Consumption Response to Aggregate Shocks and the Role of Leverage

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UK Household consumption fell sharply during the 2008 financial crisis, by 4 percent overall. However, the fall was even more drastic for households with high levels of mortgage: over 10 percent on average. To understand the effects of the crisis it is essential to explain this first-order response. This paper focuses on understanding and quantifying the different channels through which mortgage status affected households' consumption behaviors in the last crisis.

Through cohort-level analysis using UK microdata, we first document that households with a mortgage cut their consumption by more than households with no mortgage. We show that the higher a household's loan-to-income ratio, the more they cut their consumption in the crisis period. Moreover, we find that the relationship between leverage and consumption growth varies significantly with the observed time period and with age. On the one hand, this co-movement seems to be present in the crisis period only. When we examine non-recessionary periods, we find no significant impact of household leverage on consumption behavior. On the other hand, young households cut their consumption by roughly twice as much as old households for the same level of leverage over the crisis.

Having documented these empirical irregularities, we then turn to understanding the drivers that led indebted households to cut their consumption by more than other households during the crisis. Using a heterogeneous-agents life-cycle model, we consider four channels by which the recession may have directly affected households: a fall in the level of income, rising uncertainty around future income, a reduction in the supply of credit, and a decline in house prices.

The first channel works through a negative shock to income. When households face a fall in their income level, they cut their consumption. However, the size of the cutback may differ across households not just because of where they are in their life-cycle but also because of liquidity constraints. After a negative permanent income shock of the same size, younger households may cut their consumption by more than older households as they are likely to be more liquidity constrained. As young households are typically more leveraged than old households, we may also observe that more leveraged households decrease their consumption by more than others after a negative income shock.

The second channel plays a role when the recession is associated with greater uncertainty around future income. As uncertainty increases, households increase their precautionary savings, and hence

consume less. Again, depending on where the households are in their life-cycle and consequently what their leverage is, they could quantitatively behave very differently.

The third channel works through an exogenous reduction in the supply of credit. Since the crisis, banks significantly decreased the acceptable mortgage loan-to-value ratios (LTV) at which they were willing to lend, which made it increasingly difficult for households to finance consumption by topping up mortgages. As a result, households close to the acceptable leverage threshold were unable to withdraw additional equity from their housing wealth. This change may affect high-leveraged households the most, leading their consumption to fall by much more than other households.

The last channel is a fall in house prices, which is very similar to the credit supply channel. As house prices fall, mortgagors face a reduction in their housing wealth, which increases their LTV ratios. These high LTV households would then be unable to withdraw additional equity from their house, which consequently may lead them to decrease their consumption by more than other households.

Although the four channels have a similar qualitative effect in encouraging a positive co-movement between leverage and consumption growth, our model simulations show the observed pattern of consumption response seen in the data during the recent recession is best explained by a model in which the recession is associated with a credit supply shock (modelled through an increase in the down payment requirement).

In particular, an increase in the down payment requirement shows a differential consumption response between high- and low-leveraged young households; but a much less so between high- and low-leveraged old households. After an unexpected increase in the down payment requirement, high-leveraged young households-- who are likely to be liquidity constrained at the same time-- may find it difficult to withdraw additional equity from their housing. This leads them to decrease their consumption by more than low-leveraged young households, who are able to top up their mortgages even under the stricter credit conditions.

Together with our empirical findings, the simulation results lead us to conclude that the most important driver of the empirical co-movement between household leverage and consumption growth after 2008 is the reduction in credit supply.