

If $\bar{p} > p/e$, then $\partial E(p^*)/\partial \alpha^2 > 0$. In this case, an increase in α^2 produces a decline in $g(\cdot)$ as maintained in part b.

Proof of Proposition 1. From Proposition 1 it follows that $\partial g(\cdot)/\partial \alpha^2 > 0$. Differentiating (3) and (4) and combining expressions yields:

$$\frac{\partial g(\cdot)}{\partial \alpha^2} = \frac{\partial g(\cdot)}{\partial \alpha^2} + \frac{\partial g(\cdot)}{\partial \alpha^2} \frac{\partial \alpha^2}{\partial \alpha^2}$$

where the second bracketed term is unambiguously positive. If $\bar{p} > p/e$, then $\partial g(\cdot)/\partial \alpha^2 > 0$ which implies that $\partial g(\cdot)/\partial \alpha^2 > 0$. Therefore, an increase in α^2 causes an increase in $g(\cdot)$ if $\bar{p} > p/e$ as shown in part a.

If on the other hand, $\bar{p} < p/e$ then $\partial g(\cdot)/\partial \alpha^2 < 0$. In this case, $\partial g(\cdot)/\partial \alpha^2 < 0$. Therefore, an increase in α^2 causes a decrease in $g(\cdot)$ as maintained in part b.

Proof of Proposition 2. From Proposition 1 it follows that $\partial g(\cdot)/\partial \alpha^2 > 0$. Differentiating (3) and (4) and combining expressions yields:

$$\frac{\partial g(\cdot)}{\partial \alpha^2} = \frac{\partial g(\cdot)}{\partial \alpha^2} + \frac{\partial g(\cdot)}{\partial \alpha^2} \frac{\partial \alpha^2}{\partial \alpha^2}$$

Thus, $g(\cdot)$ is increasing in α^2 if $\bar{p} > p/e$.

Because $\partial g(\cdot)/\partial \alpha^2 > 0$, an increase in α^2 then lowers $E(p^*)$, which by Proposition 1 leads to a decline in $g(\cdot)$ as maintained in part a.

Proof of Proposition 2. Differentiating (3) and (4) yields:

$$\frac{\partial g(\cdot)}{\partial \alpha^2} = \frac{\partial g(\cdot)}{\partial \alpha^2} + \frac{\partial g(\cdot)}{\partial \alpha^2} \frac{\partial \alpha^2}{\partial \alpha^2}$$

Specifically,

$$\frac{\partial g(\cdot)}{\partial \alpha^2} = \frac{\partial g(\cdot)}{\partial \alpha^2} + \frac{\partial g(\cdot)}{\partial \alpha^2} \frac{\partial \alpha^2}{\partial \alpha^2}$$