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The consumption response to positive and negative income shocks☆

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ABSTRACT

A set of newly-added questions in the 2011–2014 Bank of England/NMG Consulting Survey reveals that British households tend to change their consumption by significantly more in reaction to temporary and unanticipated *falls* in income than to *rises* of the same size. Household balance sheet characteristics such as high debt-to-income ratios and small liquidity buffers, concerns about credit market access and higher subjective risk of lower future income account for a sizable share of this spending asymmetry. Our findings have important implications for predicting the response of aggregate consumption to expansionary and contractionary macroeconomic policies.

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1. Introduction

The marginal propensity to consume (MPC) out of temporary income shocks plays an important role in the transmission of monetary and fiscal policy. According to the permanent income hypothesis (PIH), households only respond to shocks that alter their lifetime resources and therefore a non-permanent change in disposable income should only trigger a small change in current consumption. Yet, there is abundant evidence of significant and large estimates for the MPC, with liquidity constraints, income risk and precautionary motives being prominent drivers of violation of the PIH.

Despite a large empirical literature on the spending response to temporary income windfalls, there are far fewer works on what happens to household expenditure following a temporary fall in income. In the light of the more scant evidence on the latter, it is then unsurprising that there are even fewer contributions (if any) which are able to look – within the same dataset – at the actual consumption response to positive and negative income changes. This limitation is potentially

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serious because it poses the external validity concern that the estimates obtained for income changes of a certain sign may not provide reliable inference for the consumption response to income changes of the opposite sign.

In this paper, we exploit a set of newly-designed questions in the Bank of England/NMG survey of British households to provide an unprecedented evaluation of the spending response to positive and negative income changes on actual data. Households were asked to report not only the sign *and* the size of any unanticipated change in income over the previous year but also the sign *and* the size of any associated change in spending. The answers to these questions allow us to compute household-specific MPCs for positive and negative income shocks. In addition, information on demographics and balance sheet positions allows us to relate these characteristics to the individual MPCs at the household-level, both within and across income changes of opposite sign. As with all survey approaches to estimating MPCs, the reliability of the inference one can draw depends on the ability of households to respond accurately to questions about changes in their income and consumption. Accordingly, we subject our findings to an extensive range of sensitivity analyses to ameliorate concerns on any possible recall bias, to shock identification, to different treatments of non-responses and to using a more qualitative indicator of the spending response.

Our main results can be summarised as follows. First, the average MPC out of a negative income shock is between 0.46 and 0.68 across alternative cuts of the data but the range is only 0.07–0.17 following a positive income shock. Second, the MPCs of borrowers are systematically larger than those for savers, with the asymmetry between the responses to positive and negative income changes being less pronounced among the latter. Third, households with little or no savings buffer, facing some form of liquidity constraints and more pessimistic about their income prospects tend to exhibit a significantly larger MPC, especially after a fall in income. Fourth, households' balance sheet characteristics, and in particular low liquid wealth relative to income and high debt-to-income ratios, are strong predictors of a larger spending response to a negative shock of a certain size than to a positive shock of the same magnitude. Fifth, among households who received a negative income shock, the MPC was significantly larger for those reporting to be more concerned about their future income, consistent with a precautionary motive linked to income risk. Our inference is robust to using a propensity score method to control for differences in the ex-ante probability of receiving a shock of the opposite sign based on observables, to a number of estimation strategies handling some forms of nonlinearity and measurement errors, as well as to using the responses to a set of questions that asked households about their consumption behaviour following a *hypothetical* income shock.

Most of the household balance sheet measures in the Bank of England/NMG survey refer to either past or present conditions. But household behaviour may also reflect expectations about future access to credit markets. To evaluate this hypothesis, we consider the consumption response to a temporary income shock in a partial equilibrium model with occasionally binding borrowing constraints. Despite its simplicity, the model is able to replicate well the consumption asymmetry observed across positive and negative changes as well as across households with different debt positions, thereby providing further evidence for a significant role played by household balance sheets in the transmission mechanism.

As for policy implications, the MPC asymmetry documented in this paper implies that monetary and fiscal policies aimed at stimulating the economy may exert a smaller impact on consumption than contractionary interventions of the same magnitude. While this is reminiscent of the "pushing on a string" conjecture often attributed to John Maynard Keynes, it also suggests that expansionary policy measures need to be bolder than contractionary measures in order to generate a change of the same magnitude in consumer spending.

Related literature. The theoretical literature identifies several mechanisms that can motivate an asymmetric response to positive and negative transitory income shocks, including – among others – imperfect access to credit markets for those with low holdings of assets or sizable, but illiquid, assets (Deaton, 1991; Kaplan et al., 2016; Hedlund et al., 2016), precautionary savings (Caballero, 1990; Carroll, 1992, 1994, 2001) and loss aversion (Kahnemann and Tversky, 1979). The empirical literature on the consumption responses to unanticipated income changes can be broadly divided into three groups.[1] The first group exploits abrupt policy changes as quasi-natural experiments, including income tax rebates (Johnson et al., 2006; Parker et al., 2013; Agarwal and Qian, 2014; Misra and Surico, 2014), minimum wage hikes (Aaronson et al., 2012) and credit card limit increases (Gross and Souleles, 2002; Aydin, 2016). The second strand is based on a statistical decomposition of the income process into predictable and unpredictable movements, which are then correlated to consumption (Hall and Mishkin, 1982; Attanasio and Davis, 1996; Blundell et al., 2008).[2] Finally, another branch of research focuses on survey-based responses to *intended* (as opposed to *actual*) changes in income, (Shea, 1995; Bracha and Cooper, 2013) or hypothetical increases in household resources (Jappelli and Pistaferri, 2014). With these earlier contributions we share an emphasis on the characteristics that drive the heterogeneity in the distribution of the MPCs across households. Unlike previous literature, however, we are able to provide evidence on the consumption responses to *actual* positive shocks as well as *actual* negative shocks within the same household survey dataset. The novelty of our investigation comes from the fact that the survey we consider contains self-reported, unanticipated income changes of either sign.

Structure of the paper. Section 2 describes the survey questions and the distribution of the income shocks. Section 3 reports the main finding of the paper on asymmetric MPCs out of actual income changes. Section 4 presents results from questions about a hypothetical income shock. Section 5 offers a regression analysis of the determinants of variation in the

[1] For a survey, see Jappelli and Pistaferri (2010).

[2] In independent work, Arellano, Blundell and Bonhomme (2017) report estimates of asymmetric expenditure effects using household level data for the US and a permanent/transitory income decomposition based on a nonlinear model.

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