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[Notes 2]
On the MIU model, superneutrality and the marginal rate of substitution between consumption and money

Q In the case of superneutrality, we have that the steady-state consumption level is determined by the Keynes-Ramsey rule, and money doesn't have any effect on steady-state consumption and capital. On the other hand, even though we have superneutrality, we don't have a non-zero marginal rate of substitution between money and consumption. That is, money and consumption have some sort of substitution (as given by the ratio of marginal utility between consumption and money, page 13 in the second note, or equation 2.12 in Walsh). Hence, if consumption is never affected by money, how can we interpret the marginal rate of substitution between consumption and money in the presence of superneutrality?

A To answer this, let us first restate equation 2.12 in Walsh (2003):

$$\frac{u_m(c_t, m_t)}{u_c(c_t, m_t)} = \frac{i_t}{1 + i_t}, \tag{2.12}$$

which indeed portrays that individuals in optimum choose real money and consumption such that their marginal rate of substitution equals the relative price, which is the opportunity cost of holding real money. If we have superneutrality, steady-state consumption will be independent of monetary factors. This, however, does *not* mean that real money is unaffected by different monetary policies. The steady-state value of m will be affected, because the marginal rate of substitution will be affected, even under superneutrality. For standard preferences, higher inflation leading to a higher nominal interest rate, will reduce real money demand.

Take the example of $u(c, m) = \ln c + \alpha \ln m$, $\alpha > 0$. In steady state, equation (2.12) becomes

$$\frac{\alpha c^{ss}}{m^{ss}} = \frac{i^{ss}}{1 + i^{ss}}.$$

When superneutrality applies (which it will here, as $u_{cm} = 0$), we see that higher i^{ss} leads to lower m^{ss}.