

Reply to the Referee Report (second round)

1) *“The author’s reply is correct, but I think that he does not write correctly the timing of the game in the paper, which is confusing”.*

I have already answered to the comment about the timing of the game in my first reply. Now the referee says the “the author’s reply is correct”. But still he says that the timing is confusing. It would be nice to see why such a standard timing is confusing given that its motivation is correct, as the referee admits.

2) *“Firm L only prices aggressively for avoiding being brought down by firm H (predation). This is very restrictive and unsatisfactory”*

The referee says that the result is “restrictive and unsatisfactory”. It is not clear to me how a result can be restrictive or unsatisfactory. A result may be surprising or obvious, known or unknown, motivated or unmotivated, correct or wrong. The result comes from the assumptions of the model: are the assumptions of my model “restrictive and unsatisfactory”?

3) *“Moreover this could be an error by the author because it could be profitable by firm L because firm L prices first and it is possible that $c_L < c_H$ ”*

This statement contains, in my opinion, three errors.

a) *“this could be an error”.*

The referee should not say that a proposition is wrong using as a motivation the statement that it “could be an error by the author”. I have proved my result with very easy but technical argumentations, and it would be nice that the referee indicates where the error (if any) in my proposition is.

b) *“it could be profitable by firm L because firm L prices first”*

The referee says that my central proposition *may* depend on the fact that firm L prices before firm H. But Result 1 certainly depends on the fact that firm L prices before firm H, because this is one of the assumptions of the model. I have already motivated this assumption in the paper (footnote 5) as well as in my first reply, where I shown that this is a standard and well-rooted assumption. Therefore, the observation of the referee seems to me quite inappropriate.

c) *“it is possible that $c_L < c_H$ ”*

The referee says that “it is possible that $c_L < c_H$ ”. On the contrary, *it must be* that $c_L < c_H$, due to the fact that firm *L* is the low-quality firm and firm *H* is the high-quality firm (see p.3). Therefore, the observation that “it is possible that $c_L < c_H$ ” seems to me inaccurate.

4) *“I am not sure about it”*

The referee says that he is not sure about my result. However he does provide no justifications for his statement. I think that the referee should motivate this statement, for the same reason I said above (point 3): what is wrong in my proposition? Moreover, it seems to me that my result is correct. In fact, just before the statement quoted by the referee, I say “By comparing the equilibrium prices under this strategy with respect to the non-predation case, we observe that the adoption of the *fight-to-survive* strategy lowers the prices for all consumers” (p.7-8). This is due to the fact that when predation is absent (in period 2, for example), firm *L* sets the profit maximizing uniform price; when predation is possible, firm *L* has no incentive to set a higher price, because it is sub-optimal and makes predation easier. Firm *H* prices follow.

5) “A new parameter b appears in equation (17) but the author does not define it”

Here the referee is correct. I write b instead of s_L . Moreover, I noticed that I made a computational mistake. After simplification equation (17) becomes $Y \equiv \frac{(p_1^L - c_H)^2}{2(s_H - s_L)}$. As a consequence, equation

(18) becomes: $\Gamma \equiv c_H - \frac{\sqrt{\delta[4s_H(s_L + 2v - c_H - c_L) - 4s_L^2 - (c_H - c_L)^2 - 4s_L(2v - c_H - c_L)]}}{2}$. Note that the rest of

the analysis is unaffected by this fact. The only consequence is that at p.8 an unambiguous relationship between s_H and the likelihood of predation cannot be found. Similarly, in section 5, the correct formula of Γ function is:

$c_H - \frac{\sqrt{(1-\delta)\delta^{i+1}(\delta^i - \delta^T)[4s_H(s_L + 2v - c_H - c_L) - 4s_L^2 - (c_H - c_L)^2 - 4s_L(2v - c_H - c_L)]}}{2(1-\delta)\delta^i}$, and its derivative is:

$\frac{\delta^{-i+T} \log(\delta)}{4(1-\delta)(\delta^i - \delta^T)} \sqrt{(1-\delta)\delta^{i+1}(\delta^i - \delta^T)[4s_H(s_L + 2v - c_H - c_L) - 4s_L^2 - (c_H - c_L)^2 - 4s_L(2v - c_H - c_L)]}$. Again, this is without consequences for the analysis.

6) “The author assumes that the quality costs functions are convex. However, he only dedicates a paragraph to developing and explaining the consequences of this assumption.”

I dedicated only one paragraph to the convexity assumption for two reasons:

a) it is a standard assumption. Here I provide a representative list of papers that use the assumption of convex variable quality costs functions.

- Motta, 1993, “Endogenous Quality Choice: Price vs Quantity Competition”, *Journal of Industrial Economics*, 41, 113-131 (p.124)

- Encaoua and Hollander, 2007, “First-Degree Discrimination by a Duopoly: Pricing and Quality Choice”, *The B.E. Journal of Theoretical Economics*, 7, 1-19 (p.5).

- Choudary, V., Ghose, A., Mukhopadhyay, T. and U. Rayan, 2005, “Personalized Pricing and Quality Differentiation”, *Management Science*, 51, 1120-1130 (p.1122).

In the vertical differentiation literature, also fixed quality costs functions are assumed to be convex. See for example:

- Motta, 1993, “Endogenous Quality Choice: Price vs Quantity Competition”, *Journal of Industrial Economics*, 41, 113-131 (p.115).

- Lehmann-Grube, 1997, “Strategic Choice of Quality when Quality is Costly: The Persistence of the High-Quality Advantage”, *The RAND Journal of Economics*, 28, 372-384 (p.373).

- Liu and Serfes, 2005, “Imperfect Price Discrimination in a Vertical Differentiation Model”, *International Journal of Industrial Organization*, 23, 341-354 (p.344).

I do not know papers adopting concave quality cost functions, neither variable not fixed.

b) the assumption has no impact on the main result of the paper, which would hold also for constant or concave cost functions.

7) “Moreover, throughout the paper, I have the feeling that costs of the improvement quality are constant”

Throughout the paper, the costs of improving quality are exogenous because the qualities are exogenous and constant. Therefore, the statement of the referee seems to me not entirely appropriate.

8) *“This is confusing because the results obtained from convexity are lightly explained”.*

Neither result 1 (the central result of the paper) nor result 2 depend on the convexity assumption.

9) *“The author repeats equation 1 and 3. I think that this unnecessary”*

I have not repeated equations (1) and (3), because equations (15) and (16) refer to period 1, so the subscript is different.

10) *“I think that firm H looks for maximizing profits, so his second option is accommodating firm L”*

The comment of the referee is correct. However, my quoted statement was meant to emphasize that when firm H preys it maximizes the sum of the profits in the two periods, and it is willing to renounce to some current profits in order to increase future profits, while when firm H does not prey it maximizes each period profits independently.

11) *“Author refers to v as the size of the market. This is not correct because the size of the market is one.”*

The comment of the referee is correct.

12) *“The topic of the paper is interesting but I am not convincing that the analysis is correct”*

The referee is not convinced that the analysis is correct. This is the fourth time in his report that the referee provides judgments about my results without providing any technical argument that supports his thesis. Before, he said:

- *“It could be an error”* (point 3)
- *“I am not sure about it”* (point 4)
- *“I have the feeling”* (point 7)

He says that the analysis is not correct, but I would like to be informed about my errors (if any). My results are supported with technical arguments. Of course, it is possible that my results are wrong, but I think that they should be confuted by using some technical arguments. Instead, in his report the referee does not provide any technical argument which demonstrates that my results are wrong. This seems to me quite inappropriate.

13) *“Moreover, the paper is badly structured”*

My paper is composed by the introduction, the model and the solution of the model, the intuition of the results, two extensions and the conclusions: what is wrong in this structure?

14) *“and badly written”*

The referee says that the paper is badly written. However, I’m quite surprised in seeing that in his two reports the referee finds one typo: is one typo sufficient for qualifying a paper as “badly written”?

15) *“I decide to reject his paper for being published on E-economics”*

It seems to me that the referee is not entitled to reject the paper. In the review process guidelines of the journal (<http://www.economics-ejournal.org/about-economics/two-stage-publication-process>),

one may read that: “Based on the referee reports, the author replies, and the comments made by the registered readers, the associate editor decides whether the paper is accepted or rejected from publication in *economics*”.