Let. $\text{prob}(\theta_i < \theta_{ji}) = Pr(C)$ (1)

$\text{prob}(\theta_i = \theta_{ji}) = Pr(V)$

We can write:

$$\frac{Pr(C) + Pr(V) \times \dfrac{\pi_i f''(0)}{c_i''(\cdot) + \pi_i f''(0)}}{Pr(V) \times \dfrac{-f'(0)}{c''(\cdot) + \pi_i f''(0)}}$$

$$= \frac{\beta_i \pi_i f'(0) - \lambda_2^i - Cov\left[c_i', \frac{\partial e_i}{\partial \pi_i}\right] - \beta_i \pi_i Cov\left[f'(e_i - s_i), \frac{\partial e_i}{\partial s_i}\right]}{-\mu_i - \beta_i E\left[f(e_i - s_i)\right] - Cov\left[c_i', \frac{\partial e_i}{\partial \pi_i}\right] - \beta_i \pi_i Cov\left[f'(e_i - s_i), \frac{\partial e_i}{\partial \pi_i}\right]}$$

$$\frac{Pr(C)}{Pr(V)} \cdot \left[\frac{1}{\dfrac{-f'(0)}{c''(\cdot) + \pi_i f''(0)}}\right] - \pi_i \frac{f''(0)}{f'(0)} =$$

$$= \frac{\beta_i \pi_i f'(0) - \lambda_2^i - Cov\left[c_i', \frac{\partial e_i}{\partial \pi_i}\right] - \beta_i \pi_i Cov\left[f'(e_i - s_i), \frac{\partial e_i}{\partial s_i}\right]}{-\mu_i - \beta_i E\left[f(e_i - s_i)\right] - Cov\left[c_i', \frac{\partial e_i}{\partial \pi_i}\right] - \beta_i \pi_i Cov\left[f'(e_i - s_i), \frac{\partial e_i}{\partial \pi_i}\right]}$$

Using $\dfrac{\partial e}{\partial \pi_i} = \dfrac{-f'(0)}{c''(\cdot) + \pi_i f''(0)}$

$$\frac{P_c(c)}{P_c(u)} \cdot \left(\frac{1}{\partial e_i/\partial \pi_i}\right) - \frac{\pi_i f''(0)}{f'(0)} =$$

$$= \frac{\beta_i \pi_i f'(0) - \lambda_2^i - \mathrm{Cov}\left[c_i', \frac{\partial e_i}{\partial \pi_i}\right] - \beta_i \pi_i \mathrm{Cov}\left[f'(\cdot), \frac{\partial e_i}{\partial s_i}\right]}{-\mu_i - \beta_i E\left(f(e_i - s_i)\right) - \mathrm{Cov}\left[c_i', \frac{\partial e_i}{\partial \pi_i}\right] - \beta_i \pi_i \mathrm{Cov}\left[f'(\cdot), \frac{\partial e_i}{\partial \pi_i}\right]}$$

" (8)' "

$$\left[\pi_i \frac{f''(0)}{f'(0)} - \frac{P_c(c)}{P_c(u)} \left(\frac{1}{\partial e_i/\partial \pi_i}\right)\right] \mu_i$$

$$+ \left[\pi_i \frac{f''(0)}{f'(0)} - \frac{P_c(c)}{P_c(u)} \left(\frac{1}{\partial e_i/\partial \pi_i}\right)\right] \left[\beta_i E\left[f(e_i - s_i)\right] + \mathrm{Cov}\left[c_i', \frac{\partial e_i}{\partial \pi_i}\right] + \beta_i \pi_i \mathrm{Cov}\left[f'(\cdot), \frac{\partial e_i}{\partial \pi_i}\right]\right]$$

$$\leq \beta_i \pi_i f'(0) - \mathrm{Cov}\left[c_i', \partial e_i/\partial s\right] - \beta \pi_i \mathrm{Cov}\left[f', \partial e_i/\partial s_i\right]$$

Alternativamente:

$$\left[Pr(v)\, \pi_i \frac{f''(0)}{f'(0)} - Pr(c) \left(\frac{1}{\partial e_i/\partial \pi_i} \right) \right] \mu_i \qquad \text{“}(8)\text{”}$$

$$+ \left(Pr(v)\, \pi_i \frac{f''(0)}{f'(0)} - Pr(c) \left(\frac{1}{\partial e_i/\partial \pi_i} \right) \right) \left[\beta_i E\left(f(e_i - s_i)\right) + Cov\left(c_i', \partial e_i/\partial \pi_i\right) + \beta_i \pi_i\, Cov\left(f', \frac{\partial e_i}{\partial \pi_i}\right) \right]$$

$$\leq Pr(v) \left[\beta_i \pi_i f'(0) - Cov\left(c_i', \partial e_i/\partial s_i\right) - \beta_i \pi_i\, Cov\left(f', \partial e_i/\partial s_i\right) \right]$$

Notar que para el caso especial, $Pr(v) = 1$, y $Pr(c) = 0$ podemos escribir:

$$\pi_i \frac{f''(0)}{f'(0)} \mu_i + \pi_i \frac{f''(0)}{f'(0)} \left[\beta_i E\left(f(e_i - s_i)\right) + Cov\left(c_i', \partial e_i/\partial \pi_i\right) + \beta_i \pi_i\, Cov\left(f', \partial e_i/\partial \pi_i\right) \right]$$

$$\leq \beta_i \pi_i f'(0) - Cov\left(c_i', \partial e_i/\partial s_i\right) - \beta_i \pi_i\, Cov\left[f', \partial e_i/\partial s_i\right]$$

NOTAS

* Si $Pr(V) = 1$ y $Pr(c) = 0$, entonces "recuperamos" la condición (8)' que teníamos previamente.

* Aun cuando $f'' = 0$ el regulador NO está seguro que es óptimo inducir perfecto cumplimiento.

* La condición (8)' con charitable [illegible] parece depender del tipo de instrumento, en el caso de permisos, la condición debiera ser más simple.