SHousehold Consumption: An Extended Model Approach (1995Q1-2024Q4)

no

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Abstract

Rough draft

Q3

Baseline model

The baseline consumption equation is specified as:

$$c_t = \alpha_0 - \alpha_1(i_t - \pi_t^e) + \alpha_2 y_t + \epsilon_t \tag{1}$$

where c_t is the log of real consumption, y_t is the log of real disposable income, and $(i_t - \pi_t^e)$ is the real interest rate.

Modern consumption theories, such as the life-cycle and permanent-income hypotheses, argue that consumption is smoothed over a lifetime and depends on total resources, not just current income. A key component of these resources is wealth. We, therefore, extend the baseline model to incorporate wealth effects, a standard practice in empirical macroeconomics (Blanchard, 2020).

Extended Model Specification

We extend equation (1) to include proxies for housing and financial wealth:

$$c_t = \beta_0 + \beta_1 y_t - \beta_2(i_t - \pi_t^e) + \beta_3 w_t^{house} + \beta_4 w_t^{fin} + \mu_t \tag{2}$$

where the additional variables are:

- w_t^{house} = log of real housing wealth
- w_t^{fin} = a proxy for real financial wealth (e.g., stock market growth)

This specification allows us to test the significance of income, interest rates, and wealth in determining U.S. household consumption.

Data Sources (ill add code here)

Quarterly data for the period 1995Q1 to 2024Q4 are obtained from the Federal Reserve Economic Data (FRED) database.

Table 1: Data Definitions for U.S. Analysis

Variable	**FRED Series ID**	**Description**
Nominal Consumption	PCEC	Personal Consumption Expenditures
Real Income	DSPIC96	Real Disposable Personal Income
Interest Rate	DGS10	10-Year Treasury Rate
Price Level	CPIAUCSL	Consumer Price Index
Housing Wealth	HNONWPDPI	Homeowners' Equity / Disp. Income
Financial Wealth	SPASTT01USQ657N	Share Price Index Growth

Here will be all code showing lines plots of the data and descriptions too

Q4

Econometric Methodology

Data Transformation (I'll add code snippets here)

All data is processed to be quarterly. Nominal consumption is converted to real terms using the CPI. Expected inflation is proxied using a moving average of past inflation, which is then used to calculate the real interest rate. Variables are transformed into logarithms as specified by the model.

The extended model (Equation 2) is estimated using Ordinary Least Squares (OLS). The estimation provides the coefficients (β's) that quantify the impact of each variable on consumption.

Expected Results and Interpretation

Based on macroeconomic theory, we have the following expectations for the signs of the coefficients:

Table 2: Expected Signs of Coefficients

Variable	**Expected Sign**	**Economic Rationale**
Real Disposable Income (y_t)	Positive (+)	Consumption increases with income.
Real Interest Rate ($(i_t - \pi_t^e)$)	Negative (-)	Higher rates encourage saving.
Housing Wealth (w_t^{house})	Positive (+)	Positive wealth effect.
Financial Wealth (w_t^{fin})	Positive (+)	Positive wealth effect.

1 Empirical Results

Everything here is code , ive done it just gotta paste and write descriptions under the figures