

# Responding letter to the referee report 1

January 13, 2016

## 1 For the psychological distance

In the new version, we add a new section discussing the concept of psychological distance, a measure of confidence (trust), and comparatively, analyzing the differences between the micro-financial and banking intermediation. The purpose of this new section is threefold. First, we highlight the concept of psychological distance and its contours in the credit relationship. In a compared way, the determinants of confidence in bank and in MFI are also identified. Second, the similarities and differences between the two institutions are taken into account. Finally, we will show how the psychological distance is a supplementary factor in our model and how its taking is important in the analysis of competition between bank and MFI.

In the theoretical literature, the factors of confidence in the credit contract are several. Over the customer relationship, confidence can be determined by formal elements provided by the borrower as the quality of her project, her implication in the risk-taking for the project, and her morality. Hence, in the absence of customer relationship, there are factors that can convince the lender to accept the credit. This new section analyzes these aspects and beyond, highlights, in a comparative sense, the determinants of such confidence.

We also emphasize that the introduction of psychological distance in the basic Hotelling model leads to major changes in the competition. It follows that the only transport costs are not enough to make captive customers. Trust and level of education are profoundly alter the results of Hotelling.

## 2 For the education level

In the model, we can consider education level of a consumer as a switching cost with the bank. The higher education level the lower such cost and so the easier the related person becoming banking consumer. Take for example the case of Senegal (in the CRES survey) where either French or English is the communication language with the bank. It follows that 91.4% of interviewers who speak neither English nor French are not consumers of the bank. In addition, looking for the incidence of banking consumers, it appears that only 8.2 percent of no-educated interviewers are able to access to banking services. The percentages are 12.5 for elementary, 19 for secondary and then 30.4 for high school and more.<sup>1</sup>

As for the equilibrium lending rates in (10) and (11), they are those for a given client. Indeed, for a given client located at  $x_e$ , she is characterized by an education level measuring by a number

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<sup>1</sup>Complied by the authors. Source: CRES survey on information and communications technology, growth, and poverty in Senegal.

of years of education  $a_e$ , a distrusted cost via the bank  $\sigma_{be}$ , a distrusted cost via the MFI  $\sigma_{ie}$ , a lending rate proposed by the bank  $r_{be}$ , and a lending rate proposed by the MFI  $r_{ie}$ . To simply the representation of the model, we did not add the index  $e$  in the equations in the submitted version. The latter did not discuss, as mentioned in the report, how  $a_e$  is distributed. In the new version, we take into account the distribution of  $a_e$ . We also add the index  $e$  into the equations. In addition, a more detail discussion about the marginal client is generated.

### 3 For other remarks

**Remark p.1:** It is true that the literature is very brief and does not highlight the most significant work on this issue. We introduce, in the new version, more references including the most relevant to our research question. We also stress the lack of theoretical literature on bank and microfinance competition, but there is a research on spatial competition in other areas through which we mobilize.

**Remark p.1 & p.2:** This is a mistake. We considered, in an earlier version, an analysis into two stages. This idea is removed in the submitted version for simplification. We withdraw this passage in the new version. Hence, we only consider the case of an extreme location to better highlight the importance of the psychological distance and education level. We show that a client being close to an institution can make the choice to go to the other type located further. The role of psychological distance and education level becomes more important in this extreme case.

**Remark p. 3:** Indeed, Equations (4) and (5) exactly characterize the demand. They also characterize the market share of the related institution, so a proxy for market power.

**Remark p.4:** We can consider that the distance of the marginal client to the bank and that to the MFI are respectively  $d_{bm}$  and  $d_{im}$ . Without loss of generality, we can divide  $d_{bm}$  and  $d_{im}$  by  $d_{bm} + d_{im}$ . As a consequence, the distance of the marginal client to the bank and that to the MFI become respectively  $\frac{d_{bm}}{d_{bm}+d_{im}}$  and  $\frac{d_{im}}{d_{bm}+d_{im}}$ . Let denote  $x_m := \frac{d_{im}}{d_{bm}+d_{im}}$  the distance of this client to the MFI. Then, the distance to the bank becomes:  $1 - x_m$ .

In the new version, we add the above discussion to allow  $0 \leq x_m \leq 1$ .

**Last remark:** In the new version, we take into account the important recommendation of the referee about the fundamental differences between bank and MFI. The differences can be explained in terms of their objectives, status and nature, as well as in terms of their intermediation mechanisms or factors determining the confidence.