Article (Explore Econ Winner)

Principles of Poolside Pricing: The Preference Effects of Paying What You Can for Swimming Lessons

Lev Titov[1], Sam Davidson[2]

[1] Student (BSc Economics, 2022-25), Dept of Economics, UCL, UK; lev.titov.22@alumni.ucl.ac.uk
[2] Student (BSc Economics, 2022-25), Dept of Economics, UCL, UK; samuel.davidson.22@alumni.ucl.ac.uk

How to cite
Titov, L., Davidson, S. (2025). Principles of Poolside Pricing: The Preference Effects of Paying What You Can for Swimming Lessons. *UCL Journal of Economics*, vol. 4 no. 1. DOI: 10.14324/111.444.2755-0877.2078

Peer review
This article has been selected for publication on recommendation of the scientific committee of UCL's ExploreEcon undergraduate research conference

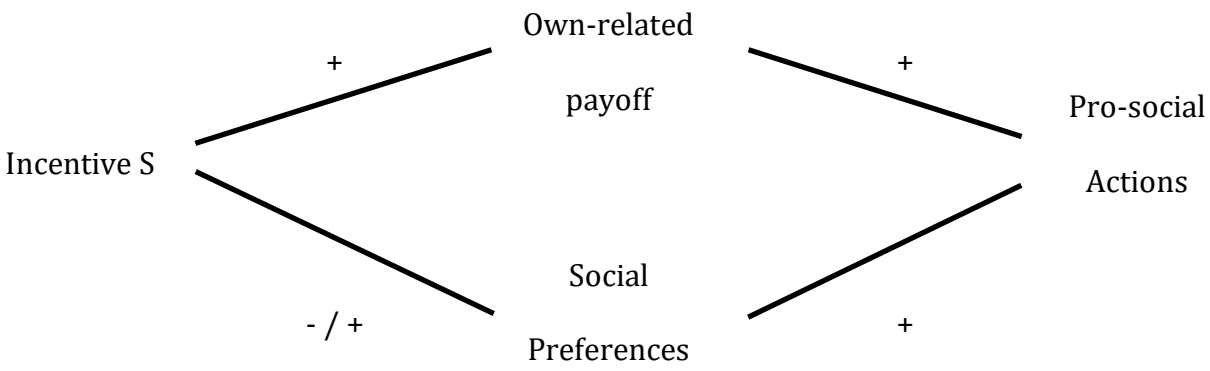
Abstract
Ensuring equitable access to swimming lessons is becoming increasingly crucial. With sharp income inequality, one in five parents cannot afford swimming lessons for their children (Winter, 2021). Using Bowles' preference endogeneity framework (Bowles, 1998), the paper's authors explore whether Pay What You Can (PWYC) can improve access to swimming lessons by "crowding in" prosocial payment behaviour. The authors leverage original survey data and propensity score matching techniques to show that: (1) nobody has entirely self-regarding preferences. All respondents paid a positive price under PWYC. (2) The more self-regarding an individual is, the less they pay under PWYC. On net, other-regarding individuals did not compensate for this. (3) Income and reference prices remain crucial for price determination. The results cast doubt on the effectiveness of PWYC as a policy to improve access to swimming lessons.

Keywords: Income inequality, Pay What You Can, payment behaviour

1. Theoretical Framework and Empirical Strategy

Samuel Bowles provides a comprehensive framework to explore the impact of market framing on pro-social actions (Bowles, 1998). In Figure 1, Bowles hypothesises that incentives affect behaviour in two ways.

Figure 1. Preference Endogeneity Framework (Bowles, 2024)



First, through a direct, self-regarding, own-related effect, which always increases with the incentive. Second, a social preference effect, which may be crowded out when an incentive is imposed. The total effect is the sum of the two effects (Bowles, 2024). The nature of the crowding effect may be categorical; the incentive changes the non-economic motivations behind the pro-social action, or marginal; the incentive level may change the magnitude of the crowding-out effect. The cause is that preferences are fundamentally endogenous and are influenced by the economic exchange mechanisms surrounding them (Bowles, 1998). For example, without altering intrinsic selfishness, market exchanges tend to induce more self-regarding behaviour by affecting preferences, with a greater number of buyers and sellers participating in the market amplifying this effect (Andre and Platteau, 1998).

An informal model of the agent's utility function is presented to develop a coherent empirical strategy for analysing the effects of preference endogeneity in a PWYC setting. Consumers maximise a Cobb-Douglas utility function given by:

$$\max_{L_i, X_i} U_i(L_i, X_i, L_{-i}) = (L_i \cdot L_{-i}^{\gamma_i})^{\alpha_i} X_i^{\beta_i} \; subject\ to P_L L_i + X_i = M_i \qquad (1)$$

Individuals choose between swimming lessons (L) and all other goods (X). The price of all other goods is the numéraire, and the consumer determines PL in a PWYC context. Consumer preferences include a term representing a degree of utility from others having lessons, represented by L–i and weighted by γi. If consumers are strictly self-regarding, then γi = 0, and it is optimal for a consumer to pay a zero price in the PWYC context. However, it is hypothesised that γi is likely driven by an intrinsic concern for others 'access to swimming lessons. These pro-social preferences are crowded in when a PWYC pricing policy is implemented. As such, if we assume there are two individuals and by symmetry Li = L–i, then the utility function simplifies to:

$$\max_{L_i, X_i} U_i(L_i, X_i) = L_i^{(1+\gamma_i)\cdot\alpha_i} \cdot X_i^{\beta_i} \; subject\ to P_L L_i + X_i = M_i \qquad (2)$$

Solving for the marginal rate of substitution gives:

$$\frac{\partial U/\partial L}{\partial U/\partial X} = \frac{(1+\gamma)\cdot\alpha}{\beta} \cdot \frac{X}{L} \qquad (3)$$

https://doi.org/10.14324/111.444.2755-0877.2078

If γ is greater than zero, then there is evidence to suggest that individuals are happier to trade off spending on other (private) goods for a larger contribution towards swimming lessons, confirming preference endogeneity affected by PWYC. To test this model empirically,

Specification 1 is suggested:

$$\begin{aligned} Price_i = {} & \beta_0 + \beta_1 Altruism_i^c + \beta_2 Responsibility_i^c + \beta_3 Benefits_i^c + \beta_4 Costs_i^c \\ & + \beta_5 Income_i + \beta_6 Gender_i + \beta_7 RefPrice_i \\ & + PWYC_i \cdot (\gamma_1 Altruism_i^c + \gamma_2 Responsibility_i^c + \gamma_3 Benefits_i^c + \gamma_4 Costs_i^c + \gamma_5) + u_i \end{aligned} \quad (1)$$

Altruism	Mean score on a five-item altruism scale (1 = Never, 5 = Very Often), based on the Self-Reported Altruism Questionnaire.
Responsibility	Agreement with the statement: "I would feel a sense of responsibility for supporting the provision of swimming lessons at this swim school." Rated on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).
Fair	Agreement with the statement: "The price I pay for swimming lessons at this swim school feels fair " Rated on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).
Cost	Agreement with the statement: "I would think about the costs involved in running this swim school when paying for lessons." Rated on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).
Benefits	Agreement with the statement: "I would consider the benefits my child(ren) and I receive when paying for lessons." Rated on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).

Table 1: Qualitative Variable Interpretations

All variable definitions and distributions are shown in Appendix A.1. However, of key interest are the qualitative variables Altruism, Responsibility, Benefits and Costs. These are defined in Table 1, and it is proposed that these form key components of γ. Several testable hypotheses are proposed:

1. First, γ_5 is statistically greater than zero. (H1: $\gamma_5 > 0$)

Hypothesis 2 (H2) is split into four sub-hypotheses based on interaction terms with the preference variables. Under the PWYC framework:

2. Those who scored higher on the altruism questionnaire pay more (H2.1: $\gamma_1 > 0$).
3. Those who feel more responsible for helping to provide swimming lessons pay more (H2.2: $\gamma_2 > 0$).
4. Those more concerned about their own private benefits pay less (H2.3: $\gamma_3 < 0$).
5. Those more concerned about the costs of running lessons pay more (H2.4: $\gamma_4 > 0$).

https://doi.org/10.14324/111.444.2755-0877.2078

2. Results and Discussion

_cons	8.461 (2.364) ***
altruism	-4.280 (1.580) **
income	4.524 (1.820) **
gender	-0.201 (1.578)
costs	-0.614 (1.293)
responsibility	-0.909 (0.730)
benefits	5.950 (1.736) ***
ref_price	0.219 (0.079) **
pwyc	0.388 (1.522)
pwyc * altruism	1.108 (1.602)
pwyc * responsibility	2.226 (1.518)
pwyc * benefits	-9.070 (2.888) ***
pwyc * costs	0.781 (1.391)
R-squared	0.2198
Root MSE	0.8216
Observations	26
F-test	F(9, 21) 2.69 (p = 0.0296)

*Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10*

***Table 2**:* Matched Regression Output

	Fixed-Price Frame (£)	PWYC Frame (£)	Difference (£)
Altruism	-4.280 (-1.58)**	1.108 (1.602)	5.39 **
Mean score on a five-item altruism scale (1 = Never, 5 = Very Often), based on the Self-Reported Altruism Questionnaire.			
Responsibility	-0.909 (0.730)	2.226 (1.518)	3.14

https://doi.org/10.14324/111.444.2755-0877.2078

Agreement with the statement: "I would feel a sense of responsibility for supporting the provision of swimming lessons at this swim school." *Rated on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).*			
Benefits	5.950 (1.736)***	-9.070 (2.888)***	-15.02 ***
Agreement with the statement: "I would consider the benefits my child(ren) and I receive when paying for lessons." *Rated on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).*			
Costs	-0.614 (1.293)	0.781 (1.391)	1.40
Agreement with the statement: "I would think about the costs involved in running this swim school when paying for lessons." *Rated on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).*			

*Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10*

***Table 2*:** Qualitative Variable Comparison

The survey, sample and methodology are discussed in Appendix A.2 - A.4. The within-sample means and standard errors of the variables collected are shown in Appendix A.5. Stata commands are available on request. The results of Specification 4, run on hypothetical-bias adjusted prices using a matching protocol to control for observables, are shown in Table 2. Statistical evidence suggests that payments are non-zero under the PWYC framing for individuals with average altruism, responsibility, benefits and cost scores, supporting H1 at all significance levels. Nobody has strictly self-regarding preferences. Reference price and income are the two strongest predictors of price paid. On average, participants earning over £100,000 annually pre-tax paid £4.52 more (SE = £1.82). Moreover, the reference price had a significant anchoring effect, with each £1 increase corresponding to a £0.22 rise in payment (SE = £0.08). This would suggest that individuals are strongly driven by economic rationality: their income and the price they last paid for swimming lessons.

However, the most statistically significant observation was the relationship between private benefits considered and the price paid. Under the PWYC frame, those more self-interested reduced payments by £9.07 (SE = £2.89), giving statistical evidence supporting H.3. This supports the idea that more self-regarding individuals seem to take advantage of the PWYC price frame. By contrast, although the evidence is not statistically significant, there is directional support that those who are more other-regarding, scoring higher on Altruism, Responsibility and Costs, increase payments under the PWYC price frame, outlined in Table 2.

This offers support to H2.1, H2.2 and H2.4, albeit not all to a statistically significant level. Thus, some weak evidence suggests that the PWYC frame crowds in pro-social behaviour, providing light support for Bowles' (1998) preference endogeneity.

3. Limitations

The most significant limitation is the construction of the pooled sample. The three surveys were collected under different conditions, times, and locations. Although matching was employed to control for any observable differences, there are doubtless unobserved differences that might bias estimates. Moreover, although every attempt was made to control for the hypothetical bias present in 90.8% of the bias post survey, a survey approach that utilises BDM (Becker et al., 1964) or ICBC (Ding, 2007) for willingness to pay would have been more effective at establishing directly comparable prices. The Orbit Model (Davies and Loomis, 2010) is the next best alternative, followed by a Matching Protocol. The Protocol itself creates problems, leaving only 26 observations for the principal regression of interest, Specification 1. The significantly reduced sample size may contribute to the lack of statistical significance on many key variables and interaction terms. Hence, at best, this paper can conclude with directional evidence of crowding-in of pro-social behaviour.

https://doi.org/10.14324/111.444.2755-0877.2078

4. Conclusion

This paper establishes three findings. Finding one is that nobody has completely self-regarding preferences. All preferences are guided by a non-zero component γ. Prices paid under the PWYC and fixed-price frames were not statistically different. No respondents indicated they would pay zero for lessons under a PWYC pricing policy. These findings are in line with the literature (Kim et al., 2009). The exact γ of respondents in these samples is heterogeneous and, unfortunately, unrecoverable from the given dataset.

Finding two is that more self-regarding individuals take advantage of PWYC. Those more considerate of the private benefits they and their children received stated a significantly lower willingness to pay for a 30-minute swimming lesson.

Finding three is that income and reference prices are still key in determining WTP. Respondents with an income greater than £100,000 before tax paid significantly more for swimming lessons in the non-hypothetical and hypothetical samples. Those with higher reference prices also spent more. These hard, economic baselines matter in pricing decisions.

PWYC is not a panacea for increasing accessibility to swimming lessons. Findings that payments do not reduce to zero ring hollow as evidence of a practical or sustainable policy. Without statistical significance, building a robust economic behaviour model or identifying a threshold proportion of individuals whose preferences would make PWYC a sustainable pricing policy remains challenging. An improved survey strategy may be the key to reducing noise and increasing the statistical power needed to detect pro-social crowding-in effects more reliably. Further research should expand the sample and investigate how exchange framing may amplify or suppress underlying preferences. It could turn the tide on declining access to swimming.

https://doi.org/10.14324/111.444.2755-0877.2078

References

Abbey, J.D. and Meloy, M.G. (2017) 'Attention by design: Using attention checks to detect inattentive respondents and improve data quality', Journal of Operations Management, 53–56, pp. 63–70. doi:10.1016/j.jom.2017.06.001.

Abrams, Jack (1964), "A New Method for Testing Pricing Decisions," Journal of Marketing, 28 (January), 6–9.

Akerlof, G. A., & Kranton, R. E. (2000). Economics and identity. Quarterly Journal of Economics, 115(3), 715–753. https://doi.org/10.1162/003355300554881

Andre, C. and Platteau, J.P. (1998) 'Land relations under unbearable stress: Rwanda caught in the Malthusian trap', Journal of Development Economics, 54(1), pp. 287–314. doi:10.1016/S0167-2681(97)00045-0.

Andreoni, J., 1990. Impure altruism and donations to public goods: A theory of warm-glow giving. The Economic Journal, 100(401), pp.464–477. Available at: https://econweb.ucsd.edu/~jandreon/Publications/ej90.pdf

Angrist, J.D. and Pischke, J.-S. (2009) Mostly Harmless Econometrics: An Empiricist's Companion. Princeton, NJ: Princeton University Press. doi:10.2307/j.ctvcm4j72.

Becker, Gordon M., Morris H. DeGroot, and Jacob Marschak (1964), "Measuring Utility by a Single-Response Sequential Method," Behavioral Science, 9 (3), 226–32.

Benabou, R., & Tirole, J. (2006). Incentives and prosocial behaviour. American Economic Review, 96(5), 1652–1678. https://doi.org/10.1257/aer.96.5.1652

Ben-Porath, Y. (1980) 'The F-Connection: Families, Friends, and Firms and the Organization of Exchange', Population and Development Review, 6(1), pp. 1–30. Available at: https://www.jstor.org/stable/1972655 (Accessed: 24 April 2025).

Blome, C. and Augustin, M. (2015) 'Measuring change in quality of life: Bias in prospective and retrospective evaluation', Value in Health, 18(1), pp. 110–115. doi:10.1016/j.jval.2014.10.007.

Bowles, S. (1998) 'Endogenous Preferences: The Cultural Consequences of Markets and Other Economic Institutions', Journal of Economic Literature, 36(1), pp. 75–111. Available at: https://www.jstor.org/stable/2564952 (Accessed: 24 April 2025).

Bowles, S. (2024) 'Moral Economics', Stanford Graduate School of Business, 5 February. Available at: https://www.youtube.com/watch?v=Kq37CjgVRPM (Accessed: 24 April 2025).

Breusch, T.S. and Pagan, A.R. (1979) 'A simple test for heteroscedasticity and random coefficient variation', Econometrica, 47(5), pp. 1287–1294. doi:10.2307/1911963.

Champ, P.A., Bishop, R.C., Brown, T.C. and McCollum, D.W. (1997) 'Using Donation Mechanisms to Value Nonuse Benefits from Public Goods', Journal of Environmental Economics and Management, 33(2), pp. 151–162. doi:10.1006/jeem.1997.0988.

Chandran, S., & Morwitz, V. (2005). Effects of participative pricing on consumers' willingness to pay. Journal of Consumer Research, 32(2), 249–256. http://dx.doi.org/10.1086/432234

Davies, S.P. and Loomis, J.B. (2010) 'An Improved Method for Calibrating Purchase Intentions in Stated Preference Demand Models', Journal of Agricultural and Applied Economics, 42(4), pp. 1–15. doi:10.22004/ag.econ.100521.

Ding, Min (2007), "An Incentive-Aligned Mechanism for Conjoint Analysis," Journal of Marketing Research, 44 (May), 214–23.

Dvorak, T., & Toubman, S. R. (2013). Are Women More Generous than Men? Evidence from Alumni Donations Economic Inquiry, 51(1), 223–231. https://econpapers.repec.org/ RePEc:pal:easeco:v:39:y:2013:i:1:p:121-131

Fiske, A. P. (1992). The four elementary forms of sociality: Framework for a unified theory of social relations. Psychological Review, 99(4), 689–723. https://doi.org/10.1037/0033-295X.99.4.689

Fox, J., Shogren, J., Hayes, D. and Kliebenstein, J.B. (1998) 'CVM-X: Calibrating Contingent Values with Experimental Auction Markets', American Journal of Agricultural Economics, 80(3), pp. 455–465.

Gayle, D. (2024, March 6). 'We're totally pay as you can': The UK restaurant prioritising people and planet. The Guardian. Retrieved from https://www.theguardian.com/environment/2024/mar/ 06/pay-as-you-can-uk-restaurant-prioritise-people-and-planet

Gibson, O. (2007, October 2). Radiohead's bid to revive music industry: Pay what you like to download albums. The Guardian. Retrieved from https://www.theguardian.com/media/2007/oct/ 02/digitalmedia.musicnews

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. https://doi.org/10.1126/science.1186744

Gneezy, A., Gneezy, U., Riener, G., & Nelson, L. D. (2012). Pay-what-you-want, identity, and self- signaling in markets. Proceedings of the National Academy of Sciences, 109(19), 7236–7240. https://doi.org/10.1073/pnas.1120893109

Gneezy, U., & Rustichini, A. (2000). A fine is a price. Journal of Legal Studies, 29(1), 1–17. https:// doi.org/10.1086/468061

Google. (n.d.). Google Ngram Viewer. Retrieved January 3, 2025, from https://books.google.com/ ngrams/graph?content=pay-what-you-want%2Cpay-what-you-can%2Cfirst-degree+price+discrimination&year_start=1800&year_end=2022&corpus=en&smoothing=1

Heyman, J., & Ariely, D. (2004). Effort for payment: A tale of two markets. Psychological Science, 15(11), 787–793. https://doi.org/10.1111/j.0956-7976.2004.00757.x

Johnson, J. W., & Cui, A. P. (2013). To influence or not to influence: External reference price strategies in pay-what-you-want pricing. Journal of Business Research, 66(2), 275–281. http:// dx.doi.org/10.1016/j.jbusres.2012.09.015

Jung, M., Nelson, L. D., Gneezy, A., & Gneezy, U. (2014). Paying more when paying for others. Journal of Personality and Social Psychology, 107(3), 414–431. https://doi.org/10.1037/a0037345

Kim, J.-Y., Kaufmann, K., & Stegemann, M. (2014). The impact of buyer-seller relationships and reference prices on the effectiveness of the pay-what-you-want pricing mechanism. Marketing Letters, 25(4), 409–423. http://www.jstor.org/stable/24571123

Kim, J.-Y., Natter, M., & Spann, M. (2009). Pay-what-you-want—A new participative pricing mechanism. Journal of Marketing, 73(1), 55–67. http://dx.doi.org/10.1509/jmkg.73.1.44

Loomis, J.B. (2014) '2013 WAEA Keynote Address: Strategies for Overcoming Hypothetical Bias in Stated Preference Surveys', Journal of Agricultural and Resource Economics, 39(1), pp. 34–46. Available at: https://www.jstor.org/stable/44131313 (Accessed: 24 April 2025).

Louviere, Jordan J. and George Woodworth (1983), "Design and Analysis of Simulated Consumer Choice or Allocation Experiments: An Approach Based on Aggregate Data," Journal of Marketing Research, 20 (November), 350–67.

Mak, V., Zwick, R., & Rao, A. R. (2010). "Pay what you want" as a profitable pricing strategy: Theory and experimental evidence. University of Cambridge. https://citeseerx.ist.psu.edu/ document?repid=rep1&type=pdf&doi=f0a846b872705f0f302826fc9efd7e9934b414ea

Miller, K. M., Hofstetter, R., Krohmer, H., & Zhang, Z. J. (2011). How should consumers' willingness to pay be measured? An empirical comparison of state-of-the-art approaches. Journal of Marketing Research, 48(1), 172–184. https://doi.org/10.1509/jmkr.48.1.172

Mitchell, R.C. and Carson, R.T. (1989) Using Surveys to Value Public Goods: The Contingent Valuation Method. Washington, DC: Resources for the Future.

Neumayr, M. and Pennerstorfer, A. (2021) 'The relation between income and donations as a proportion of income revisited: Literature review and empirical application', Nonprofit and Voluntary Sector Quarterly, 50(3), pp. 551–577. doi: 10.1177/0899764020977667.

Osterhus, T. L. (1997). Pro-social consumer influence strategies: When and how do they work? Journal of Marketing, 61(4), 16–29. https://doi.org/10.1177/002224299706100402

Park, S., Nam, S., & Lee, J. (2017). Charitable giving, suggestion, and learning from others: Pay- what-you-want experiments at a coffee shop. Journal of Behavioral and Experimental Economics, 66, 16–22. http://dx.doi.org/10.1016/j.socec.2016.04.010

Riener, G., & Traxler, C. (2012). Norms, moods, and free lunch: Longitudinal evidence on payments from a pay-what-you-want restaurant. The Journal of Socio-Economics, 41(August), 476–483. http://dx.doi.org/10.1016/j.socec.2011.07.003

Rosenbaum, P.R. and Rubin, D.B. (1983) 'The central role of the propensity score in observational studies for causal effects', Biometrika, 70(1), pp. 41–55. doi:10.1093/biomet/70.1.41.

Rushton, J.P., Chrisjohn, R.D. and Fekken, G.C. (1981) 'The altruistic personality and the self-report altruism scale', Personality and Individual Differences, 2(4), pp. 293–302. doi:10.1016/0191-8869(81)90084-2.

Santana, S., & Morwitz, V. (2011). Gender differences in pay-what-you-want pricing. Journal of Marketing Research, 48(2), 543–553. https://doi.org/10.1177/0022243721992056

Schmidt, K. M., Spann, M., & Zeithammer, R. (2015). Pay what you want as a marketing strategy in monopolistic and competitive markets. Management Science, 61(6), 1217–1236. https:// doi.org/10.1287/mnsc.2014.1946

Shiller, B. R. (2013). First degree price discrimination using big data (Brandeis University Working Paper No. 58R). Brandeis University. https://www.brandeis.edu/economics/RePEc/brd/doc/ Brandeis_WP58R.pdf

Soho Swim (unpublished) Internal company data on customer addresses. Unpublished.

Soule, C. A., Johnson, K. K., & Armstrong, R. (2015). Anchors and norms in anonymous pay-what- you-want pricing contexts. Journal of Behavioral and Experimental Economics, 57(August), 167– 175. https://ideas.repec.org/a/eee/soceco/v57y2015icp167-175.html

Spann, M., & Tellis, G. J. (2006). Does the Internet promote better consumer decisions? The case of name-your-own-price auctions. Journal of Marketing, 70(1), 65–78. http://dx.doi.org/10.1509/ jmkg.2006.70.1.65

Stangl, B., Kastner, M., & Prayag, G. (2017). Pay-what-you-want for high-value priced services: Differences between potential, new, and repeat customers. Journal of Business Research, 74, 168–174. http://dx.doi.org/10.15444/GMC2016.11.08.04

Timothy C. Haab & Kenneth E. McConnell, 2002. "Valuing Environmental and Natural Resources," Books, Edward Elgar Publishing, number 2427.

Winter, M. (2021, September 1). Millions of schoolchildren are unable to swim—because it's too expensive. Express. Retrieved from https://www.express.co.uk/life-style/life/1483710/children- swimming-lessons-sports-money

Appendix

A.1. Variable Definitions

The definitions of all variables collected are shown below in Tables 3 and 4.

	1	0
Children	Respondent has children	Respondent doesn't have children
Income	Respondent's pre-tax annual income is greater than £100,000	Respondent's pre-tax annual income is lower than £100,000
Gender	Female	Male
Parent Swimmer	Parents swims	Parent does not swim
Child_Swimmer	Child swim	Child does not swim
Hyp	Price paid is hypothetical	Price was actually paid
PWYC	Respondent faced the PWYC frame	Respondent faced the fixed-price frame
Sample	"Fixed" "PWYC" "Public", sample identifiers	

***Table 3*:** Discrete Variable Interpretations

Price	Price paid, hypothetical or actual, for a 30-minute children's swimming lessons where the child swim as part of a group of four
Child Age	Age of eldest child of respondent
RefPrice	Price previously paid by the respondent for children's swimming lessons

***Table 4*:** Continuous Variable Interpretations

https://doi.org/10.14324/111.444.2755-0877.2078

	1	0
Altruism	Mean score on a five-item altruism scale (1 = Never, 5 = Very Often), based on the Self-Reported Altruism Questionnaire.	
Responsibility	Agreement with the statement: "I would feel a sense of responsibility for supporting the provision of swimming lessons at this swim school." Rated on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).	
Fair	Agreement with the statement: "The price I pay for swimming lessons at this swim school feels fair " Rated on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).	
Cost	Agreement with the statement: "I would think about the costs involved in running this swim school when paying for lessons." Rated on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).	
Benefits	Agreement with the statement: "I would consider the benefits my child(ren) and I receive when paying for lessons." Rated on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).	

***Table 3*:** Discrete Variable Interpretations

Responsibility, Fairness, Cost (as a positive component of γ) and Benefits (as a negative component of γ) are just a few of the variables that could comprise γ in the theoretical framework. They serve as reasonable indicative proxies that can loosely suggest other or self-regarding preferences.

Each survey collects responses on willingness to pay, underlying preferences and several controls. The key difference is the location where the surveys were taken. Survey 1 was carried out at the PWYC swim school and distributed by email. Survey 2 was conducted at the fixed-price swim school, distributed by a poster with a QR code, see Figure 9, printed out and handed out during lessons. Survey 3 was distributed (i) via a mailing list of university students who were encouraged to fill it out and forward the survey to other adults with children, (ii) through parent group chats, and (iii) collected in person outside a primary school. The purpose of collecting three surveys is to build a sample size from which statistically significant results can be drawn. The survey questions are shown in Appendix A.7.

A.2. Sampling Strategy

Three surveys were conducted using Qualtrics. Each survey collects responses on willingness to pay, underlying preferences and several controls. The key difference is the location where the surveys were taken. Survey 1 was carried out at the PWYC swim school and distributed by email. Survey 2 was conducted at the fixed-price swim school, distributed by a poster with a QR code, Figure 2, printed out and handed out during lessons. Survey 3 was distributed (i) via a mailing list of university students who were encouraged to fill it out and forward the survey to other adults with children, (ii) through parent group chats, and (iii) collected in person outside a primary school. The purpose of collecting three surveys is to build a sample size from which statistically significant results can be drawn.

https://doi.org/10.14324/111.444.2755-0877.2078

Figure 2. Survey Poster

A pooled dataset combines actual PWYC payments (Sample 1) with hypothetical responses from half of the general public sample (Sample 3). The other half of that general public sample (Sample 3) is combined with the responses from the fixed-price swim school (Sample 2). Thus, the resulting sample (N = 141) contains two subgroups, PWYC and fixed price, allowing us to test the three hypotheses outlined earlier. This is summarised in Table 5.

	Sample 1	**Sample 2**	**Sample 3**
	PWYC swim school	Fixed-price swim school	General public
Service	30-minute group of four child swimming lesson	30-minute group of four child swimming lesson	30-minute group of four child swimming lesson
Framing	PWYC framing	Fixed-price framing	Randomisation between PWYC & fixed-price framing
Hypothetical Bias	X	✓	✓

***Table 5*:** Sample Structure

https://doi.org/10.14324/111.444.2755-0877.2078

A.3. Controlling for Hypothetical Bias Using an Orbit Model

A significant source of bias would be the hypothetical nature of WTP responses in Surveys 2 and 3. A simplified Orbit Model (Davies and Loomis, 2010) is proposed to generate hypothetical-bias-adjusted prices in line with the literature. Given that the data contains no zero values, the Tobit segment of the model is unnecessary. Instead, a single safety value is defined as the median price paid in the PWYC sample. Although this choice may appear arbitrary, it reflects a conservative threshold grounded in observed behaviour. Observations in the hypothetical samples that fall below or equal to this threshold are left unadjusted. Values above this threshold are treated as potentially overstated. The overstatements are categorised into three categories: £15.01 - £22.50 (a mild overstatement), £22.51 - £30.00 (a medium overstatement), and greater than £30 (an exaggeration), shown in Specification 5.

$$price\_cat_i = \begin{cases} 1 & if £15 < price_i \leq £22.50 \\ 2 & if £22.50 < price_i \leq £30 \\ 3 & if price_i > £30 \end{cases} \quad (5)$$

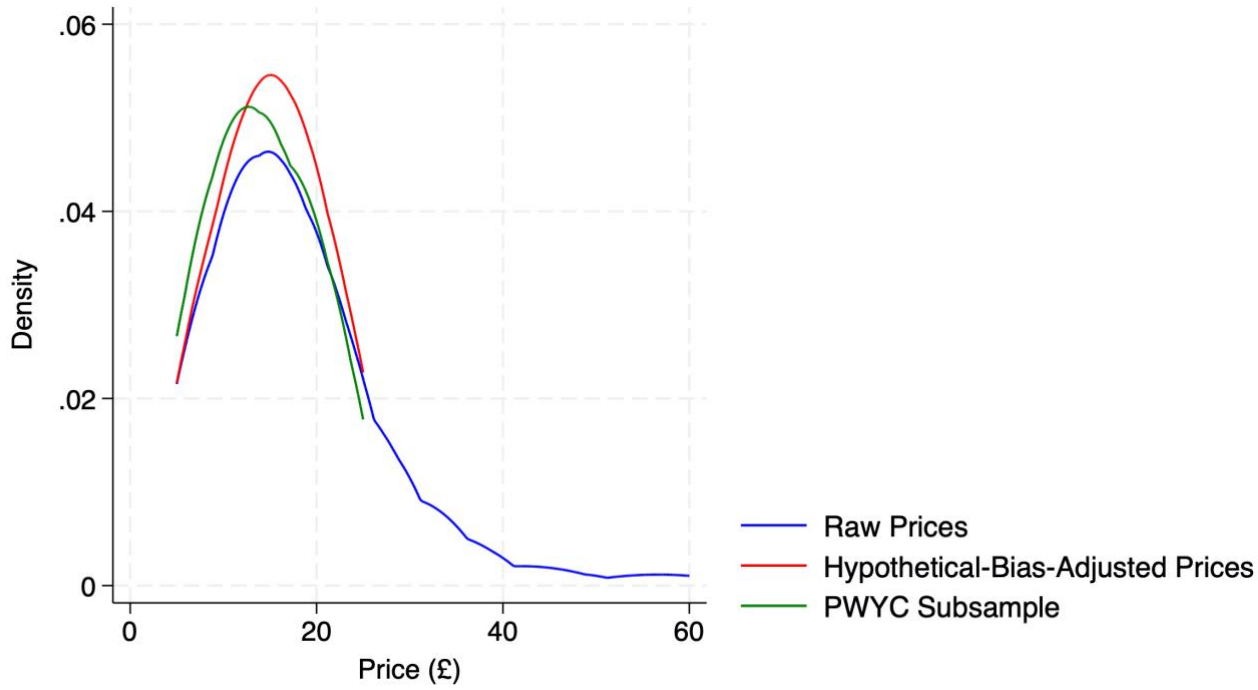
For respondents who answered with hypothetical WTP and stated a price greater than £15, the probability of belonging in each category of overstatement is calculated using an ordinal probit Specification 6. Then the adjusted price is calculated by weighting the lower bound of each interval by the probability of an individual falling in that category, shown in Specification 7.

$$price\_cat_i^* = \beta_0 + \beta_1 altruism_i + \beta_2 income_i + \beta_3 children_i + \beta_4 gender_i + \beta_5 parent\_swimmer_i + \varepsilon_i | hyp_i = 1, price_i > 15 \quad (6)$$

$$AdjustedPrice_i = 15.01P_{i1} + 22.51P_{i2} + 30.01P_{i3} | hyp_i = 1, price_i > 15 \quad (7)$$

The lower bound is chosen again to produce a conservative hypothetical-bias-adjusted price. Figure 3 below shows prices before and after adjustment.

Figure 3. Smoothed Distributions of Price Before and After Adjustment



https://doi.org/10.14324/111.444.2755-0877.2078

A.4. Matching Protocol

PWYC is likely a function of several observable variables that must be controlled to ensure comparability between the PWYC and fixed-price groups when estimating price framing effects. Due to our small sample size, Specification 8 is used to circumvent the curse of dimensionality (Rosenbaum and Rubin, 1983).

$$Pr(PWYC_i = 1) = \frac{1}{1 + e^{-Z_i\theta}} \quad (8)$$

This form predicts assignment to the PWYC group, where Zi includes covariates such as children, income, gender, parent_swimmer, and altruism. Once the propensity scores are estimated, individuals are matched across the PWYC and fixed-price groups using a 0.01 calliper, and unmatched individuals are dropped. Such a calliper is again more conservative than the literature calls for (Rosenbaum & Rubin, 1985). However, it has been chosen to ensure a higher match quality, given the distinct nature of the merged samples. This approach helps to minimise bias by ensuring that comparisons are made only between individuals with comparable observed characteristics.

A.5. Mean and Standard Errors of all Variables Collected

	Sample 1	**Sample 2**	**Sample 3**
	PWYC swim school	Fixed-price swim school	General public
Service	30-minute group of four child swimming lesson	30-minute group of four child swimming lesson	30-minute group of four child swimming lesson
Framing	PWYC framing	Fixed-price framing	Randomisation between PWYC & fixed-price framing
children ***	1 (0)	0.54 (0.06)	1 (0)
child_age ***	6.83 (0.46)	9.00 (1.43)	11.07 (0.63)
income	0.46 (0.14)	0.47 (0.06)	0.48 (0.07)
gender	0.62 (0.14)	0.54 (0.06)	0.50 (0.07)
ref_price ***		19.97 (1.96)	12.36 (0.25)
parent_swimmer *	0.38 (0.14)	0.19 (0.05)	0.36 (0.06)
responsibility	3.92 (0.21)	3.69 (0.12)	3.83 (0.14)
fair	4.31 (0.17)		3.78 (0.12)
costs **	3.69 (0.24)	3.77 (0.12)	3.24 (0.13)

https://doi.org/10.14324/111.444.2755-0877.2078

	Sample 1	Sample 2	Sample 3
benefits	4.31 (0.21)	4.47 (0.09)	4.26 (0.12)
child_swimmer ***	1 (0)	0.87 (0.06)	1 (0)
altruism **	3.12 (0.17)	2.90 (0.10)	2.81 (0.08)
sample ***	pwyc	fixed	public
price ***	13.65 (1.60)	20.49 (1.33)	14.73 (0.82)
hyp ***	0 (0)	1 (0)	1 (0)
pwyc ***	1 (0)	0.56 (0.06)	0 (0)

*Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10 for statistical difference across samples.*

Table 14: Mean and Standard Errors of all Variables Collected

A.6. Distribution of Qualitative Variables in Pooled Sample

Figure 4, to follow, displays kernel-smoothed density curves of the same variables, with a bandwidth of 1.5 applied to reduce noise.

	N	Mean	Median	Mode	Standard Deviation
Altruism	141	2.881	2.8	2.6	0.72
Mean score on a five-item altruism scale (1 = Never, 5 = Very Often), based on the Self-Reported Altruism Questionnaire.					
Responsibility	141	3.766	4.0	4.0	1.012
Agreement with the statement: "I would feel a sense of responsibility for supporting the provision of swimming lessons at this swim school." *Rated on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).*					
Benefits	141	4.369	5.0	5.0	0.805
Agreement with the statement: "I would consider the benefits my child(ren) and I receive when paying for lessons." *Rated on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree)*					
Costs	141	3.546	4.0	4.0	1.023

Table 15: Distribution of Qualitative Variables

https://doi.org/10.14324/111.444.2755-0877.2078

A.7 Survey Questions

Survey responses were collected using Qualtrics. There are 17 further pages of Survey Questions.

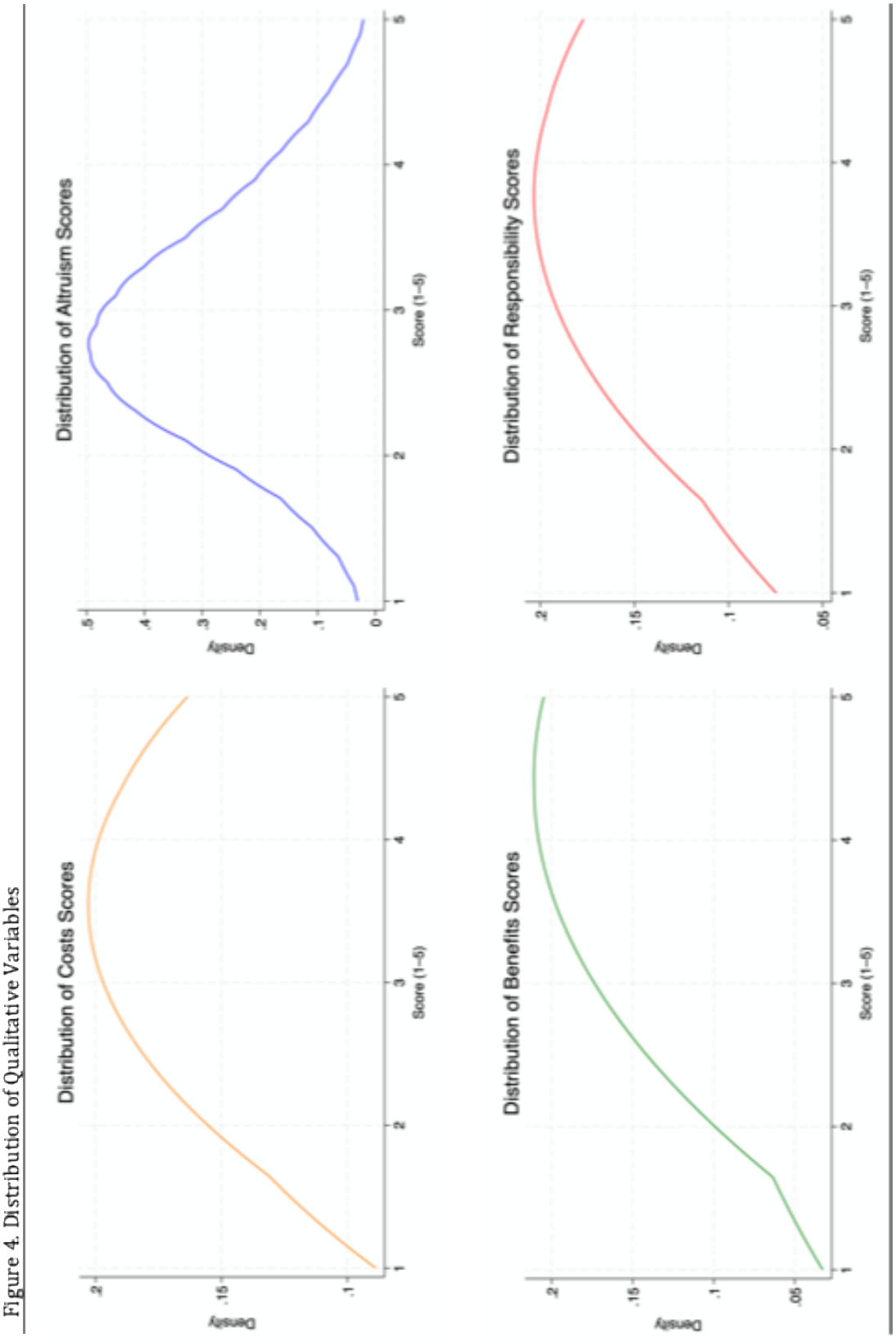


Figure 4. Distribution of Qualitative Variables

https://doi.org/10.14324/111.444.2755-0877.2078