Locked Down, Saved Up

– work in progress –

Miguel Ampudia[1] Johannes Fleck[2] Javier Ramos Perez[3]

[1]European Central Bank

[2]Federal Reserve Board

[3]CEMFI

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Surge in household savings

- Unprecedented increase in households' savings at the onset of the pandemic 2020Q2
- Little evidence on who held these savings: mostly rich households, or even distribution?
- Poor -*micro*- evidence from National Accounts (DFA)
- This paper:

  Develops a model that updates the cross-section of households of the HFCS

  Focuses on the **distribution** of the saving's glut

  Sheds light on policy questions: role of transfers, lockdown, and excess savings.

A statistical model of household finances

- Our goal is to craft a model that deals with
  - **Volatile macroeconomic dynamics** during the pandemic
  - **Rich labor market transitions**, e.g. sectoral heterogeneity
  - **Two consumption functions:** one before Covid, other during Covid
  - **Dynamic scal policy** implemented by governments, e.g. Covid-specific support measures
- Handy tool for policy analysis
  - Pass-through of rate hikes to households
  - Financial vulnerability of households

Today's talk

- Statistical model and data
  - **Labor market**
  - **Consumption decision**
  - **Fiscal policy**
  - **Aggregate environment**
- Use the model to
  - Provide a brief description of households' position during the pandemic
  - Assess **pass-through** of **transfers** to savings, and excess savings

Overview

1. The model
   - The labor market
   - The consumption function
   - The fiscal rule
2. Macroeconomic environment
3. Baseline results
   - Disposable income
   - Total consumption
4. Counterfactuals
   - No transfers

The model

- Built around 4 blocks

  Labor market: transitions and income: individual level

  Consumption decisions: household level

  Fiscal rule: household level

  Aggregate Dynamics: simulation matches aggregate dynamics

- Data

  Household Finance and Consumption Survey 2017 (**HFCS**)

  Household Budget Survey 2015 (**HBS**)

  ECB'S Statistical Data Warehouse (**SDW**)

- Ultimate goal is to update the cross-section of households from the HFCS 2017

The labor market

Incidence of unemployment (U) heterogeneous across sectors and skills

- Rank individuals i according to probability to remain employed (E)

$$Pr(E_{i,t+1}) = \underbrace{Pr(E_{i,t}|X_i)}_{i\text{'s predicted E prob}} \quad \underbrace{|\{z\}}_{\text{sector shock}} \quad \underbrace{|\{z\}}_{\text{individual shock}} \tag{1}$$

with X_i: individual i's characteristics

- Assign individual changes in E $ U status so that

$$\Delta_{t,t+1} \text{ aggregate U rate in HFCS} = \Delta_{t,t+1} \text{ U rate in macro series} \tag{2}$$

Changes of individual employment status drive changes of income

- E ! U: country, year specific replacement rates
- U ! E: Heckman selection model to predict labor income
- E ! E: growth rate of aggregate wage rate

The consumption decision: Step 1

Estimate consumption expenditures on Household Budget Survey

- Two consumption rules, one before Covid, another during Covid

$$\begin{cases} C_i^{hbs} & = x_i^{hbs\theta}\ ^{hbs} + u_i^{hbs} \text{ if } 2 \ [2020Q2; 2021] \\ C_i^{hbs} \quad \bar{C}_i & = x_i^{hbs\theta}\ ^{hbs}_{covid} + e_i^{hbs} \text{ if } 2 \ [2020Q2; 2021] \end{cases} \tag{3}$$

  where $x_i^{hbs\theta}$ are covariates, C_i^{hbs} is the sum of consumption expenditures of household i and $\bar{C}$ a list of prohibited items during the pandemic: trips, food outside, vacations...

- Estimate parameters by absolute shrinkage and validate by k-fold cross validation

$$\frac{1}{2N}(\mathbf{y} \quad \mathbf{x}\ ^{hbs})^{0}(\mathbf{y} \quad \mathbf{X}\ ^{hbs}) + \sum_{j=1}^{p} {}_{p}^{hbs} j \tag{4}$$

The consumption decision: Step 2

With our estimates at hand,

– Project estimated ^{hbs}'s onto x^{hfcs}, similar to Lamarche (2017)

$$\hat{C}_i^{hfcs} = x_i^{hfcs^{\theta}} \quad \hat{}^{hbs} + \ '_i \tag{5}$$

Where $'$ is an individual shock

– Estimate a set of $_j$'s such that two conditions are satisfied:

1. Aggregate saving rate in the HFCS = aggregate saving rate from macrodata (dynamic target)
2. Distribution for estimated consumption in HFCS = distribution of consumption in HBS

The consumption decision: Step 3

– Final measure of total consumption is

$$\hat{C}^{hfcs}_{i\,;i\,2j} = \ _j(x_i^{hfcs^{\theta}} \ \ \hat{}^{hbs} + \ '_i) \tag{6}$$

Where $i\ 2\ j$ stresses that we adjust the consumption of household i by $\ _j$ only if that household belongs to the j percentile of the initial distribution of consumption ($\hat{C}^{hfcs}$).

– Two remarks:

Rich MPCs

We do not torture the model to hit on desired targets. For example, $\ _j$ ranges from increasing/decreasing consumption between 1 to 7 % relative to the initial level.

Empirical Consumption Function

Figure: Binscatter household disposable income and total consumption .

The scal rule

- A Fiscal Rule $F_{c;j;t}$ is a mapping gross income ! disposable income
- Contingent on country (c), year (t) and household type (j)
  - Household type 1: single, no children
  - Household type 2: single parent
  - Household type 3: couple with children
- Includes pandemic-speci c transfers
- Recovered from Euromod ! EU counterpart of Taxsim in the US
  - Integrated tool that computes tax and bene ts for all European countries

Fiscal rule

(a) Fiscal Rule for Germany

(b) Fiscal Rule for Spain

Figure: Source: Euromod

Macrodata, an informative example (1)

(a) Aggregate unemployment rate

(b) Aggregate wage rate

Figure: Source: ECB's Statistical Data Warehouse

Macrodata, an informative example (2)

(a) Sectoral employment dynamics in Germany

(b) Sectoral Employment dynamics in Spain

Figure: Source: ECB's Statistical Data Warehouse

Model'sback-cast

Baseline: Disposable income, ES

(a) Disposable income

(b) Quarterly level of hh disposable income

Baseline: Total consumption, ES

(c) Evolution of hh consumption expenditures

(d) Binscatter disposable income - total consumption

Baseline: Saving Rate, ES

(e) Household saving rate

Counterfactuals

Counterfactuals

– What does the model have to say about

1. **No government transfers**
2. **Excess savings?**

! **Critical assumption: no general equilibrium e ects**

Counterfactuals: *No transfers*

1. Let A_t describe the set of macroeconomic conditions at quarter t,

– We set fiscal rule F_t equal to F_{2019} ! no gov. reaction

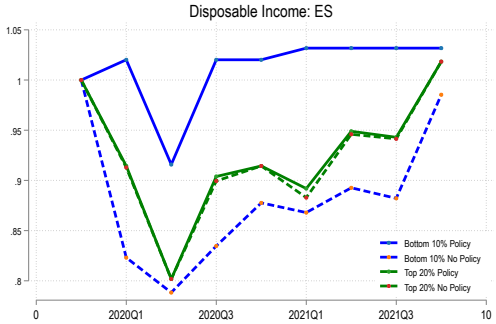
– Household disposable income evolves according to A_t and fiscal rule F_t

$$\hat{y}_t^{(1)} = \hat{y}_t(A_t; F_{2019}) \tag{7}$$

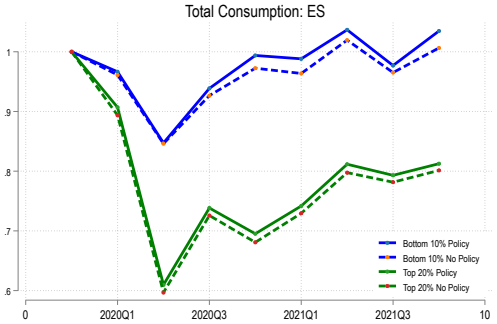
– Thus, consumption evolves according to $_t(A_t)$, $^{hbs}_t$ and $\hat{y}_t^{(1)}$

$$\hat{C}_t^{(1)} = \hat{C}_t(\hat{y}_t(A_t; F_{2019}); \ _t(A_t); \ ^{hbs}_t) \tag{8}$$

Counterfactuals: *No Transfers*



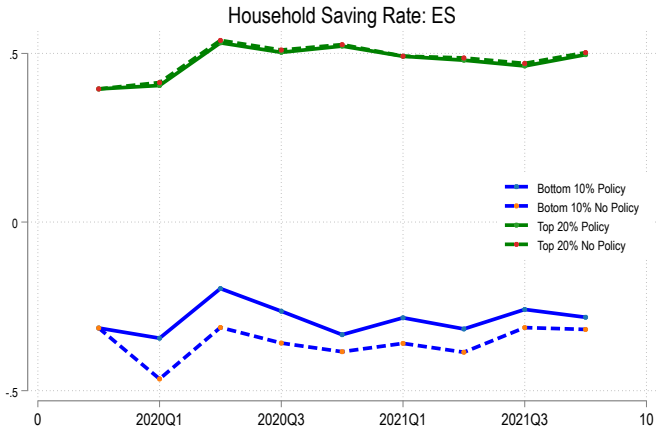
(f) Disposable income



(g) Total consumption

Counterfactuals: *No Transfers*

- "Rich" *!* No effect at all *!* progressive implementation
- "Poor" *!* have their saving rate fueled by transfers! but still rather poor



Counterfactuals: *Excess Savings?*

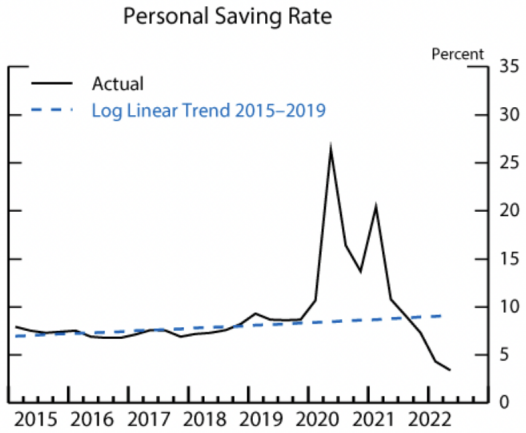


Figure: Excess Savings according to FED policy note

Counterfactuals: *Excess Savings?*

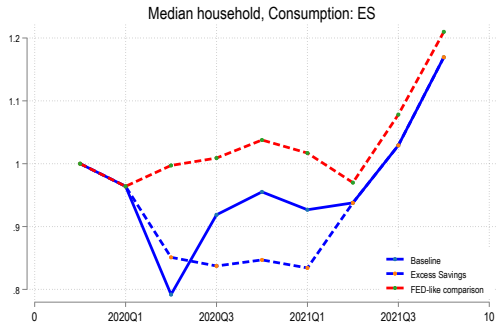
Given the **drop in income** and **consumption** the above definition of excess savings seems to miss something. What about the equilibrium effects?

How to *approximate* excess savings?

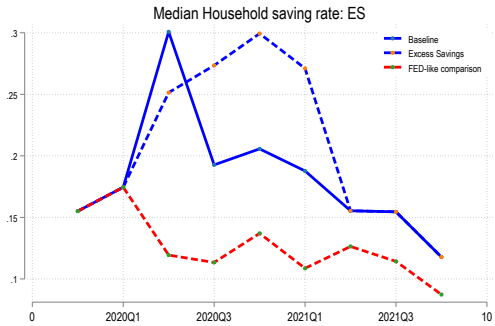
1. Keep the macroeconomic environment A_t, except for S_t^{agg}
2. Keep fiscal policy and two consumption functions
3. Households will respond - given F_t and C^{Covid} to the macroeconomic environment
4. However, set $_t = _{2019Q4}$ and let S_t^{agg} be determined endogenously

This way captures all dynamics, but does not force the model to save as much as in 2020Q2. We trade-off the shape of the consumption distribution, in exchange for an approximation to an **equilibrium** saving rate

Counterfactuals: *Excess Savings?*



(a) Consumption



(b) Saving rate

Concluding remarks

Easy-to-use tool for policy analysis that feeds on public and transparent data

Fiscal policy was very effective offsetting poor's income **with no remarkable pass-through to consumption**

The median household over-saved just in 2020Q2, under-saved the rest of the pandemic