

# DATA REGULATION AND ITS EFFECT ON BUSINESS MODELS & CORPORATE ORGANIZATION IN THE NEW ECONOMY

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## INTRODUCTION

It's hardly an overstatement to claim that data is (or is fast becoming) the lifeblood of the modern economy. As new business models built on innovative uses of data emerge in the economy, these businesses are confronted with increasing regulatory constraints that may work to limit both the scope of their operation as well as their corporate structure.

Nominally in the name of consumer protection, largely in response to foreign government surveillance threats, but also significantly as a form of protectionism, many countries around the world have adopted various and differing data localization laws — what Chander and Le aptly call “data nationalism”<sup>2</sup> — that either preclude or make more difficult the removal of data from a particular country.<sup>3</sup>

Multinational data platforms (e.g., search engines, product review sites, electronic payment services (including credit cards), data brokers, and the like) that process data in a central location and/or that combine data across borders in order to improve their predictive algorithms are particularly affected by such rules.

Regulatory and legal approaches that make the collection and use of data more expensive along certain dimensions must, at least marginally, induce some companies to alter their behavior to avoid those costs and, consequently, to eschew potentially more beneficial business arrangements in favor of ones that correlate with lower regulatory risk, lower regulatory cost, and/or greater regulatory predictability.<sup>4</sup> “However, regulation often

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<sup>2</sup> See Anupam Chander & Uyen P. Le, *Data Nationalism*, 64 EMORY L. J. 677 (2015).

<sup>3</sup> See, for example, the recently enacted EU Data Protection Regulation. Chander and Le, *Id.*, have collected data protection regulations across a number of jurisdictions.

<sup>4</sup> It is also possible, of course, that compliance with regulation (i.e., avoidance of liability through compliance) or avoidance of regulatory constraints (i.e., avoidance of regulatory compliance costs *and* liability) leads to optimal, efficient behavior. *Possible*, but not likely, except by accident, and if it were, regulation would be unlikely to be necessary in the first place. It is also possible that regulations are the product of rent-seeking behavior, and thus that some firms will prefer to operate in compliance with seemingly costly rules, at least as long as their rivals do, too. This is worth exploring, of course, but the dramatically diffuse incidence of data/privacy regulations in the economy suggests in the first instance that simple public choice concerns don't likely explain most data or privacy regulation. And, even if they did, we would still expect to see regulatory avoidance strategies employed by firms less able to bear these regulatory costs, including adoption of sub-optimal business models and governance structures aimed at avoiding the costs of regulatory compliance or liability.

influences behavior in ways that differ from the initially stated rationale.”<sup>5</sup> By disrupting organizational structures designed to work with data, firms will respond to these regulations not only by altering their data collection and use practices, but also the organizational structures that complement them.

Data (information) regulation (as opposed to other types of regulation) is particularly likely to affect institutional structure. As Luis Garicano notes:

Organizations exist, to a large extent, to solve coordination problems in the presence of specialization. As Hayek pointed out, each individual is able to acquire knowledge about a narrow range of problems. Coordinating this disparate knowledge, deciding who learns what, and matching the problems confronted with those who can solve them are some of the most prominent issues with which economic organization must deal.<sup>6</sup>

Regulations that affect how firms can collect, store, use and disseminate information may thus have significant effect on firm governance and organization.

Faced with costly regulations, firms engage in something akin to regulatory arbitrage. They face a tradeoff between incurring (or reducing) regulatory costs on the one hand, and increasing transaction costs on the other and, when regulatory costs are high enough relative to transaction costs, will rationally choose the latter over the former:

[Firms] face a tension between reducing regulatory costs on the one hand and increasing Coasean transaction costs on the other. Deal lawyers routinely depart from the optimal transaction-cost-minimizing structure even though restructuring the deal reduces its (nonregulatory) efficiency. A corporation that needs cash might minimize transaction costs by entering into a secured loan, but instead, in order to improve the cosmetics of the balance sheet, enters into an economically similar transaction to securitize the assets. A company that would minimize agency costs by incorporating in Delaware decides that, to save on taxes, it will instead incorporate in Bermuda. So long as the regulatory savings outweigh the increase in transaction costs, such planning is perfectly rational.<sup>7</sup>

Unlike the theory of regulatory arbitrage, however, what I am suggesting here is not simply that firms exploit imperfectly drafted laws and regulations in order to opt-in to more preferable legal regimes (although that is certainly part of it). Instead, I am also suggesting that firms will structure their businesses in part to minimize the impact of legal rules, even where they still apply.

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<sup>5</sup> Lee Benham, *Licit and Illicit Responses to Regulation*, in HANDBOOK OF NEW INSTITUTIONAL ECONOMICS (Menard and Shirley, eds.) (2005) at 591.

<sup>6</sup> Luis Garicano, *Hierarchies and the Organization of Knowledge in Production*, 108 J. POL. ECON. 874, 874 (2000).

<sup>7</sup> Victor Fleischer, *Regulatory Arbitrage*, 89 TEXAS L. REV. 227 (2010).

While many data and related privacy regulations are nominally aimed at consumer protection, efforts to avoid stricter consumer protection per se, in order to “exploit” consumers may not be the primary or even significant impetus behind firms’ efforts to arbitrage such rules. Instead they may be driven more significantly by efforts to evade the broader consequences of such laws for how their businesses innovate and experiment, what business models they employ, and how they are structured.<sup>8</sup>

A related point is that effective use of data often (always?) requires implementation of complementary organizational structures. Rules affecting the collection and use of data may under-appreciate the inter-relatedness of data (technology) and its internal implementation (organization), such that their enactment and enforcement will engender not just technological responses, but organizational ones, as well.

Regulation imposes costs and rational actors seek to avoid those costs. But the situation here isn’t binary. Sometimes, when parties avoid costs, they merely seek to avoid a higher expense, and substitute for something more affordable — a substitution that is, by definition, a second-best (or worse) outcome.

This dynamic could manifest itself as companies simply choosing to collect and use less data, but it could mean a lot of other things as well. It could affect corporate organization (e.g., deterring vertical integration or creating “data firewalls” between different divisions of a company), encourage limits on the geographic scope of data collection or operation, affect the mechanisms for determining executive compensation, or (further) encourage jurisdictional considerations to dictate incorporation and principal place of business decisions. While choosing second-best options is rational from the perspective of regulated parties, it is nevertheless costly to society, both in terms of the firm’s efficient operation relative to its operation in a viable alternative regulatory regime and to consumer welfare generally.

Data regulations may also deter entry,<sup>9</sup> thereby indirectly affecting business and organizational decisions of incumbent firms in the market.

Such consequences are often unobserved and unintended. The hypothesis presented here is that the actions of over-eager regulatory agencies will have a host of unintended effects not just on data use directly, but on how firms are organized, how business is done, and on

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<sup>8</sup> As Avi Goldfarb and Catherine Tucker point out, “[t]his new data economy has obvious benefits for both firms and individuals, but it raises privacy concerns. Never before have firms been able to observe consumer actions on such a detailed level or obtain such potentially personal information. This generates the possibility of an inherent tension between innovations that rely on the use of data, and the protection of consumer privacy.”

<sup>9</sup> See, e.g., Campbell, Goldfarb, and Tucker, *Privacy Regulation and Market Structure*, 24 J. ECON. & MGMT STRATEGY 47, 48-49 (2015). (“We show that such privacy regulation can preclude profitable entry by the specialist firm. Under regulation, the extra costs required to obtain consent mean that in some cases where entry had been profitable without regulation, the specialist firm will choose not to enter.... Overall, our model suggests that privacy regulation can alter the competitive market structure of data-intensive industries.”).

corporate governance more broadly. The goal of this project is to discover and elucidate as much of this unseen ground as possible, and to determine the extent to which particular information regulation rules affect these outcomes.

## **TOWARD A MORE ACCURATE UNDERSTANDING OF BUSINESS RESPONSES TO DATA REGULATION**

Although the governance and organization of “new economy” firms largely exhibit only changes in degree, not kind, from more “traditional” firms (and although more traditional firms regularly adopt new-economy practices, especially with respect to the collection and use of data), recent technological changes in IT have ushered in seemingly important organizational and business model changes that are worth focusing on for purposes of understanding the implications of data regulation.<sup>10</sup>

A major development over the past two decades, for example, has been the rise of technology-enabled companies that have an inverted relationship to capital when judged by historical standards. Traditionally, large, hierarchical firms acted as centralizers of the factors of production. These firms would aggregate large pools of capital, hire labor in dedicated blocks through salary arrangements with workers, and compete by being able to most efficiently combine these factors into finished goods and services. Many modern platform-based firms, however, turn this relationship on its head.

Uber, perhaps the most visible example of this sort of firm, turns the role of a firm into an “enabling” one where production factors external to the firm — drivers (labor) and cars (capital goods), for instance — can be instantaneously and reliably deployed in order to allow more spontaneous production that capitalizes on localized knowledge and is better-tailored to the needs of consumers. These platform companies are in many respects without capital of their own besides that which is invested in developing the infrastructure upon which other parties interact. It should be immediately apparent that the implications for privacy and data security are of a deep structural nature in this business model. These platform companies are, at heart, data companies, and they are only among the first of what promises to be a new wave of such businesses. As the Internet of Things blossoms, and more entrepreneurs find ways to virtualize goods and services, a large portion of the economy will increasingly depend upon these business models.

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<sup>10</sup> As Daron Acemoglu, *et al.* detail, for example, firms in high tech industries, younger firms, and firms “closer to the technological frontier” will tend to have more decentralized structures. See Daron Acemoglu, et al., Technology, Information, and the Decentralization of the Firm, 4 Q. J. Econ. 1759 (2007). It’s worth noting that Acemoglu, et al. predict less decentralization arising from new technology when more information is known about optimal implementation of new technology. But it should be noted that their analysis doesn’t differentiate between types of “new technology.” To the extent that the new technology is itself useful in conveying organizational information, the result may not hold, and more decentralization, accompanied by (caused by) more effective information technologies may be likely. Indeed, it seems fair to say that since the paper was published in 2007 we have seen a significant uptick in firms of this sort.

In such a world, even seemingly marginal, exogenous constraints on the ability of these firms to allocate property rights relating to the information that undergirds their business model can, in theory, have significant consequences. Background rules regarding ownership and use of information, obligations to protect data, restrictions on sharing information, and the like take on unique importance when the viability of a particular enterprise turns on the ability of the firm to collect, create and extract value from data.

Significantly, the very structure of these firms depends upon their ability to take advantage of advances in information technology:

Increased governmental regulation tends to increase centralization. It does so by increasing the amount of specific knowledge in the headquarters office dealing with the regulatory agency. Improvements in control technology, such as communication and measurement techniques that reduce the marginal agency costs associated with delegating decision rights, will tend to increase decentralization in an organization.<sup>11</sup>

The “wrong” set of legal rules can mean the difference between viable, innovative enterprises — and the incentive to invest in the experimentation that leads to them — and a relatively sclerotic economic environment where novelty is forsaken for the security of imitation and regulatory prescription.

Since Kenneth Arrow posited his theory in 1974, economists have often looked at organizations as information-processing institutions.<sup>12</sup> The decisions that individuals within organizations make are dependent upon the information they have, and the structure and behavior of an organization depends upon the information it has (and creates) and the internal mechanisms it employs to process information. “Given the existence of complementarities among organizational practices, a range of organizational choices may have to be altered together for a particular technological advance to improve efficiency.”<sup>13</sup> Organizational success is not “a matter of small adjustments, made independently at each of several margins, but rather involve[s] substantial and closely coordinated changes in a whole range of the firm’s activities.”<sup>14</sup> As Garicano & Heaton demonstrate, the value of technology and information to an organization isn’t inherent, but rather a function of how they are implemented. As they discuss:

Although [information technology] by itself may have little impact, its impact may be substantial when it is introduced within the context of an organizational and human resource system designed to take advantage of it. In the specific

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<sup>11</sup> Michael C. Jensen & William H. Meckling, *Specific and General Knowledge, and Organizational Structure*, in *CONTRACT ECONOMICS* (Lars Werin & Hans Wijkander, eds.) (1992), at 251.

<sup>12</sup> KENNETH ARROW, *THE LIMITS OF ORGANIZATION* (1974).

<sup>13</sup> Garicano & Heaton, *Information Technology, Organization, and Productivity in the Public Sector: Evidence from Police Departments*, 28 *J. LABOR ECON.* 167 (2010).

<sup>14</sup> Milgrom & Roberts, *The Economics of Modern Manufacturing: Technology, Strategy, and Organization*, 80 *AM. ECON. REV.* 511, 513 (1990).

context of police work, the complementarity hypothesis takes one very salient form: Compstat. The system of practices summarized by this name... combine[d] real-time geographic information on crime with strong accountability by middle managers in the form of daily group meetings, geographic resource allocation, and data-intensive police techniques.<sup>15</sup>

Changes in the cost of technology or the ability to use it will affect not just the amount of technology used, but also the organizational structure of a firm. The choice of business form and business practices isn't static. But proponents of data regulation (and even many of its critics) treat regulated behavior as static in fairly important respects; that is, they assume a considerable degree of behavioral constancy, even as some behavior becomes more expensive or less effective through regulation.

This view understands that effective regulation will lead to a reduction in the level of "bad" conduct, but fails to appreciate that it may also lead to changes in the *form* of conduct, in ways that may undermine the benefits. For example, as I have written elsewhere discussing the effects of disclosure regulations on executive compensation:

[M]anagerial responses to regulation may be complex and unanticipated. CEOs may simply take less compensation, but they instead may shift the difference into non-pecuniary compensation, for example. They may work less hard; they may exit the market entirely; they may expend resources to camouflage their compensation. The response to regulation is not simply a matter of the cost of engaging in the behavior subject to disclosure. It is also a matter of what substitutes are available for the regulated behavior and the degree of elasticity between them.<sup>16</sup>

The regulation of complex economic entities frequently results in unintended and costly consequences. Appropriately evaluating the desirability of data and privacy regulations requires accounting for the cost of efforts to circumvent those rules, however, along with the more attenuated cost of other unintended consequences. It is insufficient either to ignore unanticipated consequences or to presume that the only relevant effects will be the salutary, intended ones.

In my article on disclosure regulation, I identified several consequences that can arise from securities disclosure regulation and that were missing from the discourse on the merits of such regulation. Most significant among them, "[b]ehavior made more costly to insiders by disclosure may be deterred, but insiders may shift into less — not more — desirable alternative activities."<sup>17</sup>

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<sup>15</sup> Garicano & Heaton, *Information Technology, Organization, and Productivity in the Public Sector: Evidence from Police Departments*, 28 J. LABOR ECON. 167, 170 (2010).

<sup>16</sup> Geoffrey A. Manne, *The Hydraulic Theory of Disclosure Regulation and Other Costs of Disclosure*, 58 ALA. L. REV. 473, 477 (2007).

<sup>17</sup> *Id.* at 478.

Analogous effects are likely at play with respect to data and privacy regulation, as well. Thus, for example, a heightened risk of liability for disclosure of sensitive data may lead not only to firms adopting more-effective data security practices within a data-intensive structure, it may also lead to firms substituting less data-intensive business models for data-intensive ones (say, by diverting investment into ownership of cars and employment of drivers rather than Uber’s platform model).

Moreover, because it is often the case that implementation of certain data regulations requires disclosure, the very same dynamics at play in the context of securities regulation are likely to surface in the context of data regulation. The FTC has noted, for example, that

[f]or any data collection that is inconsistent with [the context of a particular transaction or the consumer’s relationship with the business], companies should make appropriate disclosures to consumers at a relevant time and in a prominent manner—outside of a privacy policy or other legal document.<sup>18</sup>

Seemingly, the FTC hopes to encourage firms to disclose novel data collection activities, not to deter the collection of data itself. But it doesn’t take much reading between the lines to see that experimentation via data collection is frowned upon. The FTC goes on to state that unexpected data collection should not only be notified to consumers, but that they be afforded “choice” with respect to such data. One would think that notice alone affords choice, as consumers always have a choice not to complete a transaction. But that implies that notice alone is essentially costless (other than the often relatively trivial direct costs of the notice itself) and won’t affect the likelihood of offering the “unexpected” service in the first place. And yet a data collection disclosure requirement can be costly to the extent that it induces implementation of less desirable alternatives that don’t entail collection of data in order to avoid disclosure. Disclosure thus becomes not a “neutral” aspect of new initiatives entailing data collection, but a deterrent to those initiatives in the first place.

It is important to note, as well, that even such minimal notice obligations may deter industry-wide experimentation and innovation and may deter small-firm entry (which itself replicates experimentation by incumbent firms).

[A] specialist that fills a smaller niche and offers a smaller quality premium over the equivalent function of the generalist is more likely to earn lower revenue after entry in the case with regulation than in the case without.... Intuitively, absent regulation, entrants offer a targeted product after entry, and if the content of the firm’s product offering has broad enough appeal, this generates enough revenue to allow them to profitably enter. With regulation... [s]maller entrants and entrants that offer a smaller quality premium in their niche are more likely to offer an untargeted product in equilibrium after entry. Since an untargeted product generates less revenue, this means that, all else equal, the marginally profitable entrant must be larger than before to overcome the fixed cost of

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<sup>18</sup> FTC, PROTECTING CONSUMER PRIVACY IN AN ERA OF RAPID CHANGE (2012), at 27.

entry.... [P]rivacy regulation can shield a large, general incumbent from potential competition because regulation raises the threshold quality and scope for profitable entry by a challenger.... This is more likely for relatively strong incumbents: the stronger the incumbent, the better the marginal entrant must be.<sup>19</sup>

It might seem like it would be desirable in the abstract to facilitate firms devising ways of making use of undervalued assets like data as an alternative to monetary payments. But disclosure deters such experimentation if, for example, a firm anticipates that consumers will over-value their data, perhaps precisely because a disclosure signals that it is more valuable than it really is or that its collection entails more risk than it actually does.<sup>20</sup>

On the other hand, the FTC clearly also believes that “take-it-or-leave-it” is often not a permissible choice, and that disclosure on its own is not enough. Thus, for example, the FTC Privacy Report notes that

[w]hen consumers have few options for broadband service... the service provider should not condition the provision of broadband on the customer’s agreeing to, for example, allow the service provider to track all of the customer’s online activity for marketing purposes.<sup>21</sup>

This may seem like a sensible rule, except that the FTC has not undertaken to actually evaluate the tradeoff. Nevertheless, there must be some price, at least for many consumers, at which the tradeoff between data collection and cash is worth it. Yet if it is only worth it to the service provider if the option is offered on a take-it-or-leave-it basis, the choice

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<sup>19</sup> Campbell, Goldfarb & Tucker, *Privacy Regulation and Market Structure*, *supra* note \_\_\_. Of course, there is (presumably) a corresponding benefit for consumers from the regulation itself, thus the welfare effects of such rules are ambiguous. “Its direct effect is to remove for consumers the harm h they suffer when participating in an industry that has incentives to exploit consumer data without well-defined rules on data use. The second effect is the competitive effect. As we saw in the previous section, depending on the characteristics of the specialist and on consumer attitudes to potential exploitation of their data, the consent-based regulation we consider can be pro- or anti-competitive.” *Id.*

<sup>20</sup> Depending on the specific legal rule, of course, this can have significant cumulate effects on investment incentives. Josh Lerner has found, for example, that

decisions around the scope of electronic personal data usage can have significant impacts on investment and innovation. We find that VC investment in online advertising companies decreased significantly in the EU relative to the U.S. after passage of the EU e-Privacy Directive. Our results suggest that the EU e-Privacy Directive has led to an incremental decrease in investment in EU-based online advertising companies of approximately \$249 million over the approximately eight-and-a-half years from passage through the end of 2010. When paired with the findings of the enhanced effects of VC investment relative to corporate investment, this may be the equivalent of approximately \$750 million to \$1 billion in traditional R&D investment.

Josh Lerner, *The Impact of Privacy Policy Changes on Venture Capital Investment in Online Advertising Companies*, ANALYSIS GROUP (Feb. 13, 2012), at 2, available at [http://beta.analysisgroup.com/uploadedFiles/Publishing/Articles/AG\\_Lerner\\_EU\\_PrivacyDirectiveImpact\\_2012.pdf](http://beta.analysisgroup.com/uploadedFiles/Publishing/Articles/AG_Lerner_EU_PrivacyDirectiveImpact_2012.pdf).

<sup>21</sup> PROTECTING CONSUMER PRIVACY IN AN ERA OF RAPID CHANGE, *supra* note 18 at 52.

requirement will preclude any consumers from receiving that option. It seems plausible that the FTC believes that the choice requirement merely defines some of the terms of the hypothetical deal, not that it might preclude any data-based payment option at all if it would be valuable to the service provider. What I am suggesting is that this is an unsupported assumption, and that such a rule may, in fact, deter the offering in the first place.

That may be a tradeoff worth making. I am not saying that we're necessarily better off if consumers can be hoodwinked or pressured into welfare-reducing transactions. Rather, I am identifying under-appreciated, attenuated effects of data regulations, some of which might be sufficient to render those regulations inefficient, but others of which may not. Before we can make that calculation, however, we have to know what those effects actually are. This project is aimed at identifying those effects.

### **Uber, et al.**

Firms pool risk, lower capital costs, manage joint inputs into production, aggregate information, and routinize and centralize decision-making. But a key trade-off for the organizational marvels offered by firms has always been a relative loss of market price signals.

It may be desired to make a long-term contract for the supply of some article or service.... Now, owing to the difficulty of forecasting, the longer the period of the contract is for the supply of the commodity or service, the less possible, and indeed, the less desirable it is for the person purchasing to specify what the other contracting party is expected to do.... Therefore, the service which is being provided is expressed in general terms, the exact details being left until a later date.... The details of what the supplier is expected to do is not stated in the contract but is decided later by the purchaser. When the direction of resources (within the limits of the contract) becomes dependent on the buyer in this way, that relationship which I term a "firm" may be obtained.<sup>22</sup>

Corporate organization, despite valiant efforts over the years to change it, is decidedly top-down. A manager sets salaries, for example, and, once a worker is employed, must rely on observation, voluntary feedback, and business acumen to assess the employee's ongoing value. The situation is even worse for employees who generally receive no direct market signals about their value. And consumers, as well, who do at least generally face choices in the market, are rarely afforded enough autonomy to have significant input into how businesses are run (can you imagine a taxi passenger influencing the identity of the dispatcher?); rather, products and services are generally offered in bundles defined by a firm and with inputs from employees determined entirely within the organization.

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<sup>22</sup> Ronald H. Coase, *The Nature of the Firm*, 4 *ECONOMICA* N.S. 391-92 (1937).

Corporations enable the organization of activities that are better performed when multiple inputs are jointly managed — even though doing so makes it harder to determine the relative contribution of each input to the ultimate product.<sup>23</sup>

The sharing economy is premised on the notion that, with technological help, some activities can be better performed with less centralization and more information about the value of specific inputs. “The ability of the firm to foster human learning, technological innovation, and research and development may be a central reason for its existence.”<sup>24</sup> Sharing economy platforms seem to prioritize this dynamic role for the firm. Uber drivers aren’t told by a dispatcher where to go and when to go there, but the information provided by the platform about the amount of demand for rides, the location of potential riders and the location of other drivers makes up for the loss of direct control. Information substitutes for direct control to ensure that riders and drivers efficiently and effectively connect by enabling self-directed workers to respond to real-time market signals.

“In the context of an uncertain world, the analysis of human behaviour has to be centred on the development of capabilities to deal with complexity and change, and on the modes of generation and transmission of knowledge about the evolving socio-economic environment.”<sup>25</sup> Today, certain technology, it seems, has reduced the costs of using alternate means than incorporation into a hierarchical firm to coordinate activity and knowledge across an array of industries. That’s the sharing economy.

Platforms like Uber’s facilitate quality control, manage demand and supply shocks, set “salaries” and promote consumer autonomy by setting and publishing prices and sharing rating information between riders and drivers. Consumers need not rely solely on a firm’s aggregate reputation to judge quality, but can look at specific workers’ reviews; capital need not be centralized because real-time provisioning is possible; and centralized allocation/control of resources isn’t required because knowledge about where resources are best deployed can be left to workers who are incentivized and motivated via automated feedback mechanisms instead of quarterly reviews; and so on.

Arguably, these organizations merely replace human management with management by smartphone. And in part that’s correct. But recall what management was for in the first place: To coordinate inputs to enable workers, entrepreneurs and owners of capital to earn income or profits by successfully meeting consumer demand. The corporate form is like a translator, converting signals about consumer demand into the goods and services they are demanding. Technology diminishes the importance of translation by conveying information directly to the inputs and relying on their own self-interest to ensure that demand is met.

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<sup>23</sup> Alchian and Demsetz.

<sup>24</sup> Geoffrey M. Hodgson, *Evolutionary and Competence-Based Theories of the Firm*, 25 J. ECON. STUD. 25, 34 (1998).

<sup>25</sup> *Id.* at 35.

Of course, this works only in settings where the need to coordinate doesn't outweigh the benefits of data and decentralized activity. For the foreseeable future, the development and management of Uber's platform itself, for example, will be accomplished by a firm; Protection of intellectual property, coordination between entrepreneurs and workers, and efficient allocation of risk, are too important to the enterprise for it to be otherwise.

But driving a car, renting out a home, fixing a thermostat and the like — “last mile” jobs that depend on coordinated activity behind the scenes (someone has to build the ridesharing platform, to say nothing of the car itself), but that require little joint activity to actually perform — are ripe for transformation. These activities can be removed from the “chain of command.” They can be reliably performed with minimal direct control, and they can be compensated directly by consumers, without workers or consumers taking on unbearable risk.

But, of course, these organizations depend on data, information, and the ability to move, convey and analyze data and information. If those activities are made too expensive by regulation, or if the data and information is made less valuable by regulation, then it is not merely data collection and use that are at risk, but the organization of the enterprises themselves.

### **The FTC's Apple case**

It should be noted that the FTC (like the EU) has rejected a simplified notice mechanism in numerous contexts — always without analysis of the trade-offs and, more troublingly, in apparent violation of Section 5 of the FTC Act.

In a string of cases against companies like Apple, Google and Amazon, the FTC has challenged the sufficiency of companies' notification practices for in-app purchases as unfair.

In the first of these cases, against Apple,<sup>26</sup> the Commission alleged that Apple engaged in “unfair acts or practices” by billing parents and other iTunes account holders for in-app purchases made by children with inadequate notice and consent. Notably, while Apple did use notifications and required consent for in-app purchases in general, the FTC took issue with the specific design of Apple's notice and consent mechanism by which entry of the account owner's password opened a fifteen-minute period during which a user did not need to re-enter a billing password after completing the first transaction. The Commission charged that Apple billed iTunes account holders for the activities of children without obtaining express informed consent in violation of the FTC Act, effectively because Apple designed its interface to reduce the number of repeated notifications and password entries.

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<sup>26</sup> *In the Matter of Apple, Inc.*, FTC File No. 1123108 (Jan. 15, 2014), available at <https://www.ftc.gov/enforcement/cases-proceedings/112-3108/apple-inc>.

The Commission's unfairness authority under Section 5 of the FTC Act is circumscribed by subsection (n), which itself tracks language issued by the FTC in its 1980 Unfairness Policy Statement. Section 45(n) actually incorporates sensible economic limiting principles:

The Commission shall have no authority under this section or section 57a of this title to declare unlawful an act or practice on the grounds that such act or practice is unfair **unless the act or practice causes or is likely to cause substantial injury to consumers** which is **not reasonably avoidable by consumers themselves** and **not outweighed by countervailing benefits to consumers or to competition.**<sup>27</sup>

The core requirements (that injury be substantial, that it not be reasonably avoidable by consumers and that it not be outweighed by countervailing benefits) serve to enshrine an error cost approach to unfairness questions, limiting both the likelihood and harm of erroneous over-enforcement. "To justify a finding of unfairness, the Commission must demonstrate the allegedly unlawful conduct results in net consumer injury."<sup>28</sup>

That such a balancing was absent from the majority's decision in *Apple* reflects not only dereliction of a legal obligation by the Commission, but also the subversion of sensible economic analysis. As then-Commissioner Wright noted:

The Commission, under the rubric of "unfair acts and practices," substitutes its own judgment for a private firm's decisions as to how to design its product to satisfy as many users as possible, and requires a company to revamp an otherwise indisputably legitimate business practice. Given the apparent benefits to some consumers and to competition from Apple's allegedly unfair practices, I believe the Commission should have conducted a much more robust analysis to determine whether the injury to this small group of consumers justifies the finding of unfairness and the imposition of a remedy.<sup>29</sup>

Undertaking an appropriate cost-benefit analysis — as the Commission's own Policy Statement requires — would have yielded a different result given available facts:

In particular, although Apple's allegedly unfair act or practice has harmed some consumers, I do not believe the Commission has demonstrated the injury is substantial. More importantly, any injury to consumers flowing from Apple's choice of disclosure and billing practices is outweighed considerably by the benefits to competition and to consumers that flow from the same practice.<sup>30</sup>

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<sup>27</sup> 15 U.S.C. §45(n), available at <http://www.law.cornell.edu/uscode/text/15/45> (Emphasis added).

<sup>28</sup> Dissenting Statement of Commissioner Joshua D. Wright, *In the Matter of Apple, Inc.*, FTC File No. 1123108, at 14 (Jan. 15, 2014), available at [http://www.ftc.gov/sites/default/files/documents/cases/140115applestatementwright\\_0.pdf](http://www.ftc.gov/sites/default/files/documents/cases/140115applestatementwright_0.pdf).

<sup>29</sup> *Id.* at 1-2.

<sup>30</sup> *Id.* at 2. As Wright explains in more detail:

Apple's choice to include the fifteen-minute window in its platform design, and its decision on how to disclose this window, resulted in harm to a small fraction of consumers. Any

What's particularly notable about the *Apple* case — as has been borne out by subsequent data-related enforcement actions predicated on unfairness — is the unique relevance of the attributes of the conduct at issue to Apple's product. Unlike past, allegedly similar cases against true fraudsters, Apple's conduct was not aimed at deceiving consumers, nor was it incidental to its product offering. Instead, as Commissioner Wright noted:

Disclosures made on the screen while consumers interact with mobile devices are a fundamental part of the user experience for products like mobile computing devices. It is well known that Apple invests considerable resources in its product design and functionality. In streamlining disclosures on its platform and in its choice to integrate the fifteen-minute window into Apple users' experience on the platform, Apple has apparently determined that most consumers do not want to experience excessive disclosures or to be inconvenienced by having to enter their passwords every time they make a purchase.<sup>31</sup>

But by challenging the practice, particularly without the balancing of harms required by Section 5(n), the FTC majority substituted its own judgment not about some manifestly despicable conduct but about the very design of Apple's products.

With complex technology products such as computing platforms, firms generally find and address numerous problems as experience is gained with the product. Virtually all software evolves this way, for example. This tradeoff— between time spent perfecting a platform up front versus solving problems as they arise—is also relevant for evaluating unfairness.

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Nonetheless, the Commission effectively rejects an analysis of tradeoffs between the benefits of additional guidance and potential harm to some consumers or to competition from mandating guidance by assuming that “the burden, if any, to users who have never had unauthorized charges for in-app purchases, or to Apple, from the provision of this additional information is de minimis” and that any mandated disclosure would not “detract in any material way from a streamlined and seamless user experience.” I respectfully disagree. These assumptions adopt too cramped a view of consumer benefits under the

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consumer harm is limited to parents who incurred in-app charges that would have been avoided had Apple instead designed its platform to provide specific disclosures about the fifteen-minute window for apps with in-app purchasing capability that are likely to be used by children. That harm to some consumers results from a design choice for a platform used by millions of users with disparate preferences is not surprising. The failure to provide perfect information to consumers will always result in ‘some’ injury to consumers. The relevant inquiry is whether the injury to the subset of consumers is ‘substantial’ as contemplated by the Commission's unfairness analysis. *Id.* at 5.

<sup>31</sup> *Id.* at 4.

Unfairness Statement and, without more rigorous analysis to justify their application, are insufficient to establish the Commission's burden.<sup>32</sup>

The specific, narrow question may seem fairly trivial, but it reflects part of what Apple views as its competitive advantage, helps to define its brand, and is of a piece with its overall product innovation.

The FTC's Unfairness Statement itself requires the Commission to "consider the impact of contemplated remedies or changes in the incentives to innovate new product features upon consumers and competition."<sup>33</sup> In failing to observe such limits in *Apple* precisely in a way that imposed greater data regulation costs on users and firms, the FTC set a problematic precedent that seems to reflect a disregard for innovation in general and for the indirect effects of increasing experimentation and entry costs in particular. As Wright concludes his dissent:

Establishing that it is "unfair" unless a firm anticipates and fixes such problems in advance – precisely what the Commission's complaint and consent order establishes today – is likely to impose significant costs in the context of complicated products with countless product attributes. These costs will be passed on to consumers and threaten consumer harm that is likely to dwarf the magnitude of consumer injury contemplated by the complaint.<sup>34</sup>

Apple consented to a set of specific notice and consent obligations rather than challenge the action in court. Among other things, the consent order subjects Apple to 20 years of FTC oversight. Such rules dampen incentives to invest in quality generally. But they also threaten to dampen competition, which may have more significant indirect effects not only on market structure but on the organization of firms themselves — most obviously (as Campbell, Goldfarb and Tucker discuss) with respect to optimal size. Moreover, and perhaps most importantly, such actions chill the iterative experimentation (even for large companies like Apple) that is at the heart of new economy business models.

[T]o the extent that privacy regulation generates transaction costs (as modeled by Campbell et al. 2011), regulations will increase the importance of walled gardens. Facebook, for example, is considered a valuable service by many of its customers, so it is likely that consumers would explicitly consent to give Facebook access to their data, in contrast to an unknown entrant that has not yet proven its value. Websites that take this walled-garden approach control all data and encourage users to expand their Internet usage within the confines of the website. In this way, privacy protection may stifle innovation outside the structures developed by a handful of leading players.<sup>35</sup>

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<sup>32</sup> *Id.* at 11-12, 13.

<sup>33</sup> *Id.* at 15 (citing FTC Unfairness Statement at 1073-74).

<sup>34</sup> *Id.* at 16.

<sup>35</sup> Goldfarb & Tucker, *Privacy and Innovation*, 12 INNOVATION POL'Y & THE ECONOMY 65, 84 (2012).

## **IDENTIFYING THE EFFECTS OF DATA REGULATION: SOME THOUGHTS ABOUT THE SCOPE AND APPROACH OF THIS PROJECT**

A key part of the consequences of data regulation that regulators tend not to take into account includes not only the blunt effects on investments in innovation, but also the effects on incentives to adopt efficient organizational structures and business models.

Managers of firms themselves almost certainly don't know in most cases whether their decisions are optimal. Particularly in the context of novel products, technologies, and business models, the longevity (let alone prior success) of existing exemplars may be nonexistent or of little value.<sup>36</sup> It might seem attractive to look to indicia like profits, prices and output levels to assess optimality, but with what degree of reliability can we tell if a firm is operating "optimally" when the prevailing price is zero, where inputs and outputs are exceedingly heterogeneous, or where (as Harold Demsetz has often stressed), past profits under certain conditions are no indication of future profits under an entirely different set of conditions?<sup>37</sup>

All economic activity is fundamentally governed by a set of judgments regarding potential trade-offs. Thus, the roles of regulators need to be evaluated against a backdrop where technology enables businesses of the modern economy to experiment with new forms of organization, distribution, and customer satisfaction — which is to say, a freedom to further diversify and tailor the sets of potential tradeoffs that consumers have available. The point is to make sure that we leave room for innovation in business models in order to allow individuals to discover when those trade-offs make sense.

But data and privacy regulations significantly interfere with this process. Most obviously, prohibitions on collection and use of data absent demanding notice and consent obligations curtails innovative uses of data and experimentation in business models and even corporate organization. This is especially true where such rules place the greatest limitations on sharing of data outside a traditional firm structure — meaning they tend to ossify hierarchical firms even as the very technology at issue is undermining the relative benefits of traditional firm structure.

The following gives an idea of the sort of relationships I expect to identify:

### **“Direct” effects of liability risk from data and privacy regulation**

First, and most directly, data regulation affects firm behavior with respect to the collection and/or use of data. An increased risk of liability arising from data collection or use will, at the margin, diminish the collection and/or use of data. There are several obvious ways for a firm to reduce this risk:

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<sup>36</sup> See generally Geoffrey A. Manne & Todd J. Zywicki, *Uncertainty, Evolution, and Behavioral Economic Theory*, 10 J.L. ECON. & POL'Y 555 (2014).

<sup>37</sup> See, e.g., Harold Demsetz, *Industry Structure, Market Rivalry, and Public Policy*, 16 J. L. & ECON. 1 (1973). See also YALE BROZEN, *CONCENTRATION, MERGERS, AND PUBLIC POLICY* (1982).

- Most obviously, the firm can simply collect less data, collect data from a smaller number of people, retain it for a shorter period of time, and/or minimize the uses of data collected.
- Further, some specific regulations will lead to more nuanced reactions. Thus, for example, a prohibition on the retention of certain data beyond six months will lead most or all firms to implement policies to ensure the deletion of that data in the relevant timeframe.
- Many regulations will also affect the implementation of data security practices, including not only the “amount” of security (amount of investment in security), but also specific attributes of its implementation, timing, etc.

Less obviously, however, there are a range of other decisions that a firm can make that may also reduce legal risk, while not requiring it to collect or use less data or to implement enhanced security processes, at least not directly. Among these, the most straightforward effects would manifest in terms of activity level, size and scope of operations.

- In the first instance, and most obviously, a firm can simply exit the market or not enter into it at all — that is, reduce its activity level to zero. On the margin we should expect this to happen most significantly for new entrants, but also in some cases for incumbents that exit the market.
- Slightly less drastically, a firm can reduce risk by reducing its activity levels. Thus, one first-cut implication of data regulation might be somewhat smaller firms, measured by things that correlate with data (number of customers, number of employees, etc.). We should not necessarily expect that firms will be smaller in terms of revenue, as revenue may not correlate with less data-related risk; it is possible that the constraints imposed by data regulation will operate as a barrier to entry sufficient to enable firms to maintain supracompetitive profits.
  - Efforts to restrict activity may thus also correlate with lower levels of horizontal merger activity.
  - Depending on which effect predominates, as noted above such rules could favor larger over smaller firms.
- Similarly a firm can mitigate data regulation compliance costs by constraining its scope of geographic operation to avoid more restrictive rules. This has at least two aspects, particularly for online businesses. On the one hand, a firm may choose to locate its headquarters, workforce, data processing and other operations in more favorable jurisdictions. But it may also limit its geographic reach to reduce the likelihood that customers or even suppliers are located in less favorable jurisdictions.

- Efforts to restrict the geographic scope of operations and/or sales could thus also correlate with lower levels of both horizontal and vertical integration.

### **“Indirect” effects of liability risk from data and privacy regulation**

But a firm may alter its operations in still other, more subtle ways if the costs of data regulation are significant enough.

As with other forms of liability, a heightened data-regulation-related liability risk should correlate with structural and contractual arrangements to limit liability. This could manifest in several ways:

- In the first place, common to all heightened liability risk, firms will adopt corporate structures to limit liability, choose to incorporate in favorable jurisdictions, offer various forms of contractual immunity for various agents, etc. These effects may be difficult or impossible to suss out unless data-related liability risk is significant relative to other sources of legal liability.
- But some of these should be specific to the nature of the regulation. Thus, in the case of data/privacy regulation, firms might be expected to, for example, implement specific restrictions on internal and external data sharing and the ability to export data electronically.

### **“Indirect” effects of data access constraints**

To the extent that access to data is constrained or made more expensive, firms can be expected to implement organizational structures that are less dependent on data.

- For example, where information can substitute for traditional, hierarchical management structures, the higher cost of information should lead firms to make greater use of direct management and reduce reliance on reputation systems, connected devices and the like.
- Relatedly, factors of production are more likely to be integrated into the firm.

Technological decisions may also be affected:

- To the extent that the benefits of interoperability increase with the extent of information exchange, firms may invest less in interoperable systems.
- To the extent that IT upgrades may be cost-effective only if combined with more data to process, upgrades may be made less frequently.
- Both of these either lead to or are correlated with less experimentation and innovation.

And product decisions may be affected. For example:

- Firms may extend less credit.
- Use of advertising-based revenue sources may be curtailed.
- Even marginal product innovations may be reduced if they trigger new notice and consent obligations.
- Etc.

While any or all of these outcomes are likely to correlate with “stronger” data regulation requirements, it is also worth noting that some of them may correlate more with *uncertain* requirements than with stronger requirements. Thus, one important variable to address in assessing the effect of data regulation regimes on firm structure and behavior is the uncertainty of the relevant laws.

This uncertainty can arise in at least four primary ways:

- 1) the law itself may be ambiguous;
- 2) enforcement of even well-defined laws may be or seem arbitrary;
- 3) the relevant laws may be expected to change in unknown ways and in a relatively short timeframe; and
- 4) there may be overlapping legal regimes with either uncertain or unknown choice of law rules, supremacy rules, or the like.

### **Timing and ambiguity of data access constraints**

One thing that is noteworthy, and perhaps worth trying to explore in this project, is the timing of regulation-responsive business decisions. A related issue is the mechanism by which ambiguous rules, guidance and enforcement decisions are internalized by corporate actors. An important objective of this project is the identification of the practical consequences of regulatory ambiguity.

Take the FTC’s push for “privacy by design,” for example. Privacy by design is not “law” in any strict sense; rather, it is a “best practice,” identified by the FTC in a couple of reports issued by the agency that have no force of law. As the FTC articulates it, privacy by design means that “[c]ompanies should promote consumer privacy throughout their organizations and at every stage of the development of their products and services.”<sup>38</sup> Note at the outset that the FTC contemplates that implementation of the principle will entail “procedural safeguards aimed at integrating the substantive principles into a company’s everyday business operations.”<sup>39</sup> The report doesn’t contain much further guidance regarding what that phrase means, other than to nominally identify the “substantive principles” at issue. But it is clear that the FTC intends for its rules to alter business behaviors beyond the mere binary decision whether to collect data or not.

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<sup>38</sup> FTC, Protecting Consumer Privacy in an Era of Rapid Change (2012) at 22.

<sup>39</sup> *Id.* at 23.

What is not clear is, for example, whether the FTC intends its guidance to affect how a 16 year old developer in his parents' garage designs his software. One might assume that such an effect isn't expected: Most 16 year old developers don't read FTC privacy reports or consent decrees. But, as Randy Picker points out,

[i]t seems clear that the FTC hopes that actual app developers will sit down and read the document and make product design choices based on the document. I assume that most teenage developers don't start writing their mobile app by reading the FTC Mobile App report, but if they did, they might easily conclude that the FTC had imposed on them a legal obligation to develop their apps with built with the principle of privacy-by-design.... [T]he FTC hopes to bake privacy-by-design into industry development practices. It is attempting to do that without promulgating actual rules that would comply with the procedural and substantive statutory standards for rule-making. And in documents like the FTC's Mobile Apps report, it is doing that in a way that seems like that can't possibly be transparent to the FTC's target audience of developers.<sup>40</sup>

Do such pronouncements, even though they lack actual legal weight, nevertheless affect business conduct? Do they do so in expected ways, at expected stages of development, and with any sort of identifiable consistency? On the one hand, the fact that such "non-law law" and "non-rule rules" do likely affect behavior complicates this exercise. But on the other hand, it presents the opportunity to identify just how such regulatory sleights of hand actually operate, and to identify what may be their unexpectedly far-reaching consequences.

### **Defining "optimality"**

Identifying the ways that data regulations induce firms to depart from their "optimal" structures and behaviors requires defining "optimal" in the first place. This presents a complicated task.

Take a company like Uber, for example. For Uber and its users data does not substitute for cash, as it arguably does in the case of a company like Google. But even in cases where shared data doesn't subsidize those who shared it, the benefits to them (and others) of the platform's use of their data are manifest. With Uber, riders benefit from sharing their location data with the platform by having a convenient and readily accessible means of transportation. Drivers benefit from the ability to reduce the transaction costs of finding riders and by having a secure payment mechanism. And the platform itself benefits from the attendant expansion of its platform (and its profits).

In order to maximize the value of the platform, Uber must also facilitate trust between drivers and riders. Thus, Uber created the rating system which allows riders to evaluate drivers and vice versa. Similar trust mechanisms are part of many virtual multi-sided

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<sup>40</sup> Randal C. Picker, *Unjustified By Design: Unfairness and the FTC's Regulation of Privacy and Data Security*, Working Paper (May 13, 2011), available at [http://www.masonlec.org/site/rte\\_uploads/files/PickerGMUDraft.pdf](http://www.masonlec.org/site/rte_uploads/files/PickerGMUDraft.pdf).

platforms, like Amazon and eBay. The rules the platform establishes regarding the when, what, and with whom information is shared are important to maximizing the platform's value. Not surprisingly, such rules are frequently in flux, as new opportunities are explored and as existing data needs are refined.

But in Uber's case, these (and other) types of data have more extensive effects. Among other things, they facilitate Uber's ability to contract with drivers as independent contractors instead of workers. They let Uber efficiently allocate resources according to instantaneous supply and demand feedback. They help the company to make decisions about geographic expansion. And they enable it to operate at much larger scale by facilitating its operation without capital investment in cars, dispatchers and the like. The data used by Uber is valuable only in the context of the organizational structures that make effective use of it, and those organizational structures may be valuable only when coupled with the data technology that led to them.

Similar sorts of claims (and, of course, with much greater specificity) can be made about the "ideal" data-driven organizational and operational attributes of other New Economy companies, as well.

The project will identify the core, salient, data-driven attributes of these companies, and then discuss the observed deviations from these "optimal" business practices and structures, and identify how and why privacy and/or data regulations may influence these deviations. This section will include qualitative analysis based on new institutional economics, the economics of information, the economics of regulation and related disciplines.

For example, although typically better able to bear the costs of legal and regulatory compliance, even large, well-established firms may defensively structure themselves to avoid rent-seeking behavior. This is because firms that grow to a sufficient size also may become sitting ducks, so to speak, subject to opportunistic agents of the state. Subject to the sunk costs of large capital investments, such firms will develop institutional procedures, the aim of which is to mitigate the costs of opportunistic regulators — for instance specialized investment policies, quality control, and procedures intended to avoid government's ability to "opportunistically expropriat[e]... sunk investments." There is valid debate over whether such structures are "efficient," given a particular institutional environment.<sup>41</sup> But if such structures are costly and wouldn't exist in a different, readily achievable (or even recently extant) regime, it seems fair to identify them as deviations rather than optimal adjustments. The project will identify common structures such as these that are preemptive or reactive responses to data regulation.

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<sup>41</sup> See Demsetz.

## **IDENTIFYING AND MEASURING THE SOURCES OF DATA REGULATION IN THE NEW ECONOMY: SOME FURTHER THOUGHTS ABOUT THE SCOPE AND APPROACH OF THIS PROJECT**

To the extent that this dynamic exists (and is observable) in the context of data regulation, different types of regulation will have different effects. Understanding the more nuanced implications of data regulations requires understanding the basic nature of these regulations, the areas of business they affect, the *ex ante* requirements they impose, the possible *ex post* penalties and/or obligations they may entail, the degree of certainty with which the rules are written and enforced, and the interactions among overlapping sources of regulation.

Again, thinking of burgeoning platform models, such businesses that effectively facilitate other actors — remarkably heterogeneous and far-flung actors — to meet and transact business are potentially open to law in a large number of jurisdiction. This is, of course, not new, as e-commerce and other web-based businesses have been struggling with this issue for some time. Nevertheless, the issue is particularly salient for data regulations in the platform context. These platforms actively encourage third-parties to engage in commercial activity through their services — activity that is often of a personal nature (like driving a car, or cleaning a home). In order to increase participation, these businesses offer varying degrees of assurance regarding the identity and trustworthiness of the different trading partners.

Thus these businesses, utilizing data as a key part of their business models, are subject to constraints imposed by several sources of law, as well as various subtleties relating to the relatively novel relationships that emerge on these platforms. Contractual duties and common law responsibilities form the fundamental baseline of regulation for businesses operating in this space. On top of that, most US states impose data breach notification duties. Privacy regulation has both a common law (e.g., privacy torts) and a state-level statutory component, including broader consumer protection laws. The federal government, through FTC Act Section 5, other generally-applicable privacy laws (e.g., CAN-SPAM and COPPA), and sector-specific regulations (e.g., HIPAA), imposes additional layers of consumer protection regulation. And, finally, there are multiple, additional obligations for firms that do business outside of the US.<sup>42</sup>

The responsibilities under these legal regimes may sometimes be unclear, burdensome, or even contradictory. For instance, states impose diverse requirements for data breach notification in terms of both timing and form. The US is largely an opt-out regime (for now, but decreasingly so), while the EU is opt-in. Sector-specific regulations apply only to firms operating in those sectors, but debates continue about whether to apply similar regulatory schemes to companies even when they aren't *technically* credit agencies, ISPs, health care

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<sup>42</sup> The consequences of foreign data regulation are particularly salient in light of the ongoing uncertainty arising from the ECJ's *Schrems* decision, and the possible breakdown of the US-EU Safe Harbor, as well as the generally greater degree of regulation under the EU's Data Protection Directive.

providers, or other companies that are clearly regulated under such laws. While the FTC has broad consumer protection authority under Section 5 of the FTC Act, other agencies — NHTSA, for example — often claim concurrent consumer protection authority. In a digital world (and even more so in an Internet of Things world), it is unclear who does or should have the final regulatory say over, for example, medical devices that connect to smartphones (the FDA, HHS, FCC or FTC?), auto manufacturers using sensors to collect location data for safety (NHTSA or FTC?), or drone technology (FAA, NTIA or FTC?).

Penalties also differ greatly depending on the source of law. Civil remedies can attach to violations of common law duties or contractual rights, fines may be imposed for violations of statutes or consent decrees, and criminal penalties may be imposed under some laws.

On top of the complexities created by multiple, overlapping obligations, what constitutes a violation of many of these laws, whether and how they will be enforced, and what penalties or remedies will be imposed are inconsistent, at best. FTC consent decrees are the source of much of the “law” on remedies for privacy or data security problems in the United States. While FTC consent decrees often track the terms of the agency’s Safeguards Rule under Graham-Leach-Bliley, they also often diverge from each other — and not in consistent fashion, and not in predictable ways correlated to the underlying characteristics of the firm, data types, injured parties or other relevant criteria at issue in each case.

The upshot of all of this is that identifying the salient laws and the salient characteristics of those laws that may affect firm conduct (or may be expected by managers to affect the firms they manage) is complicated and uncertain. In order to identify correlations between specific attributes of governing law and the responses by regulated firms, the project will need to create a taxonomy of data regulations and a metric of some sort for identifying and quantifying the relative contributions of each provision of each governing law to observed behavior, accounting for the uncertainties of each provision’s definition, enforcement, penalties/remedies, and the like.

## **CONCLUDING THOUGHTS ON THE PROJECT’S SCOPE AND APPROACH**

As we move forward into the twenty-first century, it is critical to develop a body of knowledge surrounding the effects of data regulation on the decision-making of firms, particularly in their choice of business models and forms of governance. This project, therefore, will conduct a review of the range of business types and organizational forms from the modern economy, and examine the relative sensitivity of each to different sorts of data regulations. This will entail a discussion of a significant (but likely not exhaustive) variety of companies, such as: on-demand economy companies like Uber, payment card companies like Square, data collection & analytics companies like Nomi, mobile providers like Verizon, online advertising and social media companies like Google and Facebook, among others. The discussion will lay out a taxonomy and identify important variables, describing the collection and uses of data they incorporate, the business model types they employ, the organizational structures they adopt, and the like.

The project will then turn to a quantitative assessment of the effect of privacy/data regulations on these businesses. In basic outline, I will exploit differences in regulatory regimes and business practices/organization between countries/states and across time to run a series of difference-in-difference regressions to identify the most significant regulatory variables and their effects. In particular, I will run regressions utilizing industry and firm characteristics including, but not limited to, variables comprising: “technology implementation characteristics,” “financial structure characteristics,” “liability structure characteristics,” and “product and geographic market characteristics.” In order to identify which variables will, or might, matter, I will first look at a number of case studies of some of the biggest data breaches to see what actions firms took after these events to restructure different aspects of their organizations.

Additional firm characteristics will be used as control variables. Other dependent variables in the regression may include breach (including size, timing, etc.), year and state fixed effects, a dummy variable for whether or not a breach had occurred in that industry or with a competitor before this company’s breach occurred, etc. The aim of this analysis is to determine or shed light on how firms react or modify their firm structure, i.e. changes in the dependent variables, in reaction to a breach to prevent recurrence of a breach. I will use existing data sets comprising privacy and data regulations, and construct my own data set comprising the companies, using the identified variables as described above.

While the various complications may make quantification difficult or impossible, they shouldn’t entirely obscure the extent to which legal regimes overall, and specific provisions in particular, induce deviations from the optimal. At an aggregate level, we should be able to assess the relative optimality of legal regimes by the extent to which they enable or constrain experimentation. More specifically, all else equal it seems appropriate to assume that decisions that are made to avoid or mitigate legal rules entail deviations from the optimal, and, with the right tools, it should be possible to identify a sample of organizational and business model decisions that are made in response to regulatory pressures, rather than competitive ones. Further, it should be possible to observe firm characteristics, and thus to infer decisions regarding those characteristics, before and after particular legal rules changes or enforcement actions, and perhaps even more fruitful to observe such decisions before and after highly publicized breaches.<sup>43</sup> Qualitatively, however, the paper will identify the dynamics of the interactions between data regulation and firm behavior and organization, which should itself be a useful contribution.

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<sup>43</sup> Cf. Eric Helland & Jonathan Klick, *The Market Impact of Privacy Breaches*, Working Paper (Dec. 2, 2012).