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Informing Consumers About Themselves

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INFORMING CONSUMERS ABOUT THEMSELVES

OREN BAR-GILL*

ABSTRACT

Consumers make mistakes. Imperfect information and imperfect rationality lead to misperception of benefits and costs associated with a product. As a result consumers might fail to maximize their preferences in product choice or product use. A proposed taxonomy of consumer mistakes draws attention to a less-studied category of mistakes: use-pattern mistakes—mistakes about how the consumer will use the product. Use-pattern mistakes are prevalent. Sellers respond strategically to use-pattern mistakes by redesigning their products, contracts and pricing schemes. These strategic, design responses often exacerbate the welfare-costs associated with consumer mistakes. From a policy perspective, focusing on disclosure regulation, the importance of use-pattern mistakes requires more, and better, use-pattern disclosure. In particular, sellers should be required to provide individualized use-pattern information.

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TABLE OF CONTENTS

INTRODUCTION	1
I. THE OBJECT OF CONSUMER MISTAKE: TWO CATEGORIES	5
A. Two Categories of Consumer Mistakes.....	6
B. The Persistence of Use-Pattern Mistakes.....	7
1. Learning by Consumers.....	8
2. Correction by Sellers	10
II. SELLERS' RESPONSE TO CONSUMER MISTAKES	11
A. Multidimensional Prices	12
1. Consumer Mistakes and Seller Reactions.....	12
a. Rebates.....	13
b. Delayed Payment	15
c. Penalties	16
2. Welfare Implications.....	17
B. Bundling.....	18
1. Consumer Mistakes and Seller Reactions.....	18
a. Durables and Parts	20
b. Add-ons.....	23
c. Retail Stores	25
d. Intertemporal Bundling with Backloaded Pricing	26
e. Intertemporal Bundling with Frontloaded Pricing	31
2. Welfare Implications.....	32
a. The Decision to Purchase Product B.....	33
b. The Decision to Purchase Product A	35
c. Distributional Implications	38
d. The Welfare Implications of Bundling - Summary	39
C. Alternative Explanations	40
D. Undoing Mistake: Learning and Competition	41
III. DISCLOSURE REGULATION	43
A. Proper-Use Information	47
B. Product-Attribute Information with Average-Use Benchmarking.....	50
C. Direct Disclosure of Average-Use Information	53
D. Individual-Use Information	57
1. Credit Cards	58
2. Cell Phones	59
3. Other Markets	60
E. Designing Optimal Use-Pattern Disclosure	62

F. The Costs and Limits of Disclosure	63
1. The Costs of Disclosure.....	63
2. The Limited Efficacy of Disclosure.....	64
3. The Limited Efficacy of Average-Use Disclosure	64
4. Voluntarily-Supplied Use-Pattern Information	66
5. The Costs and Limits of Disclosure – Summary	67
CONCLUSION	68

INTRODUCTION

Consumers make mistakes. Imperfect information and imperfect rationality lead to misperception of benefits and costs associated with a product. As a result consumers might fail to maximize their preferences in product choice or product use. In this Article, I offer a taxonomy of consumer mistakes, drawing attention to a less-studied category of mistakes: use-pattern mistakes. I argue that use-pattern mistakes are prevalent. Sellers respond strategically to use-pattern mistakes by redesigning their products, contracts and pricing schemes. These strategic design responses often exacerbate the welfare-costs associated with consumer mistakes. From a policy perspective, focusing on disclosure regulation, I argue that the importance of use-pattern mistakes requires more, and better, use-pattern disclosure.

I begin, in Part I, by distinguishing between two categories of information—information about product attributes and information about product use.¹ For example, the interest rate on a credit card and the penalty for late payment are attributes of the credit card product. Borrowing patterns and the incidence of late payment describe how the product is used. The total benefits and costs associated with a product are a function of both product attributes and use patterns. Total interest paid depends both on the interest rate and on the consumer's evolving balance. Total penalty charges depend both on the late fee and on the frequency of late payment. The important role of information has been recognized both in the economic analysis of consumer markets and in consumer protection law. To a large degree, however, both the law and the economics of consumer markets have focused on information about product attributes. This Article emphasizes the importance of product use information or lack thereof in explaining market behavior and in effectively regulating consumer markets.

The relevance of consumer mistakes—descriptively, normatively, and prescriptively—depends on the robustness and persistence of these mistakes in a market setting. A naïve view would dismiss mistakes based on imperfect use information as short-lived or even non-existent. Product use depends on consumer wants and needs, and consumers are supposed to know their own wants and needs. The ideal *homo economicus* consumer has perfect information about his preferences. But his real-world counterpart does not. Moreover, product use depends on external influences as well as on internal preferences. Accordingly, even the ideal, perfectly rational consumer might suffer from imperfect use information.

After describing the two main subjects of consumer mistakes—product attributes and product use—I proceed, in Part II, to analyze market

¹ Product attributes affect product use. How a consumer uses a product depends on the product's functionality and on the product's price—both product attributes.

reactions to consumer mistakes. In particular I focus on how sellers redesign their products, contracts and, especially, prices in response to use-pattern mistakes. Price multidimensionality is, in many cases, a precondition for a strategic design response to consumer mistakes. With a single spot price, price misperception is difficult to imagine. But many consumer markets are characterized by multidimensional pricing. And, in some cases, this multidimensionality is artificially manufactured in response to consumer mistakes. For example, instead of setting a one-dimensional price, many sellers prefer two-dimensional rebate pricing. This pricing scheme is attractive because consumers overestimate the likelihood that they will redeem the rebate—a use-pattern mistake.

Multidimensional pricing is also achieved through delayed payments and other temporal divisions of a single price into multiple price components. When consumers are more deterred by a present payment and less deterred by a future payment—not because of any attribute of the product or price scheme but because of consumer preferences and psychology—sellers respond with delayed payment. The proliferation of penalty fees and rates included in consumer contracts provides another example of multidimensional pricing. A contractual penalty, which can be characterized as a contingent price component, is attractive to sellers because its cost to consumers is underestimated by consumers who mistakenly believe they will not trigger the penalty. Again, the design response is triggered not by a product attribute mistake, but rather by a mistake about the consumer's future behavior.

A common means for inconspicuously achieving price multidimensionality is product bundling. Bundling consists of the independent sale of two (or more) separate products in a way that ensures that many consumers purchase both products from the same seller. The bundle inherently has a two-dimensional price—a price for each of the two bundled components. In competitive markets price must closely follow cost. Bundling creates pricing flexibility by severing the tie between price and cost at the component level; of course, price must still closely follow cost at the bundle level. Sellers bundle together printers and ink and backload the price onto the ink dimension in response to consumers' underestimation of use. Similarly, intertemporal bundling with low introductory prices and high long-term prices, as observed for example in the credit cards market, responds to underestimation of the length of the consumption period. Conversely, intertemporal bundling in the health club market with frontloaded, subscription pricing responds to overestimation of use.

The proposed theory of market reactions to consumer misperception, especially misperception about product use, explains observed outcomes in numerous consumer markets. In addition, the correspondence between the

theoretical predictions and actual market outcomes provides strong evidence for the robustness and persistence of consumer mistakes about product use. Sellers would not redesign their products, contracts and prices in response to short-lived, non-robust mistakes. Accordingly, policymakers should look to product, contract and price design as indicators of a behavioral market failure—a market failure triggered by consumer misperception.² Policymakers should search for these indicators of consumer mistakes, because consumer mistakes reduce welfare. Mistakes reduce welfare even absent market reactions to these mistakes. I show that in many cases the welfare costs of consumer mistakes are exacerbated by sellers' strategic responses to these mistakes.

Importantly, the design features described in this Article should serve as *indicators* of persistent consumer mistakes, not as conclusive proof that mistakes exist. Many design features that can be explained as a strategic response to consumer misperception can also be explained within a mistake-free, rational choice framework. Accordingly, design evidence must be considered in combination with other economic data before a market failure conclusion can be drawn. Still, these design indicators should be useful to policymakers and regulators in identifying suspect markets for in-depth evaluation.³

After offering indicators of a behavioral market failure in Part II, I consider, in Part III, regulatory responses to such market failure. In particular, I consider disclosure regulation. I focus on disclosure regulation for several reasons. First, disclosure is the most benign form of intervention, facilitating, rather than inhibiting, the operation of markets.⁴ Second, and related, disclosure mandates have proven to be the most politically feasible, often the *only* politically feasible, form of regulation in many contexts.⁵ Finally, this Article studies the problem of consumer mistakes. Since mistake can often be traced back to lack of information, disclosure of information is the natural starting point for solving the mistake problem.

² Cf. Joseph Farrell & Paul Klemperer, *Coordination and Lock-In: Competition with Switching Costs and Network Effects*, in 3 HANDBOOK OF INDUSTRIAL ORGANIZATION § 2.9 (Mark Armstrong & Robert Porter eds., North-Holland, forthcoming Sept. 2007), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=917785 (legal intervention may be warranted when sellers deliberately increase switching costs, thus creating multidimensionality). See also *infra* Part II.B.1.b (discussing the relationship between switching costs and multidimensionality).

³ This is especially important since use-pattern information is important in virtually every consumer market and, consequently, virtually every consumer market is prone to use-pattern mistakes.

⁴ See Colin Camerer et al., *Regulation for Conservatives: Behavioral Economics and the Case for "Asymmetric Paternalism"*, 151 U. PA. L. REV. 1211 (2003); Cass R. Sunstein & Richard H. Thaler, *Libertarian Paternalism is not an Oxymoron*, 70 U. CHI. L. REV. 1159 (2003).

⁵ See, e.g., Oren Bar-Gill, *Seduction by Plastic*, 98 NW. U. L. REV. 1373, 1374 n.3 (2004) (describing the failed attempts to enact usury ceilings for credit cards and the resort to disclosure regulation); RONALD J. MANN, CHARGING AHEAD: THE GROWTH AND REGULATION OF PAYMENT CARD MARKETS 159 (Cambridge University Press 2006) (describing disclosure mandates as "a common compromise solution in the American regulatory regime.").

This does not mean that disclosure is a perfect fix in all mistake cases. Nor does it mean that disclosure is always superior to other forms of regulation or to no regulation at all.⁶ The costs and limits of information disclosure are well known. My goal is not to idealize disclosure. Rather, recognizing the prevalence of disclosure regulation, my goal is to help regulators design more effective disclosure mandates. I argue that disclosure requirements should match the type of information deficit that caused the market failure. When market failure is caused by mistakes about product attributes, the solution is disclosure of product attributes. And when market failure is caused by mistakes about product use, the solution is disclosure of use patterns.

A brief survey of existing disclosure requirements demonstrates the prevalence of disclosure mandates focused on product attributes. Use-pattern disclosure requirements are more limited and less effective. Consumers receive information on the proper use of products. For example, the FTC requires clothes manufacturers to provide information on how to properly clean the clothes.⁷ Consumers also receive indirect use information, when product attribute information is based—explicitly or implicitly—on some assumption about average or typical use. For example, a cigarette’s tar and nicotine ratings, which are certified by the FTC, assume a certain intensity of smoking—a 2-second, 35-milliliter puff every minute.⁸ I argue for enhanced use-pattern disclosure. In particular, I argue for direct disclosure of average use-pattern information. For example, credit card issuers can be required to disclose the average likelihood of paying late (and triggering a penalty fee), or, even better, the amount that an average consumer pays in late fees each year. More importantly, I argue that in certain markets sellers should be required to provide individual-use information. Elaborating on the previous example, credit card issuers can be required to tell each consumer how much this individual consumer paid in late fees over the past year. This prescription is feasible and desirable in markets, such as the credit card market, where sellers maintain long-term relationships with their customers and thus voluntarily collect individual-use information.

The call for enhanced use-pattern disclosure, and specifically the emphasis on individual-use disclosure, challenges the conventional wisdom about information and disclosure in consumer markets. This conventional wisdom recognizes that sellers often have superior product attribute

⁶ When price multidimensionality, strategically attained through bundling, exacerbates the welfare costs of consumer mistakes, unbundling policies should be considered in addition to disclosure regulation. Unbundling policies often involve the elimination or reduction of switching costs. See Farrell & Klemperer, *supra* note 2, § 2.9; Oren Bar-Gill, *Bundling and Consumer Misperception*, 73 U. CHI. L. REV. 33 (2006).

⁷ See *infra* Part III.A.

⁸ See *infra* Part III.B.

information and that it may be desirable to require them to disclose this information to consumers. On the other hand, the conventional wisdom largely overlooks the welfare-enhancing potential of use-pattern disclosure, because it assumes that consumers, not sellers, have superior use-pattern information. I argue that this assumption, while clearly true in some markets, is false in others. In important consumer markets sellers know more about a consumer's use-patterns than the consumer herself. In these markets use-pattern disclosure may well be desirable.⁹

I. THE OBJECT OF CONSUMER MISTAKE: TWO CATEGORIES

This Article is about mistakes, specifically, consumer mistakes affecting product choice and product use. A mistake can be the result of imperfect information or imperfect rationality. Why do consumers have only imperfect information? Why and in what way do consumers deviate from the perfect rationality ideal? These are all important questions—important questions that are largely sidestepped in this Article. I will argue that valuable insight can be gleaned by taking mistakes as given and studying market responses to mistakes—in Part II—and regulatory responses to mistakes—in Part III. Yet it should be recognized that market reactions can depend on the reason for the mistake and that the efficacy of the regulatory responses can depend on the reason for the mistake.¹⁰ And, as explained below, product and price design as well as regulatory design can trigger consumer mistakes or influence the type and magnitude of consumer mistakes.¹¹ Before embarking on an analysis of the law and economics of consumer mistakes, it is helpful to begin by conceptualizing and categorizing mistakes. In doing so, I will remark briefly on the origin of consumer mistakes.

⁹ While the conventional wisdom, and the regulatory landscape that is based on it, focus on product attribute disclosure, there are important examples of use-pattern disclosures, including direct average use disclosures and individual use disclosures, both in existing law and in law reform proposals. *See infra* Part III. These examples, however, serve as the exception that proves the rule. Until use-pattern information is broadly recognized as a legitimate, even necessary, subject of disclosure regulation, there will be only that rare exception.

¹⁰ Indeed, when conducting the market-specific analysis advocated in this Article (analysis that I perform in related work), the reason for the mistake should be explored. For example, in my study of the credit card market I explore the origin of consumer mistakes. *See* Bar-Gill, *supra* note 5. *See also* George Loewenstein & Emily Haisley, *The Economist as Therapist: Methodological Ramifications of 'Light' Paternalism*, in 1 HANDBOOK OF ECONOMIC METHODOLOGIES: PERSPECTIVES ON THE FUTURE OF ECONOMICS: POSITIVE AND NORMATIVE FOUNDATIONS (Andrew Caplin & Andrew Schotter eds., forthcoming 2007) (“An enhanced understanding of [the psychological *processes* underlying economic behavior] can help to explain why people make mistakes in the first place, and, more importantly, can provide insights into what types of policies are likely to be effective in correcting the mistakes.”).

¹¹ *See infra* parts II and III.

A. Two Categories of Consumer Mistakes

Informed choice assumes two distinct categories of information: information about product attributes and information about how the product will be used. One way to view the distinction between product-attributes information and product-use information is by tracing the source of the information. Product attribute information, like the product itself, is created by the manufacturer. The manufacturer is the source of the information. Product use is a function of both the product's attributes and the consumer's wants and needs. Product-use information has two sources—the manufacturer and the consumer. A different categorization would focus on these two sources and distinguish between manufacturer (or seller) information and consumer information. Consumer information, i.e., information on consumer wants and needs, can be further divided into two categories or sources of information: an internal source, consumer preferences, and an external source, consisting of the sum of external forces that affect the benefit to the consumer from using the product.

Consumer protection law is concerned with imperfect information on the part of consumers. Traditional consumer protection analysis and policy focus on lack of information about product attributes.¹² This emphasis on product attribute information can be traced back to the rational choice foundations of traditional consumer protection analysis. Rational choice theory assumes that individuals have perfect information about their own preferences. To the extent that use is determined by consumer preferences, the rational choice model assumes perfect information about use patterns. Unfortunately, few consumers are perfectly rational. And imperfectly rational consumers might have imperfect information concerning their own preferences.¹³ Moreover, as explained above, how a consumer will use a product depends on external influences, as well as on internal preferences. Even a perfectly rational consumer may have only imperfect information about these external influences.

Consider a lawnmower. The value of a lawnmower to a consumer depends on attributes of the lawnmower and on how frequently the consumer will want or need to mow her lawn. How often the lawnmower will be used depends, in turn, on attributes of the lawnmower, on consumer preferences, and on external factors influencing the consumer's need to mow the lawn.

¹² See *infra* Part III.

¹³ I am assuming that consumers have fixed preferences, but might be imperfectly aware of these preferences at the time when they decide whether to buy a certain product or which type of product to buy. My departure from the neoclassical model is thus limited. A more substantial departure would recognize that some preferences are not fixed, but rather constructed. And that information, including information provided by sellers, affects the construction of preferences. Relaxing the fixed-preferences assumption raises important descriptive and normative questions; questions which I do not address in this Article.

The attributes of the lawnmower matter, because, for example, a better lawnmower is less burdensome to operate and thus will be used more often. Consumer preferences matter, because a consumer who cares more about her lawn will use the lawnmower more often. And external forces, like rainfall and soil condition, matter, because they affect the speed with which grass grows. To make a fully-informed decision whether to purchase a lawnmower and which lawnmower to purchase the consumer must have information on all of these factors. Yet consumer protection law, with its focus on product attribute information, pays insufficient attention to other factors affecting product use.

Or consider a credit card. Focusing on the financing component of the credit card product, the value of a credit card depends on product attributes, specifically the interest rate. The value of the product depends also on how it will be used—on how much the consumer will borrow. The extent of borrowing, in turn, depends on – (1) product attributes such as the interest rate, (2) the consumer’s intertemporal consumption preferences, and (3) external forces affecting the consumer’s desire to borrow or need to borrow such as present and expected available income and conditions affecting the demand for funds, e.g., illness or divorce. Policymakers have been concerned about mistakes in the credit card market. Their response, however, has largely been targeted at product attribute information. The Truth-in-Lending Act, for example, mandates conspicuous disclosure of credit card interest rates. Use pattern mistakes that are not caused by imperfect information about interest rates have received less attention.¹⁴

B. The Persistence of Use-Pattern Mistakes

Many consumer mistakes are short-lived. Consumers quickly learn to avoid these mistakes and market forces work to eliminate them. Accordingly, consumer mistakes are important, descriptively and normatively, only if they can withstand these mistake-correction forces. The persistence of any mistake, including use-pattern mistakes, is an empirical question.¹⁵ A market-specific inquiry is necessary to determine whether the specific market is afflicted by a mistake-driven, behavioral market failure. But before I turn to empirics, I offer several observations on the theoretical possibility of persistent use-pattern mistakes. I argue that learning, an important mistake-correction force, might be weaker in the use-pattern context. I then argue that another mistake-correction force,

¹⁴ See *infra* Part III.

¹⁵ See Amos Tversky & Daniel Kahneman, *Rational Choice and the Framing of Decisions*, in *RATIONAL CHOICE: THE CONTRAST BETWEEN ECONOMICS AND PSYCHOLOGY* 91 (Robin M. Hogarth & Melvin W. Reder eds., 1987) (“The claim that the market can be trusted to correct the effect of individual irrationalities cannot be made without supporting evidence.”).

education efforts by sellers, might also be less effective in curing use pattern mistakes.

1. Learning by Consumers

Use-pattern mistakes are based on misperception about product attributes as well as about the consumer's own wants and needs. Learning about internal factors influencing a consumer's wants and needs—about preferences—should be easy and quick. Learning about external factors, namely, product attributes and external forces influencing the consumer's wants and needs can be more or less effective depending on context.¹⁶ But there are general forces working against learning of use-pattern information. Learning can be both intrapersonal and interpersonal. In many markets interpersonal learning is an important safeguard against persistent consumer mistakes. And interpersonal learning is less effective in curing use-pattern mistakes.¹⁷

Interpersonal learning is quick and effective when the object of learning is a standardized product.¹⁸ But not all products are standardized. And when the product is not standardized interpersonal learning becomes slower. With a standardized good, when a consumer reveals, through use, a certain hidden feature of the product, he can share this information with his family and friends. Since the information pertains to a standardized good it is relevant to others. But if the good is not a standardized good such interpersonal learning will be less effective. With a non-standardized good the information obtained by one consumer might not be relevant to another consumer who purchased a different version of the non-standard good.¹⁹

When the nature of the product is more broadly defined to include the potential uses of the product, then the group of standardized products

¹⁶ Learning from one's mistakes relies on timely, clear and painful feedback that the decision was in fact a mistake. See Colin Camerer, *Comments on "Some Implications of Cognitive Psychology for Risk Regulation,"* by Roger Noll and James Krier, 19 J. LEGAL STUD. 791, 794 (1990) (learning occurs when the outcome is prompt and unambiguous); Russell Korobkin, *Bounded Rationality, Standard Form Contracts, and Unconscionability*, 70 U. CHI. L. REV. 1203 (2003) (citing references). An impediment to learning is that people attribute good outcomes to skill and bad outcomes to (bad) luck. See Jennifer Arlen, *Comment: The Future of Behavioral Economic Analysis of Law*, 52 VAND. L. REV. 1765, 1783 (1998) (citing MAX BAZERMAN, JUDGMENT IN MANAGERIAL DECISION MAKING (4th ed. 1998)). On the limits of learning, see generally Tversky & Kahneman, *supra* note 15, at 90-91; Howard Latin, *"Good" Warnings, Bad Products, and Cognitive Limitations*, 41 UCLA L. REV. 1193, 1252-55 (1994). Generally, infrequent mistakes or mistakes that generate infrequent feedback are less susceptible to correction by learning.

¹⁷ Learning—both intrapersonal learning and interpersonal learning—can occur within markets and across markets. Some use-pattern mistakes transcend market boundaries and are more amenable to cross-market learning than product attribute mistakes.

¹⁸ See, e.g., Richard A. Epstein, *Behavioral Economics: Human Error and Market Corrections*, 73 U. CHI. L. REV. 111, 120 (2006) (arguing that mistakes with respect to the value of a standardized product are unlikely to persist in the marketplace).

¹⁹ See Oren Bar-Gill, *The Behavioral Economics of Consumer Contracts*, MINN. L. REV. (forthcoming).

shrinks. In particular, even an otherwise standardized product is non-standardized with respect to use patterns, when different consumers use the product in different ways. And this can inhibit learning of use-pattern information. After using a product for some time a consumer will obtain valuable use-pattern information. But this information, while valuable to this specific consumer, may be of little value to another consumer who will use the same product differently.²⁰

An important factor that facilitates learning is seller reputation. Seller reputation is commonly based on the quality of the seller's product, not on how consumers use the product. Accordingly, reputation, as facilitator of consumer learning, plays a smaller role in the learning of use-pattern information. Another form of learning is based on expert advice. Consumers, recognizing their imperfect rationality and the imperfect information at their disposal, take steps to limit the mistakes that they make. In particular, consumers seek advice and consult experts before entering the market.²¹ While clearly effective in many contexts, this indirect form of learning is also limited. Consumers do not seek advice before each and every purchase or use decision. When faced with a big decision consumers are more likely to take the time and incur the cost of seeking expert advice. They are less likely to do so when faced with a smaller decision.

For example, consumers are more likely to seek third-party assistance before taking-on a substantial home-equity loan. They are less likely to engage in substantial consultations before deciding on a minor credit card purchase. In many markets consumers make many small decisions, rather than a few large decisions. In these markets reliance on expert advice is probably rare.²² Focusing on product use, to the extent that use decisions are smaller decisions, mistakes in product use are less likely to be cured by advice and consultation. Use-pattern mistakes affecting product choice decisions are also less likely to be cured by advice and consultation. Experts and other advice-providers can assist the consumer by providing product attribute information and by offering more sophisticated analysis of this information. Third party advisers generally do not have superior

²⁰ This is not to say that meaningful information cannot be conveyed. For example, one consumer can indicate to another: "This is a good printer if you don't print more than 100 pages a month, otherwise it is expensive." This information is useful to consumers with different use patterns. Interpersonal learning about use-pattern information is plausible if the "teacher" conveys generic information that the "learner" can adapt to his/her own circumstances.

²¹ See, e.g., Richard A. Epstein, *Second-Order Rationality*, in BEHAVIORAL PUBLIC FINANCE 355, 361-62 (Edward J. McCaffery & Joel Slemrod eds., 2006).

²² An important exception should be noted: Many consumers consult Consumer Reports, CNet and similar third-party providers of information, even before making relatively small-scale purchases. Nevertheless, even with Consumer Reports, CNet and others, many consumers still make many small-scale mistakes. Many small mistakes can be as harmful as a few large mistakes. Credit card borrowing provides an example. See Bar-Gill, *supra* note 5. Of course, consumers make mistakes even when the decision is a big one. For example, many consumers take on subprime mortgage loans that they cannot repay.

information about the consumer's wants and needs—an important determinant of anticipated product use.²³

2. Correction by Sellers

In addition to learning by consumers, sellers may invest in correcting consumer misperceptions.²⁴ Consider the following, arguably common, scenario. Seller A offers a product that is better and costs more to produce than the product offered by seller B. Consumers, however, underestimate the added value from seller A's product and thus refuse to pay the higher price that seller A charges. In this scenario, seller A has a powerful incentive to educate consumers about her product—to correct their underestimation of the product's value. Underestimation of value is often the product of a use-pattern mistake. For example, consumers who underestimate the intensity with which they will use a product will underestimate the value of a higher-quality, more resilient product. Accordingly, seller A will want to correct consumers' use-pattern mistake.

But what if both seller A and seller B and many other sellers offer identical low-quality products? If seller A increases the quality of her product and invests in correcting the use-pattern mistake that led consumers to undervalue high-quality products, then seller A will attract a lot of business and make a supra-competitive profit. But this is not an equilibrium. After seller A invests in consumer education, all the other sellers will free ride on seller A's efforts. They will similarly increase quality and compete away any profit that seller A would have made. Anticipating such a response, seller A will realize that if she invests in consumer education she will not be able to recoup her investment. She will thus choose not to increase the quality of her product, and instead will continue to offer a low-quality product. This collective action problem can lead to the persistence of consumer misperception.²⁵

²³ Third-party advisors can provide helpful average-use or typical-use information and information about common use-pattern mistakes.

²⁴ See, e.g., Epstein, *supra* note 18, at 120. The line between consumer learning and seller advertising is not always clear. Sellers can and do influence information transmission between consumers (word-of-mouth). See David B. Godes & Dina Mayzlin, *Firm-Created Word-of-Mouth Communication: A field-Based Quasi-Experiment* (HBS Marketing Research Paper No. 04-03, 2004).

²⁵ See Howard Beales, Richard Craswell & Steven Salop, *The Efficient Regulation of Consumer Information*, 24 J.L. & ECON. 491, 527 (1981) (explaining why sellers might not disclose both positive and negative information). See also R. Ted Cruz & Jeffrey J. Hinck, *Not My Brother's Keeper: The Inability of the Informed Minority to Correct for Imperfect Information*, 47 HASTINGS L.J. 635, 659 (1996). In some markets the first-mover advantage will be large enough to overcome the collective action problem. Branding and product differentiation can also reduce the collective action problem. See Epstein, *supra* note 18, at 120. But see Bar-Gill, *supra* note 19, § I.B. (identifying the limits of Epstein's branding and differentiation argument). In this sense monopoly power, including limited monopoly power conferred by patent or trademark, by geographic proximity, etc', can facilitate mistake-correction by reducing the collective action problem. See Beales, Craswell & Salop, *supra*, at 503-509, for a general discussion of information failures in consumer markets. On the limits of advertising as a mistake-correction mechanism, see also Xavier Gabaix & David Laibson, *Shrouded Attributes*,

Even apart from this collective action problem sellers might prefer not to correct consumer mistakes and might even invest in creating misperception. Arguably, manipulation of consumer perceptions, and even preferences, is a main purpose of advertising.²⁶ For example, to increase demand for their product sellers will often try to persuade consumers that they will use a product more than they actually will. Therefore, while competing sellers may often choose to educate consumers, this mistake-correction force is limited. Moreover, there is a specific impediment that restricts correction of use-pattern mistakes. A necessary, but not sufficient, condition for mistake-correction by sellers is that sellers possess the information that consumers lack. Sellers always have information about product attributes. Sellers might not have information about consumers' use patterns.

Use-pattern mistakes are less susceptible to correction for another reason. Sellers have a powerful incentive to correct product attribute mistakes, and specifically to undo any underestimation of product quality, because these product attribute mistakes hurt the seller's reputation and thus adversely affect not only the demand for this one product but also the demand for the seller's other products. Since use-pattern mistakes do not have a similar effect on the seller's reputation, the incentive to correct such mistakes is weaker.

II. SELLERS' RESPONSE TO CONSUMER MISTAKES

Use-pattern mistakes are important. They are sufficiently important that sellers respond strategically to these mistakes in designing their products, contracts and prices. In this Part, I develop a theory of market reactions to consumer misperceptions.²⁷ Through a series of examples from different

Consumer Myopia, and Information Suppression in Competitive Markets, 121 Q. J. ECON. 505 (2006); Korobkin, *supra* note 16, at 1242-43.

²⁶ See Edward L. Glaeser, *Psychology and the Market*, 94 AM. ECON. REV. PAPERS & PROCEEDINGS 408, 409-411 (2004) ("Markets do not eliminate (and often exacerbate) irrationality. ... The advertising industry is the most important economic example of these systematic attempts to mislead, where suppliers attempt to convince buyers that their products will yield remarkable benefits. ... It is certainly not true that competition ensures that false beliefs will be dissipated. Indeed in many cases competition will work to increase the supply of these falsehoods.") Glaeser argues, however, that government decision makers have weaker incentives than consumers to overcome errors, and thus intervention in markets might make things worse. *Id.* See also Edward L. Glaeser, *Paternalism and Psychology*, 73 U. CHI. L. REV. 133 (2006).

²⁷ Cf. Jon D. Hanson & Douglas D. Kysar, *Taking Behavioralism Seriously: The Problem of Market Manipulation*, 74 N.Y.U. L. REV. 630 (1999) (hereinafter *Hanson and Kysar I*); Jon D. Hanson & Douglas A. Kysar, *Taking Behavioralism Seriously: Some Evidence of Market Manipulation*, 112 HARV. L. REV. 1420 (1999) (hereinafter *Hanson and Kysar II*). Sellers may be aware of the consumer mistake, or they may be responding to market demand, which is driven by the mistake. Compare *Hanson and Kysar II, supra*, at 1427 ("the competitive forces of the market should drive manufacturers to act as if they are utilizing behavioral findings to exploit consumer perceptions, regardless of manufacturers' awareness of the process.").

consumer markets, I suggest that sellers are in fact reacting to use-pattern mistakes as the theory predicts. The empirical testing of the theory is suggestive, not conclusive. The identified product, contract and price designs while arguably explained as a response to consumer mistakes can also be explained within a mistake-free, rational choice framework. I argue that the alternative, rational choice explanations are incomplete or not completely persuasive. But a comprehensive evaluation of these arguments requires an in-depth analysis of each design feature in the specific market context—an analysis which is beyond the scope of this Article.²⁸

When a product, contract or pricing scheme is redesigned in response to consumer mistakes, this provides powerful evidence that these mistakes are robust and persistent. Sellers would not redesign their products, contracts and prices in response to insignificant, short-lived mistakes. Not only do sellers' responses to use-pattern mistakes prove the robustness and persistence of these mistakes, but also, in many cases, these design responses increase the welfare costs of use-pattern mistakes. The increased welfare costs reinforce the case for legal intervention. Part II, in detailing the welfare costs of consumer mistakes and of sellers' response to consumer mistakes, sets up the stage for the analysis of regulatory responses in Part III.

A. Multidimensional Prices

1. Consumer Mistakes and Seller Reactions

Sellers respond strategically to consumer mistakes by redesigning their products and, especially, their pricing schemes. Such a strategic response, however, requires multidimensional pricing. It is difficult to imagine misperception about a one-dimensional price. Moreover, with a single price, competition dictates that price equal marginal cost, leaving no room for strategic pricing in response to consumer misperception.²⁹ Sellers, however, have a powerful incentive to respond to consumer mistakes. Therefore, they break-up the single price into several price components. The total price paid by consumers must equal total cost, but the distribution of the total payment across the several price components can be strategically designed in response to consumer misperception.

Multidimensional pricing as a response to consumer mistakes is based on consumers' differential sensitivity to different pricing dimensions. The benchmark is the spot price. With one-dimensional pricing the spot price is the single price, and thus also the total price. With multidimensional pricing total price is divided among several price dimensions, where the

²⁸ See *infra* Part II.C.

²⁹ See, e.g., ANDREU MAS-COLELL, ET AL., MICROECONOMIC THEORY 316-322 (1995).

spot price can be, but does not have to be, one of these dimensions. Multidimensional pricing is effective when, for some reason, consumers are more sensitive to the spot price and less sensitive to other pricing dimensions.

a. Rebates

The rebate strategy provides an example of multidimensional, misperception-based pricing. For present purposes it is important to distinguish rebates—including mail-in rebates and rebates redeemed over the internet—from coupons that are redeemed at the point of purchase. Rebate pricing is prevalent. Between four and ten billion dollars worth of rebates are offered in the U.S. each year.³⁰ I focus on rebates of modest but non-trivial amounts, say \$5 – \$100, for which redemption rates are significantly below 100 percent. For example, marketing scholars Tim Silk and Chris Janiszewski found that rebates of \$10 to \$20 on a \$100 software product have a redemption rate of 10 – 30 percent.³¹

Consider a kitchen table, with a per-unit cost of \$100. If price is one-dimensional, in a competitive market the seller of this table will set a price of \$100. With consumer misperception, however, the seller will have a strong incentive to set a two-dimensional price. For instance, the seller can set a pre-rebate price of \$110 and offer a \$20 rebate. Focusing consumers' attention, through advertising, on the post-rebate price of \$90, this seller will attract business from other sellers who offer a one-dimensional, no-rebate price of \$100. But attracting many consumers is not enough. If all consumers send-in their rebate forms and end-up paying \$90 on a table that costs the seller \$100, the rebate-offering seller will lose money. Of course, not all consumers redeem their rebates. Specifically, if only 50% of consumers send-in their rebate forms, then the seller will not lose money. On average she will get \$100 for each table, since 50% of consumers will pay the pre-rebate price, \$110, and 50% of consumers will pay the post rebate price, \$90 ($50\% * \$110 + 50\% * \$90 = \100).

Partial rebate redemption explains why the rebate-offering seller will not lose money. Partial redemption also reintroduces the basic question: why offer two-dimensional, pre-rebate and post-rebate prices? If consumers on average pay the same price, \$100, for the same table, why would they

³⁰ See Matthew A. Edwards, *The Law, Marketing and Behavioral Economics of Consumer Rebates*, 12 STAN. J.L. BUS. & FIN. (forthcoming 2007), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=944548#PaperDownload; Jeff Sovern, *Toward a New Model of Consumer Protection: The Problem of Inflated Transaction Costs*, 47 WM. AND MARY L. REV. 1635, 1641-42 (2006).

³¹ See Tim Silk & Chris Janiszewski, *Managing Rebate Promotions: An Empirical Analysis of Purchase and Redemption* 5 (unpublished manuscript). Redemption rates increase with rebate value. Still most redemption rate estimates do not exceed 50 percent. See Sovern, *supra* note 30, at 1638 (citing estimates); Edwards, *supra* note 30 (same).

prefer to buy their tables from the rebate-offering seller? Misperception provides the answer. If all consumers are perfectly rational, then indeed the rebate-offering seller will enjoy no competitive advantage. But if some consumers are less than perfectly rational, specifically, if some consumers overestimate the likelihood of redeeming their rebate, then rebates becomes a winning strategy. For example, assume that while the actual probability of redeeming the rebate is 50%, the consumer, when purchasing the table, thinks that she will send-in the rebate for sure. This consumer will mistakenly focus on the low post-rebate price of \$90, and thus will prefer to buy her table from the rebate-offering seller. The seller, on her part, knows that she will obtain an average price of \$100 ($= 50\% * \$110 + 50\% * \90), enough to cover her costs. Misperception draws a wedge between the actual price, \$100, and the perceived price, \$90. Of course, the seller can exploit this misperception only when two-dimensional, rebate pricing is employed.³²

Rebate pricing has two components: the spot price and the rebate. The rebate is in effect a negative price. Accordingly the mistake is excessive, not insufficient, sensitivity to this negative price. Overestimation of the likelihood of rebate redemption explains consumers' excessive sensitivity to the rebate component of the two-dimensional price. Again, the consumer is mistaken not about a product attribute but rather about her future behavior—about the probability that she will redeem the rebate.³³ Rebates also provide an example of product design in response to consumer mistakes. Beyond the two-dimensional pricing itself, sellers deliberately increase the transaction costs associated with rebate redemption—by imposing onerous requirements on consumers who wish to redeem the rebate and by sending the rebate check only after a prolonged period of time.³⁴ The increased transaction costs reduce the redemption rate. But a reduced redemption rate does not necessarily make the rebate more attractive to sellers. A lower redemption rate is attractive to sellers only if it increases consumer mistakes, i.e., only if the degree of overestimation of

³² See Dilip Soman & John T. Gourville, *The Consumer Psychology of Mail-In Rebates: A Model of Anchoring and Adjustment* (HBS Marketing Research Paper No. 06-02, 2005), available at <http://ssrn.com/abstract=875658>; Sovern, *supra* note 30, at 1663 (“the consumer must either overlook or underestimate the cost [of rebate redemption] at the time the consumer enters into the transaction.”); Hanson and Kysar II, *supra* note 27, at 1450; Edwards, *supra* note 30; Francesco Drago & Dora Kadar, *Rebate or Bait? A Model of Regret and Time Inconsistency in Consumer Behavior* (CEPR Discussion Paper No. 5757, 2006), available at <http://ssrn.com/abstract=925009>.

³³ I consider this a use-pattern mistake, even though the mistake concerns use of an ancillary product feature—the rebate option.

³⁴ See Sovern, *supra* note 30, at 1638-41. Moreover, sellers conceal information about the redemption procedure to increase consumer mistakes. *Id.* at 1641. See also Edwards, *supra* note 30 (describing the transaction costs associated with rebate redemption and recent State acts and bills that attempt to reduce these transaction costs). A recent patent granted on an automated rebate processing system boasts that “the rebate processing system provides a user friendly interface, yet retains hurdles sufficient to maintain breakage.” (Breakage is the industry term for rebates that are not successfully claimed). See U.S. Patent 7,120,591, (filed October 10, 2006) (“Rebate processing system and method providing promotions database and interface”).

the redemption rate is inversely related to the actual redemption rate. The prevalence of tactics that increase the cost of rebate redemption is evidence of such an inverse correlation.

b. Delayed Payment

Another way to create multidimensionality in pricing is to divide the price into several components due at different points in time. The idea is to postpone part, even most, of the payment into the future. If consumers are myopic, if they excessively discount the future, this strategy will reduce the perceived cost to the consumer of purchasing the good. The lower perceived cost of future payments is attributed, in part, to optimism about available income in the future. A consumer who wants to buy a good now but does not have money now, might mistakenly believe that he will have money in the future.³⁵ Similarly, some evidence suggests that an irrational “pain of paying” might deter purchases. By decoupling the time of purchase from the time of payment, sellers may be able to overcome this “pain of paying.”³⁶ Of course, the “pain of paying” is not eliminated; it is only postponed. The myopic or optimistic consumer believes that future pain is not as painful. Multidimensional backloaded pricing responds to consumer mistakes about the consumer’s own situation (although not about future use), not about a product attribute.

Marketing campaigns boasting “no payment due for one year” and “buy now, pay later” offers are examples of this pricing strategy. Of course, delayed payment can also be attractive for the perfectly rational consumer. Delayed payment is a form of financing. In a competitive market sellers charge for this financing service by increasing the price which is due later above the price they would have charged now. If sellers have a comparative advantage as lenders, so that this financing arrangement is efficient, rational consumers will prefer delayed payment. In many cases, however, backloaded pricing is not an efficient extension of credit, but

³⁵ See David A. Armor & Shelley E. Taylor, *When Predictions Fail: The Dilemma of Unrealistic Optimism*, in HEURISTICS AND BIASES: THE PSYCHOLOGY OF INTUITIVE JUDGMENT 334, 334 (Thomas Gilovich et al. eds., 2002) (“One of the most robust findings in the psychology of prediction is that people’s predictions tend to be optimistically biased.”); Neil D. Weinstein, *Unrealistic Optimism About Future Life Events*, 39 J. PERSONALITY & SOC. PSYCHOL. 806, 806, 818-819 (1980).

³⁶ George Loewenstein & Ted O’Donoghue, *We can do this the easy way or the hard way: Negative Emotions, Self-Regulation and the Law*, 73 U. CHI. L. REV. 183, 196 (2006) (“Perhaps the simplest way to reduce the pain of paying is to delay the payment into the future. Firms have long offered schemes that require no payments for several months, especially for furniture and other durable goods. More recently, the expansion of the credit card market has accomplished the same thing on a much broader scale.”). See also George Loewenstein & Drazen Prelec, *The Red and the Black: Mental Accounting of Savings and Debt*, 17 MARKETING SCI. 4 (1998) (introducing the concept of “pain of paying” and arguing that the decoupling of consumption and payment reduces the pain of paying).

rather an inefficient response to consumers' reduced sensitivity to postponed payments.³⁷

Delayed payment adds a credit feature to non-credit products. But multidimensional backloaded pricing is also prevalent in consumer credit products. In particular, some subprime mortgage loans require a very small, or even zero, downpayment, offer low introductory interest rates, and then adjust the interest rate upward after several years.³⁸ These features of the mortgage product may be responding to consumers' optimism bias. A consumer who overestimates the rate in which her income will increase will prefer a mortgage with a small downpayment and an interest rate that increases over time.³⁹ The skyrocketing foreclosure rates suggest that borrowers' ability to pay has not increased as quickly as they had anticipated.⁴⁰

c. Penalties

Many consumer contracts impose penalties on defaulting consumers. Default may include late payment,⁴¹ early termination of the contract,⁴² failure to return a rental on time,⁴³ etc'.⁴⁴ A penalty fee is another price dimension. It is a contingent price component—contingent on default—but it is a price component nonetheless.⁴⁵ In fact, it is the contingent nature of

³⁷ See Bankrate.com, *When 'buy now, pay later' is no deal*, <http://moneycentral.msn.com/content/Savinganddebt/consumeractionguide/P125062.asp> (last visited Aug. 7, 2007). This strategy can also be seen as a bundling strategy, where the bundle comprises of the product itself and financing of the product's price. See *infra* Part D.

³⁸ See JOINT ECONOMIC COMMITTEE, *SHELTERING NEIGHBORHOODS FROM THE SUBPRIME FORECLOSURE STORM* (2007), available at <http://www.jec.senate.gov/Documents/Reports/subprime11apr2007revised.pdf> (hereinafter *JEC Report*) (documenting the prevalence of adjustable rate mortgages with backloaded pricing). See also Lauren E. Willis, *Decision making and the Limits of Disclosure: The Problem of Predatory Lending*, 65 MD. L. REV. 707, 724-25 (2006). The significant upward adjustments are not always driven by an increase in any relevant index.

³⁹ Compare Willis, *supra* note 38, at 778 (invoking consumer myopia as an explanation for introductory rates). A recent report by the Joint Economic Committee found that many subprime mortgages were approved "based on the borrower's ability to pay the mortgage only in the first two or three years of the loan at the teaser rate, when the interest rate was lower, but not over the life of the loan once it resets with higher interest rates." *JEC Report*, *supra* note 38, at 18. The report recommended the establishment of "[a] stricter standard to determine borrowers' ability to afford the loan over the life of the loan." *Id.*

⁴⁰ See, e.g., Vikas Bajaj & Ron Nixon, *Subprime Loans Going From Boon to Housing Bane*, N.Y. TIMES, Dec. 6, 2006, at C1; Vikas Bajaj & Christine Haughney, *Tremors at the Door*, N.Y. TIMES, Jan. 26, 2007, at C1; Editorial, *Losing Homes and Neighborhoods*, N.Y. TIMES, Apr. 10, 2007, at A20.

⁴¹ E.g., late fees in credit card contracts and late fees and foreclosure fees in mortgage contracts. See DAVID S. EVANS & RICHARD SCHMALENSSEE, *PAYING WITH PLASTIC: THE DIGITAL REVOLUTION IN BUYING AND BORROWING* (2nd ed. 2005) (credit cards); Willis, *supra* note 38, at 725, 731, 766 et seq. (mortgage loans).

⁴² E.g., prepayment penalties in mortgage contracts and termination fees in cellular service contracts. See Willis, *supra* note 38, at 725, 731, 766 et seq. (mortgage loans); Damon Darlin, "Getting Out of a 2-Year Cellphone Contract Alive," N.Y. TIMES, Your Money, March 10, 2007, at C1 (cell phones).

⁴³ E.g., in video rental contracts. See *infra* note 49.

⁴⁴ Exceeding the plan limit in cell-phone service contracts can also be viewed as "default," and the significantly increased per-minute rate for minutes beyond the plan limit can be viewed as a penalty fee.

⁴⁵ When price is broadly defined as money transferred from buyer to seller.

this price dimension that makes it attractive to sellers. Many consumers mistakenly believe that they will not default on their contract. Others underestimate the probability of default.⁴⁶ Either way the penalty fee is discounted by an unrealistically low probability attributed to the fee-triggering contingency. Consumers are thus less sensitive to the penalty dimension of the product's price, which explains the appeal of penalties as a pricing strategy. As with delayed payment and with rebates, penalty pricing responds not to consumer misperception about a product attribute, but rather to consumer misperception about consumer behavior—about the likelihood of penalty-triggering default.

Penalty fees are a major revenue source in important consumer markets. In the credit card market, in 2005, penalty fees accounted for 7.2% of issuers' revenues, totaling \$7.88 billion a year.⁴⁷ In the subprime home equity loan market fees, including penalty fees, reach up to 10% (and even more) of loan value.⁴⁸ And in the not so distant past, for Blockbuster, Inc., the largest retailer in the video and computer game rental market, a substantial portion of total revenues came from late fees.⁴⁹ Penalties are not a fine-print contract provision that affects a minority of consumers. They are an important and prevalent economic phenomenon.

2. Welfare Implications

Multidimensional pricing, as a strategic response to consumer mistakes, is clearly welfare-reducing, since mistakes have no adverse welfare implications absent sellers' strategic response. Consumers do not misperceive a one-dimensional, spot price. They misperceive only multidimensional prices. A seller can set a one-dimensional, spot price for its product equal to the cost of producing the product. With such pricing a consumer will buy the product if and only if its value to the consumer exceeds its cost of production to the seller. But, as argued above, sellers will often avoid one-dimensional pricing. For example, a seller may prefer two-dimensional rebate pricing. Rebate pricing is attractive because of consumer misperception—because consumers overestimate the likelihood

⁴⁶ See Melvin Aron Eisenberg, *The Limits of Cognition and the Limits of Contract*, 47 STAN. L. REV. 211 (1995); Melvin Aron Eisenberg, *The Emergence of Dynamic Contract Law*, 88 CAL. L. REV. 1743, 1784 (2000) (contracting parties might underestimate the likelihood of breach); Robert A. Hillman, *The Limits of Behavioral Decision Theory in Legal Analysis: The Case of Liquidated Damages*, 85 CORNELL L. REV. 717, 731-32 (2000) (showing that cognitive biases lead parties to underestimate the likelihood of breach).

⁴⁷ See Card Industry Directory, Analysis, Bank Card Profitability 2004-2005 (2005).

⁴⁸ See Willis, *supra* note 38, at 731.

⁴⁹ See Ian Ayres & Barry Nalebuff, *In Praise of Honest Pricing*, 45 MIT SLOAN MGMT. REV. 24 (2003). Consumer complaints, competition from no-store retailers like Netflix, and action by State Attorneys General forced Blockbuster to change its late fee policy. And questions about Blockbuster's new "no late fee" program remain. See, e.g., John Holl, *New Jersey Sues Blockbuster Over Fees*, N.Y. TIMES, Feb. 19, 2005, at B12 (describing New Jersey's Attorney General's suit that challenges the forced sale of the item one week after the due-back date).

that they will redeem the rebate. Importantly, consumer misperception is moot in the absence of rebate pricing. Rebate pricing triggers both the misperception and the welfare costs.

Rebate pricing in response to consumer mistakes is clearly welfare-reducing. Moving from a one-dimensional price to two-dimensional rebate pricing reduces the perceived price of the product, while keeping the actual price unchanged. As a result consumers who value the product at less than the actual price but more than the perceived price will inefficiently decide to buy the product. Moreover, the cost of rebate redemption is a deadweight loss, which further increases the welfare cost of rebate pricing.⁵⁰ Rebate pricing might also lead to undesirable distributional effects. If some consumers redeem their rebates and others only think that they will redeem their rebates, then the redeemers are being cross-subsidized by the non-redeemers. In the preceding example, 50% of consumers redeem the rebate and pay \$90 for the product, and 50% of consumers do not redeem the rebate and pay \$110 for the same product. This distributional effect is less troubling if the non-redeemers are the wealthier consumers who refuse to waste their valuable time on rebate redemption. The distributional effect is more troubling, if the non-redeemers are the less sophisticated consumers who are overwhelmed by the bureaucratic hurdles on the way to successful rebate redemption.

Delayed payments and penalties are similarly welfare-reducing. For the myopic or optimistic consumer delayed payments reduce the perceived total price. Accordingly, this consumer might purchase welfare-reducing products. The same is true for penalties. Consumers often underestimate the probability of triggering a contractual penalty clause. Such underestimation implies that one component of the total price—a significant component in some markets—is underappreciated. Again, consumer mistakes reduce the perceived total price below the actual total price. As a result consumers might buy products that they value at less than their actual price.

B. Bundling

1. Consumer Mistakes and Seller Reactions

Sellers commonly respond to consumer misperception, and specifically to use-pattern mistakes, by bundling together two (or more) products, effectively transforming them into a single product. Bundling occurs when two complements, product A and product B, are sold separately, but a consumer who purchases product A from a specific seller will also purchase

⁵⁰ And this deadweight loss increases when sellers deliberately raise the cost of rebate redemption.

product B from the same seller.⁵¹ For example, printers and ink cartridges are sold separately, but a consumer who buys an HP printer will also buy HP ink.⁵² The printer-ink bundle can be viewed as a two-dimensional product—the printer being one dimension and the ink being the other dimension—with separate pricing of each dimension. Accordingly, bundling can thus be viewed as a non-conspicuous way to generate multidimensional pricing. Still the descriptive and normative aspects of bundling are sufficiently unique to merit separate treatment.⁵³

Of the two bundled products—product A and product B—one product, product B, is the object of mistake, a use-pattern mistake. Consumers make mistakes about how much they will use product B—about how many units of product B they will purchase. Consumers might underestimate use of product B and they might overestimate use of product B. Both mistakes lead to a bundling response. If consumers underestimate use of product B, and mistakenly believe that they will purchase few B units, then they will be less sensitive to the price of product B. In a competitive market for product B, sellers cannot exploit this misperception. In this market the price will be set equal to the marginal cost of product B, regardless of consumer mistakes. Bundling changes the market. Instead of a market for product B, and a market for product A, there is a market for the A-B bundle. In the A-B market sellers are no longer forced to price each component of the A-B bundle at the per-component marginal cost. Total price must still equal total cost, but the total cost can now be freely allocated between the two prices—the product A price and the product B price. And since consumers are less sensitive to the price of product B, sellers will set a high, above-cost price for product B. Of course, this also means that they will set a low, below-cost price for product A.

When consumers underestimate use of product B, bundling with backloaded pricing, i.e., a high, above-cost price for product B and a low, below-cost price for product A, reduces the perceived total price, and thus

⁵¹ Or the consumer will purchase product B from another seller who is in a contractual relationship with the first seller. This definition of bundling is somewhat broader than the definition of bundling in the antitrust and industrial organization literatures, where bundling and tying imply a requirement that a consumer who purchased product A also purchase product B. See, e.g., Richard Craswell, *Tying Requirements in Competitive Markets: The Consumer Protection Issues*, 62 B.U. L. REV. 661 (1982); JEAN TIROLE, *THE THEORY OF INDUSTRIAL ORGANIZATION* 333–35 (1988). Such requirements are often violate antitrust and consumer protection laws. See Craswell, *supra*.

⁵² Printer manufacturers control approximately 80 percent of the ink market for their printer. See OFFICE OF FAIR TRADING, *THE CONSUMER PC MARKET IN THE US* (2002) (U.K.). I focus on bundles characterized by strong complementarity between the bundled products. In theory, sellers may bundle products that are not strategic complements. In practice, such bundling is rare. Sellers bundle printers and ink. They do not bundle together cars and hairspray. Such a bundle would be appealing to fewer consumers, because of the lack of complementarity. On the role of complementarity, see Farrell & Klempner, *supra* note 2, § 1.

⁵³ Compare Craswell, *supra* note 51 (studying tie-ins; tie-ins constitute a subset of bundles, as defined in this Article).

provides a competitive advantage to sellers. Bundling will also be attractive when consumers overestimate, rather than underestimate, use of product B. In this case, consumers will be more sensitive to the price of product B, and so the bundling will be accompanied by frontloaded pricing, i.e., a low, below-cost price for product B and a high, above-cost price for product A. Absent bundling the overestimation mistake raises the perceived total price above the actual price. Bundling with frontloaded pricing reduces the perceived price and brings it closer to the actual price.

Given consumer mistakes, the A-B bundle is more attractive to consumers than the sum of its components. Accordingly, sellers have a strong incentive to bundle. Bundling, however, might be difficult to attain. When consumers overestimate use of product B, then bundling is self-enforcing. With frontloaded pricing the high product A price is paid in advance and consumers have every incentive to purchase the low-priced product B from the same seller. Bundling in response to underestimation of product B use is more difficult to sustain. With backloaded pricing consumers would prefer to purchase the low-priced product A and then avoid the high-priced product B by switching to another seller. An effective bundle prevents, or minimizes, switching. In some cases “natural” switching costs are sufficient to sustain the bundle. In other cases, sellers deliberately increase switching costs—another product design response to consumer mistakes.

I now move beyond theory and present a series of examples of bundling in response to use-patterns mistakes. I begin with examples of bundling in response to underestimation of Product B use. These examples fall into four categories: bundling of a durable product and parts (or service) for this durable product, bundling of a base-good and add-ons, bundling by retail stores that offer multiple items, and intertemporal bundling—the bundling of period 1 consumption with period 2 consumption. One type of intertemporal bundling responds to underestimation of period 2 consumption. Another type of intertemporal bundling responds to overestimation of period 2 consumption. I provide examples of this second type of intertemporal bundling to demonstrate how bundling responds to overestimation of product B use.

a. Durables and Parts

Durables and parts are often sold by the same seller. Moreover, the seller makes sure that a consumer who buys the durable will also return to purchase parts. Through compatibility constraints or intellectual property protection the seller prevents competition in the parts market.⁵⁴ The

⁵⁴ I assume perfect competition in the base-good market, i.e., in the market for the durable good. On the use of compatibility constraints to monopolize aftermarkets (i.e., markets for parts or service), see Chun-Hui Miao, *Consumer Myopia, Standardization and Aftermarket Monopolization* (2006) (unpublished

compatibility constraints or intellectual property protection provide the glue that holds the bundle together. They are a species of switching costs, ensuring that a consumer who purchased the durable from one seller will not switch to another seller when in need of parts for the durable.⁵⁵ Sellers have a powerful incentive to bundle together durables and parts in response to consumer mistakes. In particular, if consumers underestimate product use and thus underestimate the number of parts that they will purchase, sellers can reduce the perceived total price of the bundled product by lowering the price of the durable and raising the price of the parts. This pricing flexibility—the ability to strategically divide the total price between the two price dimensions (which correspond to the two product dimensions), rather than being constrained to per-item marginal cost pricing—is the *raison d’être* of the bundling strategy.

To demonstrate the advantage of bundling reconsider the printers and ink example. Assume that the per-unit cost of a printer is \$1000 and the per-unit price of an ink-cartridge is \$10. If sold separately in two separate competitive markets by two separate sellers, a printer will be priced at \$1000 and an ink cartridge will be priced at \$10. With consumer misperception, however, it makes little sense to sell these two products separately. And, in fact, the same seller often sells both printers and ink for its printers. Why is bundling—of printers and ink—a profitable strategic response to consumer misperception? Assume that a representative consumer will purchase 100 ink cartridges over the life of the printer.⁵⁶ Supplying printing services to this consumer costs \$2000: the printer itself costs \$1000 to produce, and 100 ink cartridges cost the seller another \$1000 to produce (at \$10 per-cartridge). Absent bundling, when printers and ink are sold separately, the printer seller will have to set a price of \$1000, and the ink seller will have to set a price of \$10. With bundling, however, a seller that offers both printers and ink enjoys much greater pricing flexibility. For example, a bundling seller can offer printers for \$500 and ink cartridges for \$15. The seller’s revenues will still be \$2000: \$500 for the printer and \$1500 for ink (100 cartridges at \$15 per-cartridge). With bundling competition only requires that *total* revenue equal *total* cost;

manuscript, available at <http://ssrn.com/abstract=896641>). On the ability to use intellectual property rights to prevent competition in the parts market, and on the limits of this ability, see *Ariz. Cartridge Remanufacturers Ass’n, Inc. v. Lexmark Int’l, Inc.*, 421 F.3d 981 (9th Cir., 2005); *Lexmark Int’l, Inc. v. Static Control Components, Inc.*, 387 F.3d 522 (6th Cir., 2004). On the antitrust implications of the situation where there is competition in the base-good market but monopoly in the market for parts for the specific durable. See *Eastman Kodak Co. v. Image Technical Services, Inc.*, 504 U.S. 451 (1992) and subsequent cases that qualified the Kodak ruling.

⁵⁵ For a definition of switching costs, see Farrell & Klemperer, *supra* note 2, § 1. On the importance of switching costs in the durables and parts context, see *Eastman Kodak*, 504 U.S. at 476-77.

⁵⁶ This example assumes inelastic demand, i.e., I assume that a constant number (100) of ink cartridges will be purchased regardless of the price of ink. The main results are robust to the introduction of elastic demand. See Bar-Gill, *supra* note 6, Part II.D.

revenues from one product need not equal the cost of that product. In this example, part of the cost of producing the printer is covered by ink sales.⁵⁷

The added pricing flexibility obtained through bundling is irrelevant when all consumers are perfectly rational. A rational consumer realizes that she will end up paying \$2000 for printing. She does not care how she pays this \$2000: \$1000 for the printer and \$1000 for ink or \$500 for the printer and \$1500 for ink. Not so for the imperfectly rational consumer. In particular, assume that the imperfectly rational consumer mistakenly believes that she will buy 50, not 100, ink cartridges over the life of the printer. This consumer will prefer the bundling seller. To see this recall that without bundling the price of a printer is \$1000 and the price of ink is \$10 per-cartridge. For the imperfectly rational consumer the perceived total price is \$1500: \$1000 for the printer and \$500 for ink (50 cartridges at \$10 per-cartridge). The bundling seller, who sets a printer price of \$500 and an ink-cartridge price of \$15, will offer a lower perceived total price. The bundling-seller's offer translates, in the eyes of the imperfectly rational consumer, into a perceived total price of \$1250: \$500 for the printer and \$750 for ink (50 cartridges at \$15 per-cartridge).

Misperception draws a wedge between the actual price and the perceived price. Such a wedge exists even without bundling: When a printer is priced at \$1000 and an ink cartridge is priced at \$10, the imperfectly rational consumer perceives a price of \$1500, which is significantly lower than the actual price of \$2000. Bundling broadens the wedge. With bundling the imperfectly rational consumer perceives an even lower price—\$1250. To take advantage of this increased wedge sellers will find it profitable to create price multidimensionality through bundling.⁵⁸

Another example, this time a durable and service bundle, can be found in the cell phone market. Sellers commonly bundle the handset with a service contract. Such bundling allows sellers to set low prices for handsets, and often to give the handset away for “free,” while charging high prices for the service plans. If consumers are more sensitive to handset prices and less

⁵⁷ For evidence of such pricing, see Olga Kharif, *Printing a Record of Growth*, BUSINESS WEEK ONLINE, Feb. 17, 2004, http://www.businessweek.com/technology/content/feb2004/tc20040217_8510_tc055.htm (each cartridge costs less than \$10 to make but is typically priced at \$20 to \$40).

⁵⁸ Another example of a durable and parts bundle with backloaded pricing can be found in the auto market. Replacement parts for cars are sold to consumers at a large premium. See Omri Ben-Shahar & James J. White, *Boilerplate and Economic Power in Auto Manufacturing Contracts*, 104 MICH. L. REV. 953, 961 (2006) (Stating, based on interviews with automotive officials, that “[s]ervice parts are sold in the retail market at a large premium.”) One explanation for this pricing scheme is that consumers, when purchasing a new car, underestimate their future demand for replacement parts. Such underestimation is likely a combination of a product attribute mistake, i.e., overestimation of the car's quality and a use-pattern mistake, i.e., underestimation of the intensity of use. (On the other hand, overestimation of maintenance and repair costs may explain the demand for overpriced add-on warranty products in the used car market.)

sensitive to service plan prices, then competition will force sellers to set prices that deviate from the per-component marginal cost. And this requires bundling. What is the glue that holds the handset–service plan bundle together? It is the long-term contract that consumers are induced to sign. Free phones are only offered to consumers who are prepared to sign a long-term contract. And consumers, who are willing to sign longer-term contracts, reaching two- and three-year terms, get better phones free of charge. Long-term contracts, with penalties for early termination, increase the cost of switching from one seller to another, and thus help sustain the bundle.

As these examples illustrate, bundling of durables and parts (or service) responds to consumer mistakes about use patterns, not product attributes. Underestimation of use of the durable good translates into underestimation of future demand for parts (or service) for the durable good. And this underestimation of the demand for parts (or service) implies reduced sensitivity to the price of parts (or service). Bundling of durables and parts (or service), with most of the price backloaded onto the parts (or service) dimension, responds to consumers' differential sensitivity to different price dimensions of the bundled product.⁵⁹

b. Add-ons

Akin to the durable and parts bundle is the add-on phenomenon. Many products are sold with various add-ons. For example, hotel rooms are rented out with multiple add-ons, including in-room dining service (or dining at the hotel restaurant), mini-bar service, in-room video service, telephone service and laundry service. Similarly, banks offer checking accounts with a long series of add-on services, including ATM services, financing services (by allowing consumers to carry a negative balance, i.e., overdraft), and money transfer services.⁶⁰ Penalties can also be viewed as add-on prices.⁶¹ Late return of a video rental can be viewed as an additional rental period add-on. Late payment, e.g., of a credit card balance, can be viewed as an additional financing period add-on. And exceeding the plan limit in cell-phone usage can be viewed as an additional cellular service add-on.

⁵⁹ The Supreme Court recognized the difficulty of acquiring complete information in the durables and parts context, emphasizing that "the information is likely to be customer-specific; lifecycle costs will vary from customer to customer with the type of equipment, *degrees of equipment use*, and costs of downtime." (emphasis added) *Eastman Kodak*, 504 U.S. at 474. Cf. Anja Lambrecht & Bernd Skiera, *Paying Too Much and Being Happy About It: Existence, Causes and Consequences of Tariff-Choice Biases*, 43 J. MARKETING RES. 212 (2006) (providing evidence that underestimation of usage explains the consumer preference for pay-per-use pricing).

⁶⁰ See Glenn Ellison, *A Model of Add-On Pricing*, 120 Q. J. ECON. 585 (2005) (discussing the hotel example); Gabaix & Laibson, *supra* note 25 (discussing the hotel and bank example).

⁶¹ Compare *supra* Part II.C.

The add-ons are separately priced, and these separate prices are often quite high.⁶² Why do consumers purchase the add-ons? What is the glue that holds the base-good and add-on bundle together? The answer is convenience. A hotel guest who is hungry late at night can wander out of the hotel and look for an open restaurant. But room-service is more convenient. If this guest wants to see a movie, she can go to the neighborhood cinema (if one exists). But ordering a movie from the hotel's video system is more convenient. The value of convenience or, correspondingly, the cost of switching from the default seller, the hotel, to an alternative seller, the neighborhood restaurant or cinema, guarantee that many consumers purchase add-ons, even when those are priced above cost.

But this assumes that the consumer already checked into the hotel. Why would a consumer check into a hotel that sets high add-on prices? A rational consumer would not. To be more precise, a rational consumer would be indifferent between a hotel pricing both rooms and add-ons at cost and a hotel offering below-cost room rates and above-cost add-on prices. In a competitive market, the total expected price—for the room and add-ons bundle—will be identical in both hotels. With rational demand there is no reason to set above-cost add-on prices.⁶³ The prevalence of high add-on prices can be explained by consumer mistakes. If consumers underestimate their use of the add-on options, they will be less sensitive to add-on prices. If many consumers focus on room rates, rather than room-service menu prices, when choosing among competing hotels, then hotels will set below-cost room rates and above-cost add-on prices.⁶⁴ This backloaded pricing scheme attracts consumers by reducing the perceived total price. As with the durable and parts bundle, use-pattern mistakes draw a wedge between the actual and perceived total price, and bundling, with its accompanying backloaded pricing, broadens this wedge.⁶⁵

The preceding analysis focused on add-ons that are purchased after the base-good transaction is concluded. In these cases add-on pricing responds to underestimation of add-on use—a clear example of use-pattern

⁶² See Ellison, *supra* note 60, at 585-86 (noting the high price of add-ons and the substantial revenues that sellers extract through add-on pricing).

⁶³ In fact, with rational demand there is reason not to set above-cost add-on prices. Above-cost add-on prices and below-cost room rates by deviating from marginal-cost pricing generate allocative inefficiency and reduce revenues.

⁶⁴ A rational consumer if she observes only the low room rate would infer rip-off add-on prices even if these prices are not advertised. Therefore, if consumers are rational, hotels have no incentive to set below-cost room rates and above-cost add-on prices.

⁶⁵ See Gabaix & Laibson, *supra* note 25 (studying a related model of add-on pricing with imperfectly rational consumers). I have thus far focused on high add-on prices that respond to underestimation of add-on use. But overestimation of add-on use is also possible. For example, access to the hotel gym is often free of charge. Arguably, this pricing scheme responds to overestimation of gym attendance. See also *infra* Part I.B.e.

mistakes.⁶⁶ In other cases, the base-good and the add-on are purchased simultaneously. Examples include extended warranties offered with appliances, insurance and prepaid gasoline offered with rental cars, enhanced memory, higher capacity hard disks and better video cards offered with personal computers, and the plethora of upgrades and options offered by sellers of new homes.⁶⁷ Consumers, when choosing among competing products, focus on the base-good price. Then at check-out they are offered a highly-priced add-on, such as an extended warranty. By at least some accounts an informed, rational consumer would refuse to purchase the extended warranty.⁶⁸ But a consumer who overestimates use of the extended warranty add-on will purchase the warranty. More importantly, when choosing among competing sellers, consumers underestimate the likelihood that they will purchase the add-on—another type of use-pattern mistake. Therefore, consumers focus on the base-good price when comparing different sellers. And this forces sellers to set low base-good prices, while covering costs through high add-on prices. At the check-out counter, when the consumer is offered the add-on, switching to another seller is costly. It is this switching cost that holds the base-good and add-on bundle together.

c. Retail Stores

Grocery stores, department stores and other stores that sell multiple items can be viewed as bundling together the sale of these items. Of course, a consumer buying one item is not required to buy any other item, but in fact consumers often buy more than one item when they enter a store. Moreover, consumers often purchase items that they did not intend to purchase. A consumer might enter the store for the purpose of purchasing one item, and then notice another item that he wishes to purchase. The consumer can certainly purchase the unplanned product at another store, but this would entail a cost—a switching cost. Retail store bundling is likely driven by cost considerations; for most stores it is efficient to sell more than one item. Still, the pricing strategies that accompany this type of bundling may well be responding to consumer mistakes. In particular, loss-leader pricing can be explained as a strategic response to consumers'

⁶⁶ Although product attribute mistakes also play an important role, when the add-on prices are not conspicuously advertised. See Gabaix & Laibson, *supra* note 25 (studying shrouded prices); Ellison, *supra* note 60, at 586 (focusing on unadvertised add-ons).

⁶⁷ See Ellison, *supra* note 60, at 585 (discussing examples).

⁶⁸ See Matthew Rabin & Richard H. Thaler, *Anomalies: Risk Aversion*, 15 J. ECON. PERSP. 219, 228 (2001); Colin Camerer et al., *Regulation for Conservatives: Behavioral Economics and the Case for "Asymmetric Paternalism"*, 151 U. PA. L. REV. 1211, 1253-54 (2003). The same holds for other insurance add-ons: on rental car insurance, see Rabin & Thaler, *supra*, at 228; On riders to home or car insurance policies, see Richard H. Thaler, *Mental Accounting and Consumer Choice*, 4 MARKETING SCI. 199, § 2.2 (1985); on credit insurance, see *id.*, § 4.1; on warranties sold by phone companies covering defects in the customer's internal telephone wiring, see Charles J. Cicchetti & Jeffrey A. Dubin, *A Microeconomic Analysis of Risk Aversion and the Decision to Self-Insure*, 102 J. POL. ECON. 169 (1994); Rabin & Thaler, *supra*, at 225.

underestimation of the likelihood that they will purchase other items, in addition to the loss-leader, at the same store.⁶⁹

If consumers accurately predict which items they will purchase at the grocery store and choose among competing stores based on this prediction, sellers will have no reason to deviate from per-item marginal-cost pricing. But if consumers focus on the prices of staples like bread, milk and eggs when choosing among competing stores and underestimate the likelihood of buying other products at the same grocery store, then sellers will respond by setting below-cost prices for bread, milk and eggs, i.e., for the loss-leaders, and above-cost prices for other products.⁷⁰ In a competitive market total price equals total cost, regardless of how the individual items are priced. Absent use-pattern mistakes, consumer choice will be affected only by the total price, and thus sellers will have no reason to deviate from per-product marginal-cost pricing. Use-pattern mistakes, specifically underestimation of non-staples purchases, draw a wedge between the actual total price and the perceived total price. Since demand and profits are determined by the perceived price, sellers will have a strong incentive to broaden this wedge and reduce the perceived price as far below the actual price as possible. Loss-leader pricing achieves this goal.

d. Intertemporal Bundling with Backloaded Pricing

In many markets sellers maintain long-term relationships with their customers, selling the same product or service to the same consumer time and again. Such repeat sales can be viewed as an intertemporal bundle. The period 1 sale is bundled with the period 2 sale. This bundle is held together by switching costs that prevent the consumer from purchasing the period 2 product from a competitor. The intertemporal bundle allows the seller to deviate from per-period marginal-cost pricing. In particular, when consumers underestimate the likelihood of making a period 2 purchase from the same, period 1 seller—a use-pattern mistake—this seller will set high, above-cost period 2 prices and low, below-cost period 1 prices. For example, sellers and service providers often offer free examination periods. From magazines to cable channels, it is not uncommon to get the first few months of service free of charge.⁷¹

⁶⁹ On loss-leader pricing, see Rajiv Lal & Carmen Matutes, *Retail Pricing and Advertising Strategies*, 67 J. BUS. 345 (1994); Sang-Yong Lee & Ivan Png, *Buyer Shopping Costs and Retail Pricing: An Indirect Empirical Test*, 2 REV. MARKETING SCI. Article 6 (2004) , <http://www.bepress.com/romsjournal/vol2/iss1/art6>; Farrell & Klemperer, *supra* note 2, §§ 2.1 & 2.5.3. One way to implement loss-leader pricing is to place certain items, the loss-leaders, "on sale."

⁷⁰ See *Hanson and Kysar II*, *supra* note 27, at 1449 (1999) (arguing that supermarket pricing responds to consumers' imperfect rationality).

⁷¹ See Farrell & Klemperer, *supra* note 2, § 2.3 (introductory offers with below-cost prices are a general artifact of intertemporal bundles held together with switching costs). The focus is on services and consumables. But a related strategy is employed by sellers of durables, who offer no-fee trial periods, trial periods with a money-back guarantee and other generous return policies. The goal is to induce

The efficacy of intertemporal bundling depends on the magnitude of the switching costs. How large are these switching costs? The tangible, economic costs of switching seem rather low. A phone call to a customer service representative should do it. (Although even the cost of such a phone call should not be dismissed, especially when a ten-minute hold is required.) But there are additional switching costs that are just as real. In some cases, switching is costly because the consumer, during the introductory period, has made some product-specific investment that would be lost if she switches to a competing product. The prospect of having to make a similar investment after switching to another product deters switching.⁷² And there might also be a psychological switching cost.⁷³

There is also evidence that sellers deliberately inflate switching costs.⁷⁴ One wonders whether placing customers on hold for ten minutes or more before they can discontinue the service is not a deliberate policy aimed at increasing switching costs.⁷⁵ Moreover, service could end without a phone call after the introductory period. A consumer who wishes to continue receiving the service could be required to make the call. Arguably the decision reached by many sellers to adopt an opt-out rather than an opt-in mechanism is another example of product design aimed at increasing the cost of switching or discontinuance.⁷⁶ In fact, these negative options, as they are sometimes called, have attracted the attention of regulators at both

underestimation by the consumer of the likelihood that he will keep the product. *See* *Brower v. Gateway 2000, Inc.*, 676 N.Y.S.2d 569 (1998); *Sovern*, *supra* note 30, at 1654-55; *Hanson and Kysar I*, *supra* note 27, at 734.

⁷² *See* Farrell & Klemperer, *supra* note 2, § 2.1.

⁷³ *See* Farrell & Klemperer, *supra* note 2, § 2.1. *Cf.* Cass R. Sunstein & Richard H. Thaler, *Libertarian Paternalism is Not an Oxymoron*, 70 U. CHI. L. REV. 1159, 1181 (2003) (arguing, in the related context of switching from a default rule, that “[a]lthough the costs of switching...can be counted as transaction costs, the fact that large behavioral changes are observed even when such costs are tiny suggest that a purely rational explanation is difficult to accept.”). *See also* Chris M. Wilson and Catherine Waddams Price, *Irrationality in Consumers’ Switching Decisions: When More Firms May Mean Less Benefit* (CCP Working Paper No. 05-4, 2005), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=787584.

⁷⁴ *Cf.* *Sovern*, *supra* note 30, at 1645-46 (“sellers make it difficult for consumers to communicate requests the firm does not wish to receive.”).

⁷⁵ In addition to the obvious goal of reducing operating costs by hiring fewer customer service representatives. There is anecdotal evidence that sellers deliberately employ “dirty” practices, such as placing customers on hold, cutting them off, and “mistakenly” failing to process a cancellation request. *See* Carey Greenberg-Berger, *Confessions: Why You Can’t Cancel Your Account, An Insider’s Perspective*, CONSUMERIST.COM, July 29, 2007, <http://consumerist.com/consumer/customer-service/why-you-cant-cancel-your-account-an-insiders-perspective-283631.php>.

⁷⁶ Alternatively, if most consumers continue with the same seller, then the opt-out design may be economizing on switching costs. This explanation is more plausible in markets where consumers engage in substantial comparison-shopping before the first period. It is less plausible when consumers are attracted by low introductory prices without sufficient comparison-shopping for low post-introductory rates.

the federal and state level.⁷⁷ Sellers also add contractual switching costs through repeat purchase coupons, rewards programs, etc'.⁷⁸

Whatever their source, switching costs are substantial in many markets.⁷⁹ In the credit cards market average switching costs were estimated to be \$150.⁸⁰ In the bank loan market, one study estimated switching costs equal to 4.12% of the customer's loan.⁸¹ In the cell phone market, switching costs approximately equal the price of an average phone.⁸² Evidence of substantial switching costs was also found in the (land) phone services market,⁸³ and in the electricity market.⁸⁴

An important example of intertemporal bundling can be found in credit card contracts. Many issuers set low interest rates, even zero percent interest rates, for short-term borrowing—these are the introductory or teaser rates that last for up to one year—and much higher interest rates for long-term borrowing. Such pricing relies on the ability of issuers to maintain the intertemporal bundle—to make sure that short-term borrowers will stay and borrow also in the long-term. Indeed, as noted above, empirical evidence suggests that substantial switching costs, estimated at approximately \$150, explain the limited switching in the credit card market. Limited switching is also confirmed by evidence that most borrowing is done at the high post-

⁷⁷ See FTC Trade Regulation Rule Regarding Use of Negative Option Plans by Sellers in Commerce, 16 C.F.R. 425. See also FTC News Release, FTC Votes to Retain Negative Option Rule For Sales of Merchandise, Aug. 20, 1998, <http://www.ftc.gov/opa/1998/08/negotpt.htm>; Mark Huffman, *Negative Options: When No Means Yes*, CONSUMERAFFAIRS.COM, Nov. 7, 2005, http://www.consumeraffairs.com/news04/2005/negative_option.html.

⁷⁸ See Farrell & Klemperer, *supra* note 2, § 2.8.3; Abhijit Banerjee & Lawrence H. Summers, *On Frequent-Flyer Programs and other Loyalty-Inducing Economic Arrangements* (Harvard University Discussion Paper No. 1337, 1987), available at http://econ-www.mit.edu/faculty/download_pdf.php?id=1207; Ramon Caminal & Carmen Matutes, *Endogenous Switching Costs in a Duopoly Model*, 8 INT'L J. INDUS. ORG. 353 (1990).

⁷⁹ See generally Farrell & Klemperer, *supra* note 2, § 2.2.

⁸⁰ See Haiyan Shui & Lawrence M. Ausubel, *Time Inconsistency in the Credit Card Market* (2004) (unpublished manuscript, available at <http://ssrn.com/abstract=586622>). See also David B. Gross & Nicholas S. Souleles, *Do Liquidity Constraints and Interest Rates Matter for Consumer Behavior? Evidence from Credit Card Data*, 117 Q. J. ECON. 149, 171, 179 (2002) (finding only limited switching, which implies substantial switching costs).

⁸¹ See Moshe Kim, et al., *Estimating Switching Costs: The Case of Banking*, 12 J. FIN. INTERMEDIATION 25 (2003) (analyzing data from the Norwegian bank loan market).

⁸² See Oz Shy, *A Quick-and-Easy Method for Estimating Switching Costs*, 20 INT'L J. INDUS. ORG. 71 (2002) (analyzing data from the Israeli cell phone market).

⁸³ See Christopher R. Knittel, *Interstate Long Distance Rate: Search Costs, Switching Costs and Market Power*, 12 REV. INDUS. ORG. 519 (1997); Harald Gruber & Frank Verboven, *The Evolution of Markets under Entry and Standards Regulation: The Case of Global Mobile Telecommunications*, 19 INT'L J. INDUS. ORG. 1189 (2001); V. Brian Viard, *Do Switching Costs Make Markets More or Less Competitive? The Case of 800-Number Portability* (Stanford University Graduate School of Business Working Paper No. 1773R2, 2005), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=371921.

⁸⁴ See Michael Waterson, *The Role of Consumers in Competition and Competition Policy*, 21 INT'L J. INDUS. ORG. 129 (2003); Wilson and Waddams Price, *supra* note 73 (identifying consumers who do not switch from one provider to another despite substantial available savings).

promotion rates, rather than at the low teaser rates.⁸⁵ Moreover, switching costs in the credit card market are not entirely exogenous. Issuers design their products to increase switching costs, e.g., through rewards programs.

With limited switching, issuers can offer a low short-term interest rate and a high long-term interest rate, instead of a constant intermediate rate. Differential pricing is attractive to consumers who underestimate the extent of their future, long-term borrowing or overestimate the likelihood of switching cards at the end of the introductory period. These misperceptions explain why consumers are more sensitive to introductory rates than they are to long-term rates, despite the fact that most of the borrowing is done at the high long-term rates.⁸⁶ Specifically, a recent study found that "consumers are at least three times as responsive to changes in the introductory interest rate as compared to dollar-equivalent changes in the post-introductory interest rate."⁸⁷ And survey evidence suggests that more than a third of all consumers consider an attractive introductory interest rate to be the prime selection criterion in credit card choice.⁸⁸

I have thus far focused on mid-stream interest rate increases. But credit card issuers change other terms as well. They change other price terms, such as the annual fee.⁸⁹ And they change non-price terms, e.g., adding an arbitration clause.⁹⁰ The power to change contract terms is reserved in the initial credit card contract. So consumers are nominally aware of this possibility as they are aware of the interest rate increase at the end of the

⁸⁵ See David B. Gross & Nicholas S. Souleles, *Do Liquidity Constraints and Interest Rates Matter for Consumer Behavior? Evidence from Credit Card Data*, 117 Q. J. ECON. 149, 171, 179 (2002). See also Lawrence M. Ausubel, *Credit Card Defaults, Credit Card Profits, and Bankruptcy*, 71 AM. BANKR. L.J. 249, 263 (1997) ("[A] substantial portion of credit card borrowing still occurs at postintroductory interest rates[;] ... finance charges paid to credit card issuers have not dropped as much as the introductory offers might suggest."); David I. Laibson et al., *A Debt Puzzle, in KNOWLEDGE, INFORMATION, AND EXPECTATIONS IN MODERN MACROECONOMICS: IN HONOR OF EDMUND S. PHELPS* 228, 228-29 (Philippe Aghion et al. eds., 2003) (finding that consumers pay high effective interest rates "despite the rise of teaser interest rates"). Indeed, the success of the teaser-rate tactic in and of itself provides powerful evidence that switching is limited. If most consumers were quick to switch cards, specifically to switch away from a card at the end of the introductory period, the teaser-rate tactic would be a nonstarter.

⁸⁶ Bar-Gill, *supra* note 5, at 1405-07.

⁸⁷ Lawrence M. Ausubel, *Adverse Selection in the Credit Card Market* 21 (1999) (unpublished manuscript, on file with author), available at <http://www.ausubel.com/creditcard-papers/adverse.pdf>.

⁸⁸ See EVANS & SCHMALENSSEE, *PAYING WITH PLASTIC: THE DIGITAL REVOLUTION IN BUYING AND BORROWING* 225 (1st ed. 1999).

⁸⁹ See, e.g., *Rossman v. Fleet Bank (R.I.) Nat'l Ass'n*, 280 F.3d 384 (3d Cir. 2002) (Fleet issued a 'no annual fee' credit card and six months later imposed a \$35 annual fee, invoking a provision that allowed the bank to unilaterally change the terms of the contract. In this case, the Third Circuit interpreted the contract to require a zero annual fee for at least one year.).

⁹⁰ See *Badie v. Bank of America*, 79 Cal. Rptr. 2d 273, 76-77 (Cal. Ct. App. 1998); Caroline E. Mayer, *Hidden in Fine Print: 'You Can't Sue Us'*, WASH. POST, May 22, 1999, at A1. See, generally, John J. A. Burke, *Contract as Commodity: A Nonfiction Approach*, 24 SETON HALL LEGIS. J. 285, 322 (2000) (credit card issuers frequently modify contract terms); Sovern, *supra* note 30, at 1660-61 (same). Moreover, issuers hide these modifications in "bill-stuffers" to reduce the likelihood of switching. See sources cited in this note.

introductory period. Still, the cost to the consumer of these pro-seller modifications will be underestimated, if the consumer mistakenly believes that she is likely to switch away from the onerous contract.⁹¹

Other consumer credit products, specifically home equity loans and payday loans, similarly feature intertemporal bundling with backloaded pricing. Subprime mortgage loans often exhibit backloaded pricing, with small downpayments and interest rates that increase over time.⁹² While mortgage loans, unlike credit card loans, look more like a single loan product and less like a series of bundled loans, the increasingly popular refinancing option transforms the home equity loan from a unitary product into an intertemporal bundle.⁹³ Refinancing is a form of switching. If consumers overestimate the likelihood of refinancing, and thus underestimate the length of their relationship with a lender, then lenders will respond with backloaded pricing.⁹⁴ Moreover, lenders seek to reinforce the intertemporal bundle, e.g., by imposing prepayment penalties.⁹⁵

Payday loans provide another example of intertemporal bundling. The short-term, cash-advance characteristic of the payday loan is transformed into a long-term financing relationship when the duration of the cash advance is extended via the common loan rollover. Many borrowers are unable to repay their initial payday loan, take another loan to repay the initial loan, and then a third loan to repay the second loan, etc'.⁹⁶ While the price of a payday loan seems constant—in a typical transaction a consumer might pay a \$30 fee for a two-week \$200 cash-advance⁹⁷—with rollovers and compounding interest or fees the effective result is backloaded pricing. The design of the payday loan as a short-term cash advance that is oftentimes continuously rolled-over and renewed for prolonged periods of time arguably responds to consumers' underestimation of the length of their relationship with the payday lender.⁹⁸

Again, it is important to note that the intertemporal bundling surveyed above responds to consumer mistakes about use patterns, not about product

⁹¹ Mid-stream term changes are more likely responding to consumer mistakes when sellers can discriminate between existing customers and new customers. If sellers must offer the same terms to all customers, then scrutiny by new customers, who are sensitive to these terms and are not yet locked-in, will prevent sellers from offering welfare-reducing terms.

⁹² See *supra* Part II.C.

⁹³ In addition to refinancing consumers can simply sell the house before the end of the mortgage period.

⁹⁴ Some lenders and brokers actively foster such underestimation by telling consumers that they should not worry about the increasing interest rates, since they will be able to refinance before the interest rate resets. See, e.g., *10 Strategies to Shop for a Mortgage*, BOSTON GLOBE, April 2, 2006 (warning against "Don't worry, you can refinance later" statements by lenders).

⁹⁵ See *supra* Part II.C.

⁹⁶ On the high rollover rate in the payday loan market, see Oren Bar-Gill & Elizabeth Warren, *Making Credit Safer* (2007) (unpublished manuscript, on file with authors) (collecting studies).

⁹⁷ See Ronald J. Mann & Jim Hawkins, *Just Until Payday*, 54 UCLA L. REV. 1 (2007).

⁹⁸ See Bar-Gill & Warren, *supra* note 96.

attributes. The likelihood of switching is use-pattern information. Of course, in some cases switching costs and thus the likelihood of switching depend on product attributes. But they also depend on consumer wants and needs and on other influences that have nothing to do with product attributes. As explained in Part I, product use is a function of product attributes, among other things, but this does not mean that product use can be reduced to product attributes.

e. Intertemporal Bundling with Frontloaded Pricing

Underestimation of use leads to intertemporal bundling. So does overestimation of use. Consider the health club market. Health clubs can sell unbundled one-day access to their facilities and charge a per-visit price. But most health clubs prefer to sell an intertemporal bundle, specifically, year-long access, and set a one-time subscription fee (and a zero per-visit price).⁹⁹ Such intertemporal bundling with its accompanying frontloaded, subscription pricing is attractive to consumers who overestimate the number of times that they will visit the health club.

Assume that the average consumer will visit the health club 10 times in one year, but mistakenly thinks that she will visit the health club 100 times in one year.¹⁰⁰ The health club can set a per-visit price, equal to the per-visit cost (to the health club), of, say, \$10. Alternatively, the health club can offer year-long access at a subscription price of \$100 (this will cover the health club's cost since the average attendance is 10 times a year; \$100 divided by 10 equals \$10, which is the per-visit cost to the health club). With per-visit pricing the consumer expects to pay a total price of \$1000 (= 100 visits multiplied by \$10 per visit). With subscription pricing the consumer pays, and expects to pay, \$100. Clearly, the consumer will prefer to purchase a subscription. Accordingly, the health club will offer the intertemporal bundle with its accompanying subscription pricing. What is the glue that holds this intertemporal bundle together? Well, no such glue is needed. Since consumers pay the subscription fee upfront or, equivalently, pay the subscription fee irrespective of their use levels, sellers do not care if a consumer stops attending in the middle of the subscription period. In fact, the entire strategy is based on the understanding that many consumers will make very few visits to the health club.

A similar analysis applies to other subscription markets. Examples include cell phone voice and data (3G) service subscriptions, subscriptions for internet services, magazine subscriptions and subscriptions for sports games

⁹⁹ See Stefano Della Vigna & Ulrike Malmendier, *Paying Not to Go to the Gym*, 96 AM. ECON. REV. 694 (2006).

¹⁰⁰ For evidence of the large disparity between the expected and the actual number of health club visits, see *id.*

(season tickets), concerts, the theatre or the opera. Membership discount cards can also be viewed as a response to overestimation of use. And issuers of pre-paid cards, including grocery cards, calling cards and the Starbucks card, may be similarly relying on consumers' overestimation of use. Specifically, a consumer might overestimate the likelihood of using the entire pre-paid sum or underestimate the time it would take her to use the entire sum. Warranties and similar insurance products provide another example. Many insurance products cater to informed, rational demand by risk-averse consumers. But the prevalence of these products may also be attributed, in part, to use-pattern mistakes. If consumers overestimate the use of repair service, sellers will bundle together these repair services and sell them as a warranty with a single, frontloaded price.¹⁰¹

2. Welfare Implications

Bundling as a strategic response to consumer mistakes can be either welfare-reducing or welfare enhancing.¹⁰² The misperception that bundling responds to is in itself welfare-reducing. The question is whether bundling exacerbates or reduces the adverse welfare implications of consumer mistake. The answer is context dependent. Specifically, it depends on the type of misperception that the bundling strategy responds to. It also depends on market characteristics and on the type of bundling that sellers employ.¹⁰³

Nevertheless the welfare effects of different types of bundling can be studied within a common framework. In the simple two product model, where product A is bundled together with a mistake-prone product B, the bundling response affects the efficiency of two decisions: the decision to purchase product A and the decision to purchase product B. Clearly, these decisions are interdependent. As explained below, the decision to purchase product A can often be viewed as the decision to purchase the A-B bundle. Since the value of the bundle depends on the B dimension as well as on the A dimension, the decision to purchase product A will be affected by the decision to purchase product B. For this reason, it is helpful to begin with the decision to purchase product B and then go back to the decision to purchase product A. I also consider the distributional effects of bundling.

¹⁰¹ See Lambrecht & Skiera, *supra* note 59 (providing evidence that the consumer preference for flat-rate, subscription pricing can be attributed to the overestimation effect, as well as to an insurance effect and to the so-called taxi-meter effect).

¹⁰² See Craswell, *supra* note 51, at 671 (arguing that when consumers are imperfectly informed tying can be welfare-reducing).

¹⁰³ Accordingly, a market-specific analysis is required to assess the welfare costs of misperception-based bundling. The analysis below discusses examples from several consumer markets. These examples draw the contours for the required market-specific analysis. I do not purport to provide comprehensive market analysis in this Article.

a. The Decision to Purchase Product B

Bundling is accompanied by deviations from marginal-cost pricing. When price exceeds marginal cost, an inefficiently low quantity will be purchased; and when price is set below marginal cost, an inefficiently high quantity will be purchased. Focusing on product B, the price of product B is set below cost in intertemporal bundles responding to overestimation of period 2 use. Specifically, with subscription pricing the marginal per-period price is zero, leading to excessive consumption. In the health club example, while overestimation of use explains the attractiveness of subscription pricing, after a consumer purchases a health club subscription she will attend the health club more often than she should.¹⁰⁴

The other types of bundling considered above respond to underestimation of product B use and thus the price of product B is set above cost. Accordingly, consumers will purchase an inadequately small quantity of product B.¹⁰⁵ In durables and parts bundles, high parts prices will inefficiently reduce the number of parts purchased. In the printers and ink example, high ink prices lead consumers to purchase an inefficiently small number of ink cartridges and, correspondingly, to use their printer less than they should. In the base-good and add-on bundle, high, above-cost add-on prices skew the add-on purchase decision. The high add-on prices prevent some consumers from enjoying the add-on services. For example, a hotel guest might inefficiently avoid ordering room-service.¹⁰⁶ In retail store bundling, consumers will purchase an inadequately small number of items that are not loss-leaders. And in intertemporal bundling, high second-period prices will inefficiently reduce the number of period 2 purchases.

These results assume effective bundling. The consumer, if she purchases product B, was assumed to purchase it from the product A seller. Accordingly, the focus was on the inefficiently low number of product B units sold, assuming that all product B units are sold by the product A seller. But generally bundling is not perfectly effective. This means that consumers must choose not only whether to buy product B, or how many units of product B to buy, but also whether to buy product B from the

¹⁰⁴ A health club subscription can be alternatively explained as a commitment device purchased by a sophisticated consumer, who seek the zero per-visit price to overcome an anticipated reluctance to attend the club. According to this explanation, the deviation from marginal cost pricing is welfare enhancing. For most people, however, subscription pricing is attractive due to use-pattern mistakes, not because it serves as a commitment device. See Della Vigna & Malmendier, *supra* note 99.

¹⁰⁵ See Farrell & Klemperer, *supra* note 2, §§ 1 & 2.3.2 (describing how switching costs and the pricing patterns that accompany them distort buyers' quantity choices); *Id.*, § 2.9 (discussing the welfare implications of switching costs).

¹⁰⁶ In other base-good and add-on bundles, especially when the base-good and the add-on are purchased simultaneously, the reduced quantity of add-ons purchased may be efficient. For example, if demand for extended warranties is excessive, driven by consumer mistake, then a higher price tag for the add-on efficiently reduces the number of extended warranties purchased.

product A seller or from a competing seller. The additional decision implies additional efficiency costs. First, consumers might purchase product B from the wrong seller—an allocative efficiency problem. Second, consumers might bear unnecessarily high switching costs—a deadweight loss.

Assume initially that switching costs are exogenously determined and not subject to manipulation by sellers. Consider two sellers: S1 and S2. The consumer purchased product A from S1 and must now decide whether to purchase product B also from S1 or to switch to S2. It is efficient for a consumer to switch from S1 to S2 if and only if the net value of S2's product exceeds the net value of S1's product by more than the switching cost. This efficient result obtains when both sellers price their products at cost. Not so when S1 sets a price above its cost of production. With such backloaded pricing, the consumer will switch to S2 even when they should stay with S1. Excessive switching leads to both allocative inefficiency and to deadweight loss from switching costs that are born more often than necessary. Clearly, S1 wants to minimize switching so that it can actually profit from the high product B prices, and this limits the price that S1 will charge. Still, price will exceed cost and excessive switching will follow.¹⁰⁷

This inefficiency exists whenever switching costs are positive. Indeed, in many markets some level of switching costs is inevitable. Further inefficiency arises when sellers deliberately increase switching costs beyond the inevitable minimum.¹⁰⁸ The severity of the excessive switching problem increases with the magnitude of the switching costs, as the price charged by S1 rises with the cost of switching. But switching is only excessive given the increased switching costs. As compared to a benchmark with the minimum inevitable switching costs, the result of deliberately inflated switching costs is an inadequately low level of switching. And, when switching does occur, the increased costs born by consumers who switch constitutes yet another source of inefficiency.¹⁰⁹ The excessive switching problem arises, for example, in the hotel room and add-ons bundle. A hotel guest facing high in-room dining prices might choose to go hungry. Or she might choose to bear the inconvenience cost, leave the hotel and search for a local restaurant. The insufficient switching problem arises in intertemporal bundling cases where sellers deliberately increase the cost of switching.¹¹⁰

¹⁰⁷ Cf. Lambrecht & Skiera, *supra* note 59 (providing evidence that pay-per-use pricing increases churn).

¹⁰⁸ As argued above, at least in some markets sellers increase the costs of switching above the inevitable minimum to reinforce the glue that holds the intertemporal bundle together. See *supra* Part II.B.1.

¹⁰⁹ See Farrell & Klemperer, *supra* note 2, §§ 1 & 2.3.2 (describing how switching costs and the pricing patterns that accompany them distort buyers' quantity choices); § 2.9 (discussing the welfare implications of switching costs).

¹¹⁰ See *supra* Part II.B.1. In the intertemporal bundling case product A and product B are essentially the same product sold in different time periods. Therefore, what is considered product B, a second-period sale, for S1 is considered product A, a first-period sale, for S2. Accordingly, not only will S1 set an

b. The Decision to Purchase Product A

When products A and B are effectively bundled together, the decision to purchase product A is, in fact, a decision to purchase the A-B bundle. Accordingly, the decision to purchase product A is affected by the total costs and benefits of the bundle, as perceived by the consumer. In particular, the decision to purchase product A is affected by mistakes about the use of product B—underestimation of use or overestimation of use. For example, in the printers and ink bundle the decision to purchase a printer, product A, is affected by the perceived value of in-home printing, i.e., the value of the printer and ink bundle. And the value of the printing bundle is a function of the estimated use of the printer or, equivalently, of the estimated number of ink cartridges, product B units, that will be purchased over the life of the printer. The effect of bundling on the efficiency of the product A purchase decision depends on the source of the use-pattern mistake that the bundling strategy is responding to. In particular, I distinguish between two sources: (1) misperception about the value of product B, and (2) misperception about the magnitude of the switching costs.

i. Misperception of Value

I begin with misperception of value. To fix ideas, consider durables and parts bundling and, specifically, the printers and ink example. Consumers underestimate the number of ink cartridges that they will buy in part because they underestimate the amount of printing that they will do. And they underestimate the amount of printing that they will do in part because they underestimate the value of in-home printing. The underlying mistake is an underestimation of the value of printing. This mistake is welfare-reducing. It leads consumers to refrain from buying welfare-enhancing printers.

Bundling *reduces* this inefficiency. As explained above, bundling of printers and ink will be accompanied by backloaded pricing. Sellers will price their printers below cost and their ink above cost in order to minimize the total price of printing as perceived by consumers who underestimate the amount of ink that they will buy. The resulting underestimation of price leads consumers to purchase more printers. This is welfare-enhancing. Absent bundling underestimation of value leads consumers to purchase an inadequately low number of printers. With bundling, underestimation of

above-cost price, but also S2 will set a below-cost price. This will only exacerbate the excessive switching problem.

price partially offsets the underestimation of value, bringing the number of printers that consumers purchase closer to the first-best.¹¹¹

A similar welfare-enhancing effect is present in other types of bundling, as long as the underlying mistake is an underestimation of value. Underestimation of the value of add-ons leads to an inadequately low number of base-goods purchased. Bundling of base-goods and add-ons reduces this inefficiency. In the context of intertemporal bundling, underestimation of the second-period value reduces the quantity of first-period purchases. Intertemporal bundling with backloaded pricing reduces this inefficiency.

But even when responding to underestimation of value, bundling does not unambiguously improve the product A purchase decision. When the bundling strategy is effective and the consumer purchases both product A and product B from the same seller, then, as argued above, bundling enhances the efficiency of the product A purchase decision. Generally, however, bundling is less than perfectly effective. And when the consumer purchases only product A from the bundling seller, the backloaded pricing that accompanies bundling reduces efficiency. For example, consumers who do not purchase the add-on and pay only the below-cost base-good price will purchase too many units of the base-good. Similarly, retail store customers who purchase only, or mainly, loss-leaders will purchase too many units of the underpriced products. And with intertemporal bundling, consumers who stay with the seller for only the introductory period will purchase an excessive quantity during the introductory period.

While bundling in response to underestimation of value may enhance welfare, bundling in response to overestimation of value is welfare-reducing. Consider intertemporal bundling with frontloaded pricing, and specifically health club subscriptions. Overestimation of the second-period value reduces welfare even absent bundling, as long as the values of consumption in different periods are interdependent. For example, if health club attendance in both period 1 and period 2 are necessary for any health or aesthetic benefits, then overestimation of second-period value and thus of second-period use can lead to excessive period 1 attendance.¹¹²

This problem is exacerbated when sellers offer multi-period subscriptions. In particular, with multi-period subscriptions overestimation of the period 2

¹¹¹ With full backloading of the price, such that printers are priced at zero and ink is priced sufficiently high to cover the total cost of producing both printers and ink, the underestimation of price perfectly offsets the underestimation of value and the first-best optimal number of printers is purchased. This also precludes the possibility that underestimation of price will more than offset the underestimation of value leading to the purchase of an excessively large number of printers (at least as long as prices are non-negative). See Bar-Gill, *supra* note 6, Part II.B.

¹¹² See Bar-Gill, *supra* note 6.

value will lead to excessive subscription purchases even when the values of consumption in different periods are not interdependent. Assume that on January 1st a consumer is considering whether to make a year-long commitment to visit a specific health club. The consumer will obtain a benefit worth \$5 from club attendance on 10 days over the course of the year and no benefit on the remaining 355 days. This consumer, however, mistakenly thinks that she will obtain a benefit of \$5 on 100 days over the course of the year. With a per-visit price of \$10, reflecting the per-visit cost to the club, the consumer will not enter into a year-long commitment, regardless of the misperception. This is an efficient outcome. The overestimation of value, \$500 (= 100 visits * \$5 per-visit) instead of \$50 (= 10 visits * \$5 per-visit), is offset by an overestimation of price, \$1,000 (= 100 visits * \$10 per-visit) instead of \$100 (= 10 visits * \$10 per-visit).

But a year-long commitment is generally accompanied not by per-visit pricing but rather by subscription pricing. In a competitive market, the subscription price will reflect the true cost to the health club. The health club, anticipating an average of 10 visits per-consumer, will set a subscription price of \$100 (= 10 visits * \$10 per-visit). And the consumer will buy the subscription (and make the year-long commitment), since \$100 is less than the overestimated value of \$500. With overestimation of use, per-visit pricing will lead consumers to overestimate the total price of health club attendance. Overestimation of price is desirable as it partially offsets the overestimation of value. Subscription pricing eliminates the overestimation of price and thus reduces welfare. The result: Too many consumers sign-up for health club membership, and barely attend the health club.¹¹³

ii. Misperception of Switching Costs

When the underlying mistake concerns the value of product B, then bundling may increase efficiency. Bundling in response to misperception of switching costs unambiguously reduces efficiency. For example, the underestimation of add-on use is often a result of an underestimation of the inconvenience costs or switching costs involved in purchasing the add-on from another seller, i.e., not the base-good seller. Underestimation of switching costs leads to excessive base-good purchases, even without backloaded pricing, as the consumer overestimates the likelihood of buying low-priced add-ons from other sellers. Backloaded pricing by the base-good seller, i.e., below-cost base-good prices and above-cost add-on prices only exacerbates this inefficiency. Put differently, underestimation of switching costs and thus of switching leads to underestimation of total price

¹¹³ See Della Vigna & Malmendier, *supra* note 99. In fact, the average club member with a year-long subscription ends-up paying an effective per-visit price that is over 50% higher than the health club's per-visit price. *Id.* at 703.

even without backloaded pricing. Backloaded pricing leads to further underestimation of total price.

Intertemporal bundling in response to underestimation of switching costs leads to similar inefficiency. Underestimation of switching costs leads to excessive first-period purchases, even without backloaded pricing, as the consumer overestimates the probability of switching to a low-price competitor (or abandoning the service altogether). Backloaded pricing, e.g., below-cost, introductory prices that make way to above-cost prices at the end of the introductory period, only exacerbates this inefficiency. If consumers are aware of the cost of switching, then a low introductory price followed by a high long-term price will not seem very attractive. This strategy becomes more attractive to consumers, and thus more profitable to sellers, when consumers underestimate the cost of switching and, as a result, underestimate the likelihood of paying the long-term price. Underestimation of switching costs and thus of switching leads to underestimation of total price even without backloaded pricing. Backloaded pricing leads to further underestimation of total price.

c. Distributional Implications

In discussing the efficiency effects of bundling, I have suppressed consumer heterogeneity. But, of course, consumers differ on multiple dimensions. And bundling affects different consumers differently. In particular, bundling leads to cross-subsidization among different groups of consumers. The welfare implications of this distributional effect will be determined by the identity of the different groups. When each product is priced at cost, each consumer pays for the product that she buys. When some products are priced below cost and others above cost, as is the case when the products are bundled together, then consumers who purchase more underpriced items are cross-subsidized by consumers who purchase more overpriced items.

Consider durables and parts bundles. With backloaded pricing, the high ink prices pay not only for the ink but also for the printers that are sold at a below-cost price. This means that heavy users, who print a lot and buy a lot of ink, cross-subsidize light users, who print less and buy less ink. In essence, heavy users pay for the printers that light users get at a low, below-cost price. This distributional effect can be seen as either good or bad, depending on the identity of the heavy users and the light users.¹¹⁴ And similarly with other types of bundling: Hotel guests who purchase the high-priced add-ons cross-subsidize guests who pay only the below-cost room rate. Retail store customers who purchase fewer loss-leaders and more

¹¹⁴ See Bar-Gill, *supra* note 6, Part II.B.

items that are not loss-leaders will cross-subsidize consumers with the opposite purchasing patterns. When intertemporal bundling is accompanied by backloaded pricing, consumers who stay-on beyond the introductory period and pay the high long-term prices cross-subsidize consumers who overcome the switching costs and jump from one low-price introductory offer to the other. And when intertemporal bundling is accompanied by frontloaded, subscription pricing, light users who barely go to the health club cross-subsidize the heavy users who actually take advantage of their health club subscription. Again, the desirability of these distributional implications depends on the identity of the affected groups—the cross-subsidizing group and the cross-subsidized group.

The introduction of consumer heterogeneity and the cross-subsidization effects of bundling have efficiency implications as well. Cross-subsidization implies that some consumers pay a total price that is higher than the seller's cost of production and other consumers pay a total price that is lower than the seller's cost of production. Consumers who pay an above-cost price purchase an inadequately small number of units. And consumers who pay a below-cost price purchase too many units.¹¹⁵

d. The Welfare Implications of Bundling - Summary

Bundling in response to use-pattern mistakes is a broad phenomenon spanning multiple markets. The welfare implications of the bundling strategy are correspondingly diverse, precluding any general statement as to the overall social desirability of bundling. Nevertheless, the preceding analysis does suggest that in many cases when sellers bundle in response to use-pattern mistakes this bundling response exacerbates the welfare costs of the mistake. In some cases, bundling reduces the efficiency of both the product A purchase decision and the product B purchase decision. In other cases, bundling improves the product A purchase decision, but skews the product B purchase decision and leads to undesirable wealth redistribution, such that the overall welfare effect is negative.¹¹⁶

¹¹⁵ Redistribution, especially from less sophisticated actors to more sophisticated actors, can increase efficiency and may even benefit the less sophisticated actors. For example, in financial markets gains made by sophisticated actors, often at the expense of less sophisticated actors, motivate the sophisticated actors to acquire information, and this information enhances market efficiency to the benefit of all actors. However, this advantage of redistribution does not exist, or is insignificant, in many markets.

¹¹⁶ To take one example—the printers and ink example—the reduction in the perceived total price efficiently increases the number of printers purchased—a positive product A effect. The high ink prices inefficiently reduce the number of ink cartridges purchased by each printer owner—a negative product B effect. The result is more printers but less printing per-printer. The overall efficiency effect depends on the relative price elasticities of demand for printers and for ink. If printer elasticity is high and ink elasticity is low, then bundling is efficient. If printer elasticity is low and ink elasticity is high, then bundling is inefficient. And the distributional effect of bundling might lead to an overall negative assessment of bundling, even if it is efficient. See Bar-Gill, *supra* note 6, Part II.D. See also Farrell & Klemperer, *supra* note 2, §§ 1 & 2.3.2 (“‘‘hold-up or ‘bargain-then-ripoff’ pricing distorts quantity choices, incentives to switch suppliers, and entry incentives.’’”). Also note that if the price elasticity of

C. Alternative Explanations

The preceding sections present a behavioral economics theory of product and price design in response to consumer mistakes, specifically use-pattern mistakes. However, the identified design features can also be explained within a rational choice framework. In particular, the identified pricing schemes can be explained as a price-discrimination or screening mechanism—as a means for charging different prices to different consumers. Consider rebate pricing. Assume that rebate redemption requires substantial time and effort. And assume that the (alternative) cost of time is higher for wealthier consumers. Under these assumptions, a rebate strategy allows sellers to charge more from wealthier consumers who are willing to pay more.¹¹⁷ Pricing schemes that include substantial penalties may also facilitate price discrimination or screening. For example, if paying the credit card bill late is correlated with higher default risk, then a late fee is a way to charge higher prices to riskier consumers.

Bundling with backloaded pricing can also be viewed as a price discrimination mechanism.¹¹⁸ Consider the printers and ink example—an example of a durable and parts bundle. Heavy users extract more value from printing and are thus willing to pay more. Light users extract less value and are thus willing to pay less. Setting low printer prices and high ink prices is a way to charge higher prices to heavy users and lower prices to light users. The flip-side of the price-discrimination or screening model is a signaling model. Bundling with backloaded pricing can serve as a signal of product quality or longevity. If consumers are uncertain about the quality of the durable product, sellers will want to offer the durable for a low price and then sell parts for a high price. Only high-quality sellers will be able to profitably employ this strategy, knowing that satisfied consumers will continue to use the product and compensate them for the low durable price by purchasing many high-priced parts.¹¹⁹

The plausibility of these rational choice explanations varies by context. For example, the price-discrimination theory assumes that sellers enjoy market

demand for ink is high bundling becomes less attractive for sellers. After all, sellers are counting on revenues from the sale of ink cartridges. If the number of ink cartridges drops sharply, then bundling with low printer costs and high ink costs becomes a losing strategy.

¹¹⁷ See, e.g., Yuxin Chen, Sridhar Moorthy & Z. John Zhang, *Price Discrimination After the Purchase: Rebates as State-Dependent Discounts*, 51 MGMT. SCI. 1131, 1131 (2005); Edwards, *supra* note 30. Similarly, delayed payment pricing strategies allow sellers to offer free credit and thus an effectively lower price to less-wealthy, cash-strapped consumers. The assumption is that exercising the delayed payment option entails some transaction costs and that wealthier consumers will want to avoid these transaction costs.

¹¹⁸ See Craswell, *supra* note 51, at 668-69 (describing how tying can be used as a price discrimination mechanism).

¹¹⁹ Similarly, low base-good prices and loss-leader pricing can serve as a signal that the seller offers attractive add-ons or non-loss-leader products.

power.¹²⁰ Returning to the rebate pricing example, in a competitive market wealthier consumers will not pay the high pre-rebate price. They will purchase the product from a seller that sets a single price equal to cost.¹²¹ Similarly, heavy users will not purchase their printers and ink from a seller that adopts a backloaded pricing strategy; rather they would purchase their printers and ink from a competitor that offers per-component marginal-cost pricing. While the rational choice, price discrimination theory presumes some level of market power, the behavioral, misperception-based accounts of rebate pricing and of bundling with backloaded pricing are valid in both competitive and non-competitive markets.

It is important to distinguish between the behavioral theory of design responses to consumer mistakes and the alternative, rational choice theories. From a normative perspective it is especially important to understand which theory explains observed market outcomes, since price discrimination, screening and signaling may be welfare-enhancing while the behavioral explanation implies a welfare loss that may justify legal intervention. Price discrimination and other rational choice theories surely explain some of the identified design features in some markets. But these theories do not explain all of the identified design features in all markets. At the end of the day, the true explanation for any observed design feature—a response to consumer mistakes or a price-discrimination or signaling technique—cannot be determined in the abstract. A market-specific analysis is required.¹²²

D. Undoing Mistake: Learning and Competition

This Part of the Article has presented a biased picture of consumer mistakes and their effects on market outcomes. I focused on cases where persistent consumer mistakes induce design responses that exacerbate the welfare costs of these mistakes. I did so in attempt to establish use-pattern mistakes as an important category of market failure, worthy of attention by

¹²⁰ In the sense that the seller-firm faces less than perfectly elastic demand. This economic definition of market power may well be broader than the antitrust law definition of market power. See Benjamin Klein & John Shepard Wiley Jr., *Competitive Price Discrimination as an Antitrust Justification for Intellectual Property Refusals to Deal*, 70 ANTITRUST L.J. 599, 602 (2002-2003). In many fairly competitive markets product differentiation, geographic location and other factors create pockets of local monopoly power that enables some price discrimination. *Id.*

¹²¹ Further evidence of the limited explanatory power of the price discrimination theory is provided by a recent survey of Promotion Marketing Association members who work with rebates: 94.6% of respondents indicated that rebates were used as a promotion mechanism, while only 2.7% reported using rebates as a price discrimination mechanism. See Edwards, *supra* note 30, at 20 n.69. The “promotion mechanism” is not necessarily correlated with the behavioral theory. Still, since sellers can always use a more straightforward promotion mechanism—lowering the spot price (a “Sale”)—the choice to use rebate pricing as a promotion mechanism provides some support for the behavioral explanation.

¹²² For an example of the required market-specific analysis, see Bar-Gill, *supra* note 5 (evaluating both the behavioral and rational choice explanations of pricing schemes in the credit cards market and concluding that these pricing schemes respond to consumer mistakes).

policymakers. But not all mistakes are persistent. And not all markets fail. In many cases, a combination of consumer learning and competition among sellers undo the adverse implications of mistakes.¹²³

To give but a few examples: Penalty fees were offered as an example of a multidimensional-pricing response to use-pattern mistakes. In the not-so-distant past Blockbuster was notorious for the high late fees that it charged. Eventually consumers learned to correct their use-pattern mistake and began to understand the cost of Blockbuster's late fee policy. The growing number of sophisticated consumers created market demand that was soon filled by Netflix—a no-late-fee competitor. Similarly, consumer complaints about rebate strategies, another multidimensional-pricing response to use-pattern mistakes, have led several major retailers to streamline their rebate programs, making rebate redemption easier, and some retailers are even beginning to phase-out their rebate programs altogether.¹²⁴ Another example concerns in-home printing—an example of a durable and parts bundle. In this example, sellers respond to use-pattern mistakes with backloaded pricing, i.e., low printer prices and high ink prices. Recently, consumer learning has begun to generate demand for low-price ink, even when the low-price ink is compatible only with higher-priced printers, and the market is starting to move in that direction.¹²⁵

Learning and competition is also affecting product and price design in the credit cards market. Credit card teaser rates were given as an example of backloaded pricing in an intertemporal bundle—a response to consumers' use-pattern mistakes. The success of the teaser rate strategy depends on the limited switching at the end of the introductory period. Some consumers do not switch because they cannot find an alternative source of financing that could be used to eliminate existing balances at the end of the introductory period. Competition in the credit cards market has worked to reduce this switching cost. Specifically, credit card offers with low-interest balance-transfer options increase switching and consequently reduce the profitability of the teaser rate strategy. Finally, there are signs of effective learning and competition in the cell phone market. Large disparities between per-minute prices within the plan limit and beyond the plan limit were presented as an example of backloaded pricing that responds to use-pattern mistakes. The introduction of service plans with roll-over minutes suggests that consumer learning is gradually eliminating these mistakes and

¹²³ Cf. Alan Schwartz, *How Much Irrationality Does the Market Permit*, J. LEGAL STUD. (forthcoming) (showing, in a search equilibrium model, that competition can drive out contracts that exploit consumer irrationality).

¹²⁴ See Edwards, *supra* note 30. In addition, websites like <http://www.onrebate.com> help consumers process rebates.

¹²⁵ See Walter S. Mossberg, *Kodak's New Printer Is a Good Start, Plus It Cuts the Cost of Ink*, WALL ST. J., April 26, 2007, at B1 (Kodak entered the market with low-price ink and higher-priced printers, and HP is responding with lower-price ink).

that sellers are responding to the changing demand. Similarly, learning is reducing misperceptions about the costs of long-term lock-in contracts, and sellers are responding by offering pay-as-you-go no-commitment products.

Learning and competition are effective consumer-protection forces. Their efficacy varies from market to market and from mistake to mistake. The question is how large a welfare cost will be incurred before learning and competition correct the behavioral market failure. In some cases the waiting period is too long and the resulting welfare cost too high. In these cases legal intervention should be considered.

III. DISCLOSURE REGULATION

Consumer mistakes are costly. Sellers' response to these mistakes often increases their cost. An identification of a market failure, here a behavioral market failure, opens the door to the possibility of welfare-enhancing legal intervention. In many markets the primary form of regulation is disclosure mandates. Disclosure is preferred because it does not constrain market forces. Instead it facilitates the efficient operation of markets.¹²⁶ Disclosure mandates are perhaps the most widely used tool for regulating consumer products and contracts. Disclosure regulations are promulgated at both the federal and state levels. And disclosure requirements are based on both statutory law and common law.

Product attribute information features prominently in the vast landscape of disclosure regulation. A comprehensive survey of product attribute disclosure mandates is beyond the scope of this Article. Yet even a few examples demonstrate the range of product attribute information that is subject to disclosure mandates. Starting with price information, the Truth-in-Lending Act (TILA) requires disclosure of interest rates and fees by lenders.¹²⁷ TILA also mandates transparent disclosure of different price components as well as total price in consumer lease contracts.¹²⁸ Parallel legislation, the Truth in Savings Act, requires depository institutions to disclose fees and other terms concerning deposit accounts.¹²⁹ And regulations promulgated by the Securities and Exchange Commission require disclosure of mutual fund fees.¹³⁰ Mandated disclosure of price information is not limited to financial services. For example, the Real

¹²⁶ Yet disclosure is not without cost. *See infra* Part III.D.

¹²⁷ 15 U.S.C. §§ 1601 et seq.; Regulation Z, 12 C.F.R. § 226.

¹²⁸ Regulation M, 12 C.F.R. § 213. *See also* Press Release, Federal Reserve (Sept. 27, 1996), *available at* <http://www.federalreserve.gov/boarddocs/press/boardacts/1996/19960927/default.htm>.

¹²⁹ 12 U.S.C. §§ 4301 et seq.; Regulation DD, 12 C.F.R. § 230 (2000).

¹³⁰ Shareholder Reports and Quarterly Portfolio Disclosure of Registered Management Investment Companies, Exchange Act Release Nos. 33-8393, 34-49333, IC-26372, File No. S7-51-02, 17 C.F.R. §§ 210, 239, 249, 270, & 274; RIN 3235-AG64, 2004 SEC LEXIS 474 (Feb. 27, 2004).

Estate Settlement Procedures Act requires disclosure of closing costs in real estate transactions.¹³¹ And the Federal Trade Commission (FTC) requires various price disclosures in its Funeral Industry Practices Rule.¹³²

Moving on to product quality information: FTC trade regulations require gasoline stations to post octane ratings of gasoline,¹³³ sellers of insulation to disclose the effectiveness of the insulation,¹³⁴ sellers of home amplifiers to disclose the power output of the amplifier,¹³⁵ and the list goes on.¹³⁶ The Nutrition Labeling and Education Act, enforced by the Food and Drug Administration (FDA), directs that food labels list information concerning twelve of the most important nutrients.¹³⁷ The FDA also regulates drug labeling.¹³⁸ For example, labels of non-prescription, over-the-counter (OTC) drugs must provide information on active ingredients and on purposes and uses of the drug.¹³⁹ The Motor Vehicle Information and Cost Savings Act, enforced by the National Highway Traffic Safety Administration, requires car dealers to disclose information about a vehicle's damage susceptibility, crashworthiness, and ease of diagnosis and repair.¹⁴⁰ And the courts, enforcing contract law doctrine, require disclosure of material facts about any contractual transaction.¹⁴¹ Contract law also provides incentives for disclosure of contract terms,¹⁴² which,

¹³¹ 12 U.S.C. §§ 2601-17; HUD, RESPA - Real Estate Settlement Procedures Act, http://www.hud.gov/offices/hsg/sfh/res/respa_hm.cfm (last visited Aug. 8, 2007).

¹³² 39 C.F.R. § 453 (especially § 453.2). See also FED. TRADE COMM'N, FACTS FOR BUSINESS: COMPLYING WITH THE FUNERAL RULE (2004), available at <http://www.ftc.gov/bcp/online/pubs/buspubs/funeral.pdf>.

¹³³ 16 C.F.R. § 306.10.

¹³⁴ 16 C.F.R. §§ 460.13-.14.

¹³⁵ 16 C.F.R. § 432.

¹³⁶ For an exhaustive list of the disclosure rules that the FTC enforces, see PETER C. WARD, FEDERAL TRADE COMMISSION: LAW, PRACTICE AND PROCEDURE (2006). The FTC is also engaged in negative disclosure regulation, working to prevent disclosure of false or misleading information. The FTC has general authority to police unfair or deceptive acts or practices. See Federal Trade Commission Act, 15 U.S.C. §§ 41-58. It also has authority under specific statutes such as the Nutrition Labeling and Education Act, which regulates health claims on food labels and in food product advertising. 21 U.S.C. § 301; 21 C.F.R. § 101. See also <http://www.cfsan.fda.gov/label.html>. The FTC regulates food advertising, while the Food and Drug Administration (FDA) is responsible for food labeling. See Working Agreement Between the FTC and FDA, 3 Trade Reg. Rep. (CCH) P 9851 (1971).

¹³⁷ 21 U.S.C. § 301; 21 C.F.R. § 101. See also <http://www.cfsan.fda.gov/label.html>.

¹³⁸ 21 U.S.C. § 352n; 21 C.F.R. § 201 (prescription drugs); 21 C.F.R. § 201.66 (nonprescription drugs). The FDA supervises labeling of both prescription and nonprescription drugs. With respect to advertising, the FDA has the authority to supervise advertising for prescription drugs, while the FTC supervises nonprescription drug marketing. See Memorandum of Understanding Between Federal Trade Commission and the Food and Drug Administration, 36 Fed. Reg. 18,539 (Sept. 16, 1971).

¹³⁹ 21 C.F.R. § 201.66. See also FDA Center for Drug Evaluation and Research, OTC Labeling: Questions and Answers, <http://www.fda.gov/cder/otc/label/quesanswers.htm> (last visited Aug. 8, 2007).

¹⁴⁰ 15 U.S.C. §§ 1901-2012.

¹⁴¹ See RESTATEMENT (SECOND) OF CONTRACTS §161b (1981) (unilateral mistake doctrine). See also Craswell, *Taking Information Seriously: Misrepresentation and Nondisclosure in Contract Law and Elsewhere*, 92 VA. L. REV. 565, 575 (2006) (discussing the duty to disclose product attributes and contract terms); Melvin A. Eisenberg, *Disclosure in Contract Law*, 91 CAL. L. REV. 1645 (2003).

¹⁴² In particular, unconscionability doctrine provides an indirect incentive for sellers to inform consumers about contract terms. See Beales, Craswell and Salop, *supra* note 25, at 493-94. See also Craswell, *supra* note 141, at 575 (discussing the duty to disclose product attributes and contract

given the collapse of the product-contract distinction,¹⁴³ are also considered quality information.¹⁴⁴

The quality dimension that is most often subject to disclosure regulation is product risk. The Federal Hazardous Substances Act requires that certain hazardous household products bear cautionary labeling to alert consumers to the potential hazards that those products present.¹⁴⁵ FDA regulations require that OTC drug labels include warnings about possible side-effects and other risks associated with the use of the drug.¹⁴⁶ Under regulations promulgated by the Environmental Protection Agency (EPA) and the Department of Housing and Urban Development (HUD), sellers, landlords and agents must disclose the use of lead-based paint on the property and provide purchasers and tenants with an EPA-approved lead hazard information pamphlet.¹⁴⁷ And tort law, through its "duty to warn," provides strong incentives for the disclosure of product risk information. In particular, the failure to provide a reasonable warning about a product risk is considered a product defect that might trigger tort liability.¹⁴⁸

terms.); Melvin A. Eisenberg, *supra* note 141. In insurance law, the "reasonable expectations" doctrine provides insurers with an incentive to disclose policy terms to consumers. *See, e.g.*, Robert E. Keeton, *Insurance Law Rights at Variance with Policy Provisions*, 83 HARV. L. REV. 961, 968 (1970); Daniel Schwarcz, *A Products Liability Theory for the Judicial Regulation of Insurance Policies*, 48 WM. & MARY L. REV. 1389, 1395 (2007).

¹⁴³ *See* Arthur Allen Leff, *Contract as Thing*, 19 AM. U. L. REV. 131, 144–51, 155 (1970); Lewis A. Kornhauser, *Unconscionability in Standard Forms*, 64 CAL. L. REV. 1151 (1976); Douglas G. Baird, *The Boilerplate Puzzle*, 104 MICH. L. REV. 933 (2006).

¹⁴⁴ *See also* Magnuson-Moss Consumer Warranty Act, 15 U.S.C. §§ 2301-12 (requiring a seller or manufacturer who provides a written express warranty to properly disclose warranty or service contract terms). In addition, both federal and state law facilitates the meaningful disclosure of certain contract terms, especially warranty and liability-related terms, by requiring that they be conspicuously disclosed. *See, e.g.*, 15 U.S.C. § 2303 (consumer product warranties must be labeled conspicuously); U.C.C. § 2-316(2) (any disclaimer of the implied warranty of merchantability must be conspicuously disclosed); N.Y. PERS. PROP. LAW § 335.1 (liability of an automobile lessee for the total loss of a vehicle must be conspicuously disclosed). *See also* Govern, *supra* note 30, at 1688.

¹⁴⁵ 15 U.S.C. §§ 1261-78; 16 C.F.R. §§ 1500-12. *See also* U.S. CONSUMER PRODUCTS SAFETY COMMISSION, FEDERAL HAZARDOUS SUBSTANCES ACT, <http://www.cpsc.gov/businfo/fhsa.html>. Among the disclosures that such labels must include are: the name and business address of the manufacturer, packer, distributor, or seller; the common or usual or chemical name of each hazardous ingredient; the signal word "Danger" for products that are corrosive, extremely flammable, or highly toxic; the signal word "Caution" or "Warning" for all other hazardous products; an affirmative statement of the principal hazard or hazards that the product presents, for example, "Flammable", "Harmful if Swallowed", "Causes Burns", "Vapor Harmful", etc.; the word "Poison" for a product that is highly toxic, in addition to the signal word "Danger." *See* OFFICE OF COMPLIANCE, CONSUMER PROD. SAFETY COMM'N, REQUIREMENTS UNDER THE FEDERAL HAZARDOUS SUBSTANCES ACT: LABELING AND BANNING REQUIREMENTS FOR CHEMICALS AND OTHER HAZARDOUS SUBSTANCES 3 (2002), *available at* <http://www.cpsc.gov/businfo/regsumfhsa.pdf>.

¹⁴⁶ 21 C.F.R. § 201.66c (warnings for non-prescription drugs, including side-effects).

¹⁴⁷ *See* Residential Lead Based-Paint Hazard Reduction Act of 1992, 42 U.S.C. §§ 2681-92, 4851-56; Requirements for Disclosure of Known Lead-Based Paint and/or Lead-Based Paint Hazards in Housing, 24 C.F.R. § 35, 40 C.F.R. § 745. *See also* Toxic Substances Control Act, 15 U.S.C. § 2686.

¹⁴⁸ *See* RESTATEMENT (THIRD) OF TORTS: PRODUCT LIABILITY § 2 (1998); W. PAGE KEETON, ET AL., PROSSER AND KEETON ON THE LAW OF TORTS § 96 (5th ed. Supp. 1988); Craswell, *supra* note 141, at 566; James A. Henderson, Jr., & Aaron D. Twerski, *Doctrinal Collapse in Products Liability: The Empty Shell of Failure to Warn*, 65 N.Y.U. L. REV. 265 (1990); Latin, *supra* note 16; Hanson and Kysar I, *supra* note 27. Accordingly, the Restatement (Third) of Torts: Products Liability instructs sellers to

The preceding examples demonstrate the prevalence of product attribute disclosures. Information about product attributes is clearly valuable. It is important to know what APR is charged on a credit card balance. It is important to know that orange juice contains Vitamin C. And it is important to know that the paint in an apartment contains lead. With most products, however, the benefit or cost to a consumer from any product attribute depends on how the consumer will use the product. The APR on a credit card is more important for consumers who borrow more. Drinking orange juice is a good source of Vitamin C, but only if the juice is consumed soon after the container is first opened. And lead paint is especially dangerous when chewed on by toddlers. Accordingly, if consumers make mistakes not only about product attributes but also about product use, it is important to provide use pattern information in addition to product attribute information.

While many disclosure mandates focus on product attribute information, product use disclosure is not absent from the current regulatory scheme. Still, current use-pattern disclosures are insufficient—both in quantity and in quality. I begin in Sections A and B by surveying existing use-pattern disclosure mandates. Existing product-use disclosures fall into two categories: (1) proper-use disclosures, and (2) average-use information that is indirectly disclosed as a benchmark for product-attribute disclosures. This survey of existing product use disclosures highlights the limits of the current regulatory scheme. I respond to these limits by advocating improved use-pattern disclosure. In Section C, I argue for direct average-use disclosures. And, more importantly, in Section D, I argue for the disclosure of individualized use-pattern information. After arguing that use-pattern information should be disclosed, I turn in Section E to the regulatory design question: how use-pattern information should be disclosed? Finally, Section F recalls the main costs and limits of disclosure regulation. The limited efficacy of disclosure and the costs of disclosure regulation caution against a broad expansion of the disclosure landscape. I do not argue for more disclosure. Rather I argue for a more balanced division of disclosure mandates between product-attribute information and use-pattern information and for better-designed use-pattern disclosures.¹⁴⁹

“provide reasonable instructions and warnings about risks of injury posed by products.” See RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 2, cmt. i (1998). See also *Liriano v. Hobart Corp.*, 170 F.3d 264 (1999).

¹⁴⁹ An important question that I do not address in this Article is the question of who should be entrusted with designing and enforcing disclosure regulations. I begin to address this question in the context of consumer credit products in Bar-Gill & Warren, *supra* note 96 (arguing that regulation of consumer credit markets, including disclosure regulation, should be entrusted to a federal administrative agency). See also Alan Schwartz and Lewis Wilde, *Intervening in Markets on the Basis of Imperfect Information: A Legal and Economic Analysis*, 127 U. PA. L. REV. 630, 678-82 (1979) (arguing that administrative agencies are better suited than courts to address the market failure); Craswell, *supra* note 51, at 700 (same); *Ford Motor Credit Co. v. Mihollin*, 444 U.S. 555, 568-69 (1980).

A. Proper-Use Information

Use information is provided through disclosures that specify the proper use of a product. The Consumer Products Safety Commission (CPSC) has general authority to promulgate "requirements that a consumer product be marked with or accompanied by clear and adequate warnings or *instructions*."¹⁵⁰ (emphasis added) The purpose of this provision is to provide information on how to use the product properly. Under this authority the CPSC has issued regulations requiring the disclosure of proper-use information for numerous products.¹⁵¹ For example, sellers of bicycle helmets must provide instructions telling riders how to make sure the helmet fits properly and how to wear it properly.¹⁵² Sellers of television antennas must provide instructions on how to avoid the hazard of electrocution during the installation of the antenna.¹⁵³ And sellers of bunk beds must provide instructions for safe use, including: "Do not allow children under 6 years of age to use the upper bunk"; "Use guardrails on both sides of the upper bunk"; "Prohibit horseplay on or under beds"; "Prohibit more than one person on upper bunk"; and "Use ladder for entering or leaving upper bunk."¹⁵⁴

The CPSC-enforced, Federal Hazardous Substances Act provides another example. The Act requires that certain hazardous household products bear cautionary labeling to alert consumers to the potential hazards that those products present and to inform them of the measures they need to take to protect themselves from those hazards.¹⁵⁵ Specifically, such labels must include the following disclosures: precautionary statements telling users what they must do or what actions they must avoid to protect themselves; instructions for first aid treatment to perform in the event that the product injures someone; if a product requires special care in handling or storage, instructions for consumers to follow to protect themselves; and the statement "Keep out of the reach of children."¹⁵⁶

¹⁵⁰ 15 U.S.C. § 2056.

¹⁵¹ Beyond the examples provided below, CPSC regulations are listed on the CPSC's website, <http://www.cpsc.gov/cgi-bin/regs.aspx>.

¹⁵² See OFFICE OF COMPLIANCE, CONSUMER PROD. SAFETY COMM'N, REQUIREMENTS FOR BICYCLE HELMETS 4 (2002), available at <http://www.cpsc.gov/businfo/regsubicyclehelmets.pdf>.

¹⁵³ 16 C.F.R. § 1402 (§ 1402.1 describes the scope of the regulation; §1402.4 requires the disclosure of a specific warning: "Warning: Installation of this Product Near Powerlines is Dangerous. For Your Safety, Follow the Installation Directions.").

¹⁵⁴ See CPSC Safety Standard for Bunk Beds, 16 C.F.R. §§ 1213, 1500, 1513. See also OFFICE OF COMPLIANCE, CONSUMER PROD. SAFETY COMM'N, SAFETY STANDARD FOR BUNK BEDS 2 (2001) available at <http://www.cpsc.gov/businfo/regsubunkbed.pdf>.

¹⁵⁵ 15 U.S.C. §§ 1261-78; 16 C.F.R. §§ 1500-1512. See also CPSC, Federal Hazardous Substances Act, <http://www.cpsc.gov/businfo/fhsa.html> (last visited Aug. 8, 2007)

¹⁵⁶ See OFFICE OF COMPLIANCE, CONSUMER PROD. SAFETY COMM'N, REQUIREMENTS UNDER THE FEDERAL HAZARDOUS SUBSTANCES ACT: LABELING AND BANNING REQUIREMENTS FOR CHEMICALS AND OTHER HAZARDOUS SUBSTANCES 3 (2002), available at <http://www.cpsc.gov/businfo/regsumfhsa.pdf>.

The FTC, in its trade regulations, also requires disclosure of proper-use information. For example, the FTC requires clothes manufacturers to provide information on proper care.¹⁵⁷ The FDA requires disclosure of proper-use information on drug labels. In particular, drug manufacturers must provide dosage and other proper-use information for non-prescription drugs.¹⁵⁸ Moving on to real estate, the EPA and HUD require sellers, landlords and agents to provide purchasers and tenants with an EPA-approved lead hazard information pamphlet, which contains proper-use information on ways to minimize lead-based paint hazards.¹⁵⁹

And tort law, through its "duty to warn," provides strong incentives for the disclosure of proper-use information. As mentioned above, the failure to provide reasonable instructions and warnings is considered a product defect.¹⁶⁰ And on the flip side, adequate warnings often provide an effective shield against liability.¹⁶¹ The subject of these instructions and

¹⁵⁷ FTC Trade Regulation Rule: Care Labeling of Textile Wearing Apparel, 16 C.F.R. § 423 (1980).

¹⁵⁸ 21 U.S.C. § 352n; 21 C.F.R. § 201.66c. *See also* FOOD & DRUG ADMIN., DRUG INTERACTIONS: WHAT YOU SHOULD KNOW (2004), available at <http://www.fda.gov/cder/consumerinfo/druginte3.pdf> ("The "Directions" section of the [over-the-counter drug] label tells you: the length of time and the amount of the product that you may safely use," and "any special instructions on how to use the product."). (For general information on the regulation of over-the-counter drugs, see <http://www.fda.gov/cder/offices/otc/default.htm>). Disclosure of dosage and other proper-use information is also required on prescription drug labels. *See* 21 C.F.R. § 201.5. *See also* FDA Requirements on Content and Format of Labeling for Human Prescription Drug and Biological Products, 21 C.F.R. §§ 201, 314, 601, <http://www.fda.gov/cder/regulatory/physLabel/default.htm> (For prescription drugs dosage information is mainly targeted at healthcare professionals). But this information is mainly for healthcare professionals, not consumers.

¹⁵⁹ HUD Requirements for Disclosure of Known Lead-Based Paint and/or Lead-Based Paint Hazards upon Sale or Lease of Residential Property, 24 C.F.R. § 35.8; EPA Requirements on Lead Based Poisoning Prevention in Certain Residential Structures, 40 C.F.R. § 745; ENV'T'L PROT. AGENCY, PROTECT YOUR FAMILY FROM LEAD IN YOUR HOME, available at <http://www.epa.gov/lead/pubs/leadpdf.pdf>.

¹⁶⁰ *See supra* note 148.

¹⁶¹ Tort law often exempts manufacturers from liability whenever the harm could be avoided had the consumer followed the warning. *See* RESTATEMENT (SECOND) OF TORTS, § 402A, cmt. j (1965) ("Where [adequate] warning is given, the seller may reasonably assume that it will be read and heeded; and a product bearing such a warning, which is safe for use if it is followed, is not in defective condition, nor is it unreasonably dangerous."); *Ellsworth v. Sherne Lingerie, Inc.*, 495 A.2d 348, 356 n. 12 (Md. 1985) ("If a product otherwise unreasonably dangerous can be made safe for reasonably foreseeable uses by adequate warnings or instructions, liability will be avoided, and the focus in such cases is generally on the adequacy of the notice. If the warnings or instructions are adequate the product is not defective, and the plaintiff cannot recover under a theory of strict liability in tort. The cause of the injury in such cases is the failure to read or follow the adequate warnings or instructions, and not a defective product."). *See also* Latin, *supra* note 16, at 1258 (describing and criticizing Section 402A, Comment J, and other tort doctrines, like proximate cause and the unforeseeable misuse defense, that have been used to exempt manufacturers from liability based on warnings). The Restatement (Third) of Torts: Products Liability takes a less extreme approach, but still counts the existence of a warning as a relevant consideration in establishing liability. *See* RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 2, cmt. f (1998) (listing instructions and warranties accompanying the product as a relevant factor "in determining whether an alternative design is reasonable and whether its omission renders a product not reasonably safe.").

warnings is commonly proper-use information.¹⁶² As emphasized by Judge Calabresi in *Liriano v. Hobart Corp.*,¹⁶³ a warning does more than provide information about a product's dangerousness—product attribute information; it also provides information about how the product should be used—product-use information.

Proper-use information is also publicized by government agencies. The CPSC's public information disclosures include safety suggestions, i.e., suggestions how to use products safely.¹⁶⁴ For example, the CPSC's website includes an Extension Cords Fact Sheet with suggestions how to avoid risks associated with extension cords.¹⁶⁵ Similarly, the FTC publicizes information on proper-use of different products and services, including credit cards and automobiles.¹⁶⁶ The SEC provides information on proper use of investment products. For example, it emphasizes the importance of diversification.¹⁶⁷ And the FDA publicizes information on proper use of food and drug products.¹⁶⁸

Disclosure of proper-use information is clearly important. But proper-use information also suffers from an important limitation. Although it is appropriate for use dimensions that have a single, well-defined proper use, not all use dimensions have a single, well-defined proper use. There is one proper way to wash a pair of jeans. There is no single, well-defined way to use a credit card.¹⁶⁹ The alternative to proper-use information is actual-use

¹⁶² See RESTATEMENT (THIRD) OF TORTS: PROD. LIAB. § 2, cmt. i (1998) ("Commercial product sellers must provide reasonable instructions and warnings about risks of injury posed by products. Instructions inform persons how to use and consume products safely.") In fact, tort law often allows manufacturers to get away with an unsafe product design as long as they provide proper-use warnings. For example, the manufacturer of a toy BB-gun with lethal power was able to avoid liability by including a warning that the gun should not be pointed at any person. And the manufacturer of a lawnmower with inadequate protective skirts was able to avoid liability by including a warning that the lawnmower should not be operated when any person (other than the operator) is in its vicinity. See *Latin*, *supra* note 16, at 1195-96 (citing *Sherk v. Daisy-Heddon*, 450 A.2d 615 (Pa. 1982) (BB-gun case) and *Dugan v. Sears, Roebuck & Co.*, 454 N.E.2d 64 (1983) (lawnmower case)).

¹⁶³ *Liriano v. Hobart Corp.*, 170 F.3d 264, 270-71 (1999). See also James A. Henderson, Jr., & Aaron D. Twerski, *Doctrinal Collapse in Products Liability: The Empty Shell of Failure to Warn*, 65 N.Y.U. L.REV. 265, 285 (1990).

¹⁶⁴ 15 U.S.C. §§ 2054-55 (the CPSC can collect and disclose information on product risks).

¹⁶⁵ See CPSC Extension Cords Fact Sheet, CPSC Document #16, <http://www.cpsc.gov/cpscpub/pubs/16.html> (on extension-cords).

¹⁶⁶ See <http://www.ftc.gov/ftc/consumer.htm>.

¹⁶⁷ SEC Beginners' Guide to Asset Allocation, Diversification, and Rebalancing, <http://www.sec.gov/investor/pubs/assetallocation.htm> (last visited Aug. 9, 2007).

¹⁶⁸ See FDA Consumer Advice and Publications on Food Safety, Nutrition, and Cosmetics, <http://www.cfsan.fda.gov/~lrd/advice.html> (last visited Aug. 9, 2007). For information on proper-use of drugs/medicine, see FDA Consumer Education/Information, <http://www.fda.gov/cder/drug/DrugSafety/drugSafetyConsumer.htm> (last visited Aug. 9, 2007); FDA Consumer Information: Safe Use of Over-the-Counter Drug Products, <http://www.fda.gov/cder/offices/otc/consumer.htm> (last visited Aug. 9, 2007).

¹⁶⁹ General statements like "Do not borrow too much" or "Use your card prudently" will not be very helpful.

information. I next consider statistical actual use information, i.e., average-use or typical-use information.

B. Product-Attribute Information with Average-Use Benchmarking

Use-pattern information is sometimes provided indirectly through product-attribute disclosures. I have argued that product use depends on product attributes.¹⁷⁰ But product attributes can also depend on product use. For example, the fuel-efficiency of an automobile depends on technical features of the vehicle and on how the vehicle is driven, e.g., city driving versus highway driving. A pure product-attribute disclosure would include only technical information on the car's engine, weight, etc'. Most consumers will find it difficult to effectively use such a disclosure when choosing among different cars. Alternatively, the law may prefer a more comprehensible "impure" product attribute disclosure that presumes a certain use pattern. For example, automobile manufacturers can be required to disclose miles-per-gallon information that necessarily presumes specific driving behavior. Indeed, mandated disclosures sometimes assume, explicitly or implicitly, a certain use pattern and provide information on price, quality or risk given this use pattern.¹⁷¹

Elaborating on the fuel-efficiency example, expenditures on gasoline are a major cost of car ownership. As noted above, these expenditures are a function of a vehicle's inherent fuel-efficiency and its owner's use patterns. The EPA decided that the best way to communicate gasoline-cost information is through miles-per-gallon disclosures. Of course, the same vehicle will drive 10 miles-per-gallon under certain conditions and 20 miles-per-gallon under different conditions. The EPA chose two use-patterns, 'city driving' and 'highway driving,' and provided miles-per-gallon ratings for these two uses. Obviously, most consumers drive both in the city and on the highway and they divide their driving between these two uses at different proportions. Moreover, there is more than one way to drive in a city and more than one way to drive on the highway. But some benchmark had to be chosen.¹⁷² The energy-efficiency feature of home appliances is similarly disclosed using a typical use benchmark. A major cost of home appliances is energy cost. The energy cost depends on product attributes, i.e., on technical features of the appliance, and on the

¹⁷⁰ See *supra* Part I.

¹⁷¹ To take a banal example: disclosure requirements under the Federal Hazardous Substances Act, include the warning: "Harmful if Swallowed." See 15 U.S.C. §1261; 16 C.F.R. § 1500; CONSUMER PROD. SAFETY COMM'N, OFFICE OF COMPLIANCE, LABELING AND BANNING REQUIREMENTS FOR CHEMICALS AND OTHER HAZARDOUS SUBSTANCES 3 (2002), available at <http://www.cpsc.gov/businfo/regsumfhsa.pdf>.

¹⁷² Energy Policy and Conservation Act, 42 U.S.C. § 6201. See also Craswell, *supra* note 141, at 581-82 ("the EPA publishes only two indices of automobile gasoline consumption ('city' and 'highway' miles-per-gallon ratings), each of which is a rough attempt to reflect the driving habits of millions of different drivers.").

consumer's use patterns. The FTC constructed an energy efficiency index for appliances, based on typical use, and required manufacturers to disclose their product's 'Energy Efficiency Rating'.¹⁷³

Nutrition information listed on food labels provides another example. The Nutrition Labeling and Education Act requires disclosure, on food product labels, of the quantities of twelve important nutrients.¹⁷⁴ The quantity of a nutrient is pure product attribute information. But the health benefits or risks of a product do not depend only on this quantity measure. Use pattern information, specifically how much one consumes of this and other food products, is as important as the quantity of nutrients per 100 grams. And food labels do include some indirect information on product use. Specifically, labels provide information on the quantity of nutrients *per-serving*. The assumption is that the average consumer consumes one serving (or, alternatively, that the per-serving information will be used by the consumer to calculate total value). Food labels also provide "percent daily value" information for the included nutrients. Percent daily value information depends not only on how much one consumes of the particular product but also on the consumer's overall diet. Food product manufacturers must include the statement "Percent Daily Values are based on a 2,000 calorie diet." And, in some cases, a more detailed disclosure of daily values based on both a 2000 calorie and a 2500 calorie diet is required.¹⁷⁵

Required disclosure of the risks associated with cigarette smoking also makes certain assumptions about use patterns. Consider the Surgeon General's warnings that appear on cigarette labels and advertisements.¹⁷⁶ One warning reads: "Smoking Causes Lung Cancer, Heart Disease, and May Complicate Pregnancy." Another reads: "Quitting Smoking Now Greatly Reduces Serious Risks to Your Health." And a third reads: "Smoking by Pregnant Women May Result in Fetal Injury, Premature Birth, and Low Birth Weight." The risks of smoking depend on the number of cigarettes smoked. The risk from smoking one cigarette a month is not equal to the risk of smoking two packs a day. The Surgeon General's

¹⁷³ 16 C.F.R. § 305 (Rule Concerning Disclosures Regarding Energy Consumption and Water Use of Certain Home Appliances and Other Products Required under the Energy Policy and Conservation Act – 'Appliance Labeling Rule'). See also Craswell, *supra* note 141, at 581-82 ("the energy used by a home appliance will vary depending on consumers' usage patterns, and the actual cost of that energy will also vary depending on local electricity rates. It might have been possible to present this data in a complicated table, so that consumers could use their own electric bills (and their knowledge of their own usage patterns) to estimate their energy costs with some precision. However, the FTC believed that few consumers had the time or the patience to calculate their actual costs in this way, so it constructed its own index of likely energy costs which allowed the costs of different appliances (relative to other appliances of the same type) to be disclosed in the form of a single 'Energy Efficiency Rating'.")

¹⁷⁴ 21 U.S.C. § 301.

¹⁷⁵ 21 C.F.R. § 101.9(d)(9).

¹⁷⁶ The Comprehensive Smoking Education Act, 15 U.S.C. §§ 1331-41.

warnings implicitly assume that most smokers smoke more than one cigarette a month.

These Surgeon General's warnings are required by law. But tobacco companies voluntarily provide additional information about the risks of smoking. Specifically they provide information about the levels of tar and nicotine produced by the cigarette. This information, while voluntarily disclosed, is certified by the FTC. Tar and nicotine levels depend on product attributes as well as on use patterns. The FTC developed a machine-based test to objectively measure tar and nicotine levels, and the tar and nicotine measures provided by the FTC test assume a certain intensity of smoking—a 2-second, 35-milliliter puff every minute.¹⁷⁷ It is now understood that the FTC's machine-based test does not reflect any reasonable assumption about typical smoking behavior. First, the machine-based FTC test has been shown to only poorly represent actual smoking by humans.¹⁷⁸ Second, if a cigarette provides less nicotine, and less tar, per puff, smokers will compensate by taking deeper, longer, or more frequent puffs from their cigarettes, or simply by smoking more cigarettes, i.e., by changing their use patterns.¹⁷⁹ The FTC rating ignores the critical impact of such compensation.

Cigarette manufacturers use the FTC's nicotine and tar ratings to promote "low tar" and "light" cigarettes.¹⁸⁰ Moreover, a 1981 Surgeon General's report encouraged smokers who are unable to quit to switch to cigarettes that scored better on the FTC rating.¹⁸¹ These inducements worked. Some 85 percent of all smokers today use the supposedly safer cigarettes.¹⁸² But it is now clear that these cigarettes are not safer, because of the compensation effect. The FTC recognized the importance of use patterns and how the compensation effect limits the informative value of its nicotine

¹⁷⁷ FTC News Release, *FTC Proposes New Method for Testing Amounts of Tar, Nicotine, and Carbon Monoxide in Cigarettes: New System Will Provide Consumers With Improved Info. About Cigarette Tar and Nicotine Yields* (Sept. 9, 1997) (hereinafter *FTC News Release*). The FTC proposed to make disclosed tar and nicotine levels more informative by adding a second, high-intensity rating, based on a 2-second, 55-milliliter puff every 30 seconds. *Id.* The FTC ratings are voluntarily disclosed by the major cigarette companies in all cigarette advertisements. *Id.* In particular, these ratings are used to promote "low tar" and "light" cigarettes. *See, e.g.*, Advertisement for Merit, Merit Low Tar Kings Soft, Merit Ultima Kings Soft, & Merit Ultra Lights Kings Soft, *Now you're on the road. You've got Merit* (Philip Morris USA Advertising Archive, Document ID 2061038984), available at <http://www.pmadarchive.com> (hereinafter *Merit Advertisement*).

¹⁷⁸ *See* FTC Consumer Alert, *Up in Smoke: The Truth About Tar and Nicotine Ratings* (May 2000) (hereinafter *FTC Consumer Alert*) ("people don't smoke cigarettes the same way the machine does"); Editorial, *The Safer Cigarette Delusion*, N.Y. TIMES, Aug. 28, 2006, at A14.

¹⁷⁹ *See* *FTC Consumer Alert, id.*; *FTC News Release, supra* note 177; *U.S. v. Philip Morris USA, Inc.*, 449 F.Supp.2d 1, 337-38 (D.D.C., 2006); Editorial, *The Safer Cigarette Delusion*, N.Y. TIMES, Aug. 28, 2006, at A14 ("More than 95 percent of all smokers compensate, with many replacing every bit of tar and nicotine they thought they were avoiding.").

¹⁸⁰ *See, e.g.*, *Merit Advertisement, supra* note 177.

¹⁸¹ Editorial, *The Safer Cigarette Delusion*, N.Y. TIMES, Aug. 28, 2006, at A14.

¹⁸² *Id.*

and tar ratings. A consumer alert published by the FTC emphasizes the importance of use patterns:

“The Federal Trade Commission wants you to know that cigarette tar and nicotine ratings can’t predict the amount of tar and nicotine you get from any particular cigarette. That’s because how you smoke a cigarette can significantly affect the amount of tar, nicotine, and carbon monoxide you get from your cigarette.”¹⁸³

The FTC had even proposed required disclosures that emphasize use patterns. The two alternative disclosures proposed by the FTC were:

“1) There's no such thing as a safe smoke. Even cigarettes with low ratings can give you high amounts of tar and nicotine. It depends on how you smoke; or

2) How much tar and nicotine you get from a cigarette depends on how intensely you smoke it.”¹⁸⁴

These proposals were not implemented.¹⁸⁵ The tar and nicotine disclosures described above demonstrate the importance of choosing accurate typical use assumptions. Inadequate provision of use-pattern information renders the product attribute information meaningless, even misleading. Of course, product-attribute disclosure based on accurate typical use benchmarking can be helpful.

C. Direct Disclosure of Average-Use Information

The preceding Section provided examples of average-use information indirectly disclosed as a benchmark for product-attribute disclosures. While average-use information is helpful even when it is disclosed indirectly, in some markets lawmakers should consider mandating direct disclosure of average-use information. For example, there is evidence suggesting that consumers are too quick to purchase extended warranties and other insurance riders which are commonly offered as add-ons with basic consumer products. The small likelihood of an event that would trigger the warranty or insurance coverage coupled with the relatively small cost that the consumer would bear if such an event occurs cannot justify the price of the add-on.¹⁸⁶ One possible remedy for this category of mistakes—

¹⁸³ See *FTC Consumer Alert*, *supra* note 178.

¹⁸⁴ *FTC News Release*, *supra* note 177.

¹⁸⁵ See 15 U.S.C.A. § 1333 (specifying the required disclosures); 15 U.S.C.A. § 1334 (preemption -- “No statement relating to smoking and health, other than the statement required by section 1333 of this title, shall be required on any cigarette package.”)

¹⁸⁶ See *supra* note 68.

overestimation of the value of the insurance product—is to provide use-pattern information. As suggested by Professors Ian Ayres and Barry Nalebuff, sellers could be required to provide information on the probability that an extended warranty would be invoked.¹⁸⁷ Or, even better, sellers could be required to provide an estimate of the total repair or replacement costs that a typical consumer would save by purchasing the extended warranty. With this use-pattern information, extended warranties and similar insurance add-ons would likely suffer a sharp decline in sales.¹⁸⁸

In the rebates context, Jeff Sovern has recently proposed that sellers offering rebates be required to disclose the low redemption rates.¹⁸⁹ Similarly, if Blockbuster's customers underestimate the likelihood, and hence the cost, of tardiness in returning their video rentals, then Blockbuster could be required to disclose the number of late returns, and the total fee payments, that an average consumer pays over a one-year period. If Hewlett-Packard (HP) customers, when purchasing a home printer, underestimate the number of ink cartridges that they will purchase over the life of the printer, then HP can be required to provide the missing use-pattern information, perhaps based on an FTC-designed average-use index. Even better, HP could be required to disclose average Total Cost of Ownership (TCO) information that combines the use-pattern information with ink prices. Similar average use or total price information could be provided by sellers of base-goods and add-ons bundles. For example, with such information a consumer choosing between two hotels could compare not only room rates, but also total price figures, based on an average add-on use index (e.g., 2 phone calls, 1 in-room meal, 1 movie, etc'). And health clubs could be required to disclose the effective per-visit fee paid by an average subscription holder. If this effective per-visit fee is eight times higher than the club's actual per-visit fee, some consumers may reconsider their decision to purchase a subscription.¹⁹⁰

¹⁸⁷ See BARRY NALEBUFF & IAN AYRES, WHY NOT? 181 (2003) ("Circuit City or Ford could tell you the odds of actually making a claim against an extended warranty.") See also IAN AYRES, SUPER CRUNCHERS (2007).

¹⁸⁸ Interestingly, use-pattern information for the insurance add-on is a function of both product attribute information and product-use information for the base good. For example, the likelihood that an extended warranty will be invoked depends on the reliability of the base good and on how the base good is used.

¹⁸⁹ See Sovern, *supra* note 30, at 1703. See also John G. Lynch & Gal Zauberman, *When Do You Want It? Time, Decisions, and Public Policy*, 25 J. PUB. POL'Y & MARKETING 67, 71 (2006) (making a similar proposal).

¹⁹⁰ See Della Vigna & Malmendier, *supra* note 99. Many consumers might think that they will attend the health club more often than the average consumer. Thus health clubs could be required to provide information also on the effective per-visit price paid by an above-average consumer, e.g., a consumer at the eightieth percentile of the distribution. The disclosure could read: "For 80% of subscription holders the effective per-visit fee is more than X."

Direct average use disclosures could also be effective in the credit card market. Some consumers are sometimes late in paying their credit card bill. And when they are late, they are assessed a ‘late fee.’ This late fee is prominently disclosed in credit card solicitations, in accordance with the disclosure regulations issued under the Truth-in-Lending Act (TILA).¹⁹¹ But this product attribute disclosure will not be very effective if consumers underestimate the likelihood of paying late. TILA disclosures, especially disclosures in card solicitations, are supposed to help consumers make an informed choice among the many competing credit card products. Such informed choice is crucial for the efficient operation of the credit card market. A consumer who underestimates the likelihood of paying late and triggering a late fee will not make a truly informed choice, even if she has perfect information about the magnitude of the late fee. The TILA disclosure apparatus can and should be amended to include use-pattern disclosures. Specifically, issuers can be required to disclose the number of late payments that an average consumer makes in a year or the amount that an average consumer pays in late fees in one year.

Moving from late payments to debt repayment rates, a recent amendment to the Truth-in-Lending Act requires issuers to provide average-use information. Congress was concerned that consumers lack information on the cost of slow repayment. Specifically, many consumers who make only the minimum monthly payment underestimate the amount of time that it will take them to repay their credit card debt and, consequently, underestimate the total amount of interest that they will end-up paying. In response, Congress required issuers to disclose, on the monthly statement, the length of time it will take an average consumer to repay a typical balance in full if he makes only the minimum required payment each month.¹⁹²

Credit card issuers engage in intertemporal bundling in response to underestimation of future use by offering low teaser interest rates for an introductory period. Issuers could be required to disclose information on average switching rates, or information on the average interest rate that the consumer will pay, accounting for borrowing patterns in both the

¹⁹¹ 12 C.F.R. 226.18, 226.5a.

¹⁹² The Bankruptcy Abuse Prevention and Consumer Protection Act of 2005, Pub. L. No. 109-8, 119 Stat 23, § 1301 (the required disclosure is: “Minimum Payment Warning: Making only the minimum payment will increase the interest you pay and the time it takes to repay your balance. For example, making only the typical 2% minimum monthly payment on a balance of \$1,000 at an interest rate of 17% would take 88 months to repay the balance in full.”) See also Thomas A. Durkin, *Requirements and Prospects for a New Time to Payoff Disclosure for Open End Credit Under Truth in Lending* (FEDS Working Paper No. 2006-34, 2006), available at <http://www.federalreserve.gov/Pubs/feds/2006/200634/200634pap.pdf> (describing the new disclosure requirement). The typical balance stated in Section 1301 is \$1000. To what extent this balance is in fact typical is questionable. Moreover, there is a risk that a consumer with a balance of \$5000 will simply multiply the disclosed repayment period for a \$1000 balance by five, leading to underestimation of the repayment period.

introductory and post-introductory periods. The evidence suggests that such disclosures would reduce the attractiveness of teaser rate offers.¹⁹³ Overestimation of switching affects not only the perceived value of teaser rate offers but also the perceived cost of other mid-stream changes that issuers make.¹⁹⁴ Disclosure of switching rates can help reduce these cost misperceptions as well.

Direct average-use disclosure can also be helpful in other consumer credit markets. Mortgage lenders that offer loans with increasing interest rates could be required to disclose the average balance-weighted interest rate, or the average monthly payment, over the life of the loan. Lenders could also be required to disclose the average likelihood of incurring each of the many penalty fees included in the loan contract and perhaps also the total fees paid by an average consumer. And in response to consumer optimism about refinancing options, lenders could disclose the average likelihood of refinancing. Payday lenders could also be required to provide average-use information. Specifically, they could be required to disclose the average number of roll-overs and, based on the average number of roll-overs, the total fee paid by an average consumer. For example, the disclosure could read: "The fee is \$30 for a two-week, \$200 advance. The average borrower renews her loan three times (namely, takes three consecutive advances) before repaying. Therefore, the total fee on a \$200 loan, is \$90 for an average borrower."

Average-use disclosures can also prove helpful in the cell-phone market. A common feature of the wireless service contract is the lock-in clause, which ties the consumer to a specific provider for as long as two years. Consumers might underestimate the cost of lock-in.¹⁹⁵ In fact, in the absence of significant fixed costs, this lock-in feature of wireless service contracts may well be a strategic response to consumers' underestimation of the cost of lock-in. Average-use disclosure can reduce this underestimation bias. Sellers can be required to provide information about the percentage of consumers who stop using their phones, but continue paying for them, before the end of the lock-in period. Sellers can also be required to disclose the percentage of consumers who broke the contract and paid the exit penalty.

I argued that proper-use information is appropriate for use dimensions that have a single, well-defined proper use. When there are many proper uses

¹⁹³ See *supra* Part II.D.1.

¹⁹⁴ See *supra* Part II.D.1.

¹⁹⁵ Consumers will underestimate the cost of lock-in if they underestimate the likelihood of contingencies that would induce them to end the contract earlier, e.g., the appearance of a more attractive offer from another provider, a change in their need for wireless services, or an unanticipated financial hardship that reduces the available income left for non-necessities like wireless phone services. Simple myopia might also lead to underestimation of the cost of lock-in.

for a product, proper-use disclosure loses its bite. In such cases the alternative is average-use disclosure. But average use disclosure suffers from a similar limitation. When heterogeneous consumers use the same product in many different ways, average-use information might be of little value. The value of average-use information depends on the degree of heterogeneity. The degree of heterogeneity is a function of both product characteristics and characteristics of the consumer group. But the degree of heterogeneity is also a function of the disclosure regime. The question is whether the seller discloses average-use information, where the averaging is done across the entire group of consumers, or whether the averaging on which the disclosure is based is done across a smaller, more homogenous subgroup of consumers.

At one extreme, the seller considers the average consumer who enters her store or even the average consumer in the market. Average use, under these assumptions, contains little information. But often the seller has more information—based on demographics, product choice etc'. Based on this information the seller can place the consumer in a subgroup of consumers, who share a set of observed characteristics. Now average-use becomes average use within this subgroup. As the subgroup becomes smaller, the consumer heterogeneity problem decreases, and the value of the average-use information increases. Disclosure of average-use information, when averaging is done over smaller subgroups, is advantageous and should be expanded.

D. Individual-Use Information

The consumer heterogeneity problem limits the efficacy of average-use disclosure. It also supports individual-use disclosure.¹⁹⁶ In certain markets, where sellers enter long-term relationships with consumers, sellers can be required to provide the consumer with individualized information on the specific consumer's use-patterns. An immediate objection to this prescription is that sellers have better information than consumers about the attributes of their product, and they generally have better information about proper use and average use, but they do not have better information than the consumer about the individual consumer's use patterns. This is surely true about some products. It is not true about all products. The following examples demonstrate the feasibility of individual-use disclosures in several consumer markets.¹⁹⁷

¹⁹⁶ See also AYRES, *supra* note 187 (arguing for individualized disclosure).

¹⁹⁷ Skepticism about the feasibility of regulations requiring disclosure of actual individualized information was recently expressed by Christine Jolls and Cass Sunstein. See Christine Jolls & Cass R. Sunstein, *Debiasing through Law*, 35 J. LEGAL STUD. 199, 209 (2006) (rejecting the possibility of requiring the disclosure of individualized information about product risk). Jolls and Sunstein write that "it is difficult to imagine incorporating such individualized information into a general legal standard." The disclosure regulation proposed below is not in the form of a general legal standard. Rather, I advocate market-

1. Credit Cards

The credit card market is an example of an economically significant market where sellers can disclose individual-use information to consumers. Credit card issuers often have more information about how a consumer will use the credit card than the consumer herself. First, issuers have detailed statistics about card use, including statistics about card use in the consumer's demographic and socio-economic group. Second, issuers have information on the individual consumer from the credit card application and from credit bureaus. Third, and most importantly, since issuers often maintain long-term relationships with consumers, they quickly obtain information about how this specific consumer uses this specific card. Most of this information is available to the consumer. But many consumers do not know or do not remember all the relevant information. Also, many consumers do not consolidate information from these different sources and do not use sophisticated algorithms to analyze the information and predict future use based on this information. Issuers, on the other hand, consolidate all relevant information, store it in databases, update it regularly, and analyze it using sophisticated algorithms that can also predict future use.¹⁹⁸

Recall the late payment, and late fee, example. I argued that the disclosure of the late fee—a product attribute disclosure—might be less effective, if many consumers underestimate the likelihood of paying late. In discussing average-use disclosures, I suggested mandating disclosure of the number of late payments that an average consumer makes over a one-year period. I also noted the limits of such a disclosure, as most consumers will optimistically believe that they will pay late less often than the average consumer. A better solution is to require disclosure of individualized late payment information.¹⁹⁹ Issuers keep records on consumers' late payments.

specific disclosure mandates. In addition to the feasibility concern, individualized disclosure raises a privacy concern. At this point, however, I propose disclosure only of information that sellers collect anyway. However, if disclosure requirements affect sellers' information collection and retention practices, then the privacy concern will have to be addressed.

¹⁹⁸ See Mark Furletti, *Credit Card Pricing Developments and Their Disclosure* 6-9 (Federal Reserve Bank of Philadelphia, Payment Cards Center, Discussion Paper, 2003), available at http://www.philadelphiafed.org/pcc/papers/2003/CreditCardPricing_012003.pdf. Duncan McDonald, former general counsel of Citigroup's Europe and North America card businesses, noted: "No other industry in the world knows consumers and their transaction behavior better than the bank card industry. It has turned the analysis of consumers into a science rivaling the studies of DNA The mathematics of virtually everything consumers do is stored, updated, categorized, churned, scored, tested, valued, and compared from every possible angle in hundreds of the most powerful computers and by among the most creative minds anywhere. In the past 10 years alone, the transactions of 200 million Americans have been reviewed in trillions of different ways to minimize bank card risks." See Duncan A. MacDonald, *Viewpoint: Card Industry Questions Congress Needs to Ask*, AM. BANKER, Mar. 23, 2007, at 10.

¹⁹⁹ There may still be optimism at play, limiting the effectiveness of even individualized disclosure. A consumer might be forced to acknowledge that he, not some average consumer, has paid a lot of money in late fees over the past year, but he may still believe that he will not repeat this behavior in the future.

They can be required to disclose the number of late payments made by the specific consumer, or the total amount of late fees paid by the consumer, over the past year.²⁰⁰

From late fees to overlimit fees: Disclosure of individualized use-pattern information can also be effective when provided at the point of sale. Professor Ronald Mann proposed that issuers be required to disclose, through merchants, when a certain purchase would take the consumer over her credit limit, triggering an overlimit fee. Such a disclosure could help the consumer avoid inadvertently exceeding her credit limit, perhaps by switching to another card or to another payment system.²⁰¹ On the debt-repayment dimension, I noted the recent addition of an average-use disclosure mandate, requiring issuers to provide, on the monthly statement, information on the average time it will take to pay-off a typical balance, if the consumer makes only the minimum payment each month. The new disclosure has an individual-use component as well. Issuers must provide a phone number that the consumer can call to receive information on the time it will take the individual consumer to pay-off her specific balance if the consumer makes only the minimum payment each month.²⁰² While this option to receive individualized repayment rate information is a step in the right direction, it would probably have been more effective if the individualized disclosure was provided automatically on each monthly statement.²⁰³

2. Cell Phones

The cellular phone market is an example of another economically significant market where the long-term relationship between providers and consumers allows for the provision of individualized use-pattern information. Evidence of consumer mistakes in the cell phone market suggests that such individualized disclosure may be helpful. A notable design feature of mobile service contracts is the steep jump in per minute charges when the consumer exceeds the plan limit. Many contracts specify an increase of over 100% in the per-minute price, with some contracts

Of course, such optimism will become less likely as the disclosed history reveals year after year of high penalty payments.

²⁰⁰ Issuers provide year-end summaries with individualized information. These summaries, however, focus more on spending behavior and less on borrowing behavior. Accordingly, the total amount paid in interest charges or late fees is not disclosed.

²⁰¹ See Mann, *supra* note 5, at 162. A proposed bill, H.R. 1052, 107th Cong. (2001), in Section 10, goes beyond disclosure and prohibits the imposition of over-limit fees for creditor-approved transactions.

²⁰² The Bankruptcy Abuse Prevention and Consumer Protection Act of 2005, Pub. L. No. 109-8, 119 Stat 23, § 1301. See also Durkin, *supra* note 192 (describing the new disclosure requirement).

²⁰³ Compare § 2 of the proposed bill, H.R. 1052, 107th Cong. (2001). See also Mann, *supra* note 5, at 160-61 (proposing an individualized disclosure on the monthly bill, and arguing that such a disclosure is not too costly to implement).

specifying increases of 200% and beyond.²⁰⁴ Arguably, the high prices set for minutes beyond the plan limit target consumers' underestimation of their future use of the cellular phone.²⁰⁵

Individualized disclosure can reduce consumer mistakes about cell phone use. In particular, sellers can provide individualized use information, focusing the consumer's attention to use exceeding the plan limit. This disclosure could be supplemented by information on alternative service plans that would reduce the total price paid by the consumer, given her current use patterns.²⁰⁶ Individual-use information can be especially helpful for consumers who inadvertently exceed the plan limit. The challenge of keeping track of cumulative use has increased with the invention of multiple-limit plans, e.g., plans with different limits for peak and off-peak minutes. To reduce the incidence of inadvertently exceeding the plan limit, issuers could be required to notify consumers, via a recorded message, when they are about to exceed the plan limit. A consumer receiving such notification may well decide to cut the conversation short, switch to a land line, or postpone the conversation until off-peak hours.

3. Other Markets

Sellers have individual-use information in many other markets. Some of this information is currently being disclosed to consumers. But enhanced disclosure requirements may be desirable. For example, phone (not cell phone) companies disclose certain use information to consumers on the monthly bill. More effective disclosure would include use-patterns averaged across several months, perhaps accompanied by total cost information under the consumer's current plan as well as under alternative plans offered by the phone company.²⁰⁷ Health clubs could also be required to disclose individualized use-pattern information. Specifically, health clubs could disclose attendance records for the past year and even for the preceding year (or years). They could also calculate and disclose the per-visit fee paid by the individual subscription-holder. Faced with such

²⁰⁴ See Stefano DellaVigna & Ulrike Malmendier, *Contract Design and Self-Control: Theory and Evidence*, 119 Q. J. ECON. 353, 380 (tbl.3) (2004); Verizon Wireless, America's Choice® Basic Plans, <http://www.verizonwireless.com> (last visited June 5, 2007) (quoting markups in excess of 300% for minutes beyond the plan limit). See also NALEBUFF & AYRES, supra note 187, at 178-79 (describing the high post-plan minute prices as "hidden pricing").

²⁰⁵ Clearly, these huge increases do not reflect a corresponding change in the provider's per minute cost. More precisely, the three-part tariffs observed in the cell phone market respond to consumers' overconfidence about their use levels. See Michael D. Grubb, *Selling to Overconfident Consumers* (May 4, 2007) (unpublished manuscript, available at <http://ssrn.com/abstract=721701>).

²⁰⁶ Utility companies in Germany have voluntarily adopted an even more pro-consumer policy. At the end of the year they retroactively match each consumer to the service plan under which the consumer pays the lowest total price given her use over the past year. See Ayres & Nalebuff, supra note 49, at 27.

²⁰⁷ Utility companies also provide some individualized use-pattern information on the monthly statement. For instance ConEdison provides information on the individual consumer's average daily use of electricity for previous months.

information when asked to renew the subscription, the consumer may well decide to forgo the subscription and pay on a per-visit basis. Similarly, a retailer asking a consumer to renew a membership card or a discount card, could be required to disclose the total savings enjoyed by the individual consumer over the past year. This information would assist the consumer in making a more informed decision whether to pay the annual fee and renew her membership.

Netflix effectively competes with traditional video rental stores through a unique business model. For a constant monthly fee, a consumer gets a specified number of movies, say three movies. The consumer can keep these three movies for as long as she likes. Whenever she sends a movie back to Netflix, the company promptly replaces it with the next movie on the consumer's priority list. Under this model, a consumer who sees two movies a month pays the same price as a consumer who sees twenty movies a month. The question is whether consumers correctly anticipate their in-home movie-viewing patterns. Netflix could easily prevent consumers from making use-pattern mistakes. It could disclose the average number of videos that an individual consumer receives in a month, as well as the average price that the consumer pays per movie. With this information the consumer would be able to compare prices across the different business models and make a more educated choice between Netflix and, say, Blockbuster.²⁰⁸

Finally, simple disclosure could assist consumers who forget to cancel a service at the end of the introductory period. Service providers know precisely when the introductory period ends for each individual consumer. The service provider could be required to send a notice to each consumer two weeks before the introductory period ends for the individual consumer. This notice would remind the consumer that the low introductory price will soon be replaced by a higher post-introductory price, and describe a low-cost way to discontinue the service. This disclosure would prevent many inadvertent continuances of service beyond the introductory period.²⁰⁹

²⁰⁸ To further facilitate a comparison between Netflix and video rental stores that follow a traditional business model with late fees, Netflix's competitors could be required to disclose the number of late payments made by the specific consumer, or the total amount of late fees paid by the consumer, over the past year. Of course, such individual-use disclosure is only feasible for consumers who maintain a long-term relationship with the video rental store (e.g., consumers who hold a membership card).

²⁰⁹ There is evidence that such inadvertent continuances are common. A recent bill introduced in the Israeli parliament (the Knesset) proposes a regulatory response similar to the one described in the text. Opposition to this bill by service providers suggests that inadvertent continuances are common and constitute a substantial revenue source for these service providers. See Roni Linder-Ganz & Zvi Zarihiya, *Bill Prohibiting Automatic Contract Renewal Stuck in Committee*, HAARETZ, May 16, 2007. In the US, state legislators have also been concerned about the problem of automatic contract renewal following a low price introductory period. See, e.g., Illinois Automatic Contract Renewal Act, 815 I.L.C.S. 601/1 et seq. (sellers must provide consumers with written notice of the automatic renewal no less than 30 days or more than 60 days prior to the date of the cancellation deadline for the renewal). Other state laws require only that sellers provide a general notice about cancellation rights, not an

E. Designing Optimal Use-Pattern Disclosure

One of the main goals of this Article is to establish use-pattern disclosure as a complement to product attribute disclosure in addressing behavioral market failures. Product-use information is clearly important for consumer decisionmaking and for the efficient operation of consumer markets. But this is not enough. Successful disclosure regulation must effectively convey use-pattern information to consumers. The question is how to optimally design disclosure regulation. I do not purport to provide a comprehensive answer in this Article.²¹⁰ Still, the preceding discussion offers some general guidelines. First, when possible, use-pattern disclosure should be based on individual-use information. And when use-pattern disclosure is based on average-use information, the averages should be taken over a cost-effectively small subgroup of consumers.

Second, in many cases disclosure mandates should combine product-attribute and product-use information. For example, a consumer will benefit from a disclosure stating the number of late payments he made on a credit card over the past year. He will likely benefit even more from a disclosure that by combining price information and use information states the total amount that the consumer paid in late fees over the last year. And the most informative disclosure would combine price and use information on multiple dimensions. Such a disclosure would state the total amount that the consumer paid in penalty fees and interest, including late fees, over-limit fees, penalty interest payments etc'. The goal is to come as close as possible to Total Cost of Ownership (TCO) information. With multiple price dimensions and when the relative importance of different price dimensions depends on use-patterns, calculating total price can be difficult. Sellers should be required to make these calculations for consumers. Disclosure regulation should strive to provide consumers with meaningful price information in a simple, accessible way.²¹¹

individualized notice prior to the end of the introductory period for the specific consumer. *See, e.g.*, Act Concerning Enforceability of Automatic Contract Renewal Provisions, H.R. 7204, Gen. Assem., Jan Sess. (Conn. 2007). *See also* HB 1702, 80th Leg. (Tex. 2007); S. 527, 2007 Gen. Assem., Reg. Sess. (N.C. 2007).

²¹⁰ On the optimal design of disclosure regulation, *see, e.g.*, Jolls & Sunstein, *supra* note 197; Beales, Craswell & Salop, *supra* note 25, at 529-31; Craswell, *supra* note 51; Luke Froeb et al., *Economic Research at the FTC: Information, Retrospectives, and Retailing*, REV. INDUS. ORG. (forthcoming), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=592101; JAMES M. LACKO & JANIS K. PAPPALARDO, FED. TRADE COMM'N, THE EFFECT OF MORTGAGE BROKER COMPENSATION DISCLOSURES ON CONSUMERS & COMPETITION: A CONTROLLED EXPERIMENT (2004), available at <http://www.ftc.gov/os/2004/01/030123mortgagesummary.pdf> (the FTC is studying the efficacy of different disclosure techniques in the home mortgage market).

²¹¹ *See* Craswell, *supra* note 51, at 692-94 (discussing single-price disclosures and detailing the costs of such disclosures).

F. The Costs and Limits of Disclosure

This Article focuses on disclosure regulation because, compared to other forms of regulation, it is more compatible with free markets and, in most cases, more politically feasible. This does not mean that disclosure is always effective. Nor does it mean that disclosure, when effective, is without cost. I now consider the main costs of disclosure mandates and the main limits on the efficacy of disclosure regulation. I begin with the general costs and limits of disclosure regulation. I then describe additional costs and limits specific to average-use disclosure. The shortcomings of average-use disclosure indirectly support an expansion of individual-use disclosure.²¹²

1. The Costs of Disclosure

I begin with the direct costs of disclosure. These include the cost to sellers of collecting, compiling and distributing the information. They also include the cost to consumers who need to read the disclosure and process the disclosed information. In many of the examples provided in this Article the direct cost to sellers reduces to only the relatively minor cost of distributing the information. The reason is that sellers collect and compile the relevant information anyway. Credit card issuers, for example, have a powerful business motivation to obtain information on consumers' use patterns.

This relates to another, indirect cost of disclosure regulation. If sellers are required to disclose the information they collect, then they will have a weaker incentive to collect information.²¹³ While this adverse incentive effect is undeniably true, its magnitude can be expected to be small in many markets, as business reasons for collecting information will often outweigh the disclosure disincentive.²¹⁴ Moreover, disclosure mandates commonly imply an obligation to collect the information to be disclosed. Of course, when the information would not have been collected absent the mandate, the cost of collection constitutes a cost of the disclosure regulation—a cost that will be passed-on, at least in part, to consumers. And, in some markets this cost might be so large that it would drive sellers out of the market.

²¹² The costs and limits described below reduce the appeal of disclosure regulation even when designed and administered by regulators who seek to advance the public good. Unfortunately, not all regulators share this goal, and regulatory decisionmaking is too often guided by politics, not by the public good. Of course, these concerns apply to all forms of regulation, and not specifically to disclosure regulation or to use-pattern disclosure.

²¹³ Compare Anthony T. Kronman, *Mistake, Disclosure, Information, and the Law of Contracts*, 7 J. LEGAL STUD. 1 (1978) (arguing that contract law disclosure obligations might deter the acquisition of information).

²¹⁴ Kronman distinguishes between deliberately acquired information and casually acquired information, and argues that casually acquired information can be subject to disclosure mandates. *Id.* In Kronman's terms much of the information that sellers should disclose is casually acquired—it would have been acquired by sellers anyway for business reasons.

2. The Limited Efficacy of Disclosure

One of the main limits on the efficacy of disclosure regulation concerns information overload. There is a limit on the amount of information that the average consumer can effectively process. Accordingly, disclosed information might be ignored or it might replace other information, perhaps more important information, in the consumer's decisionmaking process. The information overload problem cautions against increasing the amount of information disclosed.²¹⁵ Even if consumers can process the disclosed information it is not clear that they will do so. Provision of information, specifically use-pattern information, can be helpful, if consumers follow a deliberative decisionmaking process (even if this decisionmaking process is not fully rational). There is evidence, however, that consumer decisionmaking is, in some cases, driven by an emotional response, not by a deliberative process, or that emotions influence the deliberative process.²¹⁶ In these cases disclosure regulation will be less effective.

Finally, even if consumers can process use-pattern information and would like to do so, the required information might not exist. This problem is especially acute with respect to new products. It takes time to collect information about average use. And the absence of historic information precludes individual-use disclosure. Moreover, these practical impediments to effective disclosure regulation can be manipulated by sellers. In particular, to evade disclosure mandates sellers might try to present slightly modified version of a product as a new product.

3. The Limited Efficacy of Average-Use Disclosure

Average-use disclosure is subject to additional limitations. These limitations reinforce case for individual-use disclosure. The first, inherent limitation is an immediate implication of consumer heterogeneity. Averaging, by its very nature, implies loss of information. As the degree of heterogeneity among the relevant group of consumers increases, the value of average information decreases. For this reason, if sellers segment the market into small subgroups of consumers and can be required to disclose

²¹⁵ See, e.g., Richard Craswell, *Taking Information Seriously: Misrepresentation and Nondisclosure in Contract Law and Elsewhere*, 92 VA. L. REV. 565, 578 (2006) (arguing that provision of additional information dilutes the effectiveness of existing disclosures); Korobkin, *supra* note 16 (consumers can process only limited amounts of information); GOV'T ACCOUNTABILITY OFFICE, CREDIT CARDS: INCREASED COMPLEXITY IN RATES AND FEES HEIGHTENS NEED FOR MORE EFFECTIVE DISCLOSURES TO CONSUMERS 46 (2006) available at <http://www.gao.gov/new.items/d06929.pdf> (finding that credit card disclosures contain too much information); Furletti, *supra* note 198, at 19 (concluding that it is not clear that requiring more details in regulatory disclosures would be useful for consumers.); Latin, *supra* note 16.

²¹⁶ See, e.g., JOHN O'SHAUGHNESSY AND NICHOLAS JACKSON O'SHAUGHNESSY, *THE MARKETING POWER OF EMOTION* (2002).

average-use information within these more homogeneous subgroups, the value of the disclosure increases.²¹⁷

Optimism imposes another limit on the efficacy of average-use disclosure. Most consumers will optimistically think that they are above-average—that they will be late less often than the average consumer in paying their credit card bill, that they will repay their bill more quickly than the average consumer, that they are less likely than the average consumer to break their lock-in cell-phone contract, etc'. Still, average-use information can be helpful. Consumers suffer from two types of misperception: (1) misperception about the mean, and (2) misperception about their position relative to the mean.²¹⁸ Average-use information can be helpful in curing the former misperception.

Moreover, optimally designed average-use information can minimize the optimism problem. First, measuring, and disclosing, average-use across smaller, more homogeneous groups of consumers should reduce the "we are all above average" problem. Second, more sophisticated use of statistical information can reduce the optimism problem. Statistical use information need not be limited to straight averages. To take a specific example, the fact that an average consumer pays \$200 in penalty fees over the course of the year might be dismissed by most consumers as irrelevant to them. These consumers will find it more difficult to dismiss the fact that 80% of consumers pay more than \$100 a year in penalty fees. Disclosure of statistical use information describing the behavior of a supermajority of consumers should reduce the optimism problem.²¹⁹

Finally, average use disclosure might suffer from an endogeneity problem. Consider the rebates example. Assume that absent disclosure, only 5% of consumers redeem the rebate. If the seller discloses this 5% figure, then most consumers will respond by ignoring the rebate and focusing on the pre-rebate price. These consumers will purchase a product with no rebate and a lower spot price. Still, a minority of highly motivated rebate users will prefer rebate pricing. And, in time, the rate of redemption, among this minority of rebate users, will rise to, say, 90%. If the seller updates the disclosure from a 5% redemption rate to a 90% redemption rate, there is a risk that the majority of consumers will again opt for rebate pricing. The redemption rate will drop back to 5%, the disclosure will be updated again,

²¹⁷ See Craswell, *supra* note 51, at 691-92 (discussing heterogeneity as a limit of disclosures based on averages; Craswell does not focus on average use.)

²¹⁸ See Latin, *supra* note 16, at 1243-44.

²¹⁹ Of course, individual-use disclosure, when feasible, is the best way to minimize the optimism effect. But even individualized disclosure is not a perfect cure to optimism. Individualized disclosure is based on historic information. An optimistic consumer might convince herself that she will not repeat the mistakes of the past. For example, a consumer who is confronted with information about the amount of late fees that she paid over the past year might refrain from switching to a credit card with lower late fees because she optimistically believes that she will not be late next year.

etc'. This dynamic is undesirable. But the endogeneity problem will often be mitigated by market forces. In the rebates example, if a seller expects that after disclosing the 5% redemption rate only highly motivated rebate users will prefer rebate pricing, she will have to reduce the magnitude of the rebate significantly to avoid a loss. Accordingly, the seller will be able to advertise a 90% redemption rate only for minor rebates.²²⁰

4. Voluntarily-Supplied Use-Pattern Information

A cost-benefit analysis of any use-pattern disclosure mandate should consider the use-pattern information that is being voluntarily provided in the marketplace. The benefit of a disclosure mandate would generally be smaller when use-pattern information is already available.²²¹ And this smaller benefit may no longer justify the cost of the disclosure regulation. Use-pattern information is voluntarily provided by sellers and by third-parties. For example, sellers routinely provide proper-use information, even absent a legal mandate. Tobacco companies voluntarily disclose tar and nicotine levels. Utility companies, cell phone service providers, credit card issuers and other sellers provide some use information on the monthly bill. Amazon and Netflix compile use-pattern information and use it to inform consumers about books and movies enjoyed by other consumers with similar use patterns. And more.

Use-pattern information is also provided by third parties, like Consumer Reports and CNet.com. For example, Consumer Reports provides proper-use information about child car seats, lawnmowers and many other products.²²² And CNet.com provides use information and total-cost-of-ownership information on home printing, for example.²²³ When information is provided by the market—by sellers or by third parties—the

²²⁰ Health club subscriptions provide another example. Assume that the average consumer who purchases a health club subscription attends the club ten times a year. If this information is disclosed, and if this disclosure is effective, many consumers who previously purchased a subscription will now choose the per-visit pricing option, and only heavy-users will purchase a subscription. Accordingly, the average attendance of a subscription holder would rise to, say, fifty visits a year. The health club would have to update its disclosure. And there is a risk that with the new disclosure consumers will again opt for a subscription. Of course, if they do, then the disclosure will need to be updated again—back to an average attendance of ten times a year. Etc'. Again market forces mitigate the problem. If with the initial disclosure only heavy users purchase subscriptions, then the subscription price will increase significantly. And this increased price will minimize the number of light users who opt for a subscription, even when the disclosure is updated to the new fifty visits per year average.

²²¹ I assume that anti-fraud law effectively polices the accuracy of the voluntarily disclosed use-pattern information.

²²² See ConsumerReports.org, Buying Advice: Child Car & Booster Seats, <http://www.consumerreports.org/cro/babies-kids/child-car-booster-seats/reports/how-to-choose/index.htm> (last visited Aug. 8, 2007) (child car seats); ConsumerReports.org, Equipment Care, http://www.consumerreports.org/cro/home-garden/news/october-2006/end-of-season-lawn-and-equipment-guide-10-06/equipment-care/0610_end-of-season-lawn-and-equipment-guide_equipment-care.htm (last visited Aug. 8, 2007) (lawnmowers).

²²³ See CNet.com, Printer Buying Guide, http://reviews.cnet.com/4520-7604_7-1016838-5.html?tag=tnav (last visited Aug. 8, 2007).

need for disclosure regulation is diminished. The problem, of course, is that the market will not always provide sufficient information. When buyers understand the extent and cost of their ignorance they will become informed or generate demand for information that would motivate both sellers and third-parties to provide the information. But buyers are not always aware of their ignorance (or of the cost of their ignorance). And absent such rational demand for information, the imperfect alignment between seller interests, and even third-part interests, and consumer interests might lead to failure in the market for information.²²⁴ When such a market failure exists, disclosure regulation may be socially desirable.

5. The Costs and Limits of Disclosure – Summary

Disclosure regulation is only partially effective and its limited benefits are often offset by countervailing costs. This Article is not a call for expanded disclosure. Rather this Article argues that within the vast landscape of disclosure regulation too little attention has been paid to use-pattern disclosure.²²⁵ Accordingly, the implications of my analysis are not necessarily more disclosure. In many markets, applying the analysis developed in this Article will require substituting some product-attribute disclosure with use-pattern disclosure or modifying existing use-pattern disclosures. To the extent that disclosure regulation is socially desirable, the goal is to design the best possible disclosure regime. This regime will feature an optimal mix of product-attribute disclosures and use-pattern disclosures.

Most importantly, the cost-benefit analysis that should guide regulators in designing an optimal disclosure regime must be a market-specific analysis. Only an in-depth inquiry into the specific market can identify a behavioral market failure—a persistent consumer mistake that causes substantial welfare loss. And only an in-depth market-specific analysis can determine the optimal regulatory response to the identified market failure. This Article sets the framework for identifying use-pattern mistakes and for designing a disclosure-based regulatory response to use-pattern mistakes. Applying this framework to specific consumer markets must be left for future research.²²⁶

²²⁴ See also *supra* Part I.B.2.

²²⁵ As the preceding discussion makes clear, the costs and limits of disclosure inflict both product-attribute disclosures and use-pattern disclosures.

²²⁶ See OREN BAR-GILL, *FAILING CONSUMER MARKETS* (forthcoming) (including several case studies that perform the required market-specific analysis). In theory, the call for a market-specific analysis invokes the problem of defining the relevant market. While the market-definition problem is a major problem in antitrust law, it should not pose a significant hurdle in the present consumer protection context. At the very least there is a sufficiently large number of consumer markets where the proposed framework can be fruitfully applied without bumping against boundary questions of market definition. And in many contexts regulators should be able to base their policy analysis on a largely uncontroversial market definition that is functionally based on the identified objectionable design feature.

CONCLUSION

Before purchasing a product the consumer forms a mental image of how she will use the product. This image is not always accurate. Mistakes in estimating product use affect the perceived benefits and costs associated with a product and can lead to welfare-reducing transactions. The welfare-costs of use-pattern mistakes are often exacerbated as sellers redesign their products, contracts and prices in response to these mistakes. The law plays an important role in facilitating the efficient operation of markets by requiring disclosure of information that minimizes consumer mistakes. And when the problem is use-pattern mistakes, the cure must be use-pattern disclosure. Existing use-pattern disclosures are largely confined to proper-use information and to average-use information, indirectly disclosed as a benchmark for product-attribute disclosures. Policymakers should consider increasing the number and quality of use-pattern disclosure requirements. In particular, disclosure of individual-use information should be considered in markets characterized by long-term relationships between sellers and consumers.

While this Article focuses on disclosure regulation as a policy response to use-pattern mistakes, other, structural responses should be considered when applying the proposed framework to specific consumer markets. In particular, legal intervention establishing a time-limited consumer right to return a product or discontinue a service provides another regulatory response tailored to the unique characteristics of use-pattern mistakes. Ideally, after using the product or service for a period of time, the consumer will learn the necessary use-pattern information and will be better equipped to choose among competing products.²²⁷

²²⁷ Of course, the details of such a policy will have to be worked out on a market-by-market basis. Moreover, the policy will be inapplicable in many markets. Still, the structural connection of this policy to use-pattern mistakes and the potentially small burden it imposes on the operation of markets justify its consideration by policymakers. Compare Camerer, *supra* note 4 (noting cool-off periods as an example of asymmetrically paternalistic regulation).