

Referee report: Welfare and Spending Effects of Consumption Stimulus Policies

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1 Summary of paper

Brief summary The paper sets up a heterogeneous-agent model carefully calibrated to micro data on consumption behavior as well as the liquid-asset distribution. Armed with the model, the authors evaluate the performance of three fiscal policies with respect to (i) increasing aggregate consumption and (ii) increasing aggregate welfare. They find that unemployment-insurance extensions are a potent tool both for increasing aggregate consumption and increasing aggregate welfare. However, immediate cash transfers may be more successful at boosting consumption *during* the recession.

Model overview and quantitative experiment In particular, the authors set up a, by now quite standard, incomplete-markets model in “partial equilibrium”¹ with the following heterogeneity.

1. Three groups (‘dropout’, ‘high school’ and ‘college’)
2. Within each group, there is β /discount-factor heterogeneity, calibrated to match the US liquid-asset distribution within each group. Further, the groups differ with respect to their mean income, average income growth, and cross-sectional income variance.
3. Each household faces a permanent-transitory earnings process and, layered on top of this process, a two-state Markov process for employment/unemployment. They save in a risk-free bond subject to a no-borrowing constraint.

¹Strictly speaking, since no prices are determined in equilibrium, the model is an aggregation of decision problems.

A recession is conceptualized as (only) a change in the Markov process for unemployment such that (i) upon impact, the unemployment rate doubles, (ii) the unemployment rate remains at its elevated level throughout the recession, and (iii) average unemployment duration doubles during the recession. The start of the recession is an MIT event and exit from the recession is stochastic, with a constant exit probability each period yielding an expected length of a recession of 6 quarters.

With this model, the authors study how consumption and welfare are affected by unconditional cash transfers, unemployment-benefit extensions, and wage subsidies (in the model: a uniform increase in the wage level). In terms of orders of magnitude, the three policies have comparable fiscal multipliers but UI extensions have an order-of-magnitude better welfare properties.

Overall assessment The paper reads well. The exercise is clearly explained and the calibration is carefully conducted. Although there is substantial room for improvement, the paper is a serious example of quantitative macroeconomics.

2 Essential points

“Splurge” To be able to match the Fagereng-Holm-Natvik (2021) evidence on intertemporal MPCs, the authors introduce a model novelty which they call ‘splurge’. The problem that the FHN2021 evidence pose for standard models is that the marginal propensity to consume is disproportionately high in the period of receipt. The proposed solution is to postulate that a fixed share of income is consumed immediately, and only the remaining share enters the consumption-savings problem of the household. This assumption is *as if* the household consists of one hand-to-mouth individual and one buffer-stock-savings individual who share the income brotherly but have separate consumption problems.

The authors need the splurge to jointly match the intertemporal MPC, the fact that also high-liquidity households have a high MPC, and the actual liquidity distribution. In footnote 2, they argue that the utility cost from “irrational” splurge may not be so large and that may even be fully rational in a model with small durables – in such a model, the splurge is simply the spending on durables which are consumed over a longer period.

Since the splurge is a novelty, it is warranted to explore further whether/how it drives the subsequent results.

1. *How badly does a model without the splurge factor actually match the data?* As far as I can tell, the need for the splurge factor is asserted (p. 14), but not shown. I believe the authors but would like them to *show the best fit of the model without the splurge, for example the counterpart of Figure 1.*
2. *Does the splurge factor matter?* A heuristic, right or wrong, is that the distribution of (intertemporal) MPCs is all that matters for consumption dynamics.² *If we calibrate the model to evidence on marginal propensities to consume but allow ourselves to miss the liquid-wealth distribution, how does that affect the results?*

To be clear, this is not a “robustness check” since the result is interesting and informative regardless of the outcome. Either (i) the splurge factor is useful for matching the liquid-wealth distribution, but does not matter for policy evaluation or (ii) the splurge factor changes the quantitative results quite a bit. Since the splurge factor is a novelty of the paper *and* the paper’s ambition is quantitative, it behooves the authors to explore and report how the splurge factor affects the results.

Conceptualization of aggregate demand The authors introduce an aggregate-demand effect (following Krueger-Mitman-Perri 2016) in the following way (on p. 11). The income of a household i depends on its idiosyncratic income state $y_{i,t}$ but also on aggregate contemporaneous consumption through a function $AD(C_t)$ so that $y_{AD,i,t} = AD(C_t)y_{i,t}$ where

$$AD(C_t) = \begin{cases} \left(\frac{C_t}{C_{ss}}\right)^\kappa & \text{if in a recession,} \\ 1 & \text{otherwise.} \end{cases}$$

What the aggregate-demand externality provides is a distinction between consumption-stimulus policies which affect the economy *during* the recession and those that affect the economy (partially) after the recession.

3. *Motivate the introduction of the aggregate-demand externality* In the model with an aggregate-demand externality, an increase in spending leads to an increase in *everyone’s* income. One can easily imagine a world where aggregate spending instead reduces unemployment, primarily benefitting the unemployed (with higher MPCs etc.). More

²This heuristic is clearly not exactly right since it ignores precautionary saving responses, but it is a useful starting point.

broadly, one of the main purported goals of fiscal stimulus is to shorten the duration of a recession, something which the model setup does not allow for. Qualitative, these distinctions may not matter but the ambition of the paper is quantitative.

Further, the aggregate-demand externality they have introduced implies, by construction, that promised fiscal stimulus in the future has no effect on output today. This is stark, in my opinion too stark to be introduced without further motivation! It cannot be dismissed out-of-hand that promised stimulus in the future spurs investment (and hiring etc.) already today. Further, by analogy with forward guidance (with respect to monetary policy), I conjecture that a new-Keynesian model would have an effect of promised fiscal stimulus in the future on output today (perhaps even a “too strong” effect!). The aggregate-demand externality introduced in the paper, and the sharp distinction between stimulus in and out of a recession, is thus not consistent with the workhorse model.

The sharp dichotomy behind spending in a recession and outside of a recession lies behind their support of stimulus checks (since the spending associated with them arrives during the recession).³ The way they model the aggregate-demand externality therefore matters for their bottom-line results.

Given the partial-equilibrium focus of the paper, it is to me unclear what role the aggregate-demand externality serves. The particular aggregate-demand externality they introduced needs to be motivated and contrasted with alternatives such as a new-Keynesian aggregate-demand externality. If the authors simply want to distinguish consumption during vs. after the recession, they can do so without this reduced-form way of introducing an aggregate-demand externality. The authors should then, with or without a theoretical framework, make a plausibility argument for why spending during recessions is likely to be more robustly stimulative than promised spending after recessions.

³In footnote 3, they argue that a conventional new-Keynesian aggregate-demand externality would “bring in too many other confounding and confusing elements what would be likelier to obscure than to illuminate our points.” Confounding and confusing elements aside, a main qualitative difference between the two conceptualizations of aggregate demand is whether future stimulus affects output today.

3 Suggestions

Why not report stimulated consumption during recession?

4. In Table 3, “Share of policy expenditure during recession” is reported for the three policies. The policy-relevant object is, however, “share of consumption increase during recession” and it would be informative to report this number as well.

Welfare criterion – weak inequality or equality?

5. When introducing the desired properties of the welfare criterion, the authors write (p. 26): “There is no social benefit to implementing any of the policies outside of the recession.” This way of phrasing it invites the interpretation of a weak inequality when the correct interpretation is an equality. The phrasing should be changed to something along the lines of “There is no social benefit *or cost* to implementing any of the policies outside of the recession.”

Welfare criterion – measure in “bang for the buck” The welfare criterion the authors choose is (somewhat simplified, see p. 28 for full expression)

$$\mathcal{C}(\text{policy, recession}) = \underbrace{\left(\frac{\mathcal{W}(\text{policy, recession}) - \mathcal{W}(\text{none, recession})}{\mathcal{W}^c} - \frac{\text{PV}(\text{policy, recession})}{\mathcal{P}^c} \right)}_{\text{consumption equivalent gain in recession}} - \underbrace{\left(\frac{\mathcal{W}(\text{policy, expansion}) - \mathcal{W}(\text{none, expansion})}{\mathcal{W}^c} - \frac{\text{PV}(\text{policy, expansion})}{\mathcal{P}^c} \right)}_{\text{consumption equivalent gain in expansion}}$$

The welfare criterion computes the (consumption-equivalent) welfare gain of the policy and compares it with the present value of the policy. Finally, we then take difference of this number and its corresponding number in an expansion.

The welfare criterion thus expresses, in units of consumption, how good the policy is in a recession *relative to an expansion*. To be able to compare across policies, they scale the size of the policies (footnote 20) so that all programs have the same size absent a recession.

6. There is a mechanical reason why the UI extensions program will yield a larger welfare gain in recessions than in expansions: since twice as

many households are unemployed, twice as many receive unemployment benefits. The programs are thus comparable in an expansion but not in a recession (since they are of different fiscal size in recessions). For a fair comparison of the programs, it would be helpful to compute “bang for the buck” numbers (i.e., dollars of consumption equivalent *per* dollars spent). In particular, I would suggest

$$\underbrace{\left(\frac{\mathcal{W}(\text{policy, recession}) - \mathcal{W}(\text{none, recession})}{\mathcal{W}^c} \right) / \frac{\text{PV}(\text{policy, recession})}{\mathcal{P}^c}}_{\text{“bang for the buck” in recession}} - \underbrace{\left(\frac{\mathcal{W}(\text{policy, expansion}) - \mathcal{W}(\text{none, expansion})}{\mathcal{W}^c} \right) / \frac{\text{PV}(\text{policy, expansion})}{\mathcal{P}^c}}_{\text{“bang for the buck” in expansion}}.$$

7. Relatedly, I would work through the text and make sure that the explanations match the fairly nuanced welfare measure used. Concretely, on p. 29 it says “The extended UI payments are well targeted to consumers with high MPCs and high marginal utility, giving rise to large multipliers and welfare improvements”. This is a true statement but this is *also* a true statement in expansions, and the welfare measure is about the difference between the two. One could instead write (for the welfare calculations) that “the extended UI payments are well targeted to the households who are particularly severely hit by the recession, giving rise to large welfare improvements *relative to pursuing the policy in an expansion.*”

Robustness: changing real interest rate changes the discounting of the social planner

8. In the robustness section, the authors (i) change the real interest rate and (ii) change the risk-aversion parameter. As far as I can tell, when they do this, they change the parameters entering the welfare calculations (i.e., the social planner’s preferences) and the behavior of households. These are two conceptually distinct robustness exercises and it would be clearer to change them one by one. *Report the effect of changing household preferences, without changing the social planner’s preferences, and vice versa.* The authors suggest (p. 31) that changing the interest rate primarily affects the results by changing the preferences of the social planner, I think it would be clearer to spell this out.