entrepreneur promises a fixed repayment and is audited, i.e. the state is verified, only if he fails to repay. Let us start with the setting of Carlstrom and Fuerst (1997) (hereafter CF) and then highlight the differences to the original setting of Bernanke and Gertler (1989).

While entrepreneurs as a whole can convert consumption goods into capital at a constant rate of one-for-one, each individual entrepreneur's investment yields ωi_t of capital for an input of i_t consumption goods, where ω is an idiosyncratic shock, i.i.d. across time and entrepreneurs with distribution G and $E[\omega] = 1$. Given the assumption of costly state verification, the realization of an individual entrepreneur's outcome ωi_t is only observable to an outsider at a verification cost μi_t. Stochastic auditing is not allowed by assumption so the optimal contract becomes standard risky debt with an auditing threshold $\bar{\omega}$.

An entrepreneur with net worth n_t who borrows $i_t - n_t$ promises to repay $\bar{\omega}_t i_t$ for all realizations $\omega \geq \bar{\omega}$ while for realizations $\omega < \bar{\omega}$ he will be audited and his creditors receive the investment payoff ωi_t net of auditing costs μi_t. For a given investment size i_t, the auditing threshold $\bar{\omega}$ (and therefore the face value $\bar{\omega} i_t$) is set so the lenders break even

$$\left[\int_0^{\bar{\omega}} (\omega - \mu)\, dG(\omega) + (1 - G(\bar{\omega}))\, \bar{\omega}\right] i_t q_t = i_t - n_t \tag{1}$$

where q_t is the price of capital. Note that CF assume that the creation of new capital and therefore the necessary borrowing takes place *within* a period, therefore the households require no positive interest on their loan. In addition, since there is no aggregate risk in the investment process, households can diversify their lending across entrepreneurs so they require no risk premium.

An entrepreneur with net worth n_t then chooses i_t to maximize his payoff:

$$\max_{i_t} \int_{\bar{\omega}_t}^{\infty} (\omega - \bar{\omega}_t)\, dG(\omega)\, i_t q_t \tag{2}$$

subject to the break-even condition (1). The optimization results in a linear investment rule

$$i_t = \psi(q_t)\, n_t,$$

where the leverage ψ is increasing in the price of capital q_t. The entrepreneur's investment is increasing in both the price of capital q_t and his net worth n_t. Both a higher q_t and a higher n_t require a lower auditing threshold $\bar{\omega}$ which reduces borrowing costs and