Competition for traders and risk

Michiel Bijlsma, Jan Boone and Gijsbert Zwart

CPB and Tilburg University

9 december 2014
The crisis and trader compensation

• Crisis attributed in part to traders’ excessive performance pay, supposedly driven up by competition for scarce talent.

• Martin Wolf (FT): “individual institutions cannot change their systems of remuneration on their own, without losing talented staff to the competition. So regulators may have to step in.”

• Kashyap et al. (2008) “Retaining top traders, given the competition for talent, requires that they be paid generously based on performance.”

• Acharya et al. (2009): “Given the fluid market for financial talent, no single firm can get very far on its own.”
Calls to regulate banks' remuneration packages.

**Question:**
Why does competition on the labour market result in skewed incentives and not just high wages?
Idea

- When banks hire traders, they face moral hazard (choice of investment project) plus adverse selection over agents’ abilities

- Banks face dilemma: contain risk-taking with low-powered contracts or select efficient traders with high-powered contracts
Intuition

• Trade-off risk-taking versus selection alters with size of trader rents

• Increased competition for efficient traders increases efficient traders’ rents, but by incentive compatibility this spills over to inefficient traders

• the need to reduce inefficient traders’ rents forces banks to offer higher-powered contracts inducing high-risk trades.
The model

- Two types of traders (H,L)
- Set of projects with outcomes $x_1 > x_0 > 0 > -x_{-1}$.
- Probabilities $q_{1}^{H,L}, q_{0}^{H,L}$ and $q_{-1}^{H,L} = 1 - q_{0}^{H,L} - q_{1}^{H,L}$ project and type dependent.
The model

• Banks offer Wages $w_1$, $w_0$. Limited liability: $w_{-1} = 0$

• Traders maximize

$$\max_p q_{1}^{H,L}(p)w_{1}^{H,L} + q_{0}^{H,L}(p)w_{0}^{H,L}.$$  

• Banks optimize profits by setting

$$R = \frac{w_1}{w_0}$$

$$\Pi(R, \alpha) = q_{1}^{H}(p(R))x_{1} + q_{0}^{H}(p(R))x_{0} - \alpha q_{-1}^{H}(p(R))$$

• Incentive compatibility: make sure low type does not mimic high type

$$f(R) \equiv \frac{\hat{u}}{U} = \frac{q_{0}^{L}(p^{L}(R)) + Rq_{1}^{L}(p^{L}(R))}{q_{0}^{H}(p^{H}(R)) + Rq_{1}^{H}(p^{H}(R))} \leq 1.$$  

$$\hat{u} = \max_p w_{0}^{H} (q_{0}^{L}(p) + Rq_{1}^{L}(p))$$
Hotelling competition for traders

We are interested in comparative statics in $t_H$

low types $\bar{v}$

max $\max_{\bar{v},x,\bar{r},\bar{U},\bar{R}} (\pi(x,\alpha) - u) + \bar{S}(U, U_b)(\Pi(R, \alpha) - U)$

subject to $u \geq f(R)U$
\[ f(R) \frac{\phi}{2t_1} (\pi(r^*, \alpha) - U f(R) - t_1) + \frac{1 - \phi}{2t_h} (\Pi(R, \alpha) - U - t_h) = 0 \]  
(U^{uc})

\[ U f'(R) \frac{\phi}{2t_l} (\pi(r^*, \alpha) - U f(R) - t_1) + \frac{1 - \phi}{2} \Pi_R(R, \alpha) = 0 \]  
(U^{rc})

\[ U^{ic}(R) = \frac{\pi(r^*, \alpha) - t_1}{f(R)} \]  
(U^{ic})

**Lemma 1** With \( R^* \) the unconstrained optimal \( R \), defined by \( \Pi_R(R^*) = 0 \), we have

i) \( U^{rc}(R^*) = U^{ic}(R^*) \)

ii) \( U^{rc}(R) > U^{ic}(R) \) for all \( R > R^* \)

iii) \( U^{uc}(R^*) > U^{ic}(R^*) \)
Equilibrium
Results

**Proposition 1**  *In equilibrium $R > R^*(\alpha)$.*

**Proposition 2**  *If competition for the high-type traders increases ($t_h$ falls), banks induce these traders to take more risk by increasing $R$.***