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Pro Bono Work and Trust in Expert Fields

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Pro Bono Work and Trust in Expert Fields

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Pro Bono Work and Trust in Expert Fields

Abstract

A controversy has been simmering in law for at least 30 years about whether pro bono work should be mandatory for lawyers, who now donate 1-3% of their time to the poor. This has centered on the unmet legal needs of the poor, the duty of lawyers, and the contrast with US doctors, who are conspicuous in their tradition of voluntary pro bono work. In 2003 alone, they donated \$12 billion of labor amounting to 5-10% of their time. This debate has tended to neglect the credence good aspect of the services of experts (e.g., of doctors, lawyers, and accountants), and the role that voluntary pro bono work might play. Expert services have unverifiable quality to non-experts and are subject to moral hazard. Experts who cheat their customers should crowd out experts who do not, resulting in low trust, prestige, and wages. We ask how pro bono work might promote trust in expert fields. We introduce incomplete information into a psychological game theoretic model of experts who value the esteem from their customers. In our model, pro bono work arises in equilibrium because experts who value the perception of honesty among their customers more are also more willing to give away labor to the poor to signal their honesty. We show that if the aversion to disappointing this esteem is sufficiently high, there is a unique equilibrium in which their wages are high, they do pro bono work, and experts who would have been dishonest are crowded out of the field. Our novel approach involving psychological factors suggests that while mandatory pro bono could redistribute surplus from experts to the poor, it could also undermine the screening effect of pro bono work, and thus, cause a deterioration in service quality.

JEL-Code: C720, L300, M500.

Keywords: psychological games, guilt, honor, experts, credence goods.

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1 Introduction

A controversy has been simmering in law for at least 30 years about whether pro bono work should be mandatory for lawyers (see the 44,000 google hits for "mandatory pro bono work"), who donate 1-3% of their time to the poor (Rhode (2005))¹. There are a few articles by legal scholars on the controversy, but this debate tends to focus on the needs of the poor and the duty of lawyers (Critchlow (1990), Macey (1991), Lubet and Stewart (1997), Rhode (1998), Maute (2002), Cummings (2004), Dreyer (2008), Schmedemann (2008), Colbert (2010)). They often contrast the pro bono work of US lawyers with that of US doctors, who are conspicuous in their tradition of voluntary pro bono work. In 2003 alone, US doctors donated \$12 billion of labor amounting to 5-10% of their time (Rhode (2005))². As a consequence of the perceived deficit, New York State in 2012 required lawyers to do at least 50 hrs of pro bono work as a condition for bar admission³. Many other states require reporting of pro bono work⁴. 24 law schools require approximately 50 hrs before graduation⁵. This debate has tended to neglect the credence good aspect of the services of experts (e.g., of doctors, lawyers, and accountants), and the role that voluntary pro bono work might play. Expert services have unverifiable quality to non-experts and are subject to moral hazard. (See Dulleck and Kerschbamer (2006), which captured many of the main results in this literature in a simple model.) Experts who cheat their customers should crowd out those who do not, lowering the prestige, trust, effectiveness and wages of practitioners. Yet, in the US, doctors (and lawyers to a lower degree) are highly trusted, enjoy high prestige and are highly paid (Hauser and Warren (2008)).

In this paper, we ask how (voluntary) pro bono work might arise to promote trust in credence goods markets like medical and legal services. We model experts in credence goods markets as having belief preferences, e.g., care about their customers' perceptions of their honesty. We show that pro bono work can be supported in equilibrium because individual experts who value the esteem of their customers more are less likely to disappoint the trust implied by that esteem, and also, are more willing to give away labor to third parties to signal their honesty. Under some parameter conditions, there is a unique equilibrium where pro bono work signals the quality of their service, their wages are high,

¹More recent estimates are available at links here: http://en.wikipedia.org/wiki/Pro_bono
Using the 2013 ABA survey "Supporting Justice III, A Report on the Pro Bono Work of America's Lawyers", we calculated that the average pro bono hours for US lawyers was between 24-45 hrs per year.

²Part of the reason for the contrast in the amount of pro bono work between lawyers and doctors could be due to the kind of services they provide, e.g., tax or corporate lawyers skills are not very valuable to poor people. Rhode (2005) also reports that what was recorded as pro bono work was often merely unbilled work to create goodwill with favored clients. On the other hand, there is evidence that pro bono work is decreasing even among doctors Cunningham and May (2006).

³<http://www.nytimes.com/2012/05/02/nyregion/new-lawYERS-in-new-YORK-to-be-required-to-do-some-work-free.html>

⁴<http://apps.americanbar.org/legalservices/probono/reporting/pbreporting.cfm>

⁵http://apps.americanbar.org/legalservices/probono/lawschools/pb_programs_chart.html

and experts who would have been dishonest are crowded out of the field. We also show that there will not be pro bono work if all types of experts would be honest or if all types would be dishonest.

Our main contribution is to the theoretical literature on psychological games by modeling guilt based reciprocity in the context of asymmetric information interacted with another belief preference, the desire for esteem in the form of "honor", which can be understood for now as the belief of experts that they are believed to be honest. Our secondary contribution is to the empirical and experimental literatures on self-selection into jobs by intrinsic motivation and social preferences. We show how the stylized facts of this literature can arise endogenously due to sorting by belief preferences. Our novel approach involving psychological factors suggests that while mandatory pro bono could redistribute surplus from experts to the poor, it could also undermine the screening effect of pro bono work, and thus, cause a deterioration in service quality. We address the issues surrounding mandatory pro bono work after the formal results.

Certainly, ours is one of several feasible approaches to explain pro bono work. Pro bono work might be attributed to professional norms (Arrow (1963)) or identity preferences (Akerlof and Kranton (2000)), or to altruism (Chalkley and Malcomson (1998); Biglaiser and Ma (2007)). We agree that many doctors act on altruistic motivations in their pro bono work. However, economists often prefer, and explore for an *endogenous* explanation, if it is convincing, assuming that guilt driven reciprocity is not directly linked to pro bono work per se. We offer such an alternative.

That pro bono work could be motivated by more than pure altruism is suggested by Gruber and Rodriguez (2007), for example. They show that the majority of US physicians earned a higher net margin from their uninsured patients, making up their losses from recipients of pro bono work from higher margins from charging others the list price of services, than their insured, when the heavily discounted fees of the insured is used as a benchmark for the loss from pro bono work.

Before going further into the related literature, we first note some stylized facts about medicine and pro bono work. Due to the inability of non-doctors to judge quality, reputation may not have a strong effect on quality in the market for medical services. For this reason, competition may not lower price or increase quality. When common candidates like reputation and competition cannot help, we may well look towards charity motivated labor as one substitute. (See Elfenbein et al. (2012), for example, for evidence that charity can be a substitute for reputation.)

There is an established literature on job based charitable activities through unpaid overtime and sorting into the public by intrinsic motivation. To our knowledge, this literature has focused upon self-selection by non-belief social preferences into the public sector. Dur and Zoutenbier (2013) showed that charitable individuals will select into the public sector if they feel they would be working for a good cause by doing so. Higher education increases this propensity (Dur and Zoutenbier (2013)). Of particular importance to medicine is the possibility that people might sort into public sector jobs to serve and to feel

important to others (Brekke and Nyborg (2010)).

Complementing this literature, Tonin and Vlassopoulos (2013) show that social incentives increased productivity in an online real effort experiment. However, Fehrler and Kosfeld (2014) found in a lab experiment that relatively few subjects can be motivated by work missions. Therefore, both increased effort due to pro social preferences and self-selection by pro social preferences could be important for explaining empirical findings of lower wages and higher motivation in mission-oriented organizations.

On the other hand, though both Jacobsen et al. (2011) and Kolstad and Lindkvist (2013) found that nurses are more generous than real estate agents, in a giving situation, Jacobsen et al. (2011) also found that nurses are more likely to *self-select out* of such situations. This suggests that pro social behavior may not be simply the result of altruistic preferences. Costly exiting from a giving situation is consistent with guilt based reciprocity, where people *behave* altruistically towards others in order to avoid a personal psychological cost of not meeting the expectations of those others.

Indeed, the insights from the psychological game theory literature initiated by Battigalli and Dufwenberg (2009), who modeled guilt as disappointment aversion, and which were subsequently tested experimentally in Charness and Dufwenberg (2006), have already been applied to the credence goods market in lab experiments by Dulleck and Kerschbamer (2006), Dulleck et al. (2009), Beck et al. (2010), and Dulleck et al. (2011). They showed that laboratory subjects in the role of experts do often provide suitable service to other laboratory subjects in the role of consumers, especially if the experts create the expectation that they would provide better service through a promise to do so.

Promises are one way of endogenously increasing the expectations for good service. Since promises themselves are cheap talk, the only effect they could have is on beliefs. The fact that people make them in the credence goods market experiments suggests that such individuals may want to change the beliefs of others, and by implication that the beliefs of others may matter to them in their service decision. The above laboratory experiments also found variations in the levels of promise making and guilt driven reciprocity. While this variation could certainly be due to noise, we think it is more likely that people can be of different levels of "conscientiousness" or "scrupulousness" in meeting the expectations of others. We also see no reason to suppose that promises are the only way of endogenously increasing expectations. Observable charitable activities themselves could signal different degrees of belief preferences, and therefore, different dispositions to satisfy expectations.

In making the case that pro bono work could serve as a signal of such dispositions, we note that, though pro bono work is also a form of job based charity, it is to third parties. Furthermore, to the best of our knowledge, pro bono work in medicine is concentrated among poor customers. This is important because charity to the poor cannot be construed as a form of marketing to them, e.g., as a loss leader, or involve repeated game incentives. Furthermore, due to the credence goods problem for medical services, cash donations to the poor may not be a good substitute for donated labor for signaling concern for the poor. Thus,

the pro bono work of doctors to the poor can be a tenable signal of nonmonetary preferences to their customers. In particular, differences in the level of pro bono work could signal differences in the relative importance of belief preferences of doctors (though, as acknowledged above, pro bono work may be carried out for other reasons than to signal belief preferences, e.g., such as altruism). Next, we discuss the evidence for differences in such preferences to be signaled.

There is tentative experimental evidence for the possibility of heterogeneous sensitivity to disappointing expectations already. Fong et al. (2007) showed theoretically and experimentally how guilt might induce reciprocation in a gift exchange game in the context of asymmetric information, where the giver did not know the value of an exogenously assigned gift. Most intriguingly, they found a separating equilibrium where subjects who were givers figured out the value of their gift based upon the observed amount of reciprocation by receiver subjects. Heterogeneity in the sensitivity to guilt opens the way for sorting by such sensitivity, and therefore, by the propensity to meet the trusting expectations of others for reciprocation in the form of good service, even when service quality is *unobservable*.

We now seek to show how these expectations for good service (when quality is unobservable) could themselves be a source of utility because of the implied esteem. To our knowledge, there is not much coverage on the utility experts might derive from these beliefs of others, nor on how these beliefs might affect their motivation to self-select into a profession, nor how these beliefs might interact with beliefs that keep experts honest once they are in the profession. We develop the intuitions for these belief preferences and interactions in stages.

Tadelis (2011) introduced a formal model of "shame" into the economics literature, adapting the notion from the psychology literature (Tangney and Dearing (2003)) and the model of guilt from Battigalli and Dufwenberg (2009), and tested it in an experiment. In contrast to guilt, shame is an aversion to being believed to be the type who betrays trust, rather than an aversion to betraying trust. To build up to the interaction between guilt and shame, we note from the psychology literature, that guilt and shame aversion have been found to have a correlation of 0.5 (Tangney and Dearing (2003)).

We introduce the concept of "honor" which we conceive of as the mirror concept to shame. This makes honor related to prior work on the reputation motivation for charitable activities. Andreoni and Petrie (2004), Soetevent (2005) and Ariely et al. (2009) showed that public observability increased pro-social behavior. Benabou and Tirole (2011) and Ellingsen and Johannesson (2008) summarize prior experimental and empirical work on the value of esteem. With this concept of honor, we develop the conceptual basis of how honor can sort for guilt.

There is recent evidence that people may sort out of the shame conferring beliefs of others. Abeler et al. (2014)'s field experiment on lying found that some people lied in a *payoff minimizing* way when primed by a questionnaire about their beliefs about others lying in a *payoff maximizing* way. A signifi-

cant correlation was found between these beliefs and the payoff minimizing lie⁶. Presumably some subjects lied to avoid the shame from the *appearance* of lying for the sake of increasing payoffs. This confirms the finding in Utikal and Fischbacher (2013), which showed that nuns, but not students, also lied in a payoff minimizing way in the sender receiver game. The contrast between nuns and student controls also suggest the possibility of heterogeneity in the desire for esteem.

We see an analogy between lying for the sake of appearing to tell the truth and doing pro bono work to look more honorable. Both are ways of sorting into the better beliefs of others. In the first case, subjects are *observably* reporting a payoff minimizing outcome to dispel the appearance of *unobservably* lying. In the second case, experts are *observably* sacrificing income to avoid the appearance of *unobservably* cheating customers. Doing pro bono work confers honor in the separating equilibrium in our model because all those who do it are also being honest in that equilibrium.

Furthermore, *observable* charitable activities can increase esteem conferring beliefs *about unobservable good service*. There is already some experimental evidence for charitable activities increasing trust. Fehrler and Przepiorka (2013) show that donating money to a nongovernmental organization increases the perception of trustworthiness of donors, resulting in higher transfers to those donors in a simple trust game. Elfenbein et al. (2012)'s finding that charity could be a substitute for reputation is consistent with the possibility that charity could affect beliefs. Thus, when experts are averse to disappointing trusting beliefs, the increased trust from pro bono work could feedback into more honest behavior and self-selection.

The possibility of self-selection is important because the increased trust inspired by pro bono work is a kind of public good among all those who do it. Next, we show how experts can screen out those who might want to free ride by doing pro bono work, but unobservably cheating their customers.

Pro bono work effectively is a self chosen wage cut. Handy and Katz (1998), Besley and Ghatak (2008), Delfgaauw and Dur (2007), (2008), (2010), and Heyes (2005) model how jobs and wages can screen for motivation. If people get utility from beliefs about their trustworthiness, then some of this lost wages can be made up for by the increased belief utility. The implied trust could deter cheating among some experts if those expert's aversion to betraying trust is strong enough. At the same time, costly signals of trustworthiness in the credence goods market could actually increase wages by inducing those who would cheat to leave the market. The combination of increased esteem and increased wages could sufficiently compensate an expert with higher sensitivity to beliefs for the extra cost of providing good service, even if he were to give away some of that extra wage.

⁶This correlation becomes insignificant when they asked subjects to flip a coin multiple times. However, the decrease in significance could be due to a lower likelihood of "all tails" (tails pay, heads do not) when there are more tosses. For example, subjects who would have been embarrassed truthfully reporting a tail in a single toss and earning 20 Euros may not be embarrassed to truthfully report 3 tails in 4 tosses and earning 16 Euros.

2 Model

2.1 Players

To make our theory as accessible as possible to a broad audience, we embed the psychological incentives we posit into a simple two player game. Where possible, we sidestep technical issues and refer the more mathematically sophisticated reader interested in more general developments to Attanasi et al. (2013).

Player 1 can be interpreted as the expert (she). Player 2 can be interpreted as the consumer (he). Player 1 cares about the beliefs of Player 2 and money. There are two types of Player 1: $\theta \in \Theta = \{h, l\}$ representing the degrees to which Player 1 cares about the beliefs of Player 2. More details about belief preferences are shown below. Player 2 receives surplus v from the services of Player 1, provided Player 1 incurs a cost of effort c .

2.2 Actions

First, Nature selects randomly Player 1's type $\theta \in \Theta = \{h, l\}$ to be h with probability p_θ . Then, each type of Player 1 simultaneously decides to

1. either enter (E) the expert field to face Player 2 or to stay out (O) and get wage \hat{w} the outside option.
2. be honest ($x_\theta = H$) at cost $c(H) = c$ or to cheat ($x_\theta = C$) at zero cost, after entry, unobservably to Player 2.
3. and to choose an observable⁷ amount of pro bono work $b_\theta \geq 0$ that is identical with its cost and a wage $w_\theta \geq 0$ Player 2 is to pay in case of service. Note that Player 2 is not the beneficiary of the pro bono work.

Then, Player 2 can accept the service of Player 1 at the observation of the wage w and the pro bono level b or reject $z(b, w) \in \{A, R\}$, based upon beliefs about Player 1's type and predicted level of honesty.

Player 2 has beliefs:

1. $\mu(b)$ about facing the h type of Player 1 conditional on observing b .
2. φ_h is the second order belief of Player 1 about the first order belief of Player 2 of the level of honesty of the h type of Player 1. φ_l is same but for the l type of Player 1.

⁷We model pro bono work as fully observable to consumers to avoid unnecessarily complicating the analysis, though it is likely to be only partially observable in real life. The following story (courtesy Eric Posner) offers a great illustration, "...my son's allergy doctor had a very prominent display in his waiting room which showed how he spent one day a week driving his van through a poor neighborhood and providing free consultations. It certainly made us feel good! Interestingly, the allergy doctor was someone we chose; by contrast, we had much less [enthusiastic] choice over the primary care physician who didn't bother with such displays." In general, patients may learn about physicians' pro bono work from "[free] clinic days" on which they are unavailable for appointments. We elaborate on this in the discussion later.

Separate beliefs for each type (φ_h and φ_l) allow beliefs to be consistent with possibly heterogeneous behaviors from heterogeneous sensitivities to beliefs of the different types of Player 1.

2.3 Payoffs

We assume Player 2 will accept any offer from which he receives a non-negative surplus given his beliefs, i.e., if $E(v|b) \geq w$. By Player 1's rationality, backward induction leads to $w = E(v|b)$ in any equilibrium. For brevity, we will treat w as given in subsequent analyses. Player 1's payoff from the expert field if Player 2 accepts his offer is given by her wage w_θ minus her cost $c(x_\theta)$ of her action x_θ plus her *felt honor* $\eta_\theta \varphi(b_\theta)$ in entering the expert field minus the cost of her pro bono work b_θ plus her possibly *guilty feeling* $\gamma_\theta [I_H(x_\theta) - \varphi_\theta]^-$ at disappointing the expectation of Player 2, for each $\theta \in \{h, l\}$. Note, for arbitrary term X , $X^- = X$ if $X < 0$, $X = 0$ if $X \geq 0$. The profit function of Player 1 is

$$\Pi_\theta = w_\theta - c(x_\theta) + \eta_\theta \varphi(b_\theta) - b_\theta + \gamma_\theta [I_H(x_\theta) - \varphi_\theta]^-. \quad (1)$$

Here, $\eta_h > \eta_l > 0$ represents Player 1's type's sensitivities to $\varphi(b)$. $\varphi(b)$ is the type weighted average belief of Player 1's second order beliefs about Player 2's first order beliefs about the rate of honesty of each type h and l of Player 1, conditional upon Player 2's observing pro bono work b by Player 1. Formally, this is

$$\varphi(b) = \mu(b)\varphi_h + (1 - \mu(b))\varphi_l. \quad (2)$$

For convenience, we will further assume that the cost is between the guilt sensitivities of the two types of Player 1's: $\gamma_h > c > \gamma_l$.

Here, γ_θ represents Player 1's sensitivity to disappointing the expectation in honest behavior in θ and the discrepancy between the behavior that θ knows was expected of her and her actual behavior $[I_H(x_\theta) - \varphi_\theta]^-$, where $I_H(x_\theta) = \{1 \text{ if } x_\theta = H \text{ and } 0 \text{ otherwise}\}$ ⁸. We restrict this term to negative values so that it cannot lose its interpretation as disappointment aversion.

Figure 1 further illustrates the game structure discussed here.

Insert Figure 1 here.

2.4 Equilibrium

We use the Psychological Sequential Equilibrium concept from Battigalli and Dufwenberg (2009) to analyze our model. As with the standard Perfect Bayesian Equilibrium, beliefs are Bayesian where possible and players maximize utility given beliefs. However, in a Psychological Sequential Equilibrium, beliefs are interpreted as entering into utility directly. The first result is a characterization of the separating equilibrium where only the high sensitivity type enters the expert field.

⁸We have a lot of notation and only a few suitable letters. We apologize for any awkward usage and welcome suggestions.

Proposition 1 *The following strategy profile with associated beliefs is a fully separating equilibrium where only type h chose E to enter the expert field, does pro bono work b_h^* and is honest $x_h^* = H$, if $\eta_h \geq c + \eta_l$ and beliefs are consistent.*

1. Player 1: $((E, x_h^* = H, b_h^* > 0), (O, x_l^* = C, b_l^* = 0))$.
2. Player 2: $z(b) = A$ if $b \geq b_h^*$ (and $w(b_h^*) = \hat{w} + c$) and $z(b) = R$ otherwise.
In addition, $\varphi(b) = 1$ if $b \geq b_h^*$ and $\varphi(b) = 0$ otherwise.

Proof. Suppose h goes into expert field and l does not. This requires that h receives her outside option \hat{w} from the monetary and psychological benefits of after entry, while l does not.

$$w_h - c(x_h) + \eta_h \varphi(b) - b_h + \gamma_h [I_H(x_h) - \varphi_h]^- > \hat{w} > w_l - c(x_l) + \eta_l \varphi(b) - b_l + \gamma_l [I_H(x_l) - \varphi_l]^- . \quad (3)$$

We need to specify what l would have done had she entered. The conditional wages that Player 2 would accept from Player 1 in this equilibrium are

$$w(b) = \begin{cases} \hat{w} + c & \text{if } b = b^* \\ 0 & \text{if } b \neq b^* \end{cases} . \quad (4)$$

We want to show under what conditions would l always stay out. l would not enter and give up her outside option if she were to get a zero wage. If Player 2 were to accept a non-zero wage for Player 1's services, Player 1 would have to do $b_l = b^*$ pro bono work. Suppose l does $b_l = b^*$ pro bono work. Then, Player 2 cannot infer the type of Player 1 before accepting the wages offered. The wages will then be the same:

$$w_h = w_l = \hat{w} + c. \quad (5)$$

Substituting w_h and w_l into our separation condition yields

$$\hat{w} - c(x_h) + \eta_h \varphi(b) - b_h + \gamma_h [I_H(x_h) - \varphi_h]^- > \hat{w} > \hat{w} - c(x_l) + \eta_l \varphi(b) - b_l + \gamma_l [I_H(x_l) - \varphi_l]^- . \quad (6)$$

In this separating equilibrium, l type cheats so she keeps c , while h does not and incurs cost c . (6) now becomes

$$\eta_h \varphi(b_l) - b_h + \gamma_h [I_H(x_h) - \varphi_h]^- > 0 > c + \eta_l \varphi(b_l) - b_l + \gamma_l [I_H(x_l) - \varphi_l]^- . \quad (7)$$

By the equilibrium requirement that beliefs are consistent with actions, neither h nor l suffer guilt in this equilibrium. h is honest as $\gamma_h > c$ and is expected to be honest as $\varphi_h = 1$. l would neither have been since $\gamma_l < c$, nor was expected to have been honest since $\varphi_l = 0$. We can thus simplify (7) further:

$$\eta_h \varphi(b_h) - b_h > 0 > c + \eta_l \varphi(b_l) - b_l. \quad (8)$$

In this case, the minimum pro bono work b_h by h that would keep l out has to be greater than l 's profit from cheating c and l 's psychological benefit from

sharing in the honor of being thought honest n_l , should l do pro bono work. Succinctly, that means

$$\eta_h > b_h = b_l \geq c + \eta_l. \quad (9)$$

If this condition is met, then for no level of pro bono work would l enter. For simplicity, we specify for the off equilibrium path where l entered, that she would have done $b_l = 0$ pro bono work. Beliefs are consistent:

$$\mu(b) = \begin{cases} 1 & \text{if } b = b^* \\ 0 & \text{if } b \neq b^* \end{cases}, \varphi_h = 1, \varphi_l = 0, \varphi(b) = \begin{cases} 1 & \text{if } b = b^* \\ 0 & \text{if } b \neq b^* \end{cases}. \quad (10)$$

■

These incentives can be seen graphically in Figure 2.

Insert Figure 2 here.

For the psychological part of the surplus in this separating equilibrium, all who enter the expert field do pro bono work $b = 1$. It is believed that all who do pro bono work are honest $\varphi(b) = 1$. The h type $\eta_l \cdot 1$ receives $\eta_h \cdot 1$ in honor payoff, which gives her a positive surplus even when she chooses to incur the cost of being honest $-c(x = H) = -c$. Her guilt sensitivity γ_H is too high to not incur this cost, given that her type is expected to be honest $\varphi_H = 1$ in $\gamma_\theta[I_H(x_\theta) - \varphi_\theta]^-$. The l type would get $\eta_l \cdot 1$ if she entered and did pro bono work. However, if she did pro bono work, she would get less than her outside option \hat{w} . She does no better when she doesn't do pro bono work.

In other words, experts who are more sensitive to beliefs of patients, and who have the requisite honor and guilt sensitivities can screen out experts who do not have the requisite sensitivities, and who would have been dishonest. By doing so, the h type of expert have raised both their nominal and their actual wages, as well as their psychological surplus from being believed to be honest. Consumers enjoy a higher level of service. The poor also benefit from pro bono work.

If however, the conditions for full separation are not met, at least one type could cheat, though both types of experts could still do pro bono work in order to meet the consumer's requirement to pay a non-zero wage. Next, we characterize the associated pooling equilibrium.

Proposition 2 *There exists pooling equilibria where both types of Player 1 go into the expert field, both do pro bono work $b_h^* = b_l^* = b^*$, only l cheats, and beliefs are consistent. More formally, we have in the following strategy profile,*

1. $((E, x_h^* = H, b_h^* = b^*), (E, x_l^* = C, b_l^* = b^*))$.
2. $z(b) = A$ if $b \geq b^*$ (and $w(b^*) = E(v|b^*) = (\hat{w} + c)p_h$) and $z(b) = R$.
3. $\varphi(b) = p_h$ if $b \geq b^*$ and $\varphi(b) = 0$.

Proof. Both entering the expert field requires that both get at least their outside options,

$$w_h - c(x) + \eta_h \varphi(b_h) - b_h + \gamma_h [I_H(x_h) - \varphi_h]^- > \hat{w} \quad (11)$$

and

$$w_l - c(x) + \eta_l \varphi(b_l) - b_l + \gamma_l [I_H(x_l) - \varphi_l]^- > \hat{w}. \quad (12)$$

Both enter and get the same wage: $w_h = w_l = \hat{w} + c$. Again, neither suffers guilt in equilibrium. h is expected to be honest $\varphi_h = 1$ and is because $\gamma_h > c$. l is not expected to be $\varphi_l = 0$ and is not $\gamma_l < c$. Simplifying by dropping the guilt term,

$$\eta_h \varphi(b_h) - b_h > 0, c + \eta_l \varphi(b_l) - b_l > 0. \quad (13)$$

h is honest because $\gamma_h > c$. Therefore, $\varphi_h = 1$. l cheats because $\gamma_l < c$. Therefore, $\varphi_l = 0$. Hence, $\varphi = p_h$. Thus, a necessary condition for the equilibrium is:

$$\eta_h p_h - b_h > 0, c + \eta_l p_h - b_l > 0. \quad (14)$$

For the equilibrium b^* , beliefs are consistent:

$$\mu(b) = \begin{cases} p_h & \text{if } b = b^* \\ 0 & \text{if } b \neq b^* \end{cases}, \varphi_h = 1, \varphi_l = 0, \varphi(b) = \begin{cases} p_h & \text{if } b = b^* \\ 0 & \text{if } b \neq b^* \end{cases}. \quad (15)$$

This is equilibrium if wage is equal to expected value of service:

$$w(b) = \begin{cases} (\hat{w} + c)p_h & \text{if } b = b^* \\ 0 & \text{if } b \neq b^* \end{cases}. \quad (16)$$

■

As with other signaling games, the pooling equilibrium here depends upon the off equilibrium beliefs about observed deviations. Such beliefs may not be credible when the prior on h , the honor and guilt sensitivities of h , and the cost of cheating are within the following range in equation (17)

$$\eta_h \cdot 1 - b'_h + (\hat{w} + c) > \eta_h \cdot p_h - b_h^* + (\hat{w} + c)p_h > 0. \quad (17)$$

Under these conditions, Player 2, upon observing a higher than equilibrium level of pro bono work $b'_h > b_h^*$, should infer that he is facing the h type – the only type that *could benefit* from such a deviation – if Player 2 were to respond appropriately by accepting. Then, h 's deviation to b'_h would be rational. Such pooling equilibria would fail the intuitive criterion (Cho and Kreps (1987)). In effect, this condition implies that Player 2 is willing to accept both higher wages and give greater honor to those who do $b'_h > b_h^*$ pro bono work, meaning that only the separating equilibrium is sensible in this case. This is formally characterized below.

Proposition 3 *If the game parameters that supported the pooling equilibrium could also have supported a separating equilibrium while (17) is valid, this pooling equilibrium necessarily fails the intuitive criterion.*

Proof. Condition (17) becomes the following marginal condition under which the h type gains from separating with the higher level signal.

$$(\eta_h + \hat{w} + c)(1 - p_h) > (b'_h - b_h^*). \quad (18)$$

Then the beliefs supporting the pooling equilibrium would fail the intuitive criterion. Recall that the beliefs were

$$\mu(b) = \begin{cases} p_h & \text{if } b = b^* \\ 0 & \text{if } b \neq b^* \end{cases}, \varphi_h = 1, \varphi_l = 0, \varphi(b) = \begin{cases} p_h & \text{if } b = b^* \\ 0 & \text{if } b \neq b^* \end{cases}. \quad (19)$$

The h type could gain $(\eta_h + \hat{w} + c)(1 - p_h)$ at cost $(b'_h - b_h^*)$ by separating. Observing b'_h Player 2 should think; The only type that could gain from b'_h would be h who is being honest. Hence, Player 1 should believe that Player 2 should believe that only the honest h type would choose b'_h . Separation would be achieved once condition (9) $b'_h = \eta_l + c$, the condition for pro bono work to be separating, is met. ■

Intuitively, in the pooling equilibrium characterized in Proposition 3, Player 2 knows that the type of Player 1 who is more sensitive to beliefs is being honest, but does not know which type he faces because both types are doing pro bono work. When, however, Player 2 observes a deviation to increased pro bono work, he should ask which type *can* benefit from such a deviation. That has to be the type who has a higher value for esteem in the pooling equilibrium. For that type, if the marginal benefit of being believed to be more honest is greater than the marginal cost of more pro bono work, then a deviation to higher pro bono work is rational for that type, and Player 2 should respond likewise.

Note that $b'_h = \eta_l + c$ is fixed by parameters and that the wage enters into the upper bound of the marginal condition implying that a wage ceiling at the pooling equilibrium wage would restrict the separating equilibrium.

The above Proposition 3 also applies if neither was doing pro bono work $b_h^* = b_l^* = 0$. Then, given the same marginal conditions are met, the h type would also want to deviate to greater pro bono work. These incentives of a pooling equilibrium are illustrated in Figure 3.

Insert Figure 3 here.

Corollary 4 *If neither or both cheat, then neither would do pro bono work. Pro bono work would be dominated.*

Proof. If neither cheats, then by the consistency condition of the equilibrium, $\varphi = 1$ even if $b_h^* = b_l^* = 0$. If both cheat then by the consistency condition of the equilibrium, $\varphi = 0$ no matter what the value of b . ■

3 Discussion

We have shown that charitable activities to third parties can promote trust in expert fields where experts care about the beliefs of others about whether they

themselves are trustworthy and are averse to disappointing those expectations. To do this, we presented a highly stylized model which synthesizes and interacts two kind of belief based preferences in order to endogenously arrive at the behavior consistent with intrinsic motivation. However, admittedly, medicine in the US is a special market due to the intensity of interaction that medical experts have with patients, the importance of their service and the rigor with which they are selected for psychological motivations in US medical schools⁹. We do not see great challenges in testing this model in the lab using the sort of setup in Dulleck et al. (2011). A first step in testing this model in the field could be to measure the guilt and shame sensitivities of medical students and doctors with the TOSCA-3, a standard measure for those sensitivities from psychology (Tangney and Dearing (2003)), and comparing them to the general population, students and professionals in other fields in the US. One could also test whether and how much guilt and shame sensitivities might explain pro bono work in medicine and law within the US. Cross country comparison of doctor salaries, trust and pro bono work could also be done. We do not claim that the incentives which we have suggested can contribute to incentives to be honest in medicine would exist or be of sufficient strength in other fields. However, the welfare improvement would still be significant should psychological incentives ameliorate the expert problem in medicine in the US and other countries.

With regards to the welfare effects of mandatory pro bono work, our model is limited by a crucial assumption that observers believe experts productivity merit the pre pro bono work wage rate. In that case, pro bono work can signal the expert's nonmonetary preferences. It is then easy to show that mandatory pro bono work will have no effect on the separating equilibrium in our model. Mandatory pro bono work would only take away some of the expert's surplus. A wage ceiling would have similar effects. However, if the mandatory pro bono work were to cast doubt that the expert would have merited the higher wages pre pro bono work, then entering the field may no longer signal nonmonetary incentives. The psychological incentives to not cheat, which we have posited, would be lost.

In this respect, our work is obliquely related to the literature on motivational crowding out, where one recent experiment demonstrated that charging a penalty encouraged the undersirable behavior (Gneezy and Rustichini (2000)). Here, not only could enforcing the separating equilibrium level of pro bono work undermine the possibility of signaling nonmonetary preferences, but mandatory pro bono work may even send the message that policy makers believed that most experts would have had insufficient nonmonetary incentives to do pro bono work. Such a belief could shame all those who enter the field. In either case, we speculate, lower ability people will enter into the field, possibly crowding out higher ability people. Thus, our findings motivate the further study of voluntary pro bono work by suggesting that it may support efficiency in the market for experts services.

⁹See for example, <http://www.startmedicine.com/app/volunteer.asp>
<http://www.startmedicine.com/app/answers.asp?T=Volunteer&DH=14>
<http://www.princetonreview.com/medical/beyond-the-numbers.aspx>

The closest to our current work is Ong (2011), which combined shame and guilt in an incomplete information setting to model the effect of third party gifts to experts (as opposed to gifts to third parties from experts modeled here) to counteract possible moral hazard to the third party and to create moral hazard for the experts' patients (e.g., gifts from drug firm representatives to doctors). In our current work, the expert gives pro bono work to third parties in order to signal the absence of the moral hazard to their customers, because these experts care about their customers beliefs.

We took the guilt based reciprocity literature as one of our starting points and showed that if people are disappointment averse and their sensitivities vary within a certain range, we can get our results. We do not address the question of whether people are disappointment averse and their sensitivities vary, though we pointed to evidence of heterogeneity in the literature, particularly, Fong et al. (2007), who induced different sensitivity types as a part of their treatments and found a separating equilibrium. However, we only need their experiment as an example.

We have assumed that the level of the pro bono work of the specific expert that the consumer faces is observable to the consumer. This seems reasonable because, to our knowledge, doctors who do pro bono work have "clinic days", blocks of time during the week on which they were always unavailable for appointments¹⁰. This fact would be made known to patients/clients by their assistants should they try to make an appointment at those times. Though this seems a likely and straightforward mechanism by which consumers of expert services may know of the expert's pro bono work, this should nonetheless be established through empirical studies. Given that consumers are aware of the expert's pro bono work, an important test of our theory is whether consumer's trust and willingness to pay is correlated with their perceptions of the level of pro bono work. There is some preliminary evidence that doctors income is positively related to their level of pro bono work, provided that they do pro bono work (Wright (2010)). However, whether pro bono work increases income or increased income increases pro bono work is yet to be established. Gruber and Rodriguez (2007)'s finding that the majority of physicians make a larger net margin from the uninsured than the insured also suggests the further need to model how pro bono work affects pricing for both insured and uninsured patients.

It is important to note that we do not have honest or dishonest types of doctors. We have doctors who are more or less sensitive to the beliefs of patients as to their honesty. In the equilibria we studied, the less sensitive doctors did not have the belief based incentives to be honest. Therefore, by consistency, they will not be believed to be honest. That relieves them of guilt. The key difference between a pooling and separating equilibrium is that pro bono work

¹⁰See for example <http://nycfreeclinic.med.nyu.edu/information-for-patients/health-resources/health-resources-manhattan>

For more general characteristics of such clinics, see Darnell (2010). For more details on physician involvement in pro bono work including the division of hours among different specialties, see Salinsky (2004).

is a signal of honesty in a separating equilibrium. In both equilibria, the less sensitive doctor is being dishonest.

Variations to the current model are well conceivable. Doctors could also have lower costs for either treating patients or pro bono work, both reflecting higher intrinsic motivation, or there could be an exogenous correlation between both. Currently, the highly sensitive type of doctor receives extra utility by having patients believe that they are being honest. However, one could perhaps just as well have the high type doctors experience a utility loss if their patients believe that they were being dishonest. As far as we can tell, this would only change how we modeled the doctor's option outside from medicine. Right now, in the separating and pooling equilibria, the doctor receives extra belief surplus from being in medicine. If she can only get negative belief surplus in medicine in equilibrium, we would have to change the value of the outside option.

This analysis could probably be extended beyond the binary decisions of being honest or not to where the less guilt sensitive doctors are doing less work than might be expected, as apparently suggested by a referee. This extension could be more natural but we are not sure what else can be gained.

4 Conclusion

To summarize, there has been substantial prior work into three streams of literatures: self-selection into public sector jobs by social preferences, belief based reciprocity, and credence goods markets. However, to our knowledge, no work has addressed self-selection into professional services/credence goods markets by social preferences, nor the interaction between belief preferences that induce entry or exit (shame) and beliefs preferences that affect services (guilt). Prior works have studied how lower wages may induce self-selection. However, expert wages are endogenously lowered in our model in order to induce possible cheaters into selecting out. Charitable activity has not been conceived to crowd out possible cheaters by those who care more about esteem and are more guilt averse.

In this paper, we have shown how donated labor can screen for dishonesty in professional services markets when experts seek honor in entering a field and are sufficiently averse to disappointing the expectations implied by the honor. Furthermore, within a certain range of belief sensitivities, there is a unique separating level of pro bono work. We have also shown that if no one or everyone were cheating, then pro bono work would not be observed, i.e., pro bono work signals the possibility of cheaters entering. Furthermore, pro bono work can raise both wages and the honor of the expert's work from the increased belief in the honesty of the expert. Our novel approach involving psychological factors suggests that while mandatory pro bono could redistribute surplus from experts to the poor, it could also undermine the screening effect of pro bono work, and thus, cause a deterioration in service quality to the rest of the market.

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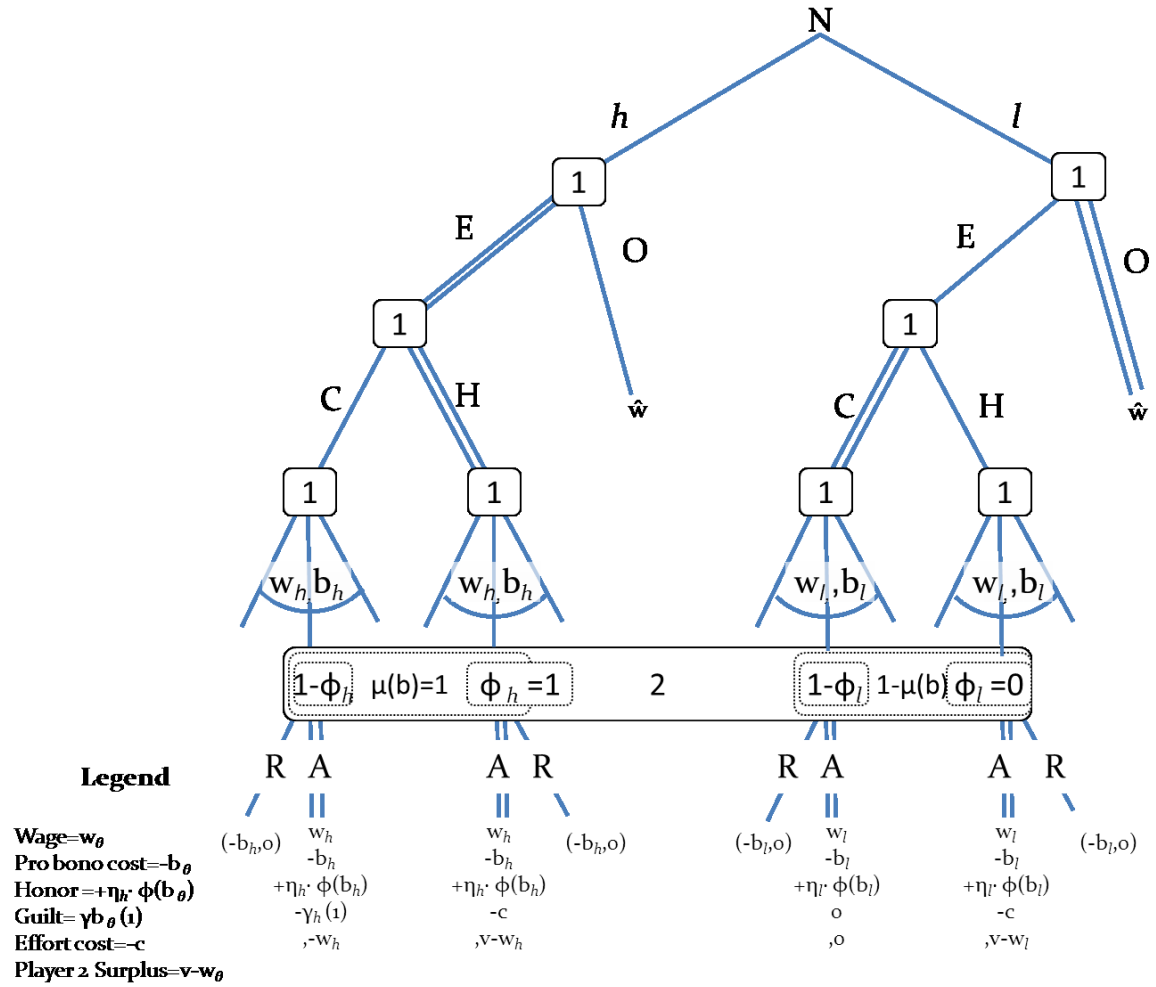


FIGURE 1: GAME TREE. DOUBLE LINES MARK SEPARATING EQUILIBRIUM

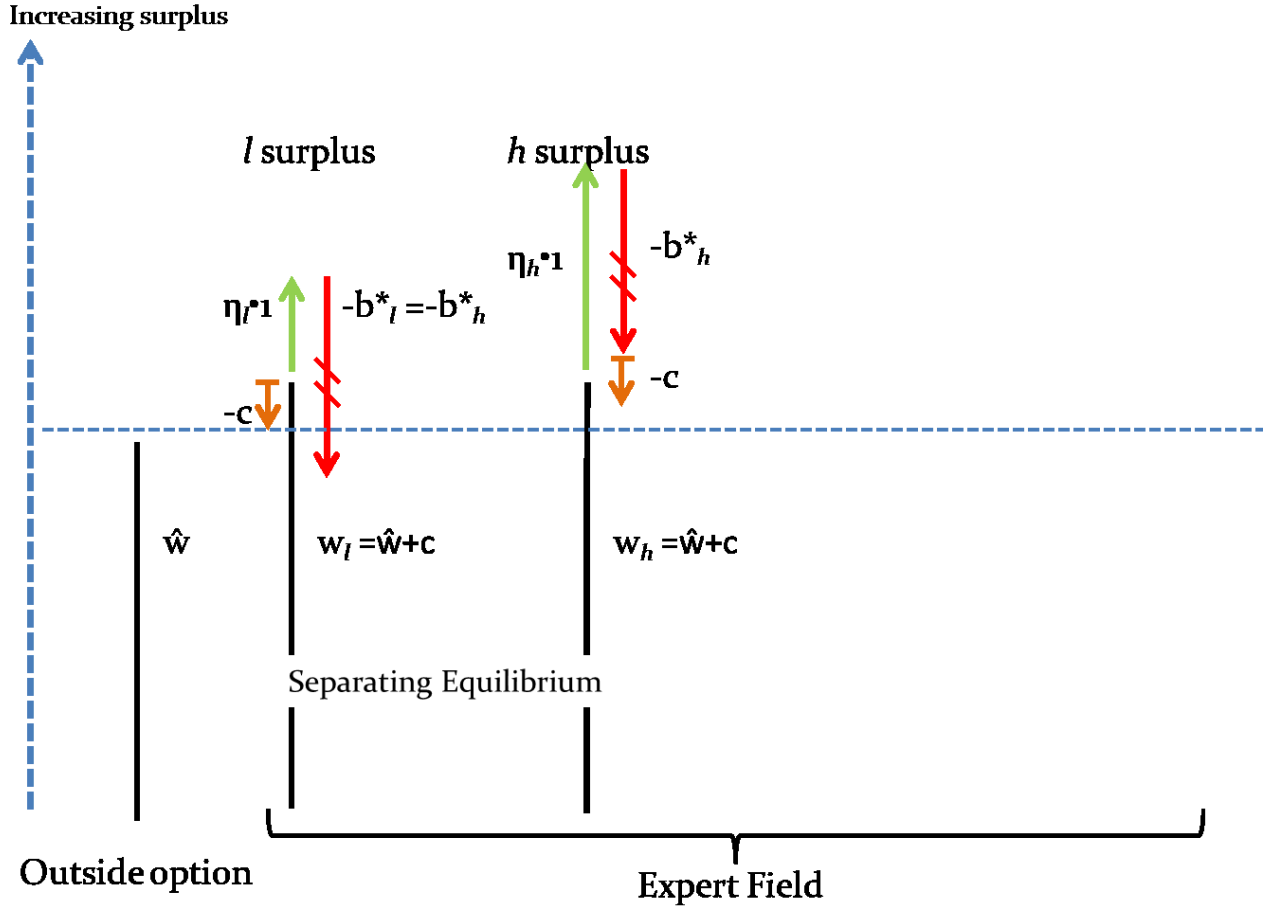


FIGURE 2: SURPLUSES OF SEPARATING EQUILIBRIUM

\hat{w} =surplus of outside option from expert field, w_θ = wage, η_θ = shame sensitivity, b_θ =pro bono work of type $\theta \in \{h, l\}$. Figure 2 shows the monetary incentives in a separating equilibrium. Note that these are higher than in a pooling equilibrium where the consumer cannot be sure that they are getting the correct service. The vertical axis shows increasing surplus. The surpluses of different types are arrayed horizontally. Reading from left to right, the outside option of all types outside of the expert field is w . In the separating equilibrium, either type that enters the expert field can earn a monetary surplus c on top of their outside option of w . However, we have assumed for simplicity that if the expert is honest, she will incur a cost of $-c$, which will bring her to her outside option.

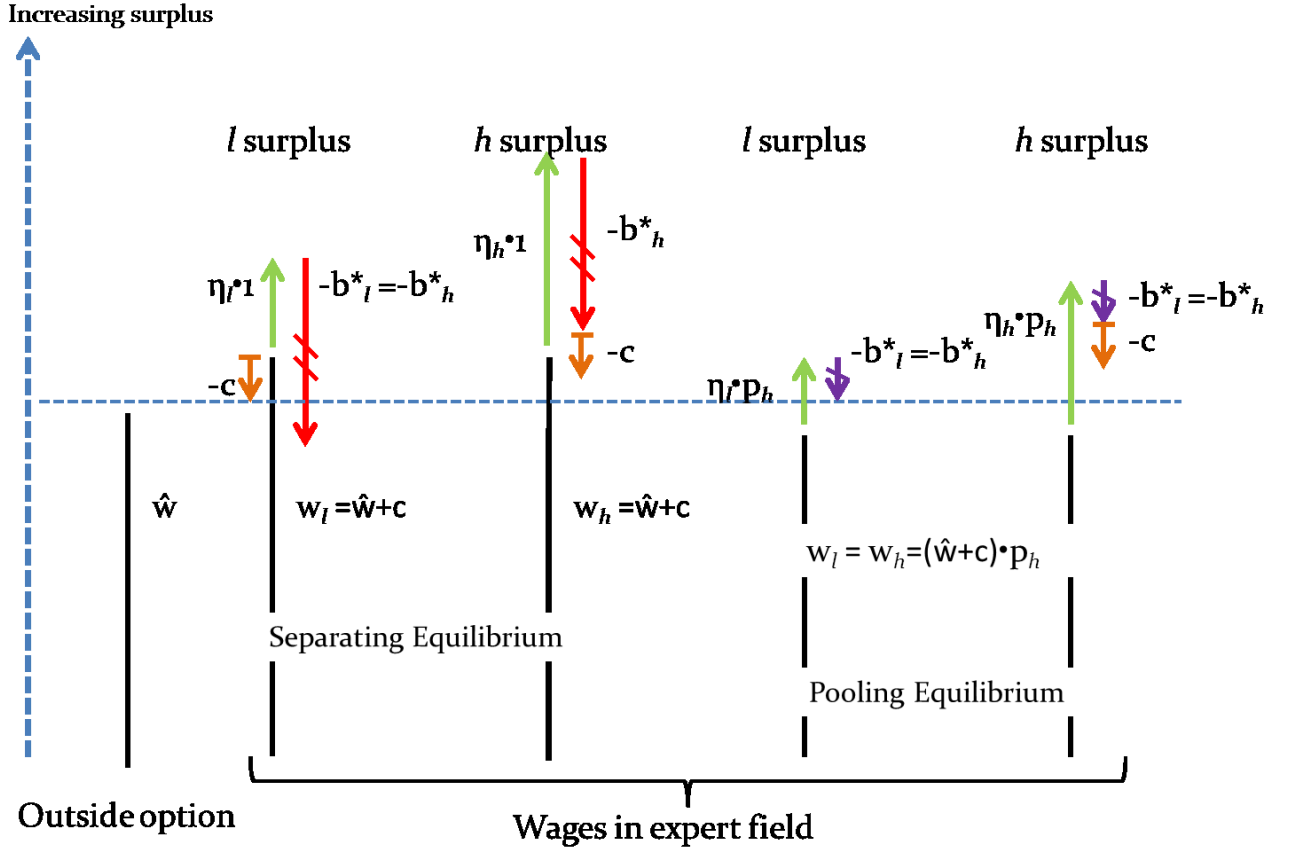


FIGURE 3: SURPLUSES OF SEPARATING AND POOLING EQUILIBRIA

\hat{w} = surplus of outside option from expert field, c = cost of being honest, w_θ = wage, η_θ = shame sensitivity, b_θ = pro bono work of type $\theta \in \{h, l\}$, p_h = prior on type h . Here both types enter the field and do pro bono work. The h type is honest, but the l type is not. Hence, both their wages within the field are depressed below their outside option. However, the pooling equilibrium is sustained because there are enough h types who are willing to be honest for the consumer to continue to want to buy. The h type is getting surplus above her outside option when honor is included, even including the cost of pro bono work b and her cost c of being honest. The l type is also getting more than her outside option given she does the same amount of pro bono work and not incurring the cost of being honest.