

The Market Price of Alpha

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Motivation

Observations

In well-developed liquid markets:

- The price of beta is zero
- But the price of alpha is positive

Questions

- What is the market-clearing price for alpha?
- What forces determine this price?

► We use economic analysis to answer these questions

Lessons from Microeconomics 101

Assume

- Managers exhibit diminishing returns in production (capacity issues)
- No uncertainty about manager performance

Outcome

- Each manager expands business until $MR=MC$
 - This occurs when $\alpha = \text{fee rate}$
 - So manager captures all the economic rent
- ▶ Not a surprise, given that manager skill is the scarce resource, not AUM

Berk & Green October 2002 (NBER 9275)

Now assume

- Same industry structure as before
- But each alpha process is stochastic, with parameters known to the manager, but not to investors

Outcome

- Pretty much as before: the **average** investor return is zero, after paying manager fees
- However heterogeneity of managers implies that **some** managers outperform, even though active managers as a group do not
- ▶ It's all about search costs

A Metric for Pricing Alpha

Assume

- There are some managers that can actually deliver positive expected alpha
- They measure price relative to their expected alpha (or actual alpha, if a performance fee)

Definition Capture Ratio \equiv \$Fees / \$Alpha

Observation

- Most empirical values of CR lie in the range 0.2 to 0.4
- Why so low?

Rational Pricing by Managers

Observation

An investment manager has a choice of business model:

1. An Agency business (the traditional approach), or
2. A Principal business (proprietary trading)

Insight

- In equilibrium, returns to the intellectual capital comprising the manager should be the same for both business models
- This equality applies on a risk-adjusted basis

A Mean-Variance Investment Process

Model

Use the Information Ratio framework from Grinold & Kahn:

$$IR(A, \omega) \equiv \alpha / SD(\alpha) = \alpha / \omega$$

$$IR(A, \omega) = IR(0) \cdot e^{-\omega \cdot A / d}$$

where

- A is \$AUM accepted by a manager
- ω is the level of active risk chosen by the manager
- d is the speed at which the manager's active process degrades IR, as AUM and active risk are increased

Note that choice of A and ω (and hence target α) will **not** be independent of the business model chosen by the manager

A Mean-Variance Business Model

Assume

- Manager maximises risk-adjusted profits
- People and technology costs are independent of A , ω

Objective Function

Choose A , ω for each business model to maximise:

$$A \cdot \{CR \cdot \omega \cdot IR - \lambda \cdot CR \cdot \omega^2 - \text{spread}\}$$

where

- λ is the risk aversion parameter (zero for Agency)
- spread is the cost of risk capital used (zero for Agency)

Equilibrium Capture Ratio

Market-clearing

- Long term equilibrium of intellectual capital is required for manager survival.
- Hence, for a given investment process, the profitability of an Agency business model must equate to the risk-adjusted profitability of a Principal business model.
- Solve for the capture ratio in the Agency model that equates profitability across business models.

Note

- Capture ratio for a Principal business model is 100%
- The same investment process is used for both cases
- But the choice of A and ω will typically differ across cases

Numerical Example

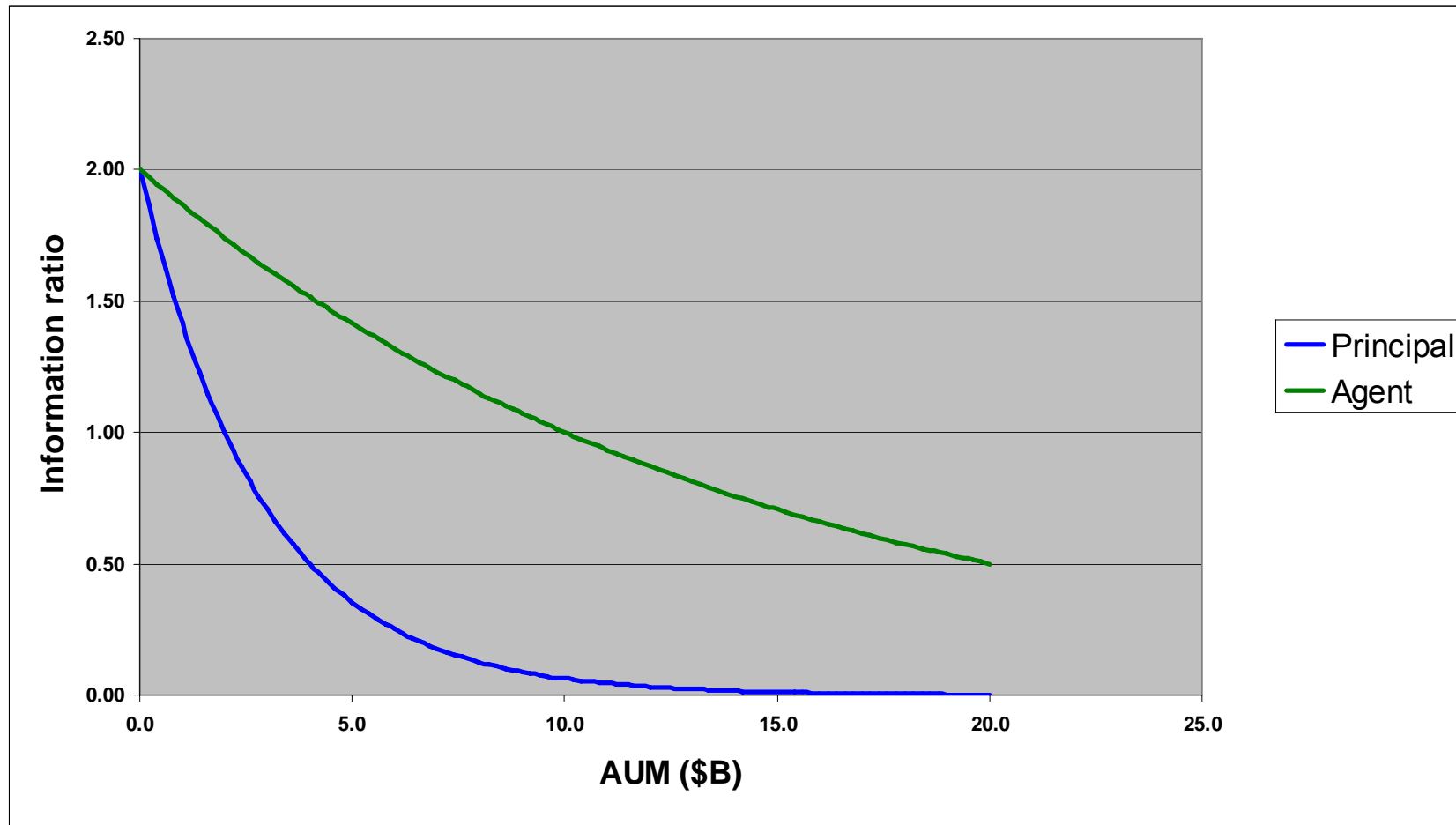
Assume

- $IR(0) = 2.0$
- IR halves for each additional \$10B of AUM
- Spread is 1.5% above cash benchmark

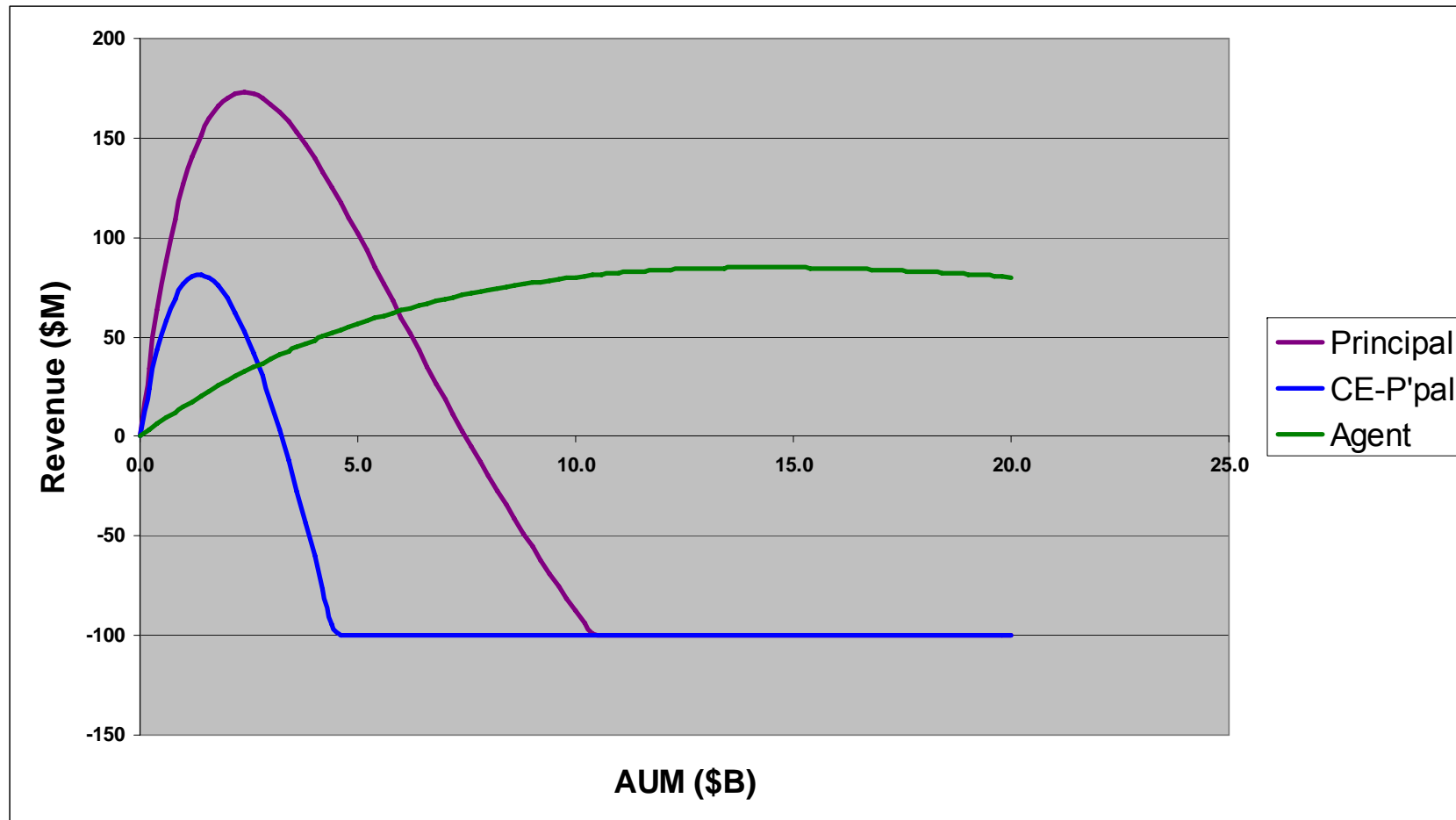
Outcomes

- Optimal A, ω for Agency business when $CR=40\%$ is \$14.4B and 2.0%pa
- Optimal A, ω for Principal business is \$1.4B and 10.0%pa
- $CR = 40\%$ equates risk-adjusted revenue for the two business models

Example: Investment Process



Example: Equilibrium when CR=40%



Conclusions

- Mean-variance models are just as relevant for analysis of industry organisation issues (ie corporate strategy) as they are for financial economics
- Despite the simplicity of the model used here, the outcomes are both qualitatively and quantitatively sensible
- The minimum capture ratio acceptable to intellectual capital is circa 40%. If an investment manager does not achieve this from its clients, the intellectual capital will disperse.

Corollary

- CR can be improved by increasing fees, **or** by expanding AUM at the existing fee level until alpha falls sufficiently!
- Optimal AUM is where the elasticity of expected alpha to change in AUM is -1. This can be thought of as the **business** definition of capacity.
- For long-only portfolios, this level of AUM will possibly be much greater than the **usual** definition of capacity, based on promised alpha. This is because the typical empirical value of elasticity, at AUM consistent with promised alpha, is much lower than you might think.

Example: Alpha Elasticity

