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

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

subject to the following constraint:

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

$$y_t = W(T - l_t) \tag{3}$$

Bellman

We can rewrite this problem in Bellman form.

Overview–Pictorially

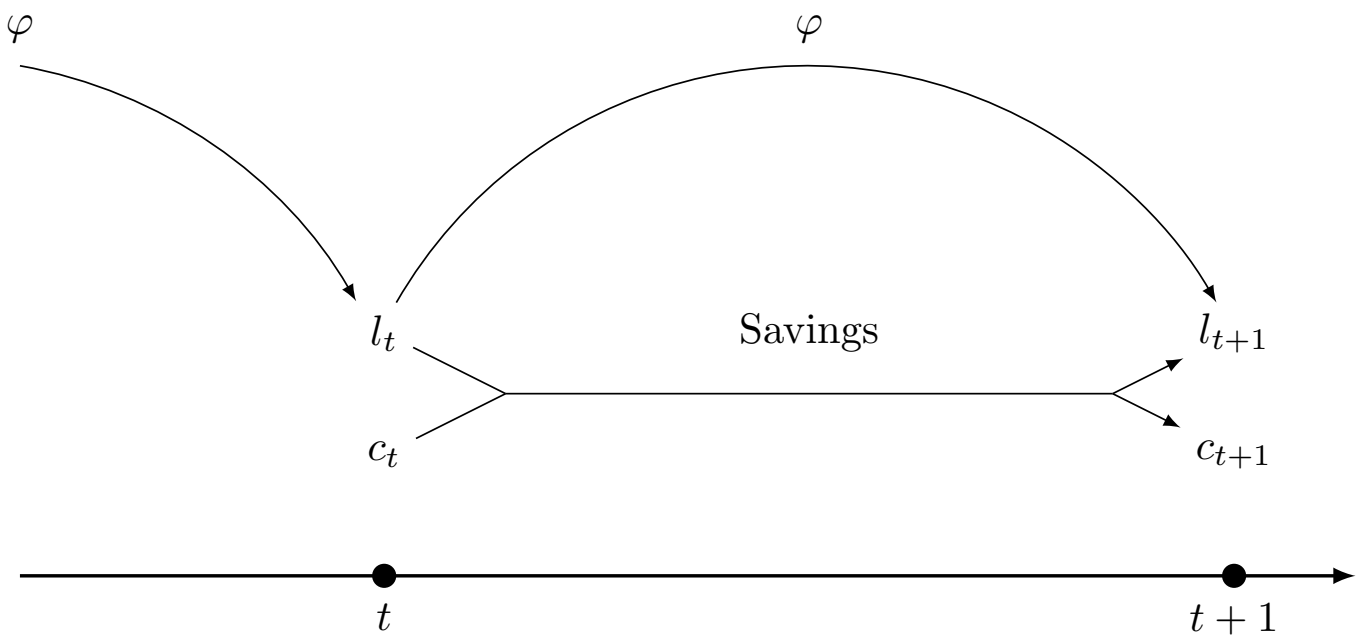


Figure: Stylized Model

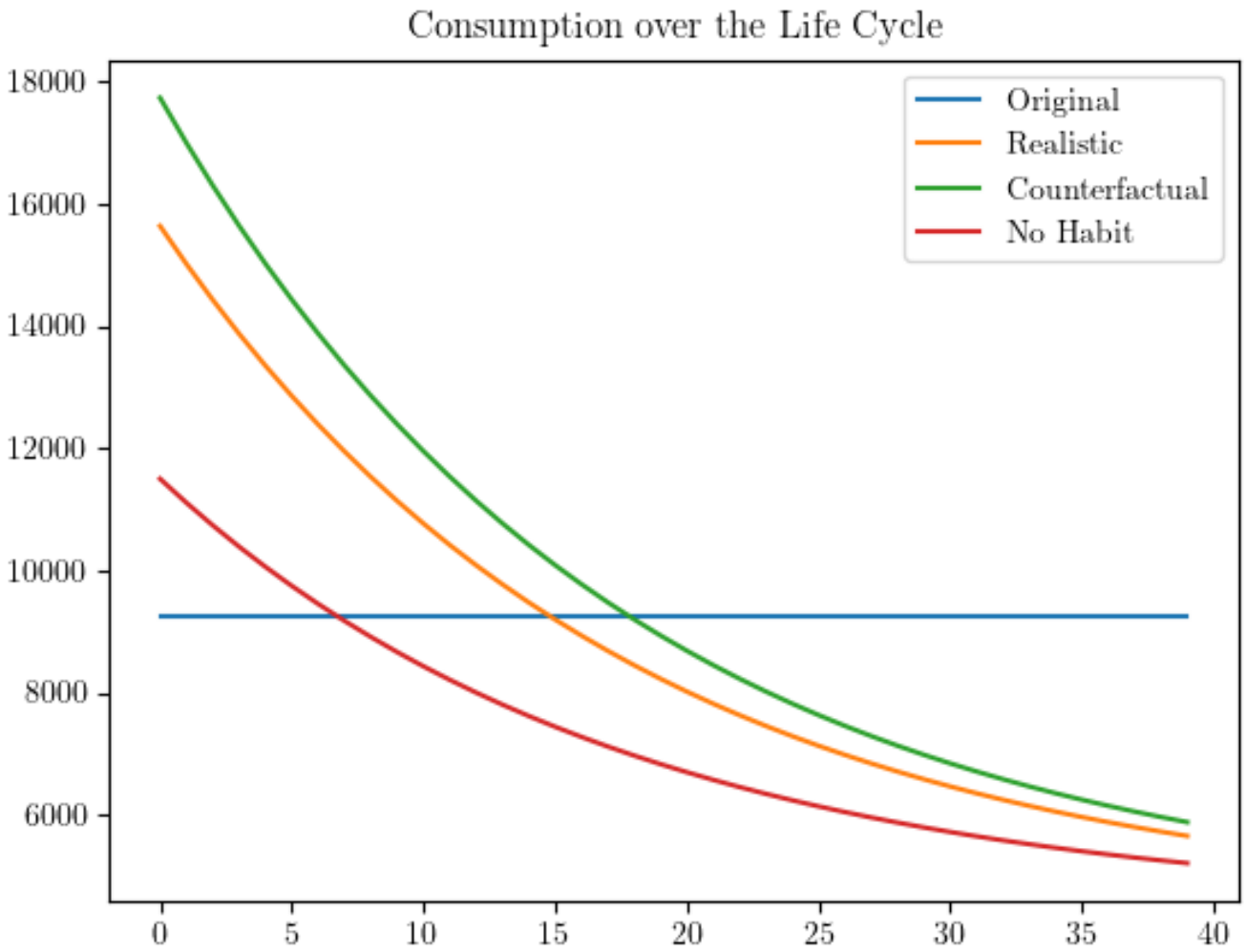
A stylized model of the labor-leisure model with habits. Agents make a decision regarding how much work (and *ipso facto* how much leisure to take), but this decision is influenced by the previous periods decision through the habit effect as captured by φ.

Calibrations

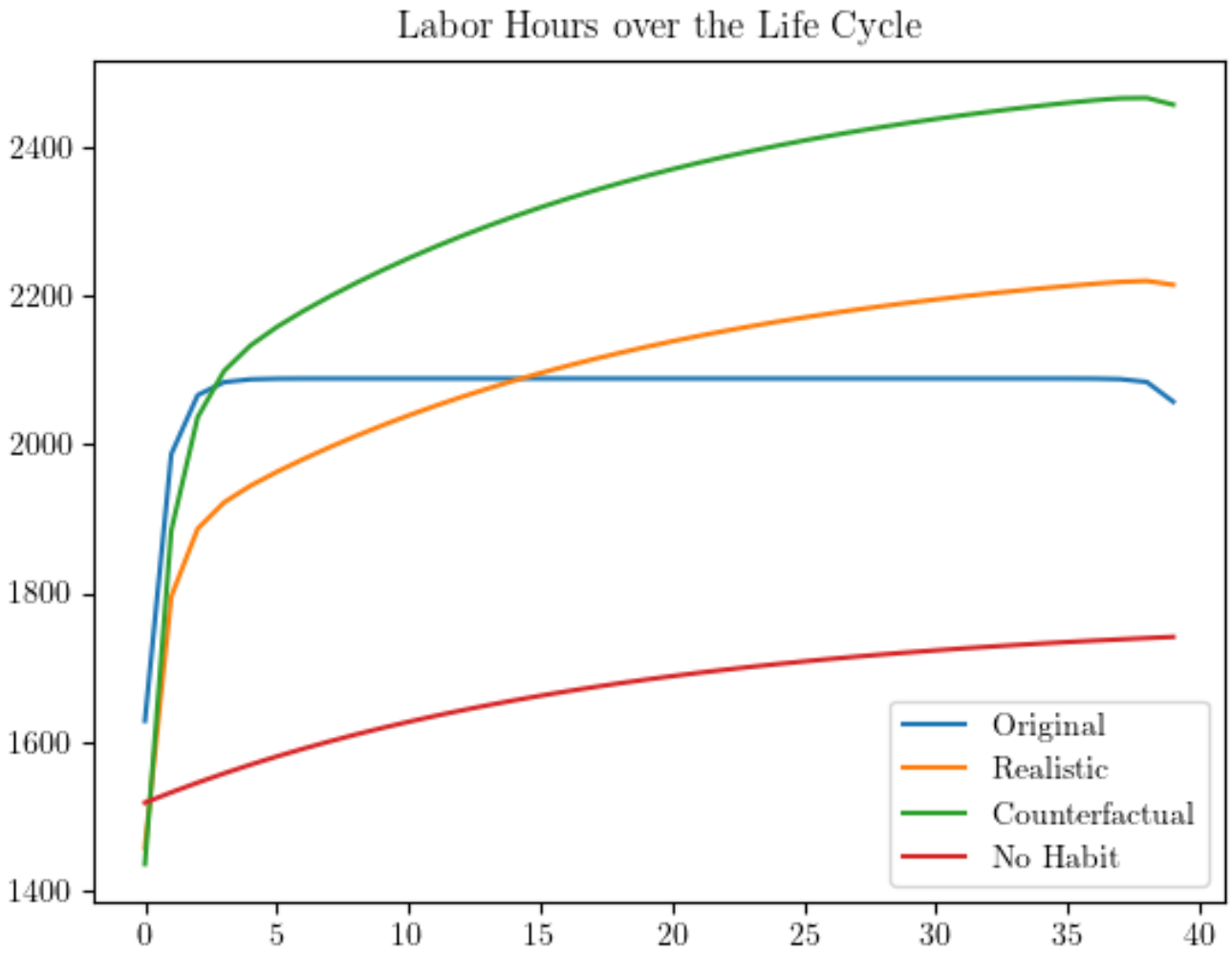
Table: Calibrated Parameters

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.