



## Profit sharing and market structure <sup>☆</sup>

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### ARTICLE INFO

#### Article history:

Received 27 August 2013

Received in revised form 24 January 2015

Accepted 25 January 2015

Available online 30 January 2015

#### JEL classification:

D01

D21

L14

L22

L23

#### Keywords:

Partnerships

Companies

Equal sharing

Professional services

### ABSTRACT

We study how agents decide between working for firms with profit sharing and firms in which pay is based on individual productivity. Profit sharing has the disadvantages of free riding and adverse selection. The benefit of profit sharing is that it makes easier for agents to signal their productivity. We show that in equilibrium skilled agents are more likely to belong to profit sharing organizations. The analysis provides a framework for understanding the market structure of industries like law, accounting and consulting services in which both profit-sharing partnerships and “eat-what-you-kill” firms co-exist and compete with each other.

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### 1. Introduction

In professional services and services in general, some firms share output among its members, and others divide output according to each member's production. For example, some law firms are lockstep seniority partnerships in which the compensation to each partner depends on seniority only, whereas other “eat what you kill” firms compensate their members according to the revenues they generate.<sup>1</sup> In some restaurants, the waiters keep the tips they receive for themselves, and in others, they divide tips equally. The decision on whether compensation should be more like lockstep seniority partnerships or eat-what-you-kill companies affects firms in two ways. First, it affects agents' incentives to exert effort, and second, it affects firms' ability to

recruit and keep workers in the organization. Sharing agreements reduce the effort agents exert because such agreements create a free-riding problem. Sharing agreements also makes it difficult for the firm to recruit skilled agents that are reluctant to share with less productive partners. In spite of these problems, sharing partnerships remain the prevailing organizational form in some professional services industries. The aim of this paper is to understand how the market addresses these two problems and to characterize the conditions under which sharing partnerships emerge.

Although there is an extensive economics literature on the free riding problem, the economics literature on partnership dissolution has focused more how partners should divide assets after dissolution (see for example Crampton et al., 1987), rather than understanding how organizational form may affect the firm's ability to recruit and keep workers in the firm. This issue has received more attention among law and strategy scholars. For example, in an often cited paper Gilson and Mnookin (1985) discuss sharing partnerships, and describe them as unstable because the most productive partners have incentives to leave partnerships. They describe a practice in partnerships called the “hit-list”, where a productive partner threatens to leave the partnership unless the firm approves a list of demands, which includes firing a list of partners. The authors state, “*The clearly observable fact is that partnership split ups occur with increasing frequency .... Still more puzzling is the fact that several of the most successful large firms, including Cravath, Swaine & Moore and Cleary, Gottlieb, Steen & Hamilton, remain committed to a “lockstep” seniority-based system and appear to be more profitable than*

<sup>☆</sup> I would like to thank the editor and two referees, Luis Garicano, Jordi Blanes, Alvaro Bustos, Marco Ottaviani and Daniel Spulber for helpful comments. I gratefully acknowledge financial support from the Instituto Milenio SCI Project No. P05-004F and from FONDECYT grant No. 11140525.

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<sup>1</sup> The co-existence of these two types of organizations in the law industry has been discussed by academics and law practitioners. For example Garth (2006) writes “While eat-what-you-kill is the prevailing approach in the U.S., some of the most elite American law firms, including Cleary Gottlieb Steen & Hamilton, Cravath Swaine & Moore, Davis Polk & Wardwell, and Wachtell, Lipton, Rosen & Katz, use lock-step compensation. Partners are paid strictly according to seniority”. A famous case of an American law firm using an eat-what you kill compensation scheme was Rogers & Wells, a firm that had difficulties in its merger with London Based Clifford Chance, arguably because the latter had an equal sharing agreement (The Economist, 2000).

ever.” They go on to explain: “These examples pose the problem directly: Why are some prosperous and large firms able to divide the pie according to a sharing bargain that appears to be at odds to the self interest of the most productive partners. What curtails grabbing and leaving?”.

This paper provides an economic explanation for the existence of sharing agreements in an industry. We develop a model where agents can get together and form a partnership, sharing profits (as would be the case in a lockstep seniority-based partnership), or they can decide to work for a company or market maker in which compensation is productivity based.<sup>2</sup> When agents join a firm, they consider that production will depend on the incentives the firm provides. Therefore, firms’ ability to recruit will not be independent of the chosen compensation scheme.

Our main findings are that partnerships will exist in industries with low economies of scale and in which agents have career concerns or care about their reputation. We show that agents with more skills have more incentives to belong to partnerships and we also confirm that in general, partnerships unravel from the top. In equilibrium, the industry will consist of the most skilled agents forming consecutive partnership, where best partnerships have more incentives to be bigger. Less skilled agents will choose to work for companies.

The main idea is that partnerships face two problems; moral hazard in teams and the instability created by the fact that the more skilled agents have to share with the less skilled ones. The benefit of partnerships is that they enable agents to more easily acquire reputation. The incentives created by career concerns partially alleviate moral hazard in teams, but these incentives are weaker for less productive agents. We show that reputation concerns make agents more homogeneous with regard to their production, which partially solves the problem of instability due to heterogeneity. Again this effect is particularly true for the most productive workers. As a result, skilled agents will form partnerships because career concerns alleviate free riding and stability problems in partnership’s for them. Less skilled agents cannot overcome free riding and the instability of partnerships, and will join eat-what-you-kill firms.

Finally, the paper shows that as economies of scale become more important, partnerships are forced to increase their size by recruiting more members. The most skilled agents in partnerships might not be willing to share with the new less productive partners, and will leave the partnership. This makes partnerships unravel from the top. We show that the best partnerships are the last to unravel in this fashion.

The results presented on the paper depend on three main assumptions i) there is more sharing in partnerships than companies, ii) agents care about their reputations and iii) customers can observe individual performance and the agent’s affiliation. Although these are strong assumptions we believe they apply to professional services such as law, consulting and auditing where partnerships are often observed.

The paper is related to two branches of literature. The first branch follows the seminal paper by Holmstrom (1982) that shows that if a team needs to divide the output, partners exert less effort than optimal. Other authors have shown conditions under which the free-rider problem becomes less severe, or conditions under which the benefits of sharing outweigh the costs. Among the former, we can cite Legros and Matthews (1993), Kandel and Lazear (1992), Battaglini (2006), and Miller (1997). Among the latter, Morrison and Wilhelm (2005) study incentives for mentoring, and Garicano and Santos (2004) show that profit sharing provides incentives to refer problems to the best experts.

The second branch of the literature focuses on understanding how partnerships form and under which conditions this formation is efficient. Most notably, Farrell and Scotchmer (1988) study the efficiency of partnerships’ formation under complete information, and Levin and Tadelis (2005) study the same problem when product quality is

imperfectly observed. These papers do not consider the incentives-for-production problem.

The analysis is different from the literature that compares the efficiency of joint versus individual performance evaluation, because partnerships have no principals and the partners themselves decide how to divide the profits. It is also different because the compensation scheme the partnership chooses affects agents’ incentives to join partnerships, and therefore also the composition of its members. In practice, partnerships could also decide to share only a fraction of the profits, becoming an intermediate form of organization. For the results in this paper to hold, it is necessary to assume that partnerships have more sharing than companies, therefore making it cheaper for agents’ to signal their quality. We focus on equal sharing to highlight the sharing nature of partnerships and to simplify the analysis.

The paper is specially related to Levin and Tadelis (2005); however, important differences exist between the two papers. The most fundamental difference is that their paper does not include incentives for production, whereas in ours, incentives play a central role in the partnership’s formation. Another important difference is that we focus our analysis on a market equilibrium whereby each agent seeks to maximize its own utility, and organizations compete in the labor market, whereas their paper focuses on a monopolic firm that maximizes profit.

## 2. The model

The economy is composed of *agents* that produce a good or service and *customers* who buy the good from agents. Agents are heterogeneous with respect to their skill level  $\eta$ . We assume that agents can costlessly observe other agents’ skill level.

Customers are on the long side of the economy and are willing to pay 1 dollar per unit of the good. Customers can only observe the agent’s level of production and the type of organization to which agents belong, but not their skill level  $\eta$ . The assumption that customers can observe agent’s production and affiliation apply to professional services such as law or consulting where agents have high visibility.<sup>3</sup>

### 2.1. Agents

Agents’ production depends on their skills and the level of effort they exert according to the following technology:

$$q = \eta + a \quad (1)$$

where  $q$  is production,  $\eta$  is the agent’s skill distributed uniformly in the unit interval, and  $a$  represents the level of effort. Effort is exerted at an increasing and convex cost  $c(a)$ . We use the notation  $c'(a)$  to represent the marginal cost of effort. This structure implies that the marginal cost of producing any quantity of the good is decreasing in the individual skill level  $\eta$ .

Agents care about the payment they receive and also about the market beliefs about their skills. If an agent receives  $m$  dollars and exerts effort  $a$ , her utility is given by

$$u = m - c(a) + LE(\eta|q, j), \quad (2)$$

where  $L$  is a measure of the agent’s reputation concern and  $E(\eta|q, j)$  is the customer’s expectation of the agent’s skills, updated after observing production  $q$  and the kind of organization to which the agent belongs ( $j$ ).

Agents might care about their reputation for several reasons. For example, it might give them the possibility of having access to other jobs that require high-level skills or in which output is not contractible (become a consultant, a member of a board, or the head of a hospital).

<sup>2</sup> This is equivalent to an eat-what-you-kill compensation scheme.

<sup>3</sup> As one referee pointed out, the assumption that individual production can be observed differs this paper from the teams’ literature.

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