$$\frac{\partial c^*(\cdot)}{\partial j}=\frac{\partial c^*(\cdot)}{\partial E(p^*)}\frac{\partial E(p^*)}{\partial \theta}\frac{\partial \theta}{\partial j}$$

for $j=\gamma^2,\alpha^2$. Differentiating (3) with respect to θ yields

$$\frac{\partial E(p^*)}{\partial \theta}=\bar{p}-\frac{p}{e}$$

which vanishes if $\bar{p}=p/e$. Thus, $\partial c(\cdot)/\partial j=\partial c^*(\cdot)/\partial j=0$ which suggests that $\partial g(\cdot)/\partial \theta=0$. Therefore, $g(\cdot)$ is independent of θ and the consumer's choice problem doesn't depend on uncertainty if $\bar{p}=p/e$.

Proof of Proposition 3. From Proposition 1, it follows that $\partial g(\cdot)/\partial E(p^*)>0$. Differentiating (3) and (4) and combining expressions yields

$$\frac{\partial E(p^*)}{\partial \gamma^2}=\frac{\partial E(p^*)}{\partial \theta}\frac{\partial \theta}{\partial \gamma^2}=\left[\bar{p}-\frac{p}{e}\right]\left[-\frac{\alpha^2}{(\gamma^2)^2}\right]$$

where the second bracketed term is unambiguously negative. If $\bar{p}<p/e$, then $\partial E(p^*)/\partial \gamma^2>0$ which implies that $\partial g(\cdot)/\partial E(p^*)>0$. Therefore, an increase in γ^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 $\partial E(p^*)/\partial \gamma^2<0$. In this case, $\partial g(\cdot)/\partial E(p^*)<0$. Therefore, an increase in γ^2 causes a decrease in $g(\cdot)$ when $\bar{p}>p/e$ as maintained in part b.

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

$$\frac{\partial E(p^*)}{\partial \alpha^2}=\frac{\partial E(p^*)}{\partial \theta}\frac{\partial \theta}{\partial \alpha^2}=\left[\bar{p}-\frac{p}{e}\right]\left[\frac{1}{\alpha^2}\right].$$

Because $1/\alpha^2>0$, $\partial E(p^*)/\partial \alpha^2<0$ if $\bar{p}<p/e$. 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.