The Viability of Pay What You Want Pricing

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The popularity of "Pay What You Want" (PWYW) pricing has attracted significant attention from the media and marketing practitioners. However, relatively little is known about the conditions under which PWYW can be profitable and superior to conventional pricing. We propose a theoretical model to explain why consumers often voluntarily pay when they can free ride under PWYW pricing. We demonstrate that the profitability of PWYW is crucially dependent on three behavioral factors: consumers' fairness motives, their reciprocity concerns and the extent of their bias in favor of a fixed pricing system. In addition, we characterize the manner in which these behavioral factors impact profits under PWYW pricing and make predictions regarding the conditions under which such factors may operate in favor of PWYW pricing. Finally, we test and verify these predictions using both a laboratory and a field setting.

Key words: Pricing, Pay What You Want, Fairness, Reciprocity, Field Experiment

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1.   Introduction

Many firms have recently started giving consumers the freedom to choose what they would like to pay for their products or services. This unique pricing strategy is quite distinct from other participative pricing mechanisms like auctions and "name your own price" schemes such as eBay or Priceline. In the latter, consumers bid for products and services under conditions of opacity i.e., they have some uncertainty about the product features and do not know whether their bids (single bid in the case with Priceline) will eventually be accepted. In contrast, the fundamental principle in a "Pay What You Want"(PWYW) strategy is that the pricing decision is fully transferred from the producer to the consumer.

PWYW pricing has long been used for public goods such as membership drives for public television and radio stations, entry tickets for museums and parks and even the pricing of some services in small rural communities (Fernandez and Nahata 2009). However, PWYW pricing is now being adopted by profit-seeking firms in a variety of settings such as restaurants, music and video games and the novelty of this pricing scheme in the context of private goods has attracted a lot of attention in the media. A growing number of real life cases appear to suggest, unlike what common sense and standard economic theory would predict, that PWYW may, under certain circumstances, be a very profitable pricing policy.

PWYW pricing raises the interesting issue of explaining *why* consumers would voluntarily pay significant amounts for something that they could just as easily obtain for free. Theories of pro-social behavior provide explanations for why many individuals voluntarily make donations to charities or pay premium prices for ethically certified products. However, it is unclear whether such theories can appropriately explain decisions regarding whether and how much to pay a profit seeking organization for a purely private good. Therefore, PWYW pricing is an intriguing development from both a managerial and theoretical perspective.

Some of the earliest studies to investigate this pricing mechanism were conducted by Kim, Natter and Spann (2009, 2010). Based on three field studies conducted in Germany during 2006-2007 they found that PWYW can yield prices that are significantly greater than zero and even lead to increases in seller revenues. In addition, the authors found a significant relationship between consumers' voluntary payments and individual specific variables such as income, satisfaction and a psychometric measure of the perceived fairness of the price paid. Theoretical work has also associated the profitability of PWYW pricing with specific supply side conditions. In particular, it has been argued that PWYW tends to be more profitable when suppliers have low marginal costs (Raju and Zhang 2010) and when the costs of price setting are significant (Fernandez and Nahata 2010). Gneezy et al. (2010) analyzed experimentally how the pricing policy interacts with a charitable contribution in the context of souvenir photograph sales in a large theme park. Their results indicated that PWYW pricing almost tripled revenues relative to conventional fixed pricing when consumers were informed that half of the sales revenues would be donated to charity, but only had a minor positive impact on revenues when the charitable contribution did not exist. More recently, Gneezy et al. (2012) found experimental evidence that under PWYW some individuals adopt an opt-out

behavior that is driven by identity and self-image concerns. In other words, when people believe that the "appropriate" price is high, they tend to feel bad about paying less than this price and react by foresaking the purchasing opportunity altogether (rather than appearing cheap and paying too little). In this paper we seek to extend the literature by identifying the main behavioral factors that determine the *viability* of PWYW pricing. We make a number of contributions, including:

- presenting a model that is grounded in neoclassical utility theory but draws on contributions from economics, psychology, and marketing to incorporate the main drivers of consumer behavior under PWYW

- characterizing demand under PWYW pricing and comparing its results with standard profit maximizing pricing. To the best of our knowledge, this has never been attempted before and represents an important contribution of our paper

- identifying different contexts or types of businesses where PWYW can be expected to be a viable pricing strategy

- testing and validating our model based on two laboratory experiments and one field study.

Our main results are as follows. First, we show that the profitability of PWYW is crucially dependent on three behavioral factors: consumers' fairness motives, their reciprocity concerns and the extent of their bias in favor of a fixed pricing system. Interestingly, we show that these factors may operate in related and complex ways. For example, while fairness concerns lead consumers to pay higher amounts under PWYW, they may also drive some of them out of the market. Similarly, posting a "suggested price", wherein the PWYW seller recommends a price that consumers can pay could be a double edged sword, because it may lead some consumers to pay less than their own valuation for the product. Second, we show that the viability of PWYW depends on the type of anchoring process that is used to form perceptions of fair prices. For example, if consumers use the amount typically charged for a similar product as the benchmark for a "fair price", then PWYW is less likely to be profitable (as compared to using their own valuation of the product for judging fair prices). Finally, based on our theoretical analysis and on previous contributions, we discuss the contextual factors for the success of PWYW pricing. In particular, we hypothesize that the effectiveness of this pricing strategy depends on: i) the size and geographical scope of the business; ii) the timing of the payment; iii) the visibility of the payment; iv) the likelihood of repeat purchases, and v) the manner in which the pricing mechanism is communicated to consumers.

The rest of the paper is organized as follows. The behavioral factors associated with the success of PWYW strategies are discussed in greater detail below. The following section presents our theoretical model for PWYW pricing. This is followed by a description of the numerical simulations that we used to solve the model and derive results on the conditions for the profitability of PWYW pricing. We then discuss the business contexts in which those conditions are more likely to be met. Next, we report the results of one stated preference study, one laboratory experiment and a field study in order to validate our theoretical model and investigate the behavioral factors empirically. The final section contains the discussion and conclusions.

2.   Behavioral Success Factors for PWYW Pricing

We argue that the distinguishing feature of PWYW is the transferring of the payment decision from firms to consumers. This transfer in the locus of control has at least three important consequences for determining the profitability of such schemes. First, since consumers establish the final price, their notions of fairness are crucial determinants of voluntary payments and the profitability of PWYW pricing. Second, consumer decisions are determined by reciprocity concerns. Finally, consumers may not like being put in a new situation where the onus of determining what to pay is transferred to them. Each of these factors is discussed below.

Fairness: Although most economic models are based on the assumption that self-interest guides the behavior of all individuals (Fehr and Schmidt 2006), there is abundant research to suggest that individuals do care about the well-being of others, either because they are altruistic or because they have fairness concerns (Bolton 1991, Gundlach and Murphy 1993, Rabin 1993, Fehr and Schmidt 1999, Thaler 1985, Kahneman et al. 1986). However, though altruistic motivations may be the source of such non-egoistic preferences in the context of contributions to public goods, they are unlikely to be significant drivers of consumer decisions in PWYW market transactions. This view is empirically supported by the results of Kim et al. (2009), who failed to find a significant relationship between altruism and prices paid under PWYW. On the other hand, fairness concerns can be a crucial factor for the viability of PWYW pricing. Research in marketing and in economics has shown that the behavior of consumers is significantly influenced by their judgments regarding price fairness (Thaler 1985, Xia, Monroe and Cox 2004, Bolton, Warlop and Alba 2003, Bolton and Lemon 1999). In addition, the recent empirical studies on PWYW pricing suggest that fairness concerns lead consumers to try to pay prices that "feel fair" (Kim et al. 2009, Gneezy et al. 2012). Accordingly, our model incorporates fairness as one of the key behavioral success factors for PWYW pricing. In particular, we draw on the seminal work of Fehr and Smith (1999) who conceptualized fairness as "self-centered inequity aversion". In other words, "people do not care per se about inequity that exists among other people but are only interested in the fairness of their own material payoff relative to the payoff of others" (Fehr and Schmidt 1999, p. 819).

Reciprocity: The actions of individuals are often governed by how they are viewed by others as well as their concerns about how their choices affect the behavior of others towards them (Ariely et al 2009, Hoffman et al., 1996). Drawing on previous literature in economics and evolutionary biology, we subsume this class of behavioral factors under the notion of reciprocity. In particular, we consider two types of reciprocity. The first is a widely documented type of behavior, known as "reciprocal altruism" (Fehr and Fischbacher 2003). This may be described as , "the exchange of altruistic acts between unrelated individuals as well as between relatives" (Packer, 1977, p. 441). For example, studies have shown that smiling waitresses get tipped more than less friendly ones (Tidd and Lochard 1978). Similarly, the use of free samples has been shown to be a particularly effective sales technique (Cialdini 1993).

Despite its designation, it has been argued that reciprocal altruism is not truly altruistic, but only a form of long-run selfish behavior. In support of this perspective it has been shown that (reciprocally) altruistic behavior in dictator game experiments is strongly reduced when decision makers are guaranteed total privacy and isolation from any social consequences of their decisions (Hoffman et al., 1996, p. 655). Therefore, the *visibility* of voluntary payments may be an important condition for the viability of PWYW. In addition, for service encounters where repeat purchases are involved, reciprocal altruism may engender significant payments under PWYW in order to induce a positive response from the seller during subsequent service encounters.

The second type of reciprocity concern, "indirect reciprocity", is based on reputation (Rankin and Eggiman 2008, p.1). Since behavior affects one's reputation, an individual who does good actions can expect to be rewarded by other individuals in the population, independently of whether those who directly benefit from such good actions will reciprocate or not (Novak and Sigmund 2005). In other words, under indirect reciprocity, if individual A observes B helping C it increases the likelihood of A helping B. This implies that consumers may still choose to pay a positive and significant amount in a PWYW context in order to build a "good guy" reputation for themselves, even if they do not intend to make a repeat purchase or are not concerned about how sellers will respond to their behavior.

Status Quo Bias: The consumer psychology literature provides evidence for the degree of dissonance and discomfort felt by consumers when faced with making decisions that represent exceptions to accepted norms. In the context of pricing, this "status quo bias" (Chernev 2004, Kahneman, Knetsch and Thaler 1991, Samuelson and Zeckhauser 1988) may be defined as a situation where consumers exhibit an exaggerated preference for the conventional pricing policy. In typical market transactions it is not customary for consumers to choose how much to pay. In fact, asking consumers to make that decision may be burdensome because they have to (a) expend greater cognitive effort in evaluating the new pricing policy and (b) overcome the dissonance associated with the uncertainty of not knowing whether the price paid under the alternative pricing system was too much or too little (Luce 1998). A possible source of such dissonance effects lies in the self-image concerns that are discussed and empirically documented by Gneezy et al. (2012). Individuals have a need to maintain a positive image of themselves. By their very nature, PWYW transactions have the potential to generate internal conflicts and to jeopardize consumers' self-image. As a result, consumers may prefer to avoid this type of transaction.[1]

In the next section we develop a formal model of consumer behavior under PWYW that incorporates these three motives: fairness concerns, reciprocity and status quo bias.

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[1] This sentiment is reflected in the following quote about PWYW pricing: "Part of the problem is if you're a customer and what you pay is voluntary, you're under pressure to pay a lot of money. I would find it a burden – my reputation is on the line. What if I only pay \$27 instead of \$34? You end up wanting to feel liberated and just paying a listed cash price. *http : //www.salon.com/food/feature/*2010/06/17/*pay_what_you_can_restaurants/index.html*. Accessed May 18, 2013.

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3. Theoretical Model

We consider a good or service which is supplied by a firm with market power. At any given time, each consumer can only consume one unit of the good. In line with the previous section, we assume that the indirect utility of consumer i is given by:

$$U_i = [V_i - P_i] - \beta_i[P_i - \psi_i]^2 + \theta_i[P_i^{\frac{1}{n}} * \delta] - [\eta_i * \delta] \tag{1}$$

where V_i is the consumer's valuation of the good, P_i is the price paid or voluntary payment made by the consumer, ψ_i is the consumer's perception of the fair price of the good, δ is a dummy variable that takes the value of 1 under PWYW and 0 under conventional fixed pricing, and β_i, θ_i, and η_i are parameters ($\beta_i > 0$, $\theta_i > 0$, $\eta_i > 0$) associated with fairness, reciprocity and status quo respectively.

The first term of the utility function is the conventional measure of consumer surplus. The second term captures the consumer's fairness concerns. More specifically, following the logic of Fehr and Schmidt (1999), we incorporate the notion that any deviation between the actual payment (P) and the perceived fair price (ψ) is a source of disutility for the consumer. It is worth noting that due to the fairness concerns outlined above, both paying more or less than the perceived fair price results in a disutility for the consumer. Fehr and Schmidt (1999) model the disutility of inequitable outcomes assymetrically, to account for the possibility that individuals are relatively less averse when the inequity is in their favor. To keep the model simple, we specify this term as a quadratic in order to reflect increasing marginal disutility of (either positive or negative) deviations from the fair price level. The parameter β measures the importance of consumer fairness. The third term captures reciprocity considerations under PWYW pricing. Due to reciprocal altruism and/or indirect reciprocity, consumer utility increases with higher payments. We use $P_i^{\frac{1}{n}}$ ($n > 1$) to capture decreasing marginal reciprocity benefits from additional payments. This reciprocity benefit is not present under conventional pricing (captured by δ). Finally, the fourth term (η_i) captures the status quo bias, which yields negative utility under PWYW.

For $\delta=0$ (i.e., under conventional pricing), equation (1) reduces to $U_i = [V_i - P_i] - \beta_i[P_i - \psi_i]^2$, which is the consumer utility function with fairness in conventional pricing (c.f., Fehr and Schmidt 1999, Thaler 1985). We note that in our framework consumers are motivated by a mix of self-interest and fairness concerns, irrespective of the pricing system. Additionally, under PWYW they are driven by two further behavioral factors: concerns about the impact of the decision on the perceptions and attitudes of others (reciprocity) and the extra burden of having to decide how much to pay (status quo bias). To avoid making the model unnecessarily complex we specify the status quo term as an individual-specific constant.

To get a feel for this model, consider a simplified example where the fairness and reciprocity parameters are $\beta = 0.5$, $\theta = 2$, $n=2$ and there is no status-quo bias ($\eta = 0$). Further, consider a consumer whose valuation (V) is \$10 and who believes that the fair price (ψ) for a product is \$8. Using equation (1) and solving for

P, we see that the maximum amount that a supplier can charge from this consumer under conventional pricing (i.e., the willingness to pay) is $9.24. It can also be shown (by maximizing (1) with respect to *P* that the voluntary payment under PWYW is $7.37. Similarly, an increase in fairness concerns (for example, if β increases to 0.6) would increase voluntary payments under PWYW pricing from $7.37 to $7.47. It is worth noting that in our model consumers with a higher reciprocity orientation can even pay more than the perceived fair price (for example, if $\beta = 0.6$ and $\theta = 5.7$). In contrast, a standard utility model, which ignores fairness and reciprocity, would predict WTP = V = $10 under conventional pricing and a voluntary payment of zero under PWYW.

3.1. The Impact of Fairness, Reciprocity and Status Quo Effects on PWYW

Since fairness plays a key role on our model, we begin by characterizing the manner in which it impacts consumers' payments. It is well known that consumers determine the fair price of a good or service based on the value that is extracted from consuming it (Emery 1970, Monroe 1973). For example, Kim et al. (2009) find empirical support for the hypothesis that satisfaction, conceptualized as the "consumer's post-consumption evaluation of the perceived quality and/or service" impacts the prices paid by consumers under PWYW pricing. Building on this, we use the the recent marketing and economics literature on fairness (Bolton and Ockenfels, 2000; Bolton, Warlop and Alba 2003; Fehr and Schmidt 1999; Xia, Monroe and Cox 2004) and model consumers' "fair price" perceptions on two additional factors:

Internal Reference Prices: Reference prices reflect the baseline price or a price standard that consumers use to evaluate product prices (Kalyanaram and Winer 1995). Internal reference prices are based on adaptation theory which suggests that consumers' response to prices is influenced by how they adapt to past prices (Monroe 1973). Therefore, a common measure of internal reference prices is the one-period lagged price (Lattin and Bucklin 1989). In contrast, external reference prices are provided by observed stimuli in the purchase environment such as shelf tags or suggested retail prices displayed in advertisements or at the point of purchase (Mayhew and Winer, 1992). It is reasonable to expect that internal reference prices will play a relatively greater role in PWYW pricing since consumers do not see any externally posted prices under this pricing scheme.

Social norms: A wide body of research has shown the importance of social norms in influencing human behavior. In particular, descriptive norms (that is, what most people do in a given situation) have been found to have a significant impact on consumer decisions, both for private and public goods (Cialdini et al. 1990, Schultz et al. 2007, Goldstein, Cialdini and Griskevicius 2008). Firms also use social norms to influence perceptions of fair prices. For example, TrueCar informs consumers about the *"true price of what people are paying on average in your local area. Thus, our TrueCar average price paid feature lets you know how*

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much you should pay, as well as what a good or great price really is". In keeping with this, we assume that the average price paid by other consumers acts as an anchor for fair price.[2]

Accordingly, we model the perceived fair price as a weighted average of these three reference anchors:

$$\psi_i[R, V_i, \tilde{P}] = \varphi_R R + \varphi_V V_i + [1 - \varphi_R - \varphi_V]\tilde{P} \tag{2}$$

where R represents internal reference price, V_i is the consumer's valuation of the product, $\tilde{P}$ is the average price paid by other consumers, φ_V, φ_R and $(1 - \varphi_R - \varphi_v)$ are the anchor weights used by consumers in determining the perceived fair price $(0 \leq \varphi_V, \varphi_R \leq 1)$. For example, $(\varphi_R = \varphi_V = 0)$ would imply that the perception of fair price is only determined by the average price paid by others for the same product.

Substituting (2) in (1), we obtain:

$$U_i = (V_i - P_i) - \beta_i[P - \varphi_R R - \varphi_V V_i - (1 - \varphi_R - \varphi_V)\tilde{P}]^2 + \theta_i P_i^{\frac{1}{n}} \delta - \eta_i \delta \tag{3}$$

Equation (3) could be used to derive both the distribution of Willingness to Pay (WTP) under a conventional pricing policy as well as the distribution of voluntary payments under a PWYW policy. Under the conventional fixed pricing system $(\delta = 0)$ all consumers pay the same price $(\tilde{P} = P)$. Therefore (3) can be re-written as:

$$U_i = -\beta_i(\varphi_R + \varphi_V)^2 P^2 + [2\beta_i(\varphi_R + \varphi_V)(\varphi_R R + \varphi_V V_i) - 1]P + [V_i - \beta_i(\varphi_R R + \varphi_V V_i)^2] \tag{4}$$

If one postulates a certain distribution for the valuations V_i expression (4) can be used to find the distribution of WTP and the corresponding demand function. For example, if consumers have no fairness concerns $(\beta = 0)$ or if social norms are the only relevant anchor for fair price perceptions $(\varphi_R = \varphi_V = 0)$, then (4) simplifies to $U_i = V_i - P$. In such cases, consumers' WTP is equal to their valuation V_i, and assuming a uniform distribution for valuations results in a linear demand function. More generally, setting utility to zero and solving (4) for P leads to the following expression for WTP under conventional pricing:

$WTP=$

$$\frac{[2\beta_i(\varphi_R + \varphi_V)(\varphi_R R + \varphi_V V_i) - 1]}{2\beta_i(\varphi_R + \varphi_V)^2} \pm \frac{\sqrt{[2\beta_i(\varphi_R + \varphi_V)(\varphi_R R + \varphi_V V_i) - 1]^2 + 4\beta_i(\varphi_R + \varphi_V)^2[V_i - \beta_i(\varphi_R R + \varphi_V V_i)^2]}}{2\beta_i(\varphi_R + \varphi_V)^2}$$

$$\tag{5}$$

Although equation (5) is complex and appears difficult to interpret, it is possible to provide some intuition for how WTP behaves in response to variations in the model parameters. First, it is clear that consumers'

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[2] Of course, this information is not always known to consumers in advance. However, while conducting this research, we discovered that in many PWYW situations, consumers would ask how much others had paid for the same product or service (such as a restaurant meal, golf game etc).

WTP increase with their own valuation of the product or service V_i. In fact, WTP and valuation will be exactly equal under three extreme cases: when consumers have no fairness concerns ($\beta = 0$), when they anchor purely on social norms ($\varphi_R = \varphi_V = 0$) and when they anchor purely on value ($\varphi_V = 1$). On the other hand, if consumers anchor solely on internal reference prices ($\varphi_R = 1$), a consumer's WTP depends both on R and on V_i, since equation (3) simplifies to: WTP=R-[1- $\sqrt{1 + 4\beta_i(V_i - R)}$)/($2\beta_i$)]. This shows that the WTP will be higher than the internal reference price for high value consumers (when $V_R > R$) and lower for low value consumers (when $V_R < R$).

In contrast, under PWYW the consumer is given the opportunity to choose the level of voluntary payment that maximizes utility. Maximizing (1) with respect to P, we obtain:

$$P_i = \psi_i[R, V_i, \tilde{P}] + \frac{1}{2\beta_i}\left[\frac{\theta_i}{n}\left(P_i^{\frac{1-n}{n}}\right) - 1\right] \tag{6}$$

Based on this, our model provides some useful intuition for how consumers behave under PWYW. First, in the absence of reciprocity motives ($\theta = 0$), expression (6) simplifies to:

$$P_i = \psi_i[R, V_i, \tilde{P}] - \left(\frac{1}{2\beta_i}\right) \tag{7}$$

Expression (7) shows that the consumer's optimal payment P_i is equal to the perceived fair price ψ_i minus an amount that depends on how fair-minded the consumer is. As the fairness parameter β_i increases, P_i increases towards ψ_i. Second, in the absence of fairness concerns ($\beta_i = 0$), maximizing (3) leads to $P_i = (\theta_i/n)^{(\frac{n}{n-1})}$, showing that the optimal payment increases with reciprocity concerns, even for consumers with a zero valuation. Therefore, an interesting insight that emerges from our model is that when consumers have fairness and/or reciprocity concerns:

1) PWYW pricing may not only increase demand for a product by attracting lower value buyers (who would otherwise be priced out of the market), but

2) *it may also lead consumers to voluntarily pay amounts that exceed their true valuation for the product.*

Finally, equation (4) shows that the status quo bias does not affect the consumers' optimal payments. However, because it reduces the overall utility of the PWYW transaction, this effect may hamper consumer participation in the market as shown by Gneezy et al. (2012), and at least partially offsetting one of the advantages of PWYW pricing. We examine this issue in greater detail in the next section.

One disadvantage of our model specification is that equations (5) and (6) do not yield closed form solutions for the distribution of the voluntary payments P and WTP. As a result of this, the demand function had to be derived numerically. However, this limitation must be viewed in light of the advantage of incorporating the relevant consumer motivations directly in the utility function, as opposed to starting with an arbitrary specification of the demand on the grounds of tractability. Furthermore, we attempt to mitigate this shortcoming by using extensive simulations of the model and by validating the simulation results with

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different empirical studies that utilize diverse empirical approaches (experimental as well as field studies) and techniques. This approach enabled us to obtain some unique insights about the profitability and future viability of PWYW pricing.

4. Numerical Simulations

4.1. Fairness and anchoring

We designed the numerical simulations with the goal of understanding both the principal drivers and the profitability of the PWYW system. Initially, in order to make the simulations tractable, we abstract from the reciprocity and status quo bias motives ($\theta_i=0$ and $\eta_i=0$ for all i). This assumption is relaxed in the subsequent section. We further assumed that consumers are homogeneous in terms of their fairness orientation ($\beta_i = \beta$) but heterogeneous in their valuations for these goods and services. More specifically, we simulated a population of consumers whose valuations (V_i) follow a normal distribution with a particular mean and standard deviation.[3]

To start with, we fixed the internal reference price at the level of the mean valuation.[4] Then we systematically varied the ($\beta, C, \varphi_V, \varphi_R$) over a wide interval of plausible values and, for each particular combination of parameter values, computed the market equilibrium under both PWYW and profit maximizing fixed pricing. The details of the simulation are contained in Appendix A, which describes the procedures adopted for solving the model numerically for a total of 300 different scenarios.

In order to gain some insights regarding the profitability drivers of the two alternative pricing schemes (PWYW and the conventional pricing benchmark), we regressed the computed profits against the values of the model parameters used in the simulation. The results are reported in Table 1. We use these models to generate a basic understanding of the conditions under which PWYW pricing may yield (a) positive profits (absolute profitability of PWYW) and (b) higher profits compared to a fixed price policy (relative profitability of PWYW).

<p style="text-align:center;">Insert Table 1 here</p>

Impact of fairness: Our results confirm that both the absolute and relative profitability of the PWYW policy tend to be enhanced by the importance of the fairness motive in consumer preferences. First, the

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[3] More specifically, $\mu_V = 10$ and $\sigma_v = 4$. We kept σ_v constant at a reasonable level (40% of the mean). However, we repeated the simulations for different values of this parameter and found that our results are not driven by the particular parameterization adopted for σ_v.

[4] Our results indicate that in the absence of fairness considerations the optimal price levels under conventional pricing vary between approximately 80% and 110% of the mean valuation (this interval widens when fairness is incorporated in the model). Therefore, the adopted reference price level can be regarded as reasonable and realistic. We show later that our conclusions remain valid for a broad interval of reference prices.

fairness motive β_i limits the profitability of a fixed price policy as shown by the estimated negative coefficient of β_i in the model for conventional pricing. This result is consistent with the previous literature on the subject (Rabin 1993, Kahneman et al. 1986). Second, as expected, fairness has a positive impact on the profitability of PWYW. However, the marginal effect of β_i on PWYW profits is declining, as shown by negative coefficient of β^2. This is so because as β increases, we observe two effects:

1) the disutility from paying significantly below the fair price increases, leading all consumers to increase their optimal payments (conditional on buying the product) and,

2) For some consumers, paying a higher amount in response to the increasing need to be fair may result in a negative net benefit. Therefore, *for these consumers, dropping out of the market is preferable to meeting their fairness threshold.* As β_i increases the latter effect offsets the former to a greater extent.

Impact of consumer anchoring: The very marked difference between the estimated coefficients of the valuation anchor φ_V in the conventional pricing and PWYW models indicates that as consumers increasingly anchor on their own valuations of the product (i.e., as φ_V increases for a given φ_R), both the absolute and the relative profitability of PWYW are significantly enhanced. Consequently, our results suggest that a very important condition for PWYW pricing to be effective is that consumers' perceptions of fair prices be anchored on their own valuations of the good (as opposed to the prices being paid by others). Secondly, the coefficients of φ_R indicate that anchoring on internal reference prices is more favorable for the profitability of PWYW than anchoring on social norms, but not as favorable as anchoring on the product value. The intuition for our results is as follows. When perceptions of fair prices are anchored on value, optimal prices are dispersed and correlate strongly with valuations. In addition, each consumer's optimal price P_i is lower than their valuation V_i (see equation 7), which creates the conditions for market participation in the first place. Therefore, the valuation anchor enables PWYW pricing to realize its full potential as an endogenous price discrimination mechanism. In other words, consumers pay a wide range of prices, according to their specific valuations and nobody abstains from consumption. However, when the main anchor of fairness perceptions is an internal reference price, all consumers have a similar optimal payment level, which for many of them lies above their respective valuations. Since a PWYW transaction would result in a negative net benefit for these consumers, they prefer to drop out of the market, such that part of the demand enhancing benefit of PWYW is lost. Finally, social norms are unfavorable for the profitability of PWYW because they simply reduce the dispersion of the perceived fair prices and payments, without pushing up their mean level. For example, a vector of zero payments could be perceived as a fair outcome by consumers who anchor their fairness perceptions solely on the payments of others.

We also tried to investigate the extent to which our results depend on distributional assumptions or on the model parameterization. In order to do so we re-ran the simulations to account for two types of changes. First, we assumed that the valuations are uniformly (rather than normally) distributed across the population. Table A1 of Appendix A shows that the previous conclusions are unaffected and remain valid. Second, we

investigated the impact of varying the internal reference price. As noted above, in our base simulation we assumed that the internal reference price is equal to the mean consumer valuation. In Table A2 of Appendix A, we report the estimates for two additional cases: i) $R = 6$ (40% below the mean valuation) and ii) $R = 14$ (40% above the mean valuation).

Interestingly, the table shows that although the magnitude of some effects is influenced by the value of R, all of our conclusions remain valid. In particular, we continue to observe that *anchoring on one's own valuation can be more favorable for the profitability of PWYW than anchoring on an internal reference price.* The intuition for this somewhat counterintuitive result lies on the interplay between price and demand effects under PWYW. Anchoring on a low reference price increases market participation but leads to a low mean payment, while anchoring on a high reference price increases the mean payment but shrinks the market (as is the case with the fixed price system). It is only when fair price perceptions are not anchored on some common reference price but on individual specific valuations that PWYW realizes its full potential of operating as an effective price discrimination mechanism.

Impact of marginal costs: The estimated parameters of marginal cost (C) (-552.2 and -716.4, respectively) suggest that the profitability of PWYW pricing is more strongly affected by a cost increase than is the profitability of the conventional fixed price policy. It is well known that under a fixed price policy a seller with market power is able to mitigate the negative effects of a cost increase by raising the price. However, under PWYW such an adjustment process cannot take place. As a result, both the absolute profitability as well as the relative profitability of PWYW decrease with cost.

4.2. Reciprocity

In our next set of simulations, we generalized the model in two directions. First, we introduced consumer heterogeneity in terms of fairness orientation by assuming that β varies across individuals. More specifically, we assumed that β is normally distributed within the population with a mean μ_β and a given standard deviation. This led us to investigate the issue of how the profitability of PWYW pricing is affected by the correlation between fairness orientation and the individual valuations $\text{Corr}(\beta, V)$. Second, we introduced reciprocity concerns in the simulations, i.e., we no longer assumed that θ is equal to zero. We abstracted from anchoring trade-offs by assuming that consumers anchor solely on value ($\varphi_V = 1$, $\varphi_R = 0$), a scenario that we had identified previously as being favorable for PWYW pricing. Consistent with the procedures adopted in the previous set of simulations, we systematically varied μ_β, C, θ, and $\text{Corr}(\beta, V)$ within wide intervals of parameter values[5] and set parameter *n* at *n*=2 [6].

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[5] More specifically, we created a grid where the values adopted were (0.4, 0.6, 0.8, 1) for μ_β, (0, 2, 4, 6) for C, (0.4, 0.6, 0.8, 1) for θ and (-1, -0.5, 0, 0.5, 1) for $\text{Corr}(\beta, V)$. In total, we solved the model numerically for 320 different combinations of parameter values.

[6] We started with n=2 but conducted sensitivity analyses by varying n to ensure that our conclusions remain valid for multiple values

<div align="center">Insert Table 2 here</div>

In table 2, we present the results of regressing the profits of the two alternative pricing schemes on the values of the model parameters, as well as on the interaction between the fairness and reciprocity parameters ($\mu_\beta * \theta$). First, regarding the effects of fairness (μ_β) and marginal cost (C) the results are totally consistent with the ones of the previous simulation. Second, the positive and significant parameter estimates for θ confirm that reciprocity considerations may be an important driver of the success of PWYW pricing. Third, the negative sign of the interaction term (μ_β) suggests that the fairness and reciprocity motives operate as substitutes, rather than as complements. In other words, the model indicates that *reciprocity does not have a major impact when consumers are fair-minded but become crucial when they are not*. Finally, and perhaps not surprisingly, PWYW is found to work better when the valuations are positively correlated with the level of fairness orientation (i.e., when the high value consumers are the most fair minded).

4.3. The Status Quo Bias

As mentioned above, in our previous simulations we abstracted from the status quo bias. We now use our model to provide a simple example of how this effect can impact the profitability of PWYW pricing. For illustrative purposes, we use the following model parameterization: C=2, $\beta = 0.25$, $\theta = 0$, R=8, $\varphi_V = 0.5$, $\varphi_V = 0.3$ (i.e., marginal cost and internal reference price of 20% and 80% of the mean valuation, respectively, no reciprocity motive and anchoring mainly on valuation). Based on these parameter values, we initially simulated the distribution of voluntary consumer payments under PWYW in the absence of the status quo bias and proceeded to estimate the profitability of PWYW. In this scenario, although the average consumer paid 17% less under PWYW than under conventional (profit maximizing) pricing, this loss is more than compensated by the demand boosting effect of PWYW (from 60% to 85% of all consumers). As a result, PWYW profits exceed fixed price profits by 11%. However, the relative profitability of the two pricing systems is reversed when we introduce a minor status quo bias (equal to 10% of the mean valuation) in the simulation. This effect alone is sufficient to reduce PWYW demand by 20%. As a result (and despite an increase in the mean voluntary payment), PWYW profits go down by 11% and become lower than fixed price profits. This simplified example clearly illustrates how the status quo bias can undermine the profitability of PWYW pricing under certain conditions by driving a significant proportion of consumers out of the market.

5. Contextual Conditions for the Success of PWYW

Our model provides interesting insights about how the identified behavioral factors impact the profitability of PWYW. In particular, our results highlight the importance of consumers' fairness and reciprocity concerns, as well as the type of mental anchoring process that favors the use of this pricing strategy and shows how the status quo bias may offset the demand enhancement benefits of PWYW pricing. However, it is also

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important to discuss the conditions under which we can expect such factors to favor the viability of PWYW as a pricing strategy. These conditions are discussed below.

Intensity of fairness concerns

When can we expect the fairness parameter β to be high? The business ethics literature provides some guidance about the different contexts in which consumers may have more pronounced fairness concerns. In particular, the influential work of Jones (1991) on moral intensity, defined as "the extent of issue-related moral imperative in a situation" (p. 372), considers the fairness of actions in terms of a set of dimensions which includes the magnitude, probability and proximity of effects. The magnitude of effects captures whether the impact of an action is felt by an individual or a group, with an act being perceived as being more unethical if it impacts an individual as opposed to a group. The probability of effects is based on the likelihood that an act will cause harm with the propensity to view the act as unethical being proportional to the extent of harm caused by an action. Finally, the proximity of effects pertains to the notion that the closer individuals feel towards another party the more likely they are to view a given act as being unethical or ethical.

Previous research has confirmed that in low moral intensity contexts the consumers' level of moral judgment may fail to impact their attitudes or behavior (Logston et al 1994).[7] This suggests that in a PWYW context consumers will be more fair-minded when the transaction occurs in a high moral intensity context. For example, if the seller is a small local business, consumers will perceive the act of paying zero (or a very small amount) as being considerably more harmful or more likely to cause harm than if they were buying from a large national corporation or a chain store. Furthermore, consumers tend to feel more proximate to local businesses than to national or international firms. Similarly, moral intensity will tend to be higher, and consumers more fair-minded, when the transaction involves a direct interaction between the buyer and the seller due to the effect of proximity on moral intensity.

Fairness Anchoring

Regarding the anchoring process we propose that consumers are more likely to base their fair price perceptions on their own valuations in services where: a) payments are ordinarily expected to be made after consumption and b) the consumption experience remains very salient in consumers' minds at the moment of the payment. For example, the pleasure and enjoyment of a delightful weekend in a resort tends to be very vivid in the mind of a consumer at the time of departure.

Second, the way in which the pricing mechanism is communicated to consumers might also influence their anchoring process. Voluntary payment schemes have been advertised in various ways such as "Pay

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[7] Logston et al (1994) found that the attitudes of US college students toward software piracy were not significantly affected by their levels of moral judgment, arguably because software piracy is a low moral intensity issue. Similarly, Sinha and Mandel (2008) note how little social norms against piracy seemed to influence the responses of college students. The threat of being caught while pirating, and the ensuing embarrassment, did nothing to increase their willingness to pay for legal music.

What You Want", "Pay What You Wish", "Pay What You Like", and "Pay What You Can". However, our results suggest that "Pay What You Think It Is Worth" would probably be a better way to communicate this policy because it directly appeals to the "right" anchor of fairness perceptions.

Reciprocity

We now turn to the discussion of the main contextual determinants of consumers' reciprocity concerns. As discussed earlier, the visibility of the payment is an important determinant of PWYW. If the amount paid is unobservable by the seller or by others (friends, relatives, etc.) then there is no reason for consumers to worry about the impact of their choice on their own external image or on the way others will respond to that choice. Furthermore, the reciprocal altruism factor is more likely to be salient when consumers expect further interactions with the seller. For example, PWYW will tend to work better when selling a book in a physical store than selling its digital version online. However, Gneezy et al. (2012) found evidence that under some conditions the visibility of the payment may have a negative impact on prices paid. More specifically, in a field experiment carried out in a PWYW restaurant, they found that when consumers were not informed about the average customer payment, they paid more under a anonymous payment condition than under a visible payment condition. In terms of our model, one possible explanation for this result is that while the visibility may amplify the consumers' reciprocity concerns, such focus may in turn reduce their fairness orientation, with the latter effect possibly offsetting the former.[8]

Status Quo Bias

The success of PWYW depends on the extent to which consumers can overcome the status quo bias associated with traditional pricing. For example, firms that use PWYW pricing may post suggested prices for products or how much others are paying in similar situations as a form of reducing the extra burden involved in the pricing decision and, in doing so, stimulate PWYW demand. However, suggested prices are a double edged sword because they put the spotlight on a non-discrimanting price anchor and divert fair price perceptions away from individual-specific consumer valuations.

In the following section, we report the results of three studies (a stated preference study, a laboratory experiment and a field study) designed to assess the viability of PWYW pricing and test the predictions of our previous analysis. The first study was designed to test the impact of the three factors that were identified in our model as being the primary factors impacting PWYW pricing i.e., *fairness*, *reciprocity* and *status quo bias*. Building on these results, study 2 investigated the role of contextual factors (such as the timing and the visibility of the payment) in determining the amounts voluntarily paid under PWYW pricing. Finally, we

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[8] Interestingly enough Gneezy et al. (2012) found no significant price difference between the visible and anonymous conditions when consumers were informed about the average customer payment. It is possible that calling attention to the payments made by others worked as a priming of the image motivation, such that the negative effect of visibility on fairness concerns was no longer dominant in that case.

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conducted a field study where we collected data from a PWYW pricing scheme offered by two major golfing resorts in the United States. This allowed us to compare the results of PWYW pricing with conventional pricing. Taken together, not only do these studies explain the rationale for PWYW pricing but they also shed light on the conditions under which PWYW may be a viable and profitable pricing strategy.

6. Empirical Evidence

6.1. Study 1: PWYW Versus Conventional Pricing in a Hypothetical Service Scenario

The first study was designed to test our PWYW model (equations 1-3). The behavioral underpinnings of the three variables in the model (fairness, reciprocity and status quo bias) necessitated a laboratory study in order to discern the differential impact of these factors on PWYW and conventional pricing. We used conjoint analysis to elicit consumer preferences in a restaurant service scenario. Participants were undergraduates at a major public university who completed the survey in exchange for partial course credit. A total of 294 students participated in the restaurant experiment. However, some surveys were eliminated due to blank responses or inconsistencies in the reported information, leading to a final sample of 258 respondents. They were asked to imagine going for dinner to an upscale restaurant and ordering a typical meal consisting of an appetizer, main course and dessert (alcohol not included). The characteristics of the meal were varied according to the following attributes:

- Service level (Good or Excellent)
- Entree type (Steak or Seafood)
- Pricing scheme (Conventional pricing or PWYW) and
- Price/Voluntary Payment tiers (4 price points).

We generated two factorial designs consisting of 12 product profiles.[9]

4 different price points were selected for each design and were varied across product profiles. Based on the range of prices prevailing at local high end restaurants, the price points chosen for the study (per entree) were: $10, $20, $35 and $50 in design 1 and $15, $25, $40 and $60 in design 2. Each respondent was asked to rank the 12 service profiles for a given design. In the case of the PWYW profiles, consumers were reminded that the dollar amount included in the profile was a voluntary payment (as opposed to a fixed price). The ranking tasks were computerized and greatly simplified through the use of a drag and drop menu which allowed the respondents to visualize and alter their rankings in a very simple and intuitive manner.

In order to operationalize our theoretical model, we assumed that the consumers' valuation of the meal is a function of its non-price attributes. In addition, we model both the fair price perceptions and the status-quo bias as functions of consumers' product or service valuations, so that the utility function (3) can be re-written as:

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[9] We chose this approach because a single design would lead to a very high number of service profiles, causing the ranking task to be too long and cumbersome (Louviere 1988).

$$U_i = (V_i - P_i) - \beta_i[P - \psi_i(V_i(A))]^2 + [\theta_i P_i^{\frac{1}{n}}]\delta - \eta_i[V_i(A)]\delta \qquad (8)$$

Under some simplifying assumptions (equality of parameters β, θ and η across consumers and linearity of $V_i(A)$) and $\psi_i(V_i)$, (7) may be re-written as a linear function in the parameters. This leads to:[10]

$$U = \alpha_0 + \alpha_S(S) + \alpha_E(E) + \alpha_{SP}[S * P] + \alpha_{EP}[E * P] + \alpha_{SE}[S * E] + \alpha_P P - \beta P^2 + [\theta_i P_i^{\frac{1}{2}}]\delta - [\eta_0 + \eta_E E + \eta_S S]\delta \quad (9)$$

Once model (9) is estimated, the parameter values provide empirical evidence of the three factors that affect decision making under PWYW. The results of the model estimation are presented in Table 3. First, the coefficients of P and P^2 are statistically significant and had the expected signs, which confirms the empirical relevance of the fairness behavioral factor. Second, although the reciprocity parameter has the expected positive sign, it not significant . While this may appear surprising, a likely explanation is that concerns about image and the attitudes of others are unlikely to be salient in a situation where preferences are elicited anonymously. We explore this issue in greater detail below where we describe our second laboratory study. Finally, the negative and significant coefficient of δ confirms that PWYW has a detrimental effect on utility (the status-quo bias).

Equation (6) can also be used to estimate the level of voluntary PWYW payment that maximizes consumers' utility. The estimated mean prices paid for the dinner meal under PWYW vary between 14.8 and 18.3, depending on the levels of the non-price attributes. In short, we find that the results of our first study are consistent with our theoretical analysis and provide empirical support for the behavioral factors that determine the profitability of PWYW pricing.

<u>Insert Table 3 here</u>

6.2. Study 2: PWYW Laboratory Study

6.2.1. Method and Design Our second study investigated how different contextual factors discussed previously impact voluntary payments. As before, respondents were students at a major university who volunteered to participate in exchange for extra credit in their class. The 518 respondents who volunteered for the experiment were told that the purpose of the study was to watch and evaluate a short film. In order to simulate a movie theatre experience, the respondents were given the opportunity of purchasing a snack that could be consumed while watching the film. They were told that they could pay whatever they wanted

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[10] We assume that $V(A)$ is linear i.e., $V(A) = \sigma_0 + \sigma_S S + \sigma_E E$. Similarly, the perceived fair price is assumed to depend linearly on the valuation V, which in turn results in a linear function of the attributes: $\psi_{V(A)} = \gamma_0 + \gamma_S S + \gamma_E E$. Substituting the above two equations in (6) leads to: $U = (\sigma_0 - \beta \gamma_0^2) + (\sigma_S - 2\beta \gamma_0 \gamma_S - \beta \gamma_S^2)S + (\sigma_E - 2\beta \gamma_0 \gamma_E - \beta \gamma_E^2)E + (2\beta \gamma_S * S * P) + (2\beta \gamma_E * E * P) - (2\beta \gamma_S \gamma_E * S * E) + (2\beta \gamma_0 - 1)P - \beta P^2 + \theta P^{\frac{1}{2}}\delta - [\eta_0 + \eta_E E + \eta_S S]\delta$ which is equivalent to the equation below.

including not paying anything at all, though the exact instructions varied for different conditions as described below. Respondents were randomly assigned to one of the following 16 conditions based on a 2x2x2x2 between-subjects experimental design. The four experimental factors were the following:

- Seller type: local seller versus nationally recognized brand

- Payment time: PWYW payment made either before or after consuming the snack

- Payment Appeal: PWYW versus "Pay what you think it is worth"

- Payment visibility: public (payment was visible to seller) versus private (payment was not visible to seller)

The first experimental factor manipulated the moral intensity of the context. For the local product condition, respondents were told that the snack was made and purchased from a local store while in the national product condition they were told that the product was produced by a national brand. In each case, the respondents were informed that the proceeds from the sale would benefit the respective local or national sellers. Based on the previous discussion, we expected voluntary payments for products made by local firms to exceed those made for products from national brands due to the higher moral intensity inherent in the former situation.

The second and third factors pertained to the participants' anchoring process. For the payment time factor, respondents could pay either before or after consuming the product, so that in the latter case their payment would reflect their actual experience with the product and capture their fairness perceptions based on anchoring on their product valuation. For the payment appeal factor, respondents were given either the "PWYW" or "Pay What You Think It is Worth" option prior to their product selection. In the former, they were told that they could pay whatever they wanted while in the latter they were told that they could pay whatever they felt it was worth i.e., based on their own valuation of the product.

Finally, the fourth factor manipulated the participants' reciprocity concerns based on the visibility of payments. In the visible payment condition, respondents were asked to pay for the snack in the presence of a laboratory assistant while in the non-visible condition they were asked to place the money in a sealed envelope in the absence of any onlookers. The laboratory assistants were instructed not to collect the envelopes until the students had left the laboratory in order to ensure anonymity and privacy. Despite the findings of Gneezy et al. (2012) we expected voluntary payments under PWYW to be lower when the respondents' payments could not be directly observed by the seller (for example, payments over the Internet as opposed to payments in a restaurant).

After watching the movie, the respondents filled out a survey that contained a number of questions about (a) the movie and their affective responses to its content, storyline, and overall quality (b) quality and taste of the snacks (c) an ethics scale, based on Vitell and Muncy (2005), and defined as "the extent to which consumers believe that certain questionable behaviors are either ethical or unethical" (Vitell 2003, p.35). We used ethics as a control variable for the study and measured it with two items that most closely reflected the

store setting of the experiment. The 5-point scale (Cronbach $\alpha = 0.73$) assessed beliefs regarding "returning to a store and paying for an in item that the cashier mistakenly did not charge you for" and "correcting a bill that has been miscalculated in your favor". After filling out the survey, respondents were debriefed and probed about the true purpose of the experiment. Ten respondents who guessed the true purpose of the experiment as well as 27 subjects who did not fully comply with the experimental instructions were deleted from the sample, leaving us with a final analysis sample of 481 respondents.

6.2.2.   Results The voluntary payment made by the respondents was the dependent variable for our analysis. While 60% of the sample chose to pay nothing at all, the remaining 40% had a mean payment of $0.75, leading to an overall average payment of $0.30 (s.d. = $0.50) for the entire sample. Given the experimental setting (respondents may have felt entitled to consume the snacks for free in return for evaluating the movie) and the purchase of a very low involvement product, we expected a large proportion of respondents to pay zero, and were surprised to note that the total receipts from voluntary payments led to a profit of 14% (based on comparing the sales revenue with the cost of purchasing the consumed snacks, evaluated at retail prices). Due to the excessive count of zero payments and the consequent left censoring of the data, we used a tobit model to analyze the data, the results of which are contained in Table 4. The parameter estimates indicated that the seller type has a negative impact on voluntary payments, implying, as expected, that consumers made higher payments for local products relative to those associated with national brands.

Insert Table 4 here

In order to understand the impact of payment time, we considered the interaction between payment time and evaluation of the product (i.e., the snack that was consumed by the respondents). The reason for this is that the timing of payment (before or after experiencing or consuming the product or service) is only relevant for predicting voluntary payments if consumers have had a chance to evaluate the snack. Our results indicate a negative impact of payment time (-0.73) and a positive impact of the interaction between satisfaction with the snack and payment time (0.17). Noting that snack satisfaction was measured on a 7 point satisfaction scale (1=Not At All Satisfied and 7= Extremely Satisfied) and the mean satisfaction rating was 4.39, these results tell us that for those consumers who evaluate the snack in excess of 4.29 units (0.73/0.17) on the satisfaction scale (i.e., consumers who have about average and above average satisfaction scores), the marginal impact of payment time on payments under PWYW is positive i.e., they pay more after they have experienced the product. By way of contrast, dissatisfied consumers pay less. This result highlights the double-edged sword of PWYW pricing in that it behooves the seller to offer PWYW in situations where consumers can experience the product, but this strategy can backfire if the product fails to meet consumers' expectations. The impact of payment appeal is positive, implying that consumers pay more under "Pay What You Think It Is Worth" pricing compared to PWYW pricing. This also confirms the prediction of our model.

Finally, the parameter estimates indicated that the visibility of payment (private or public) does not significantly impact the voluntary payments made by the respondents. This result appears to suggest that image concerns were not an important concern in consumer decisions. Although, at first glance, this finding is rather surprising, it may be an artifact of the experimental setting (where the payment was only visible to a lab assistant with whom most participants did not expect to have any future interactions). Moreover, we do not observe a negative impact of payment visibility on prices paid as found by Gneezy et al (2012). To further explore this effect, we also ran a separate truncated (at zero) regression model with only the positive payments as the dependent variable (i.e., dropped all the zero payments from the sample) and payment type as a predictor. This model yielded a negative and significant coefficient for payment type, suggesting that, conditional on respondents making non-zero payments, voluntary payments were lower in the private condition. [11]

Therefore, this provides partial support for our model prediction with regard to the visibility of payments, with the caveat that the results hold only for those consumers who made positive voluntary payments. Finally, we control for consumers' ethical beliefs and find that more ethical consumers pay more under PWYW pricing. In summary, our results suggest that PWYW pricing is more likey to succeeed when offered by local (versus national) sellers and when payment is made after consumers have had an opportunity to experience the product (as is entirely normal in the case of restaurants and personal services such as haircuts or massages, but generally not the norm for most products or services). Furthermore, we find that focusing on product value is conducive for voluntary payments so that "Pay What You Think It Is Worth" may be a better way to describe this strategy than "PWYW". Finally, we found partial support for the contention that the visibility of payments may have a positive impact on voluntary payments schemes, at least among those consumers who are willing to make non-zero psyments.

6.3. Study 3: A Field Experiment Regarding PWYW Versus Conventional Pricing

The PWYW field studies were conducted with the cooperation of two internationally renowned golf resorts in the western United States. These resorts held golf events called "Play 'N Pay" over 6 Saturdays during summer 2011. Consumers were invited to play golf and then pay whatever price they wanted at the end of their round i.e., after they had the opportunity to experience the service. At the same time, there were golfers who booked their rounds under regular pricing so that on any given "Play 'N Pay" day there were golfers playing under both regular and PWYW pricing schemes. Our main objectives were to assess the revenue generating potential and profitability of PWYW pricing in a real market and to obtain further evidence on the behavioral factors that are accounted for by the theoretical model. In particular, we seek to investigate

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[11] The regression of Payment Type on Actual Payment led to a highly significant parmeter estimate for Payment Type of 0.47 (s.e. = 0.18)***, N= 191.

two effects that were not addressed in the laboratory experiment: which price anchors have a significant impact on consumers' payments and the empirical relevance of the status-quo bias.

Profitability of PWYW In order to assess the profitability of PWYW, we compared data from the PWYW event dates with the corresponding data from the control or benchmark dates (the Saturdays immediately preceding each "Play 'N Play" event). Over the six PWYW event dates, the golf courses were used by a total of 991 golfers. This is a 34% increase relative to the 742 customers who played on benchmark dates and suggests an increase in market participation based on PWYW pricing. However, only 537 of the 991 golfers (54%) played under the PWYW pricing scheme. Therefore, on any given day, total demand can be broken into a conventional pricing segment (comprising players who make their bookings in advance under conventional pricing schemes, irrespective of whether PWYW pricing is available or not) and a flexible pricing segment, consisting of the potential customers of PWYW pricing. In order to estimate the upper bound for the increased demand under PWYW, we made the assumption that the number of users of the conventional pricing segment is constant across the PWYW event dates and benchmark dates. Then, we would expect 249 flexible price golfers without the PWYW promotion and conclude that the PWYW event boosted demand of the flexible pricing segment from 249 to 537 golfers, which represents an increase of 86%.

We now look at the effect of PWYW pricing on the voluntary prices paid by consumers. On the benchmark dates, golfers were charged a mean price of $31.07 (taxes included)[12], compared to a mean price of $26.97 that was collected on the PWYW event dates (a 13% reduction). However, as noted above, the latter mean includes payments from both PWYW and conventional pricing customers. The mean payment under PWYW was $22.95, where 84% paid amounts within the $15-$30 interval, with very clear peaks at the $20 and $25 levels. This is 26% below the mean price charged on the benchmark dates.

Finally, we investigated how the lower payment under PWYW pricing impacted revenues and profitability. The combination of lower mean prices (by 13%) and larger demand (by 34%) increased total revenues of the event dates by 16% relative to the benchmark dates.[13] Obviously, whether these larger revenues translate into larger profits depends on costs. Assuming marginal costs of $1 per round of golf (based on estimates provided by the management who highlighted the very low marginal costs for golfing), simple calculations indicate that the gross margin is 15% higher under PWYW than under conventional pricing. Moreover, PWYW remains more profitable than conventional pricing for any marginal cost below a threshold level of

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[12] Golfing services in a resort are priced under different schemes, depending the status of the golfer (guest, member, non-member etc.), the golfing event (tournament or isolated round of golf), the booking channel etc.

[13] Repeating the earlier calculations and breaking demand down into two segments with the assumption of similar demands in the conventional pricing segment leads to the conclusion that the revenues of the flexible price segment increased by as much as 38%.

$14.75[14]. Based on these numbers, management declared PWYW pricing to be a success and decided to persist with this pricing strategy.

Anchoring We also administered a survey that was completed by 483 of the 537 PWYW customers[15]. Among other questions, respondents were asked for their best estimates of the following:

- "Average amount paid by other Play N' Pay golfers today" (Social Norms)

- "How much today's round of golf was worth to you" (Value)

- "Normal fee of a round of golf at a similar golf course" (Regular Price)

- "Assuming a normal fee of $40 how much of this amount do you think goes to maintaining and operating the course" (Cost)

Table 5 contains the estimates of a linear regression model where the price paid by respondents is explained by their best estimates of the four anchors above.

<div align="center">Insert Table 5 here</div>

As shown in the table, *Value* and *Social Norms* were found to have a significant impact on the level of voluntary payments. Interestingly, the self-reported measures of importance of the various anchors confirm Value as a relevant anchor but clearly understate the importance of Social Norms. This should not come as a surprise, since it is well known that individuals fail to recognize how their choices and behavior are affected by social influences. In the opposite direction, consumers state that regular prices (a proxy for internal reference prices) are the second most important anchor in their decision process, but our regression results indicate a non-significant effect of that variable on the prices paid.

The Status Quo Bias In our model the status quo bias is conceptualized as a loss of utility associated with having to make decisions that are unfamiliar and are potentially difficult for consumers. As shown previously, this disutility may be strong enough to make some consumers reject PWYW offerings. Since we only surveyed the golfers who accepted the Play N' Pay promotion, our sample may suffer from self-selection and our respondents may not be strongly affected by the status quo bias. With this limitation in mind, we measured the perceived importance of the status quo bias by asking respondents about their level of agreement (on a 7 point scale, with 7 being Totally Agree) with the following two statements: a) "Deciding how much to pay for Play N Pay was not very easy because I had to make quite an effort to think about it" (Effort); b) "I had mixed feelings while paying for Play 'N Pay because I was not sure whether I was paying too much or too little" (Dissonance).

Although the sample means for the above items were not high (3.89 and 3.96, sig=.238), the proportions of respondents who checked one of the two top boxes was far from negligible (20.2% and 19.5%,

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[14] The condition for the gross margin of the event dates to be larger than the gross margin of the benchmark dates is $991(26.97 - C) > 742((31.07 - C)$, leading to $C < 14.75$

[15] All the respondents were playing under the assumption that their round of golf was a PWYW pricing situation. In addition, the survey was administered **after the players made their voluntary payments.**

respectively). These results (low to middling effort and dissonance) suggest that even some consumers who accepted the PWYW offer had difficulty with PWYW pricing. In addition, we also asked respondents the following question: "Suppose that in addition to the Play N Pay offer, this resort also offered a discount of 20% over the regular green fees. Under these circumstances which offer would you prefer?" According to our model, the only possible reason to prefer the 20% discount is the status quo bias. Clearly, the possibility of paying any price will always be preferred to a discount offer, unless having to decide how much to pay imposes a burden on the consumer. What we observed, somehow surprisingly, was that almost one third (32.2%) of the respondents declared that they would prefer a 20% discount offer to the PWYW promotion. Furthermore, respondents who claimed to prefer the discount offer exhibited significantly higher means for the "Effort" and "Dissonance" items than those who preferred the PWYW system, as expected[16] Overall, these results confirm the empirical relevance of the Status Quo Bias, consistent with our findings in study 1. In addition, our results are also consistent with those of Gneezy et al (2013) who observed lower levels of participation under PWYW than under low fixed price levels.

Subsequent Follow-up Study

Due to the success of the PWYW pricing strategy, the same resorts gave us another opportunity to collect additional data on the potential determinants of the prices paid by their customers. In particular, we were interested in investigating the extent to which satisfaction and loyalty impact the price paid. Such relationships were initially proposed by Kim et al. (2009), who only found empirical support for the former. The same "Pay 'N Play" events were repeated in 2012 and the demand patterns were very similar to what had been observed in the previous year. Data was collected from a sample of 200 Pay N' Play golfers whose mean voluntary payment was $21.10. Only 4 respondents had chosen to pay zero, while about one third paid $20 (the modal price).

Besides recording the price paid, the questionnaire contained a few questions regarding overall satisfaction, frequency of play at the resort and a dichotomous question on whether the respondent was likely to return to the resort based on the experience. Basic sample statistics revealed that 22% of the respondents had never played in the same resort before, while 46% were occasional customers (play less than once per month) and about one third (32%) were regular customers. The mean level of satisfaction was 5.1 (on a 7 point scale) and 88% of the respondents claimed that they would be likely to come back at some point in the future. In table 6 we present the results of regressing the satisfaction and loyalty variables on payments.

<u>Insert Table 6 here</u>

The results show that both satisfaction and the intention to return to the resort have a significant and positive impact on the prices paid. In particular, the prospect of using the service again is estimated to

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[16] The mean of the dissonance item for respondents who preferred the discount offer was 4.43, against 3.69, for those who preferred the PWYW offer, the difference being statistically significant (sig=.000). Similarly the corresponding means for the effort item were 4.27 and 3.66, again with an independent sample T-test rejecting the hypothesis of equal means (sig=.001).

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increase the voluntary payment by as much as $5.40 (roughly one fourth of the mean payment). These results are again consistent with our theoretical analysis. First, satisfied consumers tend to derive a higher value from the consumption experience, which in turn leads to higher perceived fair prices and to higher voluntary payments, as predicted by the model. Second, reciprocity motives lead the consumers who intend to come back to pay more. However, provided that the intention to return exists, using the service more often does not seem to impact the voluntary payment, as shown by the non-significant coefficients of the frequency dummy variables (Occasional and Regular).

7. Conclusions

The main goals of this paper were twofold. First, we wanted to determine the main behavioral factors that drive consumer choice under PWYW. This is particularly interesting due to the unique characteristics of PWYW pricing. As is the case with donations, under PWYW pricing individuals can choose the amount they wish to contribute. However, in stark contrast to donations, these contributions are in return for the consumption of a private good and the "recipients" are profit maximizing firms. Second, we wanted to examine the conditions under which PWYW can be a profitable pricing strategy, both in absolute terms and relative to conventional fixed pricing. In order to do so, we formally incorporated some important behavioral factors into a model that is solidly grounded in neoclassical economics and derived consumer demand under both PWYW and conventional pricing. In addition, we characterized the manner in which these behavioral factors impact profits under PWYW pricing and made predictions regarding the conditions under which such factors may operate in favor of PWYW pricing. Finally, we tested and verified these predictions using both a laboratory and a field setting. To the best of our knowledge, this is the first paper to characterize product demand under PWYW pricing and identify the conditions under which PWYW can be a profitable strategy.

Our analysis shows that PWYW has the potential to expand demand very significantly and to operate as an effective price discrimination device. However, these advantages only materialize to the extent that a number of conditions are met. First, consumers (in particular, high value consumers) must be driven by fairness considerations. This tends to happen when there is psychological proximity and/or a personal connection between the buyer and the seller. Those conditions create an environment of high moral intensity where customers feel obliged to be fair. This means that PWYW pricing can be a favorable strategy for small, local firms that sell personal services. However, our results highlight the double-edged nature of fairness: while it has the potential of increasing voluntary payments made by most consumers, it may also prevent some others from entering the market.

Second, consumers should mainly base their fairness perceptions on their own valuations of the good or service, as opposed to being driven by social norms or by internal reference prices. This is so even when internal reference prices are significantly higher than the mean valuation. This suggests that PWYW is more

likely to evolve in services where payments are ordinarily expected to be made after consumption and where the consumption experience remains very salient in consumers' minds at the moment of the payment. This is generally the case for restaurants and many personal services (such as haircuts and massages). By definition, personal services require unique or special talents that cannot be easily replicated by others, thereby providing consumers with a natural opportunity to anchor on value. Interestingly, our results also point to the importance of encouraging product trials and allowing consumers an opportunity to fully evaluate the products prior to making payments.

Third, PWYW pricing benefits from consumers' image and reciprocity concerns, that is, their concerns about how the amount paid will influence their reputation and the future behavior of others towards them. This suggests that PWYW works better for businesses where, in addition to visible payments, the levels of repeat purchases and consumer loyalty tend to be high.

Fourth, consumers need to overcome the status quo bias that leads them to have a preference for conventional pricing schemes. In order to achieve this, firms might try to find ways of reducing the incremental effort, dissonance and self-image signaling concerns that PWYW pricing imposes on consumers. For example, on the basis of a suggested "donation" policy", the Panera Cares restaurants get 60% of their customers to pay the suggested price. However, our results suggest that the potential benefits of suggested prices must be weighed against their potentially negative effects on the formation of fair price perceptions. Under such conditions, the choice of suggested price becomes absolutely crucial. Levels that are too low tend to erode the prices paid, while those that are too high will create an additional barrier to market participation.

In the second part of our paper we empirically tested our model, as well as its predictions. The results from a stated preference study were generally consistent with the predictions of the theoretical model and highlighted the relevance of the behavioral factors. Manipulations of those factors in a lab experiment also produced evidence that was mostly consistent with our expectations. For example, we found that PWYW payments increase a) with the moral intensity of the context b) when consumers are primed to pay in accordance with the value of the product and c) when the payment is made after consumption (provided that the experience was satisfying). Payment visibility was the only factor for which our results were only partially in support of our hypothesis. The weak evidence for this factor, taken together with the results of Gneezy et al (2012), who found that visible payments can in some contexts reduce revenues, appears to suggest that the critical behavioral factors for the viability of PWYW pricing are the significance of the consumers fairness concerns and how such concerns translate into perceived fair prices. Finally, a field study conducted in a local golf resort confirmed that PWYW can indeed be profitable and provided further evidence regarding consumer anchoring and the relevance of the status quo bias. In addition, this study also demonstrated that satisfaction and loyalty impact voluntary payments.

In conclusion, the long-run viability of PWYW depends on the confluence of a number of factors, which are highly context specific and not easy to control in practice. For example, while it is relatively easy in

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certain settings to engender fairness and reciprocity in the minds of consumers, this is generally not the case for most products and services. Therefore, PWYW can prove to be a feasible pricing mechanism for particular types of businesses such as local restaurants or personal services. The positive results that we obtained for golfing services should also come as no surprise given the characteristics of the seller (a local resort), the type of service, the visibility and the timing of the payment, and finally the fact that the value of the golfing experience tends to be very vivid at the time of payment. In addition, the marginal cost of serving an additional golfer is very low . However, most businesses offer less favourable conditions for PWYW pricing. For example, when a consumer buys music online, an airline ticket, a piece of clothing in a department store, or even food products in a large supermarket, most of the behavioural and contextual forces oulined above tend to have an adverse impact in that they may encourage free riding and paying as little as possible. In the final analysis, regardless of how well it is set up, by ceding the entire pricing decision to consumers, PWYW pricing ultimately relies on consumer goodwill and trust. Managers contemplating this pricing strategy may wish to consider the evidence from economics, where a survey of experimental outcomes regarding trust finds that "The fact that the return to trust is zero is fairly robust" (Camerer 2003).

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References

Bolton, G. E., Ockenfels, A. (2000) ERC: A theory of equity, reciprocity, and competition. *American Economic Review* **90**(1):166–193.

Bolton, G. (1991) A comparative model of bargaining: Theory and evidence. *American Economic Review* **81**(5):1096–1136.

Bolton, Lisa E., Warlop, L., Alba, J. (2003) Consumer perceptions of price (un)fairness. *Journal of Consumer Research* **29**(4):474–491.

Bolton, Lisa E., Lemon, K. N. (1999) A dynamic model of customers' usage of services: Usage as an antecedent and consequence of satisfaction. *Journal of Marketing Research* **36**(2):171–86.

Camerer, Colin (2003) *Behavioral Game Theory: Experiments in Strategic Interaction* (Princeton: Princeton University Press)

Chernev, Alexander (2004) Goal orientation and preference for the status quo. *Journal of Consumer Research* **31**(3):557–565.

Cialdini, R. B. (1993) *Influence-The Psychology of Persuasion* (New York, NY: Morrow).

Cialdini, R. B., Reno, R. R., Kallgren, C. A. (1990) A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology* **58**(6):1015–1026.

Emery, Fred (1970) Some psychological aspects of price. Taylor, Bernard, Wills, Gordon, eds.*Pricing Strategy* (Princeton, New Jersey), 98–111.

Fehr, Ernst, Fischbacher, Urs (2003) The Nature of Human Altruism. *Nature* **1**, (425): 785-791.

Fehr, Ernst and Schmidt, K. (1999) A theory of fairness, competition and cooperation. *The Quarterly Journal of Economics* **14**(3): 817–868.

Fehr, Ernst, Schmidt, K. (2006) The Economics of Fairness, Reciprocity and Altruism Experimental Evidence and New Theories. *Handbook of the Economics of Giving, Altruism and Reciprocity* **1**, 615–691. Elsevier Press.

Fernandez, Jose M., Nahata, Babu (2009) Pay what you like? Available at SSRN: http://ssrn.com/abstract=1433845 or http://dx.doi.org/10.2139/ssrn.1433845

Gneezy, A., Gneezy, U., Nelson, L. D., Brown, A. (2010) Shared social responsibility: A field experiment in pay-what-you-want pricing and charitable giving. *Science* **329** (5989):325–327.

Gneezy, A., Gneezy, U., Riener, G. and Nelson, L. D. (2012) Pay-what-you-want, identity, and self-signaling. *Proceedings of the National Academy of Sciences* **109**(19):7236–7240.

Goldstein, N.J., Cialdini, R., Griskevicius, V. (2008) A room with a viewoint: Using social norms to motivate environmental conservation in hotels. *Journal of Consumer Research* **35**(3): 472–482.

Gundlach, Gregory T., Murphy, Patrick E. (1993) Ethical and legal foundations of relational marketing exchanges. *Journal of Marketing* **57**4(Oct):35–46.

Haws, K., Bearden, W. O. (2006) Dynamic pricing and consumer fairness perceptions. *Journal of Consumer Research* **33**(3):304–311.

Hoffman, E., McCabe, K., Smith, V. (1996) Social distance and other regarding behavior in dictator games. *American Economic Review* **86**(3):653–660.

Johnson, E. J., Goldstein, D. (2003) Medicine - Do defaults save lives? *Science* **302**(5649):1338–1339.

Jones, T. M. (1991) Ethical decision-making by individuals in organizations: An issue-contingent model. *Academy of Management Review* **16**(2):366–395.

Kahneman, Daniel, Knetsch, Jack L., Thaler, R. H. (1986) Fairness as a constraint on profit seeking: Entitlements in the market. *American Economic Review* **76**(4):728–741.

Kahneman, D., Knetsch, J.L., Thaler, R.H. (1991) Anomalies: The endowment effect, loss aversion and status quo bias. *Journal of Economic Perspectives* **5**(1):193–206.

Kalyanaram, G, Winer, Russell S. (1995) Empirical generalizations from reference price research. *Marketing Science* **14**(3):G161–G169.

Kim, Ju-Young, Natter, Martin, Spann, Martin (2009) Pay what you want: A new participative pricing mechanism. *Journal of Marketing* **73**(1):44–58.

Kim, Ju-Young, Natter, Martin, Spann, Martin (2010) Kish: Where customers pay as they wish. *Review of Marketing Science* **8** 3. 1–11

Lattin, James M., Bucklin, Randolph E. (1989) Reference effects on price and promotion on brand choice. *Journal of Marketing Research* **26**(3):299–310.

Luce, Mary Frances (1998) Choosing to avoid: Coping with negatively emotion-laden consumer decisions. *Journal of Consumer Research* **24**(4):409–433.

McDonald, John F., Moffitt, Robert A. (1980) The uses of Tobit Analysis. *The Review of Economics and Statistics* **62**(2):318-321.

Monroe, Kent (1973) Buyers' subjective perceptions of price. *Journal of Marketing Research* **10**(1):70–80.

Novak, Martin A., Sigmund, Karl (2005), Evolution of indirect reciprocity. *Nature* **437**(7063):1291–1298.

Packer, C. (1977) Reciprocal altruism in Papio anubis. *Nature* **265**(5593): 441–443.

Rabin, M. (1993) Incorporating fairness into game theory and economics. *American Economic Review* **83**(5):1281–1302.

Raju, J.S., Zhang, Z. J (2010), *Smart pricing: How google, priceline, and leading businesses use pricing innovation for profitability.* (Pearson Prentice Hall)

Rankin, D. J., Eggiman, F. (2008) The evolution of judgment bias in indirect reciprocity. *Proceedings of the Royal Society B* **276**(1660):1339–1345.

Samuelson, W., Zeckauser, R. (1988) Status quo bias in decision making. *Journal of Risk and Uncertainty* **1**(1): 7–59.

Schultz, P.W., Nolan, J.M., Cialdini, R.B., Goldstein, N.J., Griskevicius, V. (2007) The constructive, destructive and reconstructive power of social norms. *Psychological Science* **18**(5):429–434.

Thaler, Richard (1985) Mental accounting and consumer choice. *Marketing Science* **4**(3):199–214.

Tidd, K.L, Lochard, J.S. (1978) Monetary significance of the affiliative smile: A case for reciprocal altruism. *Bulletin of the Psychonomic Society* **11**(6):344–346.

Vitell, S. J. (2003) Consumer ethics research: Review, synthesis and suggestions for the future. *Journal of Business Ethics* **43**(1-2):33–47.

Vitell, S. J., Muncy, J. (2005) The Muncy-Vitell consumer ethics scale: A modification and application. *Journal of Business Ethics* **62**(3):267–275.

Xia, L., Monroe, K., Cox, Jennifer (2004) The price is unfair! A conceptual framework of price fairness perceptions. *Journal of Marketing* **68**(4):1–15.

Table 1

Simulation Results: Profits As A Function of Model Parameters

Variables	Conventional Pricing Profits	PWYW Profits
Constant	5409.61(16.91)***	-1685.39 (237.49)***
β *(Fairness)*	-116.60 (43.81)**	21392.42 (615.42)***
C (Cost)	-552.19 (1.96)***	-716.35 (27.52)***
φV *(Value Anchor)*	-7.43(20.27)	2949.69 (284.82)***
φR *(RP Anchor)*	-133.00 (20.27)***	906.64 (284.82)**
β^2	50.16 (41.98)	-15261.94 (589.67)***
N	300	300
R^2	0.996	0.902

- Note: *** p < 0.001, ** p < 0.01

Table 2

Simulation Results (including reciprocity)

Variables	Conventional Pricing Profits	PWYW Profits
Constant	5410.21 (51.32)***	7006.44 (41.76)***
μ_β	-.428(148.25)	4938.83 (120.62)***
C (Cost)	-569.09 (1.85)***	-999.99 (1.50)***
θ *(Reciprocity)*	.007 (10.16)***	354.809 (8.27)***
Corr(β,V)	.000 (5.845)	50.458 (4.75)***
μ_β^2	.309 (103.84)	-2325.94 (84.48)***
$\mu_\beta * \theta$	-.010 (13.86)	-287.491 (11.28)***
N	320	320
R^2	0.997	0.999

- Note: *** p < 0.001, ** p < 0.01
- μ_β is the mean of the fairness parameter β

Table 3   Conjoint Model Estimates (Study 1)

Variables	Coefficient (s.e)
S	.318 (.04)***
E	-.0987(.04)**
$S*P$	.0024 (.001)*
$E*P$	.0012(.001)
$S*E$	-.09 (.03)*
Fairness	
P	.011(.003)***
P^2	-.0005(.000)***
Reciprocity	
$\delta P^{\frac{1}{2}}$	.02(.01)
Status Quo	
δ	-.17(.07)*
$S*\delta$	-.03(.03)
$E*\delta$	.09(.036)*

- Note: *** p< 0.001 **p<0.01 *p<0.05

- S is dummy variable coded as 1 for "excellent" service and 0 for "good" service

- E is a dummy variable coded as 1 for "seafood" entree 0 for "steak" entree.

- P is the level of price (if conventional pricing) or voluntary payment (if PWYW) in $

- δ is a dummy variable coded as 1 for "Pay What you Want" and 0 for conventional pricing.

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Table 4	Tobit Model: Study 2
Variable	**Coefficients (s.e.)**
Payment Visibility	0.04 (0.11)
Payment Time	-0.73 (0.24)***
Payment Appeal	0.06 (0.01)***
Seller Type	-0.21 (.11)*
Ethics	0.07 (.02)***
Satisfaction Payment Time*	0.17 (0.06)***
Constant	-0.82 (0.37)**
sigma	0.97 (0.13)**
N	*478*

- Note: *** $p < 0.01$, ** $p < 0.05$
- Payment Visibility is 0 if visible and 1 if private (anonymous)
- Payment Time is 0 if Payment is made Before Consumption and 1 if After Consumption
- Payment Scheme is 0 if PWYW and 1 if "Pay What You Think It Is Worth"
- Product Type is 0 if Local and 1 if National

A Brief Note on the Interpretation of the estimated coefficients in the Tobit Model:

The coefficients from a Tobit model may be interpreted based on the method suggested by McDonald and Moffit (1980). They show that these coefficients can be decomposed into (a) the impact of X on the probability of making a non-zero payment and (b) the impact of X on the magnitude of payments for those who made non-zero payments. For example, it is possible to calculate that the impact of payment time (-0.73) implies that if the payment is made before experiencing the product fully then it (a) lowers the probability of paying a non-zero amount by 29% and (b) lowers the amount paid by an average of $0.22 for those consumers who do pay a non-zero amount. Since the mean payment for the non-zero payers was $0.70, this represents a decline of 31% relative to the mean, clearly highlighting the importance of getting consumers to pay only after consuming the product or service. The impact of the other coefficients can be decomposed in a similar fashion.

Table 5   Regression model for voluntary Payments as a Function of Fair Price Anchors (Study 3)

Anchors	Coefficients (s.e.)	Stated Mean Importance
Value	.39 (.05)***	5.2
Social Norms	.40 (.06)***	3.61
Regular Price	-.01 (.04)	4.98
Cost	.05 (.04)	4.03
Constant	2.9 (1.3)*	-
N	329	
R^2	0.52	

- Note: ***$p < 0.001$, **$p < 0.01$ *$p < 0.05$

Table 6   Regression model for Voluntary Payments as a function of Satisfaction and Loyalty (Study 3)

Variable	Coefficient (s.e)
Satisfaction	1.24 (.37)***
Return	5.39 (1.93)**
Occasional	1.47 (1.23)
Regular	1.54 (1.31)
Constant	8.62 (2.17)**
N	199
R^2	0.15

- Note: ***$p < 0.001$, **$p < 0.01$
- Satisf is the respondent's level of satisfaction with the golfing experience (7 point scale)
- Return is a dummy variable reflecting the respondent's intention to come back to the resort
- Occasional is a dummy variable and equals 1 for occasional players (less than once per month)
- Regular is a dummy variable and equals 1 for respondents who play regularly at the resort

Appendix A.

Procedures for simulating the market equilibria under PWYW and under profit maximizing conventional pricing.

The PWYW market equilibrium was found through the following procedure:

1) We simulated data for 1000 consumers by fixing values for the model parameters $(\beta, C, \varphi_V, \varphi_R)$

2) We fix a value for the mean payment $(\tilde{P})$ and use expression (2) to determine the perceived fair prices for all consumers $(\phi_i = 1.1000)$.

3) Next, we solve Equation (4) for the optimal payments for all consumers, P_i.

4) Using equation (1), we check whether or not the utility level associated with the optimal payment P_i is positive. Consumers with negative utility are designated as non-participants in the PWYW market.

5) Given the vector of payments P_i we re-calculate the mean payment $\tilde{P}_i$.

6) We use the mean payment obtained in step 5) as initial input for step 2) and repeat steps 2) to 5) until the process converges.

7) Based on this we computed the profit of PWYW pricing as: $\delta_{PWYW} = \sum_{i=1}^{1000} \omega_i(P_i - C)$, where ω_i is a variable that takes the value of 1 if consumer i participates in the market and 0 otherwise (as determined in step 4).

8) Finally, we changed the values of the model parameters and repeat steps 1) to 7).

We systematically varied $(\beta, C, \varphi_V, \varphi_R)$ over a wide interval of plausible values. The values adopted for the anchor weights φ_V and φ_R, which vary between 0 and 1 by definition, were 0.1, 0.3, 0.5, 0.7 and 0.9 (with the natural constraint that the sum not exceed 1). Marginal costs were set at 0, 2, 4 and 6. It is worth noting that the latter value represents a fairly high cost level, given that it corresponds to 60% of the mean consumer valuation.

Finally, β was varied between 0 and 1 (values of 0, 0.25, 0.5, 0.75 and 1). Although this parameter could in theory take any positive value, using the upper bound of the adopted interval (i.e., $\beta = 1$) makes the fairness term so large that it becomes by far the most dominant component of consumer utility. Therefore, larger values of β are very unrealistic and not worth considering. Using all the possible combinations of the above parameter values, we solved the model numerically for a total of 300 different scenarios. The profit maximizing equilibrium solution under conventional pricing was computed as follows:

1) For each combination of parameter values, we used expression (3) to solve for the WTP of all consumers (WTP_i).

2) We systematically varied price within a pre-specified grid and for each price level, we determined the demand (number of consumers whose WTP exceeds price) and the corresponding profit level. Finally, we selected the price level that generated the highest profits.

Table A1   **Profits as a function of the model parameters under alternative distributional assumptions for consumer valuations**

Variables	Conventional Pricing Profits		PWYW Profits	
	Normal	Uniform	Normal	Uniform
Constant	5409.61***	5295.66***	-1685.39***	-1762.73***
	(-16.91)	(-12.59)	(-237.49)	(-230.91)
β (Fairness)	-116.60**	-69.66*	21392.42***	21117.51***
	(-43.81)	(-32.62)	(-615.42)	(-598.35)
C (Cost)	-552.19***	-519.94***	-716.35***	-704.69***
	(-1.96)	(-1.46)	(-27.52)	(-26.75)
ψ_V (Value Anchor)	-7.43	-0.33	2949.69***	2956.58***
	(-20.27)	(-15.09)	(-284.82)	(-276.92)
ψ_R (RP Anchor)	-133.00***	-77.91***	906.64**	986.71***
	(-20.27)	(-15.09)	(-284.82)	(-276.92)
β	50.16	31.57	-15261.94***	-14946.41***
	(-41.98)	(-31.26)	(-589.67)	(-573.32)
R^2	0.996	0.998	0.902	0.905

Table A2   Profits with varying internal reference prices

Variables	Conventional Pricing Profits			PWYW Profits		
	R=6	R=10	R=14	R=6	R=10	R=14
Constant	5689.58***	5409.61***	5592.56***	-1850.47***	-1685.39***	-769.49**
	(-30.87)	(-16.91)	(-91.17)	(-193.82)	(-237.49)	(-286.56)
β (Fairness)	-613.05***	-116.60**	-2021.67**	18315.36***	21392.42***	19604.65***
	(-80)	(-43.81)	(-236.24)	(-502.24)	(-615.42)	(-742.56)
C (Cost)	-597.09***	-552.19***	-403.48***	-889.91***	-716.35***	-496.92***
	(-3.58	(-1.96)	(-10.56)	(-22.46)	(-27.52)	(-33.2)
ψ_V (Value Anchor)	53.51	-7.43	-286.28**	4525.82***	2949.69***	1148.84***
	(-37.02)	(-20.27)	(-109.33)	(-232.44)	(-284.82)	(-343.66)
ψ_R (RP Anchor)	-609.67***	-133.00***	-1636.24***	615.55**	906.64**	-1226.28***
	(-37.02)	(-20.27)	(-109.34)	(-232.44)	(-284.82)	(-343.66)
β^2	320.84***	50.16	1043.41***	-12124.28***	-15261.94***	-15050.83***
	(-76.65)	(-41.98)	(-226.36)	(-481.23)	(-589.67)	(-711.49)
R^2	0.99	0.996	0.869	0.939	0.902	0.801