

Pay-what-you-want, identity, and self-signaling in markets

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We investigate the role of identity and self-image consideration under “pay-what-you-want” pricing. Results from three field experiments show that often, when granted the opportunity to name the price of a product, fewer consumers choose to buy it than when the price is fixed and low. We show that this opt-out behavior is driven largely by individuals’ identity and self-image concerns; individuals feel bad when they pay less than the “appropriate” price, causing them to pass on the opportunity to purchase the product altogether.

fairness | social preferences | behavioral pricing

Although social norms encourage nonselfish behavior (1–4), self-interest is clearly a powerful motive in markets. This raises two important questions with respect to the economic consequences of nonselfish behavior: Is nonselfish behavior important in markets, and if so, how does it operate?

A pricing scheme known as “pay-what-you-want” (PWYW) can help answer both of these questions. To address the first question, nonselfish behavior in the form of PWYW definitely exists in markets. Perhaps the most famous case of PWYW is the release of the band Radiohead’s album “In Rainbows” in 2007. Fans were invited to download the album from the band’s Web site for any price they chose, including nothing. If fans could get the album for free, why would they pay? However, they did. Hundreds of thousands of fans chose to pay for something they could have received for free, and Radiohead collected hundreds of thousands of dollars from its album sales. Other artists (e.g., Girl Talk) and video game companies (e.g., World of Goo) also have had some level of success in using PWYW. The continued use of PWYW by for-profit organizations (as opposed to, e.g., museums or charities) allows the rejection of the straw man model of pure selfishness in markets. Nevertheless, a closer look at these attempts highlights the importance of the second question: What motivates people to behave nonselfishly in markets? Understanding the reasons for individuals’ nonselfish behavior can improve our understanding of how markets work, and help guide the design of institutions based on such behavior.

We report results from three field experiments (5, 6) using PWYW to show that individuals’ nonselfish behavior is influenced, at least in part, by concerns related to self-image. The basic argument is that people want to maintain a sense of being good and fair. That is, individuals derive utility from prosocial behavior as a signaling mechanism; when an individual behaves prosocially, she is judged more positively by others as well as by herself. The evidence provided in this paper converges to support our proposition that self-image plays an important role in individuals’ payment decisions under PWYW.

The first piece of evidence presented here is based on a recent field experiment conducted in collaboration with large amusement park that involved selling photos taken during a ride at the park (7). We compared a regular PWYW pricing scheme with a PWYW variation in which half of the revenue went to charity (a well-known and well-liked organization that helps very ill children). The main finding emphasized in that report was that people pay substantially more when they learn that half of their

payment will benefit charity, making PWYW profitable and socially beneficial. Importantly, here we emphasize a possibly even more notable result. Relative to the traditional PWYW treatment, when people learned that half of their payment was going to charity, they were offered an essentially superior product—an equally good photo, along with an opportunity to support a good cause. Nevertheless, they were dramatically less likely to buy the photo. This finding speaks strongly to our self-image proposition. Those who did buy the photo in the charity treatment paid on average five times more. This suggests that when people believe that the “right” price is high, they simply prefer to forego the opportunity to buy the product (and benefit the charity) rather than to appear cheap by paying too little. When someone is willing to pay little but cares about maintaining a positive self-image, the best option is to not buy at all.

Our second piece of evidence comes from a field experiment showing that under some circumstances, PWYW will result in fewer purchases than a standard fixed-price scheme. Rather than manipulating the variation of the PWYW price, we compared that treatment with treatments in which we manipulated fixed prices to be low or high. Passengers on sightseeing tour boats were photographed before boarding and then had a chance to purchase the printed photos on their return. This is a good real-life example of the ultimatum game. The company has no value for the pictures, which end up in the trash if passengers do not buy them. But this is a take-it-or-leave-it offer; the company representative is not allowed to negotiate the price with the potential buyer. We manipulated the prices such that passengers on different tours could purchase the photo for \$15 (the routine price), for \$5, or at PWYW. All were told that the regular price was \$15. We measured sales and purchase prices. As expected, demand went up when the price dropped from \$15 to \$5. However, in support of our self-image hypothesis, fewer people chose to buy the photo when they had to choose how much to pay than when the price was \$5. This result is surprising, given that those in the PWYW treatment also could have chosen to pay \$5. The fact that fewer people chose to buy under PWYW is consistent with the idea that people were managing their self-image. If \$5 seems unfairly low, people find it easier to maintain self-image by foregoing the purchase altogether. However, when the company sets the price at \$5, there is no ambiguity about fairness, self-image concerns disappear, and people are happy to pay. We argue that individuals who chose to not purchase under PWYW were avoiding the possible negative consequences on their self-image from paying too little.

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The third field experiment was conducted in a buffet-style restaurant in Vienna. We manipulated whether payments were made privately (by putting money into a sealed envelope) or publicly (by paying the owner directly). This manipulation allows us to test the relationship between self-image and social-image considerations. It is plausible to assume that the two forces work in the same direction. Under this assumption, one would expect customers to pay more when they pay the owner than when they pay anonymously. Alternatively, it is possible that being monitored by the owner may crowd out the self-signaling strength, leaving the individual to believe that she chose to pay the specific amount because she “had to,” not because she is a fair person. Under this account, the transaction carries relatively little self-signaling value, so the customer may end up paying less when monitored by the owner. Consistent with the latter hypothesis, diners paid more when asked to pay anonymously than when observed.

Taken together, these studies offer converging evidence that self-image plays an important role in individuals’ nonselfish behavior in markets. Specifically, people care about their self-image and thus are willing to pay for products and services that they can otherwise get for free.

This result is in line with the findings of Akerlof and Kranton (8, 9), who used insights from sociology and psychology when introducing the concept of identity into economic modeling. In their model, identity influences an agent’s utility function. If a person’s behavior clashes with her identity, then her utility decreases. In contrast, identity-confirming choices enhance utility. In Benabou and Tirole’s model (10), individuals derive utility from prosocial behavior as a signaling mechanism; when a person behaves prosocially, she is judged more positively by others and, importantly, by herself (11). In our discussion, we consider this self-image concern to be analogous to identity.

In a recent investigation regarding the role of self-image in prosocial behavior, the researchers manipulated the interaction between extrinsic and image motivations and found that monetary incentives were more effective in increasing charity donations in private settings than in public settings (12). Finally, the finding that some people prefer to avoid situations that may harm their self-image is also consistent with the results of two

recent laboratory experiments (13, 14). Dana et al. (13) reported that people preferred to take \$9 over playing a dictator game for \$10, arguably because making a \$1 offer in the dictator game compromised their self-image and made them feel bad; better to lose the \$1 than to lose a positive self-image.

Experiments

Theme Park Experiment: Choosing to Not Buy Under PWYW with Charity. *Design.* The data in this section are based largely on a recent analysis of Gneezy et al. (7). We conducted a field study at a large amusement park. Participants rode a rollercoaster-like attraction, were photographed during the ride, and later chose whether or not to purchase a print of the photo.

Two of the four treatments reported in that paper featured a PWYW pricing scheme. In the first treatment (regular PWYW), customers ($n = 28,263$) could purchase a photo using a traditional PWYW. In the second treatment (PWYW + charity), customers ($n = 25,968$) could purchase the photo using PWYW, with the additional feature that half of their payment would go to a nationally recognized patient-support foundation (we termed this treatment “shared social responsibility”). In essence, people in each treatment could pay what they wanted, but those in the shared social responsibility treatment had the added benefit of knowing that half of their payment was going to a good cause. Those people were simply offered a better product. Each of the two treatments was conducted over 2 full days.

Results. The most striking result here is that 8.39% of the riders chose to purchase the photo in the regular PWYW treatment, compared with only 4.49% in the PWYW + charity treatment ($\chi^2 = 337.44$; $P < 0.001$). The average amounts paid were \$0.92 and \$5.33, respectively [$t(3535) = 43.24$; $P < 0.001$].

One interpretation of the substantial payment difference is that people thought that the “right” price for the PWYW + charity treatment was more than five times larger than that in the regular PWYW treatment. Our data support the proposition that people prefer to avoid buying in the PWYW + charity treatment because they would rather forego the opportunity than risk paying too little and harming their prosocial self-image (8, 15, 16).

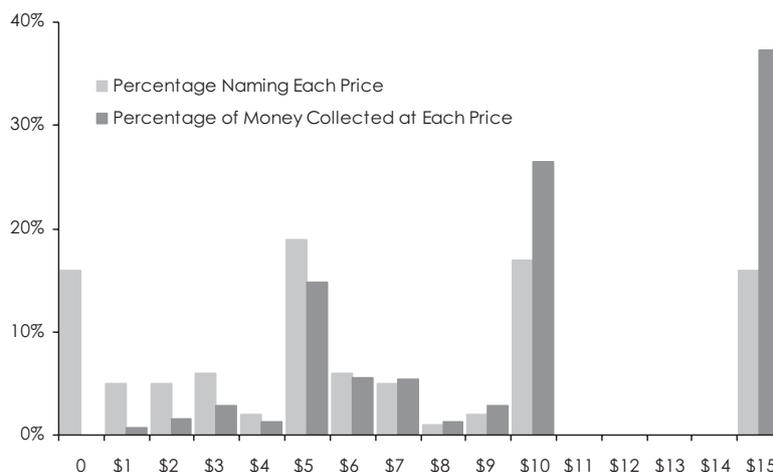


Fig. 1. Passengers from 20 cruises were offered personal photos for \$5, passengers from 20 other cruises were offered to buy the photo for \$15, and passengers from 20 other cruises could “pay what you want.” The panel reports financial data for the three treatments. The figure shows the distribution of prices and revenue for passengers in the PWYW treatment. All data were reported and analyzed at the boat level.

	\$5 price	\$15 price	PWYW
Percentage purchasing photos	64%	23%	55%
Average price paid	(\$5)	(\$15)	\$6.43
Profit per photo	\$3.2	\$3.45	\$3.50

We also conducted a PWYW + charity treatment in which the digital screen on the cashier was turned on, so people in the line behind the person paying were able to observe how much the person paid. One prediction may be that adding the public signal to the self-signaling would increase payments. Interestingly, there was no statistically significant difference between the two PWYW + charity treatments, indicating that self-signaling was the driver of behavior in this case.

Tour Boat Experiment. Design. The tour boat company operates several ships, each with daily cruises 7 days a week. On a typical day, each individual or group is photographed on boarding and informed that the photo will be available for purchase for \$15 on return from the cruise. While passengers are at sea, the photographer prints and hangs the photos on a display board. After the cruise, the passengers walk past this board and can choose to buy photos at the advertised price.

In our study, we manipulated the price of the photos. In addition to the regular \$15 treatment, we added two treatments, one in which we reduced the photo price to \$5 and another in which we sold the photos using PWYW pricing. (We collected data for four other fixed prices on different days, and none of those results were inconsistent with any claims made here. The complete dataset is available on request). In each pricing scheme we collected data from 20 cruises, each with at least 50 groups of passengers. We randomized the price for each cruise and observed the number of photos purchased and, for the PWYW treatment, the average price paid.

Results. Fig. 1 presents the fraction of people who chose to pay each amount, and the total revenue collected for each amount in the PWYW treatment. As shown, for a variety of exogenous factors (e.g., wind, waves), cruises differed significantly in terms of the popularity of photo purchasing. As expected, significantly more people bought photos when priced at \$5 than when priced at \$15 (64% vs. 23%). For the test, we used the lower end of each interval, with one observation per ship, resulting in 20 observations per treatment. Results from both the two-tailed Mann-Whitney U test and t test were highly significant ($P < 0.0001$). In line with our hypothesis, more people bought the photo when the price was \$5 than when they could name their own price (55% vs. 64%; U test, $z = 2.22$, $P < 0.026$; t test, $P < 0.016$). This result is surprising, given that passengers in the PWYW treatment could have chosen to pay any amount, including \$5, and thus the finding that fewer people bought photos under PWYW remains a puzzle. We argue that this difference captures the additional signaling value that exists in the PWYW treatment, but not in the \$5 treatment. Note that in this experiment, we were able to lower the fixed price sufficiently such that the demand under it will be higher than the demand under PWYW (in contrast with the theme park experiment).

In terms of profitability, the \$15 treatment resulted in \$3.45 profit per photo taken, while under PWYW, 55% of the photos were purchased at an average price of \$6.43, for an average profit of \$3.50 (55% \times \$6.43) per photo taken. The difference in profit between the treatments is not statistically significant; however, when the photo was offered for \$5, the profit was lower than in the other two treatments (\$3.20 per photo).

Restaurant Experiment. Setup. The experiment was conducted in the Der Wiener Deewan restaurant, located in a central Vienna district. The restaurant serves 140–160 customers per day between 11:00 AM and 11:00 PM and is open from Monday to Saturday. Food is served buffet style. Customers eat as much as they wish and pay as they leave. They pay a fixed amount for drinks and a voluntary amount for food (drinks are paid separately for tax reasons). To encourage payment, the staff usually phrases the PWYW as “zero plus” (translated from German). The owners introduced PWYW when the restaurant opened to

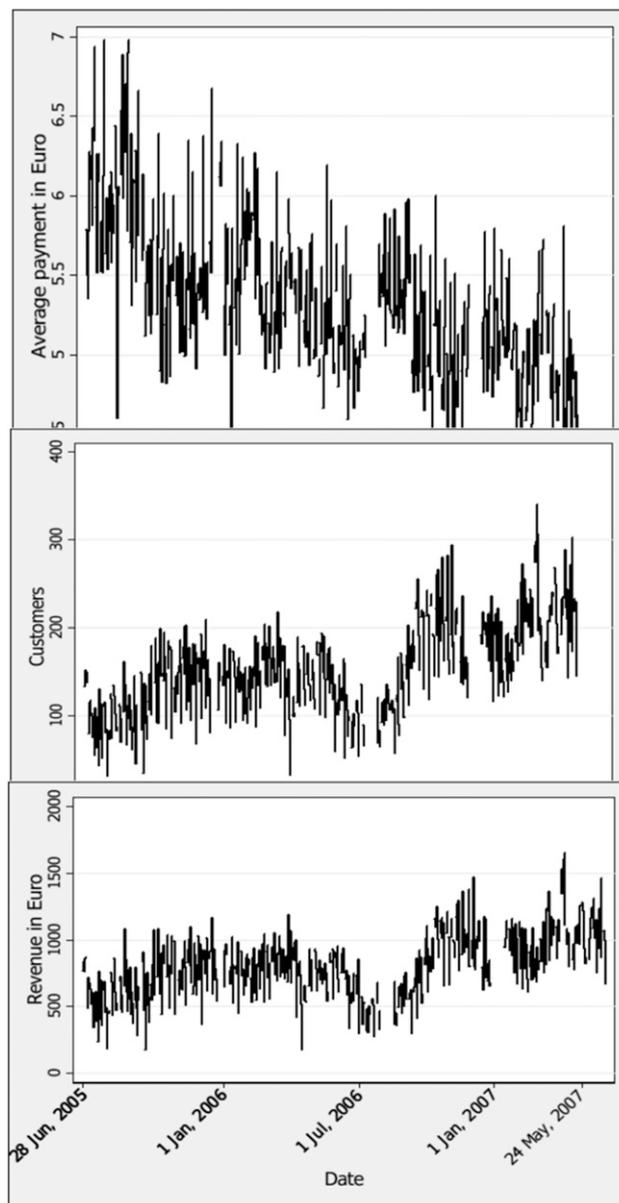


Fig. 2. Variation is customer volume, payment amounts, and revenue over the 2-y period preceding the restaurant experiment. Gaps in the graph are dates when the restaurant was closed. The top panel shows declining average payments, whereas the two graphs at the bottom show a clear upward trend of the number of customers and revenue over the observation period.

attract new customers. Seeing that payments approximately matched fixed price expectations, they elected to retain it. Fig. 2 presents 2 y of data (July 2005 to July 2007), showing variations in customer volume and average payment. The time series has been described in detail previously (17). The average payment ranged between €5.50 and €7.00 (similar to comparable restaurants in the area) initially, and then gradually decreased over the observation period. However, the drop in average payment was matched by an increase in the number of customers, yielding a slight increase in revenue. Three months before the experiment, the median payment was €5, with a minimum of €0 (which was observed at most three or four times a day) and a maximum of €50.00 (which was observed once). People paid individually. In the uncommon case when one person paid for the entire table, the owner divided the amount equally over the number of people

Table 1. Comparison of payments by treatment

Payment anonymity	Informed about average payment		Total
	No (<i>n</i> = 134)	Yes (<i>n</i> = 123)	
Anonymous (<i>n</i> = 118)	€5.37 (1.97)	€5.20 (1.97)	€5.29 (1.97)
Observed (<i>n</i> = 139)	€4.66 (1.37)	€5.44 (1.27)	€5.03 (1.38)
Total	€5.02 (1.73)	€5.32 (1.65)	€5.16 (1.70)

SDs are in parentheses.

* $P < 0.10$; ** $P < 0.05$; *** $P < 0.01$; Wilcoxon rank-sum test.

for whom he or she paid. [The payment of €50 was made by a local communication company manager from a nearby building. He paid for himself only, adding a (written) statement “That’s what one does here, if I am not mistaken” to the payment.] This restaurant demonstrates that PWYW can be sustained over a long period in an environment with meaningful marginal costs.

Design. We use a 2×2 factorial design to manipulate whether or not customers had information about the average price paid by others, and whether or not their own payment was made anonymously. To reduce day and time effects, the treatments were assigned at random over tables. Each customer completed a questionnaire (see the translation in *SI Appendix*) before paying. These questionnaires were coded with table numbers and time of handout to identify groups that sat together. The experiment was conducted in June 2007 during the lunch and dinner hours. A total of 257 customers (54.5% female) participated in the study. The mean group size for each table was 2.54, and the maximum number of customers at a table was 8. The majority of customers were students (62%), followed by customers working in the service sector. More than half of the customers (53.7%) planned to attend the restaurant again within the next month.

In the “observed” treatment, customers filled out the questionnaire and returned it, along with their payment, to the person handling money and questionnaires at the counter. This person was instructed to treat all customers equally and to record the amount contributed on the questionnaire. Customers in the “anonymous” treatment also received a questionnaire to answer, along with an envelope containing €20 in change, to allow them to pay the precise amount they wanted to pay without the need to ask staff for change.

Note that in this treatment, customers could pay even less than €0; they could have taken the change in the envelope and thus paid –€20 (notably, this never occurred). Before leaving,

customers put their payment in the envelope, and dropped it, along with the questionnaire, into a box near the entrance.

The second dimension that we varied was the information customers received about the payments of others. Some customers learned that on a previous day, the average customer’s payment was €6 (which was the true average on a previous day, but was above the overall average), and some customers did not receive this information. When added, the information was inserted before the questionnaire.

Results. We first wanted to make sure that our experiment was relatively close to the typical behavior at the restaurant. The treatment in which customers were observed and had no information about the payment of others was closest to typical circumstances, so we compared payments in that treatment to payments received over the preceding week. People paid approximately the same amount in this control treatment (€4.66) as they did in the period before the experiment (€4.72), and this difference was not significant given *t* tests and rank sum tests at conventional levels.

When customers were told about the others’ payments, anonymity had no influence on the amount paid ($P = 0.38$), presumably because of the normative anchor that it sets. Consistent with our postulation, when participants were uninformed about the behavior of others, customers paid more when they were anonymous, increasing average payments by €0.71 over the control treatment ($P < 0.01$) (Table 1).

The results of a multivariate analysis show a strong correlation between people’s beliefs about the owner’s payment expectations and actual payments (Table 2, column 5). This suggests that customers are trying to pay a price that feels fair. This analysis also reveals that age (likely to be a proxy for income) is strongly correlated with observed payment behavior. Introducing age into the analysis reduces the treatment effect when customers are not observed, yet it leaves the coefficient positive. We measured some other factors as well (Table 2). Note that customers who visit the restaurant for the first time seem to be most affected by the information treatment with owner interaction.

We can clearly reject the hypothesis that customers pay less when they are not observed. This result supports our proposition that people often pay to enhance their self-image. We emphasize that, like many other aspects of PWYW pricing, this result is sensitive to the parameters of implementation. Our findings should be viewed as demonstrating not that adding signaling to others always reduces payment, but rather that adding signaling to others *sometimes* reduces payment.

Table 2. Multivariate analysis: Restaurant experiment

Dependent variable	Payment	Payment	Payment	Payment
No communication	0.71 (0.40)*	0.69 (0.40)*	0.31 (0.37)	0.36 (0.36)
No communication and no information	0.55 (0.43)	0.36 (0.41)	0.56 (0.38)	0.27 (0.35)
Communication and information	0.79 (0.35)**	0.51 (0.34)	0.55 (0.33)*	0.60 (0.31)*
First visit		0.051 (0.32)	0.29 (0.25)	
No communication \times first visit		0.11 (0.86)		
No communication and no information \times first visit		0.93 (0.80)		
Communication and information \times first visit		1.08 (0.51)**		
Age			0.31 (0.074)***	
Age squared			–0.0034 (0.00096)***	
Sex			0.19 (0.21)	
Evening			0.65 (0.25)**	
Second-order belief				0.59 (0.081)***
Constant	4.66 (0.26)***	4.64 (0.26)***	–1.30 (1.29)	1.59 (0.43)***
Observations	235	235	234	227
Adjusted R^2	0.021	0.038	0.220	0.386

Cluster-robust SEs are in parentheses. Cluster: group.

* $P < 0.10$; ** $P < 0.05$; *** $P < 0.01$.

Conclusion

What motivates prosocial behavior in markets? This paper provides evidence that identity and self-image concerns are potentially very important. Three field experiments involving PWYW pricing demonstrate that companies can sustain profitability with payments that rely entirely on social preferences. We argue that people choose to pay because they feel that paying for a good or service received is the right thing to do (2, 3, 17). Thus, choosing to pay serves to maintain an individual's positive self-image.

Such fairness considerations may depend on social norms and are related to tipping behavior, in which people consider the tipping norm when they decide how much to give (18–20). As in tipping, people are interested in the social norm that is relevant to their situation; for example, many tip 15–20% at restaurants in the United States, but tip much less in Germany, consistent with the local norm. Even in the United States, people do not tip the same everywhere; when eating at McDonald's people do not leave a tip, at Starbucks they sometimes do, and at nicer restaurants they typically do. When faced with PWYW pricing, people use their experience to choose how much to pay. Learning how much other people paid, as in our restaurant experiment, is then more effective for inexperienced customers than experienced ones—similar to tipping in a familiar culture versus a new culture.

Clearly, such norms affect the behavior of people who face a PWYW pricing situation. As a result, choosing whether to purchase a product or service, and how much to pay for it, has a self-signaling value. People feel bad when violating the norm and thus would rather avoid the situation by choosing not to buy the product or service. If they do choose to purchase the product or service, they often choose to pay a “fair” price that does not have a negative effect on their self-image.

Paying in PWYW may signal to others that “I am a moral person.” At the same time, however, such payment also serves as a self-signal (8–11). In the self-signaling model, a person is not certain about her true identity due to some form of imperfect recall, and therefore uses her actions to update her beliefs regarding her “true” type.

In the theme park experiment, fewer participants chose to buy the photo when we added the charity component to it. In the tour boat experiment, more people bought the photo when the price was relatively low and fixed than under PWYW. Finally, customers in our restaurant study chose to pay more when they were not observed. These three observations provide a clear indication that image concerns are at work.

Importantly, the results of our restaurant study indicate that people are not simply signaling to others. If self-signaling and social signaling were merely additive, then we would expect customers who were being observed to pay more than those who were not, with the difference capturing the value of signaling to others. This hypothesis is rejected in an interesting way. Specifically, our data suggest that the signal to others crowds out the value of the self-signaling; when observed, the customer feels that the self-signal regarding how good a person she is loses its hold; that is, she cannot use this signal to the same extent to update her beliefs regarding her type, presumably because she now also attributes her decision to pay in the PWYW to the fact she is being observed. This argument is similar to that used to explain why paying people small amounts of money could backfire and reduce effort relative to not paying them anything (21).

Similar evidence is all but absent when considering market results for for-profit companies. Social preferences in real markets are important and should be taken seriously in economic modeling (22). On the practical level, when designing pricing mechanisms, companies can use social preferences to increase profits. For example, in the open-source software development (23), satisfied consumers may choose to pay more than required or to invest more effort to reward such a company for its product, paying a fair price for the good.

Under PWYW, when people like a company, they may pay a price that feels right rather than simply the lowest price possible. Despite allowing customers to pay nothing for the product, the companies in our investigation retained their profitability. Our results provide strong support for the PWYW mechanism in different market contexts, by suggesting that this profitability can often be sustained in the long run. Radiohead benefited from being the first major musical artist to use this method, and probably enjoyed the resulting “Robin Hood” effect. This effect may last only as long as Robin Hoods remain unique in the music industry. In the boat tour study, very few passengers were returning customers, and thus the surprise effect was present each time a passenger was offered to name her own price for her photo. However, in the restaurant study, many of the participants were repeat customers who were faced with this pricing scheme time and again over the years.

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- Akerlof GA (1982) Labor contracts as partial gift exchange. *Q J Econ* 97:543–569.
- Fehr E, Simon G (2000) Fairness and retaliation: The economics of reciprocity. *J Econ Perspect* 14:159–181.
- Gintis H, Bowles SBR, Fehr E (2005) *Moral Sentiments and Material Interests: On the Foundations of Cooperation in Economic Life* (MIT Press, Cambridge, MA).
- Meier S (2007) Do subsidies increase charitable giving in the long run? Matching donations in a field experiment. *J Eur Econ Assoc* 5:1203–1222.
- Benz M, Meier S (2008) Do people behave in experiments as in the field? Evidence from donations. *Exp Econ* 11:268–281.
- List JA (2011) Why economists should conduct field experiments and 14 tips for pulling one off. *J Econ Perspect* 25:3–15.
- Gneezy A, Gneezy U, Nelson LD, Brown A (2010) Shared social responsibility: A field experiment in pay-what-you-want pricing and charitable giving. *Science* 329:325–327.
- Akerlof GA, Kranton RA (2010) *Identity Economics: How Our Identity Shapes Our Work, Wages, and Well-Being* (Princeton Univ Press, Princeton).
- Akerlof GA, Kranton RA (2000) Economics and identity. *Q J Econ* 105:715–753.
- Benabou R, Tirole J (2011) Identity, morals and taboos: Beliefs as assets. *Q J Econ*, in press.
- Bem D (1972) Self-perception theory. *Advances in Experimental Social Psychology*, ed Berkowitz L (Academic, New York), Vol 6, pp 6–62.
- Ariely D, Bracha A, Meier S (2009) Doing good or doing well? Image motivation and monetary incentives in behaving prosocially. *Am Econ Rev* 99:544–555.
- Dana J, Cain DM, Dawes R (2006) What you don't know won't hurt me: Costly (but quiet) exit in a dictator game. *Org Behav Hum Dec Proc* 100:193–201.
- Lazear E, Malmendier U, Weber R (2012) Sorting, prices and social preferences. *Am Econ J: Appl Econ* 4(1):136–163.
- DellaVigna S, List JA, Ulrike M (2012) Testing for altruism and social pressure in charitable giving. *Q J Econ* 127(1):1–56.
- Frey B, Meier S (2004) Social comparison and pro-social behavior: Testing “conditional cooperation” in a field experiment. *Am Econ Rev* 94:1717–1722.
- Riener G, Traxler C (2011) Norms, moods and free lunch: Longitudinal evidence on payments from a Pay-What-You-Want restaurant. *J Soc Econ*, in press.
- Kim JY, Natter M, Spann M (2009) Pay-what-you-want: A new pricing mechanism. *J Marketingk* 73:44–58.
- Azar O (2003) The Implications of tipping for economics and management. *Intern J Soc Econ* 30:1084–1094.
- Azar O (2004) The history of tipping—from sixteenth-century England to United States in the 1910s. *J Soc Econ* 33:745–764.
- Gneezy U, Rustichini A (2000) Pay enough or don't pay at all. *Q J Econ* 115:791–810.
- Bowles S, Gintis H (2008) Cooperation. *The New Palgrave Dictionary of Economics*, eds Durlauf SN, Blume LE (Palgrave MacMillan, Basingstoke, UK), 2nd Ed.
- Haruvy E, Sethi S, Zhou J (2008) Open source development with a commercial complementary product or service. *Prod Oper Man* 17:29–43.