Divide now equation (5) by p_t and by $\partial D(t)/\partial p_t$ to obtain the following condition that describes the optimal price path:

$$
\begin{aligned}
&(1-\tau_t)\left\{\frac{q(t)}{p_t}\frac{\partial p_t}{\partial D_t}+(1+\lambda_t)-\frac{\partial c(t)}{\partial q_t}\frac{1}{p_t}(1+\lambda_t)-\frac{\partial h(t)}{\partial q_t}\frac{1}{p_t}(1+\lambda_t)\right\} \\
&-E_t\beta_{t,t+1}(1-\tau_{t+1})\left\{\frac{\partial h(t+1)}{\partial q_t}\frac{1}{p_t}(1+\lambda_t)+\frac{\partial l(t+1)}{\partial(p_t q_t)}\left[\frac{q(t)}{p_t}\frac{\partial p_t}{\partial D_t}+(1+\lambda_t)\right]b_t\right\}=0
\end{aligned} \tag{7}
$$

Now let $(\partial p_t / \partial D_t)(q_t / p_t) = \varepsilon_t$ be the inverse of the direct effect price elasticity and let marginal cost be given by $\partial c(t) / \partial q_t = \eta_t (c_t / q_t)$, where η_t denotes the cost elasticity of output, the reciprocal of the scale elasticity. Using these definitions and dividing equation (7) by $(1-\tau_t)$ we obtain:

$$
\begin{aligned}
&\varepsilon_t+(1+\lambda_t)-\eta_t\frac{c_t}{q_t}\frac{1}{p_t}(1+\lambda_t)-\frac{\partial h(t)}{\partial q_t}\frac{1}{p_t}(1+\lambda_t) \\
&-E_t\beta_{t,t+1}\frac{(1-\tau_{t+1})}{(1-\tau_t)}\left\{\frac{\partial h(t+1)}{\partial q_t}\frac{1}{p_t}(1+\lambda_t)+\frac{\partial l(t+1)}{\partial(p_t q_t)}\left[\varepsilon_t+(1+\lambda_t)\right]b_t\right\}=0
\end{aligned} \tag{8}
$$

Observe now that the second and third terms of equation (8) can be rewritten as follows:

$$
(1+\lambda_t)\left(\frac{p_t q_t - c_t}{p_t q_t}\right)+(1+\lambda_t)(1-\eta_t)\frac{c_t}{p_t q_t}=(1+\lambda_t)\left[PCM_t+(1-\eta_t)\frac{c_t}{p_t q_t}\right] \tag{9}
$$

where PCM_t is the firm's price-cost margin. Substitute (9) into (8) and divide throughout by $(1+\lambda_t)$ to finally obtain the following expression for the firm's price-cost margin: