5-6-2008

Getting the Word Out: The Informational Function of Trademarks

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Forthcoming, 40 Arizona State Law Journal (Winter 2009)

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J. Shahar Dillbary[†]

ABSTRACT

This article challenges the statement that "the only legally relevant function of a trademark is to impart information as to the source of the product." Information about the source of the product undoubtedly helps the consumer choose the product she wants from a set of possible products. This article argues, however, that the informational function of trademarks is broader: in addition to providing information about the source, a trademark often provides information that reduces consumers' uncertainty about the product's qualities and impacts purchasing decisions. Specifically, this article shows that a trademark not only helps the consumer choose the product she wants, but it can also help her decide how many units she should purchase of that product. This article then draws on several examples to illustrate that the reduction in consumers' uncertainty enhances welfare but that under certain conditions it may be used by unscrupulous sellers to defraud customers. Drawing on these insights, this article turns to explain different types of regulations, the optimal investment in trademarks, and offers an alternative explanation as to why trademark law allows sellers to use "deceptively misdescriptive" marks. In doing so, this article provides a new framework for evaluating future trademark policies.

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TABLE OF CONTENTS

I. INTRODUCTION

Trademarks provide consumers primarily with two types of information[1] that serve two different functions. First, they provide consumers with information that helps them *identify and choose* the product they want to purchase from a set of competing products.[2] Trademarks serve this *inter-*

1. WILLIAM LANDES & RICHARD POSNER, THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW 174 (Harvard Univ. Press 2003); David W. Barnes, *A New Economics of Trademarks*, 5 NW. J. TECH. & INTELL. PROP. 22, 31 (2006). For a more expansive view of the role of trademarks, see Shahar J. Dillbary, *Famous Trademarks and the Rational Basis for Protecting "Irrational Beliefs*,*"* 14 GEO. MASON L. REV. 605 (2007) (discussing the signaling and persuasive value of famous trademarks and offering a model that explains the economics of anti-dilution).

2. Lanham (Trademark) Act § 45, 15 U.S.C. § 1127 (2000) (whether a word, name or a symbol, trademarks are used by sellers to *identify and distinguish* their goods from those manufactured and sold by others); *see also* Lanham (Trademark) Act § 2, 15 U.S.C. § 1052

brand function by giving a product a name (its trademark) which denotes to the public a single source of sale or manufacture.[3]

Take for example the coffee enthusiast who had a favorable experience with Nescafé and wants to purchase it again. Assume that the local grocery store carries a number of brands, including Starbucks, Folgers, and Nescafé. In a world with no trademarks, the consumer would bear high search costs. She would have to read the fine print on the label of each coffee until she finds the one she wants. At the local café, she would also incur high communication costs when she conveys her *choice* to the seller. Absent trademarks, she would have to ask for "the coffee made by Nestlé." If Nestlé manufactures more than one brand of coffee (as is the case), then the task would be even harder. A trademark helps the consumer economize her costs. The consumer does not have to remember the name of the manufacturer or the product's attributes. She just has to ask for "Nescafé." Because she knows that all coffee products bearing the mark Nescafé come from the same source, she can be sure that the product she will receive is the same as the one she enjoyed in the past. A trademark can serve this naming—or, as referred to in this article, inter-brand—function only if other manufacturers are prohibited from using the same mark.[4] This is exactly where the legal system comes into play. By prohibiting passing off, trademark law ensures that the public is not misled into buying A's product when it wants B's.[5] To date, the economic literature on trademarks led by

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(2000) (stating that "[n]o trademark by which the goods of the applicant may be *distinguished* from the goods of others shall be refused registration" unless certain conditions are met) (emphasis added); Scandia Down Corp. v. Euroquilt, Inc., 772 F.2d 1423, 1429 (7th Cir. 1985) ("Trademarks help consumers to select goods. By identifying the source of the goods, they convey valuable information to consumers at lower costs. Easily identified trademarks reduce the costs consumers incur in searching for what they desire, and the lower the costs of search the more competitive the market."); Ty, Inc. v. Perryman, 306 F.3d 509, 510 (7th Cir. 2002); LANDES & POSNER, *supra* note 1, at 174.

3. This ensures the consumer that all products bearing the same mark have the same qualities (whatever those qualities are), or simply put, that they are identical. *See* 1 J. THOMAS MCCARTHY, MCCARTHY ON TRADEMARKS AND UNFAIR COMPETITION § 3:10 (4th ed. 2009) ("[T]he chief function of a trademark is a kind of 'warranty' to purchasers that they will receive, when they purchase goods bearing the mark, goods of the same character and source, anonymous as it may be, as other goods previously purchased bearing the mark that have already given the purchaser satisfaction.").

4. New Kids on the Block v. News Am. Publ'g, Inc., 971 F.2d 302, 306 (9th Cir. 1992) ("The benefit of the brand name is analogous to that of designating individuals by last as well as first names, so that, instead of having to say 'the Geoffrey who teaches constitutional law at the University of Chicago Law School—not the one who teaches corporations,' you can say 'Geoffrey Stone, not Geoffrey Miller.'"); LANDES & POSNER, *supra* note 1, at 166–67.

5. Lanham (Trademark) Act § 32, 15 U.S.C. §1114 (2000).

Professor Landes and Judge Posner has focused on this inter-brand function.[6]

Second, trademarks often provide information about *the product itself* (intra-brand information). A descriptive mark, for example, conveys information about the product's attributes and ingredients. The mark "Simply-Stevia," for example, informs the consumers that the sweetener is made from a specific plant (stevia),[7] "SweeTARTS" describes a candy's flavor,[8] "Pig Sandwich" an ingredient,[9] and "Apple Pie" a potpourri's scent.[10] But even a non-descriptive mark can have informational value if consumers learn to associate the mark with a certain quality. "SNICKERS," for example, means to many a chocolate bar consisting of peanuts. The calorie-aware consumer associates McDonald's Big Mac with 560 calories, Burger King's Whopper with 670, and Subway's Turkey Sandwich with only 280.[11] To the caffeine-aware consumer, a 16 oz cup of Starbucks Vanilla Grande coffee means 150 mgs of caffeine; whereas an 8 oz cup of Starbucks Decaf Espresso stands for only 32 mgs.[12] While prior literature has recognized that this *intra-brand information* "also lowers search costs,"[13] no attempt has been made to investigate or model the role of trademarks in intra-brand settings. This article undertakes to do exactly that. After reviewing the prior literature, this article constructs a formal model that complements Landes and Posner's analysis. The model shows that information about the product can reduce consumer uncertainty regarding the product's credence qualities (qualities that cannot be verified even post purchase), thereby influencing the number of units purchased.[14]

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6. LANDES & POSNER, *supra* note 1, at 166 (explaining how trademarks provide information that enables the public to choose the product they want and why sellers of branded products can command higher prices in a competitive market).

7. "Simply-Stevia" is manufactured by Stevita Co. and is touted as "[t]he purest Stevia extract in the market." Stevita, http://stevitastevia.com/content/blogcategory/27/50 (last visited Dec. 2, 2009).

8. Sunmark, Inc. v. Ocean Spray Cranberries, Inc., 64 F.3d 1055, 1057 (7th Cir. 1995).

9. Texas Pig Stands, Inc. v. Hard Rock Cafe Int'l, Inc., 951 F.2d 684, 687 (5th Cir. 1992).

10. *In re* Gyulay, 820 F.2d 1216, 1218 (Fed. Cir. 1987) (finding the mark merely descriptive).

11. *See infra* note 115 and accompanying text.

12. For caffeine content of food and drugs, see Center for Science in the Public Interest, Caffeine Content of Food & Drugs, http://www.cspinet.org/new/cafchart.htm (last visited Oct. 30, 2009).

13. LANDES & POSNER, *supra* note 1, at 174.

14. The economic literature distinguishes between three types of attributes: search attributes, experience attributes, and credence qualities. Search attributes are attributes that can be tested before the purchase (such as the color of a car or the size of a refrigerator). Experience attributes are attributes that consumers learn of only after they have acquired the product and "experienced" it (e.g., the taste of a canned tuna or the life expectancy of a bulb). Credence

To illustrate, consider again the caffeine-aware consumer who has been advised not to consume more than the 300 mgs of caffeine per day suggested by the American Diabetic Association.[15] Assume further that she has already made her (inter-brand) choice and decided to order Starbucks Vanilla Grande because she prefers its taste to others. The next question—How many cups of coffee should she order?—calls for an intra-brand analysis. If the consumer believes that the drink is low in caffeine, she will be willing to order more cups of coffee and vice versa. For example, if the average amount of caffeine in a cup of coffee is 266 mgs, the consumer, absent more information, would purchase only one unit so as not to exceed the 300 mg daily cap. But if she knows that Starbucks Vanilla Grande contains only 150 mgs of caffeine, she would increase her consumption and purchase two units. The consumer who prefers Starbucks Decaf Espresso, on the other hand, absent more information, would be willing to purchase up to 60 units if she believes it contains the average amount of caffeine—5 mgs.[16] But if she knew that Starbucks Decaf Espresso contains 32 mgs of caffeine, she would reduce her consumption and purchase up to 9 units only. A trademark, therefore, may help the consumer not only choose the right product but also choose the optimal number of units of that product.[17]

Moreover, in many situations a trademark is the *only* means to communicate information about the product to (potential or repeat) customers. Turning back to the Starbucks example, a cursory survey shows that the customer who chose to enter a Starbucks Café cannot receive any information about the amount of caffeine in her coffee. Such information does not appear on labels (and even if it did, the coffee is served without the original packaging) and it is not available in the store. In fact, the only way the consumer can receive and use the intra-brand information is through the mark which is attached to the product. By checking consumer reports or

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qualities are qualities that cannot be easily verified even post-purchase (e.g., the effects of vitamins and the number of calories in a salad dressing). *See* Michael R. Darby & Edi Karni, *Free Competition and the Optimal Amount of Fraud*, 16 J.L. & ECON. 67, 68–69 (1973); Phillip Nelson, *Information and Consumer Behavior*, 78 J. POL. ECON. 311, 317 (1970).

15. *See* American Dietetic Association, *Coffee and Caffeine: Are There Health Risks?*, AMERICAN DIETETIC ASSOCIATION, June 10, 2004, http://www.eatright.org/cps/rde/xchg/ada/hs.xsl/home_4293_ENU_HTML.htm.

16. The average amount of caffeine in a generic 8 oz *decaf* coffee is 5 mgs compared to 32 mgs in an 8 oz cup of Starbucks Decaf Espresso. *See* Center for Science in the Public Interest, *supra* note 12 (emphasis added).

17. Note that the same piece of information can serve an inter-brand and intra-brand function. A consumer may choose to purchase a Subway Turkey Sandwich rather than a Big Mac (inter-brand decision) because it contains only 280 calories, half the calories in a Big Mac; and, if allocated 560 calories for her meal, she may decide to purchase two sandwiches (an intra-brand decision). *See also infra* notes 112–20 and accompanying text.

through exposure to comparative advertising, the consumer learns to associate "Starbucks Vanilla Grande" with 150 mgs of caffeine, "Starbucks Decaf Espresso" with 32 mgs, and so on. A trademark is, thus, much more than a signifier of a source of sale or manufacture. It is an important (often the only) means by which a seller can communicate information about its product (intra-brand information).

Despite its importance to consumers, producers, and the marketplace, the intra-brand function of trademarks has received little attention. After discussing the prior literature in Part II, Part III extends a model I discussed elsewhere[18] to show how information about a product can reduce consumer uncertainty.[19] The model suggests that in purchasing a product with credence qualities, even if consumers are not defrauded, they nevertheless incur an error cost. This error cost can be minimized, but not eliminated, absent trademarks or other branding mechanisms. The model further investigates the conditions for branding, the impact of trademarks on consumer behavior and welfare, and producers' incentives to engage in fraud. Part IV discusses some of the positive and normative implications of the model. It analyzes two legal regimes, as well as private reputational mechanisms that are aimed at reducing consumers' intra-brand error costs. It then discusses the role of trademarks and comparative advertising in influencing consumers' purchasing decisions. In a departure from the conventional wisdom, Part IV concludes that even when consumers' inter-brand search costs are zero, trademarks are, nevertheless, socially desirable.

Part V focuses on deceptive marks and false advertising. It explains why trademark law allows a seller to use a "deceptively misdescriptive" mark (a mark which not only misrepresents the product's qualities, but also is likely to cause the consumer to believe the misrepresentation). Moreover, Part V also argues that while trademark law protects the consumer against inter-brand confusion—confusion between different products or their sources (by prohibiting passing-off)—it fails to provide adequate protection against intra-brand confusion. Intra-brand confusion occurs when a seller passes-off his own products, not as someone else's, but rather as possessing attributes that it does not possess. For example, Johnson & Johnson might change its sweetener, so that it is not suitable for diabetics, but nevertheless continue to use the mark Splenda, which the public has already learned to associate with "suitable for people with diabetes".[20] In *Trademarks as a Media for*

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18. Dillbary, *supra* note 1.

19. I use the term "search costs" to refer to the consumer's inter-brand cost of identifying and distinguishing between products. I use the terms "uncertainty costs" or "error costs" to refer to the consumer's intra-brand decision as to the number of units purchased.

20 *See* Splenda® No Calorie Sweetener FAQs, *infra* note 108 and accompanying text.

False Advertising,[21] I show that, beginning with cases such as *American Washboard v. Saginaw Mfg. Co*.,[22] courts have held that "fraud on one's *own* consumers . . . while explicitly recognized as a 'great evil,' was not actionable" under the Trademark Act.[23] This somewhat bizarre development of the law was the result of the "traditionally accepted premise that the *only* legally relevant function of a trademark is to impart information as to the source or sponsorship of the product."[24] This article challenges that statement. It investigates the intra-brand function of trademarks and it argues that it also merits protection. Part VI provides concluding remarks.

II. THE PRIOR LITERATURE

A. The Economics of Branding

Being a species of advertising, it is not surprising that, until not long ago, branding and trademarks have been thought of as economic evils. Opponents of these marketing methods fiercely argued that they are no more than a way to change consumers' tastes,[25] manipulate demand,[26] waste valuable resources,[27] raise barriers of entry,[28] and lead to artificial product differentiation.[29] Trademarks and advertising, it was argued, allow sellers to raise prices and obtain higher rents than they otherwise would have if they

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21. Shahar J. Dillbary, *Trademarks as a Media for False Advertising*, 3 CARDOZO. L. REV. 327 (forthcoming Dec. 2009).

22. 103 F. 281 (6th Cir. 1900).

23. Dillbary, *supra* note 21, at 331.

24. Smith v. Chanel, Inc., 402 F.2d 562, 566 (9th Cir. 1968) (holding that "the rule [prohibiting passing-off] *rests upon the traditionally accepted premise that the only legally relevant function of a trademark is to impart information as to the source or sponsorship of the product*.") (emphasis added).

25. *See* JOE S. BAIN, BARRIERS TO NEW COMPETITION 115 (Harvard Univ. Press 1956); JOHN KENNETH GALBRAITH, THE AFFLUENT SOCIETY 125–30 (Houghton Mifflin Co. 1998) (1958).

26. HENRY SIMONS, ECONOMIC POLICY FOR A FREE SOCIETY 71–72 (Univ. of Chicago Press 1948).

27. ROBERT H. FRANK, LUXURY FEVER 44 (Simon & Schuster Inc. 1999); GALBRAITH, *supra* note 25, at 125–30; Robert Pitofsky, *Changing Focus in the Regulation of Advertising*, *in* ADVERTISING AND SOCIETY 125, 126 (Yale Brozen ed. 1974); SIMONS, *supra* note 26, at 71–72.

28. JOE S. BAIN, INDUSTRIAL ORGANIZATION 227 (Wiley, John & Sons, Inc. 1968); Mark A. Hurwitz & Richard A. Caves, *Persuasion or Information? Promotion and the Shares of Brand Name and Generic Pharmaceuticals*, 31 J.L. & ECON. 299, 304 n.14 (1988).

29. *See* Gary S. Becker & Kevin M. Murphy, *A Simple Theory of Advertising as a Good or Bad*, 108 Q. J. ECON. 941, 955 (1993); Ralph S. Brown, Jr., *Advertising and the Public Interest: Legal Protection of Trade Symbols*, 57 YALE L.J. 1165, 1171, 1178 (1948).

were required to meet the full burden of competition.[30] So prevalent was the view against advertising that one commentator noted that "in intellectual circles it is risky to one's reputation of intelligence and/or honesty to defend advertising."[31]

Over time, however, this approach has been replaced by one which recognizes trademarks as a valuable means to convey information that reduces consumers' *inter-brand* search costs.[32] That is, information that reduces the cost consumers incur in the process of *distinguishing* between available products in the marketplace and identifying the one they wish to purchase.[33] An advertisement or a trademark so acts, the argument goes, because it helps the consumer *choose the right product*.[34] It reminds the consumer of her past experience with the product (or an advertisement or a friendly recommendation in the case of a new consumer) and enables her to find and purchase it once again. Absent branding, the consumer would have to conduct a search in order to decide which product, whether it be a car or a salad dressing, she should buy. She would have to incur certain search costs, such as time spent on reading articles and consulting with family members, friends, and experts, as well as other costs associated with the quest for the "right product."

The first step in recognizing the role advertising plays in asymmetric information contexts was made by George Stigler's pioneering article, *The Economics of Information*, which focuses on inter-brand settings.[35] Stigler identified two inseparable demands within a market of undifferentiated products with price dispersion: one for the products themselves and another for information about the products.[36] In such a market, consumers have to decide whether to buy from the first seller they encounter at price P_1 or whether they should buy the product elsewhere, hopefully at price P_2 such that $P_2 < P_1$.[37] Searching for a better deal, however, is costly. Consumers will have to invest resources and incur transportation and similar costs. Thus,

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30. EDWARD HASTINGS CHAMBERLAIN, THE THEORY OF MONOPOLISTIC COMPETITION 126–27, 174 (Harvard Univ. Press 1962) (1933); GALBRAITH, *supra* note 25, at 127 n.4; THORSTEIN VEBLEN, THE THEORY OF BUSINESS ENTERPRISE 55 (Harvard Univ. Press 1965) (1904).

31. L. G. Tesler, *Some Aspects of the Economics of Advertising*, 41 J. BUS. 166, 166 (1968).

32. Phillip Nelson, *supra* note 14, at 312; Phillip Nelson, *The Economic Consequences of Advertising*, 48 J. BUS. L. 213 (1975); Phillip Nelson, *Advertising as Information*, 82 J. POL. ECON. 729 (1974).

33. *See supra* note 2 and accompanying text.

34. *Id*.

35. George Stigler, *The Economics of Information*, 69 J. POL. ECON. 213 (1961).

36. *Id.* at 214.

37. *Id.*

consumers are willing to search for a better bargain only if their expected gain from such a bargain exceeds their expected cost from a further search.[38] If search costs are prohibitive, however, consumers will not be able to investigate properly and sellers could charge supra-competitive prices. For this reason, Stigler viewed price dispersion as "a manifestation and . . . the measure of ignorance in the market."[39]

Modern trademark analysis offers a different explanation for the price dispersion.[40] It does not perceive it as a form of "market failure" due to consumers' "ignorance," but rather as a phenomenon that may exist in a competitive market.[41] Because a trademark denotes a single (if anonymous) source of manufacture, a trademark assures the consumer that the product is the same as the one she previously experienced. For the first-time consumer, it assures that the product is the same as the one recommended to her. Thus, a trademark, regardless of the information it provides about the product itself, economizes the consumer's search costs. One need not identify and gather information about a product each time one buys it. A trademark does this work. Landes and Posner describe the inter-brand cost-reducing function of trademarks as follows:

$$I = [\Pi - S(_T)]X - C(_X) - B(_T)$$[42]

Where I is the producer's net income (profit); Π is the full price to the buyer; C and B are the total cost of production and branding (the cost of coining and maintaining a mark T) respectively; and $S(_T)$ is the search cost function faced by consumers. The search cost function, in turn, is dependent on the strength of the mark, T. This implies that the stronger a mark, the smaller the consumer search costs ($S'(_T)<0$) and the higher the price charged by the producer. This formulation explains how, in a perfectly competitive market where firms are price takers (they take Π in equation (1) as given), the nominal price charged, $\Pi - S(_T)$, differs among firms. Put differently, $S(_T)$ is the "premium" a producer can charge for minimizing the

38. *Id.* at 215–16.

39. *Id.* at 214.

40. *See, e.g.*, LANDES & POSNER, *supra* note 1, at 166; Stacey L. Dogan & Mark A. Lemley, *Trademarks and Consumer Search Costs on the Internet*, 41 HOUS. L. REV. 777, 786–88 (2004); William M. Landes & Richard A. Posner, *Trademark Law: An Economic Perspective*, 30 J.L. & ECON, 265, 268–70 (1987); Mark A. Lemley, *The Modern Lanham Act and the Death of Common Sense*, 108 YALE L.J. 1687, 1688–90 (1999).

41. *See, e.g.*, LANDES & POSNER, *supra* note 1, at 176 (noting that "the firm is assumed to be operating in a competitive market" and that "each firm is a price taker").

42. *Id.* at 174–76.

consumers' search costs.[43] Assume, for example, that the consumer has to invest $20 to find a product the price of which is $100. This investment includes purchasing consumer reports, taking the time to read them, and so on. In such a case, the full price to the consumer is $120. A competitor, which sells a branded product that lowers the consumer search cost from $20 to $5, can sell its product for $105.

Landes and Posner acknowledge that information about the product itself (as distinguished from its source) "also lowers search costs."[44] Their model, however, does not explain how. Furthermore, Landes and Posner's model leads to the conclusion that if inter-brand search costs are zero, producers will not invest in branding.[45] The model pressed in this article complements the Landes and Posner model and fills that gap. It shows that even where the consumer has already found and decided which product she should purchase (or, alternatively, even where search costs are zero), trademarks are socially desirable because they impact the number of units purchased.

B. The Signaling Literature

The model developed in this article is also related to the signaling literature on warranties.[46] This line of literature mainly focuses on

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43. For a similar analysis, see Isaac Ehrlich & Lawrence Fisher, *The Derived Demand for Advertising: A Theoretical and Empirical Investigation*, 72 AM. ECON. REV. 366 (1982). The authors argue that

> [A]dvertising affects the demand for goods because it lowers the gap between the market price received by the seller and the full price borne by the buyer—a gap that exists because of the buyer's cost of obtaining information about the characteristics of varieties of products and sellers . . . . The implicit demand for cost saving information by the buyer generates a derived demand for advertising . . . .

Id. at 366. Imperfect information about the product "creates a wedge between the nominal price [(P)] received by the seller and the full price [(Π_{ij})] borne by the buyer [(j)] of a given brand [(i)]. The difference can be termed information . . . cost. It represents search, transaction, and adjustment costs . . . ." *Id.* at 367; *see also* Nicholas S. Economides, *The Economics of Trademarks*, 78 TRADEMARK REP. 523, 525 (1988) (explaining that "trademarks enable consumers to choose the product" they want by facilitating flow of information regarding unobservable features).

44. LANDES & POSNER, *supra* note 1, at 174.

45. From Equation (1) it follows that the consumer will invest in branding so long as the marginal cost of branding is equal to or exceeds the marginal returns from branding, that is as long as B'T is more than or equal to S'T. If S=0, the producer will not invest in branding because such investment would not yield any returns.

46. For a discussion on the relevancy of the signaling literature in the context of trademarks, see George A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 Q.J. ECON. 488, 499–500 (1970); Dogan & Lemley, *supra* note 40, at

warranties as an indication of high performance. The most obvious connection to this article is the existence of information asymmetry between the sellers, who are assumed to be familiar with their product, and buyers, who possess imperfect information.[47] It should be noted immediately, however, that there should be no confusion between the "guarantee function" of trademarks and warranties. The two are oceans apart. Warranties are usually limited to durable products.[48] They are applied to the product space (promising to fix, alter, or replace a malfunctioning product); and to the extent they convey information, they do so only indirectly (because warranty redemption presents a cost to the seller, and because this cost depends on the probability that the product will break-down, consumers can infer that only sellers of high quality products, which are less likely to malfunction, will offer a warranty)[49]. Also, a warranty is a "signal" based on one single and detectable attribute: performance. Trademarks that provide information about the product's credence qualities are fundamentally different. They apply to all types of products: durable as well as perishable. They are purely informational. They signify a source of manufacture or sale, they identify the product, and they acquire secondary meanings in consumers' minds. They are not limited to assuring "high performance." Rather, they convey the message that the attributes of the product, whatever they may be, are consistent. They assure that a product has a certain constant taste, that it is made of the same fabric, or that it is manufactured by the same formula. True, trademarks can, and often do, signify performance, but not necessarily a superior one. While the level of performance designated by a trademark can be high, low, or mediocre, the only limitation is that it must be constant.[50]

The signaling literature also differs from this article in that it is limited to *inter-brand settings*. As Boulding and Kirmani note, "In this setting consumers would like information that allows them to *distinguish* the seller

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799–801; Lemley, *supra* note 40, at 1690; Nelson, *Advertising as Information*, *supra* note 32; Nelson, *The Economic Consequences of Advertising*, *supra* note 32.

47. *See, e.g.*, Economides, *supra* note 43, at 526 ("From an economic standpoint, the argument for trademarks is simple. In many markets, sellers have much better information as to the unobservable features of a commodity for sale than the buyers. This is known as information asymmetry"); Giovanni B. Ramello & Francesco Silva, *Appropriating Sign and Meaning: The Elusive Economics of Trademark*, 15 INDUS. & CORP. CHANGE 937, 944 (2006). *See also* Winand Emons, *The Theory of Warranty Contracts*, 3 J. ECON. SURV. 43, 44 (1989).

48. *See e.g.*, Darby & Karni, *supra* note 14, at 69-70 (discussing durable goods and repair services).

49. William Boulding & Amna Kirmani, *A Consumer-Side Experimental Examination of Signaling Theory: Do Consumers Perceive Warranties as Signals of Quality?*, 20 J. CONSUMER RES. 111, 113 (1993).

50. *See* Shell Oil Co. v. Commercial Petroleum, Inc., 928 F.2d 104, 107 (4th Cir. 1991).

of high-quality goods or services from the seller of low-quality goods or services."[51] Moreover, unlike warranties, trademarks do not necessarily lead to a separating equilibrium because they convey information about different attributes. In a separating equilibrium, the market leads different sellers to choose different strategies. In such a case, the consumer can "separate" (or distinguish) between sellers by observing the different strategies they have chosen.[52] For a separating equilibrium to occur, consumers must be able to observe and compare the same attribute across different products. Because a warranty is a signal which is premised only on one attribute (performance), consumers can "correctly expect products with higher warrant[ies] to be more reliable because the lower-quality firm cannot afford to match the higher warranty due to higher redemption costs."[53] Trademarks, unlike warranties, are used to impart information about different attributes. Each seller can use its mark to convey the attribute for which its product is most valued. One would use the mark to convey a certain taste, another to convey the existence or absence of an ingredient, a third to convey that a product was made under a certain process, and so forth.[54] Thus, the only thing a consumer may infer from the existence of a mark is that the attribute for which the mark has gained a secondary meaning may be the strongest quality of that product or, at the very least, a desirable one. Because a trademark, unlike a warranty, is usually not a signal for one common attribute, the mere fact that a product is branded cannot separate good products from bad ones.

Furthermore, the signaling literature often assumes that each consumer purchases *only one unit*; and thus, it cannot provide any insight as to the impact of branding on the number of units purchased by each consumer.[55] It is also often limited to durable products, which is based on payoffs in two

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51. Boulding & Kirmani, *supra* note 49, at 112 (emphasis added).

52. A pooling equilibrium, on the other hand, occurs when the market does not force different sellers to take different strategies. *Id.* In a pooling equilibrium, all firms choose the same strategy leaving the consumer unable to distinguish between them. *Id.*

53. V. Padmanabhan & Ram C. Rao, *Warranty Policy and Extended Service Contracts: Theory and an Application to Automobiles*, 12 MARKETING SCI. 230, 231 (1993).

54. Each product can be thought of as a function of a set of attributes. Producers use their marks to highlight "positive" attributes of their products in the sense that it will make the products more desirable or marketable. McDonald's, for example, can use its mark to impart information about its burgers' taste and uniformity, but perhaps not their nutritional value. Linguist Roger Shuy has narrowed down the message conveyed by the McDonald's mark to "basic, convenient, inexpensive, and standardized." ROGER W. SHUY, LINGUISTIC BATTLES IN TRADEMARK DISPUTES 99 (2002).

55. *See* Esther Gal-Or, *Warranties as a Signal of Quality*, 22 CAN. J. ECON. 50 (1989); Richard E. Kihlstrom & Michael H. Riordan, *Advertising as a Signal*, 92 J. POL. ECON. 427 (1984); Padmanabhan & Rao, *supra* note 53; Carl Shapiro, *Premiums for High Quality Products as Returns to Reputations*, 98 Q.J. ECON. 659 (1983).

or more periods depending on the probability of a malfunction and the cost of repair.[56] Inherent to the signaling literature is also the assumption that consumers can detect malfunctions—that once a car breaks down, the consumer will be able to bring it to the mechanic to be fixed.[57] The model pressed in this article, however, is applied to credence qualities, which cannot be detected even post-purchase, and is not limited to durable products.

III. THE ROLE OF TRADEMARKS

A. The Consumer

In *Famous Trademarks and the Rational Basis for Protecting "Irrational Beliefs"* ("*Famous Trademarks*"), I investigated the persuasive value of trademarks and offered a model that explains the economics of anti-dilution.[58] This article extends the basic model I developed in *Famous Trademarks* to investigate a broader issue: the intra-brand function of trademarks. The model shows that consumers, because of a lack of information about the product itself, incur an uncertainty cost, and that while this uncertainty cost can be minimized, it cannot be completely eliminated absent information about the product's qualities. The minimum expected cost, therefore, is the consumer demand for information: The consumer will be willing to pay a positive amount of money to reduce her error. If the seller decides to brand its product and convey such additional (truthful) information (whether by using a mark, other methods of marketing, or because of regulation), this information will minimize further

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56. Gal-Or, *supra* note 55; Sanford J. Grossman, *The Informational Role of Warranties and Private Disclosure About Product Quality*, 24 J. L. & ECON. 461 (1981); Benjamin Klein & Keith B. Leffler, *The Role of Market Forces in Assuring Contractual Performance*, 89 J. POL. ECON. 615 (1981); Nancy A. Lutz, *Warranties as Signals Under Consumer Moral Hazard*, 20 RAND J. ECON. 239 (1989); Padmanabhan & Rao, *supra* note 53.

57. *See, e.g.*, Grossman, *supra* note 56; Klein & Leffler, *supra* note 56; Shapiro, *supra* note 55.

58. Dillbary, *supra* note 1, at 664–65 (showing that "both producers and consumers benefit from anti-dilution law. For producers, anti-dilution is forward looking, protecting a mark's ability to attract new customers. For consumers, it is backward looking, protecting consumers' investments from . . . an externality. Because consumers buy both a physical product and psychological freight but gain control only over the physical product, a third party may dilute the intangible psychological product for which the consumer paid dearly. By providing a cause of action to producers, the latter are able to serve their traditional role as the avengers of the public. Not only do they protect themselves, but they also protect consumers' intellectual property".).

the consumer's uncertainty cost, increase total welfare, and (where the product is of high quality) increase sales.

To illustrate, recall the coffee enthusiast who was advised to reduce her caffeine consumption to the daily recommended level of 300 mgs to avoid many of its adverse affects.[59] Assume that inter-brand search costs are zero or, more realistically, that the consumer has already chosen a certain brand due to its taste, or because it is the only brand served at the café. Assume further that it is Starbucks Vanilla Grande. The next stage—how many units she should purchase—calls for an intra-brand analysis. The consumer will be willing to purchase more units (more cups of coffee) if she knows that the coffee contains only a miniscule amount of caffeine. If the coffee is high in caffeine content, the consumer may limit the number of units purchased accordingly. The problem is real because a generic 16 oz cup of coffee contains, on the average, 266 mgs of caffeine compared to the 5 mgs in a generic 8 oz decaffeinated cup of coffee.[60] Absent information about the product itself, the consumer will under-consume. Assuming that Starbucks Vanilla Grande contains the average amount of caffeine, the consumer will purchase only 1 unit (in order not to exceed the maximum recommended level of 300 mgs). If, however, the consumer has credible information that Starbucks Vanilla Grande contains 150 mgs of caffeine (as it does), she may *increase* her consumption and purchase 2 units.[61] Similarly, if the consumer prefers Starbucks Decaffeinated Espresso, absent nutritional information, she will over-consume. The consumer will be willing to purchase up to 60 units (300 mgs divided by the 5 mgs average amount). If she learns that 8 oz of Starbucks Decaffeinated Espresso contains 32 mgs of caffeine, she will *decrease* her consumption and purchase no more than 9 units.[62] Both over-consumption and under-consumption of goods represent a deadweight

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59. Among which are withdrawal symptoms, gastroesophageal reflux disease, hypertension, decreased bone density, kidney stones, diabetes, hypoglycemia, miscarriages, reduced fertility, and fetal growth retardation. The Science in the Public Interest, CSPI Petition (requesting "the Commissioner of Food and Drugs to issue regulations requiring a quantitative disclosure for caffeine-containing products") (July 31, 2007), *available at* http://www.cspinet.org/new/pdf/caffeine_petition.pdf.

60. The Center for Science in the Public Interest, *supra* note 12.

61. ScienceDaily.com, Decaffeinated Coffee is Not Caffeine-free, Experts Say, http://www.sciencedaily.com/releases/2006/10/061012185602.htm (last visited Oct. 6, 2009) (reporting a study by University of Florida researchers finding that almost all decaffeinated coffee contain caffeine); *see also* The Center for Science in the Public Interest, supra note 12. The FDA does not require that caffeine content be included in product labels on food and beverages. For an example of a petition requesting such disclosure, see The CSPI Petition, *supra* note 59.

62. The Center for Science in the Public Interest, *supra* note 12 (reporting that 1 oz of Starbucks' Decaffeinated Espresso contains 4 mgs of caffeine).

loss (which I refer to as the consumers' uncertainty or error cost) that can be avoided by conveying to consumers information about the product itself—levels of caffeine in the example above. Another example that I discuss later is that of salad dressings.[63] Assume a consumer has already identified a salad dressing whose taste she likes the most and wishes to use it on her salad. Aware of the health problems that are associated with high-fat and increased consumption of calories, she is interested to know these attributes before consumption. If the dressing is of a "high quality" (that is, if it is a low or reduced fat product), she will be willing to consume more of it and vice versa. Because the consumer is uncertain whether she faces a "high quality" product or a "low quality" one, she may make a costly mistake.[64]

It is important to note that, as in the coffee and salad examples, trademarks are often the *only* means to inform consumers about the product's qualities. In many situations, the ingredient or attribute important to the consumer is not available at all on labels (e.g., caffeine), and it is often the case that the product is served or offered without the packaging (e.g., a salad dressing in a restaurant or the coffee at the local café).

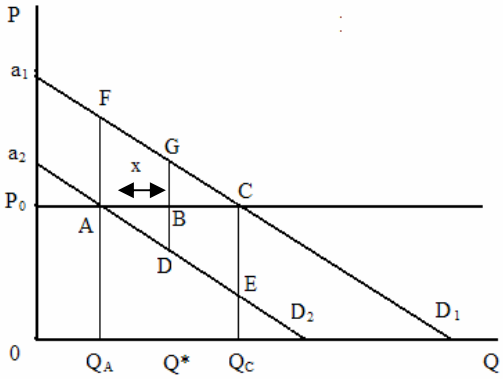

Figure 1: The Consumer's Dilemma

Formally, the consumer's dilemma—how many units to purchase—is described in Figure 1.[65] The consumer who chooses to purchase a certain coffee for the price of P_0 is not sure whether she faces a high quality or a low quality product. Put differently, she is not sure whether she is facing D_1 or D_2 in Figure 1.

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63. *See* Alan Mathios, *The Impact of Mandatory Disclosure Laws on Product Choices: An Analysis of the Salad Dressing Market*, 43 J.L. & ECON. 651 (2000). For a detailed discussion see *infra* Part IV.1.

64. *See also supra* note 17.

65. Dillbary, *supra* note 1, at 650.

(2) D_1: $P= a_1 – bQ$

(3) D_2: $P= a_2 – bQ$

The first, D_1, is the demand for the "high quality" product (e.g., the coffee which is low in caffeine) and the second, D_2, represents the demand for the "low quality" one, where $a_1>a_2>0$ and $b>0$.[66] I assume that the only difference between the high quality and the low quality products is due to the credence quality. This means that the expression a_1-a_2 represents the value of the credence quality to the consumer and that it is constant for every Q. In the coffee example, if $a_1 = 100$ and $a_2 = 80$, then for every unit Q (e.g., cup of coffee), the consumer values the high quality product—the coffee which contains less caffeine—$20 more than the one containing a higher amount of caffeine.[67]

The consumer must decide how many units to purchase under conditions of uncertainty (she does not know whether the product is of high or low quality). The consumer may believe, at a probability θ ($0 \leq \theta \leq 1$), that the product is of high quality and, at a probability $1 – \theta$, that the product is of low quality. If the consumer believes that the product is of high quality, she will purchase Q_C units. But if she is wrong—if in fact the product is of low quality—she will over-consume and will incur a loss denoted by the area ACE. Similarly, if the consumer believes that the product is of low quality, she will purchase only Q_A units. But if mistaken (if the product is in fact of high quality), she will under-consume and incur a cost at the magnitude of the triangle, FAC. The consumer, however, is facing more than two options. In fact, she can purchase any quantity Q such that $Q_A<Q<Q_C$. To find Q*, which minimizes the consumer's error cost, I define x such that $Q_A \leq Q_A+x \leq Q_C$. For $x>0$, the consumer error cost is the sum of the areas ABD and GBC in Figure 1, or more formally:

(4) $S_{\Delta ABD} = \frac{bx^2}{2}$;

66. Some consumers would of course prefer the product which is high in caffeine or calories as is common with energy drinks. The model is not limited nor does it take any position as to which products are "high" or "low" in quality, a determination that is reserved for the consumer and differs from one to another.

67. For simplicity the model assumes a level of P_0 such that $a_1– a_2<P_0$. *See* Dillbary, *supra* note 1, at 650.

$$(5)\ S_{\Delta GBC} = \frac{bx^2}{2} - x(a_1 - a_2) + \frac{(a_1 - a_2)^2}{2b}$$

Equation (4) expresses the consumer error cost (or welfare loss) from purchasing too many units because she thought that the product was a high quality one. This error is equal to zero when the consumer purchases Q_A units (x=0), but reaches its peak when $Q=Q_C$ ($x=Q_C-Q_A$). Similarly, Equation (5) expresses the consumer welfare loss from purchasing a smaller number of units than she should have purchased given the high quality of the product. This error is at its maximum when the consumer purchases Q_A units (at a magnitude equal to the area FAC, which is equal to the third expression in Equation (5)) and is equal to zero when the consumer purchases Q_C units. For every x, it is possible to formulate the general expected error function and the difference between $|Q_C-Q_A|$:

$$(6)\ Q_C-Q_A = \frac{a_1 - a_2}{b};$$

$$(7)\ E(e^Q) = (1-\theta)S_{ABD} + \theta S_{GBC} \text{ or } E(e^X) = \frac{bx^2}{2} - \theta(a_1 - a_2)x + \frac{\theta(a_1 - a_2)^2}{2b}$$

The consumer, aware of the fact that there is a place for a (costly) mistake regarding the product's quality in question (e.g., the amount of caffeine), will try to choose a quantity, or x*, that will minimize her expected error costs. By rearranging the first order condition in Equation (7), we can find x* (and thus Q*), which will bring this error function to its extremum:

$$(8)\ \frac{dE(e)}{dx} \Rightarrow x^* = \frac{\theta(a_1 - a_2)}{b} > 0$$

$$(9)\ E(e^{X^*}) = \frac{(a_1 - a_2)^2}{2b}[\theta(1-\theta)]$$

Two important implications follow from equations (8) and (9). First, x*, which brings the expected error cost to a minimum, will always be positive. This means that without information about the product's credence qualities, the consumer's best strategy is to consume a quantity Q* such that $Q_A < Q^* < Q_C$ (the consumer will not chose Q^* such that Q^* is equal to either Q_A or Q_C). Second, the consumer can minimize her error cost, but she cannot

avoid it altogether absent more information about the product itself. Even at Q* (the consumer's best strategy) the expected error, albeit minimized, is nevertheless positive $E(e^{Q^*})>0$. Thus, the positive error cost is the consumer's demand for information. The consumer will be willing to pay for information so long as her minimum expected cost is higher or equal to the cost of information.[68] To illustrate, if a branded product conveys information about the quantity of caffeine, the consumer will be willing to pay a premium for such information if such premium is lower or equal to her willingness to pay, $E(e^{Q^*})$.

The error cost is dependent on two exogenous parameters, which are of interest to us. The first is the difference between the intercepts a_1 and a_2, which I refer to as the "error span." The larger the difference in quality $d|a_1-a_2|$ (that is, the larger the error span), the larger will be the maximal error that the consumer incurs. The intuition is simple: recall that a_1-a_2 is the value of the credence quality. Thus, the more impact a credence quality has on the utility the consumer extracts from the product, the higher the cost to the consumer from an erroneous decision (and the larger the incentive for producers to engage in fraudulent behavior).[69]

The second factor on which the error cost is dependent is the subjective belief θ. Figure 2 shows that for every $0 \leq \theta \leq 1$, the error function will intersect at:[70]

$$(10)\ x^{Ig}= \frac{(a_1 - a_2)}{2b},\ E(e^{Ig})=\frac{(a_1 - a_2)^2}{8b}$$

68. Dillbary, *supra* note 1, at 651–52.

69. For illustration and generalization, see Technical Appendix.

70. Solving Equation (8) for θ = ½ yields $x^{Ig}= \frac{(a_1 - a_2)}{2b}$. Substituting x for x^{Ig} in Equation (7) yields $E=\frac{b(a_1 - a_2)^2}{2} - \frac{\theta(a_1 - a_2)^2}{2b} + \frac{\theta(a_1 - a_2)^2}{2b} = \frac{b(a_1 - a_2)^2}{2}$ which is independent of θ.

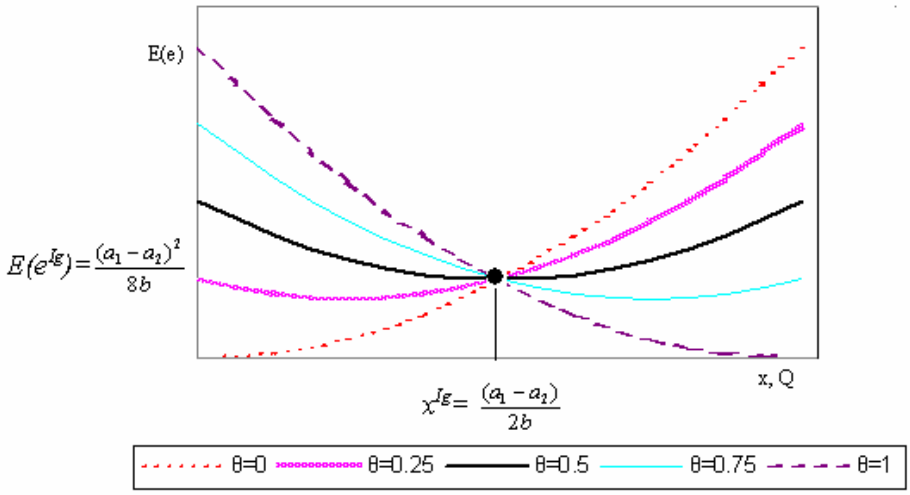

Figure 2: The Relation Between x, Q_A, Q_A and E(e) With an Exogenous Change in θ

I refer to [x^{Ig}, $E(e^{Ig})$] as the "point of ignorance." At this point the consumer has no information about the product's credence qualities—she has a 50% chance of making an error (that is, θ = ½). Additional (truthful) information about the credence qualities in question (e.g., the quantity of caffeine in her drink or the number of calories in a salad dressing) will either decrease or increase θ and the consumer's consumption, but it will unambiguously make her better off. If full information is available, the consumer will even be able to avoid any error in consumption. But if such additional information about the product's qualities is unavailable, the consumer's best strategy is to choose x* (i.e., consume at Q*), where her expected cost is minimal: [x^{Ig} , $E(e^{Ig})$].[71]

B. The Seller

So far, it has been assumed that the consumer's subjective belief, θ, is exogenous and given.[72] I now relax this assumption. This section shows how both sellers (by using private mechanisms such as trademarks and advertising) and regulation (e.g., labeling requirements) can influence consumers' beliefs and, as a result, sales and profits.

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71. The Technical Appendix illustrates how an exogenous change in θ will alter both the minimum and maximum error cost.

72. See Technical Appendix for a discussion on the impact of the exogenous parameters on the consumer's error cost.

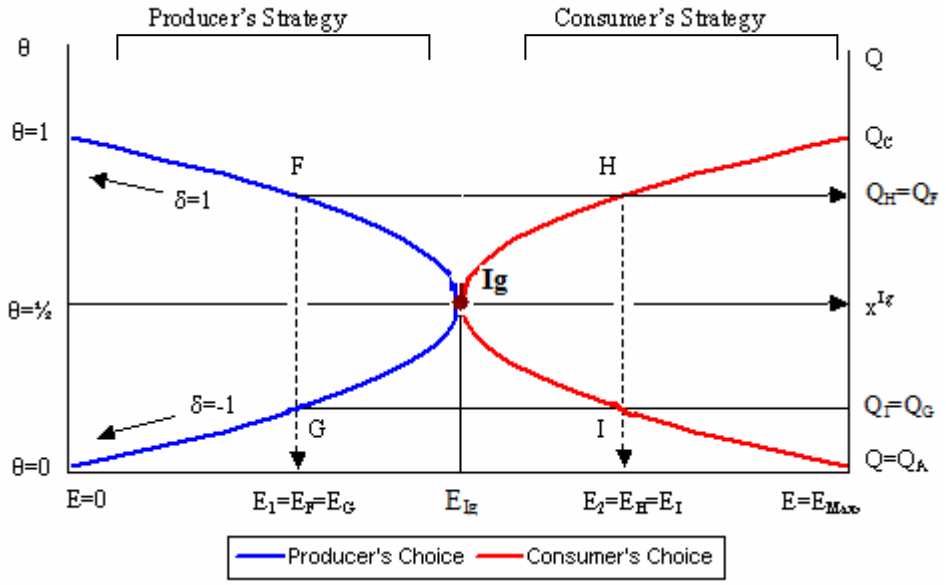

Figure 3: The Consumer's and Producer's Strategies (For $\theta_0 = ½$).

As noted above, absent information about the product, the consumer's best strategy is to be at the point of ignorance (Ig in Figure 3), [73] the point at which she purchases Q_{Ig} (Q_A+x^{Ig}) units to minimize her error cost ($E_{Ig} < E_H$, E_F). Knowing that the stronger the consumer's subjective belief that the product is of high quality ($\theta > ½$), the higher the number of units the consumer will purchase, the producer will try to impact the consumer's belief by imparting more favorable information about its product. Favorable information will cause the consumer to move from the point of ignorance to point F in Figure 3 and, therefore, will result in an increase in sale ($Q_F > Q_{Ig}$) and a reduction in the consumer's error costs ($E_H < E_{Ig}$). Although a trademark can, and in some cases does, convey unfavorable information about the product to which it is attached,[74] the producer is not likely to voluntarily disclose unfavorable information about its own product. Such unfavorable information will undoubtedly benefit the consumer and minimize her error costs ($E_G < E_{Ig}$). But it will harm the producer.

73. Dillbary, *supra* note 1, at 650.

74. A trademark can provide unfavorable information about the product to which it is attached for a number of reasons. The public, for example, may learn to associate a mark with unfavorable information if the seller is required to disclose such information by law. Another reason may be comparative advertising: A seller may seek to create a mental association in the consumer's mind between its competitor's product and an unfavorable quality. *See infra* Part IV.2.

Unfavorable information about the product's quality will drive the consumer away from the point of ignorance to point G and will result in less consumption ($Q_G < Q_{Ig}$) and, hence, less profits for the producer.[75] The producer, however, can also impact the consumer's subjective belief by providing false information about the product's qualities. False information will cause the consumer to move from point Ig to point H in which case, the consumer will increase consumption relative to the point of ignorance ($Q_H > Q_{Ig}$), but will suffer a decrease in welfare at the magnitude of $E_H - E_{Ig}$. In the model, false advertising is a true concern because it is hard, or even impossible, for the consumer to verify the producer's claims regarding the product's credence qualities—the amount of caffeine in the product. As I note below, the law of false advertising mitigates this problem by providing incentives to competitors to go after the fraudulent seller.

IV. POSITIVE AND NORMATIVE IMPLICATIONS

The model calls for the implementation of low-cost mechanisms that will facilitate the flow of information and reduce consumers' error costs. This part discusses three such mechanisms. The first two are governmental. In both, regulation has been introduced to make producers and sellers internalize consumers' error costs. The third discusses a simple low-cost private market mechanism that achieves a similar outcome.

A. Governmental Regulation and Private Mechanisms

I start with the regulation of information in the nutrition market. Before the enactment of the Nutrition Labeling and Education Act ("NLEA")[76] on

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75. The model leads to the conclusion that a pooling equilibrium will occur because it assumes that the consumer has already decided to purchase the product (e.g., Starbucks Vanilla Grande) and the ingredient or quality in question (e.g., the amount of caffeine) may only impact the number of units (cups of coffee) purchased. Moreover, as noted above, if the seller uses a trademark to convey information about its product, the fact that a mark does not convey information about certain credence qualities will not lead to a separating equilibrium. For a separating equilibrium to occur, consumers must be able to observe and compare the same attribute across different products. As discussed above, a warranty is a signal for performance. A lack of it signals the product is of low quality. Trademarks, on the other hand, are used to impart information about different attributes. Their existence only provides the information that (on the average) consumers value, the attribute the mark has come to denote in consumers' minds. *See supra* notes 46–55 and accompanying text; *see also infra* Part II.B.

76. 21 U.S.C. §§ 301, 343 (1990). The NLEA sought "to clarify and to strengthen the Food and Drug Administration's legal authority to require nutrition labeling on foods, and to establish the circumstances under which claims may be made about nutrients in foods." H.R. REP. NO. 101-538, at 7 (1990), *reprinted in* 1990 U.S.C.C.A.N. 3336, 3337.

November 8, 1990, producers had full discretion whether to use a nutrition label. The NLEA revolutionized the industry and replaced the pre-existing *voluntary* regime by creating a *mandatory* one.[77] Under the NLEA and the regulations promulgated by the United States Food and Drug Administration ("FDA") and the United States Department of Agriculture, food manufacturers are now required to disclose credence qualities such as the fat (saturated and unsaturated), cholesterol, carbohydrates, sodium, sugar, dietary fibers, protein, vitamins and minerals (but not caffeine) contained in their products.[78] The disclosure is made on the product packaging in a distinctive, easy-to-read standardized format that enables consumers to quickly process the information.[79] It thus turns a credence quality, which is verifiable only ex post at high cost, into a search quality that can be examined ex ante.

In an empirical survey conducted by Alan Mathios, the author reports that before the enactment of the NLEA all low-fat salad dressing producers disclosed, voluntarily, their nutrition values (such as fat and calories), while most high-fat producers avoided such a disclosure.[80] After the enactment of the NLEA, sales of products containing high levels of fat suffered from a significant decline due to the mandatory disclosure.[81] The model explains and predicts these outcomes. Because consumers perceive low-fat food products as being of "higher quality" (namely, healthier), the model predicts that manufacturers of low-fat dressings would disclose information about the percentage of fat. By doing so they would be able to sell more and move from the costly point of ignorance to point F (Figure 3). Manufacturers of high-fat (that is low quality) products, on the other hand, would choose not to disclose information. By keeping silent they would be able to maintain a higher volume of sales than if such information would have been otherwise disclosed. In other words, they would prefer to sell at the ignorance point

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77. 21 U.S.C. § 343(q); FDA Food Labeling, 21 C.F.R. §§ 101.1–9. For a discussion of the NLEA, see N.Y. State Rest. Ass'n v. N.Y. City Bd. of Health, 556 F.3d 114, 117 (2d Cir 2009) (referring to "the federal statutory scheme regulating labeling and branding of food" as "a labyrinth" and upholding New York City's Regulation 81.50 requiring certain restaurants to post nutritional values on their menus); Alan Mathios, *supra* note 63.

78. 21 U.S.C. § 343(q); 21 C.F.R. §§ 101.1-9.

79. For more information, see the FDA's Guide to Nutrition Labeling and Education Act Requirements, http://www.fda.gov/ICECI/Inspections/InspectionGuides/ucm074948.htm (last visited Oct. 11, 2009).

80. Alan Mathios, *supra* note 63, at 651, 659–60 (finding that although theory predicts that "under complete unraveling of information, all but the very worst would disclose . . . some of the dressings in the middle range of the fat distribution chose not to disclose, and some of the very worst chose to disclose, which indicates less than perfect unraveling of information" and concluding that "mandatory labeling will, of course, fill in this missing information.").

81. *Id.* at 667.

(absent fraudulent activity and even at higher levels of output otherwise) in order to maximize their profits. Because the error costs imposed on the consumers are not internalized by the low-quality product manufacturers, they have an incentive to sell more than society would have required.

The second example is the new inspection program established by Los Angeles County, California ("LAC") to ensure food facilities' compliance with hygienic standards.[82] Under this program the Department of Health Services ("DHS") conducts inspections and issues "grade cards" which must be visible to the public. Each inspection begins with 100 points (full compliance with health regulation).[83] If, however, during the inspection the health inspector detects a violation, a predetermined score is deducted according to the violation's category.[84] For example, a violation in category one ("major violations"), such as employee "hand-washing" (actually, lack of it), adulterated food, rodents and cockroaches, and so forth,[85] results in a six point reduction.[86] If a category two ("minor violations") violation is identified, four points are deducted, etc.[87] To determine the final grade, all the point deductions of the marked violations are added and then subtracted from the total 100 points. At the conclusion of the inspection, the DHS inspector issues a detailed "Food Official Inspection Report" ("FOIR") and a "letter grade card."[88] The letter grade card is, in fact, a quick summary of the inspection. It assigns a grade of "A" to indicate a final score of 90% or higher; a grade of "B" to a score less than 90%, but not less than 80%; and a

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82. L.A., Cal., Ordinance 97-0071 (Dec. 16, 1997), *amended by* L.A., Cal., Ordinance No. 98-0037 (July 21, 1998). The grading system is applicable to food facilities located within the unincorporated areas if LAC and the cities have adopted Ordinance 97-0071. *See* Ginger Jin & Philip Leslie, *The Effect of Information on Product Quality: Evidence from Restaurant Hygiene Grade Cards*, 118 Q.J. ECON. 409, 417 (2003). For a list of cities that have adopted ordinance 97-0071, see LA County Public Health, http://www.lapublichealth.org/eh/cityord.htm (last visited Dec. 2, 2009). The scoring system is common in other states and localities. In Alabama, for example, any facility selling food is required to obtain a food permit and a score card which it must post in conspicuous view within the establishment. Alabama Department of Public Health, http://www.adph.org/foodscores/Default.asp?id=1965 (last visited Dec. 2 2009).

83. COUNTY OF LOS ANGELES ENVIRONMENTAL HEALTH RETAIL FOOD INSPECTION GUIDE 14 (2007), http://publichealth.lacounty.gov/eh/food.htm (last visited Dec. 2, 2009) [hereinafter FOOD INSPECTION GUIDE]. The FOOD INSPECTION GUIDE has been revised over the years. For previous versions of the FOOD INSPECTION GUIDE, see LA County Public Health, http://www.lapublichealth.org/eh/RFIG/rfigfiles/understanding.htm (last visited Oct. 11, 2009).

84. *Id.*

85. For the complete list of the categories, see FOOD INSPECTION GUIDE, *supra* note 83 at 10–14.

86. *Id.*

87. *Id.*

88. L.A., CAL. COUNTY CODE ch. 8.04, § 225(A)–(D) (2009) ("Grading" and "letter grade card"), *available at* http://ordlink.com/codes/lacounty/. For a sample of the FOIA, see FOOD INSPECTION GUIDE, *supra* note 83, at 10–14.

grade of "C" for a final score which is less than 80%, but not less than 70%.[89] Food establishments that do not achieve at least a C grade may be immediately closed by the county health officer.[90] To provide incentive for food establishments to maintain a high standard of food safety, the DHS issues "Certificates of Excellence" to retail food establishments that receive three successive "A" ratings.[91]

Of importance to our discussion is the posting requirement. Under Title 8, Chapter 8.04, Section 752 of the Los Angeles County Code, the health inspector posts the letter grade card, the inspection score card, or both, as determined by the county's health officer, "*so as to be clearly visible to the general public and to patrons entering the establishment.*"[92] "Clearly visible" means: on a front window or on the outside front wall.[93] Failure to comply with the posting requirement may result in the suspension or revocation of the health permit.[94] Moreover, the full FOIR reports must be maintained at the food establishment and "available to the general public and to patrons for review upon request."[95] It is important to note that even prior to the implementation of the scoring system, consumers could request to see the DHS report and the list of violations.[96] Yet few, if any, seem to have exercised their right to do so.[97] It seems that the "costs" associated with the credence attribute of hygiene were prohibitive. Of course, asking for the available report might have been an easy task and would have been fulfilled in a very short period of time, but the disutility from waiting, and the harm to the consumer's image (think of a couple on a first date when one is asking for the report) or the fear from a possible "retaliation" (once a

89. L.A., CAL. COUNTY CODE ch. 8.04, § 225(D) *available at* http://ordlink.com/codes/lacounty/; *see also* the FOOD INSPECTION GUIDE, *supra* note 83, at 14.

90. L.A., CAL. COUNTY CODE ch. 8.04, §§ 225(C), 275(B) *available at* http://ordlink.com/codes/lacounty/. The grading system is only applicable to those food facilities located in cities (there are eighty-five cities in Los Angeles County) that have adopted Ordinance No. 97-0071. *Id.* For a list of cities that have adopted Ordinance No. 97-0071, see LA County Public Health, http://www.lapublichealth.org/eh/cityord.htm (last visited Oct 9, 2009).

91. *See* FOOD INSPECTION GUIDE, *supra* note 83, at 63.

92. L.A., CAL. COUNTY CODE ch. 8.04, § 752(A) *available at* http://ordlink.com/codes/lacounty/. .

93. *Id.* § 752(A)(1)–(3).

94. *Id.* § 752(C).

95. *Id.* § 752(E).

96. Jin & Leslie, *supra* note 82, at 410; GINGER JIN & PHILIP LESLIE, REPUTATIONAL INCENTIVE FOR RESTAURANT HYGIENE 2 (2004), *in* CONFERENCE OF INDUSTRIAL ORGANIZATION SOCIETY IN CHICAGO, *available at* http://www.stanford.edu/~pleslie/reputation.pdf; *see also* FOOD INSPECTION GUIDE, *supra* note 83, at 14.

97. JIN & LESLIE, *supra* note 96, at 2 ("Consumers could request to see the list of violations at individual restaurants, but anecdotally we know this was rarely done.").

decision to stay in the restaurant has been made) may have been too "costly." Also, it is plausible that consumers were not aware of the fact that such a report even existed, or that they had a right to ask for its disclosure. The posting requirement made this information easily available.

In an empirical study conducted by Jin and Leslie (2004), the authors concluded not only that health inspection scores increased due to the posting requirement, but also that revenues were significantly impacted by the new regime.[98] More specifically, they showed that a mandatory posting of grade cards for A-grade restaurants resulted in a 5.7% increase in revenues compared to the old regime.[99] This is an absolute magnitude of $15,000 as the annual revenue for a restaurant in the sample was around $260,000.[100] Revenues for grade B restaurants increased by 0.7%, and C-graded restaurant revenues decreased by 1%.[101] These outcomes are consistent with the theoretical model set forth above. Producers of high quality products (restaurants with a high level of hygiene) are expected to gain from a disclosure, while low quality product manufacturers are expected to "lose" (hence the increase in revenues of A and B-graded restaurants and the decrease in C-graded ones). Also, the higher the quality product, the more the disclosure is expected to be effective (sales in B-graded restaurants increased only by 0.7% while sales in A-graded restaurants increased by 5.7%). A mandatory disclosure—a disclosure that is not subject to the restaurants' discretion—minimizes consumers' uncertainty cost. Note that low-graded restaurants, although they suffered from a decrease in revenue, had "survived" the regulation. Despite the low grades presented on the restaurants' windows, consumers still continue to dine there. This may be explained by the fact that the consumers are attracted by other factors such as the taste of the food served in the restaurant or the "atmosphere" (or other attributes including low price) and are not totally discouraged by the low hygiene rating. They may avoid some dishes (those susceptible as suffering from low hygiene), but may nevertheless be interested in others. Just like the consumer who likes a certain salad dressing or drink, but once aware of its nutritional values

98. Jin & Leslie, *supra* note 82, at 410, 426-31. The survey is based on a sample of 13,544 restaurants in LAC. Interestingly, the authors did not discuss the role of the grade system in reducing intra-brand confusion, but rather focused on the traditional inter-brand function. *Id.* "Disclosure of restaurant hygiene grades may serve to reduce search costs for consumers. Grade cards reduce the cost of learning whether an individual restaurant has good hygiene, and may encourage consumers to go to restaurants they otherwise would not have." *Id.* at 413.

99. *Id.* at 429.

100. *Id.*

101. *Id.*

(containing a high quantity of calories or caffeine), decreases the amount purchased.

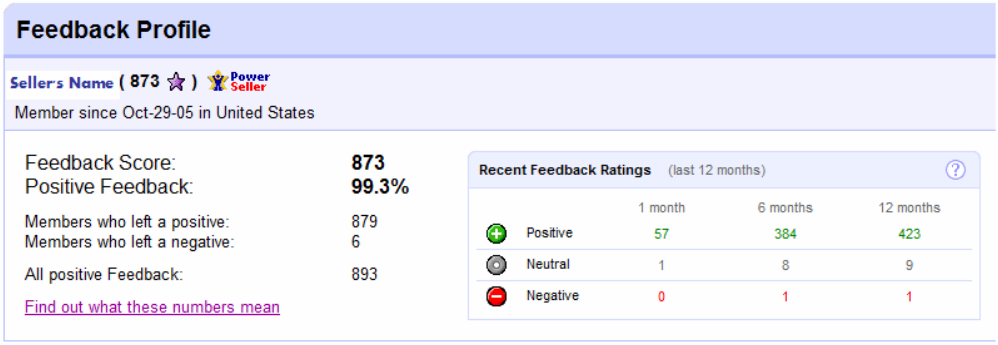

Figure 7: The Feedback Summary As It Appears on eBay

A private "reputational" mechanism, as opposed to governmental regulation, is that used by eBay.[102] eBay's "seller's records system" actually mimics the "labeling" regulation discussed above and, in fact, is very similar to LAC Ordinance 97-0071. Under this *mandatory* (although private) reputational scheme, after each transaction, both the buyer and the seller can rate each other by posting a feedback.[103] The feedback consists of a short comment and a rating, which can be positive (+1), negative (-1), or neutral (0). The buyer can only contribute once to a seller-member score.[104] For example, if a bidder had five different, yet satisfying, transactions with a certain eBay seller, she contributes only "1" to his total score. Similarly, if the consumer gave three unfavorable ratings she contributes only "–1" to the seller's score; and if she gave five positive ratings and three negative ones, she contributes only "+1." It is, therefore, the accumulative impression which creates the reputational effect.

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102. *See generally* eBay, http://www.ebay.com (last visited Oct. 11, 2009). For similar private reputational mechanisms, see Golf Club Exchange, Golf Club Auctions, http://www.golfclubauction.net (last visited Oct. 11, 2009); CNET, http://www.cnet.com (last visited Oct. 11, 2009); Pricegrabber.com, http://www.pricegrabber.com (last visited Oct. 11, 2009); Google Product Search, http://www.froogle.com (last visited Oct. 11, 2009).

103. I refer to eBay and similar branding mechanisms as "mandatory" because they are set by third parties (e.g., eBay) and the seller cannot opt out.

104. *See* eBay Policy Tutorial, Feedback, http://pages.ebay.com/help/tutorial/feedbacktutorial/intro.html (last visited Oct. 11, 2009); eBay, How Feedback Works, http://pages.ebay.com/help/feedback/howitworks.html (last visited Oct. 11, 2009). For more information about eBay's feedback system, see eBay, All About Feedback, http://pages.ebay.com/help/feedback/allaboutfeedback.html (last visited Oct. 11, 2009).

The "reputation" appears on the seller's profile. The "Feedback Score" is the difference between the number of members that had a positive experience with the seller and the number of members who had a negative experience with the seller. In the above example, it is the difference between 879 and 6. The "Positive Feedback" is a percentage of the number of members who had an overall positive experience (879) out of the total number of members who had both positive and negative (but not neutral) experiences (879+6). The system also shows the total number of positive feedback responses received for all transactions, including repeat customers (893). Also, and similar to the grade card used in LAC, eBay uses a "star icon" system. A yellow star represents 10–49 feedback points, a blue star 50–99, and so on. Higher volume sellers are flagged by "shooting stars" with a similar color system.[105] Although the full seller's profile is just one-click away, a summary of the seller's record is presented in the bidding page itself (which, in an analogy to the posting requirement of the LAC Ordinance No. 97-0071, is the seller's "window"). The summary includes the seller's ID, the star indication, the Feedback Score, the Positive Feedback, and the date on which the seller joined eBay.

It is important to note that with eBay, as with other sales made via the Internet, consumers' search costs (and other classic types of transaction costs such as negotiating, contracting, and so on) are nearly zero (consumers can easily compare products and prices). Therefore, the classic models—which perceive trademarks as performing the inter-brand function of minimizing search costs in the quest for the right product—would argue that trademarks have less utility.[106] The thesis of this article, on the other hand, is that trademarks are still crucial even where inter-brand search costs are zero. This is because in internet-based transactions, all the product qualities (whether search or experience) are transformed into credence qualities that impose high error costs. Absent a reputational mechanism, the bidder cannot assess the quality of the product sold. She cannot touch, smell, or look at the product's color or shape. She is uncertain whether the product sold is the product advertised and whether the product will be delivered after payment. The problem here is even worse because the

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105. *See* eBay, What Does the Star Next to a Feedback Score Mean?, http://pages.ebay.com/help/feedback/questions/star.html (last visited Oct. 11, 2009).

106. For articles concluding that consumer inter-brand search costs are substantially reduced due to the Internet, see Erik Brynjolfsson, Yu Jeffrey Hu & Duncan Simester, *Goodbye Pareto Principle, Hello Long Tail: The Effect of Search Costs on the Concentration of Product Sales*, SOC. SCI. RES. NETWORK, Nov. 2007, http://ssrn.com/abstract=953587 (showing that by lowering consumers search costs, internet markets expand the set of products that consumers consider when making their purchasing decisions). *But see* Dogan & Lemley, *supra* note 40, at 777.

bidders are not necessarily repeat consumers (they are more like drivers that stop at a restaurant on the highway); but eBay's accumulative feedback data cures this flaw. The genius of the eBay scoring system is that it creates a mandatory reputational effect at a very low cost, which retransforms credence qualities into experience qualities. It reduces uncertainties, and thus, consumers' error costs, even when sellers' incentives are to refrain from a disclosure of any information.

B. Semi-Private Mechanisms: Trademarks

Just like eBay's reputational system, the NLEA labeling scheme, and the LAC posting requirement, a trademark may serve as a medium to convey intra-brand information about the credence qualities of the product to which it is attached. Due to advertising or consumer familiarity with a product (e.g., reading its label), the consumer may associate the mark with a certain quality or ingredient. For example, the public associates "Evian" with natural spring water from the French Alps;[107] and "Splenda" with a "no calorie sweetener" made from sugar and "suitable for people with diabetes."[108] Similarly, due to recent advertising and caffeine awareness campaigns, the cola enthusiast, who is also a caffeine-sensitive consumer, may now associate Coca-Cola Classic with 23 mgs of caffeine compared to 31 mgs in Diet Coke and 0 mgs in 7-Up.[109]

A trademark, therefore, may provide consumers with information that helps them determine whether they face D_1 or D_2 in Figure 1. A trademark fulfills this function by influencing the consumer's subjective belief θ with regard to certain attributes emphasized by the mark. Formally, I denote the relation between the buyer's subjective belief, θ, and a unit of trademark, T, as follows:

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107. *See, e.g.*, Jerre B. Swann, Sr., et al., *Trademarks and Marketing*, 91 TRADEMARK REP. 787, 820 n.146 (2001) (referring to Evian as a brand "with strong awareness"); Sara Stadler Nelson, *The Wages of Ubiquity in Trademark Law*, 88 IOWA L. REV. 731, 781 (2003).

108. *See* Splenda® No Calorie Sweetener FAQs, http://www.splenda.com/page.jhtml?id=splenda/faqs/nocalorie.inc#q0 (last visited Dec. 2, 2009); *see also* Dillbary, *supra* note 21, at n.2.

109. On February 20, 2007, PepsiCo launched a new advertising campaign in which it announced its decision to disclose the amount of caffeine in its drinks (25 mgs per 8 oz serving in regular Pepsi cola and 24 mgs in a Diet Pepsi). It took only three days for The Coca Cola Company to join the trend. *See* Lorraine Heller, *Coca-Cola Joins Industry Move to Label Caffeine*, FOODNAVIGATOR.COM, Feb. 23, 2007, http://www.foodnavigator-usa.com/news/ng.asp?n=74478-coca-cola-pepsico-caffeine-labeling (last visited Oct. 11, 2009); Coca-Cola Co., Soft Drink Nutrition Information for Carbonated Beverages, http://www.thecoca-colacompany.com/mail/goodanswer/soft_drink_nutrition.pdf (last visited Oct. 11, 2009).

(11) $\theta = ½ + \delta LT$

Where δ is a dummy variable which is equal to 1, if the trademark conveys positive or favorable information about the product and -1 otherwise, T is an index of the trademark's strength (T is equal to 0 where the product is not branded and increases with the trademark's strength), and L is the magnitude by which an increase in the trademark level, T, impacts the probability θ.[110] Without a trademark (or, if T=0), θ=1/2. At this stage, the consumer is at the ignorance point where her expected cost is at a minimum, but still positive. A trademark, however, can convey information that will help the consumer move away from the "point of ignorance" and, therefore, reduce her error costs. This can be illustrated by substituting θ in Equation (9) with its formulation in Equation (11) and differentiating the achieved expression with respect to T:

(12) $E(eQ^*) = \frac{(a_1 - a_2)^2}{2b} \times [\frac{1}{4} - \delta^2 L^2 T^2] = \frac{(a_1 - a_2)^2}{2b} \times [\frac{1}{4} - L^2 T^2]$

(13) $\frac{dE(e^{Q^*})}{dT} = -L^2 T \frac{(a_1 - a_2)^2}{b} < 0$ [111]

Equation (13) implies that where information is truthful, the buyer's error costs are minimized, regardless of the trademark's sign (positive/negative). Whether δ=-1 or δ=1 (that is, whether a trademark conveys information that the product is of high or low quality), it unambiguously reduces E(e) with any increase in the level of T ($\forall \delta$ dE/dT<0). In the Starbucks example, the consumer will increase her consumption to 2 units if she associates Starbucks Vanilla Grande with 150 mgs (approximately half the amount of caffeine in the average coffee), but she will decrease her consumption of Starbucks Decaffeinated Espresso and limit it to 9 units if she learns that it contains substantially more caffeine (32 mgs) than the average of 5 mgs in an 8 oz decaffeinated coffee. But whether the consumer increases or decreases her consumption, she is unambiguously better off.

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110. Dillbary, *supra* note 1, at 655.

111. This is because $(a_1-a_2)^2/b$ is positive, and therefore, the first-order condition set forth in equation (14) is negative. Note that δ disappeared from equations (13) and (14). This is because δ^2=1.

Only when δ=1, however, will the decrease in E be accompanied with an increase in sales:

$$(14)\ x^* = \frac{(a_1 - a_2)}{2b} + \frac{\delta LT(a_1 - a_2)}{b};\ 0<x^*<(a1\text{-}a2)/b;$$

$$(15)\ \frac{dx^*}{dT} = \delta L\frac{a_1 - a_2}{b} > 0 \text{ (if } \delta=1)$$

The first expression in Equation (14) is the consumption at the point of ignorance where θ=1/2, while the second expression is the increase in sales due to an increase in T. This is shown on the left side of Figure 3 by a movement from the point of ignorance to point F (where δ=1) or point G (where δ=-1), such that $E_F=E_G<E_{Ig}$. Note that whether δ<0 or δ>0 does matter when one needs to consider if regulation should be introduced. If δ=1, voluntary market mechanisms (such as branding) will be available. This is because an investment in T will not only decrease the consumer's expected error costs, but also increase the producer's sales, and thus, the seller will be willing to brand. Put differently, when δ=1 the producer and consumer's interests are aligned. When δ=-1, however, while an investment in T will equally minimize consumer's error costs, it will nevertheless decrease sales. In the latter case, because private incentives are not aligned with society's incentives (the seller will lose profits), the seller will not use its mark to convey information about the credence quality in question (it may use the mark to convey information about other qualities). At this point, because a lack of information in a trademark setting cannot lead to a separating equilibrium, mandatory schemes should be considered.

Note that Sections 32[112] and 33(b)(4)[113] of the Lanham Act provide incentives, although somewhat indirectly, for sellers to reveal unfavorable information about a competitor's product (δ=-1). They achieve this desirable outcome by allowing a competitor to engage in comparative advertisement, "so long as [the advertisement] does not contain

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112. 15 U.S.C. § 1114(1) (2002) provides: "Any person who shall, without the consent of the [trademark owner] use in commerce any reproduction, counterfeit [or] copy . . . of a . . . mark in connection with the sale, offering for sale . . . or advertising of any goods . . . [where] such use is likely to cause confusion, or to cause mistake, or to deceive . . . shall be liable . . . [of trademark infringement]."

113. 15 U.S.C. § 1115(b)(4) (codifies the fair use doctrine which "is typically invoked in comparative advertising cases where use of another's mark is necessary to describe truthfully a characteristic of the defendant's product"). Frederick Warne & Co. v. Book Sales, Inc., 481 F. Supp. 1191, 1198 (S.D.N.Y. 1979).

misrepresentations."[114] Engaging in comparative advertising may result in dissemination of information about inferior qualities of the competitor's product and minimize the consumer's error cost.

RESTAURANT	CALORIES	FAT (Grams)
SUBWAYÂ® Sweet Onion Chicken Teriyaki	370	5
SUBWAYÂ® 6-inch Turkey Breast	280	4.5
Burger King Whopper	670	39
KFC original recipe chicken (1 chicken breast, 1 wing)	530	28
Taco Bell 3 tacos	510	30
McDonald's Big Mac	560	30

Figure 8: The Number of Calories in Fast Food Items as advertised by Subway[115]

The advertising war between two major competitors in the fast food market, Subway and McDonald's, is illustrative. McDonald's website makes easily available information that highlights the positive aspects of its products: that it "serves 100% beef, 100% chicken, and Grade A eggs"; that its food comes only from "suppliers who *are audited and inspected* on a regular basis"; and that it "requires that 72 safety protocols are conducted every single day in [its] restaurants."[116] Providing such favorable information (δ=1) will increase McDonald's sales and profits. When it comes to "nutrition," McDonald's notes dryly that, "a McDonald's hamburger is 260 calories."[117] More information is available, but it takes more time to find, and the consumer is required to work her way through a number of web-pages.[118] The calorie-conscious consumer may easily find unfavorable (yet truthful) information on Subway's website (and ads). After noting that Subway chain's competitors are "all fast-food restaurants,

114. SSP Agric. Equip., Inc. v. Orchard-Rite Ltd., 592 F.2d 1096, 1103 (9th Cir. 1979); *see also* Lindy Pen Co. v. Bic Pen Corp., 725 F.2d 1240, 1248 (9th Cir. 1984).

115. Subway.com, Official Subway Restaurants, http://www.subway.com/subwayroot/MenuNutrition/jared/diet/jaredMeasureUp.aspx (last visited Jan. 1, 2009).

116. McDonald's, Facts Summary (2006), http://www.mcdonalds.com/corp/about/factsheets.RowPar.0001.ContentPar.0001.ColumnPar.0002.File1.tmp/Facts%20Summary.pdf (last visited Oct. 11, 2009).

117. *Id.*; *see also supra* note 54 and accompanying text.

118. McDonald's.com, McDonald's USA, http://www.mcdonalds.com (last visited Oct. 11, 2009).

including McDonald's [and] Burger King,"[119] Subway provides nutritional information about its competitors, including McDonald's Big Mac, Burger King's Whopper, and others (Figure 8 above). Creating a mental association between "Big Mac" and "560 calories," which has double the calories of a Subway Turkey Breast sandwich,[120] will not only help Subway divert consumers but it will also help McDonald's loyal customer decide how many burgers she should purchase.

C. The Investment in Trademarks

A condition for the occurrence of private branding is that $\delta=1$. In other words, the mark must convey "positive" information about the products' credence qualities. But this condition, albeit necessary, is not sufficient. Because branding is not costless, another necessary condition is that the producer's cost of branding, denoted by K, is less or equal (but not higher) to the benefits from branding. Simply put, a producer will invest in branding only if the profit it receives from increasing the trademark level by one additional unit is higher than its cost. More formally, a producer's decision to invest in a trademark can be presented as follows:

$$(16)\ \Delta\pi = \delta LT\frac{(a_1 - a_2)}{b}(P_0 - c) \geq KT^2$$

Where $\Delta\Pi$ is the additional profits from branding, $\delta LT(a_1-a_2)/b$ is the additional quantity manufactured due to an increase in T (see Equation (14)), (P_0-c) is the markup over production,[121] and $B=KT^2$ is the cost of branding. I assume that the cost of branding is positive for every T ($B'>0$ which implies $K>0$) and increasing ($B''>0$). The assumption fits to real life situations where the stronger and more well-known a trademark is, the higher the marginal investment that is required to increase the trademark strength in one more unit. Under this formulation, it is possible to derive the optimal investment in T by differentiating Equation (16) with respect to T:

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119. Subway.com, Official Subway Restaurants FAQs, http://www.subway.com/subwayroot/AboutSubway/subwayFaqs.aspx (last visited Oct. 11, 2009) (noting that Subway chain's competitors are "all fast-food restaurants, including McDonald's®, Burger King®, Wendy's®, Taco Bell®, KFC® . . . and Arby's®.").

120. Subway.com, Official Subway Restaurants, *supra* note 115.

121. I assume that the manufacturer is a price taker and thus, the change in production does not influence the market price P_0. For a similar assumption see LANDES & POSNER, *supra* note 1, at 176, *See also supra* notes 41–43 and accompanying text.

$$(17)\ \frac{\Delta\pi}{dT} = \delta L\frac{(a_1 - a_2)}{b}(P_0 - c) - 2KT\ ;$$

$$(18)\ \frac{\Delta\pi}{dT} = 0 \Rightarrow T^* = L\frac{(a_1 - a_2)}{2b}\frac{(P_0 - c)}{K} > 0\ ;\ (\frac{d\pi}{dT})_{dT} < 0$$

Equation (18) stands for the proposition that the marginal cost of investing in a trademark must equal the benefit it confers. As I noted elsewhere, however, the investment in a trademark is bounded regardless of the cost of branding.[122] This conclusion is derived from Equation (6), which describes the information gap. Because in our simple model, the role of the trademark is to minimize consumers' error costs, an investment in T is thus useful (or efficient) only insofar as it reduces E(e). Thus, when T is such that the minimization process ends (that is, when E(e)=0 and the mark conveys full information as to the product's credence qualities), a further investment in T will be futile (an assumption I relax elsewhere).[123]

V. DECEPTIVE MARKS AND FALSE ADVERTISING

A trademark conveys primarily two types of information about the product to which it is attached, which serve two different functions. First, a trademark conveys information about the source of sale or manufacture. Such information enables the consumer to *choose* the product she wants from a set of products by reducing her inter-brand search cost. Trademark law protects this inter-brand function by prohibiting passing off. It ensures that the consumer is not tricked into buying A's product when she asks for B's (inter-brand confusion).[124]

Second, a trademark may convey information about the product itself. A descriptive mark, for example, informs the consumer about a certain quality

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122. *See* Dillbary, *supra* note 1, at 660.

123. *Id.*

124. *See supra* notes 2 and 24 and accompanying text; *see also* Inwood Labs. Inc. v. Ives Labs., Inc., 456 U.S. 844, 855 n.14 (1982) (holding that "[b]y applying a trademark to goods produced by one other than the trademark's owner, the infringer deprives the owner of the goodwill which he spent energy, time, and money to obtain" and the "consumers *of their ability to distinguish among the goods of competing manufacturers*.") (emphasis added); S. Rep. No. 79-1333 (1946), *reprinted in* 1946 U.S.C.C.A.N. 1274, at 3 (1946) (stating that "*[t]he purpose underlying any trademark statute is twofold*. One is to protect the public so it may be confident that, in purchasing a product bearing a particular trademark which it favorably knows, it will get the product which it asks for and wants to get. Secondly, where the owner of a trademark has spent energy, time and money in presenting to the public the product, he is protected in his investment from its misappropriation by pirates and cheats. This is the well-established rule of law protecting both the public and the trademark owner.").

or characteristic of the product.[125] To illustrate, the mark Simply-Stevia implies that the sweetener it is attached to is made from the plant Stevia, and Roquefort is associated with a cheese made in France. Even a fanciful (non-descriptive) term may gain a descriptive value over time (to which I refer as a "secondary descriptive meaning").[126] Splenda means to many "a no calorie sweetener" made of sugar and "suitable to people with diabetes,"[127] and Dr. Price was once associated with a baking powder made of grapes, not phosphate.[128] Similarly, due to recent caffeine awareness campaigns, a large number of consumers may now associate Starbucks Grande with 320 mgs of caffeine, Vanilla Grande with 150 mgs, Pepsi with 23 mgs, Diet Coke with 31 mgs, and 7-up with no caffeine at all.[129]

The model shows that if such information is unavailable, the consumer strategy would be to buy x* such that $x^*=x^{Ig(\theta=½)}$. That is, the consumer will be at the ignorance point where her *error costs* are at minimum (E_{Ig} in Figures 2 and 3). Because such costs, although avoidable, are nevertheless "legal," the model uses the consumers' error costs at this level as a benchmark. If a trademark (or other methods of marketing) provides information about a credence quality, it will unambiguously reduce the consumers' error costs and increase welfare.

But just as a seller may pass off its product as someone else's (and create inter-brand confusion), it may pass off its product as having properties that it does not (intra-brand confusion). An example is if the sweetener Simply-Stevia is not made from the plant Stevia or if Johnson & Johnson stops making a sweetener, which is suitable for diabetics but nevertheless affixes to it the mark "Splenda." As noted, this behavior is possible in our model because disinformation regarding a credence quality is hard to detect and the lack of information regarding a credence quality in the context of trademarks is unlikely to lead to a separating equilibrium. By engaging in intra-brand fraud, the seller will be able to increase its sale from point Q_{Ig} to

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125. *In re* MBNA Am. Bank, N. A., 340 F.3d 1328, 1332 (Fed. Cir. 2003), *reh'g en banc denied*, No. 02-1558, 2004 U.S. App. LEXIS 2187, at *1 (Fed. Cir. Jan. 12, 2004) ("A mark is merely descriptive if it immediately conveys information concerning a quality or characteristic of the product. . . .").

126. For a discussion on how exactly a secondary descriptive meaning is gained and the legal protection afforded to such secondary descriptive meanings, see Dillbary, *supra* note 21 at 336 (explaining that "over time, because of accumulating experience with the product [or because of massive advertising], a trademark may be used to describe . . . [an] attribute. The process is analogous to the 'secondary meaning' doctrine under which the law recognizes that a descriptive mark may gain a distinctive meaning as a source. Similarly, a suggestive, arbitrary and even a fanciful mark may acquire a 'secondary descriptive meaning' of an attribute.").

127. *See supra* note 108.

128. Royal Baking Powder Co. v. Fed. Trade Comm'n, 281 F. 744, 748 (2d Cir. 1922).

129. *See supra* note 109 and accompanying text.

Q_H ($Q_{Ig} > Q_H$), but such an increase in sale will result in a decrease in the consumers' welfare and is illustrated by a move from E_{Ig} to E_H ($E_{Ig} < E_H$). More formally, the decrease in consumers' welfare due to intra-brand fraud is described in Equation (19):

$$(19)\ \frac{d(CW)}{dT} = L^2 T \frac{(a_1 - a_2)^2}{b} < 0$$ [130]

Equation (19) implies that the more false information the mark provides, the higher the reduction in consumer surplus. The law of trademarks and unfair competition, however, provides only partial protection against intra-brand confusion. For reasons I discuss elsewhere, trademark law protects consumers against intra-brand confusion only where the seller is using a descriptive term or a descriptive mark.[131] Such a use is considered to be "false and misleading" under Section 43(a)(1)(B) of the Lanham Act.[132] Trademark law does *not* protect consumers against the seller who uses a non-descriptive term that gains a secondary descriptive meaning to mischaracterize its own product. To use the examples above, trademark law does provide a cause of action against Stevita Co. if it decides to use aspartame instead of the plant Stevia but nevertheless affixes the mark Simply-Stevia to its sweetener. Yet, trademark law does *not* protect the consumer who associates "Splenda" with a sweetener made from sugar if Johnson & Johnson decides to replace sugar with aspartame. In its early days, the law of trademark and unfair competition was limited to inter-brand setting. Cases such as *New York & Rosendale. Cement Co. v. Coplay Cement Co*.[133] and *American Washboard*,[134] required a showing of passing off as a condition for recovery. A fraud committed by a seller against its own consumers was not enough. In one case a petitioner even argued "that no statute or decided case has declared that a manufacturer or trader owes to his competitors the duty of refraining from misrepresentation of the quality or ingredients of his own goods, and that, on the contrary, it has been firmly held that no such duty exists."[135] In *Trademark as a Media For False*

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130. The expression $(a_1-a_2)^2/b$ is the maximum error cost. It equals to the areas FAC and ACE in Figure 1. With no information about the credence quality the consumer is at the point of ignorance, where her error cost are reduced by half.

131. Dillbary, *supra* note 21, at 348.

132. 15 U.S.C. § 1125(a)(1) (1946).

133. 44 F. 277, 279 (C.C.E.D. Pa. 1890).

134. 103 F. 281, 284 (6th Cir. 1900).

135. Royal Baking Powder Co. v. Fed. Trade Comm'n, 281 F. 744, 750 (2d Cir. 1922).

Advertising, I show that over a century after the decision in *American Washboard*, courts and commentators are still conceptually captured by traditional inter-brand thinking.[136] Surprisingly, even today, a seller who uses a non-descriptive mark to mischaracterize the nature of its own product in a way that deceives the public is immune from Section 43(a).

This anomaly—protecting consumers against false information conveyed by descriptive terms but not fanciful ones—can be attributed to the focus of the scholarship and the courts on the inter-brand function of trademarks. Courts have repeatedly emphasized that inter-brand information conveyed by a mark (that is information about the source), or put differently, the inter-brand function of trademarks, is the only function that merits protection. It was held that "the traditionally accepted premise [is] that the *only* legally relevant function of a trademark is to impart information as to the source or sponsorship of the product."[137] This article challenges this statement. It argues that a trademark provides *two* types of information about the product itself, each of which justifies protection.

It should be noted, however, that not every mischaracterization of the product's qualities should be actionable. The law should step in only if the trademark misdescribes a quality that cannot be verified pre-purchase and the mischaracterization influences the consumer's belief in a way that will impact her purchasing decision—that is θ in the model. Intervention in this situation is required to ensure that the consumer does not move from the (legal) point of ignorance (where her costs are at minimum) because of the seller's misrepresentations.

The model thus explains why trademark law allows producers and sellers to use "deceptively misdescriptive" marks. A mark is merely misdescriptive if it misrepresents or misdescribes "the character, quality, function, composition or use of the goods".[138] A classic example is the mark "Alaska Banana." The mark is merely misdescriptive because it misrepresents the origin of the good, but consumers "are unlikely to believe that bananas labeled ALASKA originated or were grown in Alaska".[139] In other words, in the case of a merely misedescriptive mark the misrepresentation pertains to a search or experience quality and thus is easily detectable by the consumer. When the mark mischaracterizes a product's credence quality, the misrepresentation is hard to detect and the mark is considered to be either "deceptively misdescriptive" or "deceptive." A mark is deceptively misdescriptive if in addition to misdescribing the product, consumers are

136. Dillbary, *supra* note 21, at 331-335.
137. Smith v. Chanel, Inc., 402 F.2d 562, 566 (9th Cir. 1968) (emphasis added).
138. Hoover Co. v. Royal Appliance Mfg. Co., 238 F.3d 1357, 1361 (Fed. Cir. 2001).
139. *In re* Nantucket, Inc., 677 F.2d 95, 98 n.5 (C.C.P.A. 1982).

likely to believe the misdescription.[140] It is considered deceptive if the "misdescription [is] likely to affect the decision to purchase."[141] Put differently, deception is found where the misdescription pertains to an essential element upon which the customer relies in deciding to purchase one product over another.[142] The mark TITANIUM, for example, was held deceptively misdescriptive, when attached to "recreational vehicles" because it (i) "misdescribed plaintiff's goods, which did not actually contain titanium",[143] and (ii) "consumers were likely to believe the misdescription and incorrectly infer that plaintiff's goods were made, at least in part, of titanium."[144] The mark LOVEE LAMB for automotive seat covers was found deceptive because in addition to misdescribing the goods (they were made from synthetic fiber) and causing the public to believe that the seats are actually made of sheep products, the court found that the "misrepresentation is likely to affect the decision to purchase."[145].

Trademark law prohibits the use of deceptive marks[146] but it allows sellers to affix "deceptively misdescriptive" marks to their products.[147] Why should the law allow a seller to use a "deceptively misdescriptive" mark? The model provides the answer: Only a deceptive mark conveys information which is not only false, but also impacts the consumer's belief in a way that impacts her purchasing decision. It *impacts* θ and increases the consumer's error costs.

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140. *Hoover*, 238 F.3d at 1361; *In re* Phillips-Van Heusen Corp., No. 76/664,835 2002 TTAB LEXIS 45, at 3 (TTAB 2002) ("A mark is deceptively misdescriptive if the following two-part test is met: (1) Does the mark misdescribe the goods or services? (2) Are consumers likely to believe the misrepresentation?").

141. *Hoover*, 238 F.3d at 1361; *In re* Budge Mfg. Co., 857 F.2d 773, 775–76 (Fed. Cir. 1988); *In re* Phillips-Van Heusen Corp., No. 76/664,835 2002 TTAB LEXIS 45, at 3 (TTAB 2002) (holding that a mark that satisfies the two conditions for deceptively misdescriptive mark, becomes "deceptive if the misrepresentation would be a material factor in the purchasing decision"); Glendale Int'l Corp. v. United States PTO, 374 F. Supp. 2d 479, 486 (E.D. Va. 2005) ("Where the misdescription is a material factor in the consumer's purchasing decision, the mark in issue is not merely 'deceptively misdescriptive,' but 'deceptive.'").

142. Marilyn Miglin Model Makeup, Inc. v. Jovan, Inc., No. 81 C 3233, 1984 U.S. Dist. Lexis 14699, at 5 (N. D. IL., 1984).

143. *Glendale Int'l Corp.*, 374 F. Supp. 2d at 481.

144. *Id.*

145. *In re Budge Mfg. Co.*, 857 F.2d at 775–76.

146. 15 U.S.C. § 1052(a).

147. 15 U.S.C. § 1052(e), (f); *Glendale Int'l Corp.*, 374 F. Supp. 2d at 481 n.10 ("The difference in effect between a finding of 'deceptive misdescriptiveness' and a finding of 'deceptiveness' is that a mark that is merely deceptively misdescriptive may ultimately be registered if the applicant can prove that the mark possesses 'acquired distinctiveness,' i.e., an association in the consumer's mind with a particular product source. *See* 15 U.S.C. § 1052(f) (2005). Not so for marks that are deceptive.").

This formulation also explains why not every change in a product should be considered false and misleading. Sellers should, and often do, change their products to improve their quality, because of a change in trends or due to an increase in the prices of certain inputs. Not every change may turn a trademark (whether descriptive or fanciful) into a deceptive mark. Only if consumers associate the mark with the credence attribute that has been changed and only if such attribute was important to their purchasing decision—then, and only then—should the law require the seller to inform consumers of the change in its product.

VI. CONCLUSION

A trademark undoubtedly provides information that reduces the consumer's inter-brand search costs and helps her choose the product she wants from a number of competing products. This is an important function of trademarks but it is not the only one that deserves protection. A trademark often provides information about the product's qualities and attributes (intra-brand information). This article shows that the intra-brand information provided by trademarks and similar branding mechanisms (private or governmental) impacts and shapes consumers' intra-brand decisions by reducing their error costs. This article shows that even where the consumer has already found and decided what product she should purchase (or, alternatively, even where inter-brand search costs are zero), trademarks are socially desirable, not to pair the consumer with a certain product (that would be an inter-brand function), but to help her choose the number of units that maximize her utility. Trademarks do so by providing information about the product's credence qualities.

Because a trademark can serve as a means to provide information about the product itself, it may be used by its owner as a medium for false advertising. An unscrupulous seller may try to use a trademark not just to pass off its product as another's (inter-brand confusion), but to mischaracterize its own product (intra-brand confusion) in order to increase sales and profits. This article explains how comparative advertising, consumer reports, and other private initiatives reduce fraudulent activity; and it explains why trademark law allows sellers to use deceptively misdescriptive marks. The article challenges the statement that "the *only legally relevant function of a trademark* is to impart information as to the source or sponsorship of the product."[148] It suggests that both functions should be protected; and it concludes that when certain conditions are met,

148. Smith v. Chanel, Inc., 402 F.2d 562, 566 (9th Cir. 1968) (emphasis added).

the law should prohibit a seller from using a non-descriptive mark that gained a secondary descriptive meaning to pass off its product as having properties it does not.

TECHNICAL APPENDIX

The error cost is dependent on two exogenous parameters that are of interest to us. The first is the difference between the intercepts a_1 and a_2, which I refer to as the "error span"; and the second is the subjective belief, θ. This Technical Appendix investigates the impact of these two exogenous parameters on the error cost.

Specifically, it shows that the larger the difference is between the product's quality and the consumer's belief about the product's quality (that is, the larger the error span), the larger the cost will be to consumers from an erroneous mistake. This can be illustrated by an upward move of the demand curve D_1^{-1} in Figure 4 ($a_1'>a_1$). Recall that the consumer's error costs are at maximum when she chooses to purchase $Q=Q_A,Q_C$. For example, if the consumer chooses to consume Q_A ($x=0$) when she should have chosen Q_C, she will incur a loss denoted by the area FAC. This error cost will increase with an increase in $d|a_1-a_2|$. The additional welfare loss (for $a'_1>a_1$) is denoted by the area FF_2C_2C.

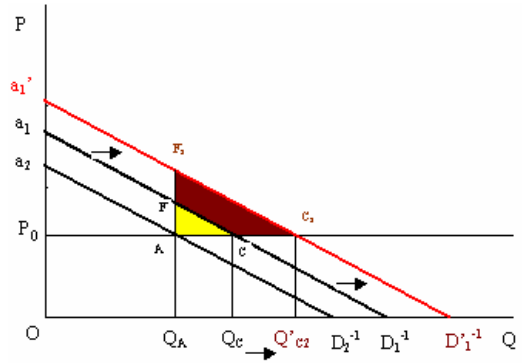

Figure 4: The Increase in E Due to an Exogenous Increase in (a_1-a_2).

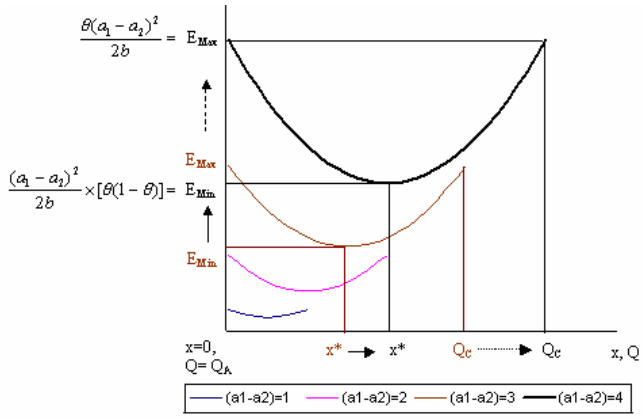

Figure 5: The Relation Between Q and E(e) (for θ=½) Due to an Exogenous Increase in the Error Span (Resulting From an Increase in a_1).

Figure 5 shows that an increase in the error span resulting from an increase in a_1 will move the error function upward and lead to an unambiguous increase of both the maximum and the minimum error cost, and will "span" the wings of the error function (hence the name "error span").[149] Figure 6 generalizes the outcome discussed in Figure 5. It shows that an increase in the error span, whether it is caused by an increase of a_1 (as shown in Figure 5) or a decrease in a_2, unambiguously leads to an increase in the consumer's error costs.

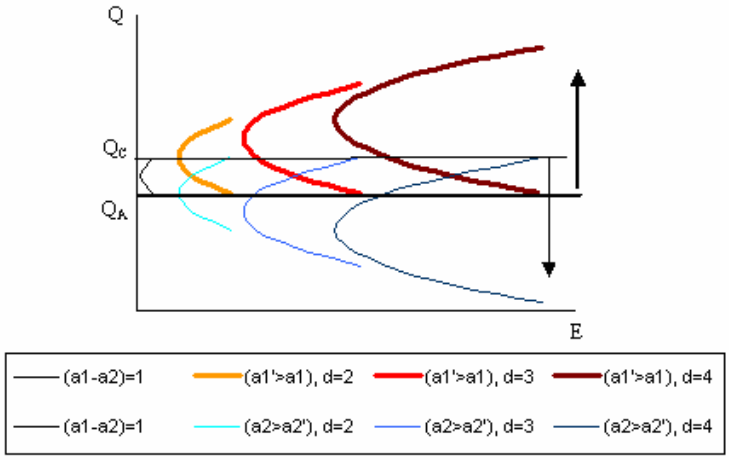

Figure 6: The Relation Between Q and E(e) (for θ=1/2) Due to an Exogenous Increase in the Error Span (Pursuant to an Increase in a_1 or a Decrease in a_2).

149. This follows from Equation (8) and (10).

Specifically, Figure 6 illustrates the change in x* and Q* due to an increase in the error span where $|Q_A-Q_C|$ are the initial values. It presents two sets of graphs. In each set, the error span increases at the same rate (denoted by an index from 1 to 4). However, while the first set's increase is due to an increase in a_1 (denoted by the bold lines), the second set's increase is due to a decrease in a_2. Figure 6 shows that an increase in the error span due to an increase in a_1 results in an increase in Q_C, Q* (Q_A remains constant); whereas a decrease in a_2 leads to a decrease in Q_A, Q* (Q_C remains constant). The error cost itself, however, will unambiguously increase with an increase in the error span (whether it is due to an increase in a_1, a_2, or both).

The second exogenous parameter, the impact of the consumer's error cost is the consumer's subjective belief, θ. It is possible to illustrate that an exogenous change in θ will alter both the minimum and maximum error cost. Take, for example, a case in which the consumer's subjective belief is θ=0 (denoted by the red broken line in Figure 2). If right, when the consumer purchases $Q=Q_A$ (x=0), she incurs no error cost. Instead, she buys the exact number of units needed to maximize her welfare. However, if she purchases $Q>Q_A$, she will incur a cost that increases with the purchase of every additional unit. At $Q=Q_C$, her cost will reach its maximum. The area below the dotted curve in Figure 2 equals the area FAC in Figures 1 and 4. Similarly, if the consumer's subjective belief is θ=1, she will purchase $Q=Q_C$, where her error cost is 0. If right, any number of units, such that $Q<Q_A$, will increase her error cost and peak at $Q=Q_A$.