

### 1. GOODWIN/KEEN MODEL OF AN ECONOMY

This is a model from Keen (1995), later elaborated by Grasselli and Costa Lima (2012). In the equations below  $\lambda$  represents employment rate (fraction of the work force employed);  $\omega$  represents the wages share of national income;  $w$  represents workers wages as a function of the unemployment rate  $\lambda$ . (This is the simplest version of the model!)

$$\frac{d\lambda}{dt} = \lambda\left(\frac{1-\omega}{v} - \alpha - \beta - \gamma\right)$$

$$\frac{d\omega}{dt} = \omega(w(\lambda)) - \alpha$$

$$\text{Where } w(\lambda) = \frac{A}{(B-C\lambda)^2 - D}$$

You can look at making  $w(\lambda)$  a simpler function, and the papers Keen (1995) Costa Lima (2012).