Sorting, Reputation and Entry in a Market for Experts

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This paper provides new insights on the workings of the market for professional (expert) services.

Experts are typically motivated by reputational concerns as contracts contingent on the quality of the service are often unfeasible.

In such markets clients usually have a differential valuation for the service.

Heterogenous clients may find it optimal to sort into experts of different quality who are motivated by reputational concerns.

This paper shows that sorting of clients can have important effects on the incentives of experts motivated by reputational concerns.

Examples: Doctors, Advocates, Consultants
Sorting of clients impact on incentives of experts.
Three channels are identified

1. sorting affects the balance between the demand and the supply of services for experts of that reputation, and thus may impact on the premium that clients pay in equilibrium to be served by more reputable experts. “fees channel”

2. sorting of clients may influence the informativeness of a success as a signal of talent. “signalling channel”. Example: winning a complex trial.

3. the premium for being successful may increase, but the likelihood of being successful may be reduced. “toughness channel”. Winning a complex trial may be tough.
In this framework, entry can have important effects on experts’ incentives.

As more experts enter the market, sorting of clients is modified and this in turn impacts incentives.
Sketch of the Model

Overlapping generation model with a continuum of experts of measure 1, and continuum of clients of measure $M > 1$.

Experts live for two periods and are characterized by different reputation levels ($\equiv$ probability of being talented). Denote this as $\lambda$. True ability is symmetrically unknown.

Clients are characterized by a parameter $\theta$, representing how they value the service. It may also signal the “toughness” of providing the service successfully.

There is a set of types $\Theta = [\underline{\theta}, \bar{\theta}]$ where $0 < \underline{\theta} < \bar{\theta}$. I assume client’s type is private information, while the distribution of types is common knowledge.
Timing

Each period a cohort of experts and clients drawn from the same distribution replaces those who exit the market, so that the distribution is stationary.

Clients observe the distribution of experts and bid for their services.

Then, they get served, until there are idle experts. If some clients cannot be served, they get an outside option of zero.

When clients are matched to experts, the latter exert effort and provide the service, whose outcome is observed by the market which updates beliefs about experts’ reputation.

Then clients exit the market and the period ends. The fee can be paid up-front, or after the service has been provided, but it cannot be made contingent on the observed outcome.
Service generates a high or low outcome depending upon the talent and effort choice of the expert, and in some cases, also upon the intrinsic quality of the client.

Talented experts, by exerting effort $e$ can raise the chances of providing a high quality service. The cost of effort is a function $c(e)$ where $c_{ee} > 0$, so that the cost of effort is strictly convex.

Untalented experts generate a good quality outcome with a fixed probability independently of effort and of the quality of the client.

Preferences of clients satisfy single crossing over talent and effort.
Players payo\footnote{Experts: $F_t - c(e_t) + \delta EW(\lambda_{t+1})$ where $F$ is the fee for the service they offer, $c(e)$ is cost of effort ($c$ is a continuous and convex function), and $EW(\lambda)$ is the expected continuation payoff, function of future beliefs about the expert’s talent. In particular, it can shown that FOCs are $
abla c(e_{t}) = \lambda[F_{t+1}(success) - F_{t+1}(failure)]$

Clients: $V_t(\lambda, \theta, e) - F_t$ obtain expected value $V_t(\lambda, \theta, e)$ from the service and pay the fee $F_t.$}
Equilibrium concept is Perfect Bayesian Equilibrium. Focus on equilibria with positive effort.

**Lemma** Experts exert zero effort in their last period, while they can exert positive effort in their first period.

**Proposition 1.** In equilibrium, the set of clients is partitioned in four subsets. Clients of type $\theta \in [\theta^*, \bar{\theta}]$ are served by experts of reputation $\lambda^+$, clients of type $\theta \in [\theta^{**}, \theta^*]$ are served by experts of reputation $\lambda$, clients of type $\theta \in [\theta^{***}, \theta^{**}]$ are served by experts of reputation $\lambda^-$. Finally, clients of type $\theta \in [\underline{\theta}, \theta^{***}]$ do not get served. The thresholds separating the three subsets satisfy $\theta^{***} < \theta^{**} < \theta^*$, Fees are function of $\lambda, \theta, e$ and are such that clients have no incentives to deviate.
Experts

\[ \lambda^+ \quad \lambda \quad \lambda^- \quad 1 \]

Clients

\[ \theta \quad \theta^* \quad \theta^{**} \quad \theta^{***} \quad \theta \]

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Proposition 2 Entry modifies the sorting behaviour of clients both in the current and in the future period. This impacts on the premium that clients are willing to pay to be served by the most reputable experts in a way that unambiguously reduces incentives to exert effort.
Period $t+1$
Equilibrium - Clients’ type affects probability of success

\[
\Pr(\text{success} \mid \text{talented}, \theta) = k(\theta)
\]

while

\[
\Pr(\text{success} \mid \text{not talented}, \theta) = z(\theta)
\]

where \( \frac{\partial k}{\partial \theta} > 0 \) and \( \frac{\partial z}{\partial \theta} \leq 0 \).

I firstly assume that clients sorting only induces a change in the informativeness of success as a signal of talent, but not the total probability of a success. In this case, as shown above,

\[
z(E(\theta \mid \lambda)) = -\frac{\lambda_t k(E(\theta \mid \lambda))}{1 - \lambda_t}
\]
**Proposition 4** When the informativeness of success depends upon the type of clients, and the total probability of success is not affected by sorting of clients, entry reduces the incentives to exert effort, both through the change in equilibrium fees, and through a reduction in the learning process about experts’ talent.

However, when the total probability of a success can change, it is possible to prove the following

**Propositions 5 & 6** When the clients’ type affects the likelihood the service is provided successfully, entry may increase the incentives to exert effort.
Policy Implications

Entry may still raise social welfare, even if standard of service is reduced.

Positive role of league tables: can preserve the rents from getting a reputation while keeping positive welfare effect of larger entry.

This is a partial equilibrium model. Entry may increase measure of clients. Next steps: add a second sector, add a step in which experts acquire education (this affects the prior probability $\lambda$ they are talented.)
Related Literature


Experts (Dulleck and Kerschbamer 2006 review literature)


Competition and Incentives (Schmidt 1997, Raith 2003)
Sorting can affect incentives in 3 ways: 1) through a change in the equilibrium fees, \((fees\ channel)\); 2) by affecting the informativeness of a successful provision of the service by the expert \((signalling\ channel)\); 3) if the type of the client affects the likelihood an expert succeeds, facing “tougher” types could reduce the total probability of success \((toughness\ channel)\).

Entry modifies sorting behaviour of clients and affects incentives through these 3 channels. When the \(fees\) and the \(signalling\) channels are at work, entry reduces the incentives to exert effort. However, when also the \(toughness\ channel\) is present, entry can increase the incentives to exert effort.