UCSD UNDERGRADUATE LAW REVIEW

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Growth and Regulation of Aftermarket Sales in the Software-Enabled Durable Goods Market

ABSTRACT. Software advances allow for durable goods producers to extract money from consumers after purchase. Traditionally, durable goods are a one-time large purchase. By attempting to expand durable goods transactions into the aftermarket, sellers are making potentially drastic changes to consumer costs for these goods, and expect hefty profits from the move. Sellers create aftermarket transactions in two ways: subscriptions and repairs, and this article argues that these areas should be regulated in new ways given advances in software. First, subscriptions on software-enabled durable goods should be regulated along the lines of the Restore Online Shoppers Confidence Act with special prohibitions for explicit removals of service (instances where companies use software to paywall functionality). Right to repair (RTR) is an issue in the area of durable goods transactions where sellers use software to monopolize their control over aftermarket sales. This article recommends it should be regulated along the proposals of RTR groups, which aim to increase competition between independent repair shops and licensed/seller associated repair. By regulating these areas, the FTC can reduce costs for consumers, both by increasing seller competition and by prohibiting unfair charges.

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INTRODUCTION

The average American consumer pays $237 per month on subscriptions, which is 197% more than American consumers *think* they are paying.[1] These relatively hefty and unexpected fees are due to two aspects of the subscription business—the industry's massive growth in the past decade, and the subscription billing system, which is designed for passive payment. The latter contributes to a situation that we've likely all been in—we forget to cancel a free trial, we stop using our subscription but still pay for it, or we are unaware that our subscription service has upped their prices. In these scenarios, the convenience of an automated and digitized service negatively impacts the consumer. Though these services are convenient to consumers when they are desired, their drawback is in their requirement for the consumer to reject the transaction when they don't want it (as opposed to affirming it when they do), and this can result in overcharging consumers. This particular business interaction is called negative option marketing (NOM), which is defined by the FTC (Federal Trade Commission) as "a category of commercial transactions in which sellers interpret a customer's failure to take an affirmative action, either to reject an offer or cancel an agreement, as assent to be charged for goods or services."[2] Negative option marketing is highly regulated by the FTC, and businesses who sell under these transactions are required to follow strict guidelines of disclosure, obtaining informed consent, and offering easy cancellation.[3] These rules are intended to reduce the instances of customers paying for more than they think they are, and to increase fair competition between service providers. When service providers have standards that are clear and enforced, it allows for them to compete on their merits.

However, the growth of the subscription service industry, the other cause of the increase in subscription fees, is not quite as easy to regulate. Not only is it predicted that prices and prevalence will increase in industries which it currently is used in,[4] but

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1 Jonathan Grieg, *Average consumer spending $273 per month on subscription services: report*, ZDNet (2021), https://www.zdnet.com/article/average-consumer-spending-273-per-month-on-subscription-services-report/.

2 *Enforcement Policy Statement Regarding Negative Option Marketing*, Fed. Trade Comm'n (2021), https://www.ftc.gov/system/files/documents/public_statements/1598063/negative_option_policy_statement-10-22-2021-tobureau.pdf.

3 15 U.S.C. § 8401.

4 Heather Long and Andrew Van Dam, *Everything's becoming a subscription, and the pandemic is partly to blame*, The Washington Post (2021), https://www.washingtonpost.com/business/2021/06/01/subscription-boom-pandemic/.

subscriptions are also beginning to breach new industries. This is seen in the novel and largely unregulated software-equipt durable goods industry. Cars, tractors, appliances, and other large machinery are increasingly enabled with advanced software that allows producers to extract money from consumers after purchase. Current estimates show that this will become a large source of revenue for durable goods producers- Stellantis, the parent company of Jeep, Dodge, and Chrysler, said that it expects to generate $22.5 billion from software and subscription sales by 2030,[5] and Tesla already has multiple subscription packages available for its customers, which may exceed their profits from hardware[6]- and that's just the auto industry. This money is made through removal of service (ROS) on certain features through a software paywall on a mechanical feature. This can be a single time or recurring fee, and therefore can sometimes be defined and regulated as negative option marketing.[7] Advances in software also allow producers to monopolize service repairs, as it lets them withhold licensing and diagnostic information from independent repair shops. Similar to negative option marketing, these practices can result in consumers paying more for their product then they originally intended, in this case with hiked up repair prices as a result of limited repair competition, and fees to unlock a product's functionality. Negative option marketing is regulated for this reason, and because the software enabled durable goods market has similar issues, it should follow similar regulations. Ideally, the regulation of the software-equipt durable goods market would come purely from the market and not require any government intervention, however, government regulation is required to make this market competitive. This is because consumers need transparency from sellers about fees and repair costs in order to make decisions about what to buy, and without that transparency, the sellers do not have to compete based on these features, despite their importance to the consumer. Therefore, this market should be regulated by the FTC, which aims to increase competition between businesses both in the

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5 Michael Wayland, *Automaker Stellantis plans to generate $22.5 billion in new software revenue by 2030*, CNBC (2021), https://www.cnbc.com/2021/12/07/stellantis-plans-to-generate-22point5-billion-in-new-software-revenue-by-2030.html.

6 Fred Lambert, *Tesla (TSLA) could make more money from software subscription than hardware, says analyst*, Electrek (2021), https://electrek.co/2021/07/20/tesla-tsla-could-make-more-money-from-software-subscription-than-hardware/.

7 Aaron Gordon, *Car Companies Want You to Keep Paying For Features You Already Have*, Vice (2021), https://www.vice.com/en/article/epxzya/car-companies-want-you-to-keep-paying-for-features-you-already-have.

primary and aftermarket. The similarities between negative option marketing and RTR/ROS allow negative option marketing regulations to provide a framework for RTR/ROS while also adapting industry specific guidelines.

I. NEGATIVE OPTION MARKETING

A. Introduction

Negative option marketing is a term that most consumers are unfamiliar with—it is most easily defined as a subscription plan, but it may still definitionally include other less-used payment plans. Negative option marketing has many benefits for sellers—it is a reliable form of revenue that gives sellers increased stability during all times of the year and phases of the market. It also allows for sellers of physical goods to stock their wares with more accuracy, since they know long before orders will be shipped out that they are needed. This in turn helps with customer satisfaction, because it reduces the chance that there will be supply shortages, and shipping in advance can give consumers more reliable and seemingly speedy delivery.[8]

Consumers benefit when the good they have a subscription to is one that they need regularly, so they save time by not having to place orders at regular intervals. However, when it comes to pricey subscriptions or services which are less suited to recurring use, consumers can end up accidentally overpaying for services. Before the FTC enforcement, which required clear disclosure of subscription costs on invoices, customers sometimes ended up paying for subscriptions in bundles with other goods without being aware that they were charged for it.[9] Many consumers also forget about services that they subscribed to, especially in free-to-pay negative option marketing, where they redeemed a free trial to use a service once and then forgot about it until they were charged at the end of the period. Ultimately, negative option marketing requires diligence from the consumer that makes informed consent a very important part of the transaction.

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[8] *Negative Options: A Report by the staff of the FTC's Division of Enforcement*, Fed. Trade Comm'n (2009), https://www.ftc.gov/sites/default/files/documents/reports/negative-options-federal-trade-commission-workshop-analyzing-negative-option-marketing-report-staff/p064202negativeoptionreport.pdf

[9] 15 U.S.C. § 8401.

B. Current Regulation And Enforcement

Section 5 of the FTC act prohibits "unfair or deceptive acts or practices" and this broad statement is the regulatory basis behind the Restore Online Shoppers Confidence Act (ROSCA), a consumer protection act passed in 2010 that requires disclosure, informed consent, and easy cancellation in any instance of online negative option marketing.[10] ROSCA's specific regulations are as follows "It shall be unlawful for any person to charge or attempt to charge any consumer for any goods or services sold in a transaction effected on the Internet through a negative option feature (as defined in the Federal Trade Commission's Telemarketing Sales Rule in part 310 of title 16, Code of Federal Regulations), unless the person

1. provides text that clearly and conspicuously discloses all material terms of the transaction before obtaining the consumer's billing information;
2. obtains a consumer's express informed consent before charging the consumer's credit card, debit card, bank account, or other financial account for products or services through such transaction; and
3. provides simple mechanisms for a consumer to stop recurring charges from being placed on the consumer's credit card, debit card, bank account, or other financial account."[10] The two notable standards in the pre-transaction regulations are
    a. the clear and conspicuous standard for disclosure, which, adapted for the internet means that there are certain font and visibility guidelines to ensure that the disclosure is apparent to the consumer, and
    b. informed consent, meaning that the consumer must assent to the transaction through some affirmative action, after reading the clear and conspicuous disclosure. Cancellation is the third aspect of ROSCA's regulations, which means companies must provide "simple mechanisms for a consumer to stop recurring charges from being placed on the consumer's credit card, debit card, bank account, or other financial account."

ROSCA has been the basis for the FTC's enforcement of negative option marketing—on October 29, 2021 the FTC released a statement that detailed their

[10] *Id.*

regulations and promised greater enforcement of ROSCA.[11] This can be seen in the cases that the FTC has brought against multiple companies, notably ABC Mouse, which paid a $10 million settlement for lack of clear and conspicuous disclosure.[12] ABC Mouse failed to disclose that its $59.95 yearly membership would automatically renew, had a cancellation process that required the customer to navigate through 6 to 9 different web screens, and in some cases billed the customers after cancellation. Similarly, *FTC vs. Remote Response* was a case in which consumer's efforts to cancel their subscriptions were thwarted by the company, Remote Response, amid additional false advertising charges.[13] These cases are representative of most in the FTC's current enforcement—companies that attempt to impede cancellation and are misleading in their terms (or simply fail to disclose them) are the primary targets.

ROSCA was brought about by the digitization of payment; subscription plans existed before the internet, and began in the 1600s, brought about by book and newspaper publishers. However, digital marketing and payment has changed how consumers interact with the companies that they purchase subscriptions from dramatically, and has lost consumer confidence. This new transaction type made it easy for companies to put in hidden fees, change prices after purchase, and sell data to third party companies. Congress first passed ROSCA in 2013 to combat these issues, however, the revamped enforcement statement from 2021 shows consumer confidence in online shopping is still a major issue that the FTC would like to combat.[14]

As technology advances, it will impact more and more industries, broadening the area with which the FTC should concern itself with consumer confidence. Online negative option marketing has shown regulation is required to moderate business transactions that occur online, because they require vigilance from consumers that has

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11 *Enforcement Policy Statement Regarding Negative Option Marketing*, Fed. Trade Comm'n (2021), https://www.ftc.gov/system/files/documents/public_statements/1598063/negative_option_policy_statement-10-22-2021-tobureau.pdf.

12 Michelle Singletary, *Learning app ABCmouse pays $10 million to settle FTC complaint it trapped parents in subscription they couldn't cancel*, The Washington Post (2020), https://www.washingtonpost.com/business/2020/09/04/abcmouse-10-million-ftc-settlement/.

13 *FTC Sends Redress Checks to Victims of Remote Response; Bogus Advance-Fee Credit Card Operation Targeted Hispanic Consumers*, Fed. Trade Comm'n (2010), https://www.ftc.gov/news-events/press-releases/2010/09/ftc-sends-redress-checks-victims-remote-response-bogus-advance.

14 *FTC to Ramp up Enforcement against Illegal Dark Patterns that Trick or Trap Consumers into Subscriptions*, Fed. Trade Comm'n (2021), https://www.ftc.gov/news-events/press-releases/2021/10/ftc-ramp-enforcement-against-illegal-dark-patterns-trick-or-trap.

not been required in analog settings. This is increasingly applicable to software enabled durable goods—an industry whose payment plans border and occasionally obtain the definition of negative option marketing. Durable goods are physical goods sold to consumers that are expected to be used for multiple uses and last for years (traditional definitions say 3+ years is an average usage period of a durable good).[15] Common durable goods are appliances, cars, bicycles, and certain electronics. These differ from non-durable goods, which are expected to be used for shorter time periods or single uses. The sale of durable goods differs dramatically in customer expectations from that of a service subscription, because consumers expect that their purchase of the durable good will be a one-time fee, but provide usability long afterwards. However, the usage period of a good is more indicative of how long payment will be extracted after purchase; with subscription services, it is clear (or should be) that the consumer will pay as long as the service should be provided, while with durable goods, repair and usage fees must be paid. Aftermarket expenses have traditionally been a common sense aspect of durable goods (ex: when your dishwasher breaks, you have a repair service fix it). However, as tech becomes integrated into these durable goods, companies can extract more money after sale. A dishwasher that communicates with its producer after sale can require a subscription service to continue running, or require specialized and expensive repairs on the basis of protecting its software.[16] While this seems far off for dishwashers, and likely is, much of this is already a reality in the automotive industry.

III. RIGHT TO REPAIR

The right to repair movement in the US is defined by two demands of pro-RTR groups: the demand for parts, and the demand for information.[17] Right to repair is a unique part of this issue because it is partially regulated. In 2012, Massachusetts passed groundbreaking legislation that forced car manufacturers to release manuals,

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15 *Durable Goods*, U.S. Bureau of Econ. Analysis (2018), https://www.bea.gov/help/glossary/durable-goods.

16 Jared Newman, *How fridge and dishwasher makers restrict repairs—and enable more e-waste*, Fast Company (2021), https://www.fastcompany.com/90670325/home-appliance-makers-right-to-repair-e-waste.

17 *We Have the Right to Repair Everything We Own*, IFixit, https://www.ifixit.com/Right-to-Repair/Intro.

diagnostic information, and parts to the public.[18] However, in the case of tractors, electronics, and electric cars, the right to repair has yet to be instituted. All consumers have the right to attempt to repair and take apart the products that they own, regardless of the product. However, many companies make concerted efforts to limit how effectively this can be done by placing controls over the repair process and lobbying.[19]

A. Apple And Right To Repair

Apple is one such industry leader in preventing its durable goods from being fixed by anyone but them. Since 2007 when the first iPhone was released, Americans have spent $11 billion on repairs on all products as of 2017, showing that Apple has ample incentive to control as much of that revenue as they can.[20] They build their devices with proprietary pentalobe screws which require obscure screwdrivers to be removed, and use excessive amounts of adhesive on batteries in iPads and Macbooks to make them difficult to remove (batteries can be secured with simple screws and other reversible means).[20] Apple also restricts their chip manufacturers from selling the chips to any entity but them. But the most nefarious aspect of Apple's non-competition efforts is their repair shops. One can go to three types of repair shops with a broken Apple product[21]: a Genius Bar, Apple authorized independent repair, or a fully independent repair shop. The Genius Bar is inside of Apple stores, and is most strongly recommended by Apple, who claims that by using official tools and diagnostics they can best repair people's electronics. RTR groups and Apple agree on this point-manufacturers can generally create the best repair tools, and that is why RTR groups would like to expand access to these tools. One can also go to an Apple authorized independent shop, which is the most expensive; they are not, for practical purposes, "authorized" by Apple. All Apple authorized stores ship the repairs they are given to a

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18 Cinnamon Janzer, *What Massachusetts' New Right-to-Repair Law Means for Small Auto Repair Shops*, Next City (2020), https://nextcity.org/urbanist-news/what-massachusetts-new-right-to-repair-law-means-for-small-auto-repair-shop.

19 *Nixing the Fix: An FTC Report to Congress on Repair Restrictions*, Fed. Trade Comm'n (2021), https://www.ftc.gov/system/files/documents/reports/nixing-fix-ftc-report-congress-repair-restrictions/nixing_the_fix_report_final_5521_630pm-508_002.pdf.

20 Joanna Stern, *How the 'Right to Repair' Might Save Your Gadgets—and Save You Money*, The Wall Street Journal (2021), https://www.wsj.com/articles/how-the-right-to-repair-might-save-your-gadgetsand-save-you-money-11630324800.

21 *Id*.

Genius Bar, where they are repaired and the customer pays shipping. Lastly, there are fully independent shops. These shops, given no diagnostic information, parts, or manuals, rely on past deconstruction, self drawn diagrams, and leaks of manuals from Apple to repair the electronics. Apple and other anti-RTR companies argue that releasing diagnostics and manuals will compromise the cybersecurity of their products, but this was debunked by an FTC report[22]- after all, other companies such as Dell release this information and have not had resulting security issues.

Anecdotally, independent shops appear to be much cheaper; a Wall Street Journal writer reported her quote at an independent shop was $450 cheaper than the Genius Bar repair. She also reported that Apple was more inclined to replace larger, and therefore more expensive computer parts, while independent shops did cheaper, localized repairs. Though there is no conclusive evidence to confirm or deny that Genius Bar repairs are more expensive than independent shop repairs, we can infer from Apple's business model why they are able to charge so much for their repairs. When independent, unauthorized shops go into business, they must procure vast knowledge of these products with no assistance from the manufacturer, and buy products to deconstruct and use for parts in their repairs (it is much costlier to buy these products whole than it would be to buy parts if they were available). This limits the repair market significantly, because independent repair shops must overcome incredible barriers to be successful and make reliable repairs. In November of 2021, Apple launched a self-service repair program to be implemented in early 2022, which is intended to certify shops to do out-of-warranty independent repairs with certified parts, but its implementation has yet to be seen.[23] It has already been criticized for excessive requirements and audits, but could be a big win for independent repair shops that meet the standards. This program still allows for Apple to have near total control over the number of Apple repair shops in the US, retaining their power over prices in the aftermarket. By limiting the number of independent shops, they drive up demand

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22 *Nixing the Fix: An FTC Report to Congress on Repair Restrictions*, Fed. Trade Comm'n (2021), https://www.ftc.gov/system/files/documents/reports/nixing-fix-ftc-report-congress-repair-restrictions/nixing_the_fix_report_final_5521_630pm-508_002.pdf.

23 Andrew Heinzman, *Hell Freezes Over: Apple Announces a Self Service Repair Program*, Review Geek (2022), https://www.reviewgeek.com/103437/hell-freezes-over-apple-announces-a-self-service-repair-program/.

and therefore prices, and there is no outside pressure on the pricing of Apple repairs.[24] They are able to set repair prices close to the cost of a new product, which encourages consumers to buy new instead of repairing, causing unnecessary purchases and electronic waste.

B. Appliances And Right To Repair

In the appliance sector of the software-equipt durable goods market, the right to repair issue persists. When repair shops attempt to fix appliances such as fridges or dishwashers that are software enabled, they need access codes to fix existing electronic parts or to install new ones. To obtain these access codes, repairers have to work for companies under warranty—this means that they will work for much lower prices then what they could usually charge, in exchange for diagnostic information and access codes from the manufacturer.[25] If they do not get licensed to do under warranty repairs, which are usually repairs done within a year after purchase, then they will be virtually unable to fix any appliances from the same company that are out of warranty, because they will not know the access code. Producers set low prices for under warranty repairs because consumers rightfully should not have to pay high prices to fix a relatively new product- but it comes at the expense of the repair people, instead of the manufacturers. Producers are able to exploit repair people in this way because of software- they can hold access codes over the heads of repair people, and that combination of letters and numbers stands between repair people and fair wages for their work. Repair people who choose not to get licensed to work under warranty (they often have to pay a fee for licensing) resort to online forums and hacking to fix broken appliances, but it is an unreliable way of doing so.

Intuitively, most repairs should happen well after 1 year of purchase. Home appliances such as fridges and dishwashers are intended to last 5 years or more. And yet, consumer reports show that appliances are much more likely to break within the first 5 years now than 20 or 30 years ago—in 2019, 40% of appliances needed repairs within the first 5 years.[26] Appliance producers maximize this shorter lifespan by trying

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[24] *Nixing the Fix: An FTC Report to Congress on Repair Restrictions*, Fed. Trade Comm'n (2021), https://www.ftc.gov/system/files/documents/reports/nixing-fix-ftc-report-congress-repair-restrictions/nixing_the_fix_report_final_5521_630pm-508_002.pdf.

[25] Jared Newman, *How fridge and dishwasher makers restrict repairs—and enable more e-waste*, Fast Company (2021), https://www.fastcompany.com/90670325/home-appliance-makers-right-to-repair-e-waste.

[26] *Id*.

to reduce the frequency and cost of repairs within the first year, when the warranty is still in effect, and then make it difficult for people to get their appliances repaired after that period. Once the appliances are out of warranty, their access codes cannot be easily found, and the diagnostic information may be inaccessible. These repairs take longer and cost more money- encouraging repair people to do more, cheaper, in warranty repairs, and encouraging consumers to buy new instead of repairing when their appliance is out of warranty.

C. Electronic Waste

Appliance repairs, like Apple repairs, generate enormous waste. 50 million tons of e-waste were generated in 2017, only less than a third of which was recycled.[27] E-waste has a particularly harmful effect on the environment in comparison to other waste, because there are many toxins present in it, such as the acid in batteries. It can also pose security threats, for people who throw away laptops or phones which can be hacked and compromised.[28] The solution to this issue requires recycling and repair. Recycling would help to alleviate the electronic release of toxins into soil, encourage parts resale, and promote mineral harvesting from broken parts. However, consumers should be able to fix their devices at reasonable prices to not have to throw them away in the first place.

IV. REMOVAL OF SERVICE

A. Introduction

Removal of service is a specific practice where producers of software-enabled durable goods use their software to limit the capabilities of the good after purchase, and allow the consumer to restore it for a price. This can fall into traditional negative option marketing, as it sometimes requires a regular fee, in which the consumers's failure to cancel the service is taken as assent to be charged. This is seen in the Toyota remote start key, where users pay $8 a month for their cars enabled with remote start

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[27] Syed Faraz Ahmed, *The Global Cost of Electronic Waste*, The Atlantic (2016), https://www.theatlantic.com/technology/archive/2016/09/the-global-cost-of-electronic-waste/502019/.

[28] *Id.*

capabilities to work from their phone.[29] Other times, however, it is a single time fee, which is not negative option marketing, since the customer assents to the fee directly.

B. Auto Industry

Removal of service is especially prevalent in the auto industry as it moves towards electric vehicles. Developments in tech and environmental science have opened up the large new software market in auto. This is because electrical cars have pioneered central processing units in cars, that both promote greater integration of machine and technology, and allows for software to be a monetized feature of a car. Gas vehicles made within the past 20 years have been run with chips that control individual systems within the car, such as air conditioning or emissions, but do not run to a central processing unit, though their sensor data may be displayed on consoles. The consoles have the ability to control tech based features of the car, such as music and navigation, but have no capacity for updates, because they do not have telematics (electronic communication between the car and the producer). However, as the gas vehicle industry moves towards software and the electrical vehicle industry grows, we will be seeing two things: a greater integration of machine and operating system, i.e. central processing units, and the capacity for car operating systems to upgrade and regularly offer newly developed tech-based features.[30] It is important to differentiate between tech-based and machine-based features. A tech-based feature is any feature which is provided by the operating system that the car runs on. This can be changed by updates made to the system both through the cloud, or a software download made in a shop. A machine-based feature is any feature which is enabled into the vehicle by its physical build, as it is at the time of purchase. The only way machine-based features can be changed or upgraded is by physical mechanical alterations, such as those made in an auto shop. As the auto industry integrates technology into their vehicles, they will argue that these features cannot be separated, that they are intrinsically linked by their central processing unit. In some cases, this may be true. There certainly is a possibility

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[29] Aaron Gordon, *Car Companies Want You to Keep Paying For Features You Already Have*, Vice (2021), https://www.vice.com/en/article/epxzya/car-companies-want-you-to-keep-paying-for-features-you-already-have.

[30] Keith Barry, *Why You Might Need to Subscribe to Get Certain Features on Your Next Car*, Consumer Reports (2021), https://www.consumerreports.org/automotive-industry/why-you-might-need-to-subscribe-to-get-certain-features-on-your-next-car-a6575794430/.

that improvements in operating efficiency would have the capacity to increase the mechanical functionality of a car, such as optimizing battery life. However, without transparency in the industry that elucidates whether these updates have substantive software improvements or if they are price gouging, consumers will have to make difficult and costly decisions about their already costly durable goods. Consumers have traditionally been distanced from the seller after purchase of a gas car, but telematics allow for continued business interactions between the seller and the consumer. This incentivizes sellers to create more goods and services to be sold after the purchase of the durable goods, but with the lack of transparency in the industry, consumers in many cases will not be able to gauge the necessity or value of these products.

In some current examples, producers already offer their consumers a fee to access a paywalled feature of their goods. This is seen with the first example of removal of service-based subscriptions in its field, the $8 a month remote start key FOB on Toyota cars. BMW also offered a free-to-pay subscription where they intended to charge their users $80 a year to use the Apple CarPlay feature on their cars.[31] When cars have the ability to connect to outside technology, it allows for services which are already enabled in the car to be removed and provided at a fee. This issue is especially obtrusive for Tesla users, who have to pay thousands of dollars for their cars to perform at the top of its capability. This is logical for tech based features such as self driving software, which are understandably costly to develop and wouldn't impede the car's usability if they are not used. But Tesla also charges its users for mechanical features, from having their cars accelerate faster to having a longer battery life. Both of these require one-time fees of $2,000-3,000 for a feature that is built into the car that the consumer bought. When purchased, the car will get a "software upgrade," which unlocks the car's ability to drive at the speeds and distance it was already able to. This tactic is expected to be utilized by other car manufacturers. Volvo has been the first to follow suit, charging its electronic car customers for upgrades in horsepower.

This raises important questions about the usage of auto software as the industry integrates more with the tech industry. While there are surely advantages to cars having advanced software, it gives the companies who sell the goods with the software complete control over the consumer after purchase, and a monopoly of service on repairs and upgrades.

When one downloads an operating system on a computer, it generally costs a fee and there is an expectation that they can get updates to the same operating system for free, but pay for a new operating system. The price one pays for the software has

[31] *Id.*

nothing to do with the usability of the physical computer, nor the functionality of the hardware. If anything, the software attempts to maximize your hardware to the fullest extent. This distinction between the machine itself and the software it runs allows for the separate parts to both perform at their fullest capacities. This is not, however, where the auto industry appears to be heading. Because the software is developed by the company who sells the machine, the consumer has only one choice in which software to buy. This is a problem- in the market of operating systems, competition is what encourages sellers to maximize the functionality of the computer their software is being downloaded on, and to not require extraneous fees that would push consumers to their competitors. Therefore, one solution to the issue of removal of service subscriptions could be to introduce competition. This is not currently a viable solution, however. Though it may work for tractors, putting expensive and complicated new electric cars on off-brand software could be dangerous, especially considering that companies like Tesla would likely not cooperate in developing a competitor software. So instead, the industry must be regulated.

V. THE CASE FOR REGULATION

A. Introduction

ROS and RTR are two features of the software-enabled durable goods industry that allow them to monopolize or have abundant control over the aftermarket. These issues allow for producers to overcharge on repairs and mechanical functionality, and limit competition in the repair market. This is similar to the problems that ROSCA was intending to fix, because negative option marketing also attempted to overcharge customers and limit competition. The important distinction between these two markets is that software-equipt durable goods has an aftermarket, while negative option marketing does not. This means that the cancellation aspect of ROSCA does not apply to software-equipped durable goods, however this issue in the application of ROSCA regulations can be solved by applying the same standards of disclosure and informed consent in the primary market and the aftermarket. Another key distinction is that the durable goods industry faces additional challenges in creating a competitive aftermarket in comparison to NOM, because for many features, it should only be the supplier that is developing the services.

B. Removal Of Service Regulation

This can be seen in the regulation of removal of service, which deals with the primary end of the market. While removal of service transactions technically occurs in the aftermarket, since it is after purchase, the period in which sellers could compete in this area is during the initial sale. This is because software like that used to run Tesla cars is not safe to be replaced or substituted out for another software due to its integral role in running the car. Sellers therefore cannot compete on who can make the best software for a Tesla car, because it would be dangerous. Instead, the car is marketed with its software, and if there is a car that does not paywall its features with software as Tesla cars do, then those car companies can compete over that feature before the consumer picks which car to buy. This can apply to any durable good, because manufacturers of appliances and most other large machinery would be the best equipt to make software for their own products; they would have the best knowledge of the specifications, building process, and how to optimize mechanical and technological performance.

This complicates efforts to make this market competitive, since the issue is an aftermarket product where introducing competition would be dangerous. However, with clear and conspicuous disclosure and informed consent, companies that sell the same durable goods can compete against each other on the basis of their software, and to what extent it withholds the machine's capabilities (as opposed to developing competing software for the same machine). While a machine's maximum functionality is arguable, since longevity and safety must be taken into consideration, there is still a clear delineation between software which intends to increase functionality by compensating through software for the negative effects of pushing the machine beyond its intended use, and software which intends to withhold functionality, and therefore does not have to compensate for any negative effects. When this is disclosed, regulations should mimic ROSCA, in that they should "[P]rovide text that clearly and conspicuously discloses all material terms of the transaction before obtaining the consumer's billing information." This means that, if applicable, producers must specify whether the software updates withhold functionality or truly increase it, and what price the consumer will have to pay to get these updates. It is important that these fees are not isolated from the software which necessitates them, there should be a clear link in the terms between the two. Independent review may be necessary in this case to ensure that a software-enabled removal of service is not portrayed as an update which simply increases the efficiency of the car. An update which increases mechanical

efficiency should not have required disclosure, since it is purely a software product, but any and all software paywalls should. This would ensure that consumers know beforehand when they are purchasing a product with features that are being withheld by software, and would allow them to make a better decision between products if the paywall is an important consideration for them. Informed consent should also be required, and as in ROSCA sellers should, "[O]btain a consumer's express informed consent before charging the consumer's credit card, debit card, bank account, or other financial account for products or services through such transactions." This would ensure that even consumers who are indifferent about the software paywalls would know exactly what they mean for the good that they are purchasing, and would have provided their informed consent. Cancellation, as previously mentioned, is not relevant to software enabled durable goods, but together clear and conspicuous disclosure and informed consent can increase competition between brands by forcing them to adapt to consumers' wants regarding software paywalls. These regulations can also decrease overspending on the part of consumers, who, when informed about software paywalls, may choose a different company to purchase their goods from, so there are no fees after purchase.

C. Right To Repair Regulation

Just as regulating removal of service would allow the FTC to increase competition in the primary software-enabled durable goods market, regulating the right to repair would help the FTC to increase competition in the aftermarket. The aftermarket is an important place for the FTC to encourage competition, because there is a large power imbalance between the well resourced dealerships/manufacturers and independent repair shops. Durable goods sellers can restrict the repairability of their products and even manufacture them to break faster (so that they will get portions of the repair money or encourage consumers to buy a new product), both of which negatively impact independent repair shops. These shops must also negotiate with all of the leading manufacturers to be able to repair their goods, each with their own rules and withheld information. The demands of right to repair groups, which want access to information (manuals, diagnostic tools, access codes) and parts for the goods that they are fixing, would level the playing field between big manufacturers and small repair shops. While it is not the job of the producers themselves to ensure that their products can be repaired easily, it is the job of the FTC to ensure that small businesses are able to

conduct their services without the undue anti-competitive influence of large corporations.

The right to repair is in the process of being established for durable goods, with 25 state legislatures considering bills regarding it. Some legislation has already been passed; a landmark bill passed in Massachusetts in 2012 that forced many car makers to release their manuals to the public. However, this bill did not go far enough, as companies such as Tesla were able to circumvent this law by claiming that they did not have any real dealerships; they argued that because they sell their products online only market them in storefronts, that they do not have dealerships in the traditional definition.[32] It also does not cover a broader range of software equipped durable goods, such as appliances and electronics, both of which cause chronic issues for independent services that repair them. If these bills pass and regulate a broader range of durable goods, it could decrease the cost of repairs for consumers, make repairs more available (given that it would likely increase the number of shops), help repairs get faster, and decrease the amount of waste created by broken, unrepaired goods.

[32] Elon Musk, *The Tesla Approach to Distributing and Servicing Cars*, Tesla (2012), https://www.tesla.com/blog/tesla-approach-distributing-and-servicing-cars.