can be illustrated in the present framework. Let the government maintain a fixed money supply of M and a price level p. Agents now do all their saving by holding non-negative money balances $m_t \geq 0$ on which the government pays interest r, financed by lump-sum taxes $\tau = rM/p$. Agents then maximize utility subject to the budget constraint

$$c_t + \frac{m_{t+1}}{p} \leq e_t + (1+r)\frac{m_t}{p} - r\frac{M}{p}.$$

Comparing this constraint to the original budget constraint (24) with the borowing constraint $a_t \geq -b$ we see that the optimization problem with interest on money is equivalent to the original optimization problem with a borrowing constraint $b = M/p$. The equilibrium condition $E[m] = M$ is equivalent to the condition $E[a] = 0$ so the equilibrium interest rate will be the same as in the economy of Huggett (1993) for $b = M/p$. This implies that the government cannot achieve the optimum of $r = \rho$ set out by Friedman (1969) who argued that it is inefficient for agents to economize on their money holdings for transactional purposes and therefore required a real interest rate equal to the time preference rate.

Guerrieri and Lorenzoni (2011) study the reaction of a Bewley-Huggett economy to an unexpected tightening of the borrowing constraint. This lowers the long-run interest rate as the precautionary motive is more pronounced. In the transition period the interest rate rises even further and overshoots as households try to build up the new larger precautionary safety buffer.

Production Aiyagari (1994) combines the precautionary saving setup with a standard growth model with production and capital. All saving is done by holding physical capital which, together with labor produces output via an aggregate production function $F(K, L)$. An agent's labor endowment in period t is given by $\ell_t \in [\ell_{\min}, \ell_{\max}]$ which is drawn i.i.d. across time and across agents. This labor endowment is supplied inelastically and implies the random endowment $e_t = w\ell_t$ for an individual agent and a constant aggregate labor supply L. In the competitive equilibrium the demand for per-capita capital is given by[22]

$$f'(k) - \delta = r,$$

where δ is the depreciation rate.

The equilibrium interest rate in a steady state of the economy is given by the

[22]Unlike in the OLG literature, there is no population growth in this model.