Managerial Incentive Problems: A Dynamic Perspective

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Motivation

- Information asymmetry in labor market (noise in abilities)→ moral hazard, market failure
- Tradeoff between allocating risk associated with incomplete observability and providing incentives for a proper supply of labor
- When time has effect on incentives (learning about ability), Fama proposed a theory which points out the importance of reputation. However, it’s not correct in general.

Basic model

Output in each period:

$$y_t = \eta + a_t + \varepsilon_t,$$

Ability with mean m and precision h;
labor input (efforts that you can put) a

$$w_t(y^{t-1}) = E[y_t|y^{t-1}] = E[\eta|y^{t-1}] + a_t(y^{t-1}).$$

Your wage in the current period is evaluated by the output of your last period

Your best choice of a is the solution of :

$$\max_{\{a_t(\cdot)\}} \sum_{t=1}^{\infty} \beta^{t-1}[Ew_t(y^{t-1}) - Eg(a_t(y^{t-1}))].$$

One important thing: “observing y will in equilibrium be equivalent to observing z”, market expects you have invested a* already

$$z_t \equiv \eta + \varepsilon_t = y_t - a_t^*(y^{t-1}).$$

Basic model results

- Ability will finally be exactly known by market
- You can put more labor to increase your output, but it won’t help in an equilibrium since market has expectations on your effort level. You are trapped in equilibrium.
- More uncertainties about ability, more returns to labor

Stationary case, efficiency and reputation

Reputation works permanently only when ability cannot be fully resolved

$$\eta_{t+1} = \eta_t + \delta_t$$

Efficiency means $g'(\bar{a}) = 1$

Stationary labor supply: $$\frac{\beta(1-\mu^*)}{1-\mu^*\beta} = g'(a^*).$$

Beta =1 → Fama's results, efficient. Otherwise not efficient

Before a stationary state is reached

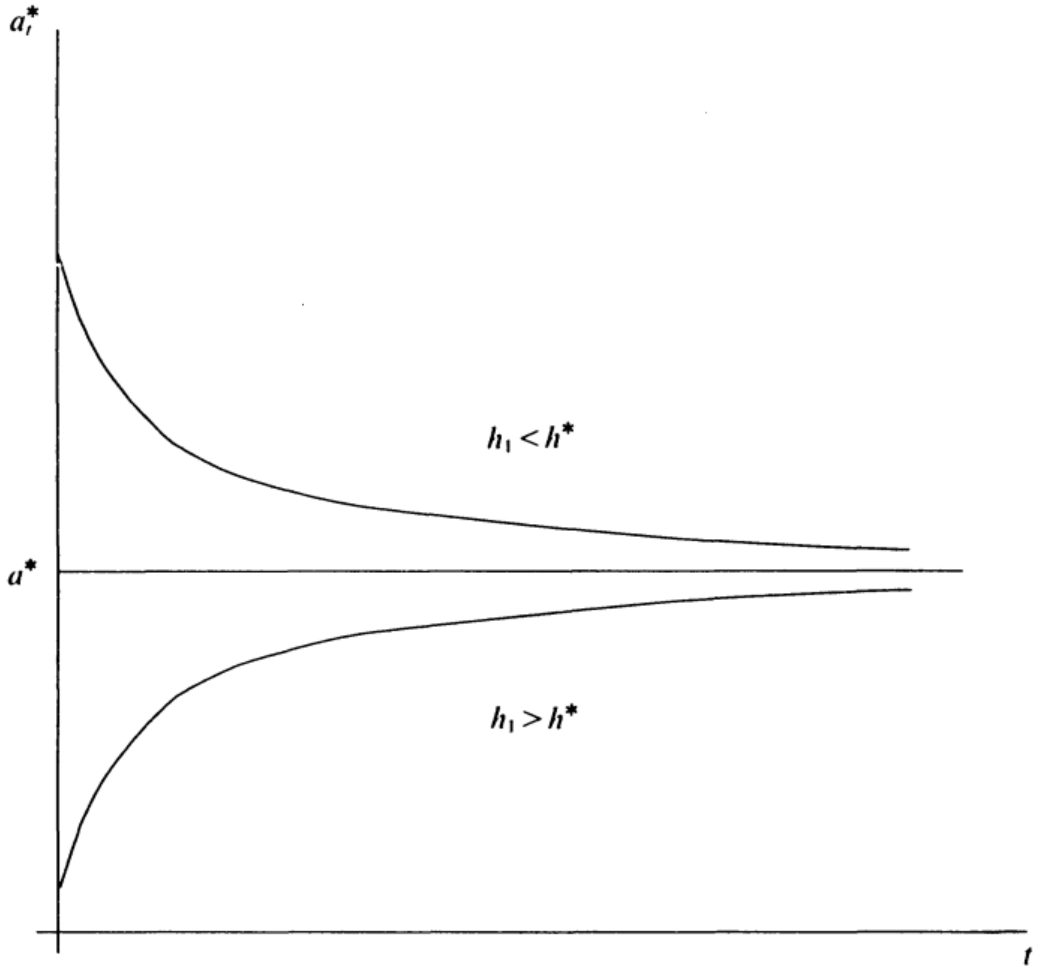

FIGURE 2

Young people overinvest in labor (卷，躺)

Noisy output, slow convergence, inefficiency

More general conclusions and my interpretation

$$y_t = f(\eta_t) + a_t \qquad E[f'(\eta_0 + \delta_0 + \delta_1)(f^{-1})'(f(\eta_0 + \delta_0))] = E\left[\frac{f'(\eta_0 + \delta_0 + \delta_1)}{f'(\eta_0 + \delta_0)}\right]$$

If f’ is convex (or, return to ability is convex), oversupply of labor; f’ is concave, undersupply of labor

Concave: return grows faster in low ability regime than in high ability regime, social media celebrity. Underinvestemt of labor （活少钱多）

Convex: return grows slower in low ability regime than in high ability regime, traditional stars. Overinvestment of labor