0.1 Related literature

Our paper is part of the growing literature using structural heterogeneous agent models to examine effects of countercyclical fiscal policies.

Because the quantitative implications of HA models depend profoundly on getting certain microeconomic details right, we begin with a brief synopsis of what we view as the relevant takeaways from the micro literature.

0.1.1 Microeconomic Evidence

For our purposes, the single most important kind of micro evidence is on the iMPC; we explicitly target our partial equilibrium model to match the microeconomic iMPC estimates of Fagereng, Holm, and Natvik (2021), whose evidence is the gold standard because their millions of datapoints allow precise estimates over a long horizon (five years) and because their natural experiment is almost ideal (a lottery win is a random shock by construction). Particularly striking is their evidence on the excess initial MPC. Any worry that their Norwegian evidence might not apply in other countries is allayed by results in a new paper by Kotsogiannis and Sakellaris (2024), who use data from a Greek lottery and find that the induced extra monthly spending in the first three months after the win is triple the induced extra spending in the remaining observed months.

There are, of course, many prominent papers dating all the way back to Friedman (1963) finding that the initial spending response to shocks is vastly greater than implied by a representative agent model (in particular a steady stream of state-of-the-art papers by Jonathan Parker and his collaborators). In much of that literature there has been some evidence that the initial spending response was out of line with the subsequent effects (see, e.g., Parker, Souleles, Johnson, and McClelland (2013); Broda and Parker (2014); Johnson, Parker, and Souleles (2006)), but data limitations usually made it difficult to sharply pin down the temporal pattern of spending (especially beyond the six month horizon).

Another striking result in Fagereng, Holm, and Natvik (2021) was that even households with high liquid wealth exhibited high MPC's. Boehm, Fize, and Jaravel (2025), Graham and McDowall (2024), Crawley and Kuchler (2023), and Kueng (2018) among others also provide strong evidence of high MPCs for high-liquid-wealth households.[1]

0.1.2 Microeconomic Theories

A rapidly growing recent literature has used a variety of data sources to reconfirm the high initial MPC, but with an eye to providing theoretical explanations. We sketch this literature because different theories might have different implications for the spending consequences of a shock.

[1] The "infrequent consumption good" model of Melcangi and Sterk (2024) has a similar flavor, but is not about MPC's. It aims at accounting for high saving rates among high-income households during normal times and high consumption during episodes where the infrequent consumption good becomes available (such as high-end health care or education expenses).

One possibility is that the burst of initial spending is rationalizable if the spending is on durables (Browning and Crossley, 2009). Mankiw (1983) showed that in the frictionless case, spending on durable goods should be vastly more responsive to an income shock than spending on nondurables. It seems plausible that a model with a large number of goods that are durable at, say, the quarterly or annual frequency could explain the 'excess initial MPC' as reflecting a rational marginal propensity to eXpend (MPX).[2]

Maxted, Laibson, and Moll (2024) combine a simplified model of durables spending with the assumption common in behavioral economics that spending decisions are influenced by "present bias" (people have time-inconsistent preferences). They present a back-of-the-envelope calculation that yields a rough estimate that the ratio of initial spending on durables to the spending that would occur if all spending were nondurable is roughly three to one (not far from the ratio estimated in the Greek lottery episode studied by Kotsogiannis and Sakellaris (2024)).

Indarte, Kluender, Malmendier, and Stepner (2024) use high frequency bank account data to study spending responses to the U.S. 2021 stimulus, and find sustantial "excess MPC's" especially among low income households; like Maxted, Laibson, and Moll (2024) they lean toward present bias as an explanation.[3]

The logic of Akerlof and Yellen (1985) and Cochrane (1989) suggests that the utility consequences of 'near-rational' deviations from frictionless rational behavior is small. In that spirit, Boutros (2022) and Ilut and Valchev (2022) present models with bounded rationality and costly re-optimization. Building on this logic, Andre, Flynn, Nikolakoudis, and Sastry (2025) argue that costs of reoptimization cause consumers to resort to simple "quick-fix" consumption heuristics; for small shocks, most people in their survey report that they anticipate that their MPC's would be one or zero.

The 'splurge' component of our consumption model is a simple modelling device that lets the model match the empirical evidence, regardless of what the right deep explanation(s) may be. As we will show, the model with our splurge component is consistent with all of what we described above as the key 'takeaways' from the micro literature.

0.1.3 Macroeconomic Models

Turning now to the macroeconomic setting, a number of papers have addressed questions that are similar in spirit to ours. For example, McKay and Reis (2016), McKay and Reis (2021), and Phan (2024) have examined the role of automatic stabilizers in HA models.

But we follow much of the recent literature in treating recessions as 'MIT shocks' – unanticipated events. And the policies we examine are discretionary, which arguably

[2]The NIPA accounts treat as 'durable' those goods whose expected lifetime is 3 years or more, but at the annual (or quarterly) frequency many more goods (and even services) are arguably durable – for example, Blinder, Deaton, Hall, and Hubbard (1985) mention clothes and shoes, and Hai, Krueger, and Postlewaite (2020) argue that many services are durable at the annual frequency, which explains why people take vacations once a year.

[3]A related theoretical insight is provided by Lian (2023), who shows that households anticipating their own future consumption mistakes can rationally exhibit higher current MPCs; this is because they know that any additional savings would be likely be disposed of suboptimally in the future.

makes sense as reflecting what occurs when the automatic stabilizers have not automatically prevented a recession.[4]

A relevant early contribution is by Kaplan and Violante (2014) who build a model where agents save in both liquid and illiquid assets. Their model yields a substantial consumption response to a stimulus payment, since MPCs are high both for low-wealth households and for the many households (in their model) with high net worth but little liquid assets (the "wealthy hand-to-mouth"). (Though the subsequent literature finding high MPC's even by wealthy households with ample liquidity casts doubt on this mechanism.)

Bayer, Born, Luetticke, and Müller (2023) study discretionary fiscal policies implemented after a large shock, in their case the COVID-19 pandemic. They find that targeted stimulus through an increase in unemployment benefits has a much larger effect than an untargeted policy. In contrast, we find that untargeted stimulus checks have slightly larger spending effects than a targeted policy extending eligibility for unemployment insurance. The difference derives from the fact that – in our model as in the data – even middle- and high-liquid-wealth consumers have relatively high MPCs, which means that much more of the stimulus checks get spent quickly.

Carroll, Crawley, Slacalek, and White (2020) also study the U.S. fiscal response to the COVID-19 pandemic, using a HA model similar in many respects to the one we study. They predicted[5] the consumption response to the 2020 U.S. CARES Act that contained both an extension of unemployment benefits and a stimulus check. They resolve the tension between obtaining a realistic MPC and fitting the distribution of liquid wealth by estimating the distribution of *ex-ante* heterogeneity in discount factors that allows the model to match both kinds of data (discount heterogeneity is one of several competing mechanisms for resolving that tension discussed by Kaplan and Violante (2022)). But the model in that paper does not match the subsequently published evidence about the iMPC (Fagereng, Holm, and Natvik (2021)); does not incorporate a multiplier; and does not compare the *relative* effectiveness of alternative stimulus policies.

Another related paper is Broer, Druedahl, Harmenberg, and Öberg (2025), who analyze the output response to different fiscal policies in a HANK and SAM model similar to the one we present in our robustness exercise. As we do in Section 5, they examine the policies in a steady state rather than a recession. Unlike us, they do not

[4]In our model (and most others in the literature we are contributing to) consumers do not adjust their labor supply in response to stimulus policies. This assumption is broadly consistent with the empirical findings in Ganong, Greig, Noel, Sullivan, and Vavra (2022) and Chodorow-Reich and Karabarbounis (2016). However, the literature is conflicted on this subject; Hagedorn, Manovskii, and Mitman (2017) and Hagedorn, Karahan, Manovskii, and Mitman (2019) argue that extensions of unemployment insurance affect both search decisions and vacancy creation leading to a rise in unemployment. Kekre (2022), on the other hand, evaluates the effect of extending unemployment insurance in the period from 2008 to 2014, and finds that this extension raised aggregate demand and implied a lower unemployment rate than without the policy. Finally, Cohen and Ganong (2024) conduct a meta-analysis of the literature on how unemployment benefits impact unemployment duration, and they find that the effects are modest.

[5]"predicted" because the paper was published long before any data on the actual response were available.

calibrate their model to match the wealth distribution and the iMPCs, and they do not evaluate the policies using a welfare metric as we do in our baseline partial equilibrium setting.

One criterion to rank policies is the extent to which induced spending is "multiplied," and our paper therefore relates to the vast literature discussing the size and timing of any multiplier. Our focus is on policies pursued in the Great Recession, a period when monetary policy was essentially fixed at the zero lower bound (ZLB). We therefore do not consider monetary policy responses to the policies we evaluate in our primary analysis, and our work thus relates to papers such as Christiano, Eichenbaum, and Rebelo (2011) and Eggertsson (2011), who argue that fiscal multipliers are higher in such circumstances. Hagedorn, Manovskii, and Mitman (2019) present an HA model with both incomplete markets and nominal rigidities to evaluate the size of the fiscal multiplier and also find that it is higher when monetary policy is constrained. They focus on government spending instead of transfers and are interested in the consequences of alternative options for financing that spending. Broer, Krusell, and Öberg (2023) also focus on fiscal multipliers for government spending and show how they differ in representative agent and HA models with different sources of nominal rigidities. Finally, Ramey and Zubairy (2018) find empirical evidence that multipliers are higher when there is slack in the economy or the ZLB binds. In any case, our concern in the versions of our model with multipliers is to compare the *relative* size of any *differences* in multiplication across the policies we consider, which should thus be roughly scalable by the absolute size of any multiplication effect, allowing a reader to scale our results by their preferred estimate of the magnitude of recessionary multipliers.

Aside from the size of spending effects (whether multiplied or not), we are interested in ranking policies in terms of their welfare consequences. Thus, the paper relates to the recent literature on welfare comparisons in HA models. Both Bhandari, Evans, Golosov, and Sargent (2021) and Dávila and Schaab (2022) introduce ways of decomposing welfare effects. In the former case, these are aggregate efficiency, redistribution and insurance, while the latter further decomposes the insurance part into intra- and intertemporal components.

One part of these decompositions is tricky: Under standard calibrations like the ones we use, any change in redistribution tends to have powerful consequences on welfare. We presume that there are real (but unmodeled) reasons that the equilibrium degree of redistribution in normal (nonrecessionary) times is much less than the model would call for. We therefore develop a welfare measure that abstracts from any incentive for a planner to increase redistribution in the steady state (or "normal" times).

0.2 Organization

The paper is organized as follows. Section 2 presents our baseline partial equilibrium model of households' consumption and saving problem as well as how we model a recession and the potential response in terms of three different consumption stimulus policies. Section 3 describes the steps we take to parameterize the model and discusses the implications for some moments that we do not target. In section 4 we compare the

three policies implemented in a recession both in terms of their multipliers and in terms of a welfare measure that we introduce. Section 5 presents a general equilibrium HANK and SAM model where we compare the multipliers of the same three policies to the partial equilibrium results. Section 6 concludes, and, finally, the appendix shows results from a version of the model without splurge consumption and provides more details of the HANK and SAM model discussed in Section 5.