Non-Essential Business-Cycles

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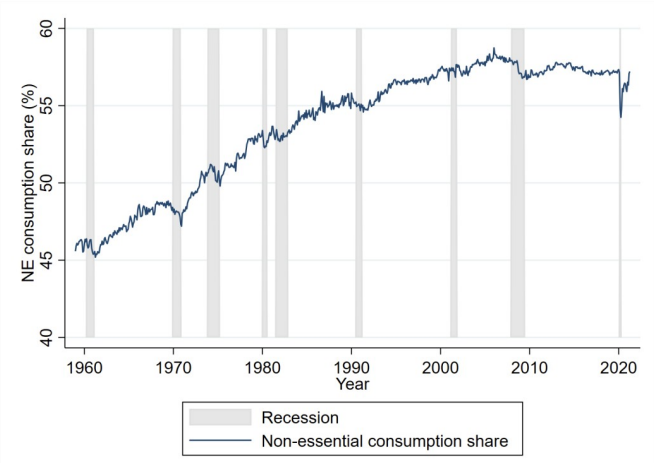
Non-Essential Macroeconomics

Figure 1: Non-essential consumption share over time



Source: Andreolli-Rickard-Surico (2025).

Non-Essential Macroeconomics

1. Growth.

   Boppart (2014), Comin-Lashkari-Mestieri (2021).

2. Business cycles.

   Andreolli-Rickard-Surico (2025).

Summary

1. Two household types: Ricardian and HtM. Differ in MPC.
2. Two goods: essentials and non-essentials. Differ in demand elasticity.
3. Sectoral composition: High-MPC agents work in the high-elasticity industry. Key.
4. Non-homothetic preferences.

Main Result

Table 2: Counterfactual exercise: amplification

	Representative Agent	Heterogeneous Agents	
		Equal Labour Composition	Unequal Labour Composition
Equal spending composition	0.22	0.36	0.49
Unequal spending composition	0.22	0.38	1.00

Notes: Each cell display the ratio of the cumulative IRF of the counterfactual model in that cell over the cumulative IRF of estimated model in the bottom-right corner for aggregate consumption. In the homothetic case, which we refer to as 'equal spending composition' (i.e. $\gamma^N = \gamma^E$), we set the IES equal to the estimated average IES in the economy. In the representative agent column, we set $\mu^L = 0$ and $\alpha^E = \alpha^N = 0$. Under 'equal labour composition', we fix $\alpha^E = \alpha^N > 0$ so as to match the relative steady state labour earnings across the two agents.

Intuition

Low-skill agents spend more on essentials and work in the non-essential sector. High-skill agents spend more on non-essentials and work in the essential sector.

In recessions, Ricardian agents restrict consumption of non-essentials by more. Low-skill agents, who work predominantly in the non-essential sector, suffer due to decreased labor demand. And because low-skill agents have a higher MPC, you get endogenous amplification.

Complementarity between household and sectoral heterogeneity is key. Non-homotheticity helps quantitatively but is of second-order. Channels by themselves are small. In combination, the covariance multiplies the total response.

Intellectual micro-foundation for Patterson (2023).

Trickle-down amplification.

Comments

My discussion also covers the companion paper "Discretionary Spending is the Cycle, and Why it Matters for Monetary Policy" (Andreolli-Ricard-Surico-Vergeat, 2025). The case of Europe.

I will comment on:

1. Theory.
2. Measurement.
3. Identification.

Ex-ante Heterogeneity

Who are the hand-to-mouth? (Aguiar-Bils-Boar, 2025)

Ex-ante heterogeneity important to match the data. High-MPC agents must be either impatient or have a very high EIS. The latter is unrealistic, as we will conclude in a few slides.

Your focus on permanent *types* is useful.

But what about permanent differences in patience? Can dispense of sectoral heterogeneity? Can add a 4th layer? Low-skill workers are HtM *and also* low-β.

Distribution and Risk

Accounting for the distribution matters (Kaplan-Moll-Violante 2018, Auclert 2019).

(Counter-cyclical) risk matters (Ravn and Sterk, 2021).

Proposal: enrich the model with tractable heterogeneity à la Bilbiie (2025).

Can be important for your normative analysis and the welfare criterion. More on this below.

Non-Essential THANK

Allow household types to *switch* with Markov probabilities. Potentially aggregate state-dependent.

$$\begin{aligned} \mu_{H,t+1} &= s\,\mu_{H,t} + (1-h)\,\mu_{L,t}, \\ \mu_{L,t+1} &= (1-s)\,\mu_{H,t} + h\,\mu_{L,t}, \\ \mu_{H,t} + \mu_{L,t} &= 1. \end{aligned}$$

- $s = \Pr(H \to H)$, $\quad 1 - s = \Pr(H \to L)$.
- $h = \Pr(L \to L)$, $\quad 1 - h = \Pr(L \to H)$.

Stationary shares:

$$\bar{\mu}_H = \frac{1-h}{2-s-h}, \quad \bar{\mu}_L = \frac{1-s}{2-s-h}.$$

Derivation of Stationary Shares

With two types H and L and Markov transition probabilities

$$s = \Pr(H \to H), \qquad h = \Pr(L \to L),$$

the law of motion for the mass of H agents is

$$\mu_{H,t+1} = s\,\mu_{H,t} + (1-h)(1-\mu_{H,t}) = (s+h-1)\,\mu_{H,t} + (1-h).$$

A stationary share $\bar{\mu}_H$ satisfies $\bar{\mu}_H = (s+h-1)\bar{\mu}_H + (1-h)$, hence

$$\bar{\mu}_H \left[1 - (s+h-1)\right] = 1-h \implies \boxed{\bar{\mu}_H = \frac{1-h}{2-s-h}}.$$

Since $\mu_{L,t} = 1 - \mu_{H,t}$,

$$\boxed{\bar{\mu}_L = 1 - \bar{\mu}_H = \frac{1-s}{2-s-h}}.$$

Special Cases

- If $s = 1$ and $h < 1$, then $\bar{\mu}_H = \frac{1-h}{1-h} = 1$ (Ricardian type is absorbing).
- If $h = 1$ and $s < 1$, then $\bar{\mu}_H = 0$ (HtM type is absorbing).
- If $s = h = \frac{1}{2}$, then $\bar{\mu}_H = \bar{\mu}_L = \frac{1}{2}$ (iid switching).
- If $s = h = 1$, you get the standard TANK in ARSV.

Non-Essential THANK

Ricardian type:

$$V_t^H = \max_{C^N, C^D, N_H, a_{t+1}} u(C^N, C^D, N_H) + \beta \mathbb{E}_t \left[s\, V_{t+1}^H + (1-s)\, V_{t+1}^L \right].$$

Budget constraint:

$$P_t^N C_t^N + P_t^D C_t^D + Q_t a_{t+1} = W_{H,t} N_{H,t} + a_t + \Pi_t.$$

Euler equation:

$$1 = \beta \mathbb{E}_t \left[\frac{s\, U_{C,t+1}^H + (1-s)\, U_{C,t+1}^L}{U_{C,t}^H} \frac{R_t}{\Pi_{t+1}} \right].$$

HtM type:

$$P_t^N C_{L,t}^N + P_t^D C_{L,t}^D = W_{L,t} N_{L,t},$$

$$V_t^L = u(C^N, C^D, N_L) + \beta \mathbb{E}_t \left[(1-h)\, V_{t+1}^H + h\, V_{t+1}^L \right].$$

Aggregation and Market Clearing

Aggregation:

$$C_t^j = \mu_{H,t} C_{H,t}^j + \mu_{L,t} C_{L,t}^j, \quad j \in \{N, D\},$$

$$N_t^H = \mu_{H,t} N_{H,t}, \qquad N_t^L = \mu_{L,t} N_{L,t}.$$

Implications:

- Composition $\mu_{H,t}, \mu_{L,t}$ now fluctuates with the cycle.
- Type-switching risk enters the Ricardian type's Euler equation: precautionary motive.
- Recessions increase $\mu_{L,t}$ (more HtM) $\Rightarrow$ stronger amplification of non-essential sector shocks.
- Policy that targets discretionary prices potentially even *more* important.

Let's derive the new welfare criterion now.

Optimal Policy Implications

Baseline:

$$-2\sum_{t=0}^{\infty}\beta^t\frac{W_t-\bar{W}}{\bar{C}} \approx \sum_{t=0}^{\infty}\beta^t\left[a_{(\pi^N)^2}(\hat{\pi}_t^N)^2 + a_{(\pi^D)^2}(\hat{\pi}_t^D)^2 + a_{(c)^2}(\hat{c}_t)^2 + a_{(p^D)^2}(\hat{p}_t^D)^2 + a_{(c,p^D)}\hat{p}_t^D\hat{c}_t\right] + \dots$$

- π_t^N, π_t^D: necessity and discretionary inflation.
- $\hat{c}_t$: aggregate output gap.
- $\hat{p}_t^D$: relative price of discretionary goods vs necessities.
- a.: functions of structural primitives (Calvo, elasticities, shares).

THANK extension:

$$\begin{aligned}\mu_{H,t+1} &= s\,\mu_{H,t} + (1-h)(1-\mu_{H,t}),\\ \mu_{L,t+1} &= (1-s)\,\mu_{H,t} + h\,(1-\mu_{H,t}), \quad \mu_{H,t}+\mu_{L,t}=1.\end{aligned}$$

Augmented Welfare Loss

New states:

$$\widehat{\mu}_t \equiv \mu_{H,t} - \bar{\mu}_H, \qquad \Delta c_t \equiv \widehat{c}_{H,t} - \widehat{c}_{L,t}.$$

Augmented loss function:

$$\mathcal{L} = \underbrace{\mathbb{E}_0 \sum_{t\geq 0} \beta^t \Big[a_{(\pi^N)^2} (\pi_t^N)^2 + a_{(\pi^D)^2} (\pi_t^D)^2 + a_{(c)^2} (\hat{c}_t)^2 + a_{(p^D)^2} (\hat{p}_t^D)^2 + a_{(c,p^D)}\, \hat{p}_t^D\, \hat{c}_t}_{\text{Baseline}}$$

$$+ \underbrace{\alpha_\mu\, \widehat{\mu}_t^2 + \alpha_{c\mu}\, \hat{c}_t\, \widehat{\mu}_t + \alpha_{p\mu}\, \hat{p}_t^D\, \widehat{\mu}_t + \alpha_{\pi\mu}^N\, \pi_t^N\, \widehat{\mu}_t + \alpha_{\pi\mu}^D\, \pi_t^D\, \widehat{\mu}_t}_{\text{Composition}} + \underbrace{\alpha_{sw}\, [s(1-s) + h(1-h)]\, (\Delta c_{t+1})^2}_{\text{Type Switch Risk}} \Big].$$

Interpretation of New Terms

- $\alpha_{\mu}\,\widehat{\mu}_t^2$: welfare cost of fluctuations in type composition (Ricardian vs HtM).
- $\alpha_{c\mu}, \alpha_{p\mu}, \alpha_{\pi\mu}^{N,D}$: interactions between compositional swings and output, relative-price, and inflation distortions.
- $\alpha_{sw} \times [.]$: the prudence term. The cost of uncertainty over next-period types (the THANK channel). Vanishes in the TANK special case (s = h = 1).

Robustness of the Welfare Criterion

The Welfare criterion is likely robust to (counter-cyclical) type transition risk because of compositional effects.

In recessions, the share of HtM, who work more in the non-essential sector, increases. Non-essential sector gets hammered more because the rich postpone luxury spending.

Recessions push agents into the HtM state, endogenously raising the HtM share, amplifying the discretionary-sector contraction and strengthening the motive for controlling discretionary prices to short-circuit the feedback loop.

Stronger case for stabilizing discretionary inflation.

Measurement I: Consumption Inequality

Table A.1: Engel curves used for Essential/Non-essential classification

Good category	CE share 1995-1997	Elasticity	SE
Rent	5.5	-1.1	0.09
Used car purchases	5.53	0.23	0.16
Communication, telephone contracts	2.59	0.31	0.04
Food at home	11.63	0.4	0.02
Utilities	5.21	0.47	0.02
Children's clothing	0.96	0.65	0.07
Gas and vehicle maintenance	6.14	0.72	0.03
Health expenditures including insurance	4.9	0.81	0.05
Personal care	0.97	0.96	0.05
Shoes and other apparel	1.47	1.07	0.09
Other car spending (leasing, financing, insurance)	5.45	1.14	0.06
Entertainment equipment and subscription television	4.01	1.22	0.07
Alcoholic beverages	0.96	1.22	0.09
Men's and women's clothing	2.47	1.36	0.05
Food away from home	4.53	1.37	0.05
Household appliances	2.3	1.42	0.07
Owner occupied housing consumption	22.25	1.45	0.04
Furniture and fixtures	1.51	1.5	0.11
Education	1.31	1.58	0.18
Domestic services and childcare	1.48	1.61	0.14
New car purchases	3.91	1.74	0.2
Public transport	1.25	1.78	0.13
Entertainment fees, admissions, reading	2.17	1.78	0.07
Cash contributions	2.18	1.78	0.17

Notes: Replication of Table II of Aguiar and Bils (2015), for 1995-1997 and for revised categories. The elasticity is the estimated β_j from Online Appendix (4). (Non-)Essential goods are those with an elasticity less than (greater than) one, above (below) the dashed line. The CE share is the share of expenditure of each category reported in the Consumer Expenditure Survey over the sample period.

Measurement I: Consumption Inequality

1. The slope of the Engel curve is country-specific. Essential/non-essential categorization must vary by country. Especially relevant for euro-area cross-country comparisons.

2. Income elasticity of demand is also time-varying.

3. Rent in essentials. Housing and the cycle. The COVID-19 issue.

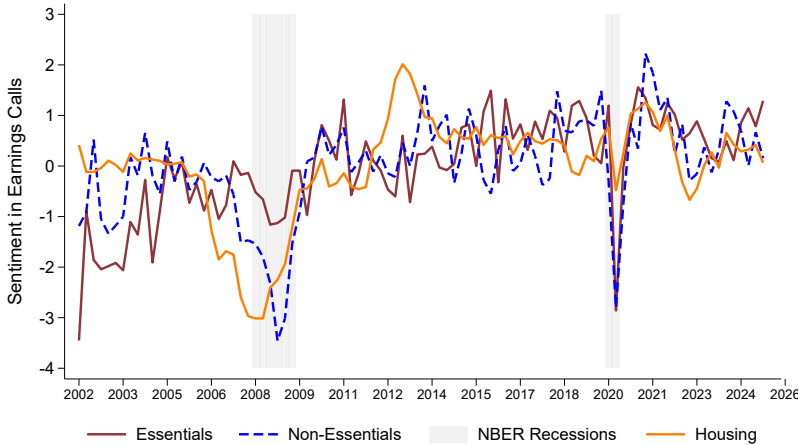
Measurement II: Earnings Calls

Spending data is not fast-moving enough. Can do more.

Leverage natural language processing and earnings calls of listed firms.

1. Search for baskets of keywords for the non-essential, essential, and housing themes.
2. Search for positive- and negative-sentiment keywords. Standard Loughran-Mcdonald.
3. Measure net sentiment towards the three baskets.

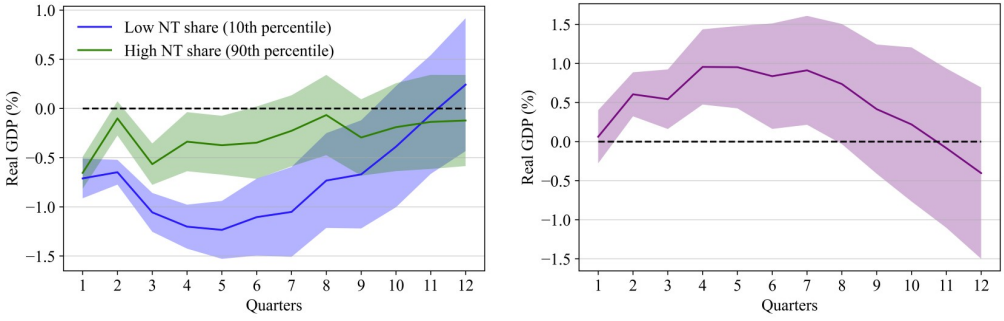
Measurement II: Earnings Calls



Non-essentials spending is the cycle, always.

Essentials and housing: the source of fluctuations matters.

TRADABILITY



(a) High and low non-tradable share

(b) Difference

Figure 1: **Impulse response functions of real GDP to a contractionary monetary policy shock of one standard deviation for countries with high and low non-tradable consumption expenditure shares.** In graph a), the low non-tradable (N) share line is based on the 10th percentile of non-tradable shares in the sample of countries and the high non-tradable share line on the 90th percentile, respectively. Graph b) shows the interaction term coefficient γ^h. The shaded areas represent 90th percent confidence intervals. Standard errors are clustered around countries.

Source: Boehnert-de Ferra-Mitman-Romei (2025).

Tradability

Sensitivity to demand shocks varies by tradability intensity.

US: non-tradables are more elastic (Bellifemine-Couturier-Jamilov, 2025). Not a concern for you.

Europe: tradables are more elastic than non-tradables.

Data: 63% of non-essential spending is tradable. Tradability and non-essentialness correlated.

Must tackle this directly, especially if ambition is to do more cross-country comparisons for Europe. If countries with tradability also have a high share of non-essentials (realistic) — the channel is confounded.

A Theory of EIS Heterogeneity

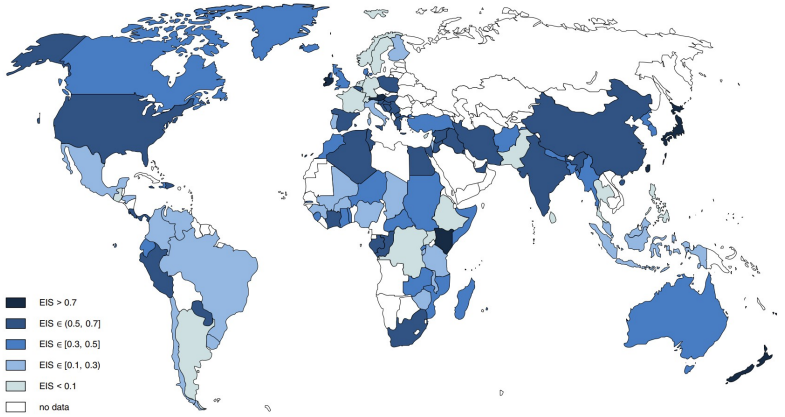


Fig. 2. Country heterogeneity in the elasticity of intertemporal substitution. *Notes*: for each country the figure depicts the mean estimate of the EIS reported in the literature; numerical values are provided in Table A1. Estimates larger than 10 in absolute value are excluded.

Source: Havranek-Horvath-Irsova-Rusnak (2015).

A Theory of EIS Heterogeneity

Elasticity of intertemporal substitution (EIS) varies across space and wealth distribution. Strong evidence that average EIS is higher in wealthier countries. EIS also increases with wealth within a country.

Andreolli-Rickard-Surico: EIS is attached to goods. High for non-essentials, low for essentials.

Because of non-homothetic preferences, wealthy agents with high productivity and low MPC spend a larger budget share on non-essentials, which have a higher EIS.

Measured EIS across the distribution of wealth increases with wealth because of the variable composition of the consumption basket. EIS is tied to goods, not agents, and because the wealthy consume more of high-EIS goods, their measured EIS appears higher.

Conclusion

An essential agenda that can spawn a series of policy-relevant papers.

The missing business-cycle component to the growth literature with non-Gorman preferences.