



Transparency in agency: The constant elasticity case and extensions[☆]



Anthony M. Marino

Marshall School of Business, University of Southern California, Los Angeles, CA 90089-0804, United States

ARTICLE INFO

Article history:

Received 28 December 2012
 Received in revised form 4 November 2013
 Accepted 21 December 2013
 Available online 29 December 2013

JEL classification:

L2

Keywords:

Information
 Disclosure
 Non-disclosure

ABSTRACT

This paper considers a hidden action agency problem where the principal has a single source of hidden information concerning the agent's utility, the agent's effort productivity, or the agent's cost of effort. We examine whether the principal should precommit to disclosing these different single sources of information to the agent. If the optimal contract is invariant over the hidden information and, thus, the disclosure rules (constant elasticity case), such disclosure increases the agent's utility, it can raise or lower profit and total surplus depending on the source of hidden information, and non-disclosure can be optimal if disclosure affects the agent's motivation. If the contract varies with the hidden information and, thus, disclosure rule, disclosure or non-disclosure can be optimal depending on whether the party's payoff is convex or concave in the information variable, respectively.

© 2013 Elsevier B.V. All rights reserved.

1. Introduction

In this paper, we examine transparency in an agency relationship. We concentrate on incentives for a principal to reveal different types of private information about an agent to that agent in an organizational setting. That is, should different sources of private information, possessed by the principal, result in different prescriptions regarding disclosure versus non-disclosure of that information to the agent?

In many agency situations, the principal may possess or acquire information about agents or about the organizational environment surrounding agents that can be hidden at the principal's discretion. An interesting question then arises. Under what circumstances, in terms of the type of information, should the principal precommit to divulge that information to agents? If it is optimal for the principal to disclose in terms of profit, will disclosure also be optimal for the agent in terms of utility? If there are divergent welfare effects of disclosure, what is the net effect on welfare? In a given class of hidden action agency problems, this paper will address these questions. We will show that under certain conditions, disclosure is not the best strategy for a principal. In addition, we will extend and apply our results to the case where information revelation by the principal can affect the agent's motivation which can in turn impact welfare.¹

We consider a principal who has hidden information which might come from three different sources, where each source is modeled as a multiplicative shift parameter, namely, information which affects the agent's firm specific productivity in the generation of cash flow (pure technological information), the agent's firm specific cost of effort (difficulty of the job), or the agent's firm specific gross utility of cash flow (fit). Our model considers a simple two outcome hidden action agency problem with an endogenously optimal agency contract. Letting $a \cdot p(\text{effort})$ represent the agent's probability of the high outcome, hidden productivity or technological information is given by the variable a . This is the case where a principal may be better at judging the efficiency of the agent's effort in a task, because the principal, unlike the agent, has previously done the task or has observed others perform it.² The second two sources of hidden information involve the agent's utility, given by $\gamma \cdot u(\text{wage}) - c \cdot \tilde{c}(\text{effort})$, where u is the utility of income, \tilde{c} is the cost of effort, γ is hidden information regarding the utility of income, and c is hidden information regarding effort cost. Hidden information on effort cost, c , arises where the principal has better information on how difficult it will be for the agent to accomplish a task. An example is the sales situation where a sales supervisor knows more about the difficulty in selling to a particular client, because of better personal experience or because of the benefit of past observation of others attempting to sell to this customer. Hidden information about the utility level of the agent resulting from consuming cash flow earned and working in the organization, γ , is motivated by a very old and large management literature on person–environment fit. See Kristof-Brown et al. (2005) for references and a review of this literature.

[☆] Thanks go to Heikki Rantakari, Ricardo Alonso and Odilon Camara. The author also thanks the Marshall School of Business for the generous research support and two anonymous referees and the editor for their insightful comments.

E-mail address: amarino@usc.edu.

¹ An increase in motivation is modeled as a decrease in the agent's cost of effort.

² These same points are made in Benabou and Tirole (2003).

Person–environment fit refers to the congruence between the agent's characteristics and the characteristics of the job and the organization. Characteristics of the job and the organization include corporate culture, characteristics of co-workers (e.g., personalities and values), characteristics of supervisors (e.g., personalities, degree of delegation, management style, and values), details of the job (precise description of day to day duties and responsibilities), and, possibly, the agent's relative firm specific ability in the organization.³ Characteristics of the individual include values, psychological needs, ability, and personality. Because the firm clearly knows the characteristics of the job and organization better than the employee and because the interview and hiring process makes the characteristics of the employee known to the firm, it is reasonable to assume that the firm better knows fit (congruence) than does the employee. Better fit is seen to provide the agent greater utility or benefit, assuming that monetary compensation is fixed. Given that better person–environment fit has to do with a better feeling of well-being on the job, we model this as a positive gross utility shift factor. While hidden information on γ and c might at first sight seem interchangeable, they are not and each has different implications for disclosure.⁴

Our base model assumes that the principal and the agent are risk neutral and that the agent has limited liability. Initially, we design a framework which makes the principal's incentive payment independent of the hidden information variable which in turn makes the incentive payment independent of the disclosure rule. This allows us to isolate the effects of disclosure alone. That is, although the principal is informed of the agent's type when choosing the optimal contract, the contract will not depend on agent type nor on the timing of information revelation (pre- versus post-contract) to the principal.⁵ This isolation is achieved by using constant elasticity functions for the cost of effort and the probability of a high cash flow. Such functions are a subset of the class of functions which make the principal's optimal contract independent of the principal's hidden information. Consequently, the agent will not be able to draw an inference about his type through the contract, when non-disclosure is used. We also assume that the principal can credibly precommit to disclose or not disclose hidden information, and that full as opposed to partial disclosure is used.⁶ The use of constant elasticity functions is common in the agency literature, and many real world disclosure policies in fact fall into the categories of either full disclosure or non-disclosure. This form also allows a convenient parameterization of the degree of concavity or convexity of cash flow production and effort cost. In a final section, we generalize the model in several directions and discuss how the results change with the introduction of general cost of effort and probability of high cash flow functions, risk aversion and a general distribution function for the hidden information variable. We show that the results of the constant elasticity case can be overturned, when the optimal contract varies with the hidden information variable and, thus, the disclosure rule.

The key factor determining whether disclosure or non-disclosure is optimal for an individual is whether that party's equilibrium payoff function is convex or concave in the hidden information variable. Convexity in the hidden information variable implies that disclosure is best and concavity implies that non-disclosure is optimal. Generally, the source of hidden information (productivity, utility of cash, or cost of effort) can affect the curvature of an equilibrium payoff function in the information variable directly and indirectly through the optimal contract.

³ The relative status variable studied in Marino and Ozbas (2012) falls into the category of hidden information about utility, in this more general setting. An agent knows his own ability but not his ranking in abilities within the organization. The latter typically matters to the agent.

⁴ The fact that asymmetric information regarding benefits versus costs can have different implications for welfare was pointed out by Weitzman (1974) in his classic planning paper.

⁵ That is, the optimal contract will then also not depend on whether the principal knows the agent's type before or after the contract is constructed.

⁶ We do not consider the case where the principal sends the agent an imperfect signal of type.

The constant elasticity version of the model isolates the direct effects of the source of hidden information, as it eliminates contract changes as a function of the hidden information variable. We show that for this version of the model, the agent's payoff is convex in the information variable for each of the single source of hidden information considered (a , γ , or c), such that disclosure by the principal increases the agent's utility in equilibrium. Given that the contract does not change across disclosure rules, the disclosure of information allows the agent to better condition effort and this results in increased rewards. The principal's payoff is also convex in the information variable if the single source of hidden information is productivity or cost of effort (a or c), so that again disclosure is optimal and it increases total surplus. However, with hidden information on utility, the principal's payoff is concave or convex in the information variable γ depending on the magnitudes of the (constant) elasticities of the probability of success and the cost of effort. When the principal's production circumstances are “unfavorable” in the sense that the elasticity of cash flow with respect to effort is small and/or the elasticity of effort cost with respect to effort is large, then the principal's equilibrium profit is concave in the information variable, non-disclosure is optimal for the principal, and non-disclosure may be optimal in terms of total surplus. The reason why hidden information about utility produces a different result is that, with an unfavorable situation, the agent's effort is an increasing and concave or weakly convex power function of the information variable γ . The principal's payoff is a positive fractional power function of effort (due to diminishing returns), thereby, leading to concavity of profit in γ . However, with hidden information on the cost of effort, the agent's effort is a convex negative power function of c . Profit is again a positive fractional power function of effort, making profit a convex negative power function of c . With hidden information on productivity, effort is a positive power function of a and profit is the product of the productivity index a^1 and a positive power function of effort. Thus, profit becomes a power function of a with power greater than unity. That is, the productivity parameter is internalized by both the agent and the principal, inducing convexity of the principal's payoff in a . When we extend and apply the constant elasticity model to the case where the agent's motivation (effort cost) can vary depending on the state of the world, so as to create two sources of hidden information, we show again that unfavorable production circumstances can lead to situations where non-disclosure is optimal.

Unfavorability says that the cash flow production process is very concave in effort and/or the cost of effort is very convex in effort. In the generalized version of the model considered in the last section of the paper, we find that, when we extend from the constant elasticity version of the model, the contract optimally depends on the hidden information and varies with the disclosure rule. Here, both the agent and the principal can benefit from non-disclosure when these conditions on diminishing returns to effort in production and rising marginal cost of effort are met. Such conditions can lead to concavity of the principal's equilibrium profit or the agent's equilibrium utility in the hidden information variable, depending on the source of hidden information, implying that non-disclosure is optimal.

Section 2 reviews the related literature. Section 3 presents the constant elasticity model and outlines the three types of hidden information. Section 3.1 focuses on hidden information regarding the agent's utility, and Section 3.2 considers the cases of hidden information on the agent's effort cost and on the productivity of the agent's effort. Section 3.3 applies and generalizes our analysis of the constant elasticity model to the case where information disclosure can affect the agent's motivation. Section 4 discusses a generalization of the constant elasticity model. Section 5 concludes.

2. Related literature

The theoretical economics literature on disclosure includes a discussion of the rationales for non-transparency in politics, in delegated

Download English Version:

<https://daneshyari.com/en/article/5077998>

Download Persian Version:

<https://daneshyari.com/article/5077998>

[Daneshyari.com](https://daneshyari.com)