

Review of MS 1856 “Dynamic Pricing with Reference Price Dependence” by Régis Chenavaz, KEDGE Business School, AMSE, CNRS & EHESS for publication in the e-journal Economics

In this paper, the author provides a qualitative analysis of the optimal path of the dynamic pricing policy resulting from a general demand function. The author obtains results about comparative statics with respect to the speed of adjustment of the reference price and the level of the reference price. The main result is that the firm optimally charges at a demand elasticity that is greater than 1 in the presence of adjusting reference prices. Overall, I find this an interesting topic as reference prices obviously are a major determinant of demand. However, I am not quite sold on the usefulness of the current exercise in particular (yet).

Comments:

- The adjusting reference price causes demand to be more elastic. It would be nice to see some discussion of whether this is a natural outcome or not. Intuitively, a high reference price should increase demand whereas a low reference price should decrease demand. Why does the latter effect appear to dominate here? Potentially because of the second assumption about the general demand function that I question below.
- The author assumes that, when the reference price is higher (everything else equal), demand decreases more for any increase in the reference price. This is not immediately obvious to me and I would like to see some discussion of why this is the case. Diminishing sensitivity in the context of Kahneman and Tversky (1979) prospect theory appears to suggest the opposite. Moreover, I understood that this effect is responsible for the (somewhat surprising) result that a higher reference price does not always lead to an optimal higher selling price. If so, then the author should elaborate on this assumption. More generally, it should be more clear which assumption this (somewhat surprising) result depends on.
- I was also left with an open question about the price the firm started off with—shouldn’t that matter for the price dynamics? I did not understand what is the assumption with respect to the starting price.
- When I hear the word reference dependence, I think of loss aversion à la Kahneman and Tversky (1979); however, the author only models a type of anchor as there is no kink in demand where the actual price exceeds

the reference price. That said, I think adding loss aversion—one of the most robust behavioral observations about risk preferences—would make the analysis much more interesting. While there exists experimental evidence for anchoring, the psychology is much less well supported and I think that loss aversion is first-order important in the context of consumer pricing. Thus, I expect the results to be very different, if loss aversion were introduced. It strikes me as weird that the author says “when customers are subject to reference effects in the spirit of prospect theory” given that three of the four major ingredients of prospect theory are left out. Purely semantically, it would be most precise to just use the word anchor in my opinion.

- It would make sense to have the reference price adjustment depend on past demand. If past demand is high then presumably more individuals updated their reference price and vice versa. It would be nice to see a discussion there.
- It would be interesting to know how much profit is lost and whether the profit loss is a first-order effect. Given that loss aversion is absent in the model, I presume it is not.
- It would be nice to have the standard model as a special case of the current model. $\beta = 0$ is the no-adjustment benchmark.
- I don’t know the surveys of Kalyanaram and Winer (1995) and Mazumdar et al. (2005) and thus the citations appeared strange to me as the first citations about reference dependence.
- I found the paper very hard to read because the authors used articles so sparingly.

References

Kahneman, D. and A. Tversky (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica*, 263–291.