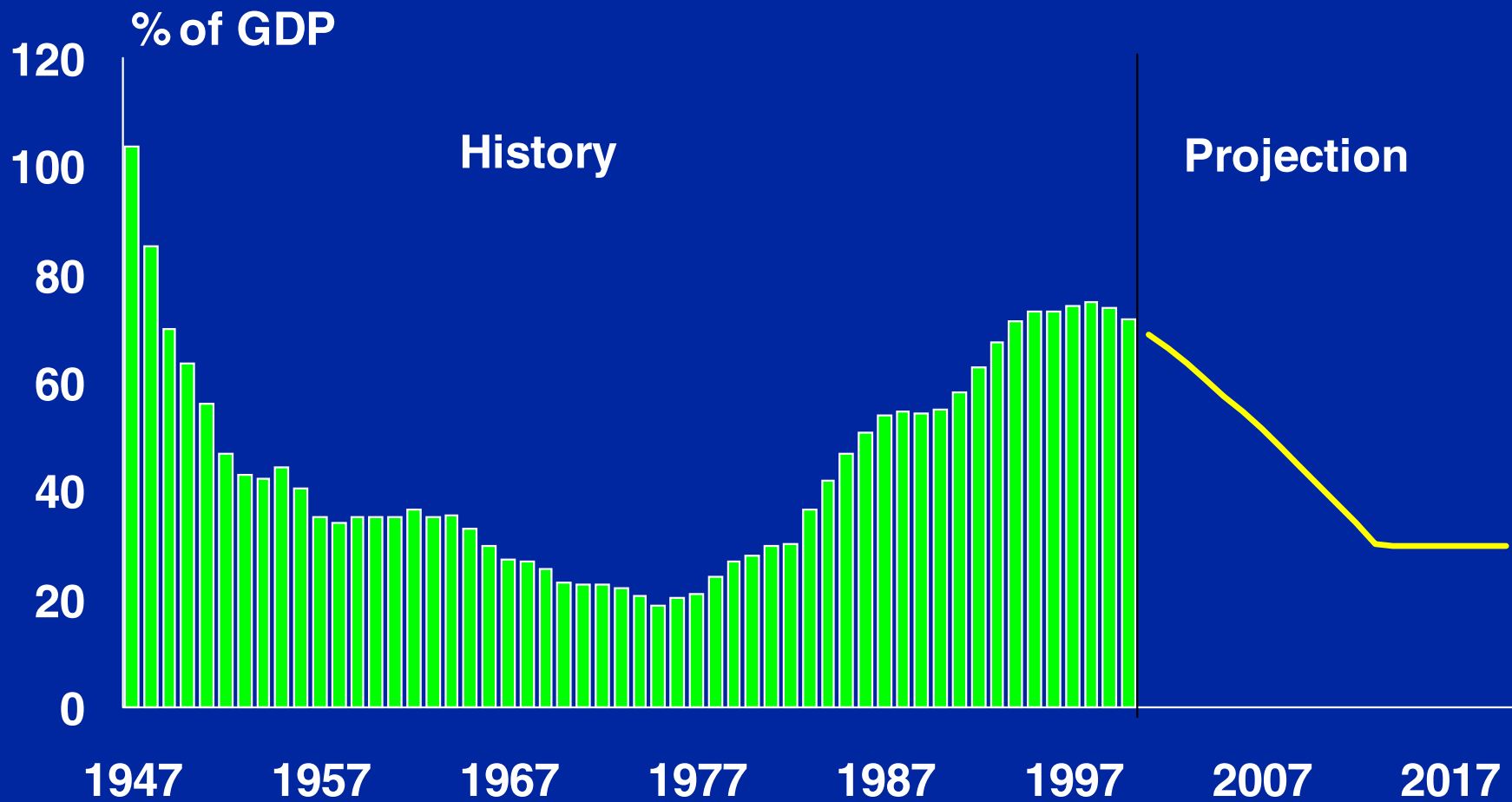
Canadian dollar and real commodity prices

U.S. dollars

index 1987=1



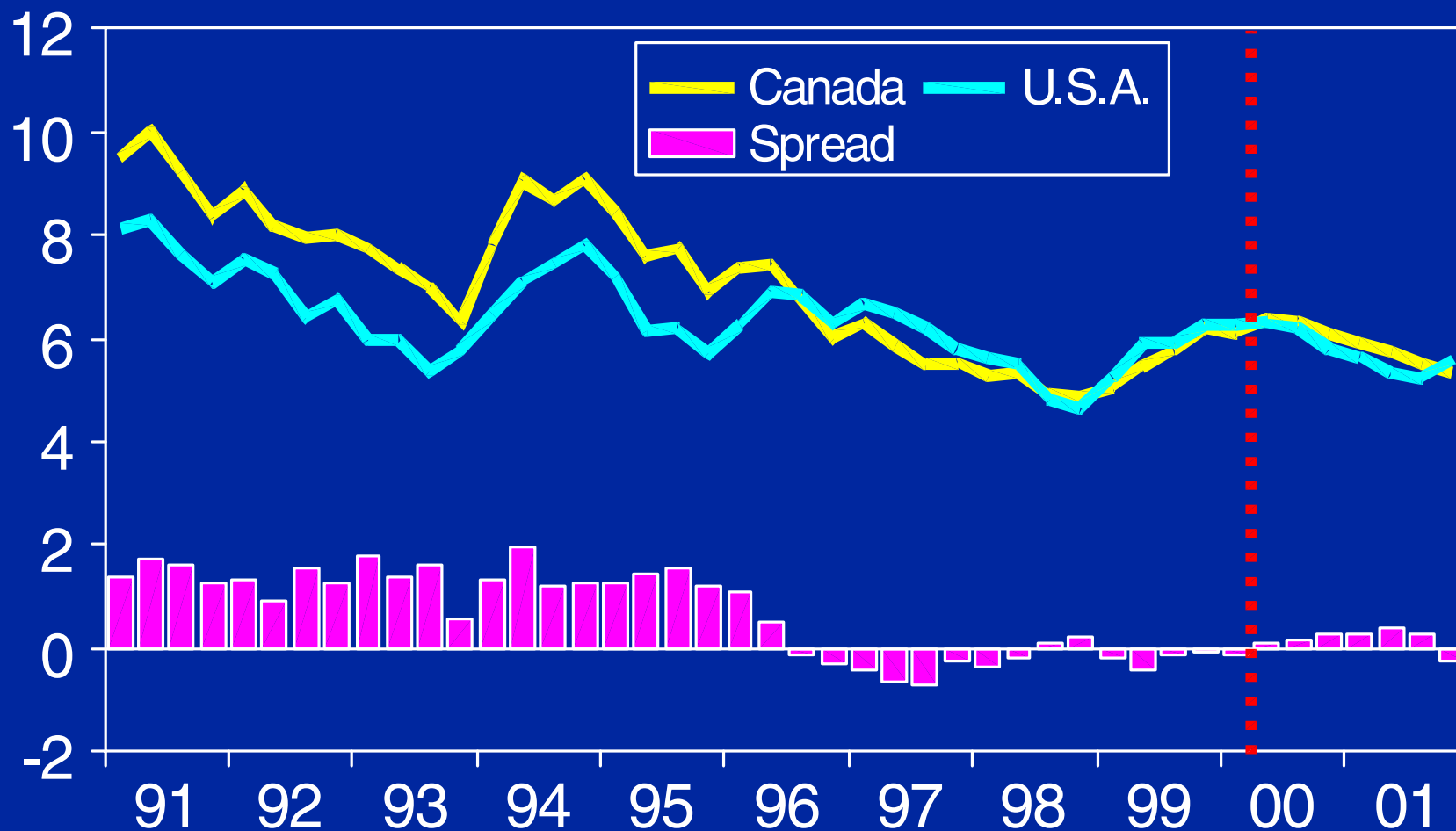
Net federal debt





Ten-year government bond yields

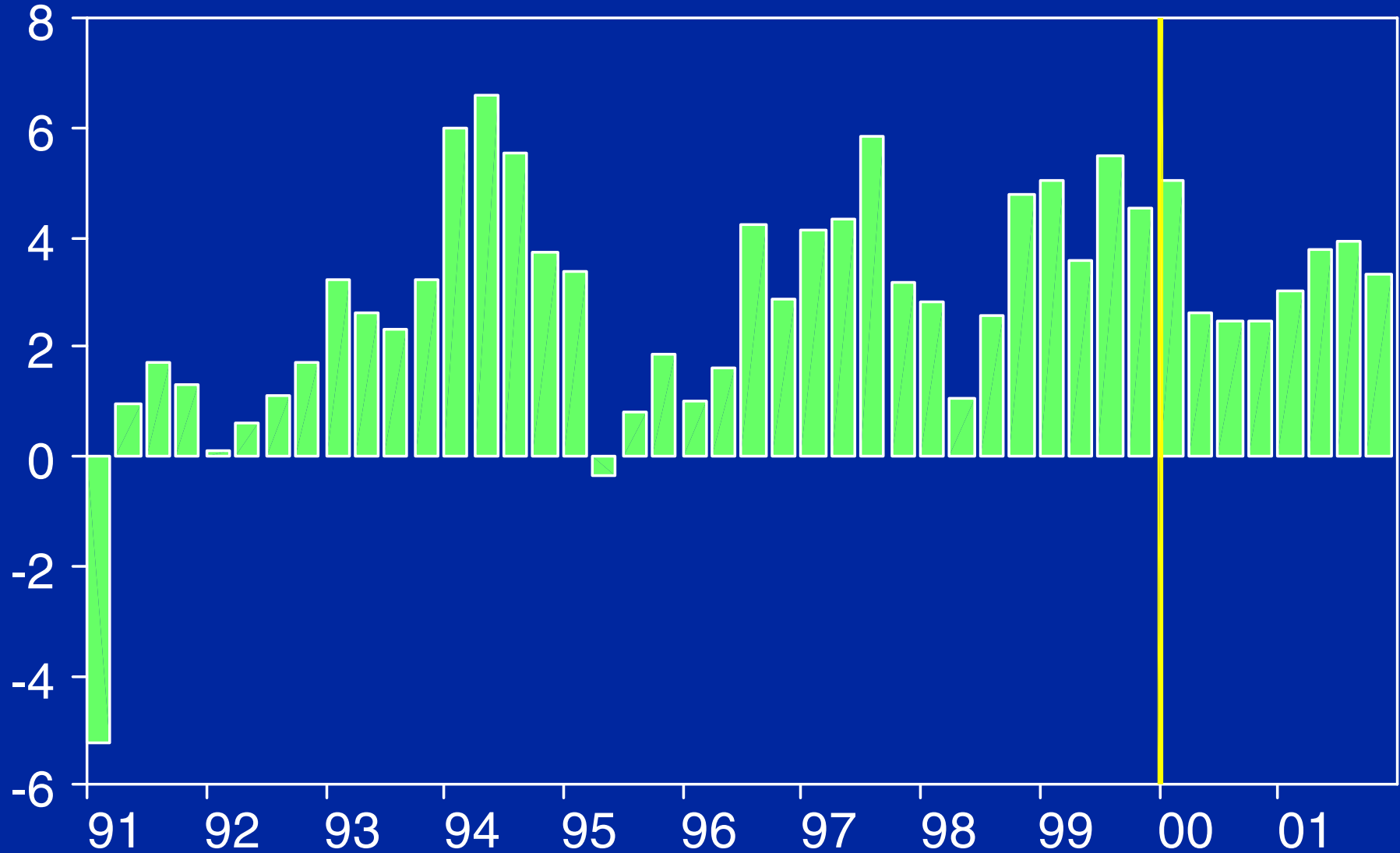
%, end of quarter



Canadian real GDP



% change, annualized



Four case studies on past and future consequences of demographic change



- **Consumption and savings**
- **Financial markets**
- **Housing markets**
- **Labour force constraints**



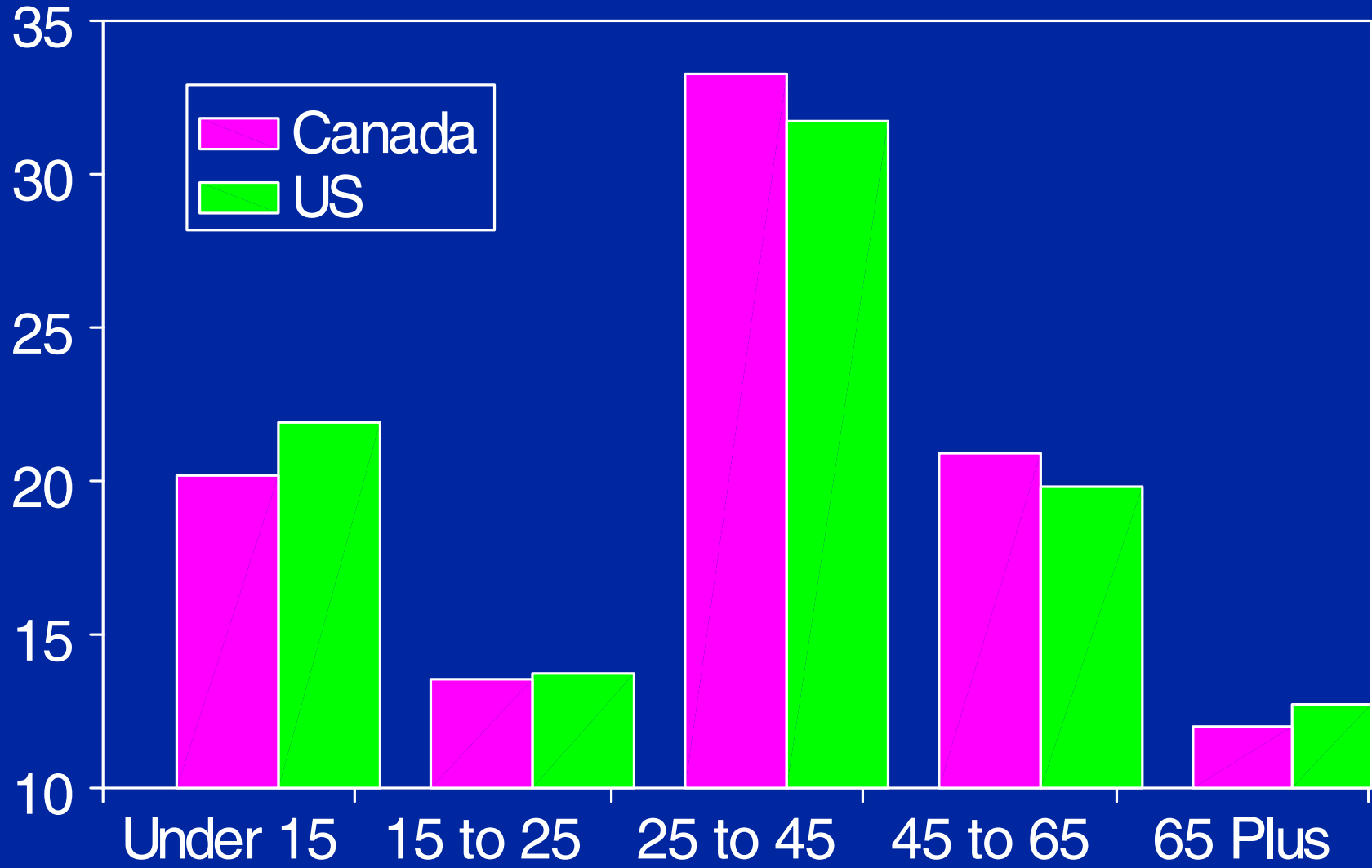
Consumption and savings

- Stylized facts and theory
- Ray Fair - Kathryn Dominguez (AER)
- Statistically significant effects for consumption, but not for saving
- Sensitivities to demographic variables far outweighed by other factors



North American population pyramids

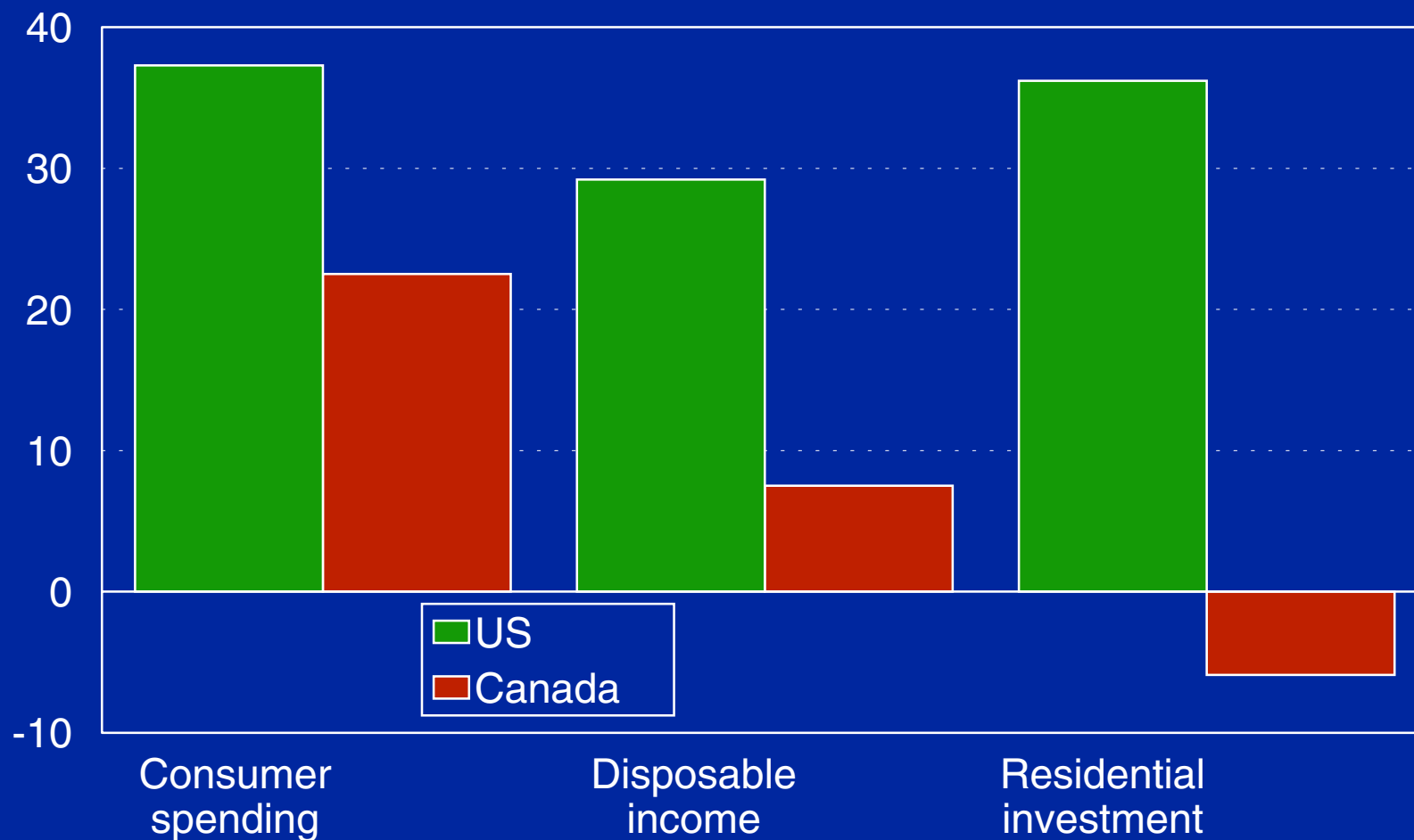
number in age groups as % of total population





Summing up two economies

Cumulative growth over 1990s, %



Source: BEA, Statistics Canada

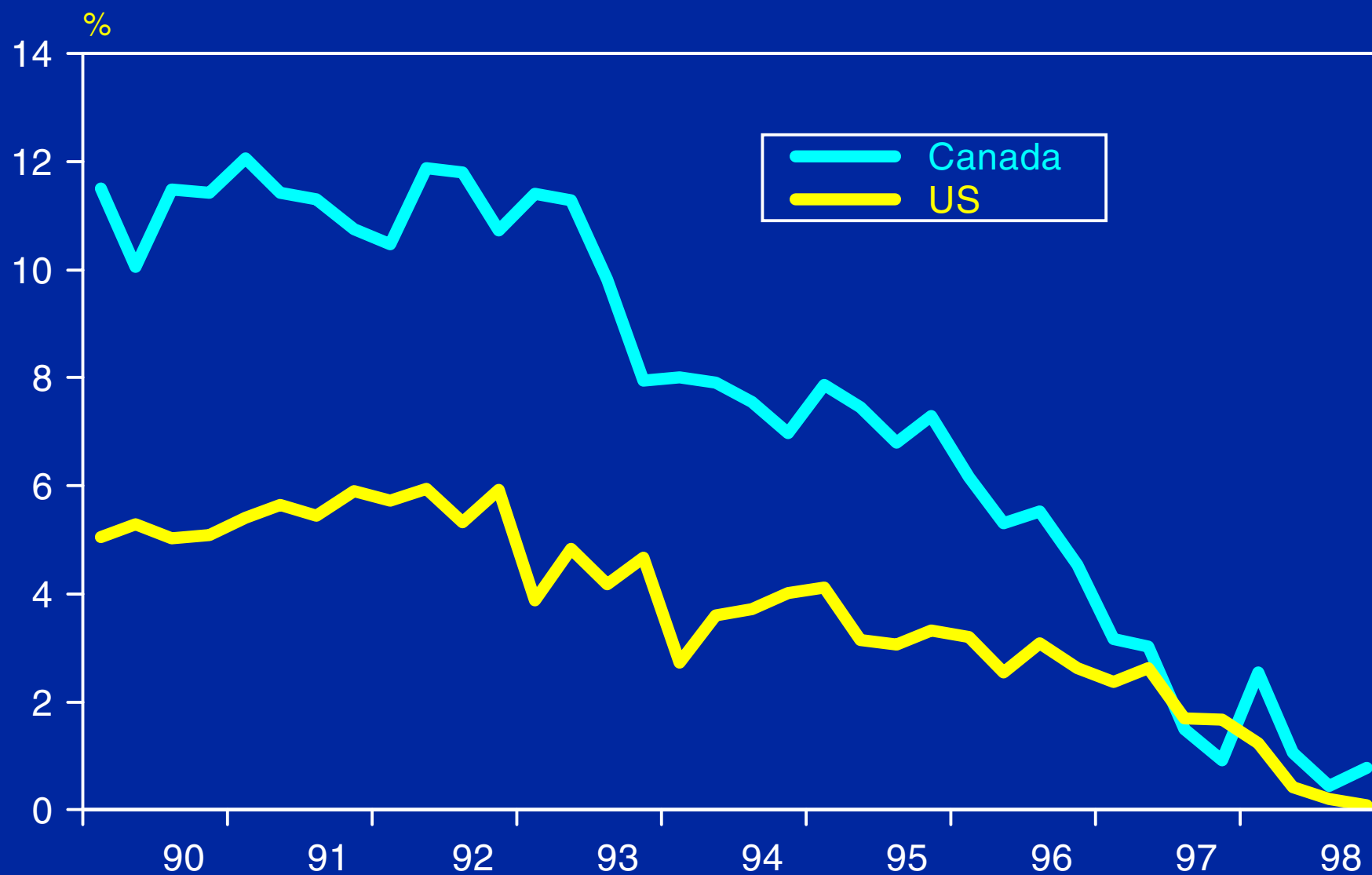


Financial markets

- Stylized facts and theory
- James Poterba (NBER working paper)
- No statistically significant effects of changing demographics upon long-run financial asset returns
- *Are Households Driving Equity Markets?* - Royal Bank Economics

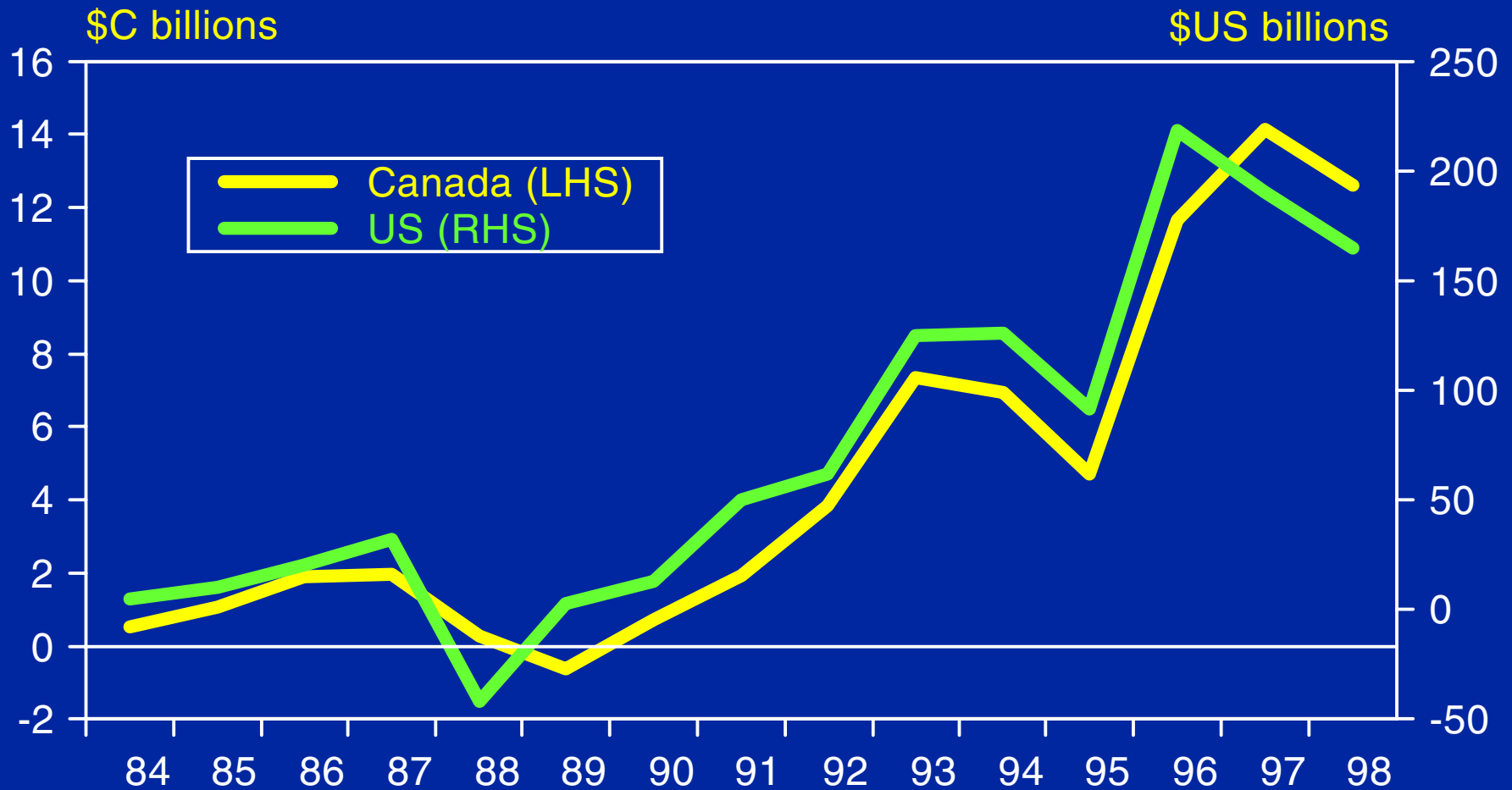


Personal saving rates



Sources: Statistics Canada, Bureau of Economic Analysis

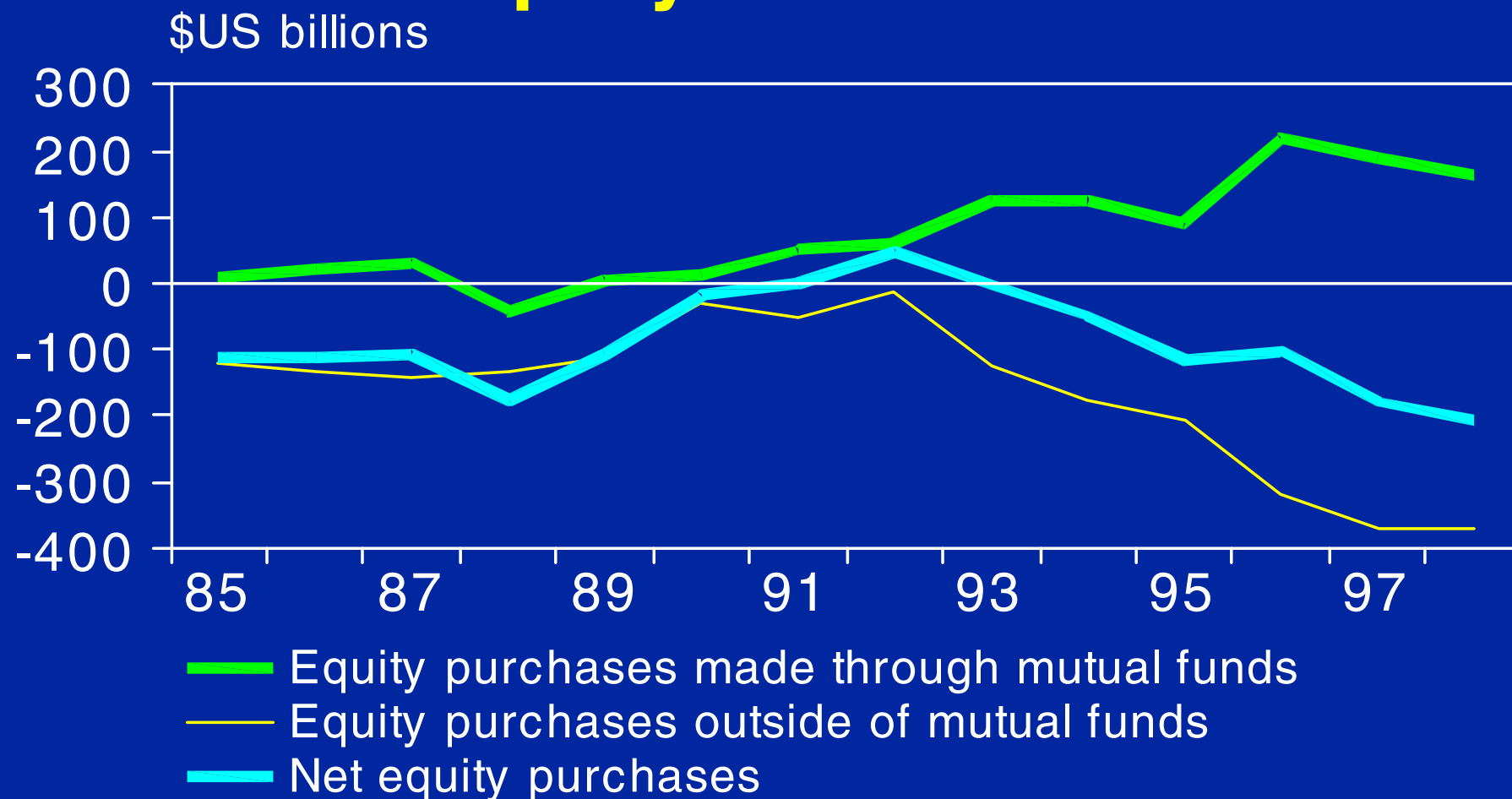
Equity purchases through mutual funds



Source: Statistics Canada, US Federal Reserve, Investment Company Institute



US households' equity investments

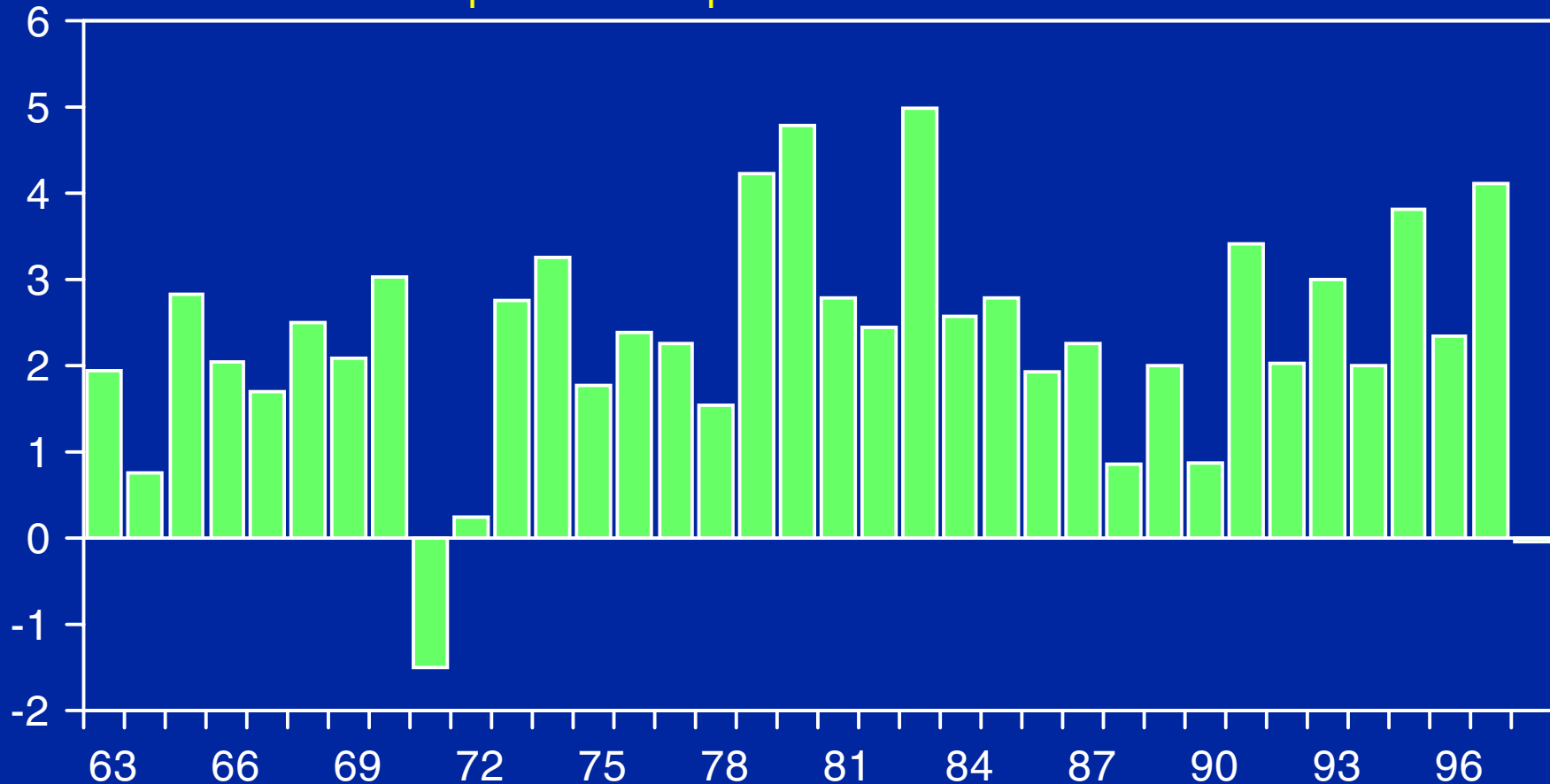


Source: Investment Company Institute (US)

Net equity purchases by Canadian households



all sources as % of personal disposable income

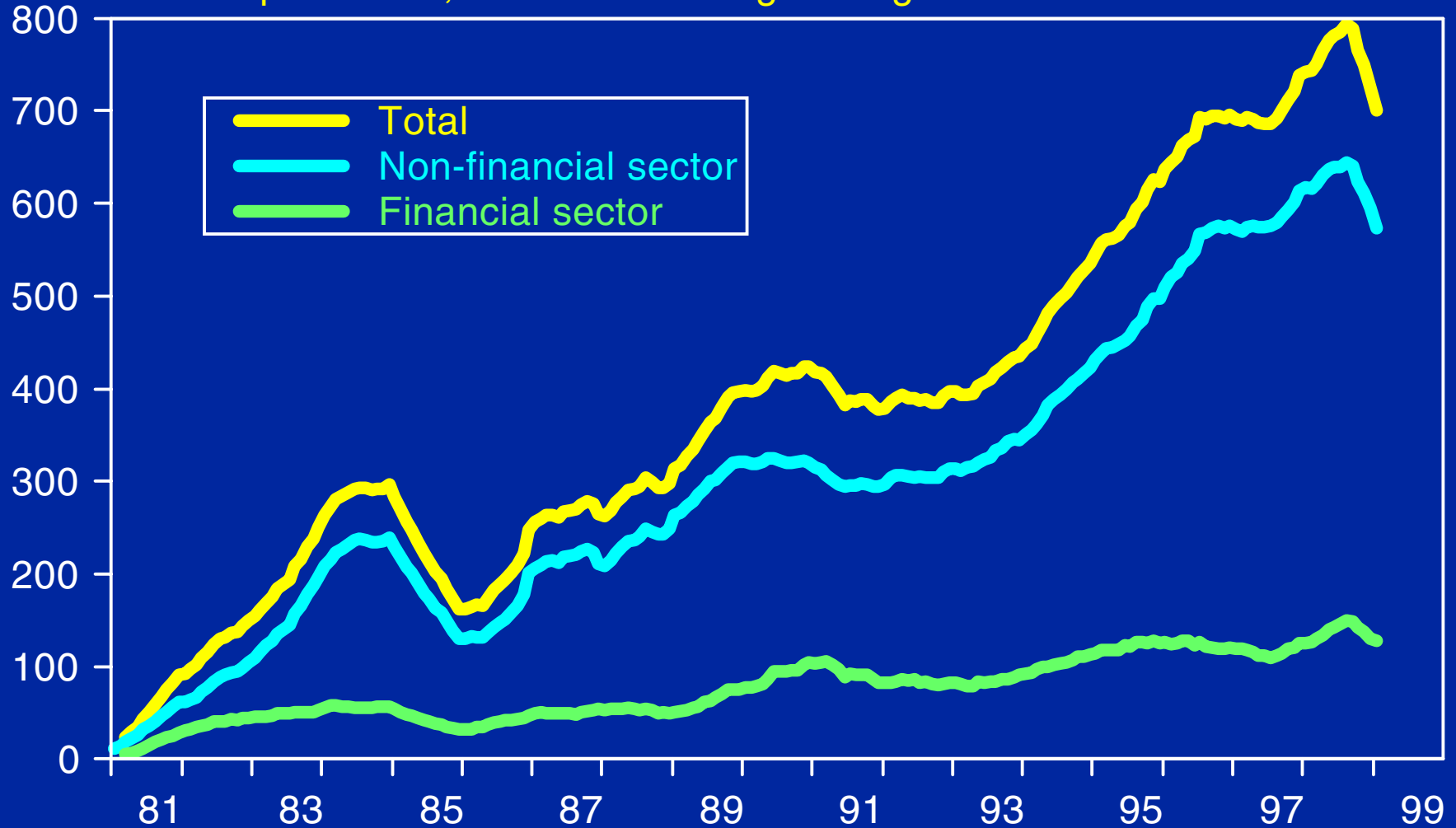


Source: Statistics Canada
Note: Data up to Q3 1998

US mergers and acquisitions



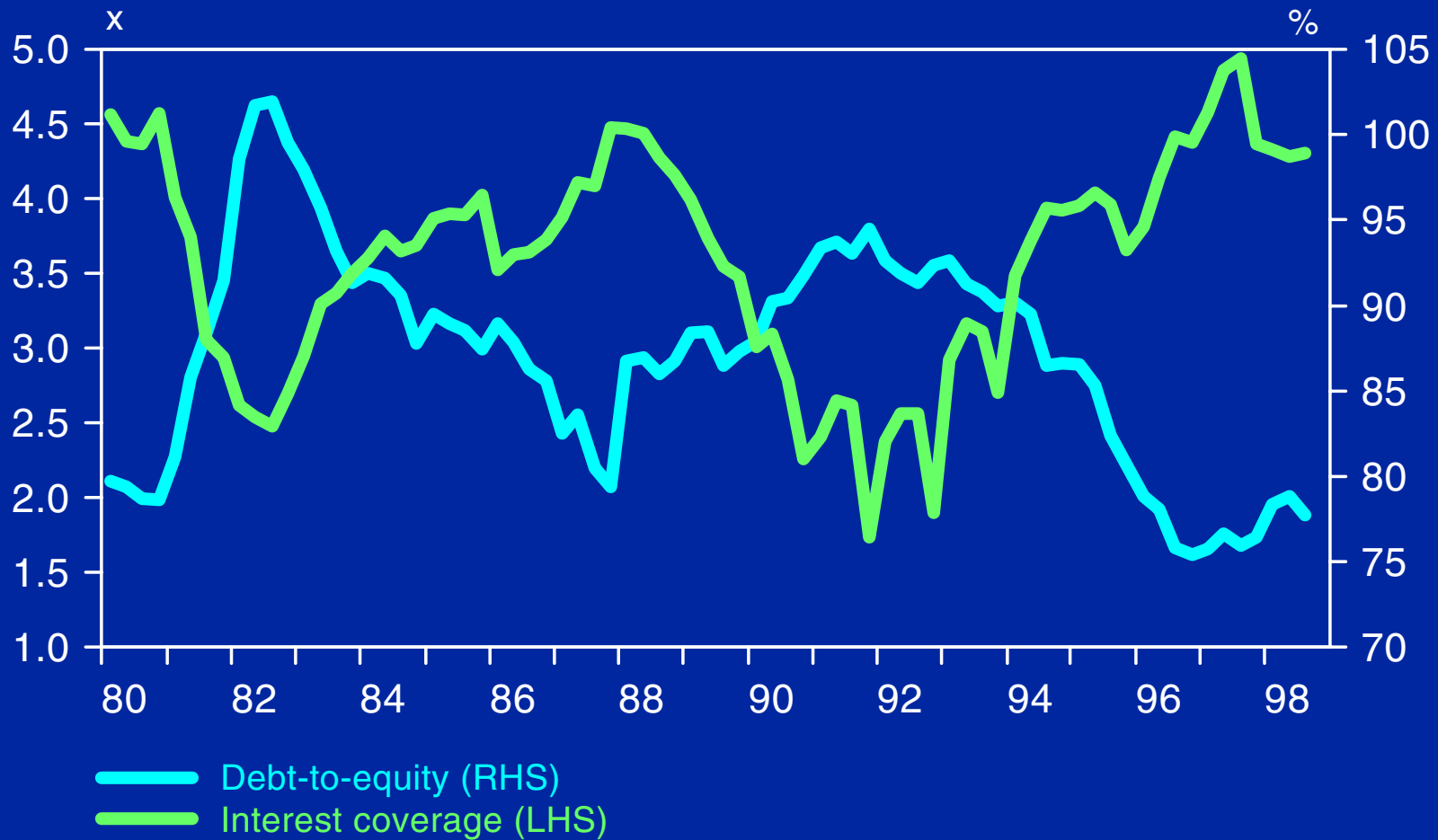
number per month, 12 month moving average



Source: Securities Data Company, Inc.

Note: US targets only, completed deals, public & private

Capital structure of Canadian non-financial corporations

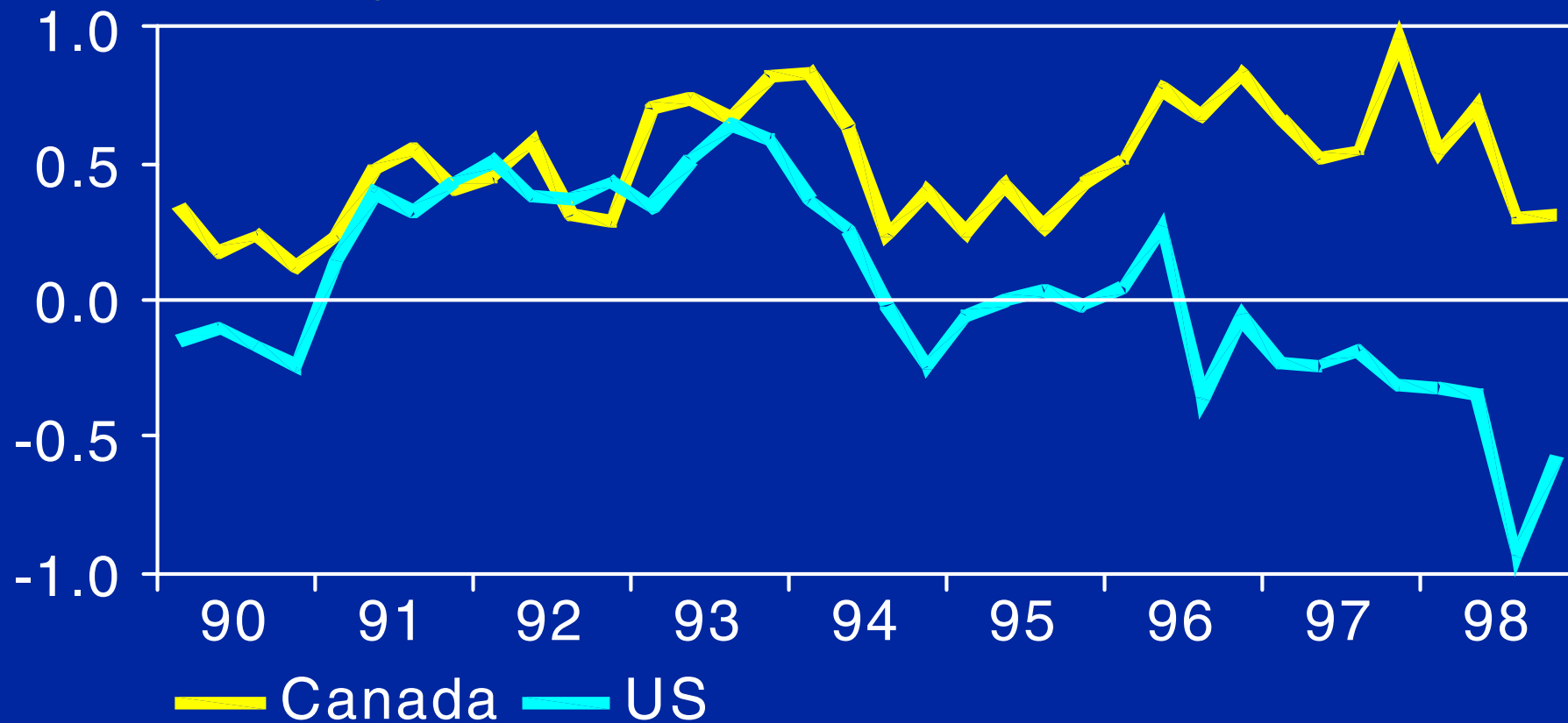


Source: Statistics Canada,
Quarterly Financial Statistics for Enterprises

Net issuance of corporate equities



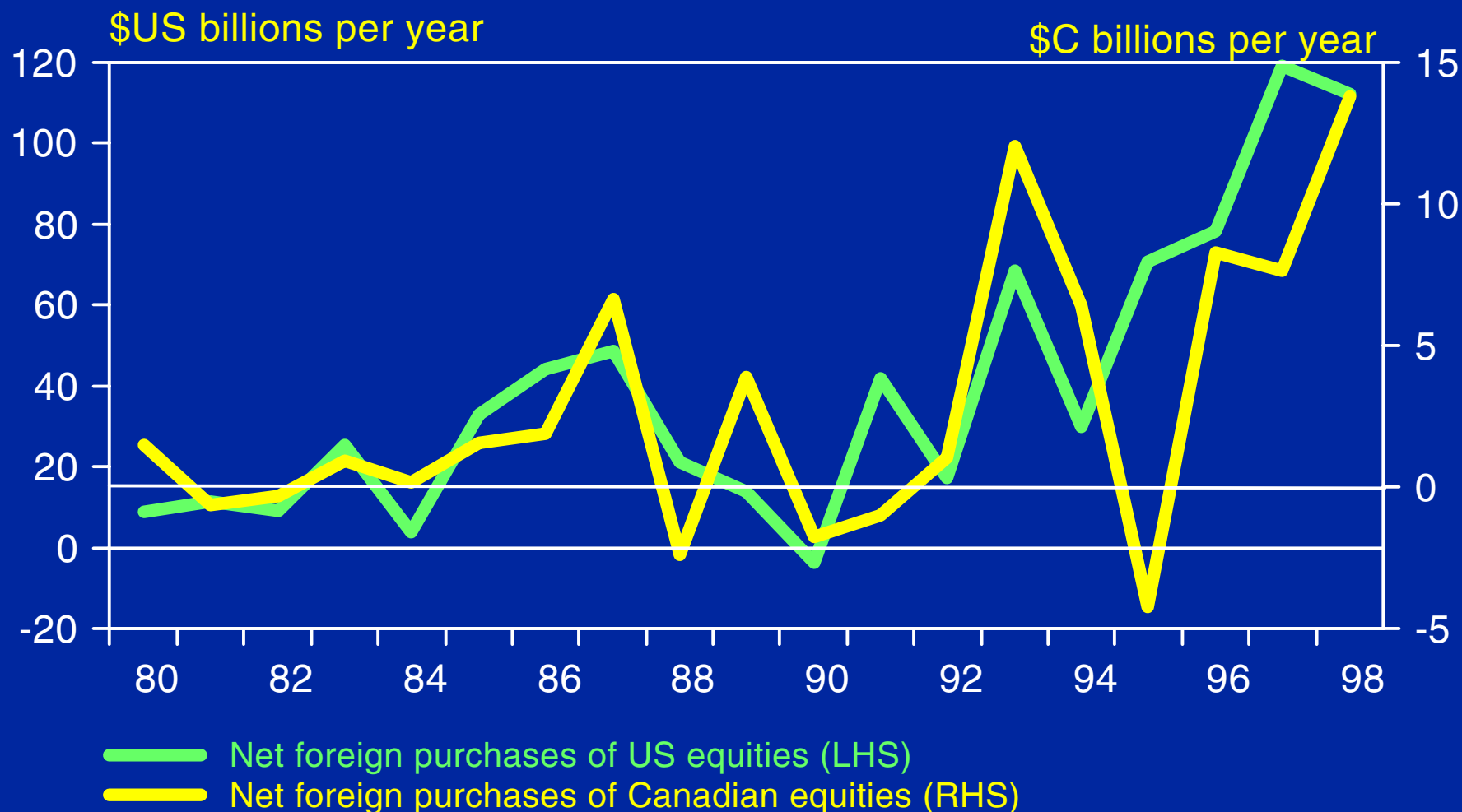
quarterly, as % of GDP



Sources: Statistics Canada, Bank of Canada,
Bureau of Economic Analysis, Federal Reserve



Foreign purchases of North American equities

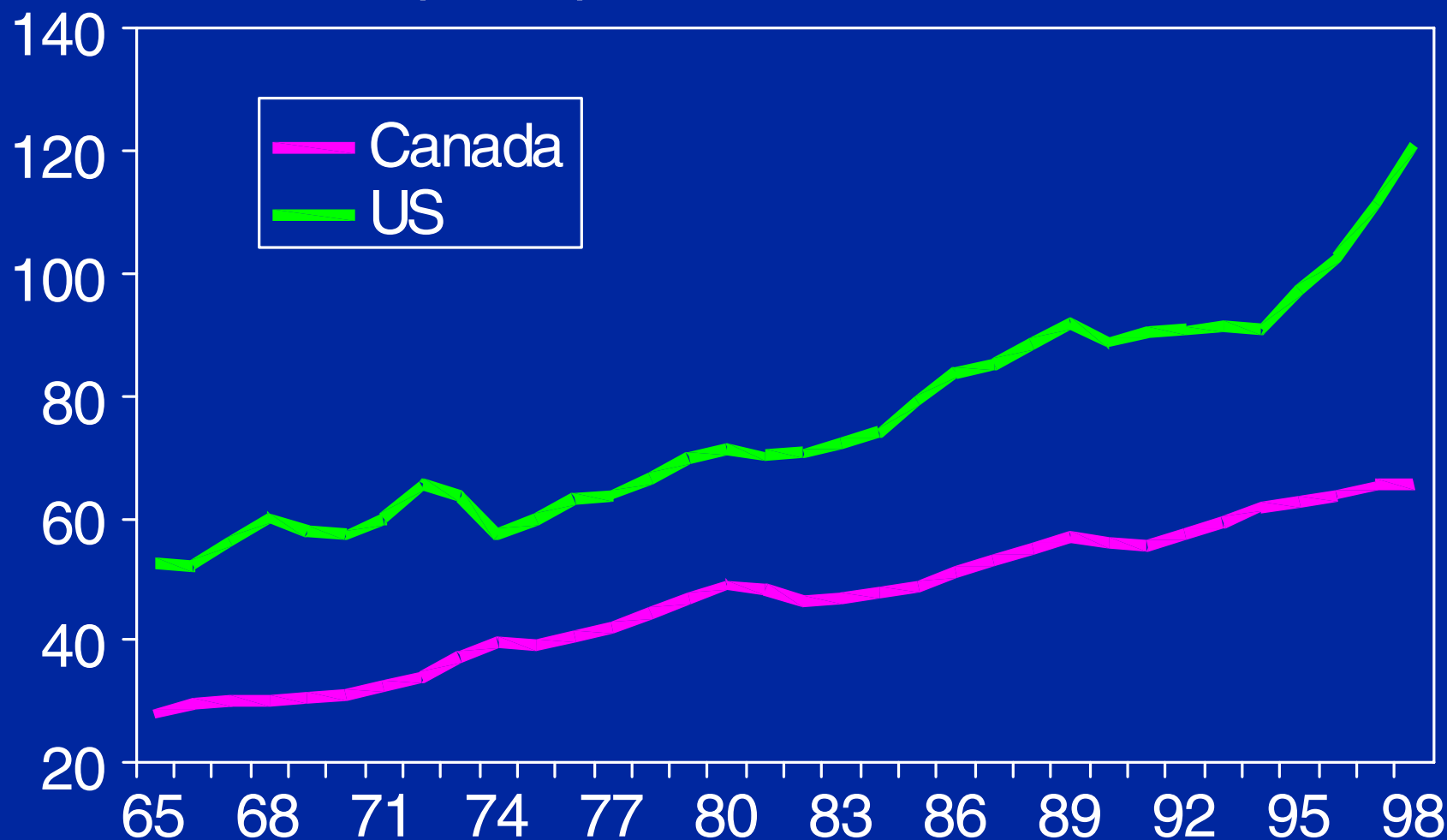


Source: US Federal Reserve, Statistics Canada



Net worth

\$000s real per capita, local currencies



Source: Statistics Canada, Federal Reserve



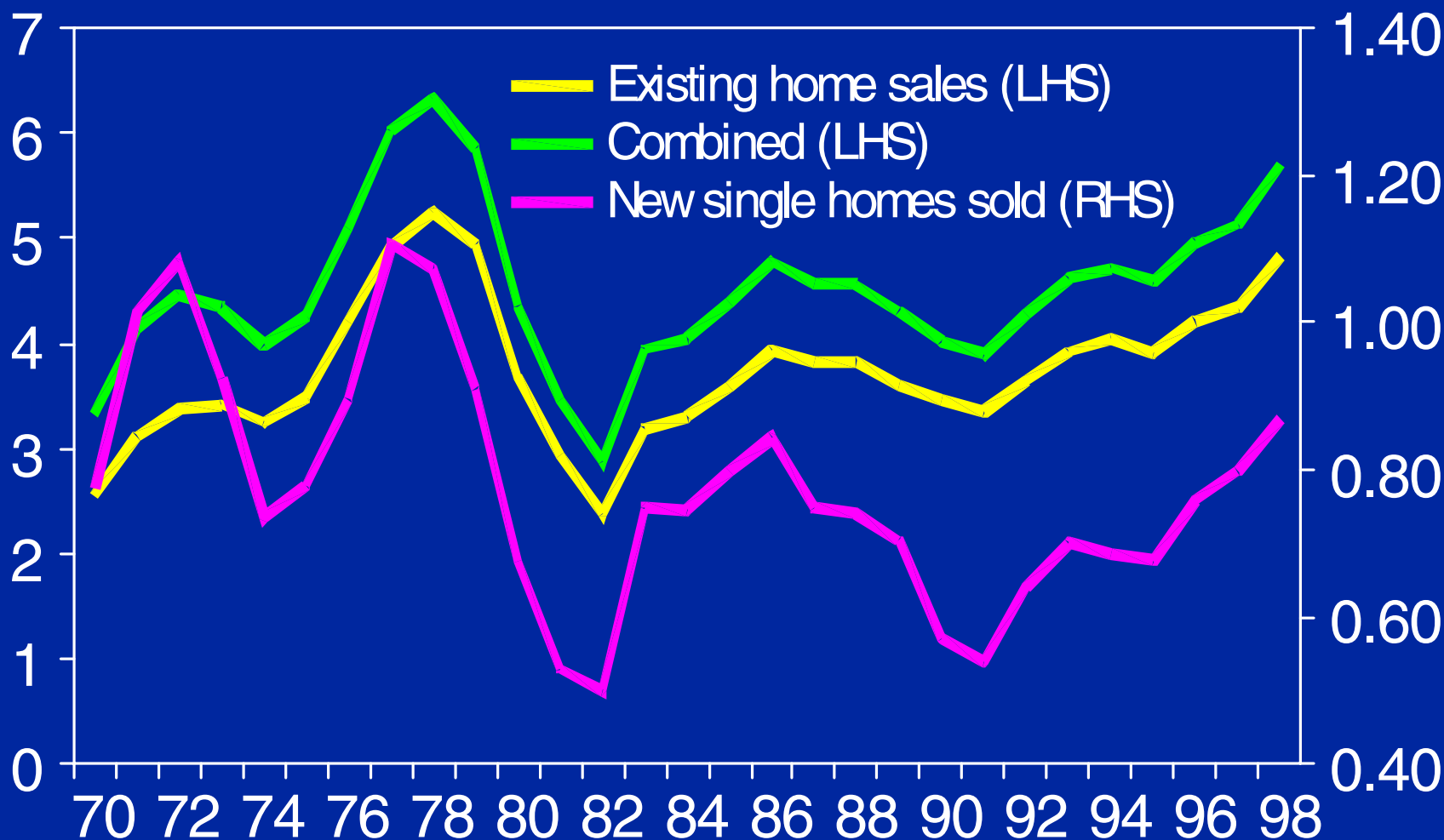
Property markets

- Stylized facts and theory
- N. Gregory Mankiw - David Weil
(Regional Science & Urban Economics)
- Doom-and-gloom housing forecasts for 1990s way off; questionable econometrics; simplistic theory
- *The Impact of Retirement on Residential Property Markets* - Royal Bank Economics



US housing demand

as % of total number of households

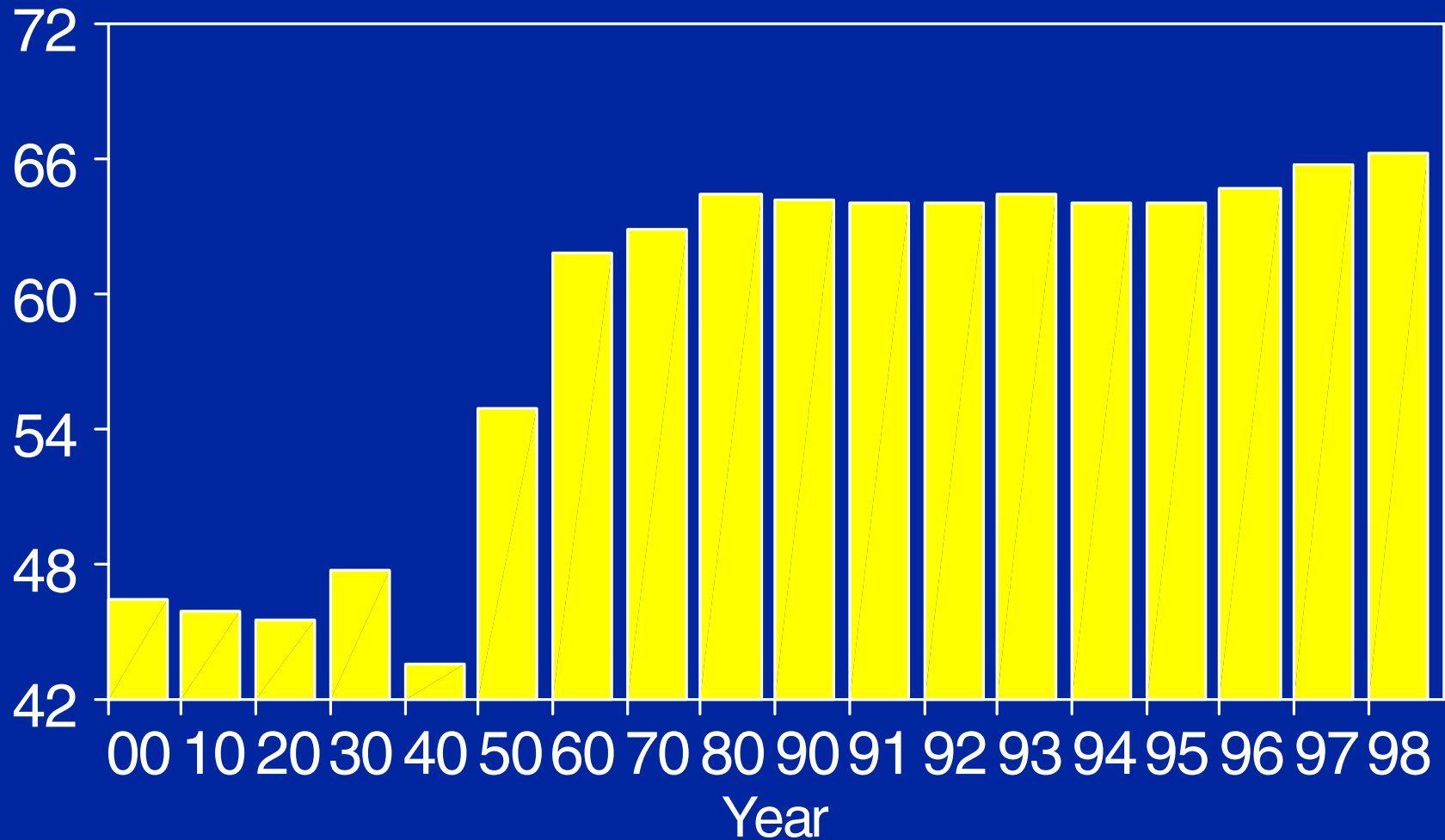


Source: US Bureau of the Census, US National Association of Realtors

US home ownership rate



% of population owning a home

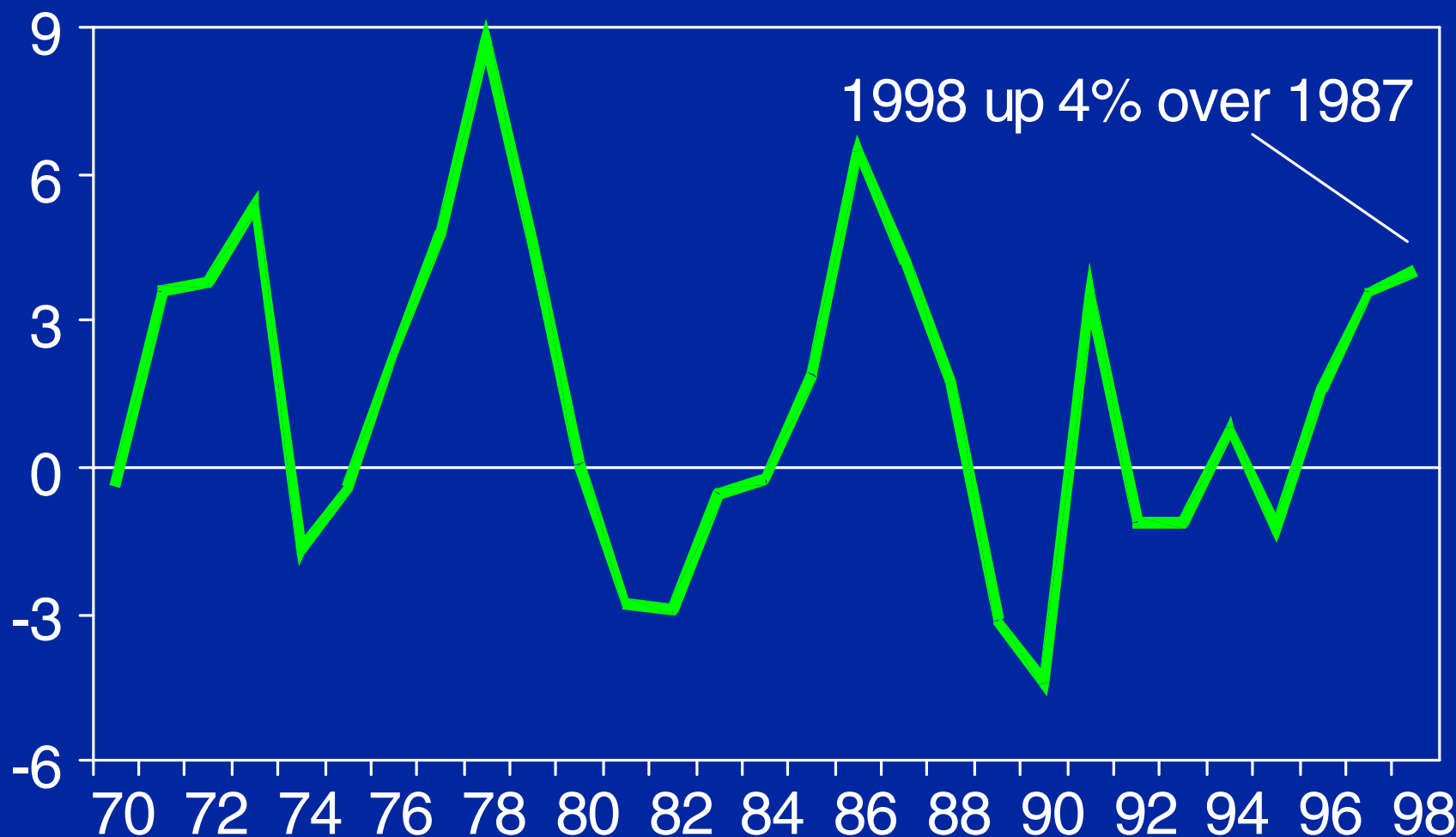


Source: US Census Bureau



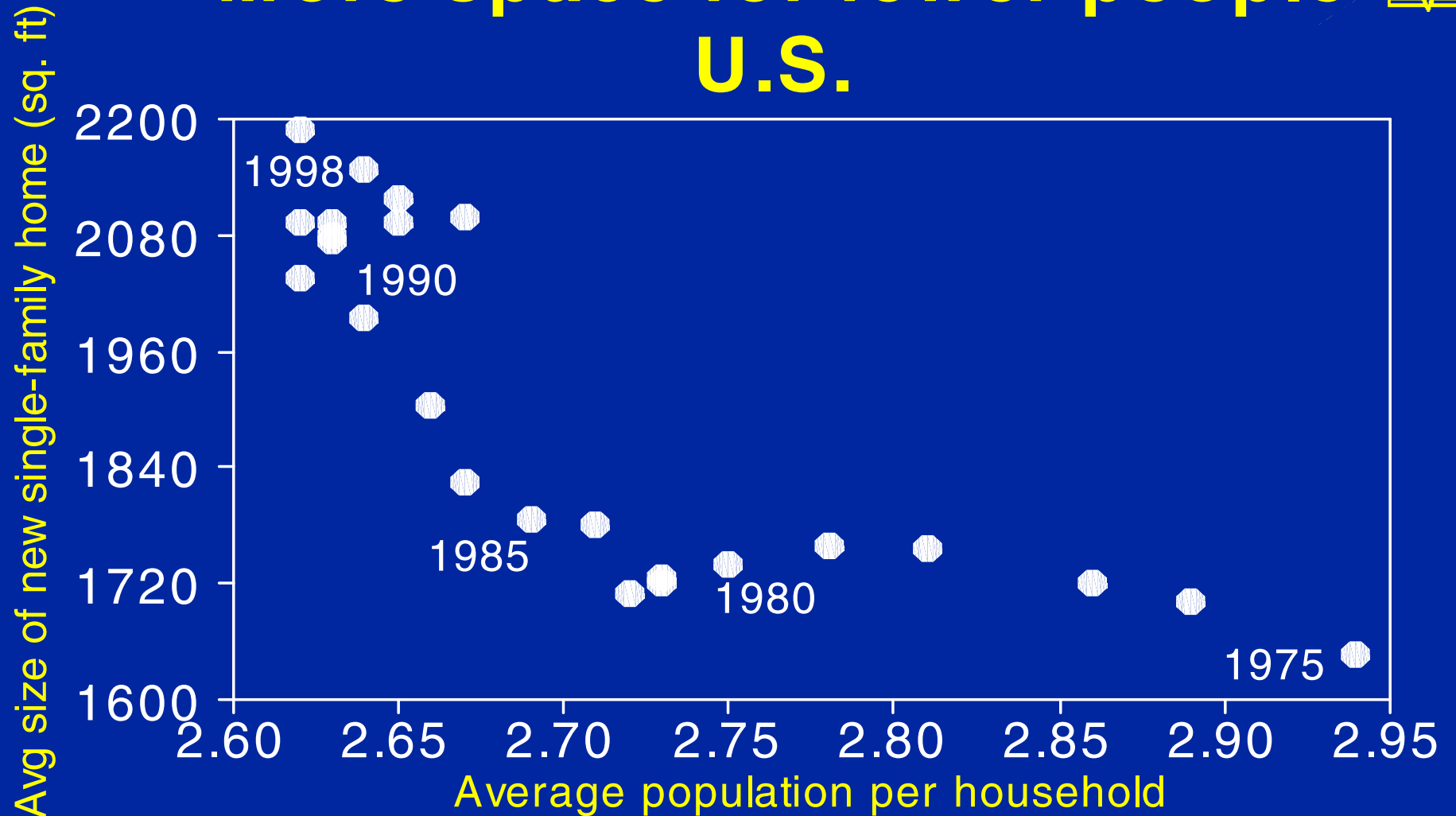
House prices - US

y/y % change in inflation-adjusted existing home prices



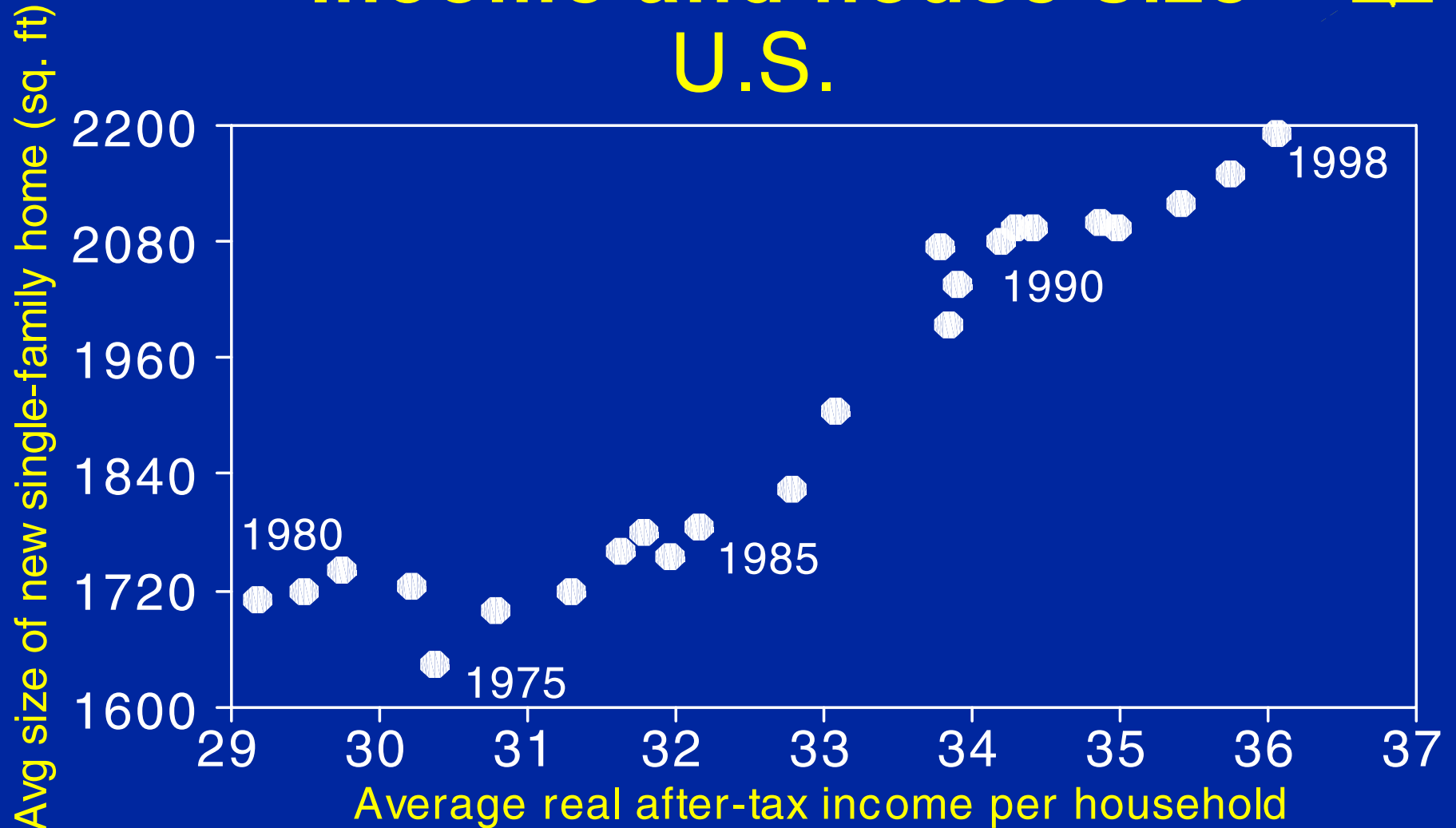
Source: US National Association of Realtors

More space for fewer people U.S.



Sources: US Dept. of Housing & Urban Development,
US Bureau of the Census

Income and house size - U.S.

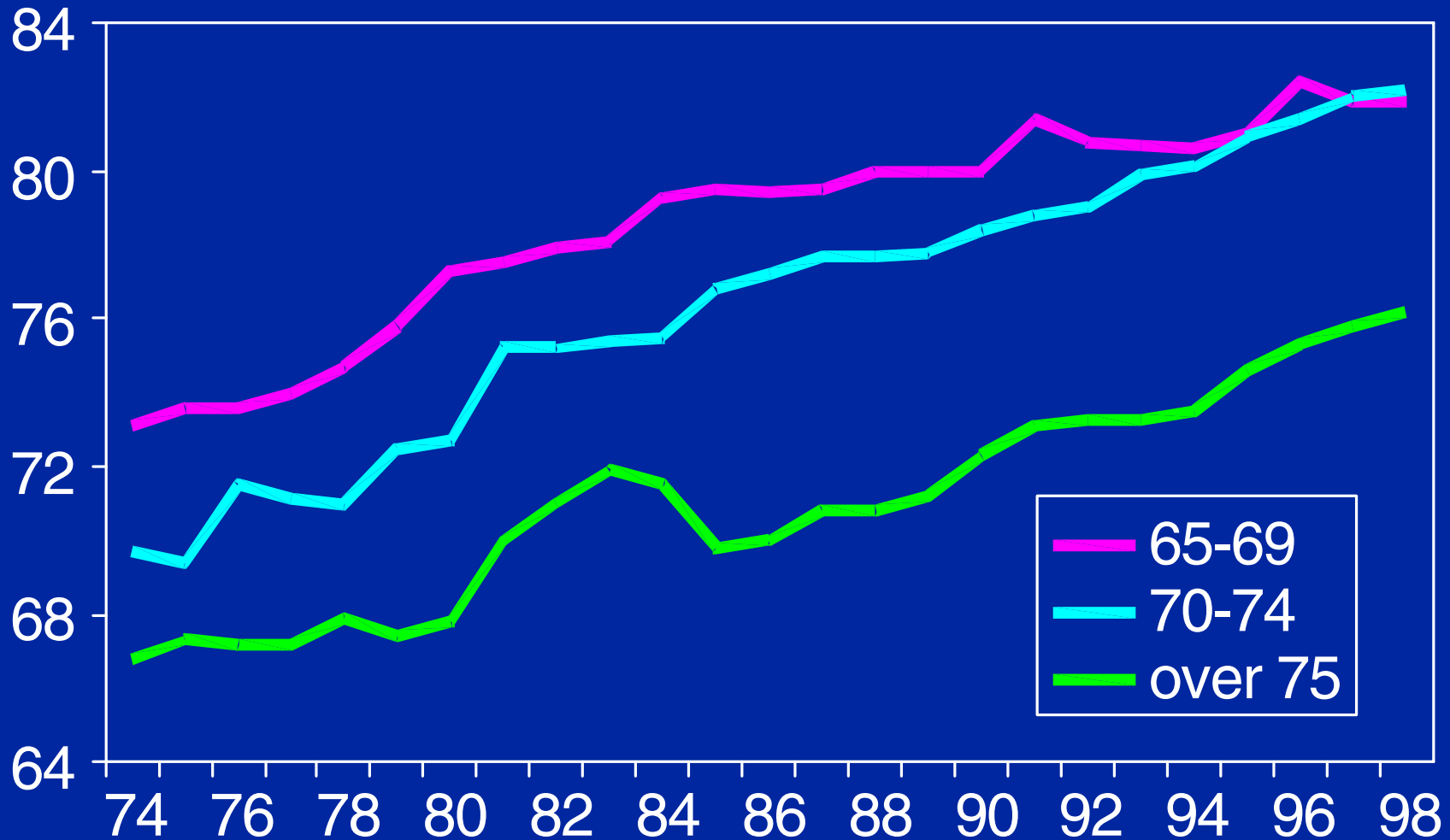


Sources: US Dept. of Housing & Urban Development,
US Bureau of the Census, US Bureau of Economic Analysis

US home ownership - retirees



% of total population in age group owning a home

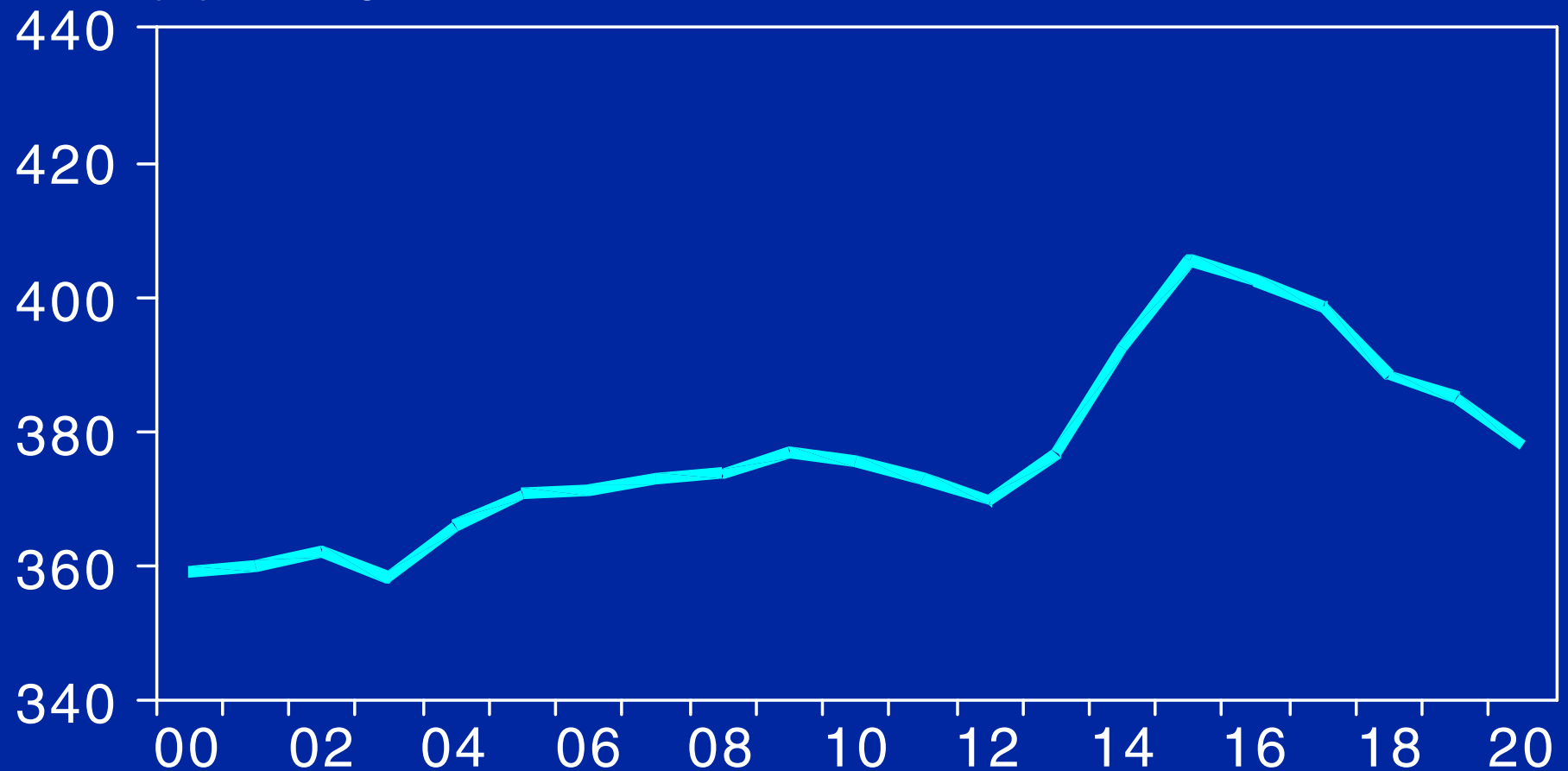


Source: US Bureau of the Census



Boom echo entering housing market - Canada

y/y change, 000s people in cohort

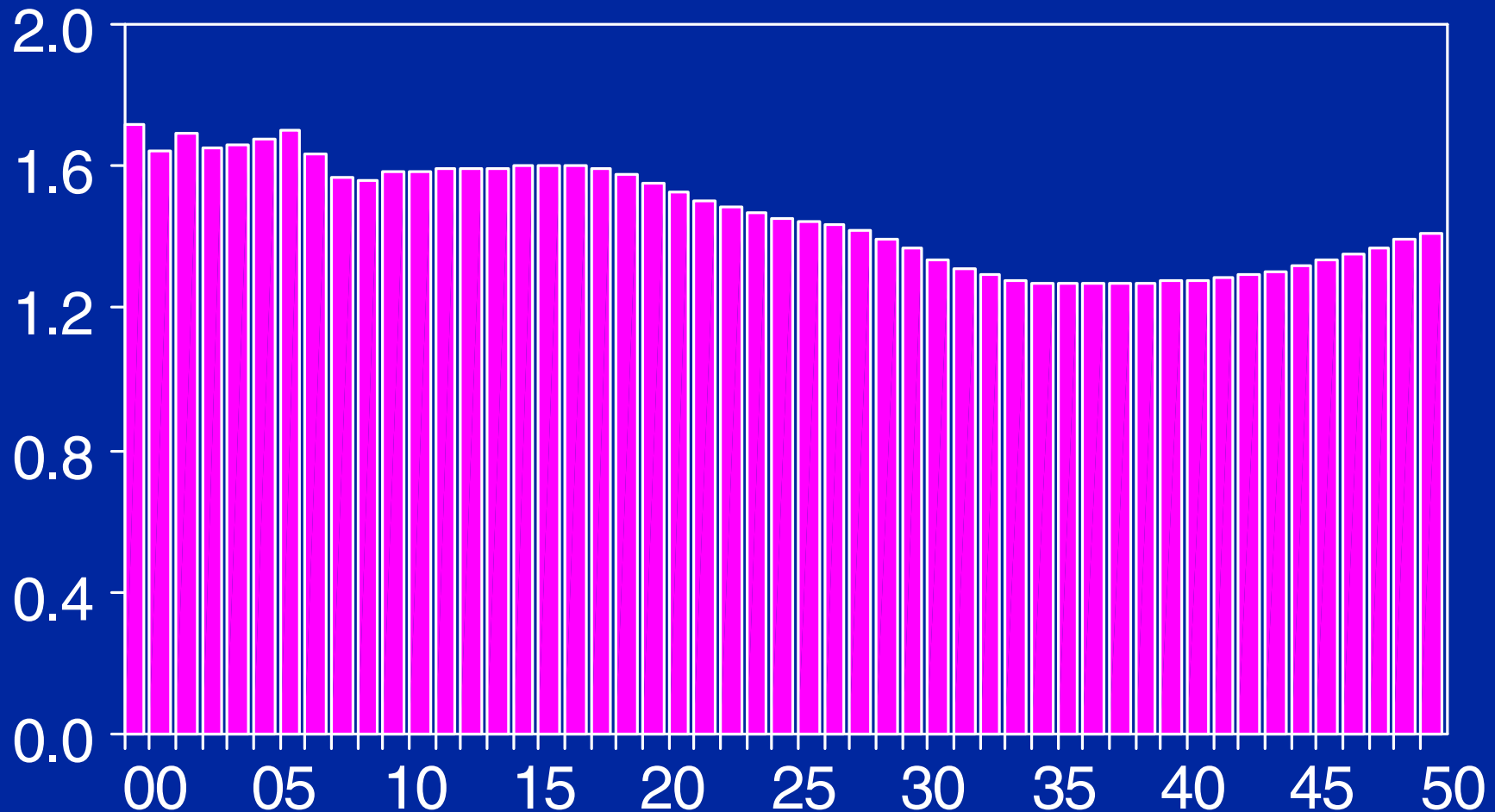


Source: Statistics Canada

Housing demand scenario - US



Change in number owning a home each year, millions of individuals



Source: Survey of Consumer Finances, US Federal Reserve, US Bureau of the Census, Royal Bank Economics Department



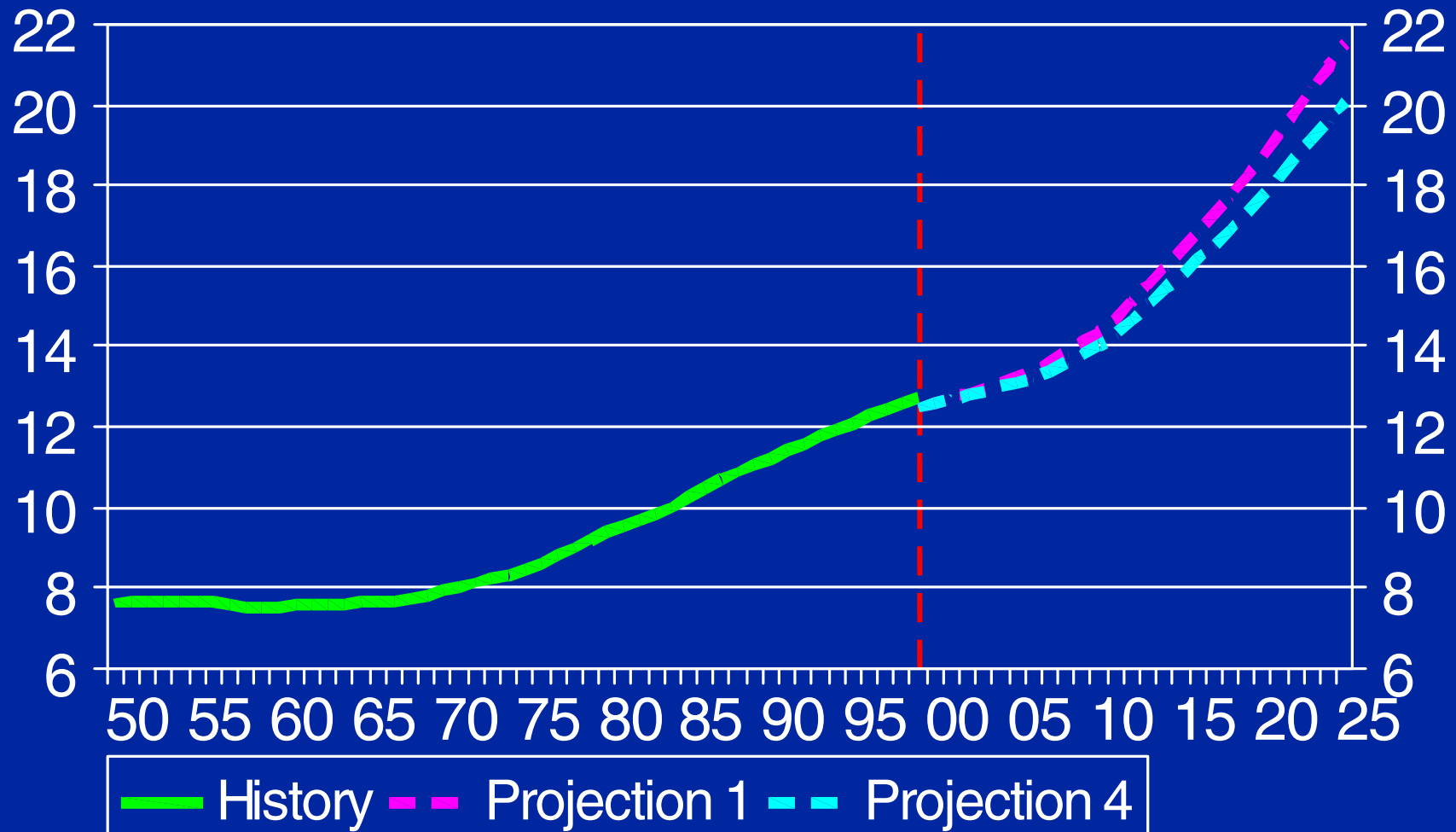
Labour markets

- **Stylized facts & theory**
- **Urban Futures Institute - huge worker shortages, negative unemployment rates ???**
- **Worker shortages and dependency ratios; far more complicated than a shock to labour supply**

Canada's aging population



over 65 as % of total population

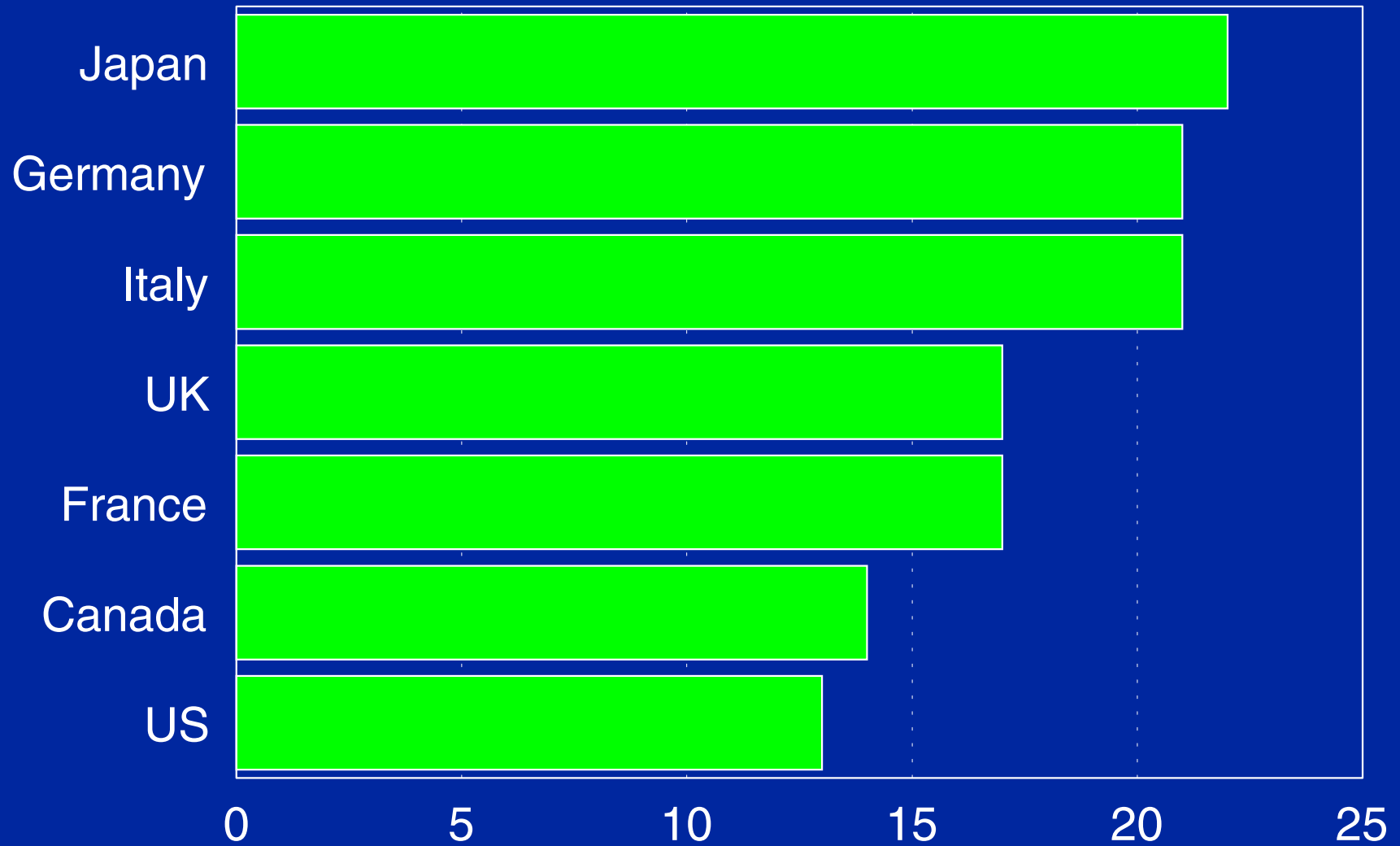


Source: Statistics Canada

Aging populations - 2010



over 65 as % of total population





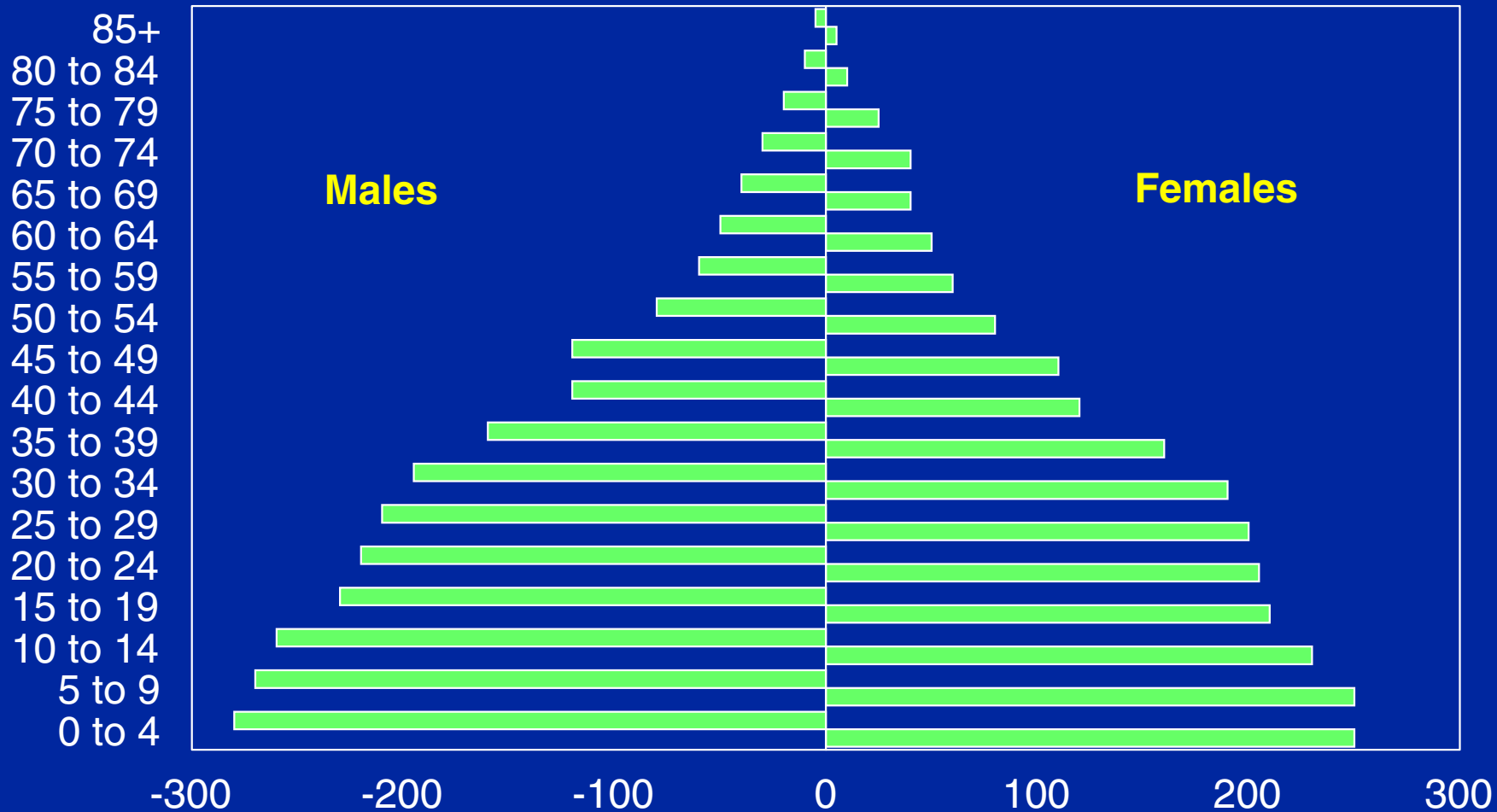
Problems with dependency ratios

- **Difficult to predict**
- **Even if predictable, economic inferences are tough to draw**
- **Cannot just shock dependency ratios and leave everything else untouched**
- **Policy changes can adjust dependency ratios - huge pool of young people outside of OECD**

Less developed countries



millions by age

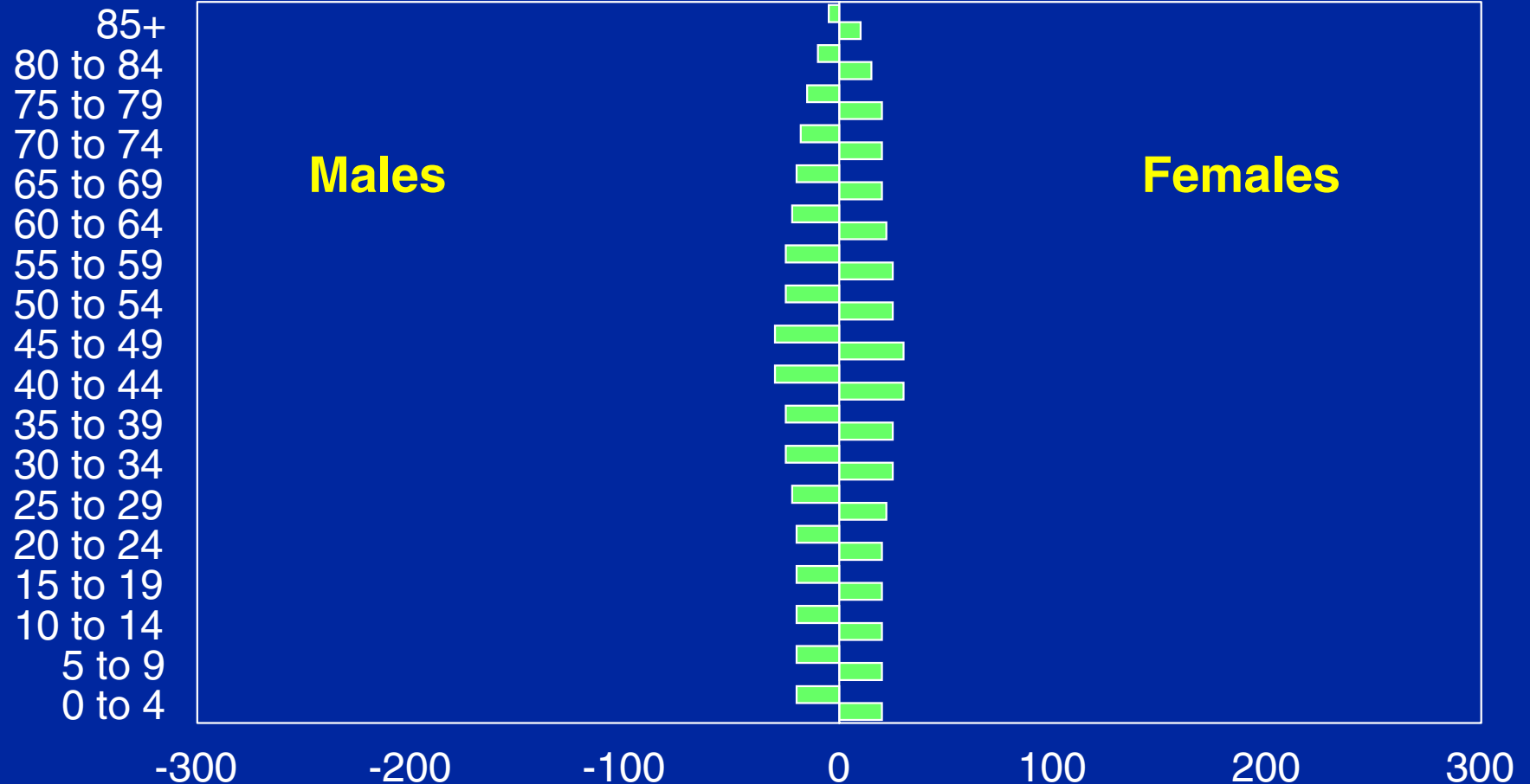


Source: UN, The Sex and Age Distribution of the World Populations 1998

Developed countries



millions by age



Source: UN, The Sex and Age Distribution of the World Populations 1998



Adjustment mechanisms to workforce shortages

- **Real wages**
- **Labour force participation**
- **Capital:labour ratio**
- **Factor productivity**
- **Skills training and education**
- **Location of demand for labour**
- **Technological innovation**
- **Immigration**



Immigration policy *can* adjust dependency ratios

- **One proposal from the Fed.Gov't is to double immigration targets**
- **But even, say, an extra 100,000 immigrants per year of prime working age would add 5 million to our workforce by 2050 *plus* their children**
- **How could such an infusion not change dependency ratios?**

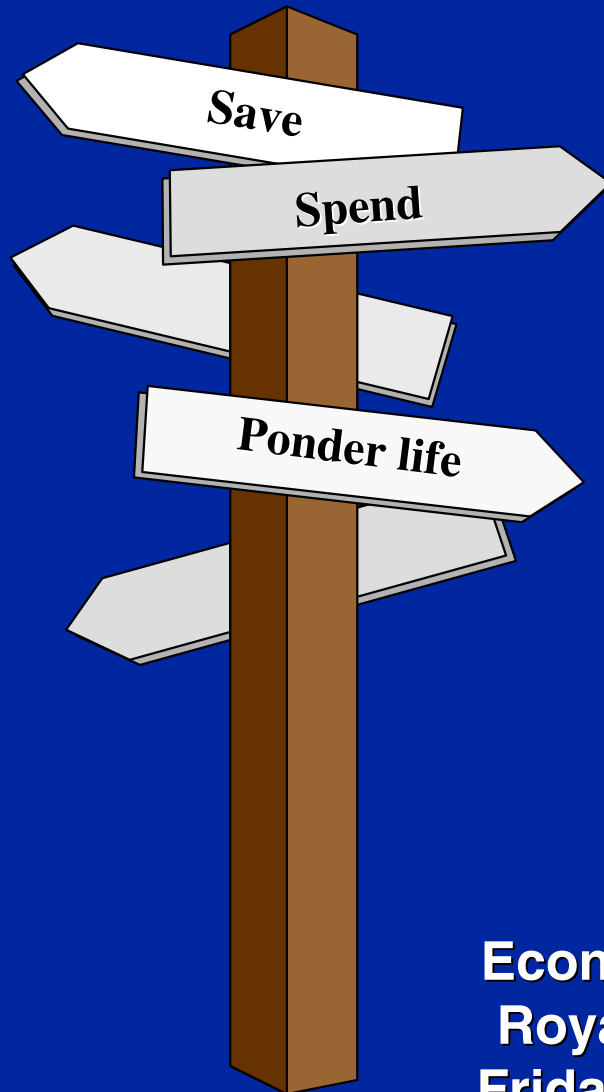


Concluding lessons

- Demographics alone is *neither* a source of boom nor bust to household wealth
- Cannot predict demographic change; not sure what it would mean anyway
- Five-to-ten year rolling targets; don't bank the CPP on single-theory sages
- Conservative assumptions



Papers and forecasts available at:
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