

A Simple Labor-Leisure Model with Habits: Some Simulations from Previous Results

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Introduction

- Introduce habits into the life-cycle labor supply model
 - Already has been done (see Bover (1991))
- Use the previous results to create some visualizations
- Change the parameter values to assess the validity of the model.
- Even under perfect foresight, this problem is fairly tough.

Key Result

- Original point estimates for the parameter values too high
 - Risk-free rate in the 20% range (if only this were true!)
- Adjustment of wage elasticities.

The Problem

We want to maximize the following utility function

$$\sum_{t=0}^{D-t} \beta^t u(c_t, l_t, h_t^l) \quad (1)$$

subject to the following constraint:

$$m_{t+1} = (m_t - c_t)(1 + r) + y_{t+1} \quad (2)$$

$$y_t = W(T - l_t) \quad (3)$$

Bellman

We can rewrite this problem in Bellman form.

Overview–Pictorially

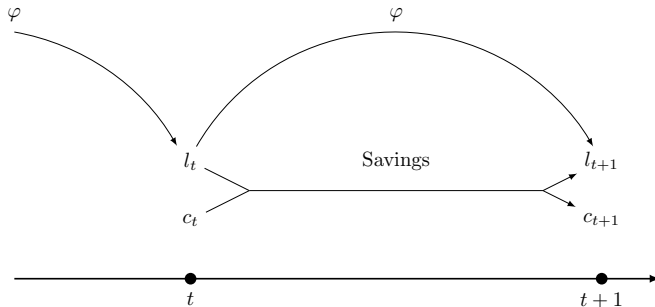


Figure: Stylized Model

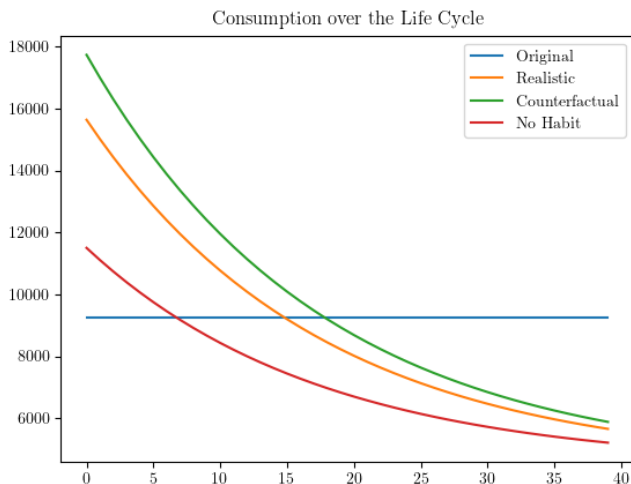
Behold a stylized model of the labor-leisure model with habits.

Calibrations

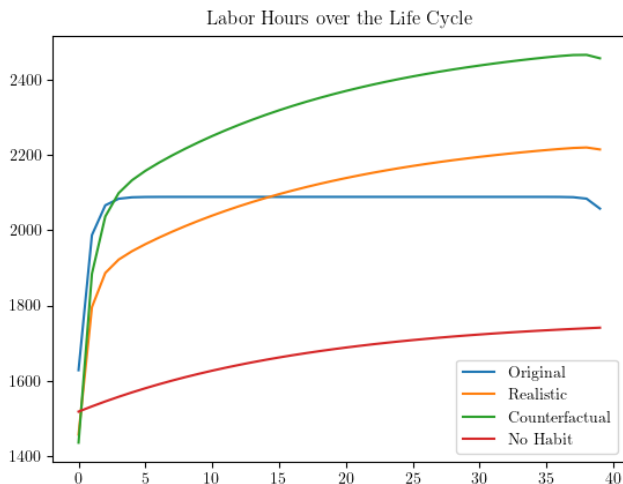
Table: Calibrated Parameters

| Simulation | γ_h | γ_c | φ | ρ | r |
|----------------|------------|------------|-----------|--------|--------|
| Original | 1768.1516 | 4454.0084 | 0.2205 | 0.2429 | 0.2429 |
| Realistic | 1768.1516 | 4454.0084 | 0.2205 | 0.0800 | 0.0200 |
| Counterfactual | 1768.1516 | 4454.0084 | 0.3000 | 0.0800 | 0.0200 |
| No Habit | 1768.1516 | 4454.0084 | 0.0000 | 0.0800 | 0.0200 |

Life Cycle Consumption



Life Cycle Labor Hours



Elasticities

Table: Simulated Elasticities

| Simulation | ϵ | η^α |
|----------------|------------|---------------|
| Original | 0.0734 | -0.1272 |
| Realistic | 0.0658 | -0.1206 |
| Counterfactual | 0.0660 | -0.1096 |
| No Habit | 0.0606 | -0.1505 |

BOVER, OLYMPIA (1991): "Relaxing Intertemporal Separability: A Rational Habits Model of Labor Supply Estimated from Panel Data," *Journal of Labor Economics*, 9(1), 85–100.