$$PCM_t = (\eta_t - 1)\frac{c_t}{p_t q_t} - \frac{\varepsilon_t}{(1+\lambda_t)} + \frac{\partial h(t)}{\partial q_t}\frac{1}{p_t} \tag{10}$$

$$+\rho_{t+1}\left[\frac{\partial h(t+1)}{\partial q_t}\frac{1}{p_t}\right] + \rho_{t+1}\left\{\frac{\partial i(t+1)}{\partial(p_t q_t)}\left[\frac{\varepsilon_t}{(1+\lambda_t)}+1\right]b_t\right\} + v_{t+1}$$

In writing down equation (10) we have replaced expected values with realizations, thereby introducing a forecast error v_{t+1} which is by assumption orthogonal to the agent's information set and have defined $\rho_{t+1} = E_t \beta_{t,t+1}(1-\tau_{t+1})/(1-\tau_t)$ as the after tax discount rate between *t* and *t+1*.

In order to make the Euler equation (10) for the firm's price operational we need to parametrize the adjustment cost and the external debt functions respectively. To this end we posit the following simple functional forms:

$$h(\cdot) = \frac{\alpha_1}{2}\left(\frac{q_t - q_{t-1}}{q_{t-1}}\right)^2 q_{t-1} \tag{11}$$

$$i(\cdot) = \alpha_2 + \alpha_3\left(\frac{b_{t-1}}{p_{t-1}q_{t-1}}\right) \tag{12}$$

Using (11) and (12) into (10) we obtain:

$$PCM_t = (\eta_t - 1)\frac{c_t}{p_t q_t} - \frac{\varepsilon_t}{1+\lambda_t} + \alpha_1\left[\frac{q_t - q_{t-1}}{p_t q_{t-1}} - 0.5\rho_{t+1}\frac{q_{t+1}{}^2 - q_t{}^2}{p_t q_t^2}\right] \tag{13}$$

$$-\alpha_3\left[\rho_{t+1}\left(\frac{b_t}{p_t q_t}\right)^2\left(\frac{\varepsilon_t}{1+\lambda_t}+1\right)\right] + v_{t+1}$$

After some straightforward algebra and assuming that η_t, ε_t and λ_t are both time and firm invariant, we can rewrite equation (13) as follows:

$$\overline{PCM_t} = \gamma_1 + \gamma_2\left[\frac{q_t - q_{t-1}}{p_t q_{t-1}} - 0.5\rho_{t+1}\frac{q_{t+1}{}^2 - q_t{}^2}{p_t q_t^2}\right] + \gamma_3\rho_{t+1}\left(\frac{b_t}{p_t q_t}\right)^2 + v_{t+1} \tag{14}$$