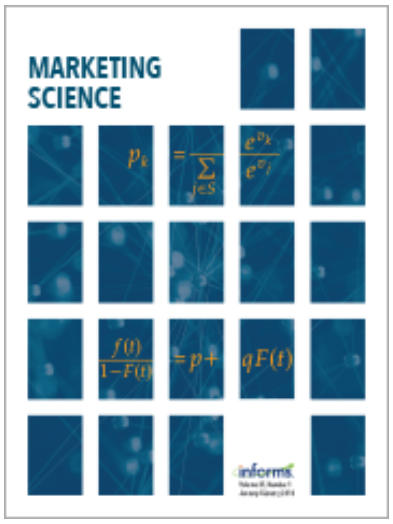

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Consumer Protection on Kickstarter

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Abstract. This article investigates consumer protection on Kickstarter—a popular and sizeable, yet largely unregulated reward-based crowdfunding platform. Specifically, the article focuses on Kickstarter campaigns' use of price advertising claims (PACs) and their failure to honor the promised discounts. Analyses show that between 2009 and 2016, more than 500,000 consumers who backed a wide variety of game or technology campaigns lost on average $45.72 because of broken PAC promises. Whereas 75% of PAC campaigns did not provide the promised discounts, in almost 50% of all cases backers who were promised a discount paid more, not less, than the retail price. In contrast, backers of campaigns that did not promise a discount received larger effective discounts. Analyzing an extensive data set comprising 34,745 Kickstarter campaigns, complete backing histories of more than 400,000 backers, and more than 4 million consumer comments, complaints, and reviews, we show that broken PAC promises pose a substantial problem to consumers, that the problem is persistent across more than 6 years, and that it has not been resolved through self-regulation by market participants thus far.

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Keywords: kickstarter • crowdfunding • consumer protection • self-regulation

1. Introduction

> I FEEL CHEATED and LIED to. They promised retail price no less than $9 after Kickstarter but you can buy them on their website for $5. I thought Kickstarters were getting a special deal.
>
> —M. A., backer of the Brimstone campaign
>
> The project funded with KS backers being promised savings off retail of up to $1500. Yet they are actually selling them right now for $1000 LESS than Kickstarter backers paid 2 years ago!
>
> —J. S., backer of the Scrooser campaign

Reward-based crowdfunding is no longer a niche phenomenon. In the past decade, more than 75 million backers have pledged more than $10 billion on Kickstarter, Indiegogo, and GoFundMe. Yet despite their reach, size, and age, crowdfunding platforms still resemble more of a "wild west" environment (Leamy 2018) than a maturing industry. The broad absence of regulation in such a sizeable market over a rather long period of time provides an interesting research setting for studying consumer protection.

In this article, we investigate consumer protection on Kickstarter, focusing specifically on price advertising claims (PACs). PACs are a form of advertising used in the sale of products whereby current prices are compared with a suggested reference price such as former prices, retail prices, or suggested prices by manufacturers (see Compeau and Grewal 1998 for a review and meta-analysis of the literature). Regulators such as the Federal Trade Commission (FTC) have promulgated specific guidelines to determine the conditions under which a PAC is deceptive and causes economic injury to consumers. For example, if a seller makes a PAC such as "Sold for $25 only today, 50% off the regular retail price," regulation requires an *immediate* price increase after the end of the promotion (for example, Code. Mass. Law, 940 C.M.R. §6.05), an *actual* price increase to the stated amount (for example, FTC 16 C.F.R. Part 233), and *maintenance* of the stated amount for a reasonable time (Better Business Bureau Code of Advertising §9.4).

On Kickstarter, a campaign might ask consumers to pay $70 to receive a product they promise will

later have a price of $140. The key question is as follows: "Do consumers actually get the price advantage that was promised or do they incur economic injury because they did not?" In the example in Figure 1, consumers on Amazon ended up paying a retail price of $59.99 upon product launch—57% less than what was promised ($140) and even 14% less than what consumers on Kickstarter actually paid ($70).

We focus this article on PACs because PAC regulation is widely applied in the United States and around the world (Boddewyn 1982) and because it remains a current topic. For example, broken PAC promises resulting in economic injury of only $36 for the plaintiff recently led courts to grant a class action lawsuit that ended up costing offline retailer J.C. Penney $50 million in a settlement (Spann v. J.C. Penney Corp.; see Stempel 2015). Still, PAC regulation has not been enforced on Kickstarter thus far.

Anecdotal evidence regarding PACs—as in the introductory quotes by angry Kickstarter backers or in the example in Figure 1—points toward potential problems. If the anecdotal evidence is indeed indicative of a *systematic and unresolved consumer protection problem*, it might affect hundreds of thousands of consumers who could incur substantial economic injury from broken PAC promises.

To analyze consumer protection on Kickstarter systematically, we have compiled an extensive data set. We match the detailed data available on Kickstarter with information from various outside sources:

- Hand-collected prices from 1,548 webshops, as well as from Amazon, Steam, and price aggregators (e.g., camelcamelcamel and steamprices),
- Consumer reviews from Amazon and Steam,
- Official consumer complaints as filed with the Federal Bureau of Investigation (FBI), the Federal Trade Commission (FTC), the Better Business Bureau (BBB), the Securities and Exchange Commission (SEC), and the Consumer Financial Protection Bureau (CFPB),
- Supplementary campaign data on nondelivery of rewards from Kickscammed and from news articles retrieved from CrunchBase,
- Survey data from 179 managers of successfully funded Kickstarter campaigns and 31 crowdfunding experts.

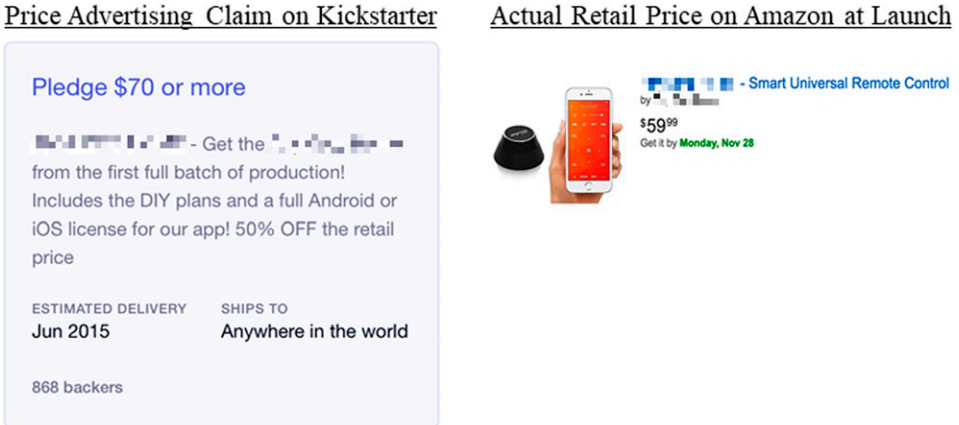
In total, we analyze 34,745 Kickstarter campaigns, complete backing histories of 442,185 backers, 4,279,494 consumer comments, 233,701 campaign updates, 1,704 blog articles from Kickstarter, 18,488 news articles from 500 publishers (e.g., TechCrunch, Wired), 94,569 consumer reviews, and 4,432 pages of consumer complaints filed with official authorities.

We use this data to investigate five questions about consumer protection on Kickstarter: (1) Is there a substantial problem with broken PAC promises on Kickstarter? (2) Do consumers care? (3) Did consumers learn to avoid the problem? (4) Did campaign managers take actions that solved the problem? (5) Did Kickstarter take actions that solved the problem?

Our analyses provide the following main results:

1. There is a substantial problem with broken PAC promises on Kickstarter. More than 75% of consumers who fund campaigns that use PACs (subsequently referred to as PAC campaigns) on Kickstarter do not receive the promised discounts. The problem is widespread and affects more than 500,000 individual backers. Products from PAC campaigns that are later offered to the public on average command a retail price on product launch that is $45.72 lower than promised by the Kickstarter campaign (the average promised price in these campaigns is $137.34). Even worse, in almost 50% of all cases the retail price is even lower than what backers paid on Kickstarter. Different from what PAC campaigns promise, their backers pay more, not less, than the retail price. All else equal, backers of campaigns that did not promise a discount (subsequently referred to as NoPAC campaigns) on average

Figure 1. (Color online) Example for Use of PACs During Kickstarter Campaign and Lower than Promised Actual Retail Price at Product Launch on Amazon



received larger discounts than backers of PAC campaigns. In addition to not receiving the promised discount, consumers who funded campaigns that use (versus do not use) PACs also have a lower likelihood of ever receiving the product, experience longer delivery delays, and receive products of lower objective quality.

2. Consumers care. All else equal, consumers who fund campaigns that use (versus do not use) PACs on Kickstarter are unhappier, as indicated by lower sentiment in backers' comments on the Kickstarter platform, and have greater probability of filing consumer complaints with the FBI, FTC, BBB, SEC, or CFPB. Also, damaged consumers vote with their feet: consumers that did (versus did not) experience broken PAC promises firsthand are significantly less likely to fund another campaign on Kickstarter.

3. Consumers did not learn to avoid the problem. We observe no PAC-specific population-level learning: all else equal, campaigns that use (versus do not use) PACs on Kickstarter do not experience a relative decrease in funding likelihood over time. We also do not observe learning for (expert) subpopulations of Kickstarter backers: a surveyed group of crowdfunding experts does not expect PAC campaigns to perform worse regarding savings over the retail price, delivery likelihood, delivery delay, or product quality. Finally, we observe no individual-level learning: PAC campaign backers who experienced damage firsthand do not show a disproportionate decrease in funding likelihood for future PAC campaigns (versus Kickstarter campaigns in general).

4. Campaign managers did not take actions that solved the problem. Only 13 of our 34,745 Kickstarter campaigns offer voluntary default-contingent signals in the form of money-back guarantees (4 campaigns, 0.01%) or warranties (9 campaigns, 0.03%); 21 campaigns (0.06%) provide default-independent signals such as external certifications via some seal of approval. An industry-wide code of conduct has not been adopted. Hence, there is no discernable sign of self-regulation by campaign managers.

5. Kickstarter did not take measures that solved the problem. Among the seven major policy updates introduced by Kickstarter between the platform's start in 2009 and the end of 2016, five policy updates protect Kickstarter (i.e., the platform), not the consumer. Among the two policy changes that could help improve consumer protection, the potentially most impactful change (introduction of a "risk and challenges" section and prototype requirements for technology products) was introduced in September 2012. The difference-in-difference-in-differences (DDD) analysis reveals no positive effect of this change on damage from PAC (versus NoPAC) campaigns.

In summary, we find no evidence of consumer protection "happening automatically," that is, without regulatory intervention, during the observed six-year period. Instead, the evidence points toward a substantial and persistent problem with broken PAC promises on Kickstarter.

Our study first and foremost contributes to the fast-growing stream of literature on reward-based crowdfunding (see Kuppuswamy and Bayus 2017a for a review) as the first to study consumer protection. We explicitly focus on the consequences (rather than the antecedents) of PAC usage, adding to the sparse crowdfunding literature that investigates phenomena after successful funding. Extant articles have mainly focused on phenomena before successful (or unsuccessful) funding of the campaign (e.g., Agrawal et al. 2015, Chan and Parhankangas 2017, Kuppuswamy and Bayus 2017b, Younkin and Kuppuswamy 2017). Only three articles look at what happens after campaign funding. Mollick (2014) examines delays in delivery, Roma et al. (2017) investigate how crowdfunding performance attracts professional investors, and Viotto da Cruz (2018) researches crowdfunding as an informational mechanism by linking products' crowd feedback to the probability of market releases. In addition, our research highlights the ongoing relevance of PAC regulation (Pechmann and Silk 2013) and speaks more broadly to the widely debated topic of consumer protection in unregulated markets and platform economies (Lagarde 2017, Ohlhausen 2015).

In the remainder of the article, we detail the setting and available data for our empirical study and discuss the variables of interest. We then detail our identification strategy. Next, we present analyses, model-free evidence and results along the five questions outlined above, investigating whether there is a substantial problem and whether it matters to consumers, whether consumers learn to avoid the problem, and whether the problem is mitigated by self-regulation by either campaign managers or the Kickstarter platform. We analyze the economic relevance of our findings and conclude with a summary, discussion of implications, and limitations.

2. Data in the Empirical Study

2.1. Data from Kickstarter and Related Websites

Consumers learn about Kickstarter campaigns via campaign websites that follow a standard format. Campaigns can describe their offerings using text, images, and videos. They specify the price of the "one standard product, unlimited availability" reward and potential other rewards, and inform consumers about the delivery date, shipping options, the identity and experience of the campaign manager, and potential campaign risks. Finally, campaigns must specify their

campaign goal and a campaign end date. If the campaign reaches or surpasses that goal (i.e., the campaign is funded) by the specified date, it receives backers' money and is obliged to deliver the reward. If the campaign does not reach the goal, then Kickstarter will not charge consumers' credit cards. All of this information, as provided by the campaign manager, is publicly available at the start of the campaign and is part of our data.

In our study, we specifically compare Kickstarter campaigns that use versus do not use PACs. To identify the use of PACs, we employ a rule-based text mining approach on reward descriptions—a popular approach to identifying patterns commonly observed in texts (Netzer et al. 2012). In line with Grewal and Compeau (1992), we identify two main types: (1) PACs indicating direct potential savings (e.g., "$10 less than retail price" or "20% off retail") and (2) PACs containing a reference price (e.g., "Retail price will be $100"). Based on this information, we determine the promised price in U.S. dollars. Although other rewards might exist (for example, receiving a special or limited-edition version of the product, early bird rewards, nontangible philanthropic rewards, or multiple products in a multibuy deal), we focus on the price of the most relevant "one standard product, unlimited availability" reward—the only reward type that is available in all campaigns and to all consumers at any time throughout the funding period, thus enabling us to compare all campaigns.

Beyond providing information about the campaign, crowdfunding websites offer a means for backers and the campaign manager to interact. The campaign manager can inform backers with updates about the current status and progress. These comments and updates are public and also part of our data.

Funded campaigns are obliged to deliver the product to backers. However, not all campaigns succeed in their endeavor and either entirely fail to deliver or deliver the product late. Information on (non)delivery is partially available on the Kickstarter platform (e.g., in the comments posted by backers and in the updates by campaign managers). We augment the information on Kickstarter through specialized third-party platforms Kickscammed and CrunchBase to assess the delivery status of funded campaigns. Matching of information from third-party websites and Kickstarter is done using campaign names. Based on this procedure, each campaign is categorized as "delivered" (i.e., delivery has been confirmed), "not delivered" (i.e., failure has been announced), or "not delivered yet" (i.e., no confirmed delivery and no announced failure).

2.2. Data from Amazon and Steam

After successfully funded Kickstarter campaigns deliver the rewards to their backers, they often seek to increase their market and sell to a broader set of consumers (Mollick and Kuppuswamy 2014, Viotto da Cruz 2018). The most relevant retail platforms are Steam for games and Amazon for technology products. We identified 361 campaigns that moved on to sell their products on these platforms. We use Steam and Amazon to gather information about consumer reviews of these products. Specifically, we use the Amazon star ratings and the Steam thumbs up/thumbs down ratings as indicators of product quality. Moreover, we gather retail prices from Amazon and Steam directly, as well as from the websites Steamprices and camelcamelcamel for historical retail prices at launch.

2.3. Data from Other Webshops

Although Amazon and Steam are the most relevant retail platforms for selling Kickstarter games and technology products, many campaigns decide to sell through other, more specialized webshops. To gather pricing data from these pages, we trained four human coders to assess all links provided by campaign managers after the funding period in the campaign's header section to manually gather actual and, if available, historical product prices for the exact product sold in the Kickstarter campaign. In total, we identified 1,548 campaigns that sold their products on webshops other than Amazon and Steam. Each campaign was assessed by two independent coders. A Krippendorf's Alpha of 0.819 indicates an acceptable level of intercoder reliability. In case of disagreements, a final decision was made by a third coder.

2.4. Data from Consumer Protection Entities (FBI, FTC, BBB, SEC, CFPB)

For information about official complaints filed by backers of Kickstarter campaigns, we gathered data (requested directly or under the Freedom of Information Act) from the four most relevant consumer protection entities in the United States: the FTC, the BBB, the SEC, and the CFPB. In addition, we requested data from the FBI's Internet Crime Complaint Center for information on fraud related to Kickstarter. We received 4,432 pages of information, which we manually matched with Kickstarter campaign data using the names of campaigns and their campaign managers. Matching revealed that official complaints for 142 of 11,948 successfully financed campaigns (1.19%) were filed with FBI, FTC, BBB, SEC, or CFPB.

2.5. Data from Campaign Managers and Crowdfunding Experts

We conducted an online survey among 179 managers of successfully funded Kickstarter campaigns, which provided insight into campaign managers' motivations for (not) offering PACs, into the effects of PACs

on campaign operations, and into otherwise unobservable campaign characteristics. Moreover, we surveyed 31 crowdfunding experts (academics and practitioners) via structured, face-to-face interviews about their expectations for PAC versus NoPAC campaigns regarding savings, delivery, delay, and product quality.

3. Measures of Interest and Their Links to Price Advertising Claims (PACs)

3.1. Link Between PACs and Promised Savings and Actual Savings

The focal measure of interest when investigating consumer protection related to PACs is Promised Savings. Current regulation clearly states that not receiving (part of) the promised discount is considered an economic injury to consumers (for example, *Hinojos v. Kohl's Corp., No. 11-55793*). Throughout this article, our use of the term *economic injury* strictly refers to this well-established legal interpretation. In line with this interpretation, we define *Promised Savings* = *Retail Price* / *Promised Price* − 1, measuring the percentage difference between the retail price (found on Amazon, Steam, or other webshops) and the retail price promised to consumers by the Kickstarter campaign. If the promised price was \$140, but the retail price turned out to be \$59.99, then Promised Savings = \$59.99/\$140 − 1 = −0.57. If Promised Savings takes on a negative value, the consumer did not receive the promised discount and incurred economic injury in the legal sense—we thus consider the PAC promise broken. If Promised Savings ≥ 0, then the Kickstarter campaign kept its PAC promise and brought the product to market at the announced retail price. By definition, NoPAC campaigns do not announce a retail price. We thus use the price paid on Kickstarter instead of the promised price to calculate Promised Savings for these campaigns.

In addition, we employ a second, more conservative measure for savings. We define *Actual Savings* = *Retail Price* / *Kickstarter Price* − 1. Whereas Promised Savings lets us see whether backers of PAC campaigns on Kickstarter saved the *promised* amount, Actual Savings reveals whether backers on Kickstarter saved *any* amount at all. If Retail Price is \$59.99 and Kickstarter Price is \$70, then Actual Savings = \$59.99 / \$70 − 1 = −0.14. The negative value means that backers did not realize any savings over the retail price by buying on Kickstarter.

3.2. Link Between PACs and Delivery, Delay, Product Quality

Beyond Promised Savings and Actual Savings, we investigate three additional metrics commonly discussed as campaign outcomes in the crowdfunding literature (Belleflamme et al. 2014, Mollick 2014): Delivery (whether the campaign delivers a product), Delay (time difference between the announced and the actual date of delivery for the product), and Product Quality (consumer ratings for the product). We do not have causal evidence of a link between PAC usage and Delivery, Delay, or Product Quality. We analyze the three metrics because of the suggestive evidence presented below and leave it to future research to investigate the causality of this link further.

It is a well-established notion in the entrepreneurship literature that financial cushions improve new venture performance, because greater cushions allow ventures to absorb small mistakes and unexpected costs more easily (Katz and Gartner 1988, Chrisman et al. 1998). On Kickstarter, PAC campaigns likely have smaller financial cushions than their NoPAC counterparts do. If a campaign decides to include a PAC, the discount it provides to backers reduces the gross margin and thus the financial cushion of the PAC campaign vis-à-vis an otherwise identical NoPAC campaign that does not offer a discount.

For Kickstarter-specific insights on this topic, we surveyed 179 Kickstarter campaign managers.[1] Many (free-form) comments by campaign managers support the notion that PAC campaigns in particular lack a financial cushion. Campaign managers pinpointed three specific consequences. First, campaigns might fail to deliver anything because they cannot afford to complete production. The managers stated, "Discounts reduce the contribution margin," "Costs turned out to be higher," and in consequence the "Discounted price does not cover production costs." If campaigns lack a financial cushion, they could fail to deliver the product altogether. Second, if campaigns do deliver, they might take longer because managers needed to identify ways to save costs: "Switching to overseas production" and "We had to switch suppliers in order to avoid a massive loss" are common comments that link a lack of financial cushion to delays. Finally, reduced margins might force campaigns to compromise on quality. "You can't produce high quality at low costs," one manager stated. One openly admitted, "We had to cut corners"; other managers reported using lower-quality materials or cheaper, lower-quality partners for production.

Suggestive evidence in the entrepreneurship literature and from interviews with Kickstarter campaign managers about a potential effect of PAC usage on Delivery, Delay, and Product Quality lead us to include these measures in our empirical study on consumer protection. Still, we focus on Promised Savings as our focal measure.

3.3. Terminology: Damage and Economic Injury

In the empirical analyses, we compare PAC and NoPAC campaigns on Kickstarter. The comparison of PAC versus NoPAC campaigns does not allow us to make statements about the absolute utility backers derive from supporting Kickstarter campaigns vis-à-vis outside options, such as preorders on Amazon or nonpurchase. It does, however, allow us to compare the relative benefit backers of (unregulated) PAC campaigns derived vis-à-vis Kickstarter backers of NoPAC campaigns. Throughout this article, we use the term *damage* to describe relative differences in Promised Savings and Actual Savings, Delivery, Delay, and Product Quality between PAC and NoPAC campaigns. Whenever we subsequently report damage experienced by PAC backers, we thus refer to *relative* damage in comparison with NoPAC backers.

In contrast, *economic injury* captures not relative but absolute injury as defined by regulators and enforced by courts. We strictly use the term in its legal sense with *Economic Injury = Promised Price – Retail Price* (*Hinojos v. Kohl's Corporation, No. 11-55793*).

4. Identification

The assignment of campaigns to the PAC versus NoPAC conditions is not random. As campaign managers make the decision to (not) use PACs *before* the start of the campaign, we expect that the assignment of PAC versus NoPAC systematically relates to *pre*campaign characteristics. To help identify the effect of PACs in our study, we therefore employ propensity score matching (PSM) based on observable precampaign characteristics. This technique has been widely used in marketing (Gensler et al. 2012) to control for potential endogeneity resulting from the nonrandom assignment of treatments. Propensity scores are calculated as the predicted probability that a campaign uses PACs given its observable and statistically significant precampaign characteristics (Rosenbaum and Rubin 1984).

The key question in using PSM for identification is whether matching on observables captures all relevant factors or whether potentially unobservable factors would alter the results. We will discuss both questions below.

4.1. Observed Precampaign Characteristics

In matching PAC and NoPAC campaigns, we consider 20 known drivers of campaigns' funding success derived from the extant literature. These 20 drivers contain all known precampaign characteristics that have been confirmed to affect campaign success on Kickstarter in three or more published studies. Combined, they capture differences in campaign features, campaign quality, team quality, and campaigns' market environment on launch. For our analyses, we test whether these known drivers of campaign success also affect PAC usage. As shown in Table 1, only 10 of these drivers do, and we subsequently include them in our analyses.

In addition to the 20 known drivers in the literature, we tested another 7 potential drivers, 3 of which indeed affect PAC usage. For example, we observe that if a campaign is started around a major holiday or sales event (where campaign managers encounter more PACs in the environment), the campaign is more likely to use PACs. In contrast, competition at campaign launch, campaign risk, or innovativeness do not affect PAC usage. We summarize all 27 precampaign characteristics in Table 1 and use all significant drivers of PAC usage in the analyses going forward.

4.2. Unobserved Precampaign Characteristics

The list of 27 potential drivers of PAC usage covers campaign features (e.g., campaign goal, subcategory), campaign quality (e.g., header and body videos, endorsements, innovativeness), team quality (e.g., campaigns launched, credibility, incorporated firm) and market environment (e.g., location, competition, sales week). Still, other unobservable confounds might exist that could bias our results. Most prominently, these might relate to expected product quality, team quality (self-assessed team quality, ability to deliver, deliver on time), and financing characteristics (availability of alternative funding options, likelihood to reach funding goal). To address these points and better understand the data-generating process, we conducted a survey of 179 managers of successfully funded Kickstarter campaigns. Of these, 93 used PACs in their campaign and 86 did not.

As detailed in Table 2, we asked campaign managers about product and team quality, as well as financing characteristics to uncover potential unobserved differences between PAC and NoPAC campaigns. Survey results provided no indication that PAC and NoPAC campaigns differ significantly along these dimensions in the prelaunch phase. To minimize adverse effects from potential social desirability bias, we designed the survey so that campaign managers were unaware about the study's focus on PACs when they answered the questions in Table 2.

Moreover, we asked campaign managers about their decision to (not) use PACs in a free-form question. Of these managers, 45% (40 PAC managers and 41 NoPAC managers) did not provide any reason, and another 23% (23 PAC managers and 18 NoPAC managers) considered their choice for or against PACs as the norm ("Common practice on Kickstarter," or "It's not permitted by Kickstarter"). Only about one-third of all surveyed campaign managers

Table 1. 27 Observable Precampaign Characteristics Tested to Affect Usage of Price Advertising Claims in Kickstarter Campaigns in a Logistic Regression

Observable precampaign characteristic		Description	Source	Found to affect PAC usage
Known drivers of campaign success				
Campaign features	Reward count	Total number of different reward types offered	Courtney et al. (2017)	✓
Campaign features	Campaign goal (USD)	Natural logarithm of fundraising goal amount (USD)	Mollick (2014)	✓
Campaign features	Subcategory	Dummy variables capturing all available subcategories on Kickstarter	Mollick (2014)	✓
Campaign quality	Header video	Dummy variable (1 if campaign has an explanatory video, 0 otherwise)	Mollick (2014)	✓
Campaign quality	Body video count	Number of embedded videos in full body description	Colombo et al. (2015)	✓
Campaign quality	Body length (000)	Number of words in full body description	Parhankangas and Renko (2017)	✓
Campaign quality	Endorsements	Dummy variable (1 for campaigns that were endorsed by tech and games websites, 0 otherwise)	Calic and Mosakowski (2016)	✓
Team quality	Campaigns launched	Number of previous technology and games campaigns on Kickstarter started by the campaign manager	Parhankangas and Renko (2017)	✓
Team quality	Credibility	Dummy variable (1 if campaign includes a link to own website, 0 otherwise)	Johnson et al. (2018)	✓
Team quality	Firm	Dummy variable (1 if campaign is initiated by a registered entity, 0 otherwise)	Steigenberger and Wilhelm (2018)	✓
Campaign features	Price (USD)	Price of "one standard product, unlimited availability" reward (USD)	Hu et al. (2015)	
Campaign features	Duration	Number of days for which a campaign accepts funding	Mollick (2014)	
Campaign quality	Spelling mistakes	Dummy variable (1 for campaigns that include a spelling error in full body description, 0 otherwise)	Mollick (2014)	
Campaign quality	Linguistic style	Linguistic cues of full body description (use of numerical terms, passion, authenticity, readability)	Steigenberger and Wilhelm (2018)	
Team quality	Work experience	Number of work-related words in biography	Allison et al. (2017)	
Team quality	Backer experience	Campaign manager's number of previously backed campaigns (not their own) on Kickstarter	Calic and Mosakowski (2016)	
Team quality	Social capital	Dummy variable (1 if campaign includes a links to social media sites, 0 otherwise)	Greenberg and Mollick (2017)	
Team quality	Ethnicity	Ethnicity based on disclosed name of campaign manager	Younkin and Kuppuswamy (2017)	
Team quality	Gender	Dummy variable (1 if campaign is initiated by a woman, 0 otherwise)	Johnson et al. (2018)	
Market environment	Location	Country codes according to the United Nations geoscheme	Agrawal et al. (2015)	
Additional characteristics				
Campaign features	Delivery time	Difference between end of campaign and announced delivery in days	Own analysis	✓
Campaign quality	Worldwide shipping	Dummy variable (1 if campaign offered worldwide shipping, 0 otherwise)	Own analysis	✓
Market environment	Sales week	Dummy variable (1 for campaigns started during a sales week, 0 otherwise)	Own analysis	✓
Campaign quality	Innovativeness	Textual analysis (scaled 0–1) of campaign descriptions regarding innovation topics	Bellstam, Bhagat, and Cookson (2017)	

Table 1. (Continued)

Observable precampaign characteristic		Description	Source	Found to affect PAC usage
Campaign quality	Risk index	Index (scaled 1–9) of 9 input factors reflecting project complexity, information, creator characteristics	Madsen and McMullin (2018)	
Campaign quality	Risk section word count	Number of words in risk section	Own analysis	
Market environment	Competition	Number of concurrent campaigns on Kickstarter	Own analysis	

noted that their choice for or against PAC usage was a deliberate decision. Nineteen percent (19 PAC managers and 15 NoPAC managers) stated that considerations of demand and profitability drove their decision ("To attract more backers," but also "Kickstarter is for early adopters. They are not price sensitive"). The remaining 13% (11 PAC managers and 12 NoPAC managers) provided other reasons, such as concerns about complexity. None of the answers pointed toward additional relevant drivers that are not included in our analyses already.

4.3. Potential Bias from Omitted Variables

The list of observed, considered precampaign characteristics is extensive, and differences between PAC and NoPAC campaigns along these dimensions are small and nonsystematic. In particular, we do not see any indication that PAC campaigns are systematically inferior to NoPAC campaigns, which could support the idea of "PAC usage as a last resort." Moreover, the existence of major differences in unobserved product quality, team quality, or financing characteristics is unlikely, given the answers of 179 campaign managers. Campaign managers' free-form answers also did not point toward additional relevant drivers. Still, it is possible that we do not completely address self-selection and that omitted variables bias our results. We thus investigate the robustness of our results to potential omitted variable bias following three slightly different approaches by Altonji et al. (2005), González and Miguel (2015), and Oster (2019).

Oster's (2019) approach to assess potential omitted variable bias is in essence an extension of the procedure of Altonji et al. (2005) to consider (a) the variation of the estimated coefficient of interest (e.g., PAC campaign) through the inclusion of additional covariates, as well as (b) the associated shift in R^2 to assess how sensitive results are to potentially omitted variables (see Oster (2019) for details and a formal derivation). The key assumption of the approach is that the selection on observable variables is informative about the selection on unobservable ones.

Following this approach, we calculate an estimate of the bias-adjusted treatment effect of using PACs on our main dependent variable of interest, Promised Savings (as detailed in Section 3.1). In Table 3, we report the coefficient for PAC campaign β without any controls (column (1)) and with all precampaign characteristics as control variables (column (2)).[2] In column (3), we report an identified set of parameters on the treatment effect, bounded on one side by the controlled treatment effect $\tilde{\beta}$ and on the other by the bias-adjusted effect $\beta^{*\prime}$ with $\delta = 1$ and $R_{max} = 1.3\tilde{R}$, as proposed by Oster (2019). The identified set excludes zero and the bounds of the identified set are within the confidence interval of $\tilde{\beta}$, suggesting that the results

Table 2. Results of Survey of 179 Kickstarter Campaign Managers Regarding Their Assessment of Own Campaign's Product Quality, Team Quality, and Financing Options Before Campaign Start

Unobservable precampaign characteristic	PAC ($n = 93$)	NoPAC ($n = 86$)	Difference	Scale
Product quality				
Expected quality of main product before campaign start	5.39	5.31	$-0.07^{\text{n.s.}}$	1 (very low) to 7 (very high)
Team quality				
Self-assessed quality of team behind campaign	5.47	5.34	$-0.14^{\text{n.s.}}$	1 (very weak) to 7 (very strong)
Confidence in delivering main product to backers	5.05	5.01	$-0.04^{\text{n.s.}}$	1 (not confident) to 7 (very confident)
Confidence in keeping promised delivery date (rather than deliver late)	3.75	3.81	$0.06^{\text{n.s.}}$	1 (not confident) to 7 (very confident)
Financing				
Confidence in reaching funding goal	5.25	5.38	$0.14^{\text{n.s.}}$	1 (not confident) to 7 (very confident)
Confidence in obtaining funding from other sources in case of not reaching funding goal	4.01	4.31	$0.30^{\text{n.s.}}$	1 (not confident) to 7 (very confident)

$^{\text{n.s.}}p \geq 0.10$; $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table 3. Assessment of Potential Omitted Variable Bias Following Oster (2019), Gonzáles and Miguel (2015), and Altonji, Elder, and Taber (2005)

	(1)	(2)	(3)	(4)	(5)
	Baseline effect $\dot{\beta}$, (SE), [$\dot{R}$]	Controlled effect $\tilde{\beta}$, (SE), [$\tilde{R}$]	Identified set [$\tilde{\beta}$, $\beta^{*\prime}$ (min{1.3$\tilde{R}$, 1}, 1)]	Identified set [R_{max} = 0.5]	δ for β = 0
PAC campaign	–0.374*** (0.023) [0.123]	–0.396*** (0.025) [0.161]	[–0.436, –0.396]	[–1.771, –0.396]	2.442
Robust toward omitted variable bias			✓	✓	✓
Reference			Oster (2019)	Gonzáles and Miguel (2015)	Altonji, Elder, and Taber (2005)

*p < 0.10; **p < 0.05; ***p < 0.01.

from our controlled regressions are robust to omitted variable bias.

The calculation of $\beta^{*\prime}$ is very sensitive to reasonable choices of the maximum R^2. We thus assess the robustness of our analysis using a more conservative value of R_{max} = 0.5 (González and Miguel 2015). The identified set in column (4) again excludes zero.

Finally, we calculate the ratio δ (i.e., the degree of proportionality) of the impact of unobserved variables relative to the observed explanatory variables. The degree of proportionality δ indicates how much stronger selection on unobservables (versus selection on observables) has to be for the coefficient of *PAC campaign* β to equal 0 (Altonji et al. 2005). The value of the δ ratio (column (5)) is well in line with values considered robust in the literature (Manchanda et al. 2015, Krauth 2016) and indicates that any unobserved campaign characteristics would need to be 2.442 times as relevant as *all the observed characteristics combined* to nullify our results (Altonji et al. 2005). In summary, results from all three analyses consistently suggest that our findings are unlikely to be driven by omitted variables.

4.4. Propensity Score Matching (PSM) Procedure

In the subsequent PSM analyses, we apply nearest neighbor matching with caliper, which is preferred when analyzing large samples of untreated observations (NoPAC) relative to the treated group (PAC) (Caliendo and Kopeinig 2008). The method matches each PAC campaign with the NoPAC campaign that has the closest propensity score (Rosenbaum and Rubin 1984). The use of caliper width increases the quality of matching by ensuring that matching occurs only when the absolute difference between the propensity scores of two potentially matched campaigns is reasonably small and less than a predefined caliper distance (ε). In line with the literature, we define the caliper distance as the proportion of the standard deviation of the propensity score (σ_P), calculated as $\varepsilon = 0.25\sigma_P$ (Guo and Fraser 2014). Results are stable to the use of kernel matching as an alternative technique.

Although campaigns show significant differences in precampaign characteristics before use of the PSM procedure, the Hotelling test of equal vector means reveals no significant differences between PAC and NoPAC groups after PSM, indicating successful matching (Cao and Sorescu 2013). We provide details on PSM and Hotelling test results in the online appendix.

5. Results of the Empirical Study

To investigate whether consumer protection "happened automatically" in the observed six-year period during which PAC regulation was not applied to Kickstarter or whether there is a substantial, persistent, and unresolved problem with broken PAC promises on Kickstarter, we investigate five questions: (1) Is there a substantial problem with broken PAC promises on Kickstarter? (2) Do consumers care? (3) Did consumers learn to avoid the problem? (4) Did campaign managers take measures that solved the problem? (5) Did Kickstarter take measures that solved the problem? We subsequently present our analyses, model-free evidence, and results regarding each question.

5.1. Is There a Substantial Problem with Broken PAC Promises on Kickstarter?

5.1.1. Analyses. Our analyses of potentially broken PAC promises focus on Promised Savings as the key measure, which allows us to reliably quantify economic injury. This measure is aligned with current regulation, by which not receiving the full promised discount is considered an injury to consumers (*Hinojos v. Kohl's Corporation, No. 11-55793*). In addition, we report Actual Savings as a second, more conservative measure for savings. Both Promised Savings and Actual Savings directly link to PACs (see Section 3.1 for details).

In addition, we report Delivery, Delay, and Product Quality. As noted in Section 3.2, all three measures are potential indirect sources of damage to backers

that are commonly discussed in the crowdfunding literature (Belleflamme et al. 2014, Mollick 2014). We define *Delivery* = 1 if product has been delivered and 0 otherwise. Among both PAC and NoPAC campaigns, failure to deliver a product is not unusual. We are, however, interested in whether the likelihood of delivery is lower for PAC campaigns versus NoPAC campaigns.

To identify whether a campaign delivered (labeled as known positive) or has announced failure to deliver (known negative), we use text mining on three sources: (1) campaign updates posted on Kickstarter, (2) information from Kickscammed, a public website where users can report crowdfunding campaigns they consider to be scams, and (3) articles on CrunchBase, which provides 18,488 news articles relating to Kickstarter from websites such as TechCrunch, Wired, CNet and Gizmodo. We match information from Kickscammed and CrunchBase to the respective campaigns using the campaign names.

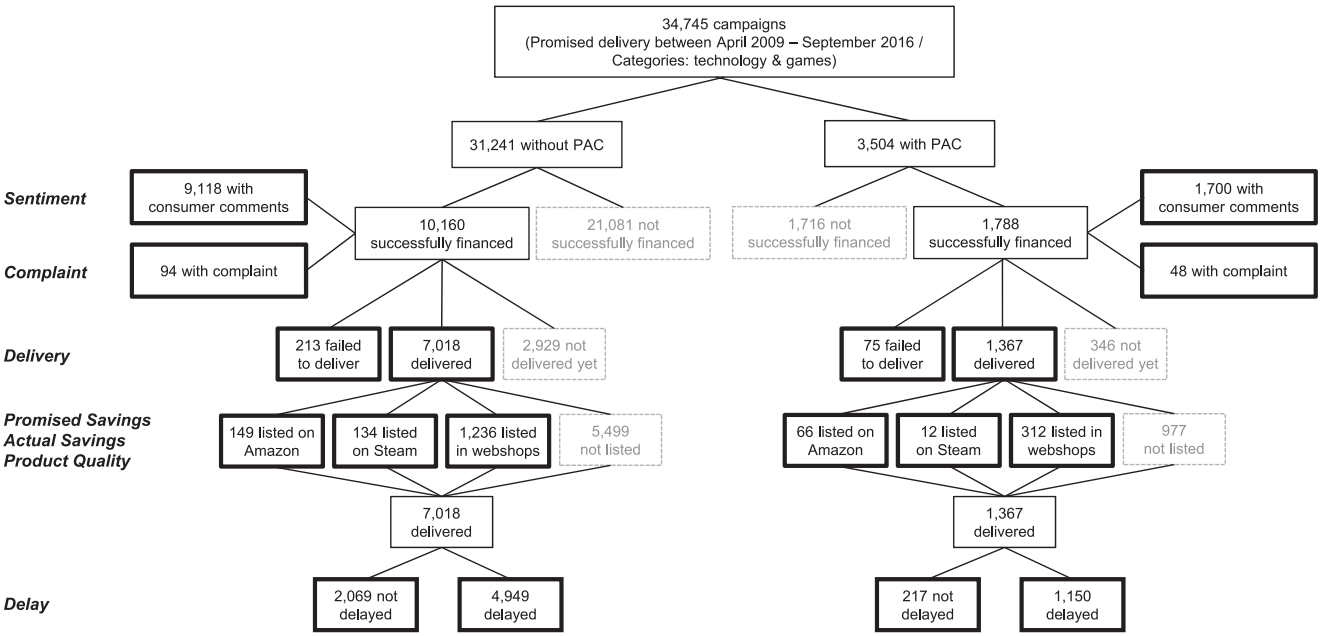
For the classification, we seek to extract information about whether the campaign has started to ship the promised rewards (e.g., "Shipped," or "Delivery started") or has announced failure (e.g., "We failed," or "We stopped work"). If information on successful delivery is available, we define this campaign as delivered (*Delivery* = 1). To circumvent false announcements, we also require at least one backer to confirm the receipt of the product in the comments. If information on failure is available, we define these campaigns as not delivered (*Delivery* = 0). If a campaign has not confirmed delivery and has not announced failure to deliver, we classify the campaign as not delivered yet.

Further, we operationalize *Delay* = min(*Actual Delivery Date* – *Announced Delivery Date*; 0), where delivery delays are measured in days, and early and punctual deliveries are coded as 0. We calculate the delay as the difference between the announced delivery date and the actual date of the shipping announcement (only for campaigns with *Delivery* = 1). As campaign managers announce shipping dates in a month-year format, we calculate delay based on the last day of the month and regard shipping within the announced month as on time (i.e., *Delay* = 0).

We base our measure of Product Quality on reviews from consumers outside the Kickstarter platform. Amazon enables consumers to submit reviews in text form and ratings of products in the form of numerical star ratings (ranging from one to five stars), whereas Steam allows users to submit text reviews and a thumbs-up or thumbs-down recommendation. Average ratings for a product are the average of the number of stars on Amazon and the share of positive recommendations on Steam. We make the rating systems comparable by rescaling the Amazon ratings to a percentage value (= (*Average Star Rating* – 1)/4). We then compare the ratings from PAC and NoPAC campaigns.[3]

The number of observations naturally differs among these five metrics (Figure 2). We are able to observe Promised Savings and Actual Savings for a total of 1,909[4] campaigns (390 PAC campaigns, 20.43%). We observe Product Quality for a total of 361 campaigns (78 PAC campaigns, 21.61%), where the product is sold on either Amazon or Steam on successful completion of the Kickstarter campaign. We observe

Figure 2. Overview of Number of Available Observations for Analyses of Savings, Delivery, Delay, Product Quality, Complaints, and Sentiment (in Bold Boxes)



Delivery for 8,673 campaigns, which either delivered (8,385 campaigns, 96.68%) or officially failed to do so (288 campaigns, 3.32%).[5] We observe Delay for all 8,385 campaigns that delivered.

The following analyses compare PAC campaigns against NoPAC campaigns, rather than against an ideal benchmark. The reason is that Kickstarter backers cannot expect the same experience as buyers in an online store. For example, Mollick (2014) has shown that backers should expect delivery delays when funding campaigns on Kickstarter. Because comparing PAC campaigns' Delay against an ideal benchmark of $Delay = 0$ would be misleading, we use comparable Kickstarter campaigns that do not use PACs (NoPAC) as a more conservative benchmark.

5.1.2. Model-Free Evidence. Model-free evidence on Promised Savings and Actual Savings (Figure 3) reveals that PAC campaigns not only fail to deliver the promised discount in 75.9% of all cases (blue bars to the left of the dotted line, left histogram); in 47.2% of all cases, they even fail to deliver any savings at all.

In comparison, NoPAC campaigns (which by definition do not promise a discount) provide a significantly larger de facto discount to backers on Kickstarter, who pay lower prices than online retail consumers (see Table 4).

In Table 4, we report model-free evidence for all five measures as they differ between NoPAC and PAC campaigns. We observe a significant difference between PAC and NoPAC campaigns across all measures. Promised Savings and Actual Savings are lower, Delivery likelihood is lower, Delay is longer, and Product Quality is lower for PAC (versus NoPAC) campaigns.

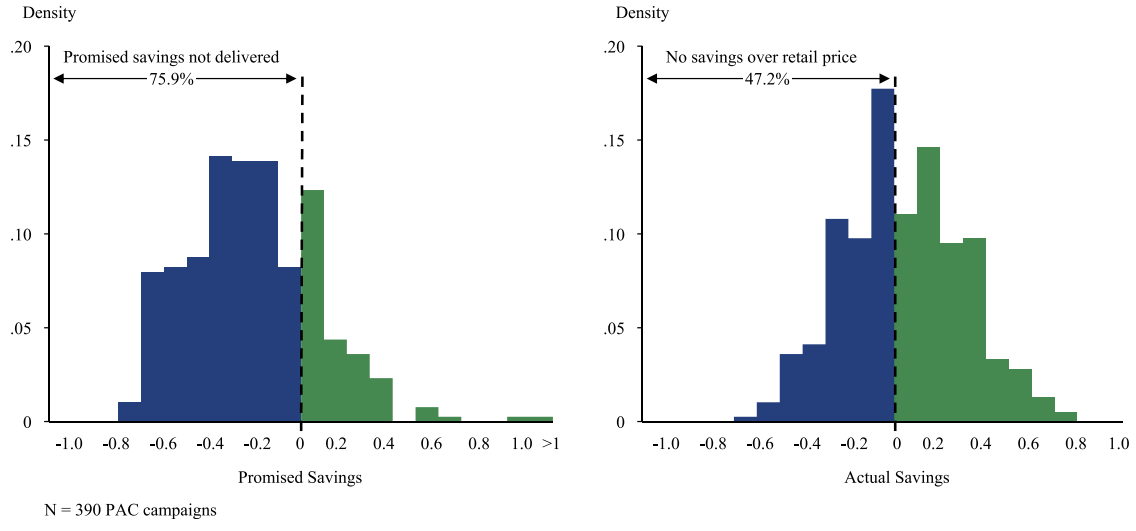
5.1.3. Results. After successful application of PSM (see the online appendix for details), we compare PAC and NoPAC campaigns via a simple t-test for Promised Savings and Actual Savings, Delay, and Product Quality, as well as via χ^2-test for Delivery. Results for all five measures in this causal analysis confirm the model-free evidence: PAC campaigns have lower savings (promised and actual), lower likelihood of ever delivering the product, and longer delays and lower product quality in case of delivery compared with their NoPAC counterparts (Table 5). The size of the effects is comparable to the model-free evidence.

5.2. Do Consumers Care?

5.2.1. Analyses. Crowdfunding research typically assumes that backers are maximizing their personal (financial) surplus (Hu et al. 2015) and are motivated to support campaigns on Kickstarter because of attractive (and attractively priced) rewards (Cholakova and Clarysse 2015). However, backers might also engage in crowdfunding because the process itself provides them with additional utility (e.g., bringing the product to life) over buying via traditional retail (Kuppuswamy and Bayus 2017b, Bitterl and Schreier 2018).

If backers gain a lot of utility from bringing the product to life, then the objectively measurable damage they incur from PAC (versus NoPAC) campaigns shown in Section 5.1 might not be relevant to them. To establish whether consumers care, we analyze whether backers, in particular PAC backers, react negatively when experiencing damage regarding Promised Savings and Actual Savings, Delivery, Delay, and Product Quality firsthand. To this end, we

Figure 3. (Color online) Distribution of Promised and Actual Savings for Campaigns Using Price Advertising Claims (PACs)



Note. Blue bars to the left of the dotted line = unfavorable outcome for the backer.

Table 4. Model-Free Evidence on Damage to Backers of Campaigns Using Price Advertising Claims (PAC) vs. Campaigns Not Using Price Advertising Claims (NoPAC)

Model-free	PAC campaigns	NoPAC campaigns	Difference in means	Observations	Campaigns with less beneficial outcome for consumers
Promised Savings	–0.207	0.168	–0.374***	1,909	PAC
Actual Savings	0.049	0.168	–0.119***	1,909	PAC
Delivery	0.948	0.971	–0.023***	8,673	PAC
Delay	99.227	83.076	16.151***	8,385	PAC
Product Quality	0.709	0.806	–0.097***	361	PAC

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

compare PAC backers that differ regarding the outcome of their first PAC campaign.[6] For the analysis of Promised Savings, for example, we compare backers whose first PAC campaign honored the promised price (no damage) against backers whose first PAC campaign did not and sold the product for less than the promised price at online retailers (damage). If backers care about the five metrics we analyze, then experiencing damage firsthand in any of these dimensions should result in a drop in funding likelihood for future Kickstarter campaigns compared with backers that experienced no damage in that dimension. Our composition of the no-damage control group is conservative, as backers in that group may have experienced other damages that reduce their likelihood to invest in another Kickstarter campaign in the future.

We base our analyses in this section on the complete backing histories of 442,185 backers—a sizeable subset[7] of all backers in Kickstarter's games and technology categories—and employ PSM to find comparable backers[8] that did versus did not experience damage along each of the five measures on their first PAC campaign.

Moreover, we investigate whether the damage experienced by backers of PAC campaigns (with backers of NoPAC campaigns as a reference group) is outweighed by countervailing benefits to these backers. If backers experience (unobserved) additional benefits from supporting campaigns using PACs that are not prevalent in NoPAC campaigns and that outweigh the damage experienced by PAC backers that we documented previously, we should observe that backers' sentiment for PAC campaigns is more positive than or identical to backers' sentiment for NoPAC campaigns. Also, we should expect a lower or identical likelihood of official complaints for PAC versus NoPAC campaigns.

We analyze backer sentiment through backers' comments posted on the campaign website after the end of the funding period. Of 11,948 successfully financed campaigns, 10,818 campaigns (90.54%) received at least one comment. The average number of comments per campaign is 396. We automatically analyzed these comments using Linguistic Inquiry and Word Count (LIWC). Using word counts for a given text, LIWC calculates the proportion of words that match predefined dictionaries for different types, such as positive and negative words. As one of the most popular tools used in social science research to measure emotional expression, the LIWC approach has been applied to a broad range of text categories, including crowdfunding campaign descriptions (Younkin and Kuppuswamy 2017). We base our analysis on the LIWC standardized summary variable of emotional tone, which combines positive and negative sentiment in a single variable scaled from 0 to 1, such that numbers greater than 0.5 suggest a predominantly positive sentiment. We then compare the average sentiment from PAC and NoPAC campaigns.[9]

We further define *Complaint* = 1 if a campaign has received official filing of a consumer complaint (with either FBI, FTC, BBB, SEC, or CFPB) and 0 otherwise.

Table 5. Results of *T*- and χ^2-Tests Analyzing Differences in Damage to Backers Between Campaigns Using Price Advertising Claims (PAC) vs. Campaigns Not Using Price Advertising Claims (NoPAC) after Successful Propensity Score Matching

After PSM	PAC campaigns	NoPAC campaigns	Difference in means	Observations	Campaigns with less beneficial outcome for consumers
Promised Savings	–0.205	0.176	–0.381***	754	PAC
Actual Savings	0.048	0.176	–0.127***	754	PAC
Delivery	0.947	0.972	–0.025***	2,850	PAC
Delay	99.846	84.330	15.516***	2,702	PAC
Product Quality	0.735	0.802	–0.067**	132	PAC

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Table 6. Model-Free Evidence on Reductions in Funding Likelihood for Another Kickstarter Campaign Among Backers That Experienced Damage vs. No Damage in Their First PAC Campaign

Model-free	Drop in funding likelihood for another campaign	Observations
Promised Savings	–4.4%***	182,821
Actual Savings	–12.2%***	191,317
Delivery	–91.3%***	408,571
Delay	–6.7%***	399,778
Product Quality	–29.3%***	87,577

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

We match 4,432 pages of complaints with all 11,948 successfully financed campaigns in our dataset by using names of campaigns and their campaign managers.

5.2.2. Model-Free Evidence. Table 6 shows that backers who experience damage[10] in their first PAC campaign see a (statistically significant) lower likelihood of ever funding another Kickstarter campaign in the games or technology categories when compared against backers who do not experience the same kind of damage.

In Table 7, we further report model-free evidence comparing backers' benefits between PAC and NoPAC campaigns. Model-free evidence suggests that backers of PAC campaigns show significantly lower average sentiment scores (i.e., are more negative in their comments) than backers of NoPAC campaigns.

Complaint rates mirror this finding. In total, we record at least one complaint for 94 NoPAC (0.93% of 10.160 funded NoPAC) and 48 PAC (2.68% of 1.788 funded PAC) campaigns. The likelihood of a PAC campaign backer filing an official complaint is thus substantially greater than for backers of NoPAC campaigns. Notably, we observe no complaints (0.00%) among the 94 PAC campaigns that kept their PAC promises. The relatively low share of campaigns with complaints overall reflects the substantial effort that is required to file such an official complaint (Raval 2016).

5.2.3. Results. Results after successful matching of PAC backers who do (versus do not) experience damage in their first PAC campaign confirm the model-free evidence. In Table 8 we see that damage regarding Promised Savings and Actual Savings, Delivery, Delay, and Product Quality matters to PAC backers. If they experience damage in the respective dimensions, their likelihood of funding another Kickstarter campaign in the games or technology categories drops by up to 90.65%.

We then compare the matched PAC and NoPAC campaigns regarding backer sentiment (t-test) and complaint likelihood (χ^2 test). Results shown in Table 9 mirror the model-free evidence: backers in PAC campaigns show significantly more negative sentiment in their comments on the campaign websites and are 50% more likely to file an official complaint (mean for PAC campaigns is 0.027; mean for NoPAC campaigns is 0.018 after matching).

5.3. Did Consumers Learn to Avoid the Problem?

5.3.1. Analyses. Literature arguing against the explicit regulation of PACs contends that skeptical consumers will learn to discount PACs and thus protect themselves from deception (Urbany et al. 1988, Biswas and Blair 1991, Kaufmann et al. 1994). In markets with high transparency (such as Kickstarter, where all historic transactions and backer comments are public), consumers might learn from past behavior (their own and others') and adapt their behavior and attitudes (Dellarocas 2003). As shown in Section 5.2, damaged consumers learn to avoid Kickstarter campaigns in general—the crucial question is, however, whether they learn to avoid PAC campaigns specifically.

In the following, we distinguish *PAC-specific* learning on three different levels: population (i.e., all consumers learn), subpopulation (i.e., groups such

Table 7. Model-Free Evidence on Backer Sentiment and Likelihood of Official Complaints for Campaigns Using Price Advertising Claims (PAC) vs. Campaigns Not Using Price Advertising Claims (NoPAC)

Model-free	PAC campaigns	NoPAC campaigns	Difference in means	Observations	Campaigns with less beneficial outcome for consumers
Sentiment	0.557	0.598	–0.041***	10,818	PAC
Complaint	0.027	0.009	0.018***	11,948	PAC

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Table 8. Reductions in Funding Likelihood for Another Kickstarter Campaign Among Backers That Experienced Damage vs. No Damage in Their First PAC Campaign; Results After Successful Propensity Score Matching

After PSM	Promised savings	Actual savings	Delivery	Delay	Product quality
	Likelihood of funding another campaign				
Outcome of first PAC campaign					
No damage	0.529	0.528	0.520	0.589	0.660
Damage	0.458	0.475	0.049	0.485	0.507
Drop in funding likelihood	**–13.43%*****	**–10.06%*****	**–90.65%*****	**–17.69%*****	**–23.15%*****
Number of observations	68,400	155,684	17,644	181,210	51,716

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

as the more knowledgeable consumers learn), and individual (i.e., consumers that experienced damage firsthand learn).

- On the population level, PAC-specific learning across all consumers (new and experienced) should be evident in a reduced funding likelihood for PAC campaigns as time progresses because they provide less consumer benefit than NoPAC campaigns.
- On the subpopulation level, we should see more experienced "crowdfunding experts" expecting greater damage from PAC (versus NoPAC) campaigns.
- For individual-level learning, we should see damaged (versus nondamaged) PAC campaign backers to show a decrease in the likelihood of funding another PAC campaign that is larger than the decrease in likelihood of funding another campaign on Kickstarter in general.

For the population-level analysis, we look for a reduction in funding likelihood for PAC campaigns over time. This reduction could be either an absolute reduction in funding likelihood for more recent versus older PAC campaigns (a conservative measure for learning: consumers learn that PAC campaigns are not as good as originally anticipated) or a relative reduction in funding likelihood for recent PAC campaigns compared with recent NoPAC campaigns (where consumers learn that PAC campaigns are less attractive than NoPAC campaigns, akin to a diff-in-diff logic).

In the analysis, we define *Recent Campaign* = 1 if the campaign started between April and September 2016 and 0 if the campaign started in the same time frame in the year before (April to September 2015). Although learning about the economic injury associated with PAC campaigns should occur on a continuous basis given a constant stream of new PAC campaigns, we chose April 2016 as a turning point in our analysis, because it marks the time when the Kickstarter campaign Coolest Cooler failed. Coolest Cooler raised more than $13 million from more than 60,000 backers in 2014, making it one of the most prominent Kickstarter campaigns ever. When the campaign announced it would not deliver a product in April 2016, media coverage was tremendous. Coolest Cooler was a PAC campaign, promising a 38% discount over the retail price. We expect that the highly publicized failure of this PAC campaign added to consumer learning.

To assess population-level learning, we first compare the funding likelihood of more recent PAC campaigns with the funding likelihood of older PAC campaigns. Second, we compare the change in funding likelihood for recent versus older PAC campaigns against the change in funding likelihood for recent versus older NoPAC campaigns.

For the subpopulation-level learning analysis, we surveyed 31 crowdfunding experts (academics and practitioners attending a crowdfunding conference in 2016, each of whom backed on average 6.72 campaigns) via structured, face-to-face interviews. Specifically, we were interested in their expectations for PAC versus NoPAC campaigns regarding savings, delivery, delay, and product quality. We collected their answers on a seven-point Likert scale, such that smaller (greater) numbers signified worse (superior) performance of PAC versus NoPAC campaigns. The scale midpoint, 4, thus signified equal expected performance.

Table 9. Results of *T*- and χ^2-Tests Analyzing Differences in Backer Sentiment and Likelihood of Official Complaints Between Campaigns Using Price Advertising Claims (PAC) vs. Campaigns Not Using Price Advertising Claims (NoPAC)

After PSM	PAC campaigns	NoPAC campaigns	Difference in means	Observations	Campaigns with less beneficial outcome for consumers
Sentiment	0.557	0.586	–0.028***	3,372	PAC
Complaint likelihood	0.027	0.018	0.009*	3,546	PAC

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Table 10. Model-Free Evidence on Average Funding Likelihood for Recent (April to September 2016) vs. Older (April to September 2015) Campaigns Using Price Advertising Claims (PAC) vs. Not Using Price Advertising Claims (NoPAC)

	PAC campaigns		NoPAC campaigns		
Model-free	Older campaigns	Recent campaigns	Older campaigns	Recent campaigns	Observations
Funding likelihood	0.490	0.511	0.295	0.306	8,215

For the individual-level learning analysis, we extended the analysis presented in Table 8 to include the funding likelihood for future PAC campaigns. For individual-level learning about PACs to occur, the drop in funding likelihood for future PAC campaigns between the two groups (damage versus no damage) needs to be larger than the drop in funding likelihood for future Kickstarter campaigns in general.

Regulators typically step in unless there is population-level learning, in order to make sure that all consumers are protected (which is not the case with subpopulation-level learning) and to make sure that consumers are protected before they themselves experience damage (which is not the case if only individual-level learning is prevalent) (Financial Conduct Authority 2017). Still, we subsequently investigate all three levels.

5.3.2. Model-Free Evidence. In Table 10 we report model-free evidence for the funding likelihood of recent and older PAC and NoPAC campaigns. The results show an increase in funding likelihood of PAC campaigns over time, which indicates a lack of PAC-specific consumer learning on the population level. While the increase in funding likelihood for PAC campaigns (0.511 – 0.490 = 0.021) is slightly larger than for NoPAC campaigns (0.306 – 0.295 = 0.012) in the same period, neither of the increases is statistically significant.

As previously reported in Table 6, backers whose first PAC campaign caused damage are less likely to fund another Kickstarter campaign compared with backers whose first campaign caused no damage—indicating that backers care about the damage they experienced firsthand. In Table 11, we present model-free evidence that compares the drops in funding likelihood for Kickstarter campaigns in general versus for PAC campaigns. The drop in funding likelihood for another PAC campaign is never larger than the drop in funding likelihood for Kickstarter campaigns in general. We thus have no indication of PAC-specific individual-level learning from the model-free evidence.

5.3.3. Results. For the population-level analysis, we first compare recent and older PAC campaigns after successful PSM. The probit regression in Table 12 shows that funding likelihood for these campaigns increases over time (positive coefficient for recent campaigns), offering no indication of PAC-specific consumer learning from this analysis.[11]

To compare the relative increase in funding likelihood for PAC campaigns over time with those of NoPAC campaigns, we first apply PSM and then follow the format of a diff-in-diff analysis. Please note that we do not claim that NoPAC campaigns are a perfect control group (after all, the failure of Coolest Cooler may have affected the funding likelihood of NoPAC campaigns as well). Results of the analysis confirm the model-free evidence: the difference in funding likelihood of PAC versus NoPAC campaigns is not significant. If anything, the average funding likelihood of matched PAC campaigns has seen a faster increase (Table 13), which would contradict learning about PACs. We thus cannot observe signs of PAC-specific population-level consumer learning in these analyses.

For the subpopulation-level analysis, we surveyed 31 crowdfunding experts as detailed in Table 14. In line with our previous analyses, we do not find evidence of PAC-specific consumer learning, not even among crowdfunding experts. Experts expect

Table 11. Model-Free Evidence on Reductions in Funding Likelihood for Another Kickstarter Campaign in General vs. Another PAC Campaign Among Backers That Experienced Damage in Their First PAC Campaign

	Drop in funding likelihood for			
Model-free	Another campaign	Another PAC campaign	PAC-specific consumer learning?	Observations
Promised Savings	–4.4%	–0.4%	No	182,821
Actual Savings	–12.2%	–4.3%	No	191,317
Delivery	–91.3%	–89.3%	No	408,571
Delay	–6.7%	3.8%	No	399,778
Product Quality	–29.3%	–11.9%	No	87,577

Note. PAC-specific consumer learning would require the drop in funding likelihood for "Another PAC campaign" to be significantly larger than the drop in funding likelihood for "Another campaign."

Table 12. Population-Level Learning: Results of Probit Regression Analyzing Differences in Funding Likelihood Between Recent (April to September 2016) vs. Older (April to September 2015) PAC Campaigns After Successful PSM

After PSM	Funding success (only PAC campaigns)
Recent campaign	**1.029****
Intercept	34.864
Observations	340
Pseudo *R*-squared	0.031

Note. Year-month fixed effects are included.
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

PAC campaigns to offer greater savings and delivery likelihood. They do not expect differences in delay or product quality between PAC and NoPAC campaigns.

Finally, we analyze individual-level learning. Results after PSM confirm the model-free evidence. Backers who experienced damage in their first PAC campaigns show no PAC-specific learning, as the decrease in funding likelihood for PAC campaigns is smaller, not larger, than for Kickstarter campaigns in general (Table 15). Put differently, Kickstarter backers that experienced damage in their first campaign do care about this damage (as evidenced by substantially lower likelihoods of funding another campaign across all five dimensions), but they do not attribute their bad experiences to campaigns' usage of PACs and thus do not specifically avoid funding PAC campaigns in the future.

In summary, the above analyses examine the same topic from very different angles but provide the same conclusion: we do not see evidence of PAC-specific consumer learning, neither on the population level that is most relevant for regulators nor on the subpopulation or individual level.

5.4. Did Campaign Managers Take Measures that Solved the Problem?

5.4.1. Analyses. Self-regulation in the context of our study could include private self-regulation, by which an individual enterprise regulates itself independent of others, and industry self-regulation, by which enterprises decide to cooperate with each other and build an industry-level organization that sets rules and standards (Gunningham and Rees 1997). In reward-based crowdfunding, such an industry-level organization currently does not exist. Because of this lack of industry self-regulation (potentially indicating market participants' lack of interest in addressing consumer protection), we focus on private self-regulation by campaign managers.

Self-regulation by campaign managers is closely connected to signaling theory, by which enterprises credibly communicate the level of some unobservable element in a transaction by providing an observable signal (Tang et al. 2008). For such a signal to be effective in a crowdfunding setting, it must be observable by backers and be difficult (or too expensive) to mimic by a low-quality campaign (Belleflamme et al. 2014, Ahlers et al. 2015). The literature distinguishes between two types of signals: (1) default-independent signals of self-regulation, which involve an upfront expenditure in reputation building that will be forfeited should product quality turn out to be poor, and (2) default-contingent signals of self-regulation, which do not involve any up-front expenditure but place future profits at risk (Rao et al. 1999, Kirmani and Rao 2000).

On Kickstarter, product quality is de facto unobservable to consumers when they make the decision to fund the campaign. Hence, campaign managers may try to signal credibility and convince consumers with quality assurances. Such self-regulation by campaign managers should be evident in a substantial number of campaigns containing default-independent signals like *seal of approval* (Tang et al. 2008) or *code of conduct* (Wotruba 1997) and default-contingent signals like *money back guarantee* (Moorthy and Srinivasan 1995) and *warranty* (Kirmani and Rao 2000). We identify campaigns using such signals by employing a rule-based text mining approach on campaigns' descriptions and risk sections.

Table 13. Population-Level Learning: Results of Probit Regression Analyzing Differences in Increase in Funding Likelihood Between Recent (April to September 2016) vs. Older (April to September 2015) PAC Campaigns vs. NoPAC Campaigns After Successful PSM

After PSM	Funding success (all campaigns)
PAC campaign	0.232***
Recent campaign	0.142
Diff-in-Diff: PAC campaign x recent campaign	**0.011**
Intercept	9.459
Observations	1,640
Pseudo *R*-squared	0.007

Note. Year-month fixed effects are included.
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Table 14. Subpopulation-Level Learning: Results of Expert Survey Regarding Expected Relative Performance of Campaigns Using Price Advertising Claims vs. Campaigns Not Using Price Advertising Claims

Variable	Mean	SD	Min	p25	p50	p75	Max
Savings	4.516**	1.180	3	3	5	5	7
Delivery	4.548**	1.179	2	4	5	5	7
Delay	$4.097^{n.s.}$	1.326	2	3	4	5	7
Product Quality	$4.000^{n.s.}$	1.211	1	3	4	5	6

Notes. Results of structured, face-to-face interviews with 31 crowdfunding experts. Answers are collected on a 7-point Likert scale, such that lower numbers (1–3) signified a worse performance of PAC (versus NoPAC) campaigns, 4 signified no expected difference between PAC and NoPAC campaigns, and higher numbers (5–7) signified a superior performance of PAC (vs. NoPAC) campaigns.
$^{n.s.}p \geq 0.10$; $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$.

5.4.2. Model-Free Evidence. Model-free evidence presented in Figure 4 shows that only 21 of 34,745 Kickstarter campaigns (0.06%) in the games and technology categories provide default-independent signals such as external certifications via some seal of approval. An industry-wide code of conduct is not adopted. Only 13 campaigns (0.04%) offer voluntary default-contingent signals in the form of money-back guarantees or warranties. We interpret the fact that in total, only 34 of the 34,745 Kickstarter campaigns studied (0.1%) use any of the four signaling devices as indication for the absence of effective self-regulation by campaign managers.

5.5. Did Kickstarter Take Measures that Solved the Problem?

5.5.1. Analyses. Kickstarter has strong incentives to protect consumer interests in order to maintain a good reputation, in particular with repeat backers. If backers become victims of deceptive behavior, they will be less likely to support further campaigns. More than 70% of all backers active in 2016 had previously funded another Kickstarter campaign. As the platform's long-term viability is dependent on the support of these repeat backers, we might expect to see self-regulation intended to protect consumers—evident in a decrease (or even complete mitigation) in damage to PAC backers following acts of self-regulation by the platform.

We used 1,704 blog posts by Kickstarter to manually identify all major policy changes by Kickstarter since 2009, listed in Figure 5. Of seven major policy changes identified, five can be classified as self-regulation to benefit the platform (compliance efforts such as renaming of staff picks or change of incorporation; introduction of platform features benefitting campaign managers, such as the launch-now feature). Only two policy changes can be classified as self-regulation to benefit consumers. The first (and smaller) change mandated the introduction of estimated delivery dates in August 2011. The second policy change aimed for increased consumer protection through consumer education and increased requirements for campaign managers.

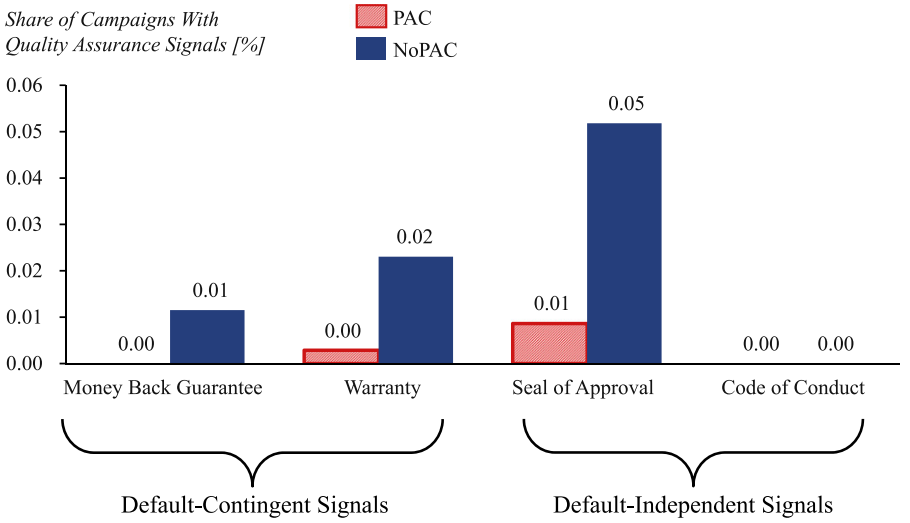
Neither of these proconsumer policy changes focuses on campaigns' use of PACs. Hence, we could simply conclude that the absence of such PAC-focused changes already establishes a lack of platform self-regulation in this regard. Still, the second proconsumer policy change implemented by Kickstarter could have an indirect effect on PAC campaigns. Announced in September 2012, the policy change "Kickstarter is not a store" (Kickstarter 2012) mandated the inclusion of a "risk and challenges section" and included new guidelines for campaigns in the technology and design categories. Most notably, the policy

Table 15. Individual-Level Learning: Reductions in Funding Likelihood for Another Kickstarter Campaign in General vs. Another Campaign that uses Price Advertising Claims (PACs) Among Backers that Experienced Damage vs. No Damage in their first PAC Campaign; Results after Successful Propensity Score Matching

After PSM	Promised savings		Actual savings		Delivery		Delay		Product quality	
	Likelihood of funding another									
	Campaign	PAC campaign	Campaign	PAC campaign	Campaign	PAC campaign	Campaign	PAC campaign	Campaign	PAC campaign
Outcome of first PAC campaign										
No damage	0.529	0.196	0.528	0.196	0.520	0.196	0.589	0.234	0.660	0.211
Damage	0.458	0.186	0.475	0.192	0.049	0.026	0.485	0.197	0.507	0.164
Drop in funding likelihood	**–13.43%**	**–5.23%**	**–10.06%**	**–2.28%**	**–90.65%**	**–86.86%**	**–17.69%**	**–15.66%**	**–23.15%**	**–22.48%**
Number of observations	68,400		155,684		17,644		181,210		51,716	

Note. PAC-specific consumer learning would require the drop in funding likelihood for "Another PAC campaign" to be significantly larger than the drop in funding likelihood for "Another campaign."

Figure 4. (Color online) Model-Free Evidence from 34,745 Kickstarter Campaigns on Self-Regulation via Use of Quality Assurance Signals by Campaigns Using Price Advertising Claims (PAC) vs. Campaigns Not Using Price Advertising Claims (NoPAC)



prohibited simulations and renderings of the product and included a prototype requirement to protect consumers from misleading campaign statements. The prototype requirement might lead campaigns to form a more accurate assessment of the production costs, production timing, and product features, which could in turn affect retail price (and hence savings), delivery likelihood, and delay, as well as product quality.

The "Kickstarter is not a store" policy change did not affect PAC campaigns directly, yet it might indirectly improve the (relative) performance of PAC (versus NoPAC) campaigns. Forcing campaigns to create prototypes could lead to greater due diligence before promising retail prices, delivery dates, and product features, which could result in fewer differences between PAC and NoPAC campaigns after the policy's implementation. The policy change affected campaigns in the technology category of our dataset but not in the games category. We thus investigate whether this act of self-regulation by the platform was followed by decreases in damage to consumers in the treated category (technology) compared with the nontreated category (games) and whether the decreases (after policy change versus before) were greater for PAC versus NoPAC campaigns (difference-in-difference-in-differences or DDD approach).

To identify the effect of the policy change on damage to consumers, we employ a model with a three-way-interacted dummy variable (DDD estimator; Gruber 1994). The first difference relates to the time of the policy change (before and after September 20, 2012), the second to the category (games or technology), and the third to the use of PACs. We estimate a linear regression for continuous dependent variables (savings, delay, product quality) and a probit regression for the binary dependent variable (delivery), with the three-way-interacted dummy variable as the variable of interest (Gruber and Poterba 1994). In line with previous analyses, we apply PSM to the four groups (defined by time of policy change and treatment) and balance them on precampaign characteristics respectively for PAC and NoPAC campaigns (Ravallion and Chen 2005).

5.5.2. Model-Free Evidence. In Table 16, we present model-free evidence on how the "Kickstarter is not a store" policy change affected damage to backers for PAC and NoPAC campaigns. Results are mixed.

Figure 5. (Color online) Timeline of Kickstarter's Major Policy Updates with Focus to Protect Consumers and the Platform

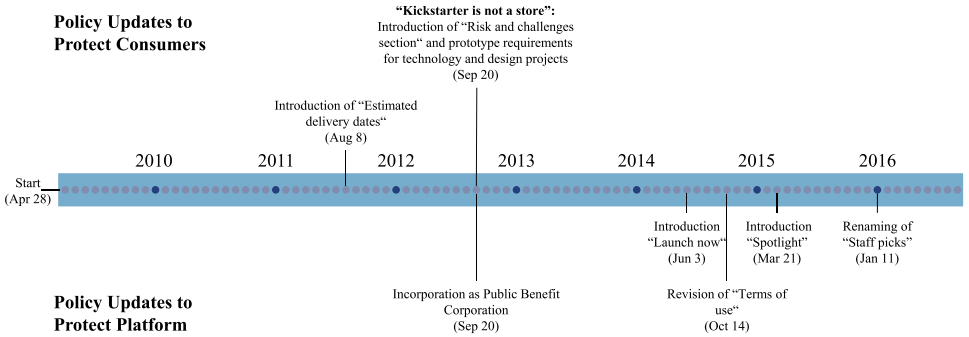


Table 16. Model-Free Evidence on Damage to Backers of Campaigns Using Price Advertising Claims (PAC) vs. Campaigns Not Using Price Advertising Claims (NoPAC) Before and After the "Kickstarter is not a Store" Policy Change

Model-free	PAC campaigns	NoPAC campaigns	Difference in means	Observations	Campaigns with greater improvement after policy change
Change in Promised Savings	−0.319	0.079	−0.398***	771	NoPAC
Change in Actual Savings	−0.113	0.079	−0.192	771	NoPAC
Change in Delivery	−0.017	0.021	−0.038	3,099	NoPAC
Change in Delay	−60.734	−24.215	−36.519*	2,987	PAC
Change in Product Quality	0.021	−0.056	0.077	203	PAC

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Whereas PAC campaigns improved less than NoPAC campaigns (before versus after the policy change) regarding promised savings, actual savings, and delivery likelihood, they developed more positively than NoPAC campaigns with respect to delay and product quality.

5.5.3. Results. We present the results of the five DDD regressions after successful PSM in Table 17. The DDD estimator is not significant in any of the five analyses. As such, the findings of the formal analysis do not confirm the model-free evidence, which pointed to some positive and some negative changes for backers of PAC campaigns. From the analyses, we conclude that backers of PAC campaigns in the technology category did not benefit disproportionally from the "Kickstarter is not a store" policy change, vis-à-vis backers in NoPAC campaigns in the technology category. Given that the policy change did not specifically address PACs, this finding is not surprising. Instead, we regard this as additional evidence of the absence of effective platform self-regulation to protect consumers.

6. Economic Relevance of Broken PAC Promises

Broken PAC promises are a substantial and persistent problem, but how big is their economic relevance? As only a fraction of campaigns actually use PACs and some of them keep their PAC promises, one might wonder whether PACs really pose a relevant consumer protection challenge in reward-based crowdfunding. We therefore analyze the impact of broken PAC promises along three dimensions: number of affected campaigns, number of affected consumers, and economic injury incurred by consumers.

Our analyses show that between 2009 and 2016, 296 different PAC campaigns have broken their PAC promises—75.9% of all 390 PAC campaigns that moved on to sell their product to the public. We thus conclude that the problem is widespread and not limited to a few black sheep.

In total, 569,507 backers invested in these campaigns, suggesting that the problem affects a substantial number of consumers. Because of broken PAC promises, these consumers experienced an average economic injury[12] of $45.72 per backer. Class action lawsuits fighting broken PAC promises have been granted (and won) on the basis of much smaller injuries in the recent past (e.g., $36.03 in *Spann v. J.C. Penney Corp.*; see Stempel 2015). Because the problem is unresolved, consumers continue to pledge money in Kickstarter campaigns that use PACs. These consumers' average expected economic injury from a lack of promised savings is $14.85[13]—a conservative estimate, which takes into account that some PAC campaigns keep their promises and that not

Table 17. Results of Difference-in-Difference-in-Differences (DDD) Analysis After Successful PSM Investigating Effect of Kickstarter's Largest Proconsumer Policy Change on Damage to Backers of Technology PAC Campaigns

After PSM	Promised savings	Actual savings	Delivery	Delay	Product quality
Policy change	−0.035	−0.031	0.112	−66.411***	0.149*
Technology	−0.095	−0.096	−0.270	−72.440***	0.183**
PAC campaign	−0.367**	−0.099	−0.014	8.272	0.168
Policy change × technology	0.134	0.134	−0.015	62.563***	−0.169*
Policy change × PAC campaign	−0.087	−0.082	−0.237	6.087	−0.155
Technology × PAC campaign	0.266	0.354	0.270	43.112	−0.359**
Policy change × technology × PAC campaign	**−0.198**	**−0.306**	**−0.567**	**−41.745**	**0.213**
Intercept	0.684	0.758	−1.359	779.405***	0.743
Observations	656	656	3,056	2,920	106
R-squared	0.141	0.020		0.045	0.026
Pseudo *R*-squared			0.037		

Note. Year-month fixed effects are included.
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

all campaigns move on to sell their products to the public (and backers hence do not suffer quantifiable injury).

This article focuses on consumer protection relating to PACs. Yet Kickstarter backers are also exposed to other risks–most prominently, the often discussed risk of nondelivery. In comparison with PACs, economic injury from confirmed nondelivery is larger for each affected backer at $87.16 (=the average Kickstarter price for campaigns that have announced failure to deliver). The average expected economic injury for each new backer, however, is only $4.58, as the share of backers that experience nondelivery is rather small.[14]

7. Summary and Implications

7.1. Summary

Kickstarter backers are currently not protected by regulation pertaining to PACs. A campaign can advertise its product on Kickstarter as "Now only $70, 50% off the retail price" but later sell its product via retailers for less than $140 without legal consequences. Indeed, our analyses show that more than 75% of all games and technology campaigns on Kickstarter that promised a discount broke their PAC promises, leading to an average economic injury of $45.72 per directly affected backer and an average expected economic injury of $14.85 for each backer of PAC campaigns. Even more severely, almost half of all campaigns that promised a discount not only gave a discount that was too low but did not give any discount at all. And to make things worse for backers, the average PAC campaign suffered from a lower likelihood of ever delivering the product, from long delays, and from low product quality. Backers' reactions show that all of these problems are relevant. Backers of PAC campaigns have worse sentiment and higher complaint rates. Backers who experience these damages firsthand display substantial drops in funding likelihood for future Kickstarter campaigns.

The problem is widespread. We identify 569,507 consumers affected by broken PAC promises in our data, but the 34,745 games and technology campaigns we analyze constitute only 16.5% of all Kickstarter campaigns launched before September 2016. Kickstarter's biggest competitor, Indiegogo, saw another 126,234 campaigns launched in the same time frame. It thus seems likely that many consumers beyond those identified in our study have experienced economic injury from broken PAC promises on crowdfunding platforms.

Our analyses show that consumer protection does not necessarily "happen automatically" without outside regulatory intervention if given enough time. Instead, the evidence points toward a substantial, persistent, and unresolved problem with broken PAC promises on Kickstarter more than six years after the platform's inception. We arrive at this conclusion after (1) establishing the existence of a substantial problem with broken PAC promises on Kickstarter, (2) showing that these problems matter to affected consumers, (3) finding no evidence of consumers learning to avoid the problem, and (4) finding no evidence of effective self-regulation by campaign managers or (5) the Kickstarter platform.

7.2. Implications

Our study provides new insights into reward-based crowdfunding. As one of the few articles to investigate phenomena after successful funding, it is the first to study consumer protection. Our study suggests that Kickstarter's current lack of policies to protect backers of PAC campaigns exposes consumers to substantial damage. We observe lower backer sentiment and higher complaint rates across all PAC campaigns, but negative effects from broken PAC promises are not limited to campaigns. Similar to the study of eBay by Nosko and Tadelis (2015), we observe that backers' negative experiences with specific campaigns spill over to the Kickstarter platform as a whole. Backers who experienced damage in a particular campaign often leave Kickstarter altogether. That Kickstarter has not successfully addressed broken PAC promises thus far not only hurts backers but likely also hurts the Kickstarter brand.

Beyond Kickstarter, our study provides the first empirical evidence on the primarily theoretical and conceptual literature on self-regulation (Ranchordas 2015). The particular setting of our empirical study lets us reliably quantify the economic injury experienced by consumers (*Hinojos v. Kohl's Corporation, No. 11-55793*) and allows us to observe market participants' behavior in an unregulated setting over a rather long time period. Capitalizing on this setting and using extensive data combining many different angles on the topic, we add to the ongoing high-profile discussion among policy makers (Ohlhausen 2015, European Commission 2017, Lagarde 2017) about consumer protection in unregulated markets. Our results show that regulators cannot always count on consumer learning or on enterprise self-regulation to ensure consumer protection.

7.3. Limitations and Future Research

The empirical setup of this study comes with several limitations. As highlighted in the introduction, this article focuses on the consequences of PAC usage, not on the antecedents. Through our survey of 179 campaign managers, we can rule out many potential antecedents of PAC usage, such as product quality, team quality, or financing options (see Section 4.2 for details). Still, we acknowledge that a deeper

understanding of PAC usage antecedents would be desirable.

Similarly, we have limited insights into why PAC campaigns break their promises. Our survey of campaign managers provides no evidence of bad intentions (i.e., campaigns intentionally misleading backers). Instead, it seems that different-than-anticipated circumstances after the campaign (i.e., when determining the retail price) leads campaigns to deviate from the price they promised before the start of the campaign. According to the survey, campaigns typically use either cost- or value-based pricing, and with both approaches, they might be better off offering lower-than-promised retail prices. As highlighted in Section 3.2, campaigns that promise discounts to backers typically operate on lower margins. If margin pressure forces the campaign to identify cheaper-than-planned production options, then campaigns that use cost-based pricing will lower their retail price accordingly. At the same time, margin pressure might result in lower-than-planned product quality. If campaigns use value-based pricing, lower product quality will result in lower retail prices. Finally, reference price effects might influence the retail price. As one survey respondent noted, "Once a discount was introduced, we were not able to sell the product at the original price." Future research on the antecedents of PAC usage could provide further valuable insights into the underlying mechanisms at play.

In the same vein, we provide suggestive but no causal evidence as to why PAC campaigns come with lower delivery likelihood, longer delays, and lower product quality (see Section 3.2). Again, statements by 179 surveyed campaign managers point toward margin pressure and a lack of financial cushion as potential reasons. The identification of the exact causal mechanisms is another interesting topic for future research.

Finally, while we can quantify economic injury resulting from broken PAC promises in line with current regulatory guidelines, we cannot observe the total utility a consumer derives from backing a Kickstarter campaign. As a result, we must leave the assessment of alternative regulatory scenarios (e.g., existing PAC regulation is applied to Kickstarter or PACs are disallowed on Kickstarter) to future research.

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Endnotes

[1] We contacted 588 campaign managers via Kickstarter to receive 179 responses (30% response rate). Campaign managers were selected based on the use of PAC (equal proportions of PAC and NoPAC). We further considered the disclosed country as well as the number, success, and category of previous campaigns to create a representative sample of all campaign managers in our data set. We did not provide incentives for answering our questions.

[2] In line with the literature, we use simple ordinary least squares regressions to assess potential omitted variable bias. We consider the derived insights as helpful, even though this simple approach differs from the analyses in our paper, where we carefully match campaigns via PSM using nearest neighbor matching with caliper.

[3] We control for the robustness of ratings as an indicator of product quality via a standard machine-learning technique and the LIWC dictionary approach to extract the sentiment of the consumer review texts. Results are essentially identical and are available on request.

[4] Observations for Actual Savings and Promised Savings:

$$N_{\text{NoPAC}} = 1{,}519 = 149 + 134 + 1{,}236;\ N_{\text{PAC}} = 390 = 66 + 12 + 312;$$
$$N_{\text{Total}} = 1{,}909 = 1{,}519 + 390.$$

Observations for Delivery:

$$N_{\text{NoPAC}} = 7{,}231 = 213 + 7{,}018;\ N_{\text{PAC}} = 1{,}442 = 75 + 1{,}367;$$
$$N_{\text{Total}} = 8{,}673 = 7{,}231 + 1{,}442.$$

Observations for Delay:

$$N_{\text{NoPAC}} = 7{,}018 = 2{,}069 + 4{,}949;\ N_{\text{PAC}} = 1{,}367 = 217 + 1{,}150;$$
$$N_{\text{Total}} = 8{,}385 = 7{,}018 + 1{,}367.$$

Observations for Product Quality:

$$N_{\text{NoPAC}} = 283 = 149 + 134;\ N_{\text{PAC}} = 78 = 66 + 12;$$
$$N_{\text{Total}} = 361 = 283 + 78.$$

[5] By the end of September 2016, 3,275 of the 11,948 successfully funded games or technology campaigns on Kickstarter had neither delivered nor officially announced failure. Rather than speculate about whether these campaigns will or will not deliver at a later point in time, we decided to exclude them from our analyses of delivery and focus on campaigns with certain outcomes only (confirmed delivery or announced failure to deliver). Our decision to exclude these campaigns from the analyses does not affect the other four metrics—Promised Savings, Actual Savings, Delay, Quality—as all of these variables mandate the product to have been delivered. At the same time, conditioning on successful delivery results in an important limitation, as all data on Promised Savings and Actual Savings, Delay, and Product Quality is right-censored.

[6] Backers' first PAC campaign is defined based on the date of (non) successful delivery of the product, not based on the date of successful funding.

[7] The backer profile pages were publicly disclosed on the Kickstarter campaign pages until February 2016 and are available for all backers with at least one comment in a campaign. We retrieved all information from the publicly available and nondeleted profiles in December 2017. Our final dataset includes the full backer history of 442,185 backers with 1,060,700 pledges in 3,297 PAC campaigns and covers on average 58.75% (median: 58.33%) of PAC campaign backers in our dataset.

[8] We match backers based on their experiences before supporting their first PAC campaign, using the number, categories, success rate, average amount pledged, and currency of previous supported campaigns as well as the number of comments and the time of the first supported campaign. Backers that never supported a PAC campaign are excluded from the analysis.

[9] We control for robustness of the LIWC dictionary approach by using a standard machine-learning technique and different training data

samples as input. Results are essentially identical and are available on request.

[10] We defined damage as follows: for savings, all campaigns that did not adhere to the promised retail price (i.e., the measure is <0); for delivery, all campaigns that did not deliver the product (known failures); for delay, all campaigns that did not keep the promised delivery month; for product quality, all campaigns that have an average rating on Amazon or Steam below the average of all ratings after delivery.

[11] As robustness checks, we performed the same analysis comparing recent campaigns (April to September 2016, after "Coolest Cooler") with even older campaigns (April to September 2014, 2013, 2012) and results are robust. Alternative estimation methods (probit regressions without year-month fixed effects, χ^2-test without prior PSM, logistic regression without prior PSM but with precampaign variables as controls) also yield the same findings. All robustness checks are available on request.

[12] To calculate average economic injury per consumer, we first calculate campaign-level economic injury (= difference between promised price and retail price for the campaign * number of backers in the campaign) for each campaign that did not honor promised savings. We then sum campaign-level economic injury across all campaigns and divide by the total number of backers in PAC campaigns that did not honor promised savings. This assessment of economic injury incurred by consumers is in line with current regulatory practices (e.g., *Hinojos v. Kohl's Corporation, No. 11-55793*).

[13] To calculate average expected economic injury, we divided economic injury across all PAC campaigns by the total number of backers in PAC campaigns.

[14] The calculation of expected economic injury disregards all "not delivered yet" campaigns that have not delivered despite being delayed but that also have not announced failure to deliver. If we assumed that 33% (66%, 100%) of these campaigns will not deliver, the expected economic injury from nondelivery would increase to $7.07 ($9.38, $11.62) per backer.

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