Solution to PS2 / Q6

<u>Key Idea</u>: Competition/Invisible Hand $\Rightarrow$ (wages, equil. prob. of job finding) maximize expected utility subject to 0 expected profits

1.) Risk-Averse: $\max\limits_{w,q,k} \left\{ \left(\frac{1-e^{-q}}{q}\right) u(w) + \left(1 - \frac{1-e^{-q}}{q}\right) u(z) \right\}$

$$\text{s.t. } (1-e^{-q})[f(k) - w] = k$$

2.) Risk-Neutral: $\max\limits_{w,q,k} \left\{ \left(\frac{1-e^{-q}}{q}\right) w + \left(1 - \frac{1-e^{-q}}{q}\right) z \right\}$

$$\text{s.t. } (1-e^{-q})[f(k) - w] = k$$

Zero Expected Profit: $1 = (1-e^{-q}) f'(k) \Rightarrow k^*(q)$

Intuition: $w\uparrow \Rightarrow$ firms worse off / workers better off

$q\uparrow \Rightarrow$ firms better off / workers worse off

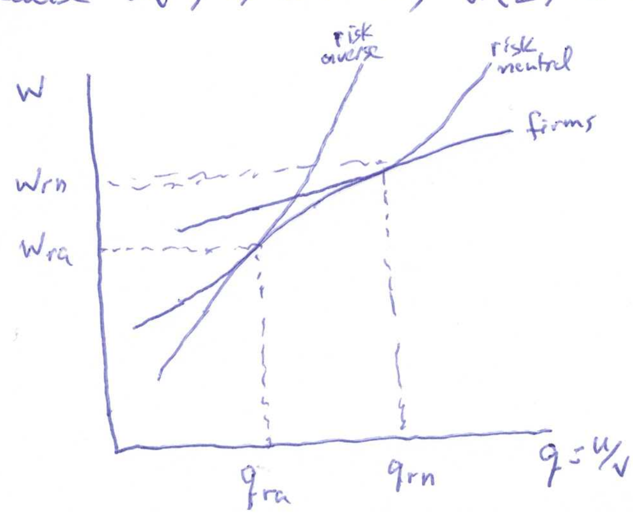
$\Rightarrow$ Indiff. Curves & Iso-Profits Curves slope up

$$\left(\frac{dw}{dq}\right)^{\text{risk averse}} = \frac{u(w)-u(z)}{u'(z)} \cdot \frac{1-e^{-q}-qe^{-q}}{q(1-e^{-q})} > 0$$

$$\left(\frac{dw}{dq}\right)^{\text{risk neutral}} \quad (w-z) \cdot \frac{1-e^{-q}-qe^{-q}}{q(1-e^{-q})} > 0$$

Because $u(\cdot)$ is concave, $u(z) < u(w) + u'(w)(z-w) \Rightarrow \frac{u(w)-u(z)}{u'(z)} > w - z$

$\Rightarrow$ Risk Averse IC steeper



Risk-Neutral workers apply for high wage jobs that have a low prob. of being found.