THE HARMONIZATION OF LEGAL WARRANTIES IN EUROPEAN LAW: AN ECONOMIC ANALYSIS

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ABSTRACT: EC Directive 1999/44 represents a sizeable step towards the harmonization of European law of warranties in consumer sales. In this article, I consider the goal of harmonization of European sales and warranties law from an economic perspective and subsequently examine some of the main provisions of the Directive in light of current economic theories of consumer protection. I begin with an analysis of conventional and legal warranties, which the law and economics literature considers as promises of the seller to assume specific responsibilities in case the quality or the performance of the purchased item does not conform to the specifications and contractual expectations of the buyer. From an economic point of view, there are three main functions of conventional and legal warranties: (a) insurance; (b) signaling; and (c) incentive functions. In such context, the choice of optimal level and duration of a warranty depends on (a) the risk propensities of the parties; (b) the informational asymmetries between the parties; and (c) the determinants of the probability of a product's lack of conformity or breakdown. The analysis reveals that different optimal levels of warranty may be chosen in real life cases to create the optimal balance of risk allocation and parties' incentives. I consider the results of the economic model in the various scenarios and evaluate the consistency of the unified solution adopted by the European Directive.

Political and legal efforts to harmonize the international law of sales have been long-lived. Since the initial steps undertaken when the International Institute for the Unification of Private Law (UNIDROIT) attempted to prepare a uniform law on the international sale of goods under the auspices of the League of Nations, the 1964 Hague Conventions, with the resulting adoption of two uniform laws, namely the Uniform Law on the International Sale of Goods (ULIS), the Uniform Law on the Formation of Contracts for the International Sale of Goods (ULF), and the 1980 UN (Vienna) Convention on

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the International Sale of Goods (CISG), several other initiatives, at the national European and private levels have taken place.[2] Most notably, on July 7, 1999 the European Community enacted a directive which likely represents the most significant step towards harmonization of European sales and consumer law, intervening on important issues concerning a core category of contract law.

1. The Aims and Instruments of EC Directive 1999/44

The harmonization effort embodied by EC Directive 1999/44 justifies its intervention in national sales law by the fact that, prior to the implementation of the Directive, the existing laws of the Member States concerning the sale of consumer goods were somewhat disparate. The result had been the persistence of national consumer goods markets that differed from one another, distorted competition between sellers, and failure to provide adequate remedies for non-conforming goods. Consequently, the Directive takes aim at disparity in European markets by requiring, above all else, that goods must conform with contractual specifications.

Yet the Directive was implemented in a form which is substantially narrower than the originally proposed drafts: a reduction in scope that was admittedly induced by reverence to the European subsidiarity principle.[3] The introduction of a European source of legal order in this field, albeit under the softer form of Directive, provides the distinctive advantage of granting exclusive jurisdiction to the European Court of Justice for the uniform interpretation of the Sales Directive. In the enacted form, Directive 1999/44

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[2] See the UNIDROIT Codification of the Principles of International Commercial Contracts in 1994, the so-called Lando Principles of European Contract Law, and the various national codifications of Sweden, Denmark, Finland, and the Netherlands of their national sales law.

[3] According to the subsidiarity principle, those who want to give the Community a new competence have the burden of proving that the Member States cannot – either independently or in concert with one another – draft legilslation that satisfies the needs of a European internal market.

is composed of 14 articles with a Preamble.

The Preamble of the Directive identifies its legal foundation as Article 153(1) and (3) of the EC Treaty. In that portion of the Treaty, the European Community resolved to contribute to the achievement of a high level of consumer protection by the measures it adopts pursuant to Article 95 EC.

The same Preamble to the Directive points out that the economic freedoms of the Community imply that consumers resident in one member state should be free to purchase goods in the territory of another member state. The accomplished implementation of the freedom of movement of goods and services requires at this point the creation of a uniform minimum set of fair rules governing the sale of consumer goods.[4]

1.1 The Market for Consumer Protection and the Need for Legal Intervention

Consumer protection is generally justified on the basis of the insufficiency of the market in generating optimal rules. Efficient rules for the protection of consumers' expectations are public goods which increase the reliability of market transactions, correcting asymmetric information and lemons problems. Yet individual consumers have limited incentive to monitor sellers' commitment to rules since each consumer faces a private cost of bargaining and monitoring which may exceed the private benefit of doing so. In the course of their lives, most individual consumers face situations where sellers frustrate their contractual expectations and find themselves without available legal relief. And it is common for individual consumers to renounce the opportunity to seek relief, even if available.

Given this behavior by consumers, the issue from an economics standpoint is one of justifying EU intervention in the field of seller's guarantees. Law and economics scholars have looked at this issue from two perspectives. First, the scholars consider the extent to which legal intervention is necessary in order to induce optimal levels of warranties and consumer protection. Second, the scholars recognize that the residual issues would concern the choice of optimal remedies and best level of government (i.e., national, European, etc.) to implement such consumer protection in view of a

[4] Directive 1999/44 EC Preamble, paragraph 2.

unified European marketplace.

In the law and economics literature, the general trust in the market is qualified by an explicit consideration of the mechanisms that may induce individual parties to fall short of efficient bargaining towards efficient levels of consumer protection.[5] More specifically, economic analysis would investigate the ability of competitive market forces to induce professional sellers to offer the optimal level of warranties in order to maximize the available opportunity for profit in their sales. Economic analysis would also consider whether multiple potential buyers and sellers would voluntarily contract for a uniform level of warranty, or whether the diverse preferences and cost functions of individual buyers and sellers would lead buyers to select different levels of consumer protection.

Once these issues have been considered through economic models of analysis, the optimal design of rules can proceed with a fuller understanding of the comparative advantage of alternative legal solutions in the pursuit of the chosen goals.

If efficient bargaining is likely to take place among the parties, the provision of uniform rules for sellers' warranties may still be justified as an instrument to minimize the transaction costs for the express specification of the warranty. Like most rules that are aimed at minimizing transaction costs, however, these provisions could be designed as waivable default rules, rather than mandatory standards. Therefore, in considering legal intervention as an instrument of harmonization of national law, we must still consider further questions.

1.2 The Choice of Instrument for Legal Intervention: Coordination and Cooperation Problems

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[5] Wehrt (2000) studies bilateral problems under long term business relationships suggesting that much of the concern for legal intervention is misplaced in this situation. Even in one-shot interactions, market mechanisms (e.g., reputation, business accreditation and ratings, etc.) serve valuable roles in reducing the importance of legal remedies for the protection of consumers. In many such studies, the general conclusion is that there is no need for legal intervention in this field.

When legal intervention is employed as an instrument in the marketplace to create optimal consumer protections where conventional warranties are deemed inadequate, significant obstacles must be cleared concerning the choice of type and level of legal intervention.

The fundamental premise of the Directive's intervention is that, in the absence of minimum harmonization of the rules governing the sale of consumer goods, the completion of the European internal market could be impeded. According to this premise, the exploitation of the opportunities offered by new communication technologies (which allow ready access to distribution systems in other member states) and the benefit from the existence of a large market in general are at risk of being compromised by the presence of fragmented and heterogeneous consumer protection. In light of this premise, the creation of a common set of minimum rules of consumer law, valid no matter where goods are purchased within the Community, is regarded as an important tool for strengthening consumer confidence and enabling consumers to make the most of the internal market.

According to the preliminary findings of the European Commission, the main difficulties encountered by consumers and the main source of disputes with sellers concern the non-conformity of goods with the contract. The relevance of this issue in transnational sales rendered it desirable to approximate national legislation governing the sale of consumer goods. The choice of instruments of harmonization (i.e., directives) rather than direct unification (i.e., regulations) was justified by the need to avoid disruptive interference with the provisions and principles of national law relating to contractual and non-contractual liability.

The main principle of the Directive , namely that goods must, above all, conform with the contractual specifications, should appear far from controversial. All national legal systems of the European Union adhere to the basic principle that the quality and characteristics of the goods delivered must conform with the contract.

But in spite of the common recognition of this principle across different national legal traditions, it was deemed necessary to trigger further harmonization to avoid inadequate and unbalanced protection across different jurisdictions. In choosing the instrument of harmonization – the European Directive – the European lawmakers have implicitly resolved the preliminary question concerning the need for centralized intervention. Their resolution amounts to a denouncement of the difficulties Member States have in

coordinating their efforts and legislating an optimal and uniform provision of consumer protection on their own.

Thus, according to the statements contained in the Preamble of the Directive, certain national legal traditions cannot rely solely on the existence of the general principle of conformity to ensure a minimum level of protection for the consumer. The Preamble promotes the enactment of additional national provisions to ensure that the consumer is protected in cases where the parties have agreed to no specific contractual terms, or where the parties have agreed to contractual terms which directly or indirectly waive or restrict the rights of the consumer, rendering such agreements ineffective.

It is noteworthy that the application of the minimum consumer protection contemplated by the Directive extends to transactions that have no foreign connections (e.g. a contract of sale among national parties that is concluded and performed in their nation state). The reason for the European concern over the regulation of merely national sales transactions is explained by the need to provide uniform rules across legal systems to avoid the danger that national lawmakers may provide differential treatment of national transactions thus creating a home bias in the competitive European market.[6]

2. The Economics of Conventional and Legal Warranties

The law and economics literature considers a warranty as a promise of the seller to assume specific responsibilities in case the quality or the performance of the purchased item does not conform to the specifications and legitimate contractual expectations of the buyer. This discussion is concerned with both conventional warranties, which are chosen and made into a contract by the parties in a transaction, and legal warranties, which are created by operation of law in specified transactions. From an economic point of view there are three main functions played by legal and conventional warranties: (a) Insurance function; (b) Information revealing function; (c) Incentive function.

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[6] Note that the Member States remain competent for the development of their national law of sales, but such competence should not be exercised in ways that may create nationalistic or anti-competitive biases in favor of national parties.

The pursuit of these three functions is not always possible with the choice of a single warranty instrument. As shown in Table 1 below, only for a small subset of situations does the same level of warranty yield the optimal balance of risk allocation and incentives between the parties. The restricted conditions under which each alternative warranty instrument yields optimal results in each dimension will be discussed in the remainder of Section 2.

For desire of graphical simplicity, Table 1 considers only three discrete values of warranties (i.e., full, partial, or no warranty). In real life, levels of warranty are continuous and the optimal level of conventional warranty will be chosen by lawmakers and by the contracting parties according to the relative weight attached to each of the three parameters of optimization (i.e., optimal level of insurance, information disclosure and performance incentives).

As a preliminary step towards understanding the issue addressed by the Directive, it is important to consider the choice of equilibrium level of warranties that the parties would contractually agree upon under different conditions. As summarized in Table 1, from an economic point of view, the equilibrium choice of level and duration of a contractual warranty depends on (a) the risk propensities of the parties; (b) the determinants of the probability of a product's lack of conformity or breakdown; and (c) the private information available to the contracting parties. From an economic incentive viewpoint, different optimal levels of warranty should be chosen in all such cases in order to create the optimal balance of risk allocation and parties' incentives.

	Doesn't Matter	Full Warranty	Partial Warranty	No Warranty
Insurance	Both Risk Neutral	Buyer Risk Averse	Both Risk Averse	Seller Risk Averse
Signaling	Symmetric Information	Seller has Private Information	Both have Private Information	Buyer has Private Information
Incentives	Exogenous Risk	Seller Controls Risk	Bilateral Precaution	Buyer Controls Risk

Table 1: Parameters for the Choice of Optimal Warranties

In the following sections, I consider in greater detail the results anticipated in Table 1, examining the equilibrium choice of contractual warranties when the terms are negotiated by the parties in different environments. Such optimal choice of conventional warranty may not coincide with the default warranty offered by a seller to a large population of consumers. I will finally consider the choice of minimum mandatory legal warranties imposed on all sellers by the legal system. After evaluating the results of the economic model in the various scenarios, Section 3 will examine the consistency of the Directive with the solutions of the economic model.

2.1 Exogenous Risk: Warranties as Insurance

Let's start our analysis considering the simplest case in which the probability of non-conformity, defects, or failure of the sold goods is merely exogenous, in the sense that neither the seller nor the buyer have any control over the probability of such defects. Further assume that the information available to the contracting parties at the time of sale is symmetric. In this situation, the allocation of the risk of products defects on one party or the other

has no signaling or incentive effects. In all such situations the optimal allocation of the risk is exclusively determined by the relative risk aversion of the parties.

(A) Seller is Risk Neutral/Buyer is Risk Averse

Let's consider the simplest and more natural case of risk-averse consumers purchasing goods from risk-neutral sellers.[7] Buyers and sellers have symmetric information (e.g., imagine the production of goods where a given percentage of produced items becomes defective within a short period of use and such percentage is known *ex ante* by both parties) and thus have similar expectations concerning the failure rate of the sold goods. Since the probability of defects is exogenous and cannot be influenced by either the sellers' level of care in production or the buyers' level of precaution in the use of the item, in this case the contracting parties would naturally bargain for a full warranty in case of products defects.

(B) Seller is Risk Averse/Buyer is Risk Neutral

An opposite result would obtain in the converse case of a risk-averse seller and a risk neutral buyer. Here, the buyer would be the best risk-bearer and thus – if all other conditions apply – the parties would naturally bargain for a sale with no warranty. The buyer serves as the seller's insurer for the exogenous risk of product failure. Any other allocation of risk (e.g., full warranty or partial warranty) would be Pareto inferior, since both parties could be made better off shifting the entire risk on the risk neutral party.

(C) Homogeneous Risk Propensities of the Parties

For desire of completeness, let's consider the two remaining cases where

[7] Sellers are generally assumed to be less risk averse than buyers, given the different financial structure and ability to insure wholesale risk. Second, sellers are generally professionally involved in the business of trade and are thus in a better position to self-insure, distributing the risk of non-conformity over a large number of sale transactions.

the contracting parties are either (a) both risk-neutral; or (b) both risk-averse.

In the event of both parties being risk-neutral, alternative allocations of the risk will yield identical levels of aggregate utility. The parties are in fact indifferent to a zero-mean risk and will thus not have any incentive to enter into a contract to reallocate such risk. In this final case of both parties with some positive level of risk aversion, the optimal allocation of risk is mixed. Since risk aversion induces increasing marginal costs (in utility terms) with an increase in the value of the risk, parties would naturally bargain to split the risk of product defect or failure, with a resulting choice of partial warranty.

2.2 Asymmetric Information: Warranties as Signals

Let's consider the different group of cases in which the risk is still exogenous but is known with different degrees of accuracy by the contracting parties. For the sake of expositional clarity, let's further assume that both parties are risk neutral so that alternative levels of warranty are equally desirable from the risk allocation point of view.

When operating under such an assumption, the only relevant criterion for choosing among different levels of warranty is the effect that alternative warranty protection may have on the parties' incentives and ability to reveal information. In the law and economics literature, this function of conventional warranties is known as signaling: the choice of warranty reveals truthful and credible information to the other party.[8] This information-revealing function materializes in different ways according to which of the contracting parties possesses private information not known to the other.

In the following sections, I will consider the three possible combinations of asymmetric information and the role played by warranties in each situation.

(A) Seller has Private Information: Warranties as Signals of Quality

Much of the literature in the field of consumer protection grows from the notion that most of consumer transactions are chronically affected by

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[8] Signaling literature can be traced back to Spence (1973) and Grossman (1981). For an application of signaling to sales under asymmetric information, see Wehrt (2000).

asymmetric information, where sellers are assumed to have informational advantages due to economies of scale in the acquisition of information, or due to other natural advantages in gathering information concerning the true quality of the sold item.[9]

For the purpose of our analysis, imagine the simple case in which different producers are faced with a varying probability of defective goods. In our case, producers cannot distinguish between defective and non-defective items at the moment of sale, but they do have better information than the buyers concerning the percentage of produced goods that will likely become defective within a short period of use.

This scenario plays out in such a way that, even though both parties are aware that the probability of defects is exogenous and is not influenced by their behavior, they end up with asymmetric expectations concerning the failure rate of the sold goods. The buyer will have an expectation of the failure rate equal to the market average, while the seller will have an expectation of the failure rate equal to his specific production sample. Such asymmetric information creates a problem that is similar in nature to the lemons problem first considered by Akerlof (1970).

In the presence of asymmetric information, the seller's willingness to offer a warranty (and to add the price of the warranty to the sale price) is a credible signal of the information available to the seller. Through the mechanism of contractual warranties, sellers facing different exogenous probabilities of products defect will be able to offer easily observable and credible information to potential buyers. Warranties are a costly and thus credible signal which can be seen as valuable "tools of information transfer" (Wehrt, 2000, p. 182-187).

From a practical standpoint, the signaling mechanism works because sellers know the actual probability of defects of their products and can compute the resulting warranty costs. Since low-quality sellers face higher probability of product defects, they face higher warranty costs. Assuming enforceable warranty contracts and assuming away situations of truncated liability (e.g., bankruptcy or dissolution of the manufacturer's company, etc.),

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[9] Note that, unlike asymmetric bargaining power explanations of consumer protection law, asymmetric information explanations do not necessitate the assumption of market power. Even in a competitive market equilibrium, asymmetric information may affect the transactions.

each seller is able to offer a warranty only if he or she can receive a price at least equal to the expected cost of future warranty claims (i.e., repairs, replacements, etc.).

This price mechanism will yield a separating equilibrium such that different types of sellers or manufacturers will be able to offer different types of warranties (or similar warranties, but only at different prices). In turn, buyers will be able to infer the actual type of seller from the observation of the warranty that they offer, thus correcting the asymmetric information problem faced by the contracting parties. In this way, the signaling function of warranties assists buyers and sellers with their individuals inquiries in the course of a transaction. Signaling allows for the transmission of credible information and it plays the general role of correcting information asymmetry between parties and facilitating trust.

(B) Buyer has Private Information: Warranties as Signals of Risk

While it is reasonable to assume that sellers may have an informational advantage concerning the qualities and attributes of a good, it may be natural to assume that the consumer may have private information concerning the future use of the good and the potential harm that he or she would suffer in case of failure of defect of the purchased item.

From an economic point of view, interesting results can be obtained if the buyer possesses private information that is not available to the seller. Following this line of thought, the choice of warranty will not signal the quality (or defect rate) of the good, but rather the content of the private information of the consumer, namely the expected level of harm that he or she faces in case of product failure.

Let's consider the case in which individual buyers face different levels of loss for the event of a product's defect. If sellers cannot differentiate a high-loss buyer from a low-loss buyer, as in the case of asymmetric information, a single level of warranty will be offered to all consumers. However, if individual bargaining is possible, the buyer's willingness to forego warranty coverage in exchange for a discount can signal the actual level of risk that he or she faces. Risk-averse consumers facing a risk above the average level will demand a warranty which fully compensates their individual losses, while low-loss buyers will prefer a discount (equal to the average expected warranty cost faced by the seller) instead of the full warranty coverage. Also in this case, the

contractual choice of warranty may serve a socially valuable signaling function.

(C) Bilateral Asymmetric Information: Warranties as Matching Devices

We can finally consider the case of bilateral asymmetry (i.e., the case in which both the buyer and the seller have private information which is not known by the other contracting party). In a situation where both asymmetric information problems illustrated above are present, only the seller knows the actual defect rate of his or her products, and only the buyer knows the actual loss faced in case of product failure.

Together, the combined presence of the two asymmetric information problems (i.e., bilateral asymmetry) poses an interesting coordination problem. As generally shown by Spence (1977, p. 570) and Wehrt (2000, p. 184) the solution of this problem is characterized by the Pareto optimal matching of different sellers and buyers. Sellers will offer a broad variety of warranty coverage in order to signal their private information concerning quality. Buyers will demand varying levels of warranty coverage to signal their individual risk levels. In equilibrium, high defect rate sellers will serve customers with small individual losses, whereas low defect rate sellers will sell to more sensitive buyers. If a continuous level of signaling is possible, the outcome will be Pareto-optimal, coinciding with the efficient matching of individual buyers and sellers that would occur in an ideal world of truthful disclosure and symmetric or observable information.[10]

2.3 Endogenous Risk: Warranties as Incentives

In real life, the probability of defective goods is not merely exogenous

[10] See Spence (1975), Grossman (1981), and Wehrt (2000) for extensions of the asymmetric information and signaling problems under different market structures. More generally, these contributions bring to light the fact that if different equilibrium prices are possible for the sold goods, warranties lose some informational value. For an application concerning oligopolistic markets, see Gal-Or (1989).

because it can be influenced by the behavior of the parties. Therefore, we should distinguish three different hypotheses: (a) situations of unilateral incentives where only the seller influences the probability of non-conformity; (b) situations of unilateral incentives where only the buyer influences the probability of non-conformity; and (c) situations of bilateral incentives where both the buyer and the seller influence the probability of such event.

In all cases of endogenous risk, warranties operate as incentives for the parties to invest in the production and preservation of quality. As Priest (1981) pointed out, a warranty is an instrument with which the parties control the efforts of the seller and buyer to provide and to maintain a functioning product.

Similar to the previous cases, we will assume in the following analysis that the only consideration for the choice of warranty level is the relative impact of alternative levels of protection on the incentives of the parties (i.e., assuming away insurance and signaling concerns in the choice of warranty instruments).

(A) Seller's Unilateral Incentives: Warranties as Incentives for Quality

The first and most natural case is the case in which only the seller can effectively influence the probability of a product's defect or non-conformity. In a unilateral seller's incentive case, the only relevant variable is the effort of such party to reduce the defect rate of the sold goods to an optimal level. In different contexts, the law and economics literature terms this criterion of allocation of liability as the "cheapest risk avoider" criterion.

The intuition behind this concept is straightforward. Since the seller is in the best position to minimize the risk of product's defect, it is desirable to shift on such party the primary liability for the case of product's failure. Any mitigation of the seller's liability would create sub-optimal incentives to minimize the endogenous risk.

(B) Buyer's Unilateral Incentives: Warranties as Incentives for User's Care

Situations of unilateral incentives where only the buyer influences the probability of non-conformity are less frequent but not impossible occurrences.

Recall the case above and note that this is the converse. Here, only the buyer can affect the probability of a product's failure through its varying level of precautions in the use. In such a unilateral incentive case, the only relevant variable is the effort of the buyer in minimizing the failure rate of the purchased item by adopting optimal care and activity level when utilizing or storing the product.

Predictably, the "cheapest risk avoider" criterion yields the converse optimal allocation of liability. Since the buyer is the only party that can influence the probability of product's failure, it is desirable to shift on such party the entire residual liability. Any form of partial or full warranty would reduce or eliminate the buyer's incentives to adopt due care in the use of the product, with an increase in the endogenous probability of failure.

(C) Bilateral Incentives: The Elusive Balance

The third case is one where both the buyer and the seller influence the probability of such event. Situations of bilateral incentives are the result of a combination of the two unilateral problems considered above. Whenever the two incentive problems can be separated, the bilateral problem can be dealt with as a mere sum of two unilateral problems. This approach presupposes that it is possible to ascertain *ex post* whether a certain defect or lack of conformity is attributable to one or the other party. As pointed out by Wehrt (2000), under this approach, the optimal warranty would provide full coverage for those risks which are under the control of the seller and no warranty for those risks which are under the control of the consumer.

In the market as we know it, however, a bilateral precaution problem cannot be easily reduced to the mere sum of the two elementary unilateral incentive problems. This is borne out in cases where the same kind of defect can be caused by the lack of precautions of either party. In all such cases where the causal contribution to the defect, lack of conformity or failure of the product cannot be ascertained *ex post*, Priest's (1981) solution is not viable. In these cases, no first best outcome can be created by a single warranty instrument. A second best outcome can be pursued through partial warranties

which leave the incentives of both parties partially aligned.[11]

2.4 Optimal Duration of Conventional and Legal Warranties

As an empirical observation, it is interesting to note that both conventional and legal warranties generally shrink the scope of coverage using time limits. Such warranties only apply with respect to failures of experience qualities which manifest themselves within the established warranty period.[12] The fact that most conventional warranties and all mandatory legal warranties have time limits has a relatively straightforward economic explanation.

Commonly, if sellers provide default warranties instead of negotiating them on a case-by-case basis, warranties are offered to last for a period of time roughly corresponding to the average (or modal) time period likely requested by consumers. Even in situations where informational asymmetries are not of concern and where the risk of product failure is merely exogenous (i.e., it is not affected by the precautions of the seller or the use of the buyer), warranties exercise an insurance function.The seller provides two goods or services: (a) the item sold; and (b) an insurance policy for the sold item.

Since under general warranties, the terms of the standard warranty are the same for all buyers, individual parties would need to negotiate different warranty terms on a case-by-case basis in order to have adequate coverage. Applying the majoritarian criterion of default rules (when transaction costs are present), the optimal choice of default warranty is the one that minimizes the sum of the transaction costs of renegotiation of separate warranty arrangements and reduces the impact on efficiency of deadweight losses of suboptimal warranties.

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[11] According to law and economics scholars, full warranties should be expected for situations where the probability of defect is determined exclusively by the seller (Wehrt, 2000). If such probability is also influenced by level of care of the buyer (Priest, 1981; Cooper and Ross, 1985) or by the activity level in the use of the product (Wilson, 1977; Rothschild and Stiglitz, 1976; Emons, 1989a) partial warranties would be expected.

[12] See Priest (1981) and Wehrt (2000).

3. The EC Directive 1999/44 and the Economics of European Consumer Protection

As noted in the beginning of this discussion, the main purpose of Directive 1999/44 is to establish a minimum level of consumer protection for non-conforming goods in the sales law of the Member States, facilitating the process of coordination and harmonization in this critical area of domestic law. Conventional warranties have been analyzed as naturally occuring market forces designed to achieve such consumer protection. By introducing legal - as opposed to conventional - warranties to expand the measure of consumer protection in the internal market, the Directive is chiefly concerned with the remedies of the consumer against the seller. Article 1, in specifying the scope of the Directive, approximates the laws, regulations and administrative provisions of the Member States on certain aspects of the sale of consumer goods and associated guarantees. Article 1 takes this approach to ensure a uniform minimum level of consumer protection in the context of the internal market.

For the purposes of the Directive, the protection is granted to consumers (defined as individuals or entities acting for purposes which are not related to their trade, business or profession) when contracting with seller (defined as individuals or entities who, under a contract, sell consumer goods in the course of their trade, business, or profession).[13] Article 1 curiously limits the scope of protection in favor of natural persons. There is no obvious economic reason to exclude the protection for juridical persons as the Article does. Indeed, the main rationale for the protection – namely, the existence of asymmetric incentives to invest in information and bargaining on the warranty terms of the contract – is equally applicable to natural and juridical persons that do not make trade their principal business.

Restricting harmonized consumer protection to the case of professional sellers and commercial traders finds precedent in the findings of law and economics inasmuch as most market failures are due to asymmetric bargaining

[13] Article 1 of the Directive allows the Member States to define the term "consumer" narrowly, excluding the sale of second-hand goods at public auction where consumers have the opportunity of attending the sale in person.

and information of the parties.

For lawmakers, the residual hypotheses of sales contracts carried out by occasional sellers for new or second- hand goods presents a different set of issues that is not homologous to those treated in the Directive under consideration. The reason for the lower preoccupation for sales contracts entered into by repeat buyers (e.g., a retail business purchasing goods from upstream suppliers) is due to the presence of effective market mechanisms that constrain the behavior of sellers. Indeed, the law and economics literature has on several occasions pointed out the existence of important market mechanisms such as reputation, which functions to promote cooperative outcomes in a market economy with repeat interactions. Unlike occasional buyers, professional traders have relatively easy access to information concerning the past dealings of their potential counterparts. The expected level of satisfactory performance in the absence of legal remedies is higher when past contractual behavior is observable by potential contracting parties. Present defection in an exchange, while providing immediate benefits for the defecting party, will have a negative impact on the likelihood of profit-generating exchanges in the future. In many real life contexts, uneforceable "gentlemen's agreements" are honored in commercial practices where reputational constraints are at work. In these contexts, the reliance on spontaneous enforcement mechanisms is most desirable, given the avoidance of expensive legal enforcement. While it should be noted that, with the extension of the EU market, repeat interaction and reputation are less effective, it should also be noted that social scientists view the introduction of legally enforceable remedies as corrosive to reputational value and social recognition of voluntary compliance. This corrosion of value weakens the stability of voluntary compliance in the marketplace.

As with the traditional solutions adopted by the legal orders of the Member States, the Directive makes the seller directly liable to the consumer for the conformity of the goods with the contract. The seller remains obviously free, as provided for by national law, to pursue remedies against the producer or against a previous seller in the same chain of contracts, unless he has renounced such rights in his dealings with the upstream suppliers and intermediaries. The Directive, in other words, governs only the guarantees concerning the final link in consumer sales, leaving untouched the rules and commercial practices concerning the other contracts between the seller, the producer, a previous seller, or any other intermediary.

This limit on the scope of the prescribed protection is consistent with empirical observations concerning the exclusion of warranties (or the adoption of more limited coverage) with regard to certain uses which depend on the buyer's intermediate input. For example, Wehrt (2000) points out that exclusions in warranties are typical for retailing and commercial uses since the retail buyer generally influences the final quality of the sold items through her own activity. As a result of such limitation in the scope of the Directive, the norms governing the protection that the retail seller can obtain against his upstream suppliers and producer of the goods remain governed by different commercial practices that are followed by professional traders within the limits specified by national law.

3.1 The Principle of Conformity with the Contract

The substantive provisions of the Directive specify basic rules for the practical application of the principle of conformity with the contract, introducing a rebuttable presumption of conformity with the contract covering the most common situations.

Article 2 defines lack of conformity with the contract and outlines a criteria for distinguishing lack of conformity from true conformity. According to this provision, the seller must deliver goods to the consumer which are in conformity with the contract of sale.[14] Consumer goods are presumed to be in conformity with the contract if they: (a) comply with the description given by the seller and possess the qualities of the goods which the seller has held out to the consumer as a sample or model; (b) are fit for any particular purpose for which the consumer requires them and which he made known to the seller at the time of conclusion of the contract and which the seller has accepted; (c) are fit for the purposes for which goods of the same type are normally used; (d) show the quality and performance which are normal in goods of the same type

[14] Directive 1999/44 Article 2 (1). Article 2 (5) extends the protection to the case of lack of conformity resulting from incorrect installation of the consumer goods shall be deemed to be equivalent to lack of conformity of the goods if installation forms were part of the contract of sale of the goods, and if the goods were installed by the seller or under his responsibility, or when the problem was occasioned by shortcoming in the installation instructions.

and which the consumer can reasonably expect given the nature of the goods and taking into account any public statements on the specific characteristics of the goods made about them by the seller, the producer or his representative, particularly in advertising or on labeling.

Unlike the mandatory minimum standards, such presumption operates as a waivable default rule, which does not restrict the principle of freedom of contract. In the absence of specific contractual terms, as well as where the minimum protection clause is applied, the elements mentioned in this presumption may be used to determine the lack of conformity of the goods with the contract. The quality of the goods and the characteristics of the performance which consumers can reasonably expect will depend *inter alia* on whether the sale concerns new or second-hand goods. The elements mentioned in the presumption are cumulative.[15]

3.2 Search Properties versus Experience Properties: Redefining the Principle of Non Conformity

Much of the value of a sold good depends on its properties. Some of the properties can be observed by both parties at the time of purchase. These verifiable attributes are the object of an information search by the buyer and have thus been described in the law and economics literature as "search properties" (Nelson, 1970; Wehrt, 2000). Other characteristics of a sold good cannot be directly observed at the time of purchase. These non-verifiable characteristics (e.g., durability, functionality, etc.) are only revealed through the use of the item overtime. These qualities are described as "experience properties," given the fact that their presence is only revealed through experience some time after the sale (Wehrt, 2000). The remaining class encompasses those characteristics that cannot be verified through search or experience, and are classified as "credence properties" (Darby and Karny, 1973).

Generally, Article 2 of the Directive limits the scope of warranties prescribed by the Directive to failures of the experience qualities of a sold

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[15] The Preamble to the Directive specifies that if the circumstances of the case render any particular element manifestly inappropriate, the remaining elements of the presumption nevertheless still apply.

item. The reason for such bright line limitation is most sensible, given the fact that credence properties are not ascertainable by a third party decision-maker. No judge or arbitrator could objectively determine if such properties are effectively present and therefore their existence cannot constitute the object of an enforceable contractual promise. Equally sensible is the exclusion from the standard legal warranty on goods of those search attributes that can be inspected by the buyer free of cost at the time of purchase. Such exclusion is explainable as a method to create incentives for the *ex ante* information and reduction of *ex post* litigation. Conversely, features that are not easily observable or searchable by the buyer fall within the scope of the warranty protection, thus creating disclosure incentives for the seller, if he or she possesses private information that is not readily observable by the buyer.[16]

EC European Directive 1999/44 is in this respect consistent with the economic model. Quite interestingly, the Directive excludes the applicability of the rules for lack of conformity if, at the time the contract was concluded, the consumer was aware, or should have been aware, the lack of conformity, or if the lack of conformity has its origin in materials supplied by the consumer. This effect of the Directive introduces a subjective test of awareness where there would have otherwise been a merely objective test of conformity. The burden of proof for this element falls, however, on the seller, reducing substantially the scope of practical relevance of this subjective defense.[17]

3.3 Choice of Remedies for Breach of Warranty

The law and economics literature considers the various remedies for lack

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[16] Also in this case, the same conclusion could be reached in the national legal systems of several Member States through the principle of good faith in contracts.

[17] A similar use of subjective tests of actual or imputed knowledge are present in Article 2.4 of the Directive, where it is specified that, among other things, the seller shall not be bound by public statements, as referred to in paragraph 2(d) if he shows that he was not, and could not reasonably have been, aware of the statement in question, or that the decision to buy the consumer goods could not have been influenced by the statement.

of conformity of the sold goods.[18] From various sources in that body of literature emerge alternative remedies such as (a) money-back warranties; (b) price reductions; (c) subsequent-improvement; and (d) replacement warranties.[19] Generally speaking, law and economics builds upon the framework of analysis presented in Section 2 in order to assess the relative merits of alternative remedies.

Looking to the remedies that are actually available, the Directive specifies that in the case of non-conformity of the goods with the contract, consumers are entitled to have the goods restored to conformity with the contract free of charge, choosing either repair or replacement. Failing those options, consumers may seek to have the price reduced or the contract rescinded. It is noteworthy that the Directive contemplates remedies that can be exercised directly by the parties without the immediate intervention of the judge. Unlike hypothetical damage remedies, which require the intervention of third party decision-makers for the quantification of the damages, all the remedies contemplated by the Directive are at the immediate disposal of the parties. Such choice and design of remedies was wise, given their immediate effect towards the minimization of adjudication costs.

The Directive further follows intuitive principles of cost-benefit analysis.[20] According to the Directive, the consumer in the first place may require the seller to repair the goods or replace them unless those remedies are impossible or disproportionate. Whether a remedy is disproportionate should be determined objectively. A remedy would be disproportionate if it imposed, in comparison with another remedy, unreasonable costs. In order to determine whether the costs are unreasonable, the costs of one remedy should be significantly higher than the costs of the other remedy.

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[18]For a comparison of the different measures, see Wehrt (1995 and 2000).

[19] See Wehrt (1995 and 2000), Mann and Wissink (1988 and 1990), Grossman (1981), Cooper and Ross (1985), Gal-Or (1989) for an examination of these alternatives.

[20] According to legal frameworks the principle of proportionality of the remedy is consistent with the legal principles of good faith followed by most national legal systems of Europe.

The solution adopted by the Directive strikes a sensible balance between the need to protect buyers' legitimate expectations and the need to minimize the performance cost of the sale. Some repairs or replacements are not cost effective solutions, and whenever the cost burden of the repair or replacement is disproportionate, it may be efficient to frustrate the buyers expectations, granting a reduction in price or a full money refund, via rescission of the contract.[21] Rescission is thus available to consumers only if other remedies are not effective in the case at hand. This will reduce the risk of opportunistic use of the rescission remedy to satisfy changing needs and preferences of the contracting parties.

Of course, in cases of lack of conformity, the seller may always offer the consumer, by way of settlement, any available remedy. It is for the consumer to decide whether to accept or reject this proposal.[22]

Article 3 of the Directive provides greater detail on the remedies of the consumer. In the instance where the seller's liability arises as a result of any lack of conformity which exists at the time the goods were delivered, Article 3 empowers the consumer (a) to demand that the seller bring the goods into conformity with the contract, through repair or replacement; or (b) to obtain a reduction in price; or (c) to have the contract rescinded with regard to the non conforming goods. The consumer's right to obtain repair or replacement of the goods[23] does not apply when such repair or replacement is impossible

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[21] It is interesting to note that the Directive's principle of proportionality of the remedy operates in two ways, precluding the risk of request of repair when a replacement could be most cost effective and the converse risk of replacement when the repair would more efficient.

[22] In order to enable consumers to take advantage of the internal market and to buy consumer goods in another member state, the Directive includes in its Preamble an informal recommendation that, in the interests of consumers, the producers of consumer goods that are marketed in several Member States attach to the product a list with at least one contact address in every member state where the product is marketed.

[23] The Directive specifies that the right to obtain repair or replacement is intended to be free of charge. In particular, Article 3.4 further explains that the term "free of charge" refers to the necessary costs incurred to bring the goods into

or disproportionate (i.e., it imposes costs which are unreasonable, in comparison with the alternative remedy).

According to the Directive, the test to verify whether a request for repair or replacement imposes a "disproportionate" burden should be conducted taking into account: (a) the value the goods would have if there were no lack of conformity; (b) the significance of the lack of conformity, and (c) whether the alternative remedy could be completed without significant inconvenience to the consumer.[24] The specification of these elements leaves many options open as to how to proceed in balancing these counterveiling elements.

Whenever the right to repair or replacement is not available (i.e., whenever the cost of repair or substitution is disproportionate, when the remedy cannot be carried out without significant inconvenience to the consumer, or when the seller has failed to complete the repair or replacement within a reasonable time), the Directive provides that the consumer may require an appropriate reduction of the price or have the contract rescinded.[25] In the above cases, however, the consumer is only entitled to a reduction in price if the lack of conformity is minor, not contract recision.[26]

Yet the Directive leaves some freedom to the Member States to control the rescission of the contract. National law may provide that any reimbursement to the consumer may be reduced to take account of the use the consumer has had of the goods since they were delivered to him.

Whenever the lack of conformity resulted from an act or omission of such upstream producers or suppliers, the liability of the final seller towards the consumer does not preclude a right of redress of the final seller towards the producer and previous sellers. Article 4 of the Directive establishes that the final seller shall be entitled to pursue remedies against the person or entity

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conformity, particularly the cost of postage, labor, and materials.

[24] Article 3.3 of the Directive further specifies that any repair or replacement shall be completed within a reasonable time and without any significant inconvenience to the consumer, taking account of the nature of the goods and the purpose for which the consumer required the goods.

[25] Article 3.5 of the Directive.

[26] Article 3.6 of the Directive.

liable in the contractual chain. The Directive leaves it to the national law of the Member States to define the individuals or entitites against whom the final seller may pursue remedies, and the relevant remedies and conditions wherein the remedy may be exercised.

In many situations, the right to obtain remedies against other parties in the contract chain is an essential element to create optimal incentives where the final seller in the retail chain is an under-subsidized party, with possible truncated liability. If the final consumer can exercise remedies against parties other than the final seller, upstream suppliers will have incentives to select solvent retailers and monitor the proper responsiveness of retailers towards the final consumers as a way to avoid liability for actions brought by final consumers. The presence of upstream liability of wholesale sellers and producers is further necessary to ensure that the proper incentives manifest for the party with actual control of the likelihood of products defect. Absent upstream recourse, such incentives may be occasionally absent, given the externalities that upstream wholesalers and intermediaries can impose on downstream retailers. The Directive curiously leaves this important matter to national legislation. The Directive – in Paragraph 9 of the Preamble – further allows retail sellers to renounce the right of redress against upstream suppliers and manufacturers. This creates a question as to the actual substance of the protection granted by Article 4 of the Directive. The lack of direct intervention on this issue, while on its face problematic, may however be explained by the fact that the various parties in the supply chain are all repeat players facing optimal incentives to chose efficient terms concerning the background liability of wholesalers and intermediaries.[27] Market forces would in most situations generate socially optimal incentives for the internal allocation of liability among the various parties in the supply chain.[28]

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[27] Put differently, the final retailers have optimal incentives to bargain with upstream suppliers in order to ensure the existence of a right of redress in case of actions by the final consumers. Likewise upstream suppliers and intermediaries will have incentives to secure a right of redress against manufacturers and other parties further up in the supply chain.

[28] This may not be the case whenever the final seller faces truncated liability, given the externality imposed on final consumers, given the high

3.4 Minimum Duration of Warranties

In line with the economic theory of optimal duration of warranties, Article 5 of the Directive also sets a conservative period as a minimum legal warranty. A minimum of two year time should be granted by all national legal systems for buyers to bring the action of liability for lack of conformity.[29] Such minimum term leaves the possibility open legal and conventional warranties to specify longer terms. The time limit is computed from the time of delivery of the goods.[30] The Directive leaves it open for Member States to introduce an additional two-month term of decadence within which the consumer must inform the seller of the lack of conformity. Consistently with the general principles of national sales law, the time limit for the notice requirement is computed from the date on which the consumer detected the lack of conformity.[31] The Directive further establishes a rebuttable

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transaction costs for investigating the financial status of the parties, and given the consequential reduced opportunity for efficient Coasian bargaining.

[29] Article 5 of the Directive states that, if, under national legislation, the rights laid down in Article 3(2) are subject to a limitation period, that period shall be extended to a period of two years from the time of delivery. The language of the Directive seems to leave it open for national law to adopt a longer statute of limitation.

[30] Interestingly, the Directive clarifies at paragraph 16 of its Preamble that the references to the time of delivery do not imply that Member States have to change their rules on the passing of the risk. This clarification is important, given the ongoing process of reconsideration of the traditional *res perit domino* principle in light of the commercial practice which links the passage of risk to physical delivery, rather than abstract passage of title.

[31] The Directive seems to leave the option open for further EU intervention on this subject, when contemplating an ongoing monitoring of the Commission of the adoption and effect of this notice requirement on consumers and on the internal market. The Directive further calls for a report on the use made by Member States to be published in the Official Journal of the European

presumption that any lack of conformity which becomes apparent within six months of delivery existed at the time of delivery.[32]

The Directive specification of the two-year time limit from the time of delivery for the seller's liability for lack of conformity is intended as a minimum term. This allows Member States to: (a) specify longer terms of protection; or (b) compute the period from a time other than delivery, as long as the resulting total duration of the limitation period provided for by national law is not shorter than two years from the time of delivery.

The Directive leaves important specifications of the prescription term to national legislation. Member States may provide for suspension or interruption of the period during which any lack of conformity must become apparent and of the limitation period in the event of repair, replacement, or negotiations between seller and consumer with a view to an amicable settlement. Albeit important, these instruments would operate to increase the total duration of the protection without infringing upon the minimum two year period specified in the Directive.

The Member States are also given freedom to set a period within which the consumer must inform the seller of any lack of conformity. The Preamble to the Directive contains an implicit recommendation that the Member States choose to provide a higher level of protection for the consumer by not introducing such an obligation. In any event, the consumers should have at least two months in which to inform the seller that a lack of conformity exists.[33]

Communities not later than 7 January, 2003.

[32] Article 5 of the Directive.

[33] Paragraph 20 of the Directive encourages Member States to guard against such a period placing at a disadvantage consumers shopping across borders. All Member States should inform the Commission of their use of this provision and the Commission should monitor the effect of the varied application of this provision on consumers and on the internal market. Information on the use made of this provision by a member state should also be available to the other Member States and to consumers and consumer organizations throughout the Community.

3.5 Effect of Seller's Express Guarantees

Article 6 of the Directive deals with the seller's express guaranties. It specifies that all guaranties represented in seller's statements and advertisement shall be legally binding. The seller's express guarantee may exceed the minimum content of the consumers' legal rights under applicable national legislation but may not reduce or limit the content of such minimum protection. The Directive requires that a statement to such effect be included in the guarantee information provided to consumers, making it clear that the consumers' rights under the law shall not be negatively affected by the terms of the guarantee.[34]

The Directive further requires that the terms of the warranty be set out in plain language, with clear inclusion of the essential elements for making claims under the guarantee, notably the duration and territorial scope of the guarantee, as well as the name and address of the guarantor.[35] For certain categories of goods, it is current practice for sellers and producers to offer guarantees on goods against any defect which becomes apparent within a certain period. This practice can stimulate competition. While such guarantees are legitimate marketing tools, they should not mislead the consumer. To ensure that consumers are not misled, the Directive requires that guarantees should contain certain information, including a statement that the guarantee does not affect the consumer's legal rights.

3.6 Revealed Preference and the Marketplace: Mandatory Warranties and Minimum Protection

From an economic perspective, the introduction of minimum legal standards of consumer protection is explained and limited by the finding of

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[34] Obviously, a guarantee which fails to satisfy the above requirements is still valid in favor of the consumer, who can still rely on the guarantee and require that it be honored.

[35] Article 6.3 of the Directive further specifies that, on request by the consumer, the guarantee shall be made available in writing or feature in another durable medium available and accessible to him.

bargaining or information asymmetries that would prevent the parties to reach the socially optimal arrangement in the absence of mandatory consumer protection. In choosing the default or mandatory levels of warranty, the legal planner should approximate the solution that the parties would have reached in the absence of strategic or informational impediments. The legal planner should be aware that it is generally assumed that the observed levels of warranties that are expressly contracted for in the marketplace reflect the true preferences of the parties, achieving the optimal allocation of risk, incentives, and informational burdens on the contracting parties.

The economic model of optimal warranties provides valuable guidance in the design of default and mandatory legal warranties. Such model evidences that the imposition of mandatory legal warranties over the typical lifetime of a product can only be justified in a very restrictive set of circumstances where the probability of product failure is exclusively controlled by the seller. In all other situations of bilateral precaution, and whenever other considerations (e.g., relative risk aversion of the parties and informational asymmetries) call for a truncated form of buyer protection, unlimited lifetime warranties would be inefficient.

Although some form of legal intervention might have been necessary, the Directive promulgates a mandatory minimum warranty protection scheme that is questionable when viewed in the light of the economic model. First, the approach to warranty protection in Article 7 of the Directive is binding and non-derogable. The result is that any *ex ante* waiver of rights by the consumer has no legal effect. As explicitly stated in Article 7, contractual terms or agreements concluded with the seller (before the lack of conformity is brought to the seller's attention) which directly or indirectly waive or restrict the consumer protection under the Directive shall not be binding on the consumer.

Second, Article 7 eliminates the parties' freedom to contract, even when contractual autonomy is exercised with full information of the expected risk and consent. From an economic point of view, this limitation of the parties' freedom to contract is unnecessary because the exercise of contractual autonomy by the parties does not automatically create externalities in society, as long as other buyers can rely on the default minimum warranty. A more prudent approach would require express approval of the waiver or the application of rules concerning the validity of burdensome terms in a standard form contract.

General analysis aside, the Directive makes a partial exception to the mandatory nature of the minimum warranty in the case of second-hand goods where the seller and consumer may agree to a shorter time period for the liability of the seller (not to be less than one year from delivery). The specific nature of second-hand goods makes it generally impossible to replace them, and therefore the consumer's right of replacement is generally not available for these goods. Also, given the different market reality of second-hand consumer goods, the Directive leaves it open for Member States to allow a shortened period of liability.

Most notably, Article 7 (2) of the Directive requires Member States to take the necessary measures to ensure that the mandatory nature of these provisions is not bypassed by contractual choice of law of the parties. Specifically, the Directive expressly states that Member States shall ensure that consumers are not deprived of the protection afforded by the Directive as a result of opting for the law of a non-member State as the law applicable to the contract where the contract has a close connection with the territory of the Member States.

In Article 8, the Article clarifies that the consumers' protection provided for includes only minimum standards. The rights resulting from this Directive can indeed be exercised without prejudice to other rights which the consumer may invoke under the national rules governing contractual or non-contractual liability. Furthermore, Member States may adopt or maintain in force more stringent provisions compatible with the general limits set by the constitutive treaties of the European Union in the field covered by this Directive. As intended, this provision ensures a higher level of consumer protection. But the consumer protection so provided is mandatory: parties may not, by common consent, restrict or waive the rights granted to consumers, since otherwise the legal protection afforded would be frustrated.

According to the Directive, the mandatory minimum principle should apply also to clauses which imply that the consumer was aware of any lack of conformity of the consumer goods existing at the time the contract was concluded. Drafters of the Directive determined that the protection granted to consumers should not be reduced on the grounds that the law of a non-member State has been chosen as being applicable to the contract.

In corroboration of this analysis, empirical studies that have examined conventional warranties adopted in the market in the absence of legal constraints are consistent with the prediction of the economic model. Even in

the absence of some minimum legal protection, parties bargain or expect some minimum level of protection. Likewise, full lifetime warranties are rarely observed in the marketplace.[36]

The dominance of partial warranties is easily explained by the economic model as well. The three main goals of warranty instruments (insurance, signaling and incentives) often require the adoption of different levels of warranty. Under such circumstances, the global optimization over all such maximands requires the balancing of the marginal benefits of the level of warranty in each of the three dimensions. In more intuitive terms, an increase in warranty level may often be beneficial for the buyer's insurance function but might reduce the incentives for the buyer to signal his subjective level of risk or to adopt precautions to avoid subsequent product failure. Symmetrically, a decrease in warranty level may create improved incentives for the buyers precaution in the use of the product, but may frustrate the goal of providing adequate insurance for the seller's signaling of the quality of the good or incentives for improving the quality of the sold products.

Under all such circumstances where there are conflicting aims of the warranty system, and where it is not possible to determine *ex post* whether a product failure is causally attributable to one or the other party,[37] the best

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[36] Priest (1981) offers an empirical account of warranty contracts showing that warranties are most frequently partial and limited in both magnitude and duration. Wehrt (2000, p. 187) reaches similar conclusions observing that "the warranty periods cover only part of the lifetime of a product. Often the warranty periods are restricted to one year. Warranties which last for three or more years can rarely be found, although the lifetime of consumer durables often exceeds ten years."

[37] Note that if a third party decision maker can ascertain *ex post* the causal origin of the product's failure or lack of conformity, some of the tension between conflicting goals of the system (e.g., bilateral incentive problem, etc.) can be eliminated by conceiving a full warranty for problems that are under the control of the seller and no warranty for problems that are under the control of the buyer. In this context, it is possible to consider the frequently observed pattern of warranty exclusions where the coverage is often excluded for improper use of the product or the lack of compliance with regular maintenance instructions. Wehrt (2000) interestingly observes that parts that are housed deep within the product

achievable choice of warranty will represent a second-best optimum, where the sum of marginal benefits of the warranty in all three dimensions is equal to the sum of the marginal costs.

Further, the empirical studies reported in Wehrt (2000) reveal that the choice of conventional warranties is essentially determined by the relative importance of the incentives of the contracting parties for the good functioning of the sold items. Some variance in the observed level of conventional warranties was found when considering bilateral incentive problems such as situations in which both parties could influence the probability of failure of the product.

Since, as noted above, the marketplace is assumed to reflect the true interests of the contracting parties, the imposition of waivable default rules may further improve upon outcomes since it would reduce the contracting costs of the parties. This level of legal intervention is consistent with the economists' approval of the so-called "majoritarian default rules." No such endorsement applies to the crystallization of the default rules as non waivable mandatory rules. Such hard form of legal intervention leaves no degrees of freedom to the parties to accommodate their idiosyncratic needs with the choice of an unconventional warranty instrument.[38]

One final observation concerns the optimal choice of default rules in the presence of asymmetric transaction costs. The common wisdom in this field seems to assume that sellers tend to be repeat players more often than buyers and thus have greater incentives to invest in information and legal counsel concerning the content of their sale transaction. Put differently, repeat players enjoy economies of scale that grant them informational and bargaining advantages in the negotiation of the warranty terms.

According to the normative Coase theorem (Coase, 1960; Calabresi and

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(and thus inaccessible to the consumer's influence), are often protected by an extended warranty. But such extended protection is voided if attempts are made to open the product, exposing the internal parts to the activity of the end user.

[38] It should be finally noted that some residual financial exposure for the buyer is always present under the Directive, given the incomplete opportunity to recover the transaction costs, legal costs, and opportunity costs of the buyers's time when exercising his or her rights under the Directive.

Melamed, 1972) the presence of asymmetric transaction costs shifts the burden of renogotiation onto the party facing the lowest costs. Generally, this Coasian market function will require the creation of default rules that favor occasional consumers, who face higher informational costs and possibly prohibitive costs in initiating the renegotiation of warranty terms. As for the effect on other contracting parties, this shifts the burden of renogotiating the terms of the default warranties onto repeat sellers. Such renegotiation should however be protected from yet new bargaining and information failures, ensuring that the *ex ante* waiver of default warranty terms be explicitly agreed upon by consumers on the basis of full disclosure and information.

3.7 The Expanding Scope of European Intervention

Articles 9 through 14 contain provisions for the implementation of the Directive. Article 9 preliminarily requires Member States to take appropriate measures to inform the consumer of the national law implementing this Directive, encouraging, where appropriate, professional organizations to inform consumers of their rights. Article 11 sets a deadline of 1 January 2002 for implementation and requires notice of the chosen instruments of implementation to the European Commission. Additionally, Article 12 contemplates a review process to be carried out no later than 7 July 2006, examining, *inter alia*, the case for introducing the producer's direct liability.

Legislation and case-law in this area in the various Member States show that there is growing concern to ensure a high level of consumer protection; whereas, in the light of this trend and the experience acquired in implementing this Directive, it may be necessary to envisage more far-reaching harmonization, notably by providing for the producer's direct liability for defects for which he is responsible.

Member States should be allowed to adopt or maintain in force more stringent provisions in the field covered by the Directive to ensure an even higher level of consumer protection.[39]

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[39] According to the Commission recommendation of 30 March 1998 on the principles applicable to the bodies responsible for out-of-court settlement of consumer disputes, Member States can create bodies that ensure impartial and efficient handling of complaints in a national and cross-border context, and which

4. Conclusion

The law and economics literature reveals a tension between conflicting goals of conventional warranties and consumer protection. The dominance of partial warranties in real life warranty contracts is consistent with the prediction of the economic model which suggests that conventional warranties serve different functions (namely, insurance, signaling and incentives) and that the optimal balancing of these different functions often necessitates the choice of partial warranties or limited consumer protection. The scholars that lament the lack of a fully compensatory remedy for consumers' losses in the Directive ignore the full domain of problems that a full compensation scheme might create if the actual causal origin of a product's misfunction or lack of conformity with the parties' expectations is absent. Table 1 makes clear that, in either situation of absent information, full warranties are not only unjustified but also unwise from an economic standpoint.

With the exception of a limited subset of cases which may justify full warranty protection, the above analysis has pointed out a contradiction between the types of mandatory warranties envisioned by consumer protection advocates and the types of warranty contracts that we observe in both real life markets (where partial warranties are dominant) and ideal optimal design of warranties in economic models (where there is selective use of full, partial, or no warranties). The mandatory consumer protection that has been occasionally advocated by some commentators would require a broad brush enactment of fully compensatory remedies without distinguishing the different environmental conditions that might justify such protection. Such form of warranty cannot be unconditionally defended on economic terms. The Directive wisely adopts a choice of remedies that leaves some uncompensated exposure to consumers. Consistent with its own nature as a discrete instrument of harmonization, the Directive omits to provide the specifics that a micro-instrument of legal intervention would necessitate. This choice comports with European Constitutional principles, but it has the added benefit of shifting the burden of wisdom to the national legislators.

In the process of implementing the Directive, national legislators will

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consumers can use as mediators

need to be wary of ideological or dogmatic explanations to bridge the gap between observed equilibrium choices in the marketplace and theories of mandatory consumer protection. The discrepancy between variance in the contractual choice of conventional warranties and the uniformity of mandatory legal warranties has a solid economic explanation. Failing to take into account the revealed preferences of the contracting parties rationally responding to insurance, information, or incentive constraints would in some instances reduce the well being of the contracting parties. The unfortunate economic cost may be socially justified by the need to cure some potential forms of market failure, but not without limits and exceptions. Obviously, as much of the law and economics literature concludes, the design of optimal warranties is often limited to the pursuit of second-best solutions in a world where risk allocation, information and incentive concerns call for different solutions. Rendering the ideal first best outcomes may be unachievable. National legislators will hopefully use some of the wisdom of economic analysis, considering the important problems of imperfect information, adverse selection, and moral hazard in implementing the Directive.

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