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16 April 2016

Online at <https://mpra.ub.uni-muenchen.de/70849/>
MPRA Paper No. 70849, posted 21 Apr 2016 09:30 UTC

A simple theory of exploding household debts

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2016/04/16

Abstract

In this paper, I explore how a household budget constraint allows one to construct a simple theory of exploding household debts. The conclusion reached in this paper is that in case the household started off being indebted, balanced budget all the time is a very dangerous choice. For analysis, government is assumed to be non-existent.

1 A simple theory of exploding household debts

Let us start from the household budget constraint without capital:

$$P_t C_t + \frac{B_t}{R_t} \leq W_t N_t + \Pi_t + B_{t-1} \quad (1)$$

where P_t is price level, C_t is consumption, B_t is bond/debt level (If $B_t > 0$, the household is in net surplus position, if $B_t < 0$, the household is net indebted.), Π_t is the profit dividends received from the firm. W_t is nominal wage, N_t is labor amount.

Suppose that the current time is $t = 0$. By some reasons, suppose that the household was net indebted at $t = -1$, that is $B_{-1} < 0$. Rearranging the equation,

$$P_0 C_0 - B_{-1} + \frac{B_0}{R_0} \leq W_0 N_0 + \Pi_0 \quad (2)$$

By accounting consistency, it is known that $C_t = Y_t$, in case there is no investment and no government spending. Let us not impose any extra decision constraints. The above the becomes

$$P_0 C_0 - B_{-1} + \frac{B_0}{R_0} \leq P_0 C_0 \quad (3)$$

Thus, the household can only satisfy the above with $B_t < 0$, assuming $R_0 > 0$. Iterating forward, we are stuck with

$$P_1 C_1 - B_0 + \frac{B_1}{R_1} \leq P_1 C_1 \quad (4)$$

Now the above discussion gives us, with the budget inequality equalized:

$$B_t = \frac{B_{t+1}}{R_{t+1}} \quad (5)$$

assuming the economy is non-stochastic. Equation 5 demonstrates that the household just rolls over the debt. Suppose that $R_{t+1} > 1$, by some consumption Euler equation. Then,

$$|B_t| < |B_{t+1}| \quad (6)$$

Thus, the household at minimum can only roll over debt, with real debt exploding relative to consumption level. If Equation 4 is not restricted to equality, then real debt is not just being rolled over but explodes even when discounted by interest rates. This is true when the standard consumption Euler equation that relates current output and future output and balanced government budget is assumed with positive output growth.

This suggests how dangerous zero government interaction, or, to generalize more, balanced budget, can be when the household is net indebted. At some point, the government needs to run fiscal deficit to offset this exploding trend. Now it is true that in this paper, the source of net indebtedness and lenders were not mentioned - it may be due to foreign agents that the household no longer trades with, or due to the loans made by the firms in the past, with the bonds offered by these agents. All mattered here is that $B_{-1} < 0$. The household also may also be indebted to the government, and further work on this direction is left to future papers.