

standard intertemporal savings decision arises from the decline in the length of production chains in the economy as financing cost increases.

Finally, the total credit used by all production chains in the economy is

$$\begin{aligned} K &= \frac{n+1}{2}wL \\ &= \left(\frac{\alpha}{1-\alpha}\right)^\alpha \left(1+\frac{2}{r}\right)^\alpha \left(\frac{\alpha}{r} + \frac{1-\alpha}{2+r}\right)L \end{aligned} \quad (13)$$

Note that total financing need is increasing linearly in chain length n , since the financing need is the “triangle” whose size increases at the rate of the *square* of the chain length.

We may interpret K as the *aggregate credit demand* in the economy. Credit demand is declining in the borrowing rate r . Once we introduce a financial sector in Section 4, the borrowing rate r can be solved as the market clearing rate that equates K with total credit supply.

The ratio K/Y could be interpreted as the credit to GDP ratio, and has the simple form as below, which also declines with the borrowing rate.

$$\frac{K}{Y} = \frac{\alpha}{r} + \frac{1-\alpha}{2+r} \quad (14)$$

Since credit is a stock while output is a flow, the choice of the time period is important in interpreting the ratio K/Y . In our model, this ratio is given meaning by setting the unit time interval to be the time required to finish one stage of production.

2.1 Analogy with Fixed Capital

There is an analogy between working capital and fixed capital, but the analogy is not exact. If we treat working capital as a factor of production, we can give a reduced-form representation of total output, but where the total factor productivity term is not a constant, but instead depends on financial conditions.