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ON THE VALUE OF INCUMBENCY:

MANAGERIAL REFERENCE POINT AND LOSS AVERSION

by

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Abstract

In discussing the market entry decision and the strategic interaction between an incumbent firm and an entrant the focus in the literature is on the different asymmetries that exist between the incumbent and the entrant. These asymmetries can be cost asymmetries, capacity asymmetries, information asymmetries or any other factor that affect the future expected cash flow. In this paper we claim that there is also a great importance to the fact that one firm is **in** the industry and it is the incumbent while the other firm is **outside** of the industry and that even without any other asymmetries between the firms we should expect a different behavior from the two types of firms. Making use of the existing literature on decision making under uncertainty the paper focus on reference dependent preferences and on loss aversion. The paper demonstrates that having different reference point affect the post entry game equilibrium and gives an advantage to the incumbent firm. We define this advantage as **the value of incumbency**. The paper demonstrates that the firms' reference points and loss aversions affect the self selection of entrants and the type of industry that will emerge.

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Introduction

In discussing the market entry decision and the strategic interaction between an incumbent firm and an entrant the focus in the literature is on the different asymmetries that exist between the incumbent and the entrant. These asymmetries can be cost asymmetries, capacity asymmetries, information asymmetries or any other factor that affect the future cash flow. The value of incumbency is derived, in such a case, from the value of these asymmetries (for an extensive survey on the value of incumbency in the industrial organization literature see Gilbert (1989)). Such an approach emphasizes the role of incumbency as the opportunity for the incumbent to create advantages that will affect future profits. In this paper we claim that there is also a great importance to the fact that one firm is **in** the industry and it is the incumbent while the other firm is **outside** of the industry and that even when entry and exit are costless we should expect a different behavior from the two type of firms. While the firms might be identical with respect to their cost and demand structure, there is a psychological aspect of incumbency which affects the decision making process by the firm.

Entry to a market is a decision that involves risk as the decision typically yields uncertain returns. Since firms are run by managers who are exposed to psychological stimulations, it is the view of this paper that any positive theory of industrial organization must be based on a detailed analysis of decision making under uncertainty and on the analysis on the behavior of people in such circumstances. The paper borrows from this literature, and in particular from

Kahneman and Tversky (1979) and Tversky and Kahneman (1991,1992), in order to discuss the entry decision in such a context. We focus, in this paper, on two aspects of decision making: Reference dependence and Loss aversion. Reference dependence argues that people perceived the outcome of a lottery as gains and losses from some given reference point while loss aversion refers to the phenomenon that losses have greater impact on preferences than gains of the same size.

The interpretation of incumbency that we adopt is with respect to the firms' reference points. The incumbent firm evaluates decisions from the point of view of being **in** the industry while the entrant has the reference point of being **outside** the industry. The paper demonstrates that the difference in the firms' reference points leads to different market decisions and thus affects market equilibrium. The value of incumbency can thus be measured as the advantage (or disadvantage) that the incumbency creates in the post entry game.

The paper considers two related problems. In the first one we consider an entry game in which the incumbent and the entrant are symmetric with respect to their payoff function but given their different reference point they would behave differently in the post entry game. Specifically we show that the incumbent will be more aggressive in the post entry game, behavior which creates an advantage for the incumbent and a disadvantage to the entrant. This disadvantage can be potentially large enough to deter entry. The second problem examines the existence of inertia forces in markets. We examine the entry decision of two different type of firms, one within the industry while the other is an outsider firm. Even though we assume again that the two firms are identical with respect to the payoffs they anticipated from entry, their different reference point combined with their loss aversion give rise to inertia forces which discourage an entry by the outsider firm yet discourage an exit of the insider firm.

The paper is organized as follows: in Section 1 we briefly discuss reference dependent preferences and loss aversion. In Section 2 we discuss the entry game and the value of incumbency in such games. In Section 3 we consider the inertia forces and the different entry decision of insider and outsider firms. We conclude in Section 4.

1. Loss Aversion and Reference Point.

We start by briefly discuss preferences that exhibit reference dependence and loss aversion. For a detailed study of such preferences see Kahneman and Tversky (1979,1984) and Tversky and Kahneman (1992) for decision making under uncertainty and Tversky and Kahneman (1991) for riskless choices.

Expected utility theory compares different lotteries by defining a value for any asset position and then compares the different expected values that the lotteries imply. There are evidence, however, that people normally perceived the outcomes of lotteries as gains and losses rather than the final states of wealth. Markowitz, in his paper "The Utility of Wealth" (1952), argued that utility should be defined as gains and losses rather than on the final asset position. However gains and losses can only be defined relative to some reference point. Thus preferences are **reference dependent** whenever different reference points affect the evaluation of gains and losses. Do people treats gains and losses symmetrically? The answer is no. Using the language of Kahneman and Tversky "The aggravation that one experiences in losing a sum of money appears to be greater than the pleasure associated with gaining the same amount". Such a phenomena is referred to as **loss aversion.**[1]

In order to illustrate the type of preferences we consider we will start by presenting a well known experiment reported by Kahneman, Knetsch and Thaler (1990)[2]. The experiment was conducted in a classroom of students. A decorated mug was placed in front of (randomly selected) 1/3 of the seats in the class. The students, who now owned a mug, were asked the following question: "You now own a mug. For the following prices indicates if you wish to sell it or keep it? ". The prices that the students were offered were between 0.5$ to 9.5$. The other group of students were asked to indicate if they wish to have the mug or a sum of money varied from $0.5 to $9.5. Clearly both groups face precisely the same decision problem and thus we should expect that, on the average, both groups will come with the same dollar value for the mug. Surprisingly the experiment indicates differently. The median value of the mug was $7.12 for the students who already owned a mug, i,e; the sellers, while for the second group, the choosers, the median value was $3.12. This difference indicates that owning the decorated mug change the way the students view the choice problem. The two groups have different reference points. Getting the mug is a gain for one group while giving it up is a loss for the other group. Loss aversion implies that the exchange rate between the mug and money will be different in the two groups. This difference in the students' behavior indicates that once they own the mug they

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[1]Formalizing loss aversion does not necessarily means a deviation from expected utility theory. In a recent paper Bowman, Minehart and Rabin (1992) formalize and extend the definition of loss aversion within the expected utility setting by incorporating psychologically more realistic preferences. They then apply their definition and discuss an optimal saving problem.

[2] This experiment deals with riskless decisions. Although the main concern in this paper is decision under uncertainty, this experiment best illustrate the issue of reference dependence and loss aversion.

view selling it as a loss and therefore evaluated it much higher than students that just had to choose.

If people evaluate an outcome relative to a reference point then the individual's preferences is described as a collection of preference relationship such that $x >_r y$ is interpreted as x is preferred to y given the reference point r. For any such reference point r if the preferences are complete, transitive and continuous one can define a value function V_r that measure the value of deviation from the reference point r. We will now let the outcome of a lottery be evaluated as the expected value of a function V_r. Thus the above description follows Kahneman and Tversky (1979)'s prospect theory, but assumes no weighting function on the probabilities. The value function V_r in the Prospect Theory has three characteristics. (i) reference dependence, (ii) loss aversion which implies that the value function is steeper in the negative domain than in the positive domain and (iii) Diminishing sensitivity which implies that the marginal value of both gains and losses decrease with the size. These properties imply an asymmetric S-shape value function that get the value zero at the reference point (see Figure 1).

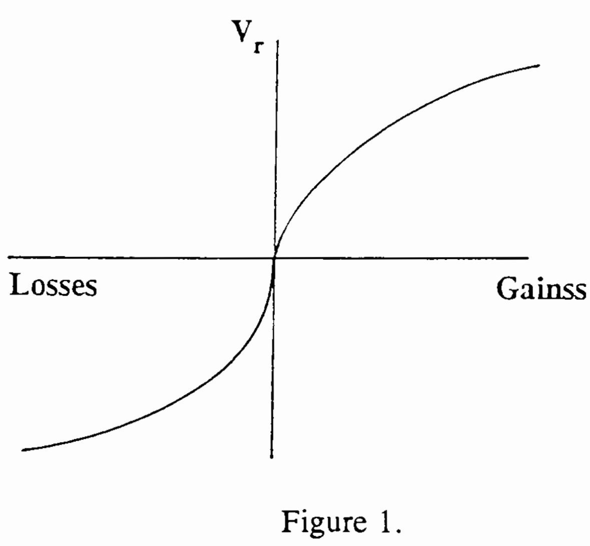

Figure 1.

A useful example for such value function is:

$$V_r(x) = \frac{w(x - r)}{g(r)} \qquad if \quad x \geq r$$
$$= \frac{-kw(r - x)}{g(r)} \qquad if \quad r > x \tag{1}$$

where w( ) and g( ) are monotonically increasing concave functions and $k > 1$ implies the loss aversion.

A crucial element in the above description of decision making under uncertainty is what is the decision maker's reference point and in particular how it changes over time. In many cases the reference point is simply the status quo (see also Samuelson and Zeckhauser (1988) for a discussion on status quo bias). But reference points might differ from the status quo. In particular when we consider a dynamic situation in which the environment keep changing. It is not clear that the reference point will have an automatic adjustment to the new status quo every time there is a small change in the environment.[3]

2. The Entry Game.

Consider an industry in which there is an incumbent firm and a potential entrant. The firms are producing a homogenous good and entry will be followed by a Cournot type duopolistic game. Demand is assumed to be stochastic such that with probability p there is a

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[3] In particular there evidence that there are incomplete adaptation to recent changes. Moreover individuals don't treat all changes in the same way. That is there is a faster adaptation to recent gains but individuals do not adjust immediately to recent losses. If an individual suffer from a recent loss it is possible that it takes some time until the reference point is adjusted.

good realization of the state of the world which results in a high demand and with the complementary probability 1-p there is a low demand. We assume that firms must determine the quantity they produce prior to observing the realization of the demand. We let q_I and q_E be the output levels of the incumbent and the entrant firm respectively and $\pi_j^k(q_I,q_E)$, $j\in\{I,E\}$, $k\in\{h,l\}$ be the type j firm's post entry profit in the state of the world k as a function of the quantities produced by the two firms such that $\pi_j^h(q_I,q_E) > \pi_j^l(q_I,q_E)$ for every q_I,q_E. We further assume that π_j^k is concave with respect to q_j and monotonically decreasing with respect to q_i for every j, k and $i\neq j$ and that for every q_E (resp. q_I) the profit function π_I^h (resp π_E^h) is maximized at a larger q_I (resp q_E) than the function π_I^l (resp π_E^l).

In order to concentrate on the value of incumbency we assume that the incumbent firm does not have any advantage in the post entry game with respect to the entrant. That is the two firms have the same cost function, there are no captive customers and consequently both firms face the **same** profit function i,e; $\pi_I^k(q_1,q_2)=\pi_E^k(q_2,q_1)$. However, having identical market opportunity does not necessarily imply that the firms view there situation the same way. The entrant will view the post entry profits as gains while for the incumbent, although there might be still profits in the post entry era, they are much lower compare to the monopolistic profits obtained prior to the entry. Specifically, the two firms have different reference point. While for the entrant the reference point is zero profits for the incumbent the reference point is the monopolistic profits π^m and all profits are compared with this level. Thus the incumbent evaluate the post entry profits as a loss of $\pi^m-\pi_I^h$ with probability p and a loss of $\pi^m-\pi_I^l$ with probability 1-p (see Figure 2).

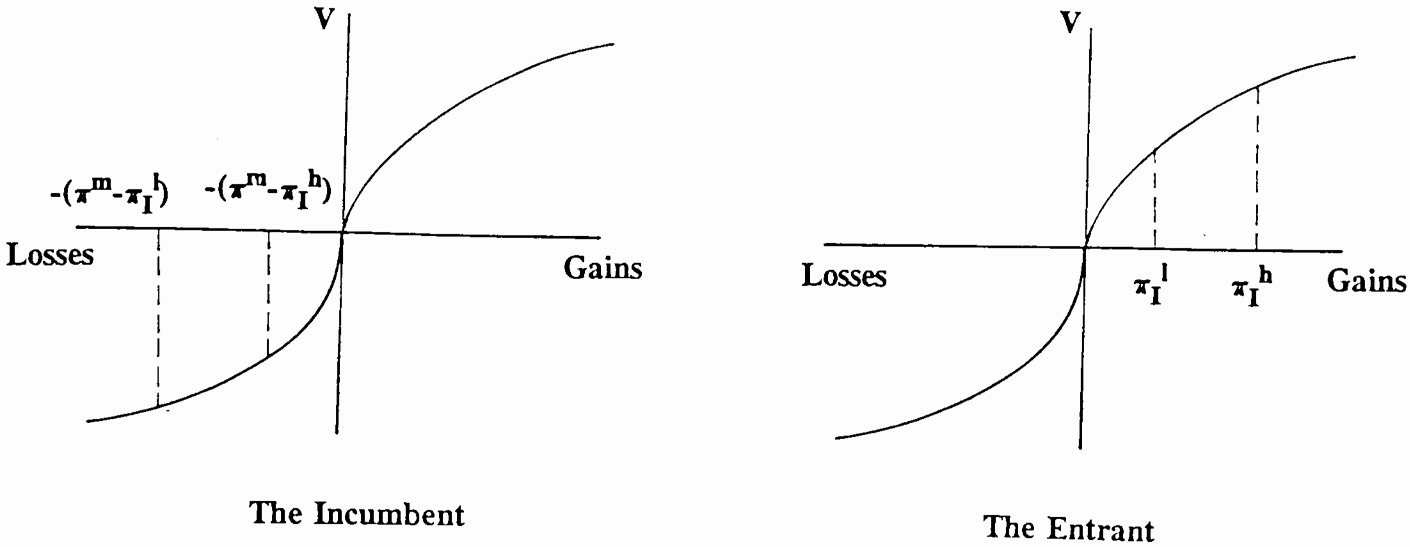

Figure 2.

We will now discuss the post entry duopolistic game having in mind the firms' different reference points. We let $R_j(q_i,r_j)$ be firm j optimal respond to the output q_i by firm i given its reference point r_j. As in a Cournot type game, the best response function are assumed to be downward sloping. An equilibrium is a pair $(q_I^*(r_I,r_E),q_E^*(r_I,r_E))$ with the standard requirement that $q_I^*=R_I(q_E^*,r_I)$ and $q_E^*=R_E(q_{I*},r_E)$.

Having the value function (1) and assuming for convenience that $g(r)=1$, the entrant's objective function is:

$$Max: \ p\, w(\pi_E^h(q_I,q_E)) + (1-p)\, w(\pi_E^l(q_I,q_E)) \ . \tag{2}$$

The entrant's reaction function, $R_E(q_I,0)$ is obtained by maximizing (2) and it is defining by[4]:

$$pw'(\pi_E^h(q_I,q_E))\frac{\partial \pi_E^h}{\partial q_E} + (1-p)w'(\pi_E^l(q_I,q_E))\frac{\partial \pi_E^l}{\partial q_E} = 0\,. \tag{3}$$

As the incumbent's reference point is π^m, it will choose its best response $R_I(q_E,\pi^m)$ so as to maximize[5]:

$$L(q_I,q_E,\pi^m) \equiv -pkw(\pi^m - \pi_I^h(q_I,q_E)) - (1-p)kw(\pi^m - \pi_I^l(q_I,q_E))\ . \tag{4}$$

Thus the incumbent reference point affects its behavior and breaks the symmetry in the post entry game. The value of incumbency is thus can be measured as the difference between the incumbent's and the new entrant's profits in the post entry game. This value will be positive if at the incumbent is better off than the new entrant.

The concavity of (4) is clearly not guaranteed but let assume for convenience that the profit function is sufficiently more concave than w( ) such that the incumbent objective function L( ) is concave[6]. Under this assumption we can demonstrate the following:

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[4]The second order conditions are guaranteed by the concavity of the functions w( ) and π( ).

[5]Although the concavity of the objective function (4) is not guaranteed, the best response function is well defined as (4) is a continuous function and the choice of q_I can be limited to a compact set between the value that maximizes π_I^h( ) and the one that maximizes π_I^l.

[6]Differentiating (4) twice with respect to q_I yields the following second order condition:

$$\frac{\partial^2 L}{\partial q_I^2} = \left[-pw''(\pi^m-\pi_I^h)\frac{\partial \pi_I^h}{\partial q_I} - (1-p)w''(\pi^m-\pi_I^l)\frac{\partial \pi_I^l}{\partial q_I}\right] + \left[pw'(\pi^m-\pi_I^h)\frac{\partial^2 \pi_I^h}{\partial q_I^2} + (1-p)w'(\pi^m-\pi_I^l)\frac{\partial^2 \pi_I^l}{\partial q_I^2}\right]$$

when in the appropriate range of outputs the profit function is sufficiently more concave than w( ) we will obtain that the second derivative is negative.

Claim 1: The incumbent firm has an advantage in the post entry game i,e; the value of incumbency is positive.

Proof: Given the concavity of (4), the incumbent's best response, $R_I(q_E,\pi^m)$, is defined by:

$$p w' (\pi^m - \pi_I^h(q_I,q_E)) \frac{\partial \pi_I^h}{\partial q_I} + (1-p) w' (\pi^m - \pi_I^l(q_I,q_E)) \frac{\partial \pi_I^l}{\partial q_I} = 0. \qquad \textbf{(5)}$$

On the other hand if the incumbent firm would have the reference point of zero profits (like the entrant), then it would have the reaction function $R_I(q_E,0)$ defined by:

$$p w'(\pi_I^h(q_I,q_E)) \frac{\partial \pi_I^h}{\partial q_I} + (1-p) w'(\pi_I^l(q_I,q_E)) \frac{\partial \pi_I^l}{\partial q_I} = 0\ . \qquad \textbf{(6)}$$

We can now compare $R_I(q_E,\pi^m)$ and $R_I(q_E,0)$ to find the effect of the different reference point on the post entry game equilibrium. Given our assumptions about the profit functions we obtain that the optimal choice of q_I both for eq (5) and (6) are such that $\partial\pi_I^h/\partial q_I > 0$ while $\partial\pi_I^l/\partial q_I < 0$. Since $\pi_I^h > \pi_I^l$ and w( ) is concave, we get that $w'(\pi_I^l) > w'(\pi_I^h)$ but $w'(\pi^m - \pi_I^h) > w'(\pi^m - \pi_I^l)$. Thus comparing the optimal respond implied by (5) and (6) yields that $R_I(q_E,\pi^m) > R_I(q_E,0)$ for every q_E.

Since the reaction functions are downward sloping and the incumbent's reference point leads to a rightward shift of its reaction function, standard analysis (see for example Bulow, Geanakoplos and Klemperer (1985)) indicates that the post entry equilibrium is such that the incumbent produces a larger quantity than the entrant (i,e; $q_I^*(\pi^m,0) > q_E^*(\pi^m,0)$) and consequently the incumbent experiences larger payoffs. □

An intuitive explanation of the above result is that since $R_I(q_E,\pi^m) > R_I(q_E,\pi^m)$ the incumbent's reference point in the post entry period causes it to respond aggressively in the post entry period when by aggressiveness we mean with larger quantities (which leads to lower prices). It is this (credible) aggressive behavior which reflects the incumbent's state of mind and creates the advantage in the post entry game.

Corollary (Entry Deterrence): In a model with fixed entry fee, the entrant disadvantage in the post entry game, created by the incumbent aggressive response, may be large enough to discourage entry. In such a case even though the entrant and the incumbent are identical with respect to their profit function, the incumbent's different reference point leads to entry deterrence.

Assuming that the value function w( ) is characterized by a decreasing absolute risk aversion, we can prove the following:

Claim 2: The larger is the incumbent's expected loss from the entry, the more aggressive its behavior will be in the post entry game.

Proof: As discussed above, the incumbent's reaction function depends on π^m. A larger π^m implies a greater loss. Increasing π^m implies the following change of the incumbent's reaction function:

$$\frac{dR_I(q_E,\pi^m)}{d\pi^m} = - \frac{\partial^2 L}{\partial q_I \partial \pi^m} \Big/ \frac{\partial^2 L}{\partial q_I^2} \ . \tag{7}$$

The concavity of L( ) with respect to q_I implies that the sign of $dR_I/d\pi^m$ depends only on the sign of $\partial^2L/\partial q_I^2$. Differentiating (4) yields

$$\frac{\partial^2 L}{\partial q_I \partial \pi^m} = p w'' (\pi^m - \pi_I^h) \frac{\partial \pi_I^h}{\partial q_I} + (1-p) w'' (\pi^m - \pi_I^l) \frac{\partial \pi_I^l}{\partial q_I} . \tag{8}$$

Using the first order condition (5) to substitute for $\partial\pi_I^h/\partial q_I$ in (11) and rearranging yields that

$$\frac{\partial^2 L}{\partial q_I \partial \pi^m} = - w'(\pi^m - \pi_I^l) \frac{\partial \pi_I^l}{\partial q_I} \left[\left(- \frac{w''(\pi^m - \pi_I^h)}{w'(\pi^m - \pi_I^h)} \right) - \left(- \frac{w''(\pi^m - \pi_I^l)}{w'(\pi^m - \pi_I^l)} \right) \right] \tag{9}$$

If the value function w( ) exhibits decreasing absolute risk aversion then since $\partial\pi_I^l/\partial q_I < 0$ we have that (9) is positive which ends our proof. □

It is important to note that although a greater loss enhances the asymmetry in the post entry game, the above result is not derived from loss aversion. Assuming no loss aversion, will not change the conclusions of the above analysis. The results are derived from having reference dependent preferences and from our assumption that the marginal value of both gains and losses decrease with the size which implies that the value function is convex in the loss domain. In the next section we consider an entry problem in which the firms' different market behavior is derived solely from loss aversion.

3. Insiders vs Outsiders: The Entry Decision.

Consider a situation in which there is a new opportunity in market A and let consider two different scenarios such that in each scenario there is a different type of a potential entrant. In the first scenario the potential entrant is a firm within industry A and we will refer to this firm as the "insider firm". In the second scenario the potential entrant is a firm that does not operate in industry A and we will refer to this firm as the "outsider firm". We will denote the two firms as firm I and firm O respectively. We assume that the two firms have the same preferences and they are completely symmetric with respect to the new market opportunity. That is, the firms have the same cost function, the same information and consequently, following an entry, the two firms will face the same distribution of returns. Our main concern is whether there might be any difference in the firms' entry decision that reflect the observation that one firm is an insider while the other is an outsider.

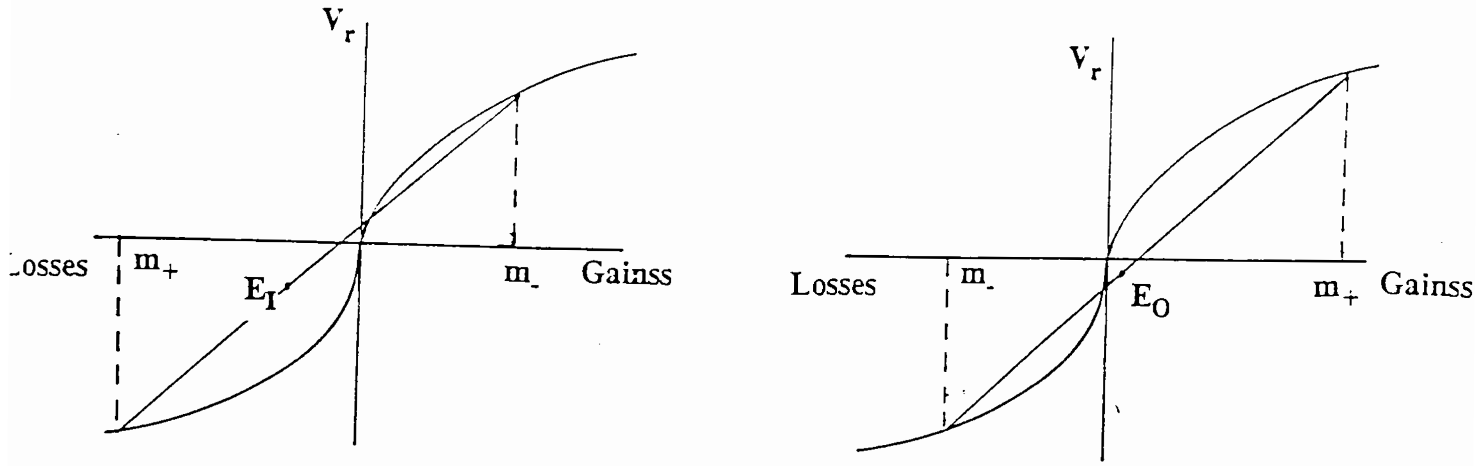
We assume that entry yields the following uncertain payoffs: with probability p there is a good state of the world and the firm gains m_+ and with probability 1-p there is a bad state of the world and the firm looses m_-. Expected profits are positive such that $pm_+ + (1-p)m_- > 0$.

We assume that firm I, which already operates in industry A, is operating in such a way that it automatically enters to any new submarket. If the firm wishes not to enter to the new submarket, management should make a specific no entry or exit decision. Alternatively firm I can be viewed as an incumbent firm that is already active in the new market but they can make an exit decision and such a decision is costless. Firm O is an outsider firm and therefore needs to make a conscious entry decision in order to take advantage of the new market opportunity. We further assume that decision making is not costly and that there are no inertia forces. Thus the decision problem the two firms are facing is **completely identical**. They both need to decide whether to take the lottery $(m_+,p;m_-,1-p)$ or not. The only difference between the firms is their reference points and the way they analyze their decision problem. Firm I is in the industry and it considers the possible decision of getting **out**. Firm O is outside the industry and considers the possible decision of getting **in**.

Before analyzing the different decision situations we would like to point out the similarities between the above market behavior and the experiment described in section 1. Firm I has the same situation as the students who already own the decorated mug and now need to decide for how much money they are willing to give it up. Firm O has the same position as the students that were asked to choose if they wish to have a decorated mug or some amount of money. It is the difference in the reported behavior of the students that illustrate the different entry decision of the two types of firms that we wish to analyze.

The entry decision of firm O will yield getting the lottery (m_+,p; m_-,1-p) while firm I already own the lottery associated with the new market opportunity. If firm I decides to exit and to give up the lottery then if there will be a realization of the good state of the world, the firm will not get m_+ and thus will view it as a loss while if there will be a realization of the bad state of the world the firm will avoid the loss of m_- and thus will view it as a gain.

In figure 3 we describe the decision problem for the two firms. In 3_a we consider the decision problem of firm O. Figure 3_b describe the decision problem of firm I. Note that the reference points of the firms are different so while firm O evaluate the attractiveness of an entry decision firm I evaluate the attractiveness of an exit decision. Note that without having loss aversion the entry \ exit decision of the two type of firms are identical.



(b) Firm I: Evaluation of the exit decision.

(a) Firm O: Evaluation of the entry decision.

Figure 3.

Using the value function given by equation (1) and letting for simplicity g(r) = 1 for every r, yields that the outsider firm will enter the new submarket only if

$$pw(m_+) - (1 - p)kw(m_-) > 0. \tag{10}$$

An insider firm will enter (or stay in) only if it will find the exit option unattractive, that is if:

$$(1 - p)w(m_-) - kpw(m_+) < 0 . \tag{11}$$

When there is no loss aversion, i,e; k = 1, conditions (10) and (11) are identical and thus both type of firms face the same decision problem and thus either both will enter or they both stay out.

When there is loss aversion, i,e; $k > 1$, condition (11) implies condition (10) and therefore if firm O enters, firm I will have the same decision. But the reverse is not correct. Specifically letting $W(m_+, m_-, p) = pw(m_+) + (1-p)w(m_-)$, conditions (10) and (11) can be written as follows: Firm O enters if

$$W(m_+, m_-, p) - (1-p)(k-1)w(m_-) > 0 , \tag{12}$$

while firm I enters if

$$W(m_+, m_-, p) + (k-1)pw(m_+) > 0 . \tag{13}$$

W( ) can be interpreted as the expected value of the lottery when loss aversion is ignored and we can see from the above conditions that loss aversion ($k > 1$) implies that firm O does not enter to any project for which W( ) is positive as it puts a larger emphasis on the bad state of the world (one can denote such a behavior as a pessimistic behavior). Firm I, on the other hand, put a larger emphasis on the good state of the world (an optimistic behavior). Clearly when loss aversion is sufficiently important and k is large, condition (13) will continue to hold while condition (12) ceases to hold. In such a case firm I enters the market (or stays in the market) while firm O does not enter the market (such a case is depicted in figure 3 in which we let E_O and E_I be the firms' expected value of the gains and losses from entry and exit decisions respectively). We can thus conclude the following:

Claim 3: Loss aversion and the different reference points of the insider and the outsider firms introduce an **inertia** effect such that firms within an industry are more likely to expand to new submarkets in the same industry than firms out of the industry coming and taking advantage of the new market opportunity. Such a result implies that specialization is a more common behavior than conglomerization.

Note also that eq (13) implies that the incumbent optimistic behavior should not be interpreted necessarily as an advantage. Such a behavior implies that the incumbent might stays in a market with a negative expected value i,e; $W( )<0$, or even with a negative expected returns. Such a behavior is better understood by making use of the concept of regret.

An alternative way to think about the decision problem facing firm I (it can also be applied to firm O) is by using the notion of regret (see for example Bell (1982) and Loomes and Sugden (1982)). Regret is a psychological reaction to making the wrong decision. Or in the language of Bell (1982) "a desire by decision maker to avoid consequences in which the individuals will appear, after the fact, to have made the wrong decision even if in advance, the decision appeared correct with the information available at the time". Thus if firm I chooses not to enter and the good state occur then firm I regret its decision of not entering and it views it as a loss of m_+. If the bad state is realized staying out was a good decision and the firm views it as a gain of m_-. Thus, as it is analyzed above, such a behavior implies that firm I might choose to stay in markets even when the expected returns are negative in order not to be in the position of regretting its decision of exiting from the market.

Remark: An immediate concern in any discussion of reference dependent preferences is the issue of dynamic consistency. That is, once the firm enters a market it becomes an insider and thus should have the reference point of an insider firm (the same apply to an exit decision). But here we need to be careful with the interpretation of a reference point. As we discussed before, the reference point is not necessarily the status quo and in particular it does not change with every change (in particular recent changes) of the status quo. Thus an entry does not necessarily changes the firm's reference point.

4. Concluding Remark.

In discussing the value of incumbency one must distinguish between three different aspects that should be discussed and analyzed separately:

(i) First mover strategic advantage or disadvantage.

(ii) The possibility to create long run asymmetries with respect to any potential entrant.

(iii) The incumbency state of mind and reference point and the resultant decision making process.

The first difference implies that having the opportunity of being first in the market might dictate a sequential order of moves. Such a structure may give the first mover an advantage (or sometimes a disadvantage). The second difference implies that the incumbent firm may use the time it is already active in the market to create some market advantages relative to an outsider firm. These advantages can be a technological or informational advantage or some other investments that translate themselves to higher future profits. The possibility to have such an advantage depends on the time the incumbent firm has to build such asymmetries. While these two aspects of incumbency were extensively discussed in the literature, this paper emphasizes the importance of the third aspect of incumbency and the different decision making process by the incumbent and the entrant firms.It is the view of this paper that any **positive** theory of industrial organization must consider the psychological aspects of decision making and we view this paper as an example that illustrate the importance of such aspects.

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