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Theoretical Approximation and Experimental Evaluation of Market Functioning when Transactions are Regulated by Adhesion Contracts

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# **Theoretical Aproximation and Experimental Evaluation of Market Functioning when Transactions are Regulated by Adhesion Contracts\***

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## **Abstract**

By using an economic model this paper describes and analyzes different forms of equilibrium within the market of the adhesion contracts where information is asymmetric and the agreement drafters decide which type of contract to offer considering that information is expensive for those who adhere. Under such conditions equilibriums are met in which contracts exist with the minimum possible quality associated to a price. In line with the economic analysis of law, the author concludes that the market is unable to correct inefficient agreements and this produces a limitation to the freedom of contract. This situation requires the implementation of controls over the contents of the adhesion contracts in order to ameliorate this result. Finally, there is an experimental analysis of the fundamental theoretic results.

**Key words:** Adhesion contract, freedom of contract, contract quality, asymmetric information, bounded rationality, economic analysis of law, experimental law and economics.

## **Resumen**

Por medio de un modelo, este trabajo describe y analiza el equilibrio del mercado de los contratos de adhesión en un entorno de información asimétrica en el que los predisponentes deciden qué tipos de contratos ofrecen teniendo en cuenta que la información es costosa para los adherentes. En estas condiciones se presentan equilibrios en los cuales existen contratos con la mínima calidad posible asociada a un precio. Con herramientas del análisis económico del derecho, se llega a la conclusión de que el mercado es incapaz de corregir los contratos ineficientes, lo que constituye una limitación al ejercicio de la libertad contractual de los adherentes. Esto hace necesario que se implementen mecanismos previos de control de contenido para que se corrija, al menos parcialmente, este resultado. Finalmente se presenta una evaluación experimental de los resultados del modelo teórico.

**Descriptores:** Contratos de adhesión, libertad contractual, calidad del contrato, información asimétrica, racionalidad acotada, análisis económico del derecho, economía experimental.

\* This was written in order to obtain the title of Master in Economy of Universidad de los Andes

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# I

## INTRODUCTION

Adhesion contracts are those contracts that have been previously defined by one of the parties involved in a business negotiation (proponent) and which are presented to the other party (adherent), who has only two options: either to accept or reject them<sup>1</sup>. As Kessler (1943) states, this type of contract is associated inevitably with the growth of large companies and the massification of production and distribution processes, which imply an important reduction in the costs of transaction. Initially, it was thought that this reduction was only associated with the elimination of the process of negotiation and the consequent automatization of the exchange of contracts. However, later, some academics, inspired by Coase's ideas on the nature of the company, recognized that adhesion contracts were also useful to help companies reduce certain costs resulting from internal functioning, due to the consolidation of their organizational structure<sup>2</sup>. Thus, adhesion contracts were considered a basic tool for companies to achieve economic efficiency and for the improvement of market functioning.

However, what was originally seen as an efficient instrument for companies to reach their aim of reducing market transaction costs ended up by becoming a source of contention. In Europe in the seventies there appeared the first laws to control adhesion contracts<sup>3</sup>. The reason for State intervention was that adhesion contracts had become a means of increasing company advantage at the cost of adherents through the imposition of abusive clauses<sup>4</sup> which were not completely understood by those who accepted them. For example, Albiez Dohrmann (1989) shows how in Germany there were a series of lawsuits instigated in relation to clauses established by companies as part of their general conditions, which had serious negative effects on the adherent, particularly in cases of exclusion and limitation of responsibility and in the modification of deadlines which appeared in BGB's supplementary norms. Similarly, Goldberg (1974) mentioned the limited responsibility clauses imposed on his clients by carparks in the United States. Cepeda (1985) also refers to the experience of England, France, Israel and Italy, where conflicts resulting from the imposition of clauses which were unfavourable to the adherents were resolved in the lawcourts.

In Colombia the situation was quite similar. Pinzón Sánchez (1985) referred to 14 judgements in which the validity of different types of clauses imposed through the use of adhesion contracts were analysed. The same author, eleven years later, carried out a similar examination of ten new judgements where the adherents sued about the contents of the adhesion contracts, alleging that these were against their interests. Recently, the examination of the validity of this type of clause has been carried out by the Colombian Supreme Court of Justice and, in addition, by some arbitration tribunales and the

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<sup>1</sup> This definition gives rise to three basic characteristics of an adhesion contract: which are: i) a contract, the content of which is ii) *predisposed* and is iii) *imposed*

<sup>2</sup> Principally: Rakoff (1983) and Collins (1999)

<sup>3</sup> See Cepeda (1985) and Suescún Melo (2003)

<sup>4</sup> Alfaro Águila-Real (1991)

Administrative and Constitutional Courts<sup>5</sup>.

Although this has been a source of anxiety for lawyers for many years, it has also had an effect on market functioning, which has made it of concern to economists. According to Slawson (1971), most of the current market transactions carried out are in the form of adhesion contracts. This entails a number of important economic problems. In reality, although there has been an important decrease in the costs of transactions, market functioning, is, in any case, inefficient when transactions are regulated by this type of contract. This is because the adherents sign contracts without full knowledge of the content they are signing up to<sup>6</sup>.

Consequently, there is an imbalance in the information available to the agent who draws up the contract and he who signs it. This asymmetry leads to the existence of contracts in the market which have a lower level of quality than that required by adherents. In addition, if it is not possible to distinguish clearly between high and low quality contracts, there will be no correspondence between the price paid and the quality agreed. This will result in the adherents paying a higher price than they should and receiving low quality contracts. In this way, the problem of the “lemons” described by Akerlof will appear in a market where transactions are governed by adhesion contracts.

However, this conclusion is not supported by all researchers in this field. There is, in fact, a group of academics who maintain that there are good reasons to believe that adhesion contracts which contain unfavorable clauses for the adherents tend to decrease, even when they are not controlled by any authority, because the market is able to ensure that the contracts signed benefit the two parties equally. Nevertheless, the problems which end up at the lawcourts and the continual complaints received by State organizations, such as the Industry and Commerce Watchdog in Colombia, are an indication that the market may not be able to ensure optimum results.

This article presents the reasons why there are contracts in the market whose contents benefit the proponents instead of the adherents. In order to defend this statement it is necessary to compare two theoretical positions: one which says that the market can offer very good adhesion contracts for the adherents (consumers), if and only if, many of these are well informed; and the other which says that there will always exist contracts in the market which are not the best option. It is important to resolve this question, in order to be able to describe many markets which are regulated by contracts of adhesion, particularly all those related to the mass consumption of goods and services. In these markets, where there are a large number of transactions, the inefficiencies associated with low quality contracts may well be considerable. It is also important to clarify that the problems associated with the existence of asymmetries of information are characteristic of adhesion contracts, although they are not exclusive to them. In any case, when both parties have had the opportunity of discussing and negotiating contract content, the difference of the information

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<sup>5</sup> These judgements appear mentioned in Rengifo García (2002) and Suescún Melo (2003)

<sup>6</sup> For example, in the “Introduction to Microeconomics” class at Universidad de los Andes, taught by Juan Camilo Cárdenas, students were asked whether they know about the conditions of the carparks stipulated in the tickets. Only 23% said that they had ever read a car park ticket.

which exists between them would be an exception which would need to be demonstrated and would not constitute a general rule.

The second chapter of this article summarizes the theoretical debate and presents a modelling which captures the essential characteristics of a particular market in which business transactions are carried out by means of adhesion contracts. Economic theory is used to represent a real problem in order to understand why the functioning of the market produces less than optimum results.

The empirical corroboration of the conclusions is also necessary. The theoretical discussion referred to above can only present elements showing that it is the most appropriate modelling in a market where transactions are regulated by adhesion contracts. However, it is important to define whether these conclusions really represent the dynamics that actually occur in a particular market. In order to verify the correspondance between what is real and what is theoretical, it will be necessary to examine the presuppositions made about the agent's behavior and the results produced.

The third chapter will show the results of a series of experiments based on the main elements of the proposed modelling. Empirical verification through the experiments was chosen for two reasons: firstly, there is insufficient data on adhesion contract markets in Colombia, and secondly, because in order to choose a particular theory, it is necessary to verify whether the presuppositions about the agents really do correspond to what happens when a contract is chosen. Then, if it is about observing people's behaviour in order to validate a set of presuppositions, the experimental economy is seen as an appropriate instrument.

By means of the proposed analysis, it will be possible to understand why competition between businessmen in a particular market is carried out on general conditions, reducing the quality of the contracts offered, which, in turn, has a determining effect on the behavior of the market. This is the main contribution of the article. This helps to explain why the great majority, if not all, of the deposit contracts agreed on with the carparks in Bogotá include a set of exclusion and limitation of responsibility clauses referring to the non provision of services. In this case, increased competition has led to a decrease in the tariffs, but not the elimination of this type of clause. The situation of mobile phones has been identical; although companies compete on tariffs, they keep clauses in the contracts which limit their responsibility in the services they offer.

This article comprises four chapters, the first of which is this introduction. The second is made up of two parts. The first part will present the arguments in favor of the possibility offered by the market to correct the contractual terms aimed at the exclusive benefit of those who drew up the contract. The idea is to show the limitations of these arguments. The second part will present the reasons which justify the lack of confidence in the ability of the market to correct these abuses, bearing in mind the restrictions discussed in the previous section. In this way, I will identify the basic aspects which need to be taken into account in the economic modelling of a market of general conditions. After that, I will apply Chan and Leland's (1982) model to show that the existence of abusive clauses is mainly the result of a problem of asymmetric information between the proponents and the

adherents, which cannot be solved by market forces. This will provide a set of strategic behaviors which will establish clauses which maximize their interests to the detriment of those of the adherents. The application of the Chan and Leland model will describe market dynamics in these conditions and will include the basic aspects which have been identified as the causes of the inability of the market to correct the existence of the abusive clauses. This analytical formulation of the problem gives rise to the possibility of evaluating the impact of this on social welfare, which may lead to the implementation of public policies aimed at regulating the content of adhesion contracts, which is the subject of the third section.

In the third chapter, there will be a description of the experiments carried out to verify the theory and the results obtained. In this way, it will be possible to identify which of the theoretical aspects are able to be verified and others for which there are no conclusive results as yet, and which present a certain degree of uncertainty. Finally, in the fourth chapter, the conclusions will be presented.

## II

### THE MARKET AS A MECHANISM WHICH IS INCAPABLE OF CORRECTING THE INEFFICIENCIES OF ADHESION CONTRACTS

#### 1. ARGUMENTS WHICH ACCEPT THE POSSIBILITY THAT THE MARKET IS CAPABLE OF CORRECTING THE EXISTENCE OF INEFFICIENT ADHESION CONTRACTS

##### 1.1. A PREVIOUS QUESTION. THE DEFINITION OF CONTRACT QUALITY

The quality of adhesion contracts is the way in which the contract satisfies the interests of the two intervening parties<sup>7</sup>, *both in its clauses, as well as the consequent execution of the same*. If the contract maximizes the interests of the two parties, then it may be seen as a high quality contract, where both parties exercise their contractual freedom. Where the terms present in the adhesion contract do not maximize the interests of one of the two parties, or of neither of them, this is known as a low quality contract. From now on, the terms 'high quality contracts', 'optimum contracts', or 'contracts which maximize the profit of both parties' will be used as synonyms.

However, in the case of adhesion contracts, low quality can be defined in much narrower terms. Given that adhesion contracts are drawn up by the proponent, who is the maximizing agent for the benefit of one of the parties, who is able to pay for specialized legal services to protect his or her interests, and in view of the fact that the proponent has access to far more information than the adherent about the direction of the business and the types of goods and services managed, it is unlikely that the contract he or she draws up and its execution will not maximize his/her benefits. Thus, the definition of low quality referring to contracts which do not maximize the interests of both parties can be rejected, as it may be supposed, for good reason, that the proponent's interest will always be maximized. Thus, low quality contracts should be understood, within the framework of adhesion contracts, as those which do not maximize the adherent's profit.

The notion of 'low quality' can be seen as a fairly wide category which needs to be analyzed in each type of contract in the light of its specific obligations. In order that the conclusions which will be presented later may have some degree of generality, without including complications derived from the classification of the low quality of a contract, we will only take into consideration a bipartite classification of low quality contracts. On one hand, there are the low quality adhesion contracts which have a particular quality determined by legal dispositions on obligatory or supplementary norms which regulate obligations and contracts in general, and certain contracts in particular. We will call this standard of quality established by legal disposition *minimum quality standard*. On the other hand, there are those contracts which comply with the lowest requirements necessary

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<sup>7</sup> The term "quality" of an adhesion contract appears frequently in various texts in which conclusions from equilibrium search models which have been developed in the area of industrial organization are used. In this respect Korobkin (2003); Gazal (1999) and Trebilcock (1993) may be consulted.

to conserve (maintain) their legal viability<sup>8</sup> and which can generate all the legal effects recognized by the law. These are *contracts of minimum quality permitted by legal disposition*. Basically, the difference between *contracts of minimum standards of quality* and those which have *minimum quality permitted by legal disposition* are the laws of supplementary norms which they contain. The contracts with minimum standards of quality contain all the current legal norms, both compulsory and supplementary, which legal dispositions require to regulate and execute a contract. Contracts of minimum quality permitted by the law would only contain compulsory and supplementary norms which would benefit the proponent.

#### 1.2.ARGUMENTS IN FAVOR OF THE POSSIBILITY OF MARKET CORRECTION. POSNER'S POSITION

Posner (1998) establishes that there are two types of explanations for the decision of the proponent to present the adherent with an adhesion contract to regulate a particular transaction. The first is "the innocent explanation" according to which an adhesion contract is chosen so that the company who acts as proponent can avoid paying the costs of the negotiation and the drawing up of a separate agreement with each contractor.

The other is the "sinister explanation". According to this, the seller (proponent in all cases) refuses to negotiate with each purchaser separately because "s/he has no choice but to accept his conditions. This does not imply an absence of competition in the market. If a seller offers conditions which are not very attractive, a rival seller who wants to get the sale will offer better conditions. The process will continue until the conditions are the best" (Posner, 1998, page 113). Thus, for Posner, the market can ensure that the general conditions finally agreed upon are those that maximize the adherents' profit.

In any case, when it is the case of a competitive market, Posner concludes, the presence of terms which are not very favorable for the adherent in an adhesion contract will be accompanied by a reduction in the price to be paid. Thus, when it is a matter of judging whether a particular contract will maximize the interests of the intervening parties, especially the adherent, it is important to look at the price paid by each of them, as, according to Posner, the presence of terms which are less than optimum in an adhesion contract are always accompanied by an equivalent reduction in the price asked for. In conclusion, Posner maintains that due to the effect of competition, the terms present in adhesion contracts will be optimum, and therefore there is no need for any other regulation in addition to that carried out by the market.

Korobkin (2003) shows that this analysis is based on a fairly restrictive premise and that both the adherents as well as the proponents have complete information about contract content and the possible contingencies which may arise during the execution, without the need to pay large sums of money. However, the adherents do not generally have all the necessary information available to be able to choose the best contract and in this way ensure that the market will eliminate the possibility of the proponents offering sub-

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<sup>8</sup> Basically with the necessary requirements that they should not be invalid, inexistent, ineffectual or non-opposable

optimum contracts. Therefore, in a context in which there is a price to pay for information and where, as a result, agents have limited information when they have to make a decision, the question of whether the market mechanism will ensure that the contractual terms which are offered will be optimum, is not as simple as Posner maintains.

### 1.3. ARGUMENTS IN FAVOR OF THE POSSIBILITY OF MARKET CORRECTION WHEN THERE ARE UNINFORMED ADHERENTS. THE POSITION OF SCHWARTZ AND WILDE

The arguments in favor of the corrective role of the market over adhesion contracts, when the existence of adherents who are not fully informed about the contents is recognised, were developed on the basis of the results of the model created by Schwartz and Wilde (1979) and Schwartz and Wilde (1985). These two models have had a great influence in the literature on adhesion contracts, to the point that Trebilcock has used them as justification for non-intervention of a market of general conditions, as there is the possibility, in theory, that the informed adherents will correct inefficient contractual terms.

Although these two models have been developed to explain market balance when there is a question of imperfect information, and quality is introduced as a variable of the product offered, its application to adhesion contracts can be justified for three reasons.

The first of these has to do with the case that if a contract is considered as a set of considerations which generate profit (in the case of rights) and costs (in the case of obligations) for each of the intervening parties, it would be possible to relate the degree of net profit generated by an adhesion contract to the profit derived from product quality. The second of these is that product quality is determined by the company that produces it and cannot be modified by the consumer. Equally, the contents of adhesion contracts are determined by the proponent and cannot be altered at the request of the adherent. The third is the distinction between essential and non essential considerations which academics frequently make to show which aspects of the contract to which consent has, in fact, been given, can be represented by equilibrium search models. Normally, in the literature on this subject there is a distinction made between characteristics of goods which can be easily observed by the consumer, in particular the price, and therefore, which are taken into account when reaching a decision (the equivalent of essential considerations in adhesion contracts) and those characteristics which are non observable and which the consumer is not conscious of at the time of decision, in particular, quality (the equivalent of non essential considerations in adhesion contracts). Now that it is clear that it is possible to apply conclusions derived from the Schwartz and Wilde model to the case of adhesion contracts, their argument will be presented.

These authors suppose that there are two types of goods which can be produced by companies: high quality and low quality products. Companies can choose to produce one of the two types, but not both. The function of company costs is related to fixed costs and marginal costs associated with the production of high quality goods, and lesser or equal costs associated with the production of low quality goods. The competitive price at which companies sell, is defined as that which covers average company costs. Companies' comparative advantage is defined as the number of consumers (adherents) that a company,

offering a product at the highest price that the consumers are willing to pay, must have to cover their costs (and not to have negative benefits).

On the other side there are the consumers (adherents) who have not been fully informed of the prices and the quality of the products, because they do not know which firms sell what quality of product (high or low) and which price to ask for (competitive or not). The search for information is carried out in relation to the two product characteristics (price and quality) at the same time (when the prices are known as well as the associated level of quality). The consumers (adherents) are divided into two groups according to their information search strategy. On one hand, there are those consumers (adherents) who randomly visit a company before deciding whether to buy the product or not. These consumers (adherents) do not spend much time or effort looking for the most favorable combination of price and quality for their interests. On the other hand, there are those who visit two companies at random. Schwartz and Wilde suppose that once the work of shopping around has been carried out, the consumers will be fully knowledgeable about the price and the quality of the products on offer and therefore will be able to decide which gives the best value. These consumers (adherents) have invested in the search for a combination of price and optimum quality. Those consumers (adherents) who fall within the first group are known as “non shoppers”, while those in the second group are known as “shoppers”. The profit function of consumers (adherents) in general is defined as the profit that they receive for buying a particular product of a particular level of quality, minus the price which they have to pay.

Schwartz and Wilde have determined market balance in two different cases: when all consumers (adherents) prefer to buy high quality products, and when all prefer to buy low quality products. The achievement of market balance depends basically on the percentage of “shoppers”. So, when the majority of consumers (adherents) prefer high quality, the balance of the market is competitive, if and only if, the percentage of “shoppers” is sufficiently large. However, if the percentage of “shoppers” is too small to sustain a competitive balance, but firms have a comparative advantage in the sale of high quality products, market balance will be high quality products sold at a price which is above the competitive level. In the case where the percentage of “shoppers” is too small to sustain competitive balance and firms have a comparative advantage in the sale of low quality products, market balance will be low quality products sold at a price which is above the competitive level. Finally, if the consumers prefer low quality, market balance will not present problems of quality (if the low quality which all the consumers want is offered) but all products will be sold at above competitive prices.

#### 1.4. CRITICISMS OF THE SCHWARTZ AND WILDE MODELS

The following criticisms can be advanced in relation to Schwartz and Wilde’s argument. First of all, it is assumed that the consumers (adherents) are looking for both quality and price, or neither of the two. This is controversial, as the search for price is much cheaper for consumers, as these can be readily observed and compared. In addition, the fixed costs

need to be high and the production capacity of the companies quite small<sup>9</sup>. These two presuppositions are fairly restrictive and do not work in the case in which industries show large scale profits.

However, the most important problem of these two models is that they base their results on the proportion of consumers (adherents) who carry out a search for quality and price among the different companies, supposing that, once this has been done, the consumers (adherents) will be in possession of complete information about the prices and quality of the products which have been compared. We must remember that the conclusion was that, the higher the percentage of “shoppers”, the more likely that there would not be distortions of quality or price in the market. However, the variable which supports the model’s optimistic results is an exogenous variable. Thus, the justification as to why it is reasonable to admit that the proportion of “shoppers” in a particular market is large, should be based on the ponderation of different elements which are totally foreign to the model and which may influence the consumers’ search decisions, because of the perception of the cost of obtaining this information (time, possibility of finding the information, etc.). In addition, in a context like Colombia where associations for the defense of adherents do not have an important role in the market, and the available information is scarce, the justification for the percentage of consumers being large is much more difficult to sustain. For these reasons, we must conclude that the corrective role of the market on sub optimum terms in adhesion contracts is based on a fairly restrictive premise in theoretical terms.

## **2 THE MARKET IS INCAPABLE OF CORRECTING THE EXISTENCE OF INEFFICIENT ADHESION CONTRACTS**

### **2.1. IN THE STEPS OF AKERLOF**

In an influential article, Akerlof (1970) demonstrates that when there exists an asymmetry of information between different agents in a particular market, and a cost associated with the search for the same, market product quality will be less than optimum. In fact, when there is a market where vendors have more information than purchasers (and the latter cannot easily find out about the real quality of the products before purchase) it is to be expected that “low quality” products will be offered and that these will end up by displacing “high quality” products. This supposes that when businessmen have to decide whether to obtain a particular benefit, without taking advantage of the disinformation of their clients or obtaining a greater benefit in the opposite case, they will choose the second

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<sup>9</sup>Schwartz and Wilde expressly recognize in relation to Theorem 1 that: "Theorem 1 is the more likely to be satisfied: (1) the larger is the ratio of shoppers to total consumers, (2) the smaller is capacity, (3) the larger are the fixed cost and (4) the smaller is the difference between consumers' willingness to pay for the product (of higher quality) and the marginal cost of producing it. The intuition underlying the first condition is obvious. Respecting the second, smaller capacity implies that more firms will enter the market; thus a deviant firm will get a smaller share of nonshoppers. A firm also is less likely to deviate from the competitive price when fixed costs are large -condition (3)- for then it needs more nonshoppers to recover these costs. Finally, noncompetitive behaviour varies inversely with the difference between consumers' willingness to pay and marginal cost -condition (4)-because the smaller is this difference the less super plus is there for deviant firms to exploit". Schwartz and Wilde (1985) Pages 254-255

option, if there are no legal obstacles against it. If this does not happen, as we will show below, they will not be able to remain in the market. *In this scenario, the opportunistic behavior, derived from taking advantage of the disinformation of the other, is the necessary condition for companies to participate in the market.*

## 2.2. THE EXISTENCE OF UNBALANCED CONTENTS IN ADHESION CONTRACTS. THE POSITION OF GOLDBERG AND RAKOFF

According to the above, the companies take advantage of the disinformation of the adherents to establish a regulatory framework to maximize their own interests at the expense of those of others. Goldberg (1974) says that this statement can be explained in two ways. The first is that the cost of acquiring and processing information about the terms of the contract is much greater than the price paid by the adherents, except when the company makes these terms an important part of the sale, and they thus become essential considerations in the transaction. For this reason, few adherents are able to detect the unfavorable nature of terms in the contract, which allows the company to be able to include them with no restrictions. The second reason is closely related to the first and it is the adherents who assume the costs generated. What Goldberg suggests is that the market cannot correct the inefficient terms in adhesion contracts, and that the adherents end up by being regulated by dispositions representing the interests of the proponents and not their own. The question is that the adherents do not have the same information as the proponents and, in addition, having to find the remaining information is very expensive.

In this same sense, Rakoff (1983) states that the adherents cannot generate sufficient pressure to have the market discipline the proponents, offering efficient adhesion contracts. Rakoff says that although the comparison between different contracts is a possibility, for the majority of the transactions carried out by adherents a careful reading and the comparison of terms is extremely difficult. Thus, the non reading of contracts is more than just laziness, it is, rather, a rational refusal to assume the enormous costs involved in the search, understanding and comparison of the different adhesion contracts in order to choose the one which maximizes the utility of each proponent.

According to Rakoff, this leads proponents to end up competing in relation to the terms taken into account by the adherents. Yet, they keep the incentive to convert these terms which have not been considered by them, into protectors of their own interests, in order to obtain maximum possible benefits. The question really is, that the market cannot improve inefficient results if proponents have incentives to produce these.

Goldberg's argument, taken up by Rakoff, is based on two alternative visions of the most problematic questions posed by the Schwartz and Wilde's model. With respect to the condition that the market needs a high percentage of adherents who carry out the job of comparing different adhesion contracts in order to correct inefficient terms, Goldberg says that there are only a small minority of adherents who are able to carry this out, due to the high costs entailed. In relation to the premise that "shoppers" make a comparison between different products with full knowledge of the characteristics of price and quality, Goldberg begins from the same consideration of the immense cost involved if the adherents are to

acquire and process the information involved in the comparison, and concludes that the decision to contract is based only on a few aspects of the contracts.

### 2.3. THE PROBLEMS DERIVED FROM THE BOUNDED RATIONALITY OF THE ADHERENTS

When a contract is negotiated, it is expected that the two parties who participate in drawing it up will be acquainted with each of the clauses in it, as each of them is an expression of what both parties want. In the case of adhesion contracts, the question appears to be quite different. The contract is drawn up by one of the parties to be applied in a series of negotiations. Normally, the proponent party is a company which has the resources to produce a contract which allows for the rationalization of all the costs and the profits associated with the transactions to be carried out. Consequently, the proponent companies, which can count on scale economies for the production of adhesion contracts, have the incentives to regulate each of the transactions carried out in a more complete fashion. The result is extensive and detailed contracts.

Numerous studies cited in Korobkin (2003) about consumer behavior show that in a competitive environment it is quite difficult to find agents who take their decisions based on a complete comparison of all the characteristics of a particular product. In the case of adhesion contracts, in which there is a detailed regulation of each transaction in order to rationalize company costs, it is also expected that the great majority of the adherents will not take into account all aspects of the contract when making the comparison. If this is true, very few adherents will be able to have all the information about contract quality, as this would imply a cost which would be greater than the benefits obtained in the contracting. Thus, even the adherents who carry out a search and the comparison of some contracts (the "shoppers" in the Schwartz and Wilde model), will only be able to have access to a small amount of the information at the moment of taking a decision.

Normally, academic studies on adhesion contracts recognize that adherents do not usually read the contracts, or if they do, they do not understand much of the content<sup>10</sup>. However, as Korobkin has noted, they do not examine these reasons in any depth. In addition, the criticism of the lack of reading implies that the resulting defect in the market would disappear if the adherents read the terms of the contract or if an institution was able to inform them about it. Korobkin establishes that in order to be efficient, the adherents need to fully incorporate the information about adhesion contract content when they are taking their decision, but due to the fact that adherents cannot do this, because of the high cost involved, it is very improbable that the defect in the market would disappear and optimum results would be obtained.

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<sup>10</sup>In this respect, Rakoff (1983) Page 1179. Korobkin cites as empirical data, the following: "One court recently reported that AT&T found that only 30 percent of its customers would read its entire form agreement updating contract terms, 10 percent would not read it at all, and 25 percent would throw away the mailing without even opening it. A related argument is that adhering parties, especially consumers, will find it irrational to bear both the "search and deliberation" costs necessary to understand the form terms". Korobkin (2003) note 45.

The economic models which support the possibility that the market would correct inefficient adhesion contracts are based on the premise that some adherents may be able to incorporate all the information about adhesion contracts when taking their decision. This means that the adherents will consciously use a cost-benefit analysis on each alternative and will choose that which offers the best combination of characteristics (quality and price). This decision must not be selective and compensatory, if what is wanted is an efficient result from the market. We understand the notion of a non selective decision as one in which the adherent compares all the characteristics of each contract before choosing which is preferable. We understand the notion of compensatory analysis as that in which the person making the decision will ponderate the desirable characteristics of one contract in relation to the desirable characteristics of another, both of which are competitors in the adherent's decision.

In order to take decisions which satisfy these requirements, the adherent must recognize all the characteristics of each product and then give them a different ponderation, according to their importance. Then, the ponderated values of the characteristics of each product will be added together. The comparison will be made between the values of the ponderated sum of the characteristics of each product. The product which has the highest value will be that which maximizes the adherent's profit, taking into account the available options. This is the analysis which is expected that the adherents will carry out when they compare two different adhesion contracts.

As Korobkin notes, the decision taken based on these two criteria is exactly the same, where this is understood as the coincidence between the product selected and the preferences of those taking the decision. However, this decision strategy requires a considerable expenditure of effort in terms of time and mental attention. On the other hand, there is the random choice decision strategy where consumers invest far less effort than the ponderated sum strategy. However, it would be unlikely that this strategy would lead to the choice of the product which would maximize profit.

The problem faced by the agents charged with choosing between different contracts is, in the end, how to take the most appropriate decision with the least effort. The way people solve this problem often depends on the ponderated sum strategy and that of random choice. According to what has been presented above, Korobkin concludes that 1) very often agents take decisions in ways which are not consistent with what the literature assumes, which defends the possibility of the market correcting the existence of inefficient contracts; and 2) the *great majority* of adherents take decisions based on much simpler strategies than that of the ponderated sum, where some information is unknown.<sup>11</sup>

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<sup>11</sup>Korobkin establishes that there are two aspects which increase the complexity of consumer decisions in general and those of adherents in particular. The first of these is the number of alternatives, and the second is the number of characteristics which are relevant for each of them. Korobkin, based on a number of empirical studies, concluded that, given that the majority of products and services provided by modern economy and the fact that these are accompanied by adhesion contracts, these are characterized by a relatively high number of characteristics relating to the functioning, the aesthetics, the cost and the terms of each product, adherents normally only take into consideration a small handful of characteristics. Korobkin (2003) Pages 1227-1229.

This general rule relating to the behavior of adherents results in proponents only offering as efficient terms those considered by the adherents. This is because the competition between the proponents leads to the equaling of the characteristics known by the adherents. On the other hand, the terms which are not outstanding<sup>12</sup> are used by the proponents to increase their benefits at the expense of the adherents. In this latter case, the same opportunistic pattern of behavior noted by Akerlof can be observed.

#### 2.4. THE ANALYTIC DEMONSTRATION OF MARKET INCAPACITY TO CORRECT INEFFICIENT CONTRACTS. AN APPLICATION OF THE CHAN AND LELAND MODEL

There are a couple of models in which tools of economic analysis are used to explain the inefficient results of adhesion contracts. The explanation of these two models stems from the lack of reading by adherents, explained by the high costs which this entails. In any case, both models consider that if there are ways of informing adherents about contract contents, the problem can be partially solved. This does not recognise the fundamental point made about the bounded rationality of adherents, and the fact that many of them are not able, in any case, to be fully informed about the quality of an adhesion contract. This is because the models developed by Gazal (1999) and Katz (1990) are not the most appropriate to explain the problem demonstrated by Korobkin, although their conclusions are quite similar to those we propose to defend. This is because once the proponents understand that the adherents cannot find out about contract quality, the market will generate a dynamic which cannot be corrected with a simple reduction of some of the costs associated with the information. Therefore, to assume that the adherents face prohibitive costs in gaining access to all the information, is not to take into account that they are able to correct market defects. The theory chosen should explain the problem, starting from the decision made by the proponents .

The development I suggest, based on Chan and Leland (1982) is the following: suppose that an adhesion contract is offerered in a particular competitive market, to accompany a particular product or service. Two characteristics will be considered: price and contract quality. The price can be seen cost-free by the adherents. This means that they can find out about the value of this variable and can take this into consideration when taking their decision, without any cost at all.

However, quality cannot be observed cost-free. As adherents will necessarily have to pay high prices to get hold of, process and compare all the information about the quality of each contract, *many of them* will not be prepared to assume these costs, as they are superior to the expected benefits. Thus, quality cannot be completely recognized and many of the elements that form part of this concept will not be taken into account in the decision making process of many of the adherents. In order to simplify our explanation, we will assume two different level of quality observation: observable and unobservable quality. Based on Korobkin's results, we need to consider it viable if quality is observed only by a

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<sup>12</sup> Korobkin calls terms which have not been considered by the adherents when taking their decision about which contract they wish to adhere to "non-salient", which may be translated as "non outstanding". Korobkin (2003) Pages 1225-1226.

very small group of adherents. If this is so, the model can be described in the following manner:

#### 2.4.1. ADHERENTS' BEHAVIOR

In this market there are a large number of adherents.  $N$ . Each of these has an inflexible and identical demand over one and only one adhesion contract. The reserve price for each consumer is designated by  $f(q)$  which is a function which depends on contract quality. That is to say, for higher quality, adherents are willing to pay a high reserve price. When the price  $p$  is paid for a quality adhesion contract  $q$ , the utility function of each adherent is:

$$U(p, q) = f(q) - p$$

We can say that there are two groups of different adherents, in relation to the terms of the information costs they face in order to observe quality. Adherents in the first group have information costs  $c_1$  which are inferior to the information costs  $c_2$  of adherents in the second group, and in all cases these are greater or equal to zero. Therefore:

$$c_2 > c_1 \geq 0$$

$N_1$  is exogenous and represents the number of adherents with information costs  $c_1$ .

Therefore, the number of adherents with information costs  $c_2$  will be equal to:

$$N_2 = N - N_1$$

#### 2.4.2. PROPONENTS' CHARACTERISTICS

The proponents are companies whose aim is to maximize their benefits. Each can choose that the adhesion contract offered should have some degree of quality ranging between minimum and maximum quality possible, Thus,  $q \in [q_0, q_H]$ . Also, a contract price of between zero and infinity can be paid. Thus,  $p \in [0, \infty)$ . The cost of production of each contract will depend on the quality chosen and the number of units produced. It is assumed that each of the proponent companies has a cost function identical to:

$$AC(q, n)$$

That is the average cost which a particular proponent has based on a particular quality and a number of contracts. It is supposed that for any  $n$ , the  $AC$  are increasing in  $q$ , which means that the higher the quality, the greater the average costs of the proponent. In addition, that the function of average costs have the form of  $U$  with respect to  $n$  given a level of quality. Finally, it is supposed that there *exists freedom of entry and exit of companies at any level of quality*.

If

$\underline{n}(q)$ : This is the minimum level of average cost production for a contract of  $q$  quality  
This is

$$\underline{n}(q) \text{ Minimize } AC(q, n) \text{ given } q.$$

$\underline{p}(q)$ : This is the lowest breakeven price at which a unit of quality  $q$  can be sold. This means that:

$$\underline{p}(q) = AC(q, \underline{n}(q))$$

$\bar{p}(q)$ : This is the highest price at which the adherents will accept and adhesion contract with quality  $q$ . This means that  $\bar{p}(q) = f(q)$ . At this price the profit will be 0. This means:

$$U(\bar{p}(q), q) = 0$$

$\underline{q}(p)$ : This is the minimum level of quality to which the consumers will hold to in a particular contract which has a price  $p$ . This means that:  $f(\underline{q}(p)) - p = 0$ . With this level of quality we have:

$$U(p, \underline{q}(p)) = 0$$

$q^*$ : This is the optimum quality of an adhesion contract; this is the quality that maximizes the utility, given the lowest price  $\underline{p}(q)$  to ensure that the benefits are not negative. Then:

$$q^* \text{ Maximize } f(p) - \underline{p}(q)$$

$p^*$ : This is the lowest price at which  $q^*$  may be offered without the proponent receiving negative benefits. Therefore:

$$p^* = \underline{p}(q^*)$$

$\hat{n}(p, q)$ : This is the lowest level of contracts  $n$  in which a company will make zero benefits when a quality contract is produced  $q$  where the selling price is  $p$ . In other words, the minimum number of adhesion contracts of quality  $q$  which the proponent needs to make, with a price  $p$ , which will cover average costs. This is:

$$AC(q, \hat{n}) = p$$

#### 2.4.3. INFORMATION STRUCTURE

In order to simplify the analysis, it is supposed that there are two groups of adherents: those who are informed and those who are uninformed. Those adherents who are in the first group are those who have previous knowledge of the contract and decide to incur the costs of becoming informed. The adherents who are in the second group are those who have no information about contract quality at the moment of signing the agreement. In addition, they are supposed to know about the distribution (frequency) of all the combinations of price and quality in the equilibrium, but not to know where this is. This means that they know how many proponents are offering each combination of price and quality, but they

do not know who these are. As the price may be observed cost-free, but not the quality, the uninformed adherents (those who did not acquire information) know the distribution of conditional quality to price<sup>13</sup>. If the distribution of prices were different due to the existence of different levels of quality, then the adherents who were not aware of this difference when signing the contract would be acting irrationally, as they are supposed to choose at random between the proponents whose characteristics, which may be observed cost-free, are the same.

Moreover, it may be the case that an uninformed adherent will only find out about additional characteristics of contract quality when there is a problem of execution of the same, which requires compensation on the part of the proponent. In other words, the size of each group of adherents in future negotiations will depend on the changing circumstances which alter the execution of the contract. This means that an uninformed adherent will cease to be so if all the eventualities are presented which are necessary to revise all contract clauses in order to demand compensation. Thanks to this, we may consider as a viable premise that the make up of each of these groups of adherents should be kept constant during a long period of time. In this way, it is possible to ignore the complications derived from modelling the problem as a repeated game in which the number of informed adherents is modified over time and in which the decision to obtain information is represented as an endogenous matter in relation to the model. This presupposition constitutes a limitation of the model in favor of simplicity. However, the verification of the same in the behavior of real individuals is a fundamental question which needs to be discussed in future studies.

The informed adherents are supposed to know about the distribution and the position of each combination of price and quality offered by the proponents. They will choose the combination  $(\hat{p}, \hat{q})$  which maximizes their profit.

The decision to acquire information by uninformed adherents will be taken if, and only if, the profit derived from keeping the contract which has the combination of price and quality which maximizes profit minus the cost of acquiring the information to find out about this quality, is higher than the profit expected from the random purchase among the proponents with the same observable characteristic. This is, if and only if:

$$U(\hat{p}, \hat{q}) - c_i > EU(\hat{p}, \hat{q})$$

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<sup>13</sup> In this information structure the adherents can only observe quality once they have adhered to the contract. Decisions taken by both proponents and adherents are made without information about the other's decision, so they are independent instead of sequential. Thus, the problem is that of game theory. The main strategy for each proponent will be that of offering the lowest quality, as he or she will obtain greater benefits, independently of the adherent's decision. Nash's equilibrium in this game is  $\{\underline{q}(\hat{p}), -Adher\}$ . So the proponents will not offer a higher quality than the minimum. Therefore, the strategy of offering the minimum possible quality associate with a price is not only a presupposition of the model, it is a result derived from the nature of Nash's equilibrium associated with the supposed structure of information.

#### 2.4.4. EQUILIBRIUMS IN AN ADHESION CONTRACT MARKET

Equilibrium will be characterized by a set of combinations of price and quality

$$\{(p_1, q_1); (p_2, q_2); \dots; (p_k, q_k)\}$$

offered by the proponents. Associated with this equilibrium there are a number of companies, endogenously determined, offering these combinations  $(M_1, M_2, \dots, M_k)$ , and the number of adherents decide to acquire this information at a price. In equilibrium, the following conditions must be satisfied:

*CONDITION 1.* An adherent will decide to purchase information if and only if

$$\text{Max}_k U(p_k, q_k) - c_1 > EU(p, q).$$

Where the expected utility is taken with respect to the relative frequencies of the proponents offering combinations  $(p, q)$  which are conditional on the price observed by the adherents. The informed adherent will sign a contract with the proponent who offers the combination  $(p, q)$  which maximizes its utility.

*CONDITION 2.* The combination  $(p, q)$  chosen by a proponent  $k$  produces at least the same benefits as any other combination  $(p, q)$  could offer, given:

- The structure of the information assumed above
- The behavior of Stackelberg towards the consumers<sup>14</sup>.
- The behavior of Nash towards other companies<sup>15</sup>

*CONDITION 3.* There exists freedom of entry, therefore all companies have zero benefits.

*CONDITION 4.* The offer of the proponents for each combination  $(p, q)$  must be equal to the demand, given the decisions of the adherents to acquire information. It is also supposed that the Law of Great Numbers should be complied with as the effective demand is equal to the expected demand.

It should be established that in equilibrium, there is no theoretical possibility that all adherents can be informed.

*DEMONSTRATION.* If all the adherents are informed, all will choose the combination  $(\hat{p}, \hat{q})$  which maximizes their utility. Then only these combinations  $(\hat{p}, \hat{q})$  will be offered by the proponents, as otherwise they will have negative benefits. But if only

<sup>14</sup> This means that the possibilities of adherents' behaviour is taken into account before the proponent takes the decision.

<sup>15</sup> This means that the main strategy for the proponents will be to offer  $\hat{q}(\hat{p})$

these optimum combinations are offered, there is no reason for the adherents to acquire information. As

$$EU(p, q) = U(\hat{p}, \hat{q}) > U(\hat{p}, \hat{q}) - c_i \quad i = 1, 2.$$

Now, there is a contradiction, as the adherents will not wish to acquire information. Thus, there will be at least some uninformed adherents.

Based on these conditions, we may conclude that the equilibrium reached by an adhesion contract market may be the following:

- **EQUILIBRIUM 1.** For  $c_1 < Y \leq c_2$ , there exists an equilibrium of unique form in which adhesion contracts are offered at an optimum price, but with two different levels of quality: optimum quality and a minimum level of quality associate with the optimum price.

In this case, the market equilibrium will be:

$$\{(p^*, q^*), (p^*, \underline{q}(p^*))\}$$

In this case, some adherents will be informed and some will not. Where:

$$Y \equiv U(p^*, q^*) - EU(p^*, q)$$

This is a number which has been determined exogenously and  $EU(p^*, q)$  is the profit expected after selecting at random between the adhesion contracts which have price  $p^*$ . This means that the adherents who cannot observe contract quality, will be offered the lowest level of quality possible at a competitive price. However, given that the decision of adhesion is decided on at random, an adherent may face a combination of price and optimum quality (which is what informed adherents are offered) or a combination of optimum price and minimum associated quality.

The conclusion of this proposition is clear. The market cannot ensure that an optimum level of quality is offered in adhesion contracts when some of the adherents are uninformed about the quality of the same.

- **EQUILIBRIUM 2.** For any parameters  $c_1$  and  $c_2$  there is a unique equilibrium

$$\{[p^{**}, \underline{q}(p^{**})]\}$$

In which all adherents remain uninformed about the quality of adhesion contracts. This is the case which is theoretically possible in which no adherent will decide to pay the costs of acquiring and processing information about contract quality, as the

expected profit for not doing so is greater than the profit obtained from adhesion to the contract with optimum price and quality minus the cost of the information. This means that:

$$Y \leq c_1 < c_2$$

Where  $p^{**}$  maximizes  $p - AC(\underline{q}(p), n)$  given that  $\hat{n} = n[p^{**}, \underline{q}(p^{**})]$ . In other words,  $p^{**}$  maximizes the average benefits of each proponent, given the minimum number of contracts necessary to be transacted to cover the average costs incurred in for offering adhesion contracts at this price and with minimum associated quality.

This is the equilibrium that is arrived at, once the presupposition that some adherents can get information about the quality of the adhesion contracts is omitted. Although the generalization that all adherents in a market are uninformed is complicated to maintain, according to Korobkin's approximations, this is a possibility that must also be considered, at least theoretically.

The conclusion of all these propositions is clear. The market cannot ensure that an optimum level of quality is offered in adhesion contracts, when some of the adherents are uninformed about the quality of the same. It is clear that these results contradict the arguments based on Schwartz and Wilde, and the argument according to which a lower level of quality in adhesion contracts will be compensated for by an equivalent reduction in the price of the merchandise or service. In fact, the market cannot have adhesion contracts with sub optimum clauses (where the combination of price and quality is other than optimum) and low quality will not compensate for an equivalent price, as long as the combination of optimum price and minimum associated quality is present in the equilibrium encountered.

### 3 CONSIDERATIONS ON THE STANDARD OF MINIMUM QUALITY IN ADHESION CONTRACTS AND THE NEED FOR REGULATION

According to the results presented above, it is clear that uninformed adherents will be offered adhesion contracts which totally remove their surplus. However, because of competition, the proponents will continue to make zero benefits. Thus, the inefficiency of adhesion contracts is clear. However, the possibility of demanding a *minimum standard of quality* would improve this result substantially, by allowing adherents to keep part of their surplus. This standard can be defined by the identification of the clauses which would not be able to be part of the contract, instead of the regulation of the whole content. This means that the situation of the adherents will be improved, by simply excluding some special types of clauses.

This type of solution to improve market inefficiency has already been proposed by some academics. The proposal that best illustrates this idea is that of Alfaro on the declarative efficacy that general conditions must have. In his demands for adhesion contracts to be subject to their content being in agreement with the legal norms and principles of the Law, Alfaro states that adhesion contracts should reflect the distribution criteria of contractual

obligations and the equivalence of the considerations which the legal system has considered desirable. To ensure this result by controlling the quality of the content of adhesion contracts requires that their quality should not be inferior to that determined by the legal system. But this control should be always carried out before the signing of the contract, as the cost of legal action is often prohibitive for adherents. The high costs of legal action makes it impossible to correct the quality of the majority of the contracts in a particular market because a type of control which is exclusively ex post cannot ensure a significant improvement in social welfare. The solution must be found in the preceeding stage, so that all adherents are covered by the improvement in quality and not only those who are able to do so, as a result of an expensive intervention by judges.

In this section, we will show how the results found previously can be improved for adherents by means of the inclusion of a minimum standard of quality. The discussion about what is the minimum standard which should be included, is in the last instance, a question about the content of a particular adhesion contract that best reflects the principles of a legal system for a particular transaction and is beyond the scope of this study, so it will not be discussed here. This means that a minimum standard of quality will be considered and not an optimum standard of minimum quality. A level of minimum quality in adhesion contracts which regulate a particular transaction may be offered by the proponent if:

- It can be produced at a minimum profitable price  $P_0 = \underline{p}(q_0)$  and
- At this price,  $\underline{q}(p_0) < q_0$ , so that adherents keep part of their profit.
- Consequently,  $U(p_0, q_0) = U(\underline{p}(q_0), q_0) > 0$

With these considerations, the minimum quality level  $q_0$  has the following implications for equilibrium.

- **EQUILIBRIUM 3.** For  $c_1 < X \leq c_2$  there is equilibrium in the form:

$$\{(p^*, q^*), (p^*, \underline{q}_0(p^*))\}$$

Where  $\underline{q}_0(p^*) = \max(\underline{q}(p^*), q_0)$ , in which some adherents are uninformed and others are not.

$E_0 U(p^*, q)$  is the expected profit when contracting at random at price  $p^*$ . Under certain circumstances  $(p_0, q_0)$  will be offered in equilibrium, where  $p_0 = \underline{p}(q_0)$

- **EQUILIBRIUM 4.** When there is a minimum level of quality  $q_0$ , each parameter of  $c_1, c_2$  there is an equilibrium of unique form:

$$\{(p_0, q_0)\}$$

In which all adherents are uninformed about the quality of the existing adhesion contracts. This is the case where it is theoretically possible that none of the

adherents are informed about the quality of the existing adhesion contracts in a particular market.

It has been demonstrated that in all cases a *minimum standard of quality* in adhesion contracts improves the result of a particular market, as it allows uninformed adherents to keep part of their surplus.

The basic question which needs to be analysed in adhesion contracts is whether the market is capable of ensuring that adherents participate in contracts which maximize their profits. The answer is no. The market is incapable of correcting inefficient contracts when adherents have bounded rationality and asymmetric information exists between them and the proponents. The expected result is that the uninformed adherents will be offered adhesion contracts with combinations of price and quality with the minimum possible quality associated with an optimum price, which implies a limitation of the exercise of their contractual freedom. This inability of the market to ensure the existence of optimum contracts for adherents should be compensated for by the demand for minimum standards of quality. This will partially correct the market defect in so far as adherents can keep part of the surplus, which will improve the global results of the transactions carried out using adhesion contracts.

### III

## AN EXPERIMENTAL ANALYSIS OF THE ECONOMIC PROBLEMS CAUSED BY THE USE OF ADHESION CONTRACTS

### 1. THE NEED FOR AN EXPERIMENTAL EVALUATION OF THE RESULTS

According to the theoretical results presented above, we can conclude that the asymmetrical information between proponents and adherents will lead to two basic conclusions. The first is that in the contracts offered there is no relationship between quality and the price charged. In fact, in all calculated balances the market reaches the situation in which there is minimum quality associated with a particular price. The second is that low quality contracts end up by displacing, at least in part, high quality contracts. This supposes that adherents will end up acquiring contracts which do not maximize their profit.

Although the theoretical model used seems to gather together the fundamental characteristics of a market where transactions are carried out by means of adhesion contracts, there is, in any case, nothing which proves the validity of the results, so it is necessary to show whether the presuppositions about behavior help to predict real life situations. According what was mentioned in the introduction, there are a set of examples in people's daily transactions which prove that adhesion contracts generally have contents which are opposed to the interests of those who agree to them. However, these examples cannot be considered evidence of the theoretical conclusion which have been presented above, in the first place because they do not constitute systematically gathered information which proves that low quality clauses are commonplace in the market.

In the second place, because contracts which have unfavorable clauses for adherents cannot be said to be low quality contracts associated with price. In fact, in order to prove this, it would be necessary to be certain about the quality, at least the relative quality, of the contracts in the market, to be able to determine the existing relationship with the price. In other words, it would be necessary to determine whether high or low quality is associated with a particular price.

In the third place, because little information can be extracted from these examples about the adherents' decision processes. In fact, it is not possible to find out about the maximizing availability to pay depending on the level of quality of the contract, nor about the costs associated with the search for information, nor about the amount of information which is available to each at the moment of signing the contract. Then, as there is no information about the parameters which were taken into account in determining the adherents' process of decision making, it is not possible to carry out an empirical evaluation of the model's performance.

In general terms, the evidence which is needed to demonstrate the real validity of the conclusions should recognize, at least, the level of relative quality of each contract in the market, of the production costs of the contracts, according to their level of quality and the information related to the adherents' decision making process; in particular, to their information costs and their maximum willingness to pay. However, in Colombia it is not possible to have access to this information. In the best of cases, there are public bodies

which have information about adherents' complaints related to specific transactions, but none of them contain a significant sample of the adhesion contracts offered in a particular market. The reason is simple: because these contracts are not regulated, the proponents are not obliged to give information about their clauses to State organizations which are responsible for vigilance and control. Therefore, the little existing information is directly related to the existence of complaints. In this case, the information is not only incomplete, it is biased.

In the face of these difficulties and because of the need to evaluate the results of the model, it was necessary to obtain the information from real agents in a controlled environment. According to Friedman and Sunder (1994) and Davis and Holt (1993), the simulation of real situations in the laboratory complies adequately with this purpose, as if the theory does not work well in a simplified context, it would be difficult to sustain its validity in real environments which are much more complex. In addition, in the laboratory it is possible to manipulate the conditions which determine agents' activity. According to Grether, Schwartz and Wilde (1992), this supposes the possibility of evaluating more precisely the importance of specific factors in the determination of market results. Finally, given that in an experiment the value of the basic parameters of a theoretical model are known, it is possible to establish a direct causal relationship between these and market performance.

This chapter has presented the empirical evaluation of the results of the theoretical model by means of a series of experiments. The chapter is made up of five parts, the first of which is the introduction. The second part presents the studies related to the experiments which have been selected to evaluate the performance of equilibrium search models. The third part presents a description of the proposed experiment, and the fourth part, the findings. Finally, the fifth part presents the conclusions.

## **2. EXPERIMENTAL LITERATURE ON "EQUILIBRIUM SEARCH MODELS"**

Although these experiments present evidence about some of the basic conclusions of the model, we need to carry out a comparison between these and those which have been used to verify the performance of equilibrium search models, including that of Chan and Leland (1982), in order to evaluate the external validity of the results.

The experimental evaluation of equilibrium search models was initially developed by Grether, Schwartz and Wilde (1998) to respond to the need to evaluate their predictive power. According to these authors, experimental evaluation of the models was adequate, as it allowed for proving whether the theory worked, at least in simplified contexts, which constituted the first condition to justify its applicability in the real world. The experiments were designed to prove the results of the models of Salop and Stiglitz (1977), Schwartz and Wilde (1979), and Diamond (1971). The fundamental difference between the proposed designs to verify each model was the information technology which the purchasers had access to. In all cases, purchasers were divided into two groups: shoppers and non-shoppers. For the experiments on the Schwartz and Wilde model, the non-shoppers were only allowed to visit one seller and they were advised to buy if the sales price was lower than their reserve prices. The shoppers were allowed to obtain information about the price

offered by various vendors and they were advised to buy from the person who offered the lowest price, if this was less than their reserve price.

In the case of the experiments on the Salop and Stiglitz model, all the prices offered by the vendors at that time were presented on a board which only the purchasers could see, but not the identification of the vendor associated with each of the prices. The shoppers in this experiment paid a special premium which allowed them to be able to purchase at the lowest price in the market. The non-shoppers simply went to a vendor to whom they had been assigned and decided whether they would buy or not.

In the experiments on the Diamond model, the shoppers had the possibility, on payment of a premium, to obtain information about two vendors and to purchase at the lowest price. The non-shoppers were only allowed to visit the vendor who had been assigned to them.

The results obtained in these experiments may be classified in terms of price in the following manner: if the prices were monopolistic, if the prices were competitive, and if the prices could be found at an intermediate level. In all the experiments, those referring to the Schwartz and Wilde model were the only ones which showed results which were fairly similar to those postulated by the theory, as the parameter of relative number of shoppers was high and the model predicted that prices should be competitive. 94% of the transactions were carried out at a price very close to this level. In the other two cases, there was a dispersion of prices between the level of competition and the competitive which was not in agreement with what was predicted.

The experiments proposed by Holt and Sherman (1990) were one of the first attempts to incorporate the quality dimension within the transactions carried out in a simulated market. These experiments were aimed at evaluating market performance when purchasers had limited information. The experimental work, which up to then, had had the closest relationship with the Holt and Sherman study was that of Lynch, Miller, Plott and Porter (1986). In the experiments proposed by these four authors, the vendors would select one of the two levels of quality, and prices were determined by means of a double auction procedure. The results showed that the efficient level of price and quality was only achieved when the purchasers had complete information about the two characteristics. However, when the identity of the vendors was concealed and information about product quality was given after transactions had been concluded, similar results to those found by Akerlof (1970) were observed. Basically, low quality products ended up being offered, which led to a lower level than optimum of efficiency achieved by high quality products.

The fundamental difference between the position of Holt and Sherman (1990) and that of Lynch, Miller, Plott and Porter (1986) was that the negotiation procedure considered by the former was not double auction, but posted-offer. This supposes that the purchasers could not negotiate the offer made. Thus, the purchaser could choose either to buy or not to buy at that price. According to Holt and Sherman, this modification was justified because many small business selling markets have these characteristics, so it is important to verify whether the conclusion of *Lynch et al.* may also be extended to these markets. Basically, Holt and Sherman considered three treatments: one in which purchasers are given information about price and quality previously defined by the vendors, another in which

they were only given information about price, and a third, in which they were given no information at all about price or quality. In all cases, the purchasers were directed at random to a vendor; once there, they decided whether to complete the transaction or not.

The results of these experiments show various interesting points. The first is that if there is complete information, it is possible to reach a degree of efficiency quite near the maximum which is associated with a particular level of quality. The second is that if the information about price and market quality is not complete, there is a degree of efficiency about half of that reached with full information. The third is that the loss resulting from these inefficiencies of information is mainly passed on to the purchaser, as there is a “lemons” result in the market. The fourth and final point refers to the fact that the price paid has no relationship with the quality offered. This design is very relevant to our interests, in so far as it correctly represents the characteristic of content predisposition seen in adhesion contracts.

The first of these experiments specially designed to verify the performance of Chan and Leland’s model in the laboratory was developed by Grether, Schwartz and Wilde (1992). This article presents a series of experiments designed to re-evaluate the models of Diamond, Salop and Stiglitz, and Schwartz and Wilde, yet the most interesting aspect is that there is a market simulation in which goods are negotiated according to two dimensions: price and quality. In this article, we will carry out three different treatments to the Chan and Leland model. In the first, quality but not price can be observed and the non-shoppers will be able to go to the vendor who offers the desired level of quality. In the second, price but not quality can be observed and the non-shoppers will be able to go to the vendor who offers the price that they consider most convenient. In the third, neither price nor quality can be observed and purchasers are assigned to the different vendors at random. In all these treatments, purchasers may become shoppers and find out about the prices and qualities offered in the market, on payment of a premium.

The results of these experiments proved some of the result of the theory. Generally the number of shoppers corresponded to what was established by the model. In addition, in the three treatments, the great majority of the transactions achieved the expected level of quality. However, in some of the experiments carried out with treatments one and two, there were dispersions of prices which were incompatible with the theoretical results. Although, in fact, some transactions were carried out at the expected price, others were negotiated at a price which was in the range between the level of competition and the level of monopoly. It is important to clarify that, in this article, the analysis of market efficiency was not carried out.

In Davis and Holt (1996) the problem of markets with asymmetric information and information costs was also considered. The main aim of this article was to demonstrate the result presented by Diamond (1971) where the existence of information costs in the market result in the observed price being at monopoly level. In this design, Davis and Holt omitted an analysis of quality and focused on price behavior when prices could be observed on payment of a fee. Market structure used was that of posted-offers.

In the experiments, each vendor fixed the selling price and this could not be observed by

the other vendors. In addition, each purchaser was charged a premium for access to information about a vendor, but not his or her identity. If this price was considered appropriate, the purchaser could buy; if not, he or she could find out about the prices offered by another vendor (but not his or her identity) on payment of another premium of equal amount. The process of the purchase of information could be carried out as often as the purchaser wished. The results showed that prices rose, but not to monopoly level.

Finally, Davis and Holt considered the case where purchasers, on payment of a premium were able to find out about the price offered by a vendor and also his or her identity. This modification was introduced in order to see if the reputation of the vendors might influence price dynamics. The results showed that the existence of reputation is not enough to lower prices.

Based on the studies presented previously, it is possible to claim that there is a type of consensus with regard to some basic results. The first is that in a market with asymmetric information, efficiency may be well below the level of efficiency seen in markets where there is access to full information. The second is that the “lemons” result is seen in all these experiments. This suggests that there is no relationship between the price charged and the quality offered. The third is that these conclusions are present in double auction and posted-offer markets.

### **3. DESIGN OF THE EXPERIMENT AND PROCEDURE**

In the proposed experiment the idea was to identify the basic characteristics of a particular market of adhesion contracts as described in Chapter I. The simulated market was that of the sale of insurance policies covering civil responsibility for vehicles, or insurance covering “all risks”. This type of contract was chosen for two main reasons. First of all, insurance contracts are a typical example of adhesion contracts. Secondly, the participants in the experiment were able to understand easily the type of goods being negotiated, as these insurance policies are widely known by car owners. The transactions were concluded by the mechanism of posted-offers, as this was what exactly represents the two fundamental characteristics of adhesion contracts: that they are taxes and that their content is predetermined.

Students from Universidad de los Andes, from different programs and semesters were present in all the sessions. The participants were separated in two groups. The first group was made up of proponents, who were insurance policy vendors, and in the second group were the adherents, the purchasers of the insurance policies. The insurance vendors chose the quality of the contract they wished to sell and the price they would offer. The adherents simply accepted or rejected the terms of the transaction proposed by the proponent.

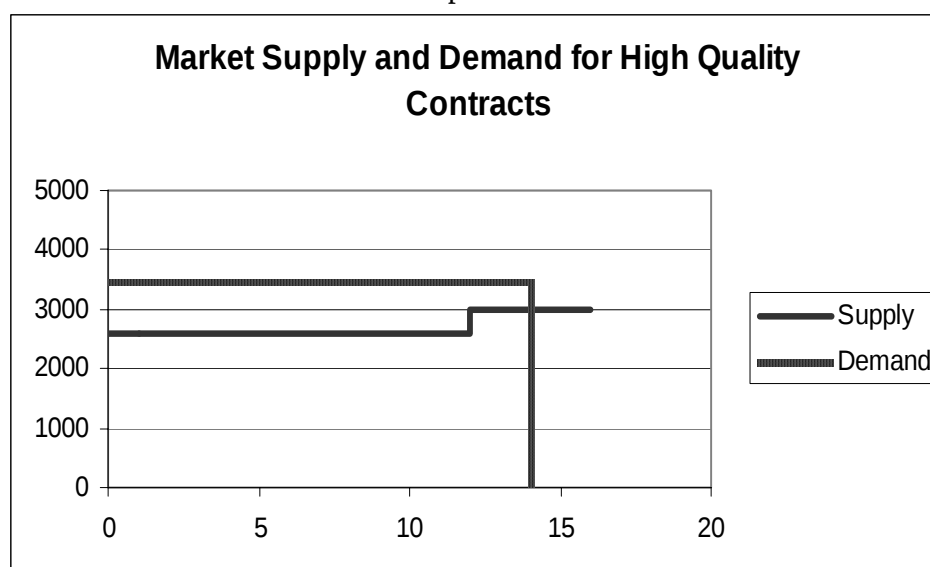
#### **3.1. VENDORS’ BEHAVIOR**

The vendors of insurance policies could choose the quality of the contracts which were on offer during a particular period and the price at which they wished to sell. They could choose between high quality, medium quality and low quality contracts. It is important to

clarify that the parameters of the experiment were adjusted to ensure maximum market efficiency in the high quality contracts.

In a particular period, each vendor could offer a maximum of four insurance policies, all of the same quality and price. The costs increased according to the level of quality. In addition, the first two contracts cost less than the other two contracts. This constituted a modification of the premise used in the model, according to which the marginal costs were constant. Although this alteration was made in order to create surpluses for the producers, and thus develop the analysis of the efficiency of the market, it was also an opportunity to relax one of the premises and verify whether the theoretical results remained constant. Finally, it is important to note that the vendors' profits were determined by the difference between price and cost. Graph No. 1 shows the form of the supply and demand curve in the high quality contract market.

Graph No. 1



Different treatments were used in the four experiments. In one of them the purchasers were informed publicly of the price, but not the quality of the contracts on offer. In the other, there was no public information available about price or quality. In all cases, the purchasers were always able to find out about quality by reading the contract. These treatments represent cases in which the price could be observed cost free but not the quality (partial information) and those in which neither the price nor the quality could be observed cost free (total disinformation), represented by Equilibrium 1 and 2.

### 3.2. PURCHASERS' BEHAVIOR

Four vendors were used in all the treatments, but the number of purchasers was between twelve to fourteen people. This difference of purchaser group size was only relevant for the treatment of partial information. In actual fact, some of the purchasers were shoppers and others were non shoppers. The size of the group depended on the number of shoppers.

Thus, if the number of shoppers was fourteen, six of these had reduced information costs and were considered to be shoppers. When the number of shoppers was twelve, only four of them were shoppers. This difference in the size of the groups was established in order to evaluate whether market performance improved when there was a larger number of informed people, as predicted by the Schwartz and Wilde model. It must be added that, although the group for each session was reduced, in any case it was larger than that considered by Holt and Sherman (1990) and Holt and Sherman (1999), and equal to that of Grether, Schwartz and Wilde (1992).

The purchasers had a maximum availability of payment, which was associated in increased proportion with contract quality level. The purchasers' profits resulted from the difference between the maximum availability of payment and the price.

Table No. 1

| Experimental Parameters with 12 Purchasers |                                  |                                 |                   |                |                            |                            |                         |            |
|--------------------------------------------|----------------------------------|---------------------------------|-------------------|----------------|----------------------------|----------------------------|-------------------------|------------|
|                                            | Cost of the second two contracts | Cost of the first two contracts | Competitive Price | Monopoly Price | Producer Surplus by Period | Consumer Surplus by Period | Total Surplus by Period | Efficiency |
| Low Quality                                | 2600                             | 3000                            | 3000              | 3450           | 3200                       | 5400                       | 8600                    | 53,75%     |
| Medium Quality                             | 2790                             | 3250                            | 3250              | 3850           | 3680                       | 7200                       | 10880                   | 68,00%     |
| High Quality                               | 2950                             | 3450                            | 3450              | 4450           | 4000                       | 12000                      | 16000                   | 100,00%    |
| Experimental Parameters with 14 Purchasers |                                  |                                 |                   |                |                            |                            |                         |            |
| Low Quality                                | 2700                             | 3100                            | 3100              | 3600           | 3200                       | 7000                       | 10200                   | 56,67%     |
| Medium Quality                             | 2875                             | 3350                            | 3350              | 4000           | 3800                       | 9100                       | 12900                   | 71,67%     |
| High Quality                               | 3100                             | 3600                            | 3600              | 4600           | 4000                       | 14000                      | 18000                   | 100,00%    |

With these parameters, it is possible to calculate the equilibriums for the two treatments. On the treatment of partial information with twelve purchasers, there were two vendors offering the optimum combination of price and quality and selling four units each. In addition, there were two vendors offering the minimum level of quality associated with the optimum price and selling two units each. For the treatment with fourteen purchasers, there were three vendors offering the optimum combination of price and quality and selling four units each. In addition, there was one vendor offering the minimum level of quality associated with optimum price and selling two units. In the treatment with total disinformation, all the vendors were offering the minimum quality and were charging the highest possible price. All the parameters included in the different treatments, as well as the equilibriums calculated, can be found summarized in Table No. 2.

Table No. 2

|                | No. of Purchasers | C1  | N1 | C2  | N2 | No. De Shoppers Expected | No. of Vendors | Partial Information | Without Information | Equilibrium Price | Equilibrium Quality | No. of Contracts Offered in Equilibrium according to Quality |
|----------------|-------------------|-----|----|-----|----|--------------------------|----------------|---------------------|---------------------|-------------------|---------------------|--------------------------------------------------------------|
| Experiment I   | 12                |     | 0  | 550 | 12 | 0                        | 4              |                     | SI                  | 3450              | Baja                | [12]                                                         |
| Experiment II  | 12                | 200 | 4  | 550 | 8  | 4                        | 4              | SI                  |                     | 3450              | Baja, Alta          | [4,8]                                                        |
| Experiment III | 14                |     | 0  | 700 | 14 | 0                        | 4              |                     | SI                  | 3600              | Baja                | [14]                                                         |
| Experiment IV  | 14                | 300 | 6  | 700 | 8  | 6                        | 4              | SI                  |                     | 3600              | Baja, Alta          | [2,12]                                                       |

### 3.3. THE EXPERIMENTAL PROCEDURE

Each session was divided into a series of periods either of total information (where adherents know the price and the quality of the contracts) and of partial information (where only the price is known); or of total information and total disinformation (where neither the price nor the quality is known). There are two reasons for this division: the first of these is that it makes it possible to verify whether if there is full information, the market will be able to ensure convergence on maximum efficiency contracts. The second is that it offers the possibility of being able to compare different information environments.

Each session began with the reading of the instructions for the purchasers (adherents) and for the vendors (proponents). The instructions were read to each group separately. At the beginning of each period, the vendors had to choose the price at which they would sell the contracts and their quality. Then, the information that could be revealed in this period was published in a type of publicity billboard. This information could be seen by all purchasers, but not by the other vendors.

Then, the order in which the purchasers should enter was established. In the area where the experiment was carried out, there was only to be one purchaser at a time. Before entering, each purchaser was asked whether they wanted to buy information at the particular price which was previously available to him. If they chose to buy information, they had to go to a table where one of the coordinators of the experiment would show them the characteristics of the contracts offered by each of the vendors, in order that they could purchase the optimum combination of price and quality. If they did not buy information, the purchaser could only choose one vendor. In the case of a partial information treatment, they could choose the vendor according to price. In the case of total disinformation, the vendor was assigned at random.

At all times during the transaction, the purchaser was able to have access to the contract. This was an important difference with the other experiments, as the transaction was carried out in relation to a tangible product which could be examined. In addition, at the end of the

transaction, the contract was signed, which implied that the adherents, in effect, had to carry out the “solemn” act that the laws currently in force consider the expression of his or her willingness. Normally, the signing of a document has been considered a conscious act in which the people who take part agree with the dispositions contained in the said document. This implies that the experiment guaranteed the adherents the possibility of knowing what they were buying and of being able to think about its content.

It is important to clarify that the authorization of the possibility of reading the contract means that the purchasers could find out information without having to buy it. Therefore, it can be seen that the purchasers have two ways of finding out about contract quality: one is buying information, which is equivalent to paying for some kind of legal advice, and the other is reading the content. At the end of the transaction, the adherent should hand over the signed contract. It is important to note that all the contracts offered were two pages in length and only contained four clauses. The first of these contained the protection offered, the second, the exclusions, the third the value of the protection offered and the fourth, the length of time the policy would be in force. The differences in contract quality were clearly shown in the first three clauses.

Each stage of the experiment finished when all the purchasers had passed through. At the end of each round, the reports of the vendors were collected and then they were told that they could choose the price and quality once again, before beginning a new round of transactions. Each session ended with a series of rounds of full information.

Finally, it is important to note that an incentive to duplicate profit value was offered, to the person who had got the best deal in each group of players. This rule was part of the instructions and was aimed at ensuring that agent behavior was carried out totally independently, as where there is a context with a small number of people, it is easy for information to become public property, which would have radically altered the nature of the experiment. At the end of each session, there was payment in cash of the profits obtained. In all cases, each participant was assured of having a minimum payment.

## **4. THE RESULTS**

In each of the sessions, there were at least ten rounds with partial information or total disinformation, according to the treatment; and in three sessions, there were four rounds with total information guaranteed.

### **4.1. THE ANALYSIS OF EFFICIENCY**

In order to measure the level of efficiency reached by the market during the four experiments, it is necessary to consider the rounds involving total disinformation or partial information and periods of total information separately. In Experiments I and III during the periods of total disinformation there was a level of market efficiency of 52.98% and 51.35% respectively. In Experiments II and IV, during the periods of partial information, there was a level of market efficiency of 38.48% and 58% respectively. These results were perfectly coherent with those found in similar experiments in which asymmetric information produces efficiency levels of around 50%. What was particularly interesting

was the analysis of the distribution of market surplus. In Experiments I, II and III, the consumers obtained a maximum of 12.37% of the surplus. In Experiment IV, the consumers obtained the maximum surplus and it was only 39.93%. In the case of the producers, in all the experiments there were surpluses higher than 100%, even reaching 200%.

One of the results of the theoretical model indicated that the surplus of uninformed adherents was zero. The results of Experiments I, II and III seem to support this. Although the results of Experiment IV may be considered contradictory, it should be remembered that there were the highest number of informed adherents in this session; a fact which may partially explain the results, because the surplus was much greater than that of the other sessions. This suggests that, in fact, the purchasers are divested of an important part of their surplus by the vendors<sup>16</sup>.

For the periods where full information existed, the question was very different in all the experiments. In fact, market efficiency was always higher than 90%. However, an unequal surplus distribution between purchasers and vendors was also noted. According to Davis and Holt (1993) this asymmetry in surplus distribution is one of the inherent characteristics of markets where there are posted-offers, and these results confirm this. The explanation given for this is that the capacity to fix prices which can only be accepted or rejected gives agents who can do so an advantage. This is due to the fact that as there is no negotiation, they can develop a strategic course of action and fix prices above the level of competition. Table 3 gives a summary of the information related to market efficiency.

Table No. 3

|                | Periods with Partial Information or Total Disinformation |                  |               | Periods with Total Information |                  |               |
|----------------|----------------------------------------------------------|------------------|---------------|--------------------------------|------------------|---------------|
|                | Consumer Surplus                                         | Producer Surplus | Total Surplus | Consumer Surplus               | Producer Surplus | Total Surplus |
| Experiment I   | 12,37%                                                   | 174,80%          | 52,98%        | NA                             | NA               | NA            |
| Experiment II  | 3,14%                                                    | 144,52%          | 38,48%        | 79,75%                         | 125,25%          | 91,13%        |
| Experiment III | 7,73%                                                    | 204,03%          | 51,35%        | 60,64%                         | 209,77%          | 93,78%        |
| Experiment IV  | 39,93%                                                   | 121,25%          | 58,00%        | 87,07%                         | 124,00%          | 95,28%        |

#### 4.2. THE QUALITY ANALYSIS OF THE CONTRACTS NEGOTIATED

It was found that the majority of contracts on offer in the market were of low quality. In the periods of partial information and total disinformation in Experiments I, II and IV more than 50% of the transactions were carried out with low quality contracts. For the last four periods of the same experiments, the percentage is quite similar. Experiment III was atypical in that as it involved a treatment of total disinformation all contracts were expected to be of low quality. In fact, 50% of the transactions were high quality contracts and only

<sup>16</sup>It must not be forgotten that in the theoretical model this result was different, as free entry was assumed and Marginal Costs are equal for the proponents.

23% were low quality. The last four periods of Experiment III also showed different results from those expected. In fact, there was a reduction in the percentage of low quality contracts in 16.66%. Table 4 summarizes this information.

In any case, even though there was a displacement noted of high quality by low quality contracts, the distribution of transactions corresponds exactly to what is predicted in the theory. Although the results of Grether, Schwartz and Wilde (1992) were not satisfactory either for the treatments of partial information, these authors had found that in the case of total disinformation, the Chan and Leland model predicted the laboratory results.

The results were also inconclusive with regards to the question of the buying of information. While the number of shoppers in Experiment II was 35 instead of the 40 which were expected, in Experiment IV there were only 15 shoppers, when 60 were expected. These results were contrary to those found by Grether, Schwartz and Wilde (1992), where the Chan and Leland model did, in fact, predict accurately the level of information buying by the purchasers.

Table No. 4

|                | Periods with Partial Information or Total Disinformation |                |                  |               |                   |                  |               | Periods with Total Information |                |                  |               |
|----------------|----------------------------------------------------------|----------------|------------------|---------------|-------------------|------------------|---------------|--------------------------------|----------------|------------------|---------------|
|                | All periods                                              |                |                  |               | Last four periods |                  |               | All periods                    |                |                  |               |
|                | % Transactions Carried out                               | % High Quality | % Medium Quality | % Low Quality | % High Quality    | % Medium Quality | % Low Quality | % Transactions Carried out     | % High Quality | % Medium Quality | % Low Quality |
| Experiment I   | 73,33                                                    | 27,27          | 9,00             | 64,00         | 43,00             | 10,00            | 48,00         | NA                             | NA             | NA               | NA            |
| Experiment II  | 71,00                                                    | 29,41          | 21,17            | 49,41         | 34,88             | 9,30             | 55,81         | 100,00                         | 91,66          | 8,33             | 0,00          |
| Experiment III | 51,00                                                    | 43,66          | 32,39            | 23,94         | 50,00             | 33,33            | 16,66         | 100,00                         | 82,85          | 8,57             | 8,57          |
| Experiment IV  | 86,00                                                    | 30,00          | 19,16            | 50,83         | 33,92             | 5,35             | 60,71         | 100,00                         | 85,71          | 10,00            | 4,28          |

In relation to market performance when there was full information, the results show that in Experiments II, III and IV, more than 80% of the transactions were carried out with high quality contracts. This suggests that when asymmetry of information between purchasers and vendors is eliminated, the market is capable of ensuring the efficient distribution of contracts. This conclusion is also supported by the efficiency data.

#### 4.3. THE ANALYSIS OF THE DISTRIBUTION OF PRICES AND THE RELATION WITH QUALITY

With regard to the distribution of prices, no convergence was noted in equilibrium levels; this difficulty had already been observed by Grether, Schwarz and Wilde (1992). In all the experiments, there was price dispersion, even in the last four periods, according to information in Diagrams 2 - 5 in Appendix 3.

However, the most general conclusion that there was no correspondence between the prices charged and the quality offered was verified well in the data. Table No. 5 summarizes the information about the distribution of prices in the market and its relation with the quality

Table No. 5

|                | Periods with Partial Information or Total Disinformation |                                           |     |                                               |    |                                              | Last Four Periods with Partial Information or Total Disinformation |                                           |     |                                               |    |                                              | Periods with Partial Information or Total Disinformation |        |     | Last Four Periods with Partial Information or Total Disinformation |        |     | Periods with Total Information |                                                    |
|----------------|----------------------------------------------------------|-------------------------------------------|-----|-----------------------------------------------|----|----------------------------------------------|--------------------------------------------------------------------|-------------------------------------------|-----|-----------------------------------------------|----|----------------------------------------------|----------------------------------------------------------|--------|-----|--------------------------------------------------------------------|--------|-----|--------------------------------|----------------------------------------------------|
|                | Contracts Agreed on                                      | Contracts Bought at the Equilibrium Price |     | Contracts Bought at a Price Below Equilibrium |    | Contracts Bought at a Price Over Equilibrium | Contratos Celebrados                                               | Contracts Bought at the Equilibrium Price |     | Contracts Bought at a Price Below Equilibrium |    | Contracts Bought at a Price Over Equilibrium | Contracts Bought at Competitive Price                    |        |     | Contracts Bought at Competitive Price                              |        |     | Contracts Agreed on            | High Quality Contracts Bought at Competitive Price |
|                | Total                                                    | High                                      | Low |                                               |    |                                              | Total                                                              | High                                      | Low |                                               |    |                                              | High                                                     | Medium | Low | High                                                               | Medium | Low |                                |                                                    |
| Experiment I   | 88                                                       | 28                                        | 0   | 25                                            | 14 | 46                                           | 40                                                                 | 9                                         | 0   | 9                                             | 3  | 28                                           | 0                                                        | 0      | 7   | 0                                                                  | 0      | 3   | NA                             | NA                                                 |
| Experiment II  | 85                                                       | 9                                         | 2   | 7                                             | 34 | 42                                           | 43                                                                 | 5                                         | 2   | 2                                             | 22 | 16                                           | 4                                                        | 0      | 16  | 2                                                                  | 0      | 12  | 48                             | 32                                                 |
| Experiment III | 81                                                       | 13                                        | 0   | 7                                             | 0  | 68                                           | 46                                                                 | 9                                         | 0   | 9                                             | 0  | 37                                           | 0                                                        | 0      | 0   | 0                                                                  | 0      | 0   | 70                             | 44                                                 |
| Experiment IV  | 120                                                      | 51                                        | 22  | 10                                            | 54 | 15                                           | 56                                                                 | 20                                        | 15  | 2                                             | 36 | 0                                            | 26                                                       | 4      | 30  | 19                                                                 | 0      | 23  | 70                             | 56                                                 |

Nota: Contracts bought at equilibrium price are those in a range of more or less \$100 pesos as the value of equilibrium.

agreed on. In the first columns there is information about the number of contracts bought at a price below that of equilibrium, the number bought for a higher price and the number bought in a range of more or less \$100 pesos as the value of equilibrium. This information was given for all periods of partial information or total disinformation and for the last four periods. The other columns show the number of contracts agreed on for a price near its competitive price, in other words, the number of contracts where there was some relation between the price charged and the quality offered. This analysis was also established for the periods of total information.

Experiments I and III had the lowest number of contracts offered at a competitive price. This result is perfectly compatible with the theory, as in both cases these were treatments of total disinformation. In Experiments II and IV the results obtained were compatible with what was expected. In Experiment II, only 23% of the contracts were agreed on at a nearly competitive price. In Experiment IV the proportion was higher and corresponded exactly to 50%. It is important to remember that in this experiment there was the largest number of shoppers, which explains the increase in the contracts at competitive prices.

According to Friedman and Sunder (1994), one of the main uses of experimental economy is the possibility of being able to evaluate rival theories. Although it was shown that the increase in the number of informed people did positively affect the efficiency of the market and the number of transactions carried out at competitive prices, the market correction found by Schwartz and Wilde was not achieved. As has been indicated above, the parameters of Experiments III and IV were calculated to evaluate market performance when the number of shoppers and non shoppers was almost equal. Although in Experiment IV, efficiency levels increased significantly, in all cases they were much below those reached in the periods of total information. The impossibility of market correction by means of the intervention of a large number of informed adherents is one of the main conclusions that can be deduced from the data obtained in the experiments which were carried out.

## **5. CONCLUSION OF THE EXPERIMENTAL RESULTS**

Based on the results, it is possible to state that the market is quite inefficient when assigning high quality contracts at competitive prices. In addition, the majority of the transactions ended up being carried out with low quality contracts. Finally, it is clear that the price charged is not related to the quality offered. All these results were consistently observed and show the main conclusion of the proposed theoretical model.

However, in the experiments it was not possible to observe evidence of the convergence of prices and the qualities of equilibrium. What was vital is that in asymmetrical information markets on the quality of the contracts offered, there is no possibility of ensuring efficiency, even by modifying the number of informed adherents, as in the experiments where the number of informed people was increased, there was no real evidence of an improvement in efficiency, nor of a considerable reduction in the number of low quality contracts.

#### IV CONCLUSIONS

Adhesion contracts are one of the most appropriate instruments to help companies reduce costs associated with their market participation. This is due to the elimination of the negotiation process, the consolidation of the internal structure of the firm and the reduction of the uncertainty present in business transactions. When Coase in his famous article in 1937 clarified the nature of the company, he provided the necessary elements to understand the constant search undertaken by companies to reduce transaction costs. Thus, the use of these contracts is inevitably related to commercial activity in a market economy of large scale production.

However, what appeared to be an ideal instrument to help companies solve the problem of maximizing benefits began to generate mistrust among adherents. The efficiency generated by the proponent firms was not reflected in the market; on the contrary, with the passing of the years, the number of disputes about who should draw up these contracts increased. It seems as if adhesion contracts did not satisfy the expectations of those who signed them, as the proponents tried to obtain a maximum benefit at the cost of reducing the adherents' profits.

As has been shown, this problem stems from the fact that the necessary information for the adherents to make their decisions with full knowledge of the characteristics of a particular contract is only available at a very high cost. This leads to an asymmetry in information available to adherents and proponents which is impossible to solve. Thus, the proponents have an incentive to reduce the quality of contract characteristics which the adherents have no knowledge of. This results in a situation in which the contracts offered have the lowest level of quality possible associated with a particular price, which leads to the proponents removing the adherents' surplus. As the information problem is too expensive to solve, the final result is that there is no theoretical possibility that low quality terms will be corrected. This makes it necessary to call on the intervention of a third part who, by means of the imposition of a minimum standard of quality improves this situation which is impossible to correct in the market. From this perspective, the present article constitutes an effort to explain the need for adhesion contracts to be regulated.

All the previous arguments constitute an approximation to the problems of the incentives that the proponents have, to fix low quality contents in adhesion contracts, which is no more than an explanation of company behavior in certain circumstances. With this theoretical framework it is possible to analyse the great majority of the clauses of exclusion and limited responsibility in insurance and transport contracts, as well as the clauses relating to the limitation of guarantee in sales contracts, the clauses involving the limiting of responsibility of banks in the payment of bad checks, and the clauses included in black and grey lists of legislation which regulate the content of adhesion contracts, as identical manifestations of the same behavior which needs to be controlled.

Although the theoretical formulation is fundamental to understand the problem, the present article is also a development with regard to the establishing of all these postulates in the real world. In fact, it has been consistently shown that market efficiency is reduced, that there are a large number of low quality contracts agreed, and that there is no relationship between the price charged and the quality offered.

## APPENDIX 1. DEMONSTRATION OF MARKET EQUILIBRIUMS

### 1. DEMONSTRATION OF EQUILIBRIUM 1

1.1. Sufficiency:  $\{(p^*, q^*), (p^*, \underline{q}(p^*))\}$  Is an equilibrium

i. If  $\{(p^*, q^*), (p^*, \underline{q}(p^*))\}$  is offered and there is  $c_1 < Y \leq c_2$ , then all informed adherents will accept the contracts with the combination  $(p^*, q^*)$ . The uninformed adherents (those who decide not to pay for acquiring and processing all the information about contract quality before signing) will contract at random depending on the different contracts offered by the proponents. However, given that the adherents are able to find out the price, they will not go far from  $p^*$ . CONDITION 3 implies that companies receive zero benefit.

ii. In the case of a new contract being offered at any price other than the optimum price, in other words  $p \neq p^*$ . This new contract can only be offered to uninformed adherents. But, given that the price is an observable characteristic, when they see that  $p \neq p^*$ , the uninformed adherents will know that they are the only ones who have been offered this new contracts, so they will assume that the proponent offered  $\underline{q}(p)$ , which is the minimum quality level associated with the new price. Thus, the adherents will expect that their profit resulting from the signing of a contract with this proponent will be 0. But, given that the expected profit on signing a contract at random at a price  $p^*$  will be positive<sup>17</sup>, then the adherents will prefer to contract at random among the proponents who have price  $p^*$ , therefore adhesion contracts with  $p \neq p^*$  will not be selected. Knowing this, the proponents will not offer a different price to  $p^*$ , as if they do so, they will receive negative benefits. It is concluded that no price other than the optimum price will be offered by the proponents.

iii. If we consider that the proponents are considering offering a new contract with new quality  $q$  such that:

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<sup>17</sup> Expected profit would be given by:

$$EU = \alpha[U(p^*, q^*)] + (1 - \alpha)[U(p^*, \underline{q}(p^*))] > 0$$

In addition, the minimum quantity that each proponent should offer will be:

$$\hat{n}(p^*, q^*) = (N_1 / M_1) + \hat{n}(p^*, \underline{q}(p^*))$$

$$\hat{n}(p^*, \underline{q}(p^*)) = N_2 / M$$

Where  $M = M_1 + M_2$  y  $M_1$  is the number of proponents who offer  $\hat{n}(p^*, q^*)$  y  $M_2$  are the proponents who offer  $\hat{n}(p^*, \underline{q}(p^*))$

$$\underline{q}(p^*) > q > q^*$$

As freedom of entry is presupposed, the proponents will have zero benefits offering  $\underline{q}(p^*)$ . As the new quality cannot be observed and in any case is inferior to optimum quality, only uninformed adherents will sign this new contract at random. However, given that to include this new quality in the contract would lead to increased costs for the proponents and not an increase in the expected number of adherents to contract with, the proponents would receive negative benefits. Therefore, the proponents will not offer new quality.

Therefore, it may be concluded that the market will not agree on adhesion contracts which contain new quality or new prices, so  $\{(p^*, q^*), (p^*, \underline{q}(p^*))\}$  is an equilibrium.

1.2. *UNIQUENESS.* In the equilibrium there will be only two combinations of price and quality. The adhesion contracts offered by the proponents to informed adherents will have the optimum combination of price and quality  $(p^*, q^*)$ . The adhesion contracts offered by proponents to uninformed adherents will have a combination of price and quality  $(p^*, \underline{q}(p^*))$ .

i. Let us suppose that the proponents who offer contracts to informed adherents offer some other combination(s) of price and quality  $(\hat{p}, \hat{q})$  such that they do not receive negative profits. By definition, the profit related to optimum price and quality is greater than that related to any other combination of price and quality. This is that  $U(p^*, q^*) > U(\hat{p}, \hat{q})$ . So, a proponent can offer an optimum price  $p^*$  and quality just slightly below optimum. Therefore, the combination  $(p^*, q^* - \varepsilon)$  will attract all informed adherents and will generate positive benefits. Thus,  $(\hat{p}, \hat{q})$  cannot be the equilibrium offered to informed adherents. As for  $p^*$  all informed adherents will decide to adhere to the contract offered by the proponent with maximum quality,  $(p^*, q^*)$  will be the equilibrium offered to informed adherents.

i. It must be remembered that the proponents who offer contracts to uninformed adherents have  $\underline{q}(p)$  as a dominant strategy of quality for whatever  $\hat{p}$ . Let us suppose that a proponent offers  $\hat{p} \neq p^*$ . No adherent will contract with this proponent, as the lower quality related to this price means that benefit will be 0. Therefore, adherents prefer to adhere to contracts with  $p^*$ , as the expected benefit is positive in so far as they can

contract with a proponent who offers  $(p^*, q^*)$ , according to what was shown in number ii. of the demonstration of sufficiency. Taking into account that no adherent will contract with proponents who offer other than optimum prices and that the proponents without clients have negative benefit, only the optimum price will be offered to uninformed adherents; therefore a quality other than  $\underline{q}(p^*)$  will not be offered either.

For the above reasons it has been shown that in the equilibrium, there will only be offered contracts which have the combinations of price and quality  $\{(p^*, q^*), (p^*, \underline{q}(p^*))\}$ . In other words, it is not viable that an adhesion contract which has a different combination of price and quality to  $(p^*, q^*)$  and  $(p^*, \underline{q}(p^*))$  can exist in the market.

As a result of sufficiency and uniqueness it has been demonstrated that  $\{(p^*, q^*), (p^*, \underline{q}(p^*))\}$  is an equilibrium of unique form.

## 2. DEMONSTRATION OF EQUILIBRIUM 2

**2.1. SUFFICIENCY.** If  $\{(p^{**}, \underline{q}(p^{**}))\}$  is offered, all adherents will remain uninformed about the quality of the adhesion contracts and will contract at random. Let us consider the case where the proponent offers a combination of quality different from that of the equilibrium which will generate greater profit or zero benefit for the proponents; in other words,  $(p, q) \neq (p^{**}, \underline{q}(p^{**}))$ , such that  $U(p, q) \geq 0$ . This will attract the same number of random adherents. The quantity required will not change for this company, as the adherents can only observe the price; therefore they will assume that the proponents will offer minimum related quality. Then the adherents will suppose that the benefit derived from this new contract will be equal to 0 and not greater or equal (as it really is). Then, it will be the same for adherents to contract  $(p, q)$  or  $(p^{**}, \underline{q}(p^{**}))$ . So, given that the choice is random and adherents will not believe that the new combination offered implies a greater profit or equal to zero, the number of contracts agreed by this proponent will not increase.

As the number of contracts will not increase, but the new combination of price and quality chosen mean that the costs for the proponent will be greater, the benefit will be negative. In other words, if the quantity required is not changed, any other combination of price and quality different to  $(p^{**}, \underline{q}(p^{**}))$  will lead to negative benefits. Therefore, the new combination of price and quality will not be offered. So  $(p^{**}, \underline{q}(p^{**}))$  is an equilibrium.

2.2 *UNIQUENESS*. If  $p$  is not maximized  $p - AC(\underline{q}(p), n)$  given that  $n = n[p^*, \underline{q}(p^*)]$ , then the proponent who offers  $(p, \underline{q}(p))$  will notice that he may receive a positive benefit, if he alters his price level. This means, if the proponent offers a price other than optimum, he has an incentive to change it until it reaches the optimum, as this will generate greater benefits (and benefits maximized to the optimum). These incentives will be maintained until the proponent reaches  $p^*$ . Once this price has been offered, he will offer  $\underline{q}(p^*)$ . Then, the only equilibrium possible is  $(p^*, \underline{q}(p^*))$ . As will be demonstrated in the appendix, this solution is equivalent to offering optimum quality at a supra competitive price. The intuitive explanation for this conclusion is that, given that price is an indicator of quality ( $\underline{q}(p)$ ), quality will fall to the minimum level possible, but not so the price. Therefore, the price may fall to point  $p^*$ , where related quality will be optimum, in other words,  $q^*$ .

### 3. DEMONSTRATION OF EQUILIBRIUM 3

According to what was demonstrated in Proposition 2, the combinations  $(p^*, q^*)$  and  $(p^*, \underline{q}_0(p^*))$  will be offered. There is also  $E_0U(p^*, q)$  which is the profit expected from the adherents for adhering to contracts offered by the proponents when there are only these two combinations of price and quality. Now, let us consider a proponent who offers a combination of price and minimum quality  $(p_0, q_0)$ . If  $U(p_0, q_0) < E_0U(p^*, q)$  no adherent would be attracted by this new combination of price and quality present in adhesion contracts, and therefore no proponent would offer it. In addition, as proponents always choose the minimum quality given price, no combination of price and quality will give adherents a greater expected profit than  $E_0U(p^*, q)$ . This is due to the fact that optimum price is the minimum at which optimum quality is produced. Then, any price other than the optimum will not be the minimum price at which maximum quality is offered, so expected profit will be less than  $E_0U(p^*, q)$ .

If  $U(p_0, q_0) > E_0U(p^*, q)$  uninformed adherents will prefer to adhere to contracts offered at price  $p_0$ ; then the combination  $(p_0, q_0)$  will be offered in the market. But, in any case, given that  $U(p_0, q_0) < U(p^*, q^*)$ , some proponents in equilibrium will continue to offer at  $(p^*, \underline{q}_0(p^*))$  as the quality of the contracts cannot be observed and, in any case, the combination of price and optimum quality will continue to be offered. Then, some opportunistic proponents will continue to offer the minimum quality allowed at the optimum price. As these proponents will have more benefits than those who offer the combination  $(p_0, q_0)$ , then more proponents will continue to enter the market offering  $(p^*, \underline{q}_0(p^*))$  until they reach:

## APPENDIX 2. THE EXISTING RELATIONSHIP BETWEEN $p^{**}$ AND $p^*$

But, what is the relationship which can be seen between  $p^{**}$  and  $p^*$ ? To clarify this we must consider, first of all, the proponent's problem when the observable characteristic is price. It will be demonstrated mathematically that the solution to this problem is the same as that of the problem discussed above. This is because when all adherents are uninformed the combination of price and quality which will be offered which leave them without any profit and, at the same time, will maximize the proponents' benefits. This will only result from a combination of price and quality which is optimum quality but at monopoly prices.

When the proponent faces the problem of deciding the purchase price for the adherents, supposing that quality is the observable characteristic,  $q^{**}$  must be found, so that it maximizes  $\bar{p}(q) - AC(q, n)$  given  $n = n[\bar{p}(q^{**}), q^{**}]$ . Equilibrium in this case will be  $\{\bar{p}(q^{**}), q^{**}\}$ <sup>18</sup>. Therefore,  $q^{**}$  satisfies

$$(1.1) \frac{d\Pi}{dq} = \frac{d\bar{p}}{dq} - AC_q = 0$$

To solve  $AC_q$  we get:

$$(1.2) AC_q = \frac{d\bar{p}}{dq}$$

By definition we have  $\bar{p}(q) = f(q)$  and  $\underline{q}(p) = f^{-1}(p)$ ; and that given that the derivation of a function by the derivation of the inverse function is equal to 1, we get:

$$(1.3) \frac{d\bar{p}}{dq} \cdot \frac{dq}{dp} = 1$$

Solving  $\frac{dq}{dp}$  we get

$$(1.4) \frac{dq}{dp} = \frac{1}{\frac{d\bar{p}}{dq}}$$

We should add that in this problem  $q^{**} = q^*$  as  $\bar{p}(q^{**}) = f(q)$

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<sup>18</sup> This demonstration can be carried out based on that done in PROPOSITION 3. The argument is developed according to the demonstration proposed by Chan & Leland. Chan y Leland (1982) Page 512.

Now, let us consider again the case in which the price should be maximized as the quality is not an observable characteristic. The proponent's problem is to find  $p^{**}$  that maximizes

$$p - AC(\underline{q}(p), \hat{n}) \text{ given that } \hat{n} = \hat{n}[p^{**}, \underline{q}(p^{**})]. \quad \text{Therefore } p^{**} \text{ must satisfy}$$

$$\frac{d\Pi}{dp} = 1 - AC_q \frac{d\underline{q}}{dp} = 0$$

To solve this expression for  $AC_q$ , we get:

$$(1.5) \frac{1}{\frac{d\underline{q}}{dp}} = AC_q$$

Replacing (0.4) by (0.5) it may be concluded that

$$\frac{d\bar{p}}{dq} = AC_q$$

Thus, the two problems have the same solution. So  $p^{**} = \bar{p}(q^{**})$  and  $\underline{q}(p^{**}) = q^{**}$ . Market equilibrium when all adherents are uninformed regarding quality was  $(p^{**}, \underline{q}(p^{**}))$ . Using the fact that  $p^{**} = \bar{p}(q^{**})$  and  $\underline{q}(p^{**}) = q^{**}$  we get

$$\{[\bar{p}(q^{**}), q^{**}]\}$$

Finally, replacing  $q^{**} = q^*$  market equilibrium will be:

$$\{[\bar{p}(q^*), q^*]\}$$

This means that when all the adherents are uninformed, optimum quality will be offered in the contract, but at supra competitive prices, which is equivalent to the result in monopoly markets.

$$U(p_0, q_0) = E_0 U(p^*, q)$$

When this condition is reached, adherents will not worry about adhering to contracts at price  $p^*$  or at price  $p_0$ . In this situation, proponents who offer the combination  $(p_0, q_0)$  will not be able to charge a higher price than  $p_0$ , as the adherents know that the quality related to this new price should be  $q_0$  and will not adhere.

#### 4. DEMONSTRATION OF EQUILIBRIUM 4

For whatever price such that  $q_0 > \underline{q}(p)$ , the profit for adherents will be higher than zero, this is  $U(p, q_0) > 0$ . Thus, this prices will attract uninformed adherents as, the fact that there is no minimum quality  $q = \underline{q}(p)$  means that a profit equal to zero will be generated. The existence of this minimum quality results in the reduction in price not being related to changes in quality, therefore, the proponents will compete for prices which can be observed by the adherents, so that the price will reach the minimum point which will allow for non negative profits, which is  $p_0 = \underline{p}(q_0)$ .

APPENDIX 3. Diagrams No. 2-5

Diagram No. 2

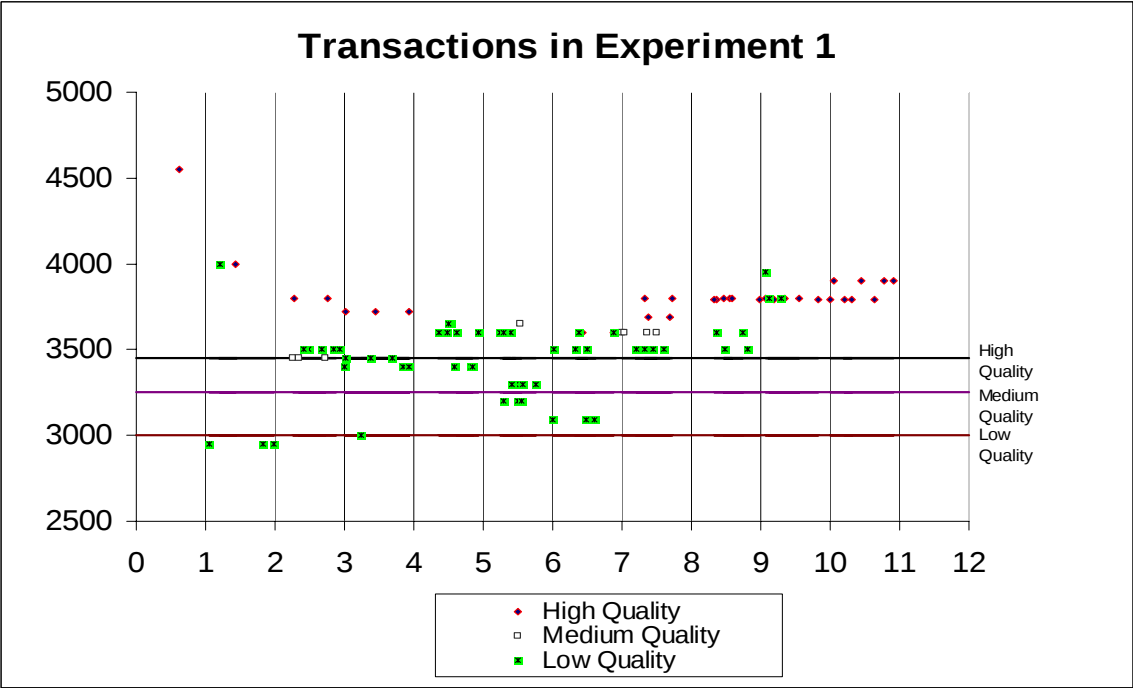


Diagram No. 3

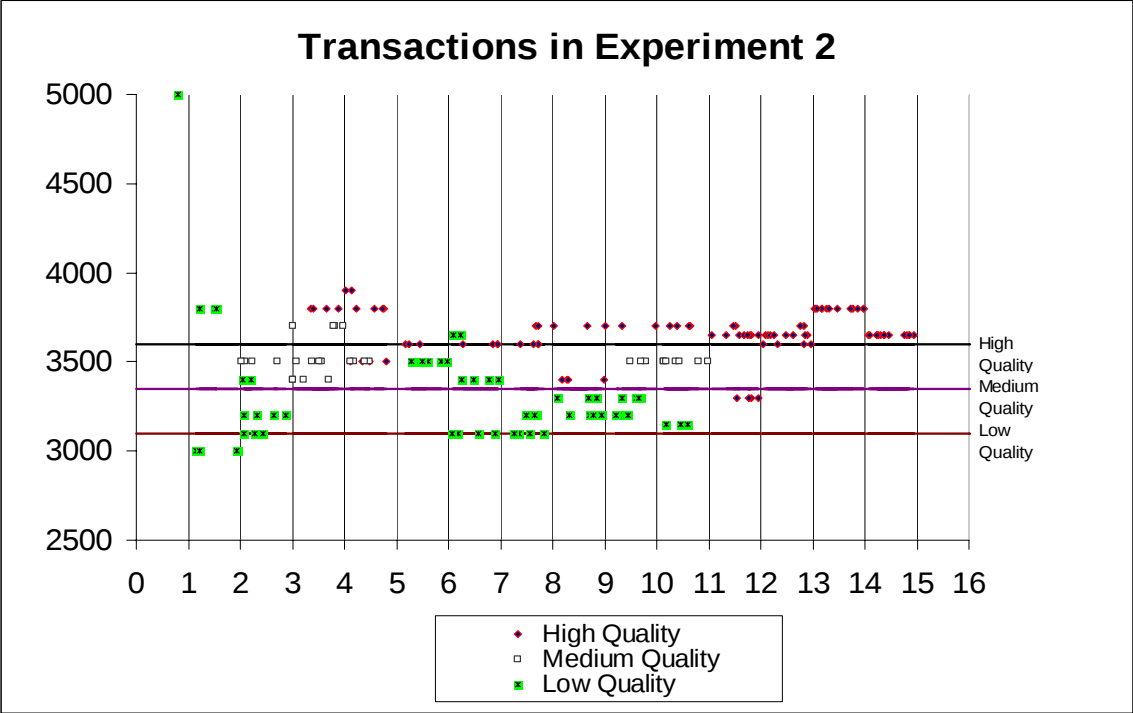


Diagram No. 4

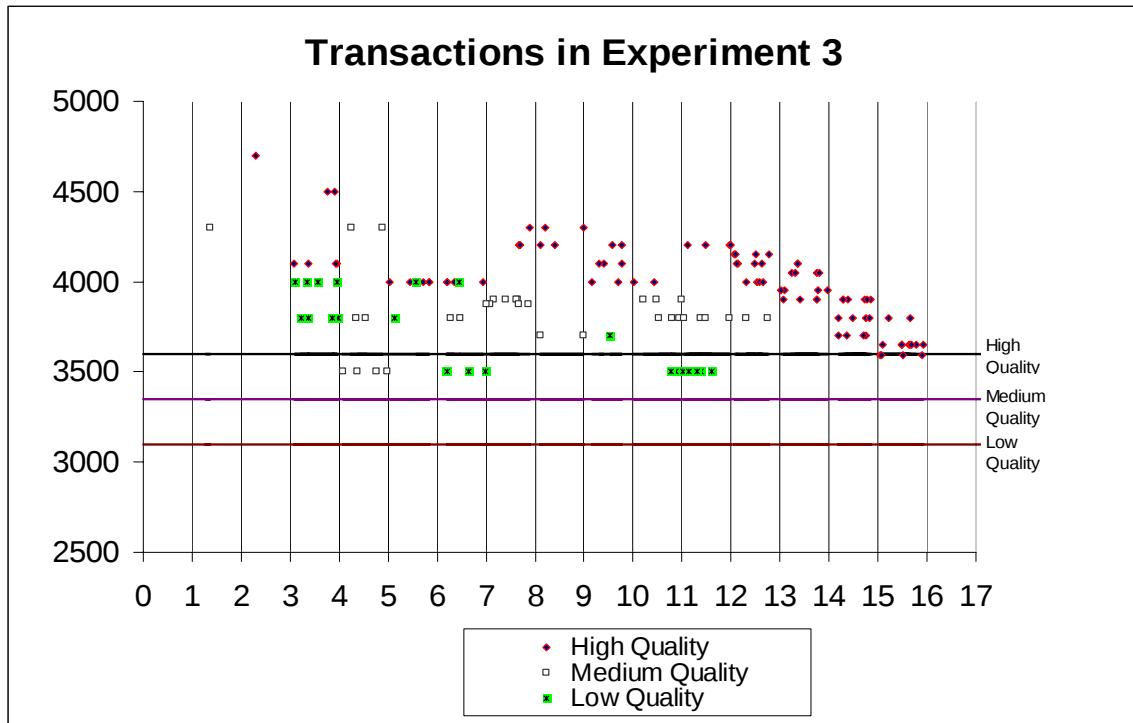
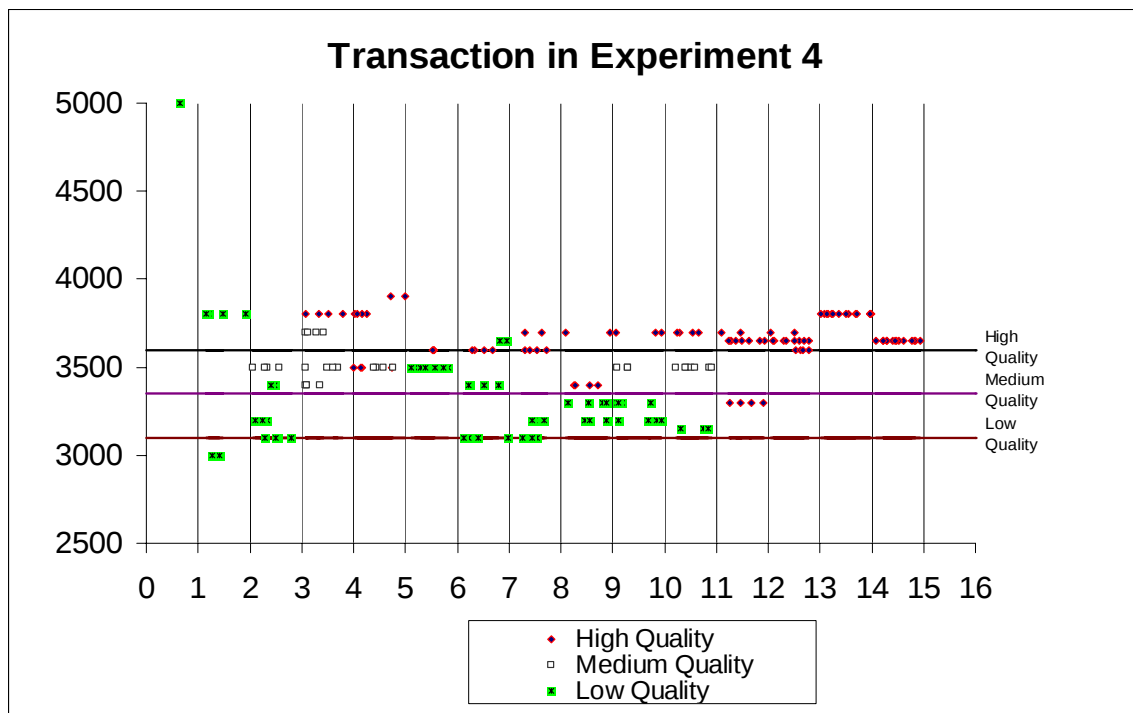


Diagram No. 5



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