How the Internet, the Sharing Economy, and Reputational Feedback Mechanisms Solve the "Lemons Problem"

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Abstract

This paper argues that the sharing economy—through the use of the Internet and real time reputational feedback mechanisms—is providing a solution to the lemons problem that many regulators have spent decades attempting to overcome. Section I provides an overview of the sharing economy and traces its rapid growth. Section II revisits the lemons theory as well as the various regulatory solutions proposed to deal with the problem of asymmetric information. Section III discusses the relationship between reputation and trust and analyzes how reputational incentives affect commercial interactions. Section IV discusses how information asymmetries were addressed in the pre-Internet era. It also discusses how the evolution of both the Internet and information systems (especially the reputational feedback mechanisms of the sharing economy) addresses the lemons problem. Section V explains how these new realities affect public policy and concludes that asymmetric information is not a legitimate rationale for policy intervention in light of technological changes. We also argue that continued use of this rationale to regulate in the name of consumer protection might, in fact, make consumers worse off. This has ramifications for the current debate over regulation of the sharing economy.

JEL codes: D45, H7, K22, K23, L1, L2, L5, L8, L9, M2, N7, O3, R4

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> *A reputation for being "sound" is a valuable asset, and we should expect people to make every effort to get it.*
>
> —Gordon Tullock[1]

> *Competition is in a large measure competition for reputation or good will.*
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> —F. A. Hayek[2]

One traditional argument for government regulation is that information deficiencies or "asymmetries" create market failures.[3] In his oft-cited paper "The Market for Lemons,"[4] George Akerlof describes why these information asymmetries prevent certain mutually beneficial exchanges from taking place. Analyzing the used car market, Akerlof explains that used car buyers know that "lemons" exist but are unable to distinguish them from higher quality cars, and they are therefore less willing to pay. The buyers' uncertainty, in turn, discourages sellers of higher-quality cars from offering their cars for sale, making both buyers and sellers worse off.

Akerlof provides several solutions to such information-based uncertainty, including guarantees, branding, chains, and licensing. He notes, however, that, while trust is important, if such trust-building mechanisms are lacking the market will suffer.[5] Many economists and public

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[1] Gordon Tullock, "Adam Smith and the Prisoners' Dilemma," *Quarterly Journal of Economics* 100 (1985): 1078, 1081.
[2] F. A. Hayek, *Individualism and Economic Order* (Chicago: University of Chicago Press, 1948), 97.
[3] See Susan Dudley and Jerry Brito, *Regulation: A Primer* (Arlington, VA: Mercatus Center at George Mason University, 2012).
[4] George A. Akerlof, "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism," *Quarterly Journal of Economics* 84, no. 3 (August 1970): 488–500.
[5] Ibid., 500.

policymakers have since taken this idea of asymmetric information as a chief justification for consumer protection regulations, such as food labels or product safety warnings.[6]

What is overlooked in much of the "lemons" literature and the corresponding policy debates is the fact that every information problem also represents an entrepreneurial *opportunity*.[7] In fact, discrepancies in information and dispersed knowledge drives economic activity by elucidating opportunities for entrepreneurs to broker relevant information. Where information deficiencies or asymmetries exist, entrepreneurs typically seize the opportunity to offer important innovations. Trial-and-error experimentation and increased rivalry leads to better ways of doing things and helps to remedy information deficiencies or asymmetries.

Importantly, reputational incentives and reputational feedback mechanisms have also increasingly helped market actors overcome information asymmetries. These mechanisms have always existed, but they were somewhat crude in the past. However, the Internet and information revolution have alleviated concerns about information deficiencies. With the recent explosion of the sharing economy, robust reputational feedback mechanisms now help consumers solve information problems and secure a greater voice in commercial interactions. With the advent of the sharing economy, many of these mechanisms have been integrated into the platforms connecting buyers and sellers.

This paper argues that the sharing economy—through the use of the Internet and real time reputational feedback mechanisms—is providing a solution to the lemons problem that many regulators have spent decades attempting to overcome. Section I provides an overview of

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[6] Joshua D. Wright, "The Antitrust/Consumer Protection Paradox: Two Policies at War with Each Other," *Yale Law Journal* 121, no. 8 (2012): n20.

[7] See, for example, Israel Kirzner, *Competition and Entrepreneurship*, rev. ed. (Indianapolis, IN: Liberty Fund, 2010 [1963]). See also Christopher Koopman, Matthew Mitchell, and Adam Thierer, "The Sharing Economy and Consumer Protection Regulation: The Case for Policy Change," *Journal of Business, Entrepreneurship, and the Law* 8 (forthcoming 2015): 101.

the sharing economy and traces its rapid growth. Section II revisits the lemons theory as well as the various regulatory solutions proposed to deal with the problem of asymmetric information. Section III discusses the relationship between reputation and trust and analyzes how reputational incentives affect commercial interactions. Section IV discusses how information asymmetries were addressed in the pre-Internet era. It also discusses how the evolution of both the Internet and information systems (especially the reputational feedback mechanisms of the sharing economy) addresses the lemons problem. Section V explains how these new realities affect public policy and concludes that asymmetric information is not a legitimate rationale for policy intervention in light of technological changes. We also argue that continued use of this rationale to regulate in the name of consumer protection might, in fact, make consumers worse off. This has ramifications for the current debate over regulation of the sharing economy.

I. The Rapid Evolution of the Sharing Economy

Before discussing how reputational feedback systems help create trust among economic actors in the modern economy and alleviate earlier concerns about information asymmetries, it is important to define the nature and extent of recent innovations in the sharing economy. We begin by noting that definitions in this area continue to evolve rapidly. While there is no universally accepted definition of the sharing economy, Koopman, Mitchell, and Thierer argue that it is helpful to think of this sharing economy as a broader classification for any marketplace that uses the Internet to bring together distributed networks of individuals to share or exchange otherwise underutilized assets.[8] Defining the phenomenon in this way then encompasses all manner of

[8] See Koopman, Mitchell, and Thierer, "Sharing Economy and Consumer Protection Regulation."

goods and services shared or exchanged for both monetary and nonmonetary benefit. In this paper, we will use the term in this manner.

Regardless of the terms used to describe it, the market actors making up the sharing economy are radically transforming many aspects of the international economy. The sharing economy is generating an estimated $15 billion in global revenues today, and this number is projected to grow to $335 billion by 2025.[9] The sharing economy's rental market for goods such as houses, cars, and machinery—dominated by firms such as Airbnb, TaskRabbit, and RelayRides—has an estimated worth in the tens of billions of dollars.[10] The ride-sharing market, which includes firms such as Uber and Lyft and their respective valuations of $41 billion and $700 million,[11] is rapidly disrupting traditional taxi and transportation services in cities across America, leading to a heated debate about its regulation.[12]

The rapid ascendancy of the sharing economy challenges traditional economic theory and corresponding regulatory regimes in important ways. The sharing economy has brought about quick, radical changes to the ways individuals transact, and both regulators and economists are still trying to understand its impact.[13] However, as Jason Tanz of *Wired* magazine notes, one clear consequence has already emerged. The sharing economy has resulted in greater trust between strangers, a precondition to successful economic exchange: "Many of these companies

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[9] Ibid.
[10] "The Rise of the Sharing Economy," *Economist*, March 9, 2013, http://www.economist.com/news/leaders/21573104-internet-everything-hire-rise-sharing-economy.
[11] Serena Saitto, "Uber Valued at $40 Billion in $1.2 Billion Equity Funding," *Bloomberg*, December, 4, 2014, http://www.bloomberg.com/news/2014-12-04/uber-valued-at-40-billion-with-1-2-billion-equity-fundraising.html; Douglas MacMillan and Evelyn M. Rusli, "Ride-Sharing App Lyft Is Valued at More Than $700 Million," *Wall Street Journal*, March 8, 2014, http://blogs.wsj.com/digits/2014/03/08/ride-sharing-app-lyft-is-valued-at-more-than-700-million.
[12] Brian Doherty, "Smartphones vs. Taxi Drivers," *Reason*, November 2014, http://reason.com/archives/2014/10/28/smartphones-vs-taxi-drivers.
[13] Jason Tanz, "How Airbnb and Lyft Finally Got Americans to Trust Each Other," *Wired*, April 23, 2014, http://www.wired.com/2014/04/trust-in-the-share-economy.

have us engaging in behaviors that would have seemed unthinkably foolhardy as recently as five years ago."[14]

This development has ramifications for both economic theory and public policy. Specifically, a growing reliance on reputational feedback systems in market transactions calls into question many of the current consumer protection regulations based on the lemons theory, as well as the notion that asymmetric information requires extensive government intervention in certain aspects of the economy.

II. The Lemons Problem Revisited: Akerlof's Theory and Some Responses

Traditionally, many economists have recognized that the difficulty of distinguishing good quality from bad is inherent in all types of transactions, and they have worried about the existence of information asymmetries concerning quality between producers and consumers as well as the resulting moral hazard problems. This concern was articulated most notably in 1970 by George A. Akerlof in "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism."[15] Akerlof was eventually awarded the Nobel Prize for his contributions to the economics of information.

Akerlof argues that when sellers have more information about products than the potential buyers, as for example, in a used car market, then the lower quality cars (lemons) would crowd out those of higher quality because uncertainty among buyers would depress the average value of used cars.[16] The lemons problem suggests that used cars tend to command a lower market price because potential buyers are unable to tell whether a used car is good or bad.

[14] Ibid.
[15] Akerlof, "Market for 'Lemons.'"
[16] Ibid., 490.

As a consequence, sellers of higher-valued cars exit the market, and only lemons are offered. The market may eventually collapse because of this ongoing adverse selection process. Akerlof, describing the information problems inherent with purchasing a car in the 1970s, concluded, "It is impossible for a buyer to tell the difference between a good car and a bad car . . . or even obtain the expected value of a new car."[17] Therefore, sellers have to accept low prices for higher-quality cars because buyers have trouble distinguishing between low and high-quality secondhand vehicles.

These information asymmetries also create moral hazard problems. In a transaction characterized by asymmetric information, it is the tendency of the better-informed party to exploit these asymmetries in an undesirable or dishonest way.[18] As George Akerlof observed, "Dishonest dealings tend to drive honest dealings out of the market."[19] In particular, in addition to a diminished willingness to pay, there is an increased likelihood that sellers will exploit these information asymmetries to pass lemons off as plums, which will also drive plums—and honest sellers—out of the used car market.

It is important to note that Akerlof himself recognized the role that both government and private institutions could play to address information asymmetry:

> It should also be perceived that in these markets social and private returns differ, and therefore, in some cases, governmental intervention may increase the welfare of all parties. Or private institutions may arise to take advantage of the potential increases in welfare which can accrue to all parties.[20]

While he admits that private institutions *may* arise, he discounts or disregards many historical examples of trust-based reputations mechanisms developed to overcome information

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[17] Ibid., 489.
[18] Alex Tabarrok and Tyler Cowen, "The End of Asymmetric Information?" *Cato Unbound*, April 6, 2015, http://www.cato-unbound.org/2015/04/06/alex-tabarrok-tyler-cowen/end-asymmetric-information.
[19] Akerlof, "Market for 'Lemons,'" 495.
[20] Ibid., 488.

asymmetries. He could predict neither the degree to which trust-based reputational mechanisms would continue to ameliorate the lemons problem nor the degree to which the entrepreneurial element would outperform formal government mechanisms. As we discuss below, the Internet, and the corresponding reputational feedback mechanisms that have developed, lowers the costs of acquiring historically costly information prior to engaging in what would otherwise be uncertain transactions, resolving much of Akerlof's lemons problem.

Since its publication in 1970, many economists have come to challenge some of the central conclusions drawn from Akerlof's paper. For example, in response to the claim that information asymmetries can result in the failure of markets, George Mason University economist Dan Klein argues that "freedom to engage in self-disclosure and competitive exposé is one of the freedoms that make just the reverse true."[21] Within markets, solutions to information asymmetries often emerge. Leveraging feedback mechanisms to garner relevant information, building a reputation, and extending trust based on the reputations of others can crowd out those exchanges based on information uncertainty.

Building on Akerlof's lemons problem, others have argued that these information asymmetries lead to distortions in people's behaviors, and "to the extent that parties are misinformed or uninformed, they are less likely to be able to behave in accord with their true preferences, and hence the market fails."[22] Others, however, have come to realize that dispersed knowledge may not contribute to these feared outcomes to the extent that many believed decades ago. Nobel Prize–winning economist Vernon Smith, for example, recognized that dispersed knowledge is the driving force of exchange and innovation. He notes,

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[21] Daniel B. Klein, ed., *Reputation: Studies in the Voluntary Elicitation of Good Conduct* (Ann Arbor: University of Michigan Press, 1997), 120.
[22] R. Ted Cruz and Jeffrey J. Hinck, "Not My Brother's Keeper: The Inability of an Informed Minority to Correct for Imperfect Information," *Hastings Law Journal* 47 (1995): 640.

> Markets are about recognizing that information is dispersed in all social systems, and that the problem of society is to find, devise and discover institutions that incentivize and enable people to make the right decision without anyone having to tell them what to do.[23]

It is important to analyze the performance of formal and informal institutions in the coordination of this dispersed, asymmetric information in order to shape policy decisions regarding the emerging sharing economy. By definition, dispersed knowledge creates information asymmetries; however, markets also incentivize entrepreneurs to develop mechanisms to coordinate this dispersed knowledge. Section III will focus on some of the Internet-based mechanisms that have arisen to fulfill this role.

Furthermore, much of the current application of the lemons problem does not emphasize the importance of incentives facing both the consumer and the buyer. As Nobel Prize–winning economist George Stigler demonstrated, buyers will seek all information available to them up to the point that the search costs exceed the value of the information.[24] Many regulations concerning the lemons problem ignore the fact that buyers demand relevant information and thus provide the incentive for feedback mechanisms to arise in the long run. The buyer has a strong incentive to get as much information about a product as possible. Ways the buyer can acquire this information include consulting a third party for external verification, seeking out a reputable seller, bringing a knowledgeable friend along, or conducting the research themselves. Entrepreneurs are incentivized to facilitate these mechanisms.

Akerlof underestimated the power of the incentives facing entrepreneurs as well. In his view, "The problem, of course, is that entrepreneurship [in identifying quality] may be a scarce

[23] Randy T. Simmons, *Beyond Politics: The Roots of Government Failure* (Oakland, CA: Independent Institute, 2011), 7.
[24] George Stigler, "The Economics of Information," *Journal of Political Economy* 69, no. 3 (June 1961): 216.

resource; no development text leaves entrepreneurship unemphasized."[25] The degree to which the entrepreneur can address information asymmetries in the context of online reputational mechanisms has called into question whether the lemons problem will persist.

Finally, Peter Boettke and Mark Steckbeck argue that the fear of information asymmetries ignores the robustness of markets, and that markets continue to function even when the underlying conditions are not ideal.[26] And ultimately, as Nobel Prize–winning economist Friedrich Hayek notes, market failures may well be corrected by competitive solutions and private institutions.[27] We argue that a private market solution has presented itself in the form of the information revolution, online reputational and trust-building mechanisms, and the lower search costs of an interconnected world. Therefore, government interventions justified on the basis of information asymmetries must be reevaluated. When this view of competition—held also by Israel Kirzner and Ludwig von Mises—is adopted, information asymmetry is not a market *failure*, but rather a market *opportunity*.[28]

III. Trust, Reputation, Norms, and Market Dynamism: Historical Responses to Information Asymmetries

Akerlof's premise is correct in that human nature will produce suboptimal behavior when there is a lack of any effective and efficient mechanism to induce cooperation among buyers and

[25] Akerlof, "Market for 'Lemons,'" 496.
[26] Mark Steckbeck and Peter J. Boettke, "Turning Lemons into Lemonade: Entrepreneurial Solutions in Adverse Selection Problems in E-Commerce," in *Markets, Information and Communication: Austrian Perspectives on the Internet Economy*, ed. Jack Birner (New York: Rutledge, 2004), 218–19, http://papers.ssrn.com/sol3/papers.cfm ?abstract_id=1538369.
[27] Ibid., 219. See also Hayek, *Individualism and Economic Order*.
[28] See, for example, Israel M. Kirzner, *Competition and Entrepreneurship*, rev. ed. (Indianapolis, IN: Liberty Fund, 2010 [1963]); Ludgwig Von Mises, *Human Action: A Treatise on Economics*, rev. ed. (Indianapolis, IN: Liberty Fund, 2010 [1949]); Israel M. Kirzner, *Market Theory and the Price System*, rev. ed. (Indianapolis, IN: Liberty Fund, 2011 [1963]).

sellers.[29] However, Akerlof's model failed to adequately account for the emergent use of mechanisms such as trust and reputation, as well as social norms, to ameliorate the coordination failure resulting from such asymmetries. In this section, we discuss how social norms, trust, and reputation have been used throughout history to lay the foundation for economic exchange.

A. The Relationship between Reputation and Trust: From the Maghribi Traders to the New York Diamond Trade

As Hayek explains in "The Use of Knowledge in Society," the fundamental economic problem society faces is the question of how to achieve cooperation between individuals with dispersed, and often asymmetric, knowledge.[30] Market actors use trust and reputational mechanisms to facilitate transactions. In transactions among impersonal agents, trust becomes an even more crucial component of cooperation because it "reduces transaction-specific risks and generates price premiums for reputable sellers."[31] And devising trust-based reputational mechanisms throughout history has allowed for a greater volume of efficient transactions between impersonal agents over a wider variety of lower-cost goods and across geographic, linguistic, and cultural barriers. These mechanisms can also complement or act as a substitute for formal enforcement mechanisms.

The use of trust and reputation to overcome information asymmetries can be traced at least as far back as the 11th century.[32] A group of Mediterranean traders, known as the Maghribi traders, provide one example of how groups have found their own solutions to the problems of

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[29] Steckbeck and Boettke, "Turning Lemons into Lemonade," 221.
[30] Friedrich A. Hayek, "The Use of Knowledge in Society," *American Economic Review* XXXV, no. 4 (September 1945): 519–30.
[31] Sulin Ba and Paul A. Pavlou, "Evidence of the Effect of Trust Building Technology in Electronic Markets: Price Premiums and Buyer Behavior," *MIS Quarterly* 26, no. 3 (September 2002): 243–68.
[32] Avner Greif, "Reputation and Coalitions in Medieval Trade: Evidence on the Maghribi Traders," *Journal of Economic History* 49, no. 4 (December 1989): 857–82; Avner Greif, "Contract Enforceability and Economic Institutions in Early Trade: The Maghribi Traders' Coalition," *American Economic Review* 83, no. 3 (June, 1993): 525–48.

asymmetric information. The Maghribi traders operated throughout the Mediterranean, achieving efficiency by using agents rather than traveling themselves. However, they also faced asymmetric information and moral hazard problems (i.e., it was easy for these agents to abscond with the capital or cheat the merchants as they operated in far-off markets) that could not be remedied through the existing legal system. As a result, these traders built reputational mechanisms that allowed them to condition future employment on past conduct, and they ostracized those who cheated through concerted refusals to deal by the entire network of traders. These reputational mechanisms worked because they allowed the traders to rely on the credible past experiences of others to help them determine with whom they would deal in the future. In the context of recurring transactions, those with positive reputations were rewarded with increased business and those with negative reputations were not.

The role that trust and reputation play in ordering social cooperation has always been an important, but often overlooked, factor in how the market process actually works.[33] Various forms of reputational mechanisms have developed in order for people to more efficiently communicate judgments and experiences with one another, and to make decisions about whom to trust and what to believe. As Adam Smith observed in 1759, in his *Theory of Moral Sentiments,* "We desire both to be respectable and to be respected," and people's success in life, he continued,

> almost always depends upon the favour and good opinion of their neighbours and equals; and without a tolerably regular conduct these can very seldom be obtained. The good old proverb, therefore, that honesty is the best policy, holds, in such situations, almost always perfectly true.[34]

[33] "Trust is a key element for society. Without trust, society could not exist. . . . Trust has been shown to be positively correlated with economic growth, well-being, and happiness, and negatively correlated with crime and corruption." Paolo Massa, "Trust It Forward: Tyranny of the Majority or Echo Chambers?" in *The Reputation Society: How Online Opinions Are Reshaping the Offline World*, ed. Hassan Masum and Mark Tovey (Cambridge, MA: MIT Press, 2011), 151–52.
[34] Adam Smith, *The Theory of Moral Sentiments*, 1759 (facsimile of 1853 edition, Liberty Fund website), 63, http://oll.libertyfund.org/titles/2620.

Roughly 225 years later, Gordon Tullock remarked,

> A reputation for being 'sound' is a valuable asset, and we should expect people to make every effort to get it. . . . When the market is broad and there are many alternatives, you had better cooperate. If you choose the noncooperative solution, you may find you have no one to noncooperate with.[35]

Indeed, many voluntary trade associations continue to play a role in providing trust-based reputational mechanisms. For example, the Diamond Dealers Club in New York—created in the early 20th century—includes a rigorous admission process, an arbitration process with industry experts, and high standards for maintaining membership.[36] Similar associations use coordinated refusals to deal in order to sustain valuable reputational mechanisms. Merchants refuse to enter into contracts with dishonest firms and demand a risk premium from those who have not lived up to their contracts.

Many of these reputational mechanisms are horizontal restraints, designed to address deficiencies in formal institutions (i.e., courts) by threatening group boycotts of dishonest firms.[37] Thus, the credible threat of coordinated punishment serves as a reputation-based mechanism for ensuring fair dealing.[38] The commercial negotiation process across industries has facilitated the transfer of information between cooperating parties. Over time, this process has been augmented to incorporate security deposits or collateral that can serve in lieu of forthcoming trust.[39]

Reputation, then, is an essential factor in building trust among others within the market; ultimately it allows greater specialization of trade.[40] Klein notes that "we are consciously and unconsciously restructuring interactions so as to resolve information asymmetry, relational

[35] Tullock, "Adam Smith and the Prisoners' Dilemma," 1078, 1081.
[36] Barak D. Richman, "The Antitrust of Reputation Mechanisms: Institutional Economics and Concerted Refusals to Deal," *Virginia Law Review* 95 (2009): 326.
[37] Ibid.
[38] Klein, *Reputation*, 331.
[39] Ibid., 102.
[40] "Trust is a key element in sustaining specialization and trade." John Duffy, Huan Xie, and Yong-Ju Lee, "Social Norms, Information, and Trust Among Strangers: Theory and Evidence, *Economic Theory* 52 (2013): 670.

tensions between consumers and producers, and substitutes for the trust mechanism."[41] Voluntary cooperation of both a commercial and noncommercial nature is far more likely to take place when the parties involved in the transactions have a reasonable expectation that they can trust the other parties to live up to their end of their deal. Thus trust and reputation can be "a catalyst in many buyer-seller transactions, and it can provide buyers with high expectations of satisfying exchange relationships."[42] Behavioral ethicist Cristina Bicchieri defines trust as "a disposition to engage in exchanges that involve uncertainty and vulnerability, but that are also potentially rewarding."[43] In this way, trust is essential to the market process. It depends on a person's history of economic behavior and an understanding of his or her incentives for future cooperation. Trust acts as an indicator of the future behavior of economic actors.[44]

Not everyone has adopted the view that reputation is an effective means for inducing efficient market cooperation. Kenneth Arrow, for example, has countered the claim that trust could serve as an effective economic asset or signal by describing trust and similar values, such as loyalty or truth telling, as externalities.[45] He argues that reputation and trust are not commodities that can be openly traded on the market in any technically possible way. Dan Klein, however, points out that there are entire services, such as Carfax and the Better Business Bureau, that indeed make money by providing reputational links. There is, in effect, a literal market for information.

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[41] Klein, *Reputation*, 102.
[42] Ba and Pavlou, "Evidence of the Effect of Trust Building Technology," 244.
[43] Cristina Bicchieri, John Duffy, and Gil Tolle, "Trust Among Strangers," *Philosophy of Science* 71, no. 3 (July 2004): 286–87.
[44] Qing Zhang, Wei Wei, Ting Yu, "On the Modeling of Honest Players in Reputation Systems," *Journal of Computer Science and Technology* 24, no. 5 (September 2009): 808–19.
[45] Kenneth J. Arrow, "The Organization of Economic Activity: Issues Pertinent to the Choice of Market versus Non-Market Allocation," in *The Analysis and Evaluation of Public Expenditures: The PPB System, a Compendium of Papers Submitted to the Subcommittee on Economy in Government of the Joint Economic Committee, Congress of the United States* (Washington, DC: Government Printing Office, 1969), 14.

Arrow is certainly correct that trust is not openly traded like other commodities. His arguments, however, miss the deeper coordination mechanisms at work. Reputational systems need not operate like a literal stock market to fulfill an invaluable social function. Trust remains an important asset that incentivizes particular behaviors by both buyers and sellers. In particular, once an individual or firm has established a solid reputation, the risk of information asymmetry is no longer as costly to consumers. Basing decisions on a reputation may create a greater willingness among consumers to engage in transactions that might have been previously considered too risky.[46]

The lemons problem is alleviated when buyers are able to rely on the solid reputations of certain sellers to provide high-quality products. Eric Goldman details how reputation and reputational systems help solve asymmetric information problems and smooth the market process by acting as a *secondary* invisible hand:

> When information about producers and vendors is costly, reputational information can improve the operation of the invisible hand by helping consumers make better decisions. In this case, reputational information acts like an invisible hand of the invisible hand (an effect I call the *secondary invisible hand*) because reputational information can guide consumers to make marketplace choices that in aggregate enable the invisible hand. Thus, in an information economy with transaction costs, reputational information can play an essential role in rewarding good producers and punishing poor ones.[47]

Indeed, by lowering the transaction costs of decision making and information gathering, reputational mechanisms allow for more economic activity at the margin and promote innovation and further gains from exchange.[48] When the costs of acquiring information are reduced, and the costs of making decisions and trades are reduced, new opportunities can be sought out and exploited.

[46] Ba and Pavlou, “Evidence of the Effect of Trust Building Technology,” 263.
[47] Eric Goldman, “Regulating Reputation,” *in The Reputation Society: How Online Opinions Are Reshaping the Offline World*, ed. Hassan Masum and Mark Tovey (Cambridge, MA: MIT Press, 2011), 53.
[48] Simmons, *Beyond Politics*, 10.

Reputation—or the fear of its loss—can act as a powerful incentive to both constrain opportunistic behavior and incentivize honest transactions among individuals within the market. Reputation aids private institutions in overcoming asymmetric information problems. Reputational constraints, like religious or ethical constraints, prevent individuals from lying and cheating by making such behavior very costly in the market.[49]

As noted in the examples of the Maghribi traders and the Diamond Dealers Club, reneging on a promise puts one's reputation—and future income—at risk. Likewise, individuals are rewarded for honest dealings. Reputation elicits cooperation, acts as an enforcement mechanism, signals trustworthiness or quality, mitigates risks, incentivizes good behavior, punishes bad behavior, and aids in resolving information asymmetry. Social norms also work to complement reputation in regulating human behavior.

B. The Relationship between Reputation and Social Norms: Shasta County, California

The use of reputational mechanisms also plays a much deeper role in how individual actions are coordinated. Cass Sunstein argues that social norms are a key determinant in the reputational benefits or costs of individual actions. Sunstein defines norms as "social attitudes of approval and disapproval, specifying what ought to be done and what ought not to be done."[50] These social norms, and corresponding social sanctions, often act as powerful regulators of behavior.[51] Sunstein notes that

> social norms are enforced through social sanctions; these sanctions create a range of unpleasant (but sometimes pleasant) emotional states in the minds of people who have

[49] Gerald P. O'Driscoll Jr. and Lee Hoskins, "The Case for Market-Based Regulation," *Cato Journal* 26, no. 3 (Fall 2006): 474, http://object.cato.org/sites/cato.org/files/serials/files/cato-journal/2006/11/cj26n3-4.pdf.
[50] Cass Sunstein, "Social Norms and Social Roles," *Columbia Law Review* 96 (1996): 914.
[51] Adam Thierer, *Permissionless Innovation: The Continuing Case for Comprehensive Technological Freedom* (Arlington, VA: Mercatus Center at George Mason University, 2014), 57–58.

> violated them. If someone behaves in a way inconsistent with social norms, public disapproval may produce shame and a desire to hide.[52]

And, as Sunstein explains, the costs of violating social norms can be quite high because the unpleasant feelings brought about are intense, and the social consequences can be profound.[53] In some cases, norms rather than formal legal rules dictate how individuals will interact with one another.

As Robert Ellickson famously observed in Shasta County, California, legal rule had no effect at all on the behavior of ranchers and farmers with regard to liability for straying cattle in the mid-20th century.[54] Interactions among these neighbors were controlled by a system of norms: a code having no connection to courts, legislatures, or any other formal institution.[55] As David Friedman explains,

> When a rancher was informed that one of his animals was trespassing, he was expected to apologize, retrieve the animal, and take reasonable precautions to keep it from happening again. If significant damage had been done, the rancher was expected to make up for the damage. . . . If a rancher consistently lets his animals stray, or fails to offer to make up for significant damages, the victim responds with gossip—spreading the word that the rancher is not behaving in a proper neighborly way. If that fails to work, the victim may transport straying animals far away—imposing significant costs on the owner who has to retrieve them.[56]

Christine Bicchieri refers to these arrangements as "covenants without swords." She explains that "covenants are made and kept even in the absence of obvious sanctions. The very act of promising . . . might be enough to induce many of us to behave contrary to narrow self-interest. A social norm has been activated, and, under the right circumstances, we are

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[52] Sunstein, "Social Norms and Social Roles."
[53] Ibid.
[54] Robert Ellickson, *Order without Law: How Neighbors Settle Disputes* (Cambridge, MA: Harvard University Press, 1991).
[55] David D. Friedman, "Less Law Than Meets the Eye," *Michigan Law Review* 90, no. 6 (May 1992): 1444–52.
[56] Ibid.

prepared to follow it."[57] Bicchieri goes so far as to call social norms "the grammar of society":

> Like a collection of linguistic rules that are implicit in a language and define it, social norms are implicit in the operations of a society and make it what it is. Like a grammar, a system of norms specifies what is acceptable and what is not in a social group. And analogously to a grammar, a system of norms is not the product of human design and planning.[58]

Thus, whether they are born out of an obligation to keep promises, or to avoid punishment or social sanction, norms act as a powerful check on opportunistic behavior.[59]

And, much like the reputational mechanisms discussed above, certain social norms can aid economic cooperation by rewarding good behavior and sanctioning the bad. Bicchieri explains, "Social norms . . . often go against narrow self-interest, as when we are required to cooperate, reciprocate, act fairly, or do anything that may involve some material cost or the forgoing of some benefit."[60] These kinds of beneficial social norms work not only in those situations where there is a conflict of interest, but also in situations where there is the potential for joint gain.

Alongside reputational mechanisms, social norms lead to consistent behavioral patterns. In creating these patterns, norms allow individuals to develop expectations about another's behavior and allow market actors to make predictions about quality in the face of asymmetric information. This facilitates ongoing economic cooperation and allows more of the mutually beneficial exchanges that ameliorate the lemons problem.

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[57] Cristina Bicchieri, *The Grammar of Society: The Nature and Dynamics of Social Norms* (Cambridge: Cambridge University Press, 2006), 175.
[58] Ibid., ix.
[59] "We feel guilt when we have undertaken or attained something which, though desired by the elemental driving forces within us, we know to be incompatible with the official norms of our group—incompatible, that is, if we seek its realization." Helmut Schoeck, *Envy: A Theory of Social Behaviour*, (Indianapolis, IN: Liberty Fund, 1966, 1987), 90.
[60] Bicchieri*, The Grammar of Society*, 3.

C. Dynamic Competition and the Forgotten Entrepreneurial Element: Modern Pre-Internet Solutions to Information Asymmetries

While the role of reputation and social norms in commercial interactions may seem self-evident, the traditional "lemons problem" downplays the potential for greater trust to develop among market participants because asymmetric information problems will continue to persist. Yet, while the Internet has allowed for more trust mechanisms and reputation-building than anyone could have predicted, the market has also been devising solutions to asymmetric information problems.

The driving force behind the rise of these mechanisms to solve information asymmetry is the alertness of the entrepreneur to emerging market opportunities. Markets are not static; they are a dynamic process. And every perceived information problem also creates an incentive for the entrepreneur to discover new ways to create profit opportunities.[61] By continually updating information and experimenting through trial and error, the entrepreneur discovers more efficient means of promoting human interaction and facilitating exchange.[62] Ultimately, as the entrepreneur takes advantage of these opportunities, the market process is driven toward equilibrium.[63]

In other words, information asymmetries represent entrepreneurial opportunities. As Hayek explains,

> In actual life the fact that our inadequate knowledge of the available commodities or services is made up for by our experience with the persons or firms supplying them—that competition is in a large measure competition for reputation or good will—is one of the most important facts which enables us to solve our daily problems. The function of competition is here precisely to teach us who will serve us well.[64]

[61] Steckbeck and Boettke, "Turning Lemons into Lemonade," 221.
[62] Ibid., 227.
[63] *See* Kirzner, *Competition and Entrepreneurship*. See also Israel Kirzner, *Perception, Opportunity, and Profit: Studies in the Theory of Entrepreneurship* (Chicago: University of Chicago Press, 1979).
[64] Hayek, *Individualism and Economic Order*, 97.

Indeed, dynamic competition allows consumers to distinguish between those who will perform and those who will fail. It also creates a strong financial incentive for individuals to overcome problems and realize gains from exchange. Today's market failures are simply tomorrow's profit opportunities, and it is the dynamism of the market process that allows entrepreneurs to discover how best to achieve the solutions.[65]

Even before the Internet and many other modern forms of information sharing discussed in the next section, individuals sought information regarding potential buyers and sellers, using various methods to acquire the information they lacked. In response, the market provided several reputational mechanisms, including methods as simple as getting to know people, reviewing prices, seeking referrals, viewing credentials and seals of approval, participating in a service trial, asking for a guarantee or a warranty, consulting a neighbor or a third party, getting a second opinion, consulting an information bureau or rating organization, trusting a middleman, or doing their own research.[66]

Traditionally, one of the core functions of prices has been to communicate the relative valuation of goods and products on the market. Hayek explains that "in a system where the knowledge of the relevant facts is dispersed among many people, prices can act to coordinate the separate actions of different people."[67] Oftentimes, buyers and sellers can use relative prices to understand a great deal of information about the product or service in question without needing to rely on costly searching methods.

Akerlof suggests two counteracting institutions—guarantees and brand names—that buyers use to derive information about products. These institutions have developed to allow

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[65] Steckbeck and Boettke, "Turning Lemons into Lemonade," 227.
[66] Klein, *Reputation*, 128.
[67] Hayek, "Use of Knowledge in Society," 526.

higher-quality products to compete with the lemons.[68] Akerlof notes that “brand names not only indicate quality but also give the consumer a means of retaliation if the quality does not meet expectations.”[69] This is certainly true in the way consumers will make concerted efforts to avoid particular brands for political, moral, and ethical reasons. In addition, like brand names, franchising extends trust over a network of associated services with a common reputation. Guarantees, warranties, and return policies help negate the effects of quality uncertainty. These are institutions in which the risk is born by the seller rather than by the buyer.[70]

Advertising is another way that relevant information is communicated to buyers. Stigler explains that, as a method of providing potential buyers with knowledge of the identity, and thus reputation, of potential sellers, advertising is “an immensely powerful instrument for the elimination of ignorance.”[71] Advertising can help educate consumers about the options at their disposal and about the relative merits of each option.[72]

In addition to these mechanisms, the 20th century saw the rise of third-party organizations that collect and disseminate information to consumers, thus alleviating information asymmetry among buyers. Independent reviewers and watchdog groups grew to collect information about quality for interested parties, and they developed effective means for communicating this information to those seeking it. Examples include consumer advocacy groups such as the Consumers Union, the Better Business Bureau, and the National Consumers League; expert industry consultant services such as the American Automobile Association

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[68] K. W. Chau and Lennon H. T. Choy, “Let the Buyer or Seller Beware: Measuring Lemons in the Housing Market under Different Doctrines of Law Governing Transactions and Information,” *Journal of Law and Economics* 54, no. 4 (November 2011): S349.
[69] Akerlof, “Market for ‘Lemons,’” 500.
[70] Ibid., 499.
[71] Stigler, “Economics of Information,” 213–22.
[72] Adam Thierer, “Unappreciated Benefits of Advertising and Commercial Speech” (Mercatus on Policy, Mercatus Center at George Mason University, Arlington, VA, January 2011), 2.

(AAA); specialized product magazines and guides like Edmunds, Carfax, and Kelley Blue Book for cars; and various other local product and service reviewers. Many specialized information services related to the car industry existed at the time Akerlof first explained the lemons problem.[73] And two decades after Akerlof described what he saw as major information asymmetries within the market, Carfax began providing its car reports.

Other third-party mechanisms used buyers as a source of information. For example, in the early 1990s, Prologue, a service of Consumer Health Services, connected people with medical practitioners by mail and telephone. It relied on the feedback mechanism of users filling out response cards in order to rate doctors. Prologue used this information to recommend and refer customers to the best doctors. The service ended in 2001. Modern equivalents such as Zocdoc or WebMD continue to provide Internet-based referral services linking consumers to medical professionals based on their reputations.

As the market continues to grow in both the number of transactions and the number of economic actors, Stigler has predicted that many of these firms will appear to collect costly information and sell it to those who would otherwise be unable to acquire the information in a cost-effective way.[74]

In addition to these information dealers, private certification and accreditation bodies also act as signals about the quality of products and services. For example, the Good Housekeeping Seal of Approval reveals information about the reliability of household products. Editor’s Choice awards signal the high quality of consumer electronics products. Other third-party accreditation organizations include Moody’s credit rating services, and J. D. Power ratings on consumer goods.

[73] It is interesting to note, however, that Akerlof did not consider the existence of these reputational mechanisms in his criticism of asymmetric information in the used car market.
[74] Stigler, “Economics of Information,” 220.

Labels also reveal information about reputation. Labels serve as "institutions or mechanisms which systematically process some information among community members."[75] One of the most prevalent examples of this is Underwriters Laboratories, which began in 1901 as a safety certification company providing on-site safety inspections both for factories and security systems, as well as aiding in the development of product standards.[76] By certifying tested products with the UL label, Underwriters Laboratories has become one of the best means of communicating desirable information to consumers regarding the merit of appliances and devices. This information would otherwise have needed to be acquired through costly means.[77]

Of course, there will always be some friction in the market process because some degree of information asymmetry will always be present in an imperfect world. In fact, as Stigler demonstrates, individuals will only continue to search for information so long as the marginal cost of each item exceeds the marginal benefit of possessing it.[78] Invariably, there will be instances in which people will remain uninformed. As Hayek explains, this is the "phenomena with which we have to deal: the unavoidable imperfection of man's knowledge and the consequent need for a process by which knowledge is constantly communicated and acquired."[79] Ultimately, as entrepreneurs discover new and effective ways to overcome these information gaps, information asymmetries between potential buyers and sellers will decrease as well.

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[75] Michihiro Kandori, "Social Norms and Community Enforcement," *Review of Economic Studies* 59, no. 1, (January 1992): 71.
[76] Klein, *Reputation*, 115.
[77] Ibid., 79.
[78] See, for example, Stigler, "Economics of Information."
[79] Hayek, "Use of Knowledge in Society," 530.

IV. How the Internet and Information Systems Solve Old Problems

As noted above, markets are a dynamic—or evolutionary—process, where both established and emergent standards, tools, and mechanisms deemed efficient today will nonetheless be supplanted by newer, more efficient means tomorrow.[80] And the market process emerges from trial-and-error experimentations, as entrepreneurs "discover more efficient means of promoting human interaction, thus facilitating exchange."[81] This same process has taken place with the rise of the Internet, and subsequent developments in how information systems are used to solve old problems. Ongoing experimentation with online technologies and feedback systems has helped alleviate information asymmetries.

A. Early Internet Reputational Feedback Mechanisms

As previously discussed, reputational feedback mechanisms in the form of product and service reviews, ratings, and awards have existed for some time. With the advent of the Internet, many of these services simply moved online, leveraging a wider audience and continuing to lower the transaction costs associated with acquiring pertinent information. For example, *Consumer Reports* still publishes its print magazine, but all the reviews and ratings can now be found online as well. Other product review sites are exclusively online; one example is *CNET*, which primarily reviews electronics, software, and other technology products.

The next evolution in online feedback mechanisms was prompted by average consumers—as opposed to professionals—rating products and services online. As Liangjun You

[80] Steckbeck and Boettke, "Turning Lemons into Lemonade," 222. See also Armen Alchian, "Uncertainty, Evolution, and Economic Theory," *Journal of Political Economy* 58, no. 3 (June 1950): 211–21.
[81] Steckbeck and Boettke, "Turning Lemons into Lemonade," 227.

and Riyaz Sikora note, "Online opinion and consumer-review sites have dramatically changed the way consumers shop, enhancing or even supplanting traditional sources of consumer information such as advertising."[82] One of the largest sites utilizing online product feedback is Amazon.com, where buyers rate individual items with a simple five-star system as well as detailed reviews. These rating systems have evolved into service review platforms such as Yelp, which allow customers to comment on and rate local businesses. Likewise, this has led to platforms such as TripAdvisor that provide a forum where travelers offer tips and ratings for specific travel sites, tourist spots, and hotels. Review and rating sites allow both professionals and amateurs to rate goods and services on platforms related to either general or hyper-specific interests. These sites perform the vital function of providing consumers with the information they need before they engage in an exchange.

The latest major evolution of online feedback mechanisms is the two-way or interactive rating system, which was first popularized by eBay. While a one-way rating system is sufficient to decide which item to buy on Amazon, it is not sufficient when interacting with another unknown party, especially an individual rather than a company. Both eBay buyers and sellers have the option of leaving feedback for each other after a transaction, giving a positive, neutral, or negative rating along with a short comment. Over time, eBay members develop a feedback profile, that is, a reputation score based on other people's comments and ratings.[83] This is one of the most powerful parts of sellers' eBay profiles, and it can determine how easily or at how high a price they can sell items. In fact, reputational systems have been found to both help avoid fraud

[82] Liangjun You and Riyaz Sikora,"Performance of Online Reputation Mechanisms under the Influence of Different Types of Biases," *Information Systems and e-Business Management* 12, no. 3 (2014): 418.
[83] "How Feedback Works," eBay website, accessed October 20, 2014. http://pages.ebay.com/help/feedback/howit works.html.

and increase buyer satisfaction.[84] Moreover, Kevin Hoffman, David Zage, and Cristina Nita-Rotaru note that "not only do reputation systems help protect the buyer, but they have also been shown to reduce transaction-specific risks and therefore generate price premiums for reputable sellers."[85] Conversely, in some instances, sellers can demand assurances from buyers with poor ratings with regard to their ability to pay. It is these simple feedback systems that allow communities like eBay not only to operate but to thrive. Others also note that

> feedback systems, or reputation mechanisms, increase trust and trustworthiness among strangers engaging in commercial transactions. They provide summarized histories of past behaviour, increasing the opportunities of well-behaved participants, and decreasing those of poorly behaved ones. They thus improve trust by rewarding cooperation."[86]

The next section will explain how reputational systems have grown even more sophisticated with the recent rise of the sharing economy.

B. Rise of the Sharing Economy and New Reputational Feedback Mechanisms

The market for reputational mechanisms is active, robust, and always adapting to new challenges. The sharing economy has caused the development of new mechanisms at the same time old ones have adapted to technological change. There are two general types of online reputational mechanisms: centralized or third-party mechanisms, and peer-to-peer mechanisms. They will be examined in order.

As Audun Jøsang, Roslan Ismail, and Colin Boyd note, trust and reputation schemes cover a wide variety of applications and utilize many different types of mechanisms.

[84] Kevin Hoffman, David Zage, and Cristina Nita-Rotaru, "A Survey of Attack and Defense Techniques for Reputation Systems," *ACM Computing Surveys* 42, no. 1, (December 2009): 2.
[85] Ibid.
[86] Elodie Fourquet, Kate Larson, and William Cowan, "A Reputation Mechanism for Layered Communities," *ACM SIGecom Exchanges* 6, no. 1 (June 2006): 11.

Therefore, "there is no single solution that will be suitable in all contexts and applications."[87] The key is to allow these mechanisms to compete in the market. Just as a competitive market in any other good or service will produce the most efficient result, a competitive market in online reputational mechanisms will allow those that provide the most accurate or efficient mechanism to develop.

1. Centralized or third-party mechanisms. These mechanisms, build trust in the centralized platform but not necessarily trust between the two transacting parties. For example, eBay has a money back guarantee that refunds buyers if they don't receive their item or the item they receive does not match the listing description.[88] This mechanism does not increase the buyer's trust in the actual seller, nor does it increase the seller's personal reputation, but it does increase the level of comfort in the transaction. In other words, the platform facilitating the transaction doesn't merely connect buyers and sellers; it also acts as a third party seeking to add trust and validity to the transactions. In contrast, an example of a platform that *only* connects buyer and seller, offering no additional value or assurance services, is Craigslist, the virtual equivalent of the classifieds in traditional print newspapers.

While eBay and Airbnb started primarily as a simple service-listing platform, it soon became evident to both that adding services and mechanisms to enhance trust in the transaction would be valuable to both parties. This frees people from having to critically evaluate each individual with whom they interact, thus lowering transaction costs. What these systems have in

[87] Audun Jøsang, Roslan Ismail, and Colin Boyd, "A Survey of Trust and Reputation Systems for Online Service Provision," *Decision Support Systems* 43, no. 2 (2007): 618–44.
[88] "eBay Money Back Guarantee," eBay website, accessed October 17, 2014, http://pages.ebay.com/help/policies/money-back-guarantee.html.

common is that they radically lower transaction costs by making hassle-free cooperation among diverse parties easier than ever.

As previously mentioned, guarantees by centralized platforms are fairly common. These are similar to the guarantees discussed earlier where a party offers to refund the purchase price if the buyer is unsatisfied. The only difference is that the seller previously provided the guarantee. For example, Maytag could offer a guarantee on their washing machine. With a centralized platform connecting independent buyers and sellers, the third-party platform, rather than the seller, can offer the guarantee. This is an obvious benefit to buyers, as it lowers their potential risk and therefore the cost of the transaction. But it also benefits the sellers as the buyer will now be willing to pay more.[89] While providing a guarantee is a cost to the third party, it also carries the benefit of increasing the number of transactions on the platform, of which the third party usually gets a percentage. Furthermore, it enhances the platform's brand, leading to further transactions and fee income.

A similar mechanism offered by centralized platforms is insurance. The centralized platform may take out insurance policies on either party of the transaction or on both. This lowers the risk for either one of the transacting parties enough that they may now view the benefits as exceeding the costs. For example, the car-sharing platform RelayRides allows those with underutilized cars to rent them to those who need a car. The risks to the owner of the car are high: Not only is their car at risk of damage, but an accident could incur liability charges from third parties as well. To alleviate these risks, RelayRides covers all vehicle owners with an additional $1 million liability insurance policy to protect against third-party claims for injuries and property damage as well as insuring the car up to the actual cash value due to collision and

[89] Hoffman, Zage, and Nita-Rotaru, "Survey of Attack and Defense Techniques," 2.

“comprehensive” causes.[90] Airbnb, the home-sharing platform, has a policy covering a host’s residence up to $1 million against damage by guests.[91]

Centralized exchanges also use vetting and screening mechanisms to block questionable or untrustworthy users from even entering their platform in the first place. This can take many forms, depending on the service offered. One of the biggest concerns for ride-sharing services is the safety of the riders. To block suspect drivers from being listed in the first place, services like Lyft perform both criminal and driving background checks. The criminal check will exclude anyone with a record of violent crimes, sexual offenses, theft, property damage, felonies, or drug-related offenses. The driving check will exclude anyone with certain moving violations, major violations (e.g., driving on a suspended license, reckless driving), and DUIs or other drug-related driving violations, as well as more serious driving-related infractions (e.g., hit-and-runs, felonies involving a vehicle).[92] They will also confirm that the driver has a valid driver’s license and personal insurance that meets state requirements. Screening can be done on the consumer of the product or service as well; RelayRides will not allow people to rent cars from others if they have any major violations on their driving record (DUI, DWI, speeding over 20 mph, etc.) or even more than *one* minor violation in the last year.[93] Other forms of vetting can be more subjective, such as Lyft’s Welcome Ride, also known as a personality check, where a seasoned Lyft driver must ride with a prospective driver and approve them before they can begin driving for Lyft.[94]

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[90] “Insurance: We’ve Got You Covered,” RelayRides website, accessed October 17, 2014. https://relayrides.com/insurance.

[91] “What is the Airbnb Host Guarantee?,” Airbnb website, accessed October 17, 2014. https://www.airbnb.com/help/article/279.

[92] “We Go the Extra Mile for Safety,” Lyft website, accessed October 17, 2014, https://www.lyft.com/safety.

[93] “What Are the Eligibility Requirements?,” RelayRides Support, accessed October 17, 2014, http://support.relayrides.com/entries/21039596-what-are-the-eligibility-requirements.

[94] “Take a Welcome Ride with an Experienced Lyft Driver,” Lyft website, accessed October 17, 2014, https://www.lyft.com/drive/help/article/1286071.

There are also mechanisms to ensure that only qualified providers can participate in certain services. DogVacay, a service that connects dog owners with dog lovers who will watch their dogs, uses a system where prospective hosts must have their profiles approved before being listed as a dog sitter. Hosts can improve their search result rankings (making it more likely people will hire them) with badges earned by reading, watching training videos, and taking tests to improve their dog care knowledge. Similar to the Lyft personality check, they can also earn a badge by undergoing a phone interview with the company.[95]

Centralized platforms acting as a payment clearing system are one of the oldest mechanisms used to facilitate transactions. When the central platform clears or verifies the payment between a buyer and a seller, neither party has to worry about things like fraudulent checks. Further, there is no handling of cash by people like ride-sharing drivers, which reduces their personal security risk. Escrow services, used by sites such as eBay, offer an additional measure of security. For new eBay sellers who do not yet have a selling record or reputation, eBay will automatically withhold payment from completed sales for a number of days or until the buyer confirms that he or she received the item as expected and leaves feedback.[96] A similar transaction can be used for high-priced items using Escrow.com, eBay's official escrow service.

"Big data" analytics is a relatively new mechanism that is unique to online, centralized exchanges.[97] These mechanisms use computer algorithms to monitor transactions and either block or flag suspicious activity that is then sent to a human employee to investigate. For example, Airbnb's platform tracks almost every transaction element of someone booking a host's

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[95] "Frequently Asked Questions," Dogvacay website, accessed October 17, 2014, http://dogvacay.com/faq-host.
[96] "PayPal payments that aren't yet available." eBay website, accessed February 1, 2015, http://pages.ebay.com/help/pay/payment_unavailable.html#new.
[97] Viktor Mayer-Schönberger and Kenneth Cukier, *Big Data: A Revolution That Will Transform How We Live, Work, and Think* (London: John Murray, 2013).

room including the listing, profile, reservation, payment, all communication between the prospective guest and host, and the follow-up review. Using this information, Airbnb's algorithms develop a "trust score" for each reservation. If the trust score is too low, it is automatically flagged for further investigation by their security team. Common items the system can flag or block include messages that mention the words "Western Union" (a sign the host is trying to circumvent Airbnb's payment system[98]); a host and guest repeatedly booking rooms with each other (they may be trying to build up their reviews or ratings through fake bookings); or a new user booking very expensive rooms with a new host (raising the possibility of a money laundering scheme).[99] Airbnb undertakes such initiatives even though no law or regulation demands it because platforms like Airbnb possess the scale and incentive to build this infrastructure. Airbnb currently has a team of approximately 80 people, with backgrounds such as former government investigators and criminal prosecutors, who are constantly reviewing suspicious activity and finding new ways to combat fraud and abuse.[100]

To summarize, when it comes to centralized or third-party mechanisms, there are already a number of well-established mechanisms in addition to emerging ones that are made possible by the advent of big data and analytics. These mechanisms work well because the third party is also a stakeholder in the transaction (usually because they receive a percentage of the transaction) and therefore have aligned interests to root out fraud and abuse. They also possess the scale and resources to offer mechanisms—such as guarantees, insurance, and even entire fraud investigation teams—that would be too expensive for individual actors.

[98] "What If Someone Asks to Arrange Payment through Email or off the Airbnb Website?," Airbnb website, accessed February 1, 2014, https://www.airbnb.com/help/article/199.
[99] Tanz, "How Airbnb and Lyft Finally Got Americans to Trust Each Other."
[100] Ibid.

While some may point out that these mechanisms do not *directly* increase the trust between the transacting parties, the end result is the same: Transactions that would not otherwise occur due to lack of trust are indeed facilitated. This is similar to the way personal referrals have worked in the traditional economy. Some people may not at first trust Bob the plumber to repair a sink, but if all their coworkers recommend him, then they may indeed choose to hire him. In such a case, they are leveraging the coworkers and their feedback as a third party, much as users leverage the network and feedback of other users on a centralized platform. In the end, the result is the same: The risk or cost of the transaction is lowered, allowing it to take place and creating value for both parties.

2. Peer-to-peer mechanisms. The second major category of online reputational systems includes mechanisms that directly increase the trust between the two parties involved in a transaction. These are feedback mechanisms that are truly peer to peer in character. Even though a third-party platform may make the existence of the mechanism possible, the value is created by interactions between the two transacting parties. Before discussing these mechanisms, however, it should be noted that trust and reputation schemes are used in varying ways in a vast array of situations; there is no one-size-fits-all solution suitable for all times and all contexts.[101]

Ratings and reviews are one of the most popular peer-to-peer feedback mechanisms, and they rely on what is often referred to as collaborative sanctioning.[102] These mechanisms have been around since the Web's earliest days with the rise of eBay and Amazon, and they have already been discussed in detail previously. Therefore, only a little elaboration is needed here.

[101] Jøsang, Ismail, and Boyd, "Survey of Trust and Reputation Systems," 37.
[102] "The term '*collaborative sanctioning*' has been used to describe reputation systems, because the purpose is to sanction poor service providers, with the aim of giving an incentive for them to provide quality services." Ibid., 10.

Two important changes since the early days of web commerce have made peer-to-peer feedback mechanisms more ubiquitous and robust. First, the rise of Web 2.0 services over the past decade—blogs, social networking platforms, smartphones and mobile apps—have made it easier than ever for the public to have a voice in commercial and noncommercial transactions. Importantly, the geolocation technology embedded in many of these tools and platforms adds another layer of accountability by making it easier for consumers and companies to interact and locate each other.

These technological developments have encouraged companies and other organizations (including governments) to become more responsive to consumer and citizen demands.[103] Many organizations also offer specific pages and social media services to address customer service concerns.[104] In particular, Facebook and Twitter are now frequent outlets for consumer complaints. Many consumers take to Twitter or Facebook to complain about shoddy service or to praise vendors. Many corporations have specific websites or Twitter accounts specifically for this purpose.

For example, in order to respond to consumer complaints promptly, most airlines (both major and minor) have established a presence on social media websites such as Twitter and Facebook, in addition to YouTube and Instagram.[105] As consumers and firms adjust to these

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[103] Rob Tarkoff, "Wake Up Brands: Customers Will Punish Those Who Get the Twitter Experience Wrong," *Huffington Post*, Jan. 23, 2014, http://www.huffingtonpost.com/rob-tarkoff/wake-up-brands_b_4171805.html.
[104] Knowledge@Wharton, "The Ignored Side of Social Media: Customer Service," *Forbes*, January 9, 2014, http://www.forbes.com/sites/knowledgewharton/2014/01/09/22014.
[105] Andrea Sachs, "Now Boarding Passengers on Air Social Media," *Washington Post*, April 3, 2013, http://www.washingtonpost.com/lifestyle/travel/now-boarding-passengers-on-air-social-media/2014/04/03/a755440e-b390-11e3-b899-20667de76985_story.html. See also Lauren Silverman, "How to Use Social Media as a Last-Minute Travel Agent," *Marketplace*, November 28, 2014, http://www.marketplace.org/topics/tech/how-social-media-can-divert-you-around-travel-hassles.

platforms, companies are able to engage in a much warmer relationship with their clientele.[106] When things go wrong for the customer, however, these mechanisms are also the best way to get grievances resolved quickly and in real time.[107] Twitter has proven to be a particularly powerful tool for consumers to complain about services and get prompt responses because of the public nature of these posts and because such complaints are readily searchable and sharable on the Internet. These feedback mechanisms also help bolster the quality of service through intense competition and constant innovation.

A second major change since the early days of the Web is that the recent explosion of the sharing economy—which depends upon many of the ingredients just discussed—has enabled even more direct and instantaneous interaction between those supplying and demanding various services. The sharing economy relies heavily on ratings and reviews, using everything from simple star or point systems to detailed reviews from users. For example, ride-sharing companies employ some of the most extensive rating systems, whereby both the rider and the driver use a five-star system to rate each other after every ride. The companies can use the ratings to select drivers, and drivers can use the ratings to decide whether to accept riders. Companies like Lyft even have rules whereby drivers whose average rating falls below 4.6 (out of 5) stars will be at risk of being deactivated. Similarly, a rider who rates a driver at three stars or lower will never be matched with that driver again.[108]

In a peer-to-peer transaction, both parties attempt to gain information about the other. Humans use various forms of signaling all of the time to try to convey something about their reputation or trustworthiness. For example, bankers usually dress professionally and work in

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[106] Lucy Wallis, "Why It Pays to Complain via Twitter," BBC News website, May 21, 2014, http://www.bbc.com /news/business-27381699.
[107] Ibid.
[108] "We Go the Extra Mile for Safety," Lyft website, accessed October 17, 2014, https://www.lyft.com/safety.

large, intimidating stone buildings to signal their soundness and trustworthiness in handling peoples' hard-earned money. Ebay sellers use multiple pictures in their listings, and Airbnb will send a professional photographer to hosts' homes to showcase them appropriately.[109]

Many online sharing platforms encourage their users to communicate directly with each other through the platform, which has been found to be a powerful way to gain trust and build reputations in online transactions and communities.[110] RelayRide stumbled upon this concept accidentally when they changed the way they transferred car keys from owner to renter. When the company first started, they had membership-card readers installed in every owner's car. Renters could unlock and start a car by swiping their membership card, thus eliminating the need for the car owner to be present. But it soon became clear to RelayRide that, in order to grow efficiently, they would have to abandon having card readers installed in every car. Instead, renters and owners met face to face to hand off the keys. The human connection led to gains for both parties: Owners made fewer damage claims and both renters and owners reported higher satisfaction ratings. As the CEO of RelayRides, Andre Haddad, stated, "People strike up a conversation and realize they have something in common, which boosts trust and makes people feel accountable. They're going to have to return this car to that person and look them in the eye."[111] For the same reasons, Airbnb, Uber, Lyft, and many other platforms require users to have a clear profile photo displayed with their accounts.

In fact, any information that confirms a person's identity strengthens the trust and reputational ties between parties. That is why many sharing services prefer people to sign up

[109] "Get Access to a Professional Photographer—It's Free," Airbnb website, accessed October 17, 2014, https://www.airbnb.com/info/photography.

[110] Elinor Ostrom provides an overview of some of the experiment evidence showing that communication between parties permits substantial increases in their cooperation with one another. "A Behavioral Approach to the Rational Choice Theory of Collective Action: Presidential Address, American Political Science Association, 1997," *American Political Science Review* 92, no. 1 (1998): 6n13.

[111] Tanz, "How Airbnb and Lyft Finally Got Americans to Trust Each Other."

using their Facebook account, as it is linked to their real identity. Lyft had originally allowed riders to sign up only with a Facebook account (but now also allows a valid cellphone number). The European ride-sharing platform BlaBlaCar will also verify a driver's phone number, email, and Facebook account along with real photos and names.[112] Airbnb hosts can require that their guests have a Verified ID Badge, meaning they have verified their identity with the Airbnb platform by uploading a driver's license or passport photo or have connected other online accounts to their identity.[113] Other items that platforms will verify include credit cards and bank accounts. A variation of this is a quid pro quo policy where users have to share information about themselves if they want to see the same information from others in the network.

Finally, the ability for both users and providers of a good or service to differentiate between individuals is another powerful mechanism that has gained use in the sharing economy. Feastly, a platform connecting chefs willing to prepare and host a meal in their home with consumers willing to pay for the dining experience, allows the host to accept or reject RSVPs from potential diners based on the information they provide or on what is included in their social network.[114] Similarly, ride-sharing drivers can decide not to pick up passengers with low ratings. This mechanism allows both parties to decide with whom they want to interact. At the same time, they know when they do interact with another party, both are doing so voluntarily.

Generally speaking, the peer-to-peer mechanisms of building online trust and reputation in the sharing economy are very similar to those used in the physical world. Unsurprisingly, they are centered on establishing an identity and increasing communication between humans. Cliff Lampe of the University of Michigan's School of Information notes that these

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[112] "Trust, Safety & Insurance," BlaBlaCar website, accessed October 17, 2014, http://www.blablacar.com/trust-safety-insurance.
[113] "What Is Verified ID?," Airbnb website, accessed November 12, 2014, https://www.airbnb.com/help/article/450.
[114] "Frequently Asked Questions," Feastly website, accessed October 17, 2014, https://eatfeastly.com/info/faq/cooks/.

mechanisms help establish new social norms in the process.[115] In particular, he states that "by providing feedback about behavior, penalizing negative actions, signaling desired outcomes, and rewarding users, reputational and recommender systems are providing *socializing functions* and becoming valuable tools for organizing online environments."[116] In addition, Lampe argues that these tools are also essential to the growth of these environments because they both teach and enforce social norms within these spaces. They also socialize new users as they enter the system for the first time by "providing information about users, rating systems can act as 'cues' or 'signals' in online communities, allowing users to reach common ground about each other and facilitating social interaction."[117]

In summary, there currently exists a host of mechanisms used to enhance trust and reputation in the sharing economy. These mechanisms continue to change and evolve to meet the needs of both buyers and sellers. Reputational systems have been heralded as the unsung heroes of the social Web.[118] As Chrysanthos Dellarocas notes, "In some form or another, they are an integral part of most of today's social web applications."[119]

Reputational systems make online commerce a more safe and secure experience. Some have gone so far as to regard trust and reputational systems as security mechanisms.[120] Much of this security is the result of reputational systems overcoming the information asymmetries of the past. However, just as different situations call for different security mechanisms, various sharing

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[115] Cliff Lampe, "The Role of Reputation Systems in Managing Online Communities," in *The Reputation Society: How Online Opinions Are Reshaping the Offline World*, ed. Hassan Masum and Mark Tovey (Cambridge, MA: MIT Press, 2011), 77.
[116] Ibid.
[117] Ibid., 81.
[118] Chrysanthos Dellarocas, "Designing Reputation Systems for the Social Web," in *The Reputation Society: How Online Opinions Are Reshaping the Offline World*, ed. Hassan Masum and Mark Tovey (Cambridge, MA: MIT Press, 2011), 3.
[119] Ibid.
[120] Jøsang, Ismail, and Boyd, "Survey of Trust and Reputation Systems," 3.

economy transactions call for different levels of reputational systems. People may not need to thoroughly vet the person hired to mow the lawn, but they will certainly seek out more information and spend much more time reviewing a potential babysitter for their children. Thus, the nature of the exchange oftentimes dictates the reputational systems that individuals rely on to acquire the necessary information.

C. Addressing Problems Facing Reputational Mechanisms

Of course, like security measures, these feedback mechanisms are not infallible. Critics have pointed to a number of Airbnb horror stories where guests have abused their host's home.[121] There have also been bad apples driving for Uber and Lyft.[122] It should be noted, however, that the vast majority of these feedback mechanisms work well enough that worst-case scenarios are extremely rare. Airbnb transacted approximately two million reservations successfully before it had its first bad actor that ransacked a host's home. Following the incident, Airbnb doubled their support staff, offered a 24/7 helpline, and instituted a $50,000 insurance policy (which they shortly after raised to the current $1 million policy).[123] But even as Airbnb has become much larger, host claims paid in 2013 totaled only 700 out of approximately six million guests, a claim rate of only 0.01 percent.[124]

Thus, while "there are still many problems and challenges in both academic and practical trust/reputation systems," experts on modern online feedback systems have concluded that "the successful implementation of practical systems confirms the robustness of

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[121] "Ten Incredible Airbnb Horror Stories," Fox News website, accessed November 12, 2014, http://www.foxnews .com/travel/2014/05/08/10-incredible-airbnb-horror-stories/.
[122] Evann Gastaldo, "Cops: Uber Driver Kidnapped Drunk Woman," *USA Today*, June 4, 2014, http://www.usa today.com/story/news/nation/2014/06/04/newser-uber-kidnap-woman-california/9956755/.
[123] Brian Chesky, "On Safety: A Word From Airbnb," *TechCrunch,* July 27, 2011, http://techcrunch.com/2011/07 /27/on-safety-a-word-from-airbnb/.
[124] Tanz, "How Airbnb and Lyft Finally Got Americans to Trust Each Other."

trust/reputation mechanisms."[125] The very fact that the sharing economy has evolved to the point it has today, with millions of parties transacting daily and having few problems, bolsters this conclusion.

There is always room for improvement, of course. In particular, firms utilizing feedback mechanisms to facilitate commercial interactions must always be on the lookout for users trying to rig those systems in their favor. As Dellarocas concludes,

> In general, it is impossible to design a totally manipulation-resistant reputation system. No matter what mechanisms one puts in place, creative and determined users are bound to find a way around them. For that reason, community administrators must constantly monitor such systems, organically evolving their designs.[126]

As Paolo Massa notes, "One of the main concerns about reputation systems and trust metrics is the fact that they can be attacked and gamed. What are often called 'malicious users' can hijack systems in order to get a personal advantage."[127] Then, citing specific research, Massa notes different recommendations for addressing these threats and for making a trust metric more attack-resistant.[128] We have also noted the use of fraud-detecting algorithms above.[129]

Ongoing competition among existing and future online operators and sharing economy firms will encourage greater innovation and improvements in these systems. We have already seen significant improvements in the efficiency and sophistication of feedback mechanisms from early Internet days. As long as they are allowed to, these systems will continue to evolve and solve new challenges.

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[125] Chen Jia, Lei Xie, Xiaocong Gan, Wenhui Liu, and Zhangang Han, "A Trust and Reputation Model Considering Overall Peer Consulting Distribution," in *IEEE Transactions on Systems, Man, and Cybernetics—Part A: Systems and Humans* 42, no. 1 (January 2012): 176.
[126] Dellarocas, "Designing Reputation Systems for the Social Web," 9.
[127] Paolo Massa, "Trust It Forward: Tyranny of the Majority or Echo Chambers?," 155.
[128] Raphael L. Levien, "Attack-Resistant Trust Metrics," Unpublished doctoral dissertation, 1995, http://www.levien.com/thesis/thesis.pdf.
[129] See section IV.B.1.

Some critics of the sharing economy argue that it will exacerbate racial tensions by making discrimination easier.[130] A recent study conducted by Harvard Business School found that nonblack Airbnb hosts charge approximately 12 percent more than black hosts for an equivalent rental.[131] While the study focuses on discrimination of suppliers rather than on the more traditional understanding of discrimination against consumers, the study's authors do note that there is evidence that the Internet has reduced racial discrimination in other transactions, including car prices.[132] Moreover, others have shown this be true: The sharing economy offers more options to underserved communities and helps overcome the problem of bias.[133] Airbnb has noted possible problems with the Harvard study, for example, the data are two years old and from only one city out of the 35,000 where they currently have hosts.[134] In addition, as the study itself notes, much of the price discrepancies may be driven by differences in location.

With regard to instances in which discrimination has in fact historically occurred, Lior Strahilevitz of the University of Chicago School of Law argues that

> an important potential upside of new reputational tracking technologies is their potential to displace statistical discrimination on the basis of race, gender, age, appearance, and other easily observable characteristics. Reputation tracking tools . . . provide detailed

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[130] See Nancy Leong, "The Sharing Economy Has a Race Problem," *Salon*, November 2, 2014, http://www.salon.com/2014/11/02/the_sharing_economy_has_a_race_problem; Greg Harman, "The Sharing Economy Is Not as Open as You Might Think," *Guardian*, November 12, 2014, http://www.theguardian.com/sustainable-business/2014/nov/12/algorithms-race-discrimination-uber-lyft-airbnb-peer.

[131] Benjamin Edelman and Michael Luca, "Digital Discrimination: The Case of Airbnb.com" (Harvard Business School Working Paper 14-054, January 10, 2014), http://www.hbs.edu/faculty/Publication%20Files/14-054_e3c04a43-c0cf-4ed8-91bf-cb0ea4ba59c6.pdf.

[132] Ibid., 12. See also Fiona Scott Morton, Florian Zettelmeyer, and Jorge Silva-Risso, "Consumer Information and Discrimination: Does the Internet Affect the Pricing of New Cars to Women and Minorities?," *Quantitative Marketing and Economics* 1, no. 1 (2003): 65–92.

[133] Johana Bhuiyan, "Uber and Lyft Position Themselves as Relief from Discrimination," *BuzzFeed*, October 7, 2014, http://www.buzzfeed.com/johanabhuiyan/app-based-car-services-may-reduce-discrimination-issues-tk#4cfx2ww; Howard Baetjer Jr., "Uber against Racial Profiling: The Sharing Economy Helps End Ethnic and Economic Discrimination," *FEE*.org, November 25, 2014, http://fee.org/the_freeman/detail/uber-against-racial-profiling.

[134] Noel King, "African-American Hosts on Airbnb May Make Less on Listings," *Marketplace*, January 23, 2014, http://www.marketplace.org/topics/wealth-poverty/african-american-hosts-airbnb-may-make-less-listings.

> information about individuals, thereby reducing the temptation for decision makers to rely on group-based stereotypes."[135]

But more importantly, if irrational discrimination is preventing mutually beneficial trades within any sharing economy platform, it would create a lucrative profit opportunity for entrepreneurs to address. What's more, there are already antidiscrimination laws on the books that could be used to address these problems as they arise. It is not necessary to try to alleviate discrimination problems through additional regulations focused on these valuable feedback mechanisms, whose resiliency depends on being able to adapt organically to address new challenges.

Whether the concerns over feedback mechanisms are about biases or gaming, the relevant question is whether these mechanisms—and the sharing economy that these mechanisms allow to flourish—improve consumer and producer welfare relative to the past. The rise and rapid growth of the sharing economy, and the fact that millions of people are voluntarily transacting with each other every day in these new ways, demonstrates that both consumers and producers are better off overall. By lowering the transaction costs between buyers and sellers, and aided by the reputational systems discussed above, the Internet has paved the way for more trust and cooperation. It is important that the perfect not become the enemy of the good when it comes to evaluating the effectiveness of these systems. Moreover, these systems will never reach a static end-point; security and effectiveness are a never-ending process of refinement.

[135] Lior Jacob Strahilevitz, "Less Regulation, More Reputation," in *The Reputation Society: How Online Opinions Are Reshaping the Offline World*, ed. Hassan Masum and Mark Tovey (Cambridge, MA: MIT Press, 2011), 64.

V. Policy Ramifications of the Sharing Economy and Reputational Feedback Systems

A. The Evaporating Rationales for Existing Regulations

The growth and combination of information sharing, product and service review sites, and reputational feedback mechanisms present profound ramifications for public policy. While consumer protection regulations were put in place in response to perceived market failures in the form of asymmetric information, they should be evaluated in light of their traditional effectiveness as well as changing marketplace and technological circumstances.[136] In both cases, the evidence supports policy reform.

First, traditional consumer protection regulations have not served consumers well. As documented by Koopman, Mitchell, and Thierer, many consumer protection regulatory regimes diminish consumer welfare because they are "captured" by the affected interests and abused to their advantage.[137] This results in barriers to entry and innovation as well as higher prices, reduced product quality, fewer choices, or some combination of all of the above.[138] The taxicab industry is a particularly vivid example of this situation.[139] Barriers to entry in the form of taxi medallions decrease competitive forces and remove incentives to better the taxi experience for users.

Second, the marketplace and the technological developments documented in this paper make it clear that information markets, reputational systems, and rapid ongoing innovation often solve problems more efficiently than regulation, especially when they are given a chance to do so. In a sense, technology has achieved what regulation promised to accomplish—or at least *should* have promised to accomplish—long ago. Indeed, it should be noted that regulations

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[136] See Koopman, Mitchell, and Thierer, "Sharing Economy and Consumer Protection Regulation."
[137] Ibid., 7–10,
[138] Ibid., 10–13.
[139] Stewart Dompe and Adam Smith, "Regulation of Platform Markets in Transportation" (Mercatus on Policy, Mercatus Center at George Mason University Arlington, VA, October 2014), http://mercatus.org/publication /regulation-platform-markets-transportation.

instituted in an effort to overcome information asymmetries involve their own costs and, in many cases, can exceed the initial claimed benefits. This is especially true as industries—and markets—continue to innovate and evolve over time.

Moreover, if asymmetric information really were as profound a problem as some have suggested, then the most logical response would be remedies aimed at filling those information gaps and empowering consumers to make better decisions. Indeed, Federal Trade Commission officials noted as much in the early 1980s:

> There is usually an advantage in designing disclosure remedies that leave as large a role as possible to normal market forces, to restrict the market as little as possible. The goal should be not to specify the exact information to be disclosed and the exact manner in which it will be disclosed but to give sellers the proper incentives to make these decisions on their own.[140]

Modern reputation tracking and feedback mechanisms, in combination with the various online review sites and information services, accomplish this objective by disclosing more information to consumers, thus putting them in a position to make better decisions. Moreover, these emergent market developments ultimately leverage the dispersed knowledge of each individual user, rather than relying on the information that a single regulator is able to collect. These information-sharing systems allow individuals to provide instant feedback regarding the quality of products and services, and they empower others to utilize this information in a way that traditional solutions never could.

Taken together, it should be clear that "when market circumstances change dramatically—or when new technology or competition alleviate the need for regulation—then

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[140] Howard Beales III, Richard Craswell, and Steven C. Salop, "The Efficient Regulation of Consumer Information," *Journal of Law and Economics* 24 (1981): 522–23. See also, Howard Beales III, Richard Craswell, and Steven Salop, "Information Remedies for Consumer Protection," *American Economic Review Papers and Proceedings* 71 (May 1981).

public policy should evolve and adapt to accommodate these new realities."[141] In addition, because these systems are constantly evolving, and because new security challenges will always arise, it is dangerous for policymakers to impose a stagnant regulatory structure mandating certain aspects, procedures, or outcomes.

B. Leveling the Playing Field

Even if many traditional consumer protection regulatory regimes have failed to improve consumer welfare and are in need of reform, both policymakers and incumbent industries will argue that the innovators of the sharing economy are evading regulations that are still on the books. Those regulations include licensing requirements, price controls, service area requirements, marketing limitations, and technology standards.

While this issue of the so-called level playing field represents a legitimate policy problem, policymakers should not remedy it by punishing new innovations and by simply extending old regulatory regimes to new technologies and sectors. Instead, policymakers should level the playing field by "deregulating down" to put similarly situated competitors on an equal footing, not by "regulating up" to achieve parity.[142] Older rules still faced by incumbents should be relaxed for entire industries as new actors and new technologies enter the market and otherwise preempt the need for the continued application of the traditional regulatory solutions.

Importantly, this does not mean that either new entrants or incumbents will be unregulated. Numerous legal remedies, both civil and criminal, already exist to deal with accidents and bad behavior. These remedies include private insurance, contracts, discrimination laws, torts, and product liability laws. The advantage of these ex post remedies is that they do not

[141] See Koopman, Mitchell, and Thierer, "Sharing Economy and Consumer Protection Regulation."
[142] Ibid.

discourage innovation and competition the way ex ante regulation does. By trying to plan for every hypothetical worst-case scenario, many preemptive consumer protection regulations actually impede many *best-case* scenarios, and they harm consumer welfare in the process.[143]

VI. Conclusion

This paper has documented how the sharing economy relies upon—and has helped spur the growth of—sophisticated reputational feedback mechanisms that facilitate online trust and commerce, overcoming many of the information asymmetries that seemed intractable to George Akerlof and others just a generation ago. In combination with online review services and other information-sharing technologies enabled by the Internet, these reputational tools can help create more effective, and largely self-regulating, markets that provide more information to more individuals than ever before. However, it is unhelpful to point out shortcomings in these systems as a justification to continue to rely solely on traditional, formal mechanisms in light of these changing circumstances. As Strahilevitz argues,

> Reputation tracking cannot and will not solve all our problems. . . . But neither can courts, police officers, or regulatory agencies. These various tools of maintaining social order work in concert, and they offer different competencies in varied contexts.[144]

In other words, reputational systems will not completely obviate the need for other legal mechanisms. Nonetheless, the significance of reputational tracking and feedback systems should not be underestimated. Jason Tanz has observed,

> We are entering a new era of Internet-enabled intimacy. This is not just an economic breakthrough. It is a cultural one, enabled by a sophisticated series of mechanisms, algorithms, and finely calibrated systems of rewards and punishments. It's a radical next

[143] Thierer, *Permissionless Innovation*, viii.
[144] Strahilevitz, "Less Regulation, More Reputation," 72.

> step for the person-to-person marketplace pioneered by eBay: a set of digital tools that enable and encourage us to trust our fellow human beings.[145]

By facilitating greater trust while simulateously opening up new innovations and opportunities, these new Internet-based mechanisms promise to revolutionize modern marketplace interactions. This should force a reevaluation of traditional regulations aimed at addressing perceived asymetric information market failures, regulations that have typically failed to improve consumer welfare while also undermining innovation and competition.

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[145] Tanz, "How Airbnb and Lyft Finally Got Americans to Trust Each Other."