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To acquire, or to compete? An entry dilemna

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To acquire, or to compete? An entry dilemma

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Abstract

In this paper we address the following question: is it more profitable, for an entrant in a differentiated market, to acquire an existing firm than to compete? We illustrate the answer by considering competition in the banking sector.

Keywords: Vertical differentiation, entry, banking competition

JEL Classification: G34, L13, L22

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1 Introduction

In this note, we analyse under which conditions a foreign bank can find profitable to enter a local market where customers face switching costs when moving from a domestic bank to a new provider. When an individual is planning to acquire a house, he/she can hesitate between either to buy an already built one, or invest in the building of a new one. An analogous dilemma is faced by a firm entering in an existing market: either it can acquire a firm which already exists, or decide to enter with a new installation. Of course, the choice effectively made is the more profitable one. Notice however that the market structure is affected by the result of the choice. Buying an existing firm does not affect competition in the market but simply leads to a money transfer among agents. On the contrary, entry with a new firm directly affects the structure of the market by increasing the number of competitors, as well as the number of varieties offered to the consumers. Indeed, firms generally do not sell a homogeneous product. Products and services supplied in the market are often differentiated.Then consumers face a wider domain of varieties when a new product enters the market than when the entrant simply buys a firm which was already existing before. In particular, when these products or services can be unambiguously ranked along some quality ladder, entry with a new product provides wider choice opportunities to consumers depending on the leveI of quality of the new product. In this paper we address the following question: is it more profitable, for an entrant in a vertically differentiated market, to buy an existing firm than to enter and to compete?

This question appears as particularly pregnant in the context of banking competition. The retail banking sector in the European Union was historically fragmented along national lines, and market integration is far from being complete. Also, it is mainly dominated by local banks which develop long-term relationships with their customers. In spite of new delivery channels in this sector (phone, internet, *inter alia*), trust and proximity turn out to be crucial, and direct contact with customers is still the main way for a bank to gain and satisfy clients. Indeed, customers' satisfaction depends not only on the product itself, but also on other variables, such as the promptness of personnel in solving problems and the face-to-face relations which are dependent on the existence of a wide network of branches. As banks are fully aware that winning regular clients is the key to get commercial success, they prevent quite often their clients from moving to other banks through the erection of switching costs, which arise each time a customer decides to change his current provider[1] .

The low level of customer mobility induced by this customer-based approach has a significant impact on the intensity of competition[2]. Due to the relevance

[1] These costs mainly derive from the *transaction costs* - arising because customers have to fill in forms for opening a new account, closing the old one, transferring balances, setting up payment instructions, and *tying and bundling practices* - which are a way to differentiate otherwise identical products.

[2] It is worth noting that entry by means of acquisition, while typically taking place in the banking sector does not appear in other retail sectors such as food and fashion industries,

of personal customer-bank relationships, the entry of foreign banks turn out to be difficult [3].

From an inquiry conducted by the European Commission (2007) on the balance between domestic and foreign banks in the top five banks in each European Member State, measured by gross total retail income, it emerges that the top banks are, in most countries, domestic. While in France, Italy, Spain, Sweden and the UK, the top five banks are all domestic, foreign banks seem to find some room available in the New Member States. Also, the same inquiry shows that, in the majority of Member States, annual customers' switching rates for current accounts are quite low and stable at 5 to 10 per cent per year.

In this note, we analyze under which conditions a foreign bank can find profitable to enter a local market where customers face switching costs when moving from a domestic bank to a new provider. Quite surprisingly, the link between customers' switching costs and bank entry has been so far neglected by theoretical scholars working in bank competition. A huge amount of work going back to the eighties is concerned with banks' entry into foreign markets (pioneering studies have been provided by Goldberg and Saunders (1981) and Kindleberger (1983). For more recent works, see Buch (2000), Buch and Golder (2002) and Boldt-Christmas, Jacobsen and Tschoegl (2001)). Yet, it mainly focuses on motives for banks to enter new markets. Also, a research line on consumers' loyalty and bank performance has been developed. This line allows to clarify how building up profitable relations with group of loyal consumers can determine a competitive advantage for banks (Levesque and McDougall (1996), Reichheld, (1993)). While contributing to disentangle the main characteristics of the banking sector, this research line is primarily concerned with the origin and sources of switching costs.

In the formal model we introduce hereafter, we assume that the local market initially consists of two domestic banks, providing financial products of different quality, say *high* and *low* quality. The high-quality bank has a widespread network and offers a full range of services to the clients, while the low quality bank has a smaller number of branches and the range of products is limited to a more restricted set of services. Then, a foreign bank decides to enter this local market. This bank can either acquire one of the existing banks, or enter while keeping its own brand and, thus, directly competing with the existing rivals. In the first case, the foreign bank enters the market by acquiring one of the existing banks, either the high quality or the low quality one. In this first scenario, the foreign bank is not penalized by the existence of switching costs. Yet, it has to pay a cost of acquisition which can still make entry unprofitable.

where switching costs play amost no role.

[3] As local banks strengthen consumers' loyalty by means of switching costs, a foreign bank acquiring local retail providers can take advantage of regular clients and thus increase the chance to survive in this new environment. " Several comments submitted by banks in the context of the public consultation stated that entry mainly occurs by means of acquiring an existing customer base with a branch network and possibly an established brand", European Commission, 16, (2007). Recent examples of this entry mode are provided by.Santander in Portugal, BNP-Paribas in Italy, Fortis in Netherlands....

In the alternative case, it can offer only services whose perceived quality is lower than the effective one, due to the existence of switching costs. As a consequence, even when the effective quality of its services is at the top of the quality ladder, it is perceived *as if* it would be lower than the one provided by the high quality local bank. The entry dilemma is: what strategy to select, to acquire, or to compete?

Using a vertically differentiated model, we show first that the foreign bank always gets a non positive profit at equilibrium when the magnitude of switching costs is so high that it can only offer services whose quality is at the bottom of the existing quality ladder. When switching costs are not so significant to prevent entry, then, only two profitable options remain: either it can enter with an intermediate quality level, or it has to acquire one of the existing banks. We illustrate in a non cooperative sequential entry/acquisition game when one choice is more profitable than the other, depending on the value of the acquisition price.

2 Two national banks

Assume that in a covered market there are two *national* banks, say H and L, providing differentiated services to the customers. Services of bank H are unanimously ranked of being of a higher quality than those of bank L. The average cost with respect to quality is assumed to be constant and, without loss of generality, we set it equal to zero.

Consumers are identified by the parameter $\theta \in [a, b]$, $0 \leq a < b$ and uniformly distributed with density equal to 1. Utility of consumer θ is given by

$$u_i(\theta, p_i) = \theta u_i - p_i, \ i = H, L,$$

where $u_H > u_L$ and p_i is equal to the price that customers pay for getting the whole bundle of services provided by bank i. Furthermore, assume that

$$\frac{a}{b} \in \left[\frac{1}{4}, \frac{1}{2}\right]. \tag{1}$$

As it will be seen later, this assumption guarantees that exactly two firms can make strictly positive profits at an interior equilibrium. Denote by $\bar{\theta}$ the consumer who is indifferent between being served by banks H and L at prices p_H and p_L, respectively. Solving in θ the equation

$$\theta u_H - p_H = \theta u_L - p_L,$$

we obtain

$$\bar{\theta} = \frac{p_H - p_L}{u_H - u_L}.$$

Then, demand functions to bank H and L are given, respectively, by

$$\begin{aligned} D_H(p_H, p_{L)} &= b - \frac{p_H - p_L}{u_H - u_L} \\ D_L(p_H, p_{L)} &= \frac{p_H - p_L}{u_H - u_L} - a, \end{aligned}$$

so that profit functions $\Pi_H(p_H, p_L)$ and $\Pi_L(p_H, p_L)$ write as

$$\Pi_H(p_H, p_L) = \left(b - \frac{p_H - p_L}{u_H - u_L}\right) p_H \quad (2)$$

$$\Pi_L(p_H, p_L) = \left(\frac{p_H - p_L}{u_H - u_L} - a\right) p_L. \quad (3)$$

Maximization of (2) and (3) with respect to p_H and p_L, respectively, gives the equilibrium prices $\overset{\circ}{p}_H$ and $\overset{\circ}{p}_L$, namely,

$$\overset{\circ}{p}_H = \frac{(2b - a)(u_H - u_L)}{3}.$$

$$\overset{\circ}{p}_L = \frac{(b - 2a)(u_H - u_L)}{3}.$$

Notice that (1) guarrantees that both equilibrium prices and profits are strictly positive and that the market is indeed covered. Substituting these prices in (2) and (3), respectively, we obtain that profits $\overset{\circ}{\Pi}_H$ and $\overset{\circ}{\Pi}_L$ at equilibrium are given by

$$\overset{\circ}{\Pi}_H\left(\overset{\circ}{p}_H, \overset{\circ}{p}_L\right) = \frac{(u_H - u_L)(2b - a)^2}{9(b - a)}$$

$$\overset{\circ}{\Pi}_L\left(\overset{\circ}{p}_H, \overset{\circ}{p}_L\right) = \frac{(u_H - u_L)(b - 2a)^2}{9(b - a)}.$$

3 Competition between foreign and national banks

We assume now that a foreign bank decides to enter the national market. When entering the market, this foreign bank can either acquire one of the national banks, or compete with them. In order to derive the optimal choice, we define a *non cooperative sequential entry/acquisition game* in the following way: the foreign firm F offers to buy the highest quality firm at some price P_H; if bank H turns down this offer, the foreign bank offers to buy bank L at some price P_L; if bank L turns down its offer, the foreign bank enters the market[4].

When entering the market, two cases may arise depending on whether the foreign bank enters the market with a quality lying at the bottom of the quality ladder, or between the top and the bottom, namely

Case *(i)*: $u_H > u_L > u_F$
Case *(ii)*: $u_H > u_F > u_L$.

In both these cases, the foreign bank provides a service whose quality is assumed to be given by $u_F = u_H - s$, $s < u_i$, $i = H, F, L$, s representing the

[4]Of course, we could have as well considered the alternative timing in which the foreign bank starts to offer to buy the low quality, and then the high quality one, in the case when bank L turns down the offer. However, restricting our analysis to this specific sequential game does not alter the main conclusions of our work.

switching cost incurred by consumers if they decide to move from a national bank to the foreign one. We start analysing when the third scenario, *direct competition*, can take place in the market, namely when there is room left to the foreign bank at equilibrium, depending on the magnitude of the switching costs.

3.1 Equilibrium analysis in case (i): $u_H > u_L > u_F = u_H - s$.

In this scenario, the consumer θ^H indifferent between being served by bank H or L at prices p_H and p_L, respectively, writes as

$$\theta^H = \frac{p_H - p_L}{u_H - u_L},$$

while the consumer θ^L indifferent between buying services provided by bank L or F at prices p_L and p_F

$$\theta^L = \frac{p_L - p_F}{u_L - u_F},$$

Accordingly, the corresponding demand functions $D_H(p_H, p_L)$ and $D_L(p_H, p_L)$ for the national banks H and L, respectively, are

$$\begin{aligned} D_H(p_H, p_L) &= b - \frac{p_H - p_L}{u_H - u_L} \\ D_L(p_H, p_L) &= \frac{p_H - p_L}{u_H - u_L} - \frac{p_L - p_F}{u_L - u_F}, \end{aligned}$$

and

$$D_F(p_L, p_F) = \frac{p_L - p_F}{u_L - u_F} - a,$$

for the foreign bank F. Thus, the respective profits functions write as

$$\begin{aligned} \Pi_H &= p_H(b - \frac{p_H - p_L}{u_H - u_L}) \\ \Pi_L &= p_L(\frac{p_H - p_L}{u_H - u_L} - \frac{p_L - p_F}{u_L - u_F}) \\ \Pi_F &= p_F(\frac{p_L - p_F}{u_L - u_F} - a) \end{aligned}$$

From the first order conditions, it is easy to identify the following best reply functions

$$\begin{aligned} p_H &= \frac{1}{2} b\,(u_H - u_L) + \frac{1}{2} p_L \\ p_L &= \frac{(p_H(u_L - u_F) + p_F(u_H - u_L))}{2(u_H - u_F)} \\ p_F &= \frac{(p_L + a\,(u_F - u_L))}{2}. \end{aligned}$$

Thus, solving the above system, we easily derive the candidate equilibrium prices $\tilde{p}_H$, $\tilde{p}_L$ and $\tilde{p}_F$:

$$\begin{aligned}
\tilde{p}_H &= \frac{(u_H - u_L)((a-4b)u_F + 3bu_H + (b-a)u_L)}{6(u_H - u_F)} \\
\tilde{p}_L &= \frac{(u_H - u_L)(b-a)(u_L - u_F)}{3(u_H - u_F)} \\
\tilde{p}_F &= \frac{(u_L - u_F)(3au_F + (b-4a)u_H + (a-b)u_L)}{6(u_H - u_F)}
\end{aligned}$$

Notice however that (1) implies

$$\frac{a}{b} \geq \frac{u_H - u_L}{4u_H - 3u_F - u_L}, \tag{4}$$

which, in turn, implies that

$$\frac{(3au_F + (b-4a)u_H + (a-b)u_L)}{6(u_H - u_F)} \leq 0$$

or, equivalently, $\tilde{p}_F \leq 0$. Accordingly, when (1) is satisfied, then the equilibrium value of $p_F = 0$. In that case, the value of best replies of banks H and L have to be computed against $p_F = 0$, namely,

$$\begin{aligned}
p_H &= \frac{1}{2}b\,(u_H - u_L) + \frac{1}{2}p_L \\
p_L &= \frac{(p_H(u_L - u_F))}{2(u_H - u_F)}.
\end{aligned}$$

Solving this system in p_H and p_L, we get the equilibrium prices p_H^*, p_L^* and p_F^*, namely,

$$\begin{aligned}
p_H^* &= \frac{2b(u_H - u_F)(u_H - u_L)}{4u_H - u_L - 3u_F} \\
p_L^* &= \frac{b(u_H - u_L)(u_L - u_F)}{4u_H - u_L - 3u_F} \\
p_F^* &= 0.
\end{aligned}$$

Given that $u_F = u_H - s$, these equilibrium prices can be rewritten as

$$\begin{aligned}
p_H^* &= 2bs\frac{u_H - u_L}{s + 3u_H - 3u_L} \\
p_L^* &= b\,(u_H - u_L)\,\frac{s - u_H + u_L}{s + 3u_H - 3u_L} \\
p_F^* &= 0
\end{aligned}$$

Finally, profits at equilibrium write as follows

$$\begin{aligned}
\Pi_H^*(p_H^*, p_L^*, p_F^*) &= \frac{4b^2(u_H - u_F)^2(u_H - u_L)}{(b-a)\left(4u_H - u_L - 3u_F\right)^2} \\
\Pi_L^*(p_H^*, p_L^*, p_F^*) &= \frac{b^2(u_H - u_F)(u_H - u_L)(u_L - u_F)}{(b-a)\left(4u_H - u_L - 3u_F\right)^2} \\
\Pi_F^*(p_H^*, p_L^*, p_F^*) &= 0
\end{aligned}$$

The following proposition summarizes the above findings.

Proposition 1 *When the switching cost s is so high that $u_H > u_L > u_F = u_H - s$, there is no room in the market left at equilibrium to the foreign bank.*

3.2 Equilibrium analysis in case (ii): $u_H > u_F = u_H - s > u_L$.

Now assume that the switching cost s satisfies: $u_H > u_F = u_H - s > u_L$. Denote by $\bar{\theta}^H$ the consumer who is indifferent between being served by banks H and F at prices p_H and p_F respectively. Solving the equality

$$u_H\theta - p_H = u_F\theta - p_F,$$

we find that

$$\bar{\theta}^H = \frac{p_H - p_F}{u_H - u_F}.$$

Similarly, denote by $\bar{\theta}^F$ indifferent between buying services provided by bank F or L at prices p_F and p_L

$$\bar{\theta}^F = \frac{p_F - p_L}{u_F - u_L},$$

Accordingly, the corresponding demand functions $D_H(p_H, p_L)$ and $D_L(p_H, p_L)$ for the national banks H and L, respectively, are

$$\begin{aligned}
D_H(p_H, p_L) &= b - \frac{p_H - p_F}{u_H - u_F} \\
D_L(p_H, p_L) &= \frac{p_F - p_L}{u_F - u_L} - a,
\end{aligned}$$

and

$$D_F(p_L, p_F) = \frac{p_H - p_F}{u_H - u_F} - \frac{p_F - p_L}{u_F - u_L},$$

for the national bank. Thus, the respective profits functions are:

$$\begin{aligned}
\Pi_H &= p_H(b - \frac{p_H - p_F}{u_H - u_F}) \\
\Pi_F &= p_F(\frac{p_H - p_F}{u_H - u_F} - \frac{p_F - p_L}{u_F - u_L}) \\
\Pi_L &= p_L(\frac{p_F - p_L}{u_F - u_L} - a)
\end{aligned}$$

From the first order conditions, it is easy to identify the following best reply functions

$$\begin{aligned} p_H &= \frac{1}{2}p_F + \frac{b}{2}(u_H - u_F) \\ p_F &= \frac{(p_H(u_F - u_L) + p_L(u_H - u_F))}{2(u_H - u_L)} \\ p_L &= \frac{(p_F + a\,(u_L - u_F))}{2}. \end{aligned}$$

Then, solving the above system, we compute the candidate equilibrium prices $\breve{p}_H$, $\breve{p}_L$ and $\breve{p}_F$, namely

$$\begin{aligned} \breve{p}_H &= \frac{(au_F - bu_F - 3bu_H - au_L + 4bu_L)\,(u_H - u_F)}{6\,(u_L - u_H)} \\ \breve{p}_F &= \frac{(b-a)\,(u_L - u_F)\,(u_H - u_F)}{3\,(u_L - u_H)} \\ \breve{p}_L &= \frac{(au_F - bu_F - 4au_H + bu_H + 3au_L)\,(u_L - u_F)}{6\,(u_L - u_H)}. \end{aligned}$$

Just repeating the argument developed in the previous section, these candidates are not equilibrium prices. Accordingly, it follows from above that the value of best replies of banks H and F have to be computed against $p_L = 0$, namely,

$$\begin{aligned} p_H &= \frac{1}{2}p_F + \frac{b}{2}(u_H - u_F) \\ p_F &= \frac{(p_H(u_F - u_L))}{2(u_H - u_L)} \\ p_L &= 0 \end{aligned}$$

Thus, solving this system in p_H and p_F, we get the equilibrium prices p_H^{**}, p_L^{**} and p_F^{**}, namely

$$\begin{aligned} p_H^{**} &= \frac{2b\,(u_H - u_F)\,(u_H - u_L)}{(4u_H - u_F - 3u_L)} = \frac{2sb\,(u_H - u_L)}{3u_H - 3u_L + s} \\ p_F^{**} &= \frac{b\,(u_F - u_L)\,(u_H - u_F)}{(4u_H - u_F - 3u_L)} = \frac{sb\,(u_H - s - u_L)}{3u_H - 3u_L + s} \\ p_L^{**} &= 0, \end{aligned}$$

leading to equilibrium profits

$$\Pi_H^{**}(p_H^{**}, p_F^{**}, p_L^{**}) = \frac{4b^2 (u_H - u_F)(u_L - u_H)^2}{(b-a)(3u_L - 4u_H + u_F)^2} = \frac{4sb^2 (u_L - u_H)^2}{(b-a)(3u_L - 3u_H - s)^2}$$

$$\Pi_F^{**}(p_H^{**}, p_F^{**}, p_L^{**}) = \frac{b^2 (u_H - u_L)(u_L - u_F)(u_F - u_H)}{(b-a)(3u_L - 4u_H + u_F)^2} = \frac{b^2 (u_H - u_L)(u_H - s - u_L)s}{(b-a)(3u_L - 3u_H - s)^2}$$

$$\Pi_L^{**}(p_H^{**}, p_F^{**}, p_L^{**}) = 0,$$

We summarize the above result in the following proposition.

Proposition 2 *When the switching cost s satisfies : $u_H > u_F = u_H - s > u_L$, the foreign bank can successfully enters the market at equilibrium. However, the local bank providing the service whose quality lies at the bottom of the quality ladder is pushed away from the market.*

4 The optimal entry

We are now in a position to characterize the optimal entry-choice for the foreign bank. The available options are: *(a)* to acquire a national bank (either the high quality bank or the low quality one) and thus to pay the cost of acquisition of the local bank without incurring switching costs; *(b)* to compete with the existing banks without paying the cost of acquisition and supply services whose quality lies, according to the previous section, between the top and the bottom qualities of the national banks, due to the switching costs.

Payoffs of the foreign bank when it decides to acquire rather than to compete, are assumed to obtain as an outcome of the following *non cooperative sequential entry/acquisition game* which develops as follows:

1. the foreign firm F offers to buy the highest quality firm at some price P_H (notice that P_H equals 0 if the foreign bank does not really want to acquire bank H);

2. if bank H turns down this offer, the foreign bank offers to buy bank L at some price P_L (which can be 0 if the foreign bank prefers to enter rather than to buy);

3. if bank L turns down its offer, the foreign bank enters the market only when there is room for it (i.e. when $u_H > u_F > u_L$)

The game is solved backward in the case $u_H > u_F > u_L$[5]. Let us first consider the possible acquisition of bank L by the foreign bank. Bank L would accept to sell out whenever offered a price P_L at least equal to the profits it

[5] In the opposite case, it is straightforward to show that the foreign bank can never compete nor acquire profitably.

would get, conditional on turning down the proposal, namely $P_L = 0$. We know from the previous section, that entry would yield to bank F profits equal to

$$\frac{(u_H - u_L)\, b^2\, (u_H - s - u_L)\, s}{(b-a)\,(3u_L - 3u_H - s)^2},$$

which are maximum at $s = \frac{3}{7}(u_h - u_L)$[6], while acquiring bank L at price 0 would give it the duopoly profits

$$\frac{(u_H - u_L)\,(b-2a)^2}{9\,(b-a)}.$$

Let us denote by Δ the value $u_H - u_L$ and define x by $x = \frac{a}{b}$. The sign of the difference between profits from entry and profits from acquiring Firm L has the same sign as the expression

$$\frac{s(\Delta - s)}{(3\Delta + s)^2} - \frac{1}{9}(1-2x)^2, \tag{5}$$

given that we have assumed $x \in \left[\frac{1}{4}, \frac{1}{2}\right]$, in order to ensure that two, and only two, firms can make positive profits in this market. Denote by s^- and s^+ the roots of the second-order polynomial

$$P(s) = s^2(-10 + 4x - 4x^2) + s\Delta(-24x^2 + 24x + 3) + \Delta^2(-36x^2 + 36x - 9).$$

Lemma 3 *(i) whenever $x \in [\frac{1}{4}, \frac{1}{2} - \frac{\sqrt{3}}{8}]$ the foreign firm F prefers to buy firm L whatever the value of s;*

(ii) when $x \in (\frac{1}{2} - \frac{\sqrt{3}}{8}, \frac{1}{2}]$ the foreign firm F chooses to buy firm L whenever $s \in [0, s^-)$ or $s \in (s^+, \Delta]$ and to enter whenever $s \in (s^-, s^+)$. It is indifferent between the two options when $s = s^-$ or $s = s^+$.

Proof. It is sufficient to notice that (i) the sign of $P(s)$ is the sign of (5) , (ii) $P(s)$ is strictly negative for all s whenever $64x^2 - 64x + 13 > 0 \Leftrightarrow x \in [\frac{1}{4}, \frac{1}{2} - \frac{\sqrt{3}}{8}]$, (ii) $P(s)$ has two roots $s^- = \Delta(\frac{1+8x-8x^2-\sqrt{-(64x^2-64x+13)}}{20-8x+8x^2})$ and $s^+ = \Delta(\frac{1+8x-8x^2+\sqrt{-(64x^2-64x+13)}}{20-8x+8x^2})$. ■

Below we have plotted s^-/Δ and s^+/Δ as functions of x.Notice that the interval of values of s such that entry is a better strategy than acquiring firm L increases as x increases.

The results of Lemma 3 are rather intuitive. It is better to buy the lower quality bank rather than to enter when (i) the consumers' types range $[a, b]$ is such that a/b is sufficiently small and (ii) even when a/b is large, when the quality of the foreign firm is not very different from the quality of one of the two existing national banks. This is simply because in both cases, competition between the entrant and one, or both, of the incumbents would be fierce, and lead accordingly to low entrant's profits. We can summarize the above results as follows.

[6] The intuition is simply that Firm F makes profits which are the larger the more different is its quality u_F from the qualities supplied by the two incumbents.

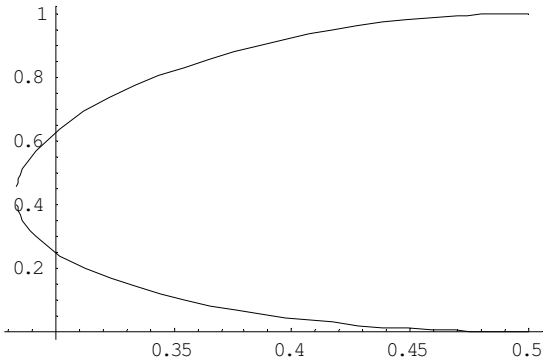

Figure 1: s^-/Δ and s^+/Δ as functions of x.

Proposition 4 *Entry is the second-stage best strategy for the foreign firm only when the ratio a/b obtained from the consumers' types range $[a,b]$ is small and the entrant's quality is different enough from the incumbents' one so as to ensure mild competition and substantial entrant's profits.*

Let us now study the first stage of the game. By acquiring firm H, the foreign bank would earn profits equal to $\frac{(u_H-u_L)(2b-a)^2}{9(b-a)}$. It would have to pay a price P_H equal to the profits of bank H, if it turns down F 's offer. Of course, the value of this price depends on what is F' s best strategy, as defined in Lemma 3, when its offer to H is turned down. When F's strategy is to buy bank L, then the acquisition price P_H is equal to bank H' s duopoly profits, namely $P_H = \frac{(u_H-u_L)(2b-a)^2}{9(b-a)}$. Accordingly, the foreign bank would earn zero profits from the acquisition of bank H, whereas it obtains strictly positive profits from acquiring bank L. When the F's best strategy is to enter the market, then the acquisition price P_H must be equal to H's profit conditional on F's entry, namely $P_H = \frac{4sb^2(u_L-u_H)^2}{(b-a)(3u_L-3u_H-s)^2}$. Thus, F's profits when acquiring H, equal to $\frac{(u_H-u_L)(2b-a)^2}{9(b-a)} - \frac{4sb^2(u_L-u_H)^2}{(b-a)(3u_L-3u_H-s)^2}$, have to be compared with its post-entry profits, namely $\frac{b^2(u_H-u_L)(u_H-s-u_L)s}{(b-a)(3u_L-3u_H-s)^2}$.The sign of the difference between the former and the latter is the same as the sign of

$$\frac{b^2 s(\Delta - s)}{(3\Delta + s)^2} - \frac{(2b-a)^2}{9} + \frac{4sb^2\Delta}{(3\Delta + s)^2}$$

which is itself the same as the sign of the second order polynomial

$$\left(\frac{s}{\Delta}\right)^2 (-x^2 + 4x - 13) + 3\left(\frac{s}{\Delta}\right)(-2x^2 + 8x + 7) - 9(x-2)^2.$$

Simple calculations reveal that this second-order polynomial is always negative in the range of admissible values ($\frac{s}{\Delta} \in [0,1]$, $x \in \left[\frac{1}{4}, \frac{1}{2}\right]$). This shows that, in

the first stage game, the foreign firm F always prefers to acquire firm H rather than to compete.

Proposition 5 *When the ratio a/b obtained from the consumers' types range is small or when it is large but F's quality is not very different from H's or L's, then the foreign bank acquires the low quality firm. When the ratio a/b is large and F's quality differs substantially from H's and L's so as to make entry a credible threat, the foreign bank acquires the high quality bank H*[7].

5 Conclusion

In this note we have completely clarified the entry dilemma under vertically differentiated competition: is it more profitable to buy an existing firm than to compete directly with incumbents? First, when the switching cost incurred by consumers is so high that the foreign bank can contemplate to enter only with the lowest quality, there is no room left for entry. On the contrary, when the switching cost is less significant, the potential entrant is able to enter with an intermediate quality and compete with the incumbents. However, *entering the market is never an equilibrium strategy for the foreign firm.* In any case, notice that, the quality ladder finally proposed to the consumers is identical, *ex-ante* and *ex-post.*

Of course, the simplicity of our conclusions relies on the specific structure which is used to model banking competition. It is well known that, under vertical product differentiation, there is an upperbound on the number of products which can survive at equilibrium (Gabszewicz and Thisse (1980), Shaked and Sutton (1983)). This property also relies on the fact that we have assumed a constant average cost with respect to quality; the conclusions about entry could be more difficult to derive if quality costs would not be assumed to be linear.

There is still room for providing many further microeconomic insights into the problem of banking competition. For instance, in order to embed spatial competition among banks, the model could be enriched if it would be combined with some elements borrowed from horizontal differentiation. For example, some consumers could prefer a bank located close to their own location than another one even providing better services, simply because this higher quality does not compensate for the higher transportation costs incurred when moving to this other bank. Solving this problem would require a framework combining elements borrowed from both vertically and horizontally differentiated models. More generally, the implications of entry by acquisition on competition constitutes an open field for future research which has only been superficially scratched in the present essay.

[7] As stated in footnote 4, even in the alternative timing in which the foreign bank starts to offer to buy the low quality, and then the high quality one, in the case when bank L turns down the offer, it could be proved that entering the market is never an equilibrium strategy for the foreign bank and thus F always buy bank H.

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