HOUSES, HORSES, AND HALLS OF LEARNING: DO FINANCIAL INCENTIVES MATTER?

Glenn Boyle

Executive Director, NZ Institute for the Study of Competition and Regulation
THE ISSUE

The predicted effect of financial incentives on human behavior is a sharp theoretical dividing line between economics and psychology. (Colin Camerer & Robin Hogarth)

ECONOMICS
Incentives are the essence of economics. (Candice Prendergast)

Most of economics can be summarized in four words: People respond to incentives. The rest is commentary. (Steven Landsburg)

PSYCHOLOGY
Money is not a motivator. (I)ndividuals who are committed to excellence are particularly unlikely to respond to financial incentives. (Alfie Kohn)
THE EVIDENCE

• Evidence on power of financial incentives in work/employment situations primarily relates to simple/manual tasks where performance is measured by quantity.
  - financial incentives matter.

• But what about quality-oriented tasks of so-called ‘experts’? Intrinsic motivation and ‘professional pride’ seem likely to be more important here.

• Laboratory evidence suggests financial incentives have little or no effect on performance quality.
FOUR QUESTIONS

1. Do experts exploit situations that allow them to extract rents from clients?

2. Can self-interested reputational concerns discipline expert behaviour?

3. Do experts put more ‘effort’ into tasks offering greater financial gain?

4. If you pay peanuts, do you get monkeys for experts?
QUESTION 1

Do experts exploit situations that allow them to extract rents from clients?
REAL ESTATE AGENT-CLIENT RELATIONSHIP

Net marginal return to agent is about 1.5%

Suppose additional effort by agent would yield extra $10,000 in price. Opportunity cost to agent is $200, so has incentive not to expend extra effort.

But would do if also the owner.

Compare sales prices of client- and agent-owned houses
DATA

- 100,000 home sales in Illinois 1992-2002 (Levitt & Syverson, 2005)
- Collected information on home characteristics, location, marketing strategy, agent experience etc
RESULTS

After controlling for house characteristics etc

- On average, agent-owned houses sell for 3.7% more than client-owned houses in Illinois

- On average, agent-owned houses sell for 4.5% more than client-owned houses in Texas

Economically Plausible

- For the median house, premium corresponds to $7700 in Illinois and $6000 in Texas.
CONCLUSION ON QUESTION 1

• Real estate agents obtain higher prices for own houses than for otherwise-equivalent client-owned houses.

• Apparently an example of a response to financial incentives that disadvantages clients - cannot rely on ‘professional pride’ for discipline.
QUESTION 2

Can self-interested reputational concerns discipline experts?

*It is maddening that society confers its blessings on traditional academic pursuits but views the study of horseracing as utter frivolity.*

(Andrew Beyer)
SETTING

• RACEHORSE OWNER-TRAINER RELATIONSHIP
  Client-owned: trainers receives fixed daily fee + 10% of winnings
  Trainer-owned: trainers receive 100% of winnings

• Tradeoff between short- and long-run – REPUTATION

• Compare performance of client- and trainer-owned horses
DATA

• Every harness horse that raced in NZ at least once during 1997-98 and 2002-03 seasons

• 1997-98: 4087 horses, 27451 horse-races, and 984 trainers
  2002-03: 3861 horses, 27126 horse-races, and 852 trainers

• Tracked performance, ownership and training details of every horse over entire season

• Also collected info on horse and trainer characteristics.
PERFORMANCE MEASURES

consistency ratio = \frac{9 \times \text{number of firsts} + 5 \times \text{number of seconds} + 3 \times \text{number of thirds}}{9 \times \text{Number of races during season}}

earnings ratio = \frac{\text{Stake earnings during the season}}{\text{Sum of winning stakes from all races during season}}
## RESULTS

### A. Uncontrolled

<table>
<thead>
<tr>
<th></th>
<th>Trainer-Owned</th>
<th>Client-Owned</th>
<th>Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistency Ratio</td>
<td>0.120</td>
<td>0.162</td>
<td>***</td>
</tr>
<tr>
<td>Earnings Ratio</td>
<td>0.095</td>
<td>0.126</td>
<td>***</td>
</tr>
</tbody>
</table>

### B. Controlled for horse and trainer characteristics

<table>
<thead>
<tr>
<th></th>
<th>Trainer-Owned</th>
<th>Client-Owned</th>
<th>Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistency Ratio</td>
<td>0.136</td>
<td>0.155</td>
<td>***</td>
</tr>
<tr>
<td>Earnings Ratio</td>
<td>0.109</td>
<td>0.124</td>
<td>***</td>
</tr>
</tbody>
</table>
WHAT DOES THIS HAVE TO DO WITH REPUTATION?

- Similar results with age/license proxies for reputation importance.
ECONOMIC INTERPRETATION

• Mean performance of client-owned horses is approximately 12% better than that of trainer-owned horses.

• Every $10K earned by typical horse when trainer-owned becomes $11220 when client-owned.

• But all ownership ‘action’ occurs in stables with strong reputational incentives.

• Every $10K won by typical client-owned horse in small stable (weak reputation incentives) becomes $13400 in large stable (strong reputation incentives).
CONCLUSION ON QUESTION 2

• On average, client-owned horses do better than trainer-owned horses

• But this advantage is apparent only in stables with strong reputational incentives

• The ability of long-term reputational incentives to discipline agents cannot simply be dismissed as a theoretical curiosity

• Most labour markets aren’t allowed to work as efficiently as that for horse trainers.
QUESTION 3

Do experts put more ‘effort’ into tasks offering greater financial gain?

• Or does ‘professional pride’ motivate them to treat all clients equally?

• Particularly germane to money managers, lawyers etc, but data not available.
• **STAY AT THE RACETRACK**

Some horses race for much higher stakes than others

Trainers have incentive to devote extra effort to horses in high-stakes races.

Compare trainer effort/performance in high-stakes races with that in low-stakes races.
HOW CAN TRAINER EFFORT BE OBSERVED OR INFERRED?

• Punters set odds using available information.

• Can observe horse, trainer, driver quality etc, but don’t know how much effort stable has put in.

• If significant variation in trainer effort, then odds will be noisy estimate of true probabilities.

• High stakes races - all trainers put in optimal effort.

• So would see lower dividends on average in high-stakes races
DATA

• 30,450 harness races in NZ between 1993 and 2006.

• Collected information on:
  Race stake
  Race dividends - win, quinella, trifecta
  Race characteristics - field size, track surface &
  condition, dispatch method, distance
**RESULTS**

*(including controls for field size and race ‘unpredictability’)*

<table>
<thead>
<tr>
<th>STAKE PERCENTILE</th>
<th>20th</th>
<th>80th</th>
<th>20% higher stake</th>
</tr>
</thead>
<tbody>
<tr>
<td>WIN</td>
<td>$6.00</td>
<td>$5.65</td>
<td>-1.6%</td>
</tr>
<tr>
<td>QUINELLA</td>
<td>$23.45</td>
<td>$22.00</td>
<td>-2.0%</td>
</tr>
<tr>
<td>TRIFECTA</td>
<td>$342.50</td>
<td>$313.45</td>
<td>-2.8%</td>
</tr>
</tbody>
</table>

*(races for experienced horses only)*

| WIN               | $6.30 | $5.90 | -2.0%            |
| QUINELLA          | $25.60| $23.90| -2.2%            |
| TRIFECTA          | $391.55| $352.40| -3.2%          |

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CONCLUSION ON QUESTION 3

• Market odds a better predictor of outcomes when stakes are high.

• Suggests that there is less ‘inside information’ to be utilised in high stakes races.

• Consistent with experts choosing to prioritise high-payoff tasks.
QUESTION 4

If you pay peanuts, do you get monkeys for experts?

⇒  

?
THE GENERAL IDEA

• NZ academic pay depends only on rank, not on discipline

If a university went ahead and paid equally, lowering economists' pay and raising French professors' pay, it would have a great French staff and a dreadful bunch of economists.
(Hamermesh, 2004, p180)

If peanuts beget monkeys, then the disciplines that are most ‘underpaid’ should have the weakest research performance on average.
IDENTIFYING PEANUTS & MONKEYS

Monkeys (PBRF)
- Average Quality Score
  - arithmetical average of discipline-researcher scores
- Proportion of R grades
  - ‘prevalence of monkeys’ in discipline

Peanuts
- Available proxy: US discipline-specific academic salaries

‘Underpayment’ = average US salary - average NZ salary
**SOME SIMPLE NUMBERS: I**

<table>
<thead>
<tr>
<th>DISCIPLINE CHARACTERISTIC</th>
<th>MEAN</th>
<th>MAX</th>
<th>MIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Quality Score</td>
<td>2.79</td>
<td>4.74</td>
<td>0.34</td>
</tr>
<tr>
<td>Proportion of ‘R’ grades</td>
<td>0.36</td>
<td>0.87</td>
<td>0.08</td>
</tr>
<tr>
<td>‘Underpayment’</td>
<td>$20,910</td>
<td>$90520</td>
<td>-$340</td>
</tr>
</tbody>
</table>
### SOME SIMPLE NUMBERS: II

#### Top-5 Average Quality Score

<table>
<thead>
<tr>
<th>Discipline</th>
<th>‘Underpayment’ ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philosophy</td>
<td>36</td>
</tr>
<tr>
<td>Anthropology and Archaeology</td>
<td>35</td>
</tr>
<tr>
<td>Earth Sciences</td>
<td>23</td>
</tr>
<tr>
<td>Ecology, Evolution and Behaviour</td>
<td>21</td>
</tr>
<tr>
<td>Biomedical</td>
<td>14</td>
</tr>
</tbody>
</table>
## SOME SIMPLE NUMBERS: III

### 5 Most Underpaid

<table>
<thead>
<tr>
<th>Discipline</th>
<th>AQS ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting &amp; Finance</td>
<td>34</td>
</tr>
<tr>
<td>Management etc</td>
<td>31</td>
</tr>
<tr>
<td>Law</td>
<td>20</td>
</tr>
<tr>
<td>Marketing and Tourism</td>
<td>30</td>
</tr>
<tr>
<td>Computer Science etc</td>
<td>26</td>
</tr>
</tbody>
</table>
• Moving from most to least underpaid decile predicts a rise in average quality score of about 0.73 points, approximately 27% of the sample mean.
RESULTS: II
(controlling for other determinants of research performance)

- Moving from least to most underpaid decile predicts a 14 percentage point increase in the number of ‘R’ grades, approximately 39% of the sample mean
MONKEY ECONOMICS?

• Part-time workers
• New researcher bias
• Workload
• “Teaching matters too!”
• ‘Monkey-mimicking’ behaviour
CONCLUSION 4

- The greater a discipline's average salary in US universities, the weaker its research performance in NZ universities.

- NZ universities apparently get what they pay for: disciplines in which compensation is high relative to opportunity cost are best able to recruit high-quality researchers.

- Paying (relative) peanuts attracts mainly monkeys.
FINAL REMARKS

- Experts respond to financial incentives!
- Quality of performance is money-sensitive.
- But unknown whether this can be successfully exploited
  - decrease intrinsic motivation
  - unforeseen consequences, e.g., ‘multitasking’