

0.0.1 Unemployment Risk as a Mean Preserving Spread

A consumer who is *employed* in the current period has $\xi_t = 1$; if this person is still employed next period ($\xi_{t+1} = 1$), market resources will be

$$\mathbf{m}_{t+1}^e = (\mathbf{m}_t^e - \mathbf{c}_t^e)\mathbf{R} + \mathbf{W}_{t+1}\ell_{t+1}. \quad (1)$$

However, there is no guarantee that the consumer will remain employed: Employed consumers face a constant risk \mathcal{U} of becoming unemployed. It will be convenient also to define $\mathcal{X} \equiv 1 - \mathcal{U}$ as the probability that a consumer does *not* become unemployed. Whether the consumer is employed or not, his labor productivity ℓ is well-defined:¹ ℓ is assumed to grow by a factor \mathcal{X}^{-1} every period,

$$\ell_{t+1} = \ell_t/\mathcal{X}, \quad (2)$$

which means that for a consumer who remains employed, labor income will grow by factor

$$\Gamma = \mathbf{G}/\mathcal{X} \quad (3)$$

so that the *expected* labor income growth factor for employed consumers is the same \mathbf{G} as in the perfect foresight case:

$$\begin{aligned} \mathbb{E}_t[\mathbf{W}_{t+1}\ell_{t+1}\xi_{t+1}] &= \left(\frac{\ell_t\mathbf{G}\mathbf{W}_t}{\mathcal{X}}\right)(\mathcal{U} \times 0 + \mathcal{X} \times 1) \\ \left(\frac{\mathbb{E}_t[\mathbf{W}_{t+1}\ell_{t+1}\xi_{t+1}]}{\mathbf{W}_t\ell_t}\right) &= \mathbf{G}, \end{aligned}$$

which is the reason for (2)'s assumption about the growth of individual labor productivity: It implies that an increase in \mathcal{U} is a pure increase in uncertainty with no effect on the PDV of expected labor income.

¹'Labor productivity' is purely hypothetical for a consumer who is unemployed; but defining it even for unemployed consumers simplifies notation and some later analysis.