Referee Report on "Strategic behavior between a bank and a microfinance institution: the role of psychological gap and education level" Submission to *Economics*

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This contribution aims to analyze spatial competition between a bank and a microfinance institution. It starts from Hotelling's basic model and introduces two additional factors of product differentiation: psychological distance between the institution and its client, and the level of education of the latter. This is of value in itself because there is very little in the existing theoretical literature on these themes, and it would be welcome to have some formal analysis on this topic.

1 General comments

The objective of the paper is relevant and is of direct interest to Economics's readership. However, I need to point out three main limitations in the current version.

First, as developed below, I cast some doubts about the research question which analyzes spatial competition with strongly differentiated bank and MFI. Namely, are MFIs able to compete with bank really differentiated from them?

Second, effort should be dedicated to a better clarification of the two additional factors of product differentiation - which are the main originality of the paper -. As stated by the authors, psychological distance can also include customers' educational level. Therefore, the educational level's factor seems to be redundant. More generally, psychological distance is presented as a catch-all term and should be more delimited and referenced.

Third, from a theoretical point of view, results are not really value-adding because the three propositions are too intuitive. The two first propositions should be labeled lemmas instead of propositions, and the third one is a corollary of the second. Hence, in its current form, the results of the model are not sufficiently significant.

For these reasons and for those expanded below, even if the approach is pioneer, I suggest to strongly revise literature references and model's assumptions relevance that actually don't meet the standards of the Economics E-journal.

2 Detailed comments on the research contribution

The paper starts from several assumptions about MFIs and bank competition. But most of them are not empirically nor academically justified in the paper. The lack of referencing limits the scope and the discussion around the results.

- The purpose of the paper is introduced with the help of numerous empirical observations in the first paragraph. Particularly, competition between banks and MFIs is considered to be more and more intensive in developing countries. But previous empirical studies and empirical figures are missing from the discussion. I suggest to rigorously reinforce the empirical illustration of the issue with the help of a literature survey and some stylized facts.

- Some of the references (Fall 2009) describe a very complex and heterogeneous mapping of banks/MFIs relationships, which are mainly based on complementarity and partnership. The most common type of collaboration entails MFIs borrowing from banks in order to finance their microcredit, benefit from bank ownership of their equity, receive subsidies from them or share infrastructure with them (Cozarenco 2015). Then, could the research question be generalized to all the MFIs and theoretically based on a binary competitive relationship?

- Quoting Brière and Szafarz (2015) *"Microfinance has changed dramatically during the last decade, moving from a universe of donor-financed NGOs toward a widely disparate industry, including a growing number of commercial banks. The microfinance sector has experienced successful initial public offerings (IPOs) such as the highly publicized flotation of Banco Compartamos in Mexico in 2007. These IPOs have nevertheless been criticized by influential players, including Nobel Prize winner Muhammad Yunus, who views the Compartamos IPO as mission drift that compromises the sector's reputation."*.

  Starting from this quotation, and admitting that MFIs able to compete with banks in three different ways (1. trying to attract richer clients (upscaling strategy), 2. being involved on capital markets operations, and 3. meeting traditional banks' standards, regulation and agreements), can we consider them as really differentiated with banks anymore (especially if traditional banks competing with them are themselves involved in a downscaling strategy)? In that sense, the main assumption of the paper has to be rigorously justified, discussed or relaxed.

- Finally, the definition of the psychological distance factor seems to be too approximate and redundant with the educational level factor. Indeed, in page

2, the authors explicitly argue that "the factors that create distrust between a bank and its client [...] can also include customers' educational level". In the model, psychological distance refers to the level of distrust between the lender and the client. As a crucial factor in the model, I recommend to develop and contextualize this definition (with the help of related literature such as Tronnberg and Hemlin 2012, and by distinguishing with others educational level and spatial distance's factors). In the same way, what are the "socio-cultural factors" mentioned at the top of page 2? The authors should give some examples.

3 Detailed comments on the theoretical analysis

- Is the physical distance really determinant in the client choice between banks and MFI? Credit is not a basic good regularly consumed and it seems that its price is relatively expansive regarding geographical distance costs. The authors should justify this assumption.
- The psychological cost should depend on the level of education given the authors' assumptions (cf. supra).
- The authors state that "for each additional year of study, we consider that his/her cost of financing with the bank decreases by an amount γ". Is that empirically relevant? Does the interest rate varies with the level of education?
- Equations (6) and (7) seem to indicate that the number of customers is normalized at 1. The authors should state it clearly.
- Equations (10) and (11) are false. The right equilibrium interest rates are respectively: $r_b = \frac{1}{3}(3t + (\sigma_i - \sigma_b) + a_e\gamma)$ and $r_i = \frac{1}{3}(3t + (\sigma_b - \sigma_i) + a_e\gamma)$
- Proposition 1 states that if the positive and negative elements added in the Hotelling model are canceled, we obtain the Hotelling initial case. This assertion is intuitive and cannot be presented as a contribution.
- Proposition 2 and 3 describe respectively what happen if equation (12) is higher than 1 or lower than 0. These propositions thus explore the limit cases where there is a monopoly position. The discussion around these two limit cases is interesting but directly comes from assumptions. For example, the authors say that "Proposition 2 implies that when the educational level of the customer is relatively higher than the psychological and physical distances, the customer is going to choose the bank". Since educated clients prefer banks to MFI, this assertion is intuitive.

4 Minor comments

- The article of Mayoukou and Ruffini (1998) is cited in the text while the bibliography indicates the year 2009.

- The authors should use the term “monopoly power” instead “monopolistic power” since they mention situations where there is only one lender in the market.

- The bibliography mentions an article of Fall 2011 which does not appear in the body of the text.

5 References

Brière, M., Szafarz, A. (2015). Does Commercial Microfinance Belong to the Financial Sector? Lessons from the Stock Market, *World Development*, 67, 110-125.

Cozarenco, A. (2015). Microfinance Institutions and Banks in Europe: The story to date. *Working Papers CEB No 15-027*.

Tronnberg, C.C., Hemlin S. (2012). Banker’s lending decision making: a psychological approach. *Journal of Managerial Finance*, 38, 1032-1047.