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Article

Sharing Economy Platforms in the Face of Crises: A Conceptual Framework

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Abstract

We propose a conceptual framework to analyze how crises dynamically affect the operations, performance, and strategic choices of digital platforms and how these effects impact their sustainability. Drawing on the theory of two-sided platforms, we propose a framework that considers two key dimensions: (1) the nature of shocks affecting each side of the platform and (2) the time horizon of their impact. We apply this framework to evaluate how sharing-economy platforms responded to the COVID-19 crisis, focusing on Airbnb, Uber Eats, and Prosper as illustrative cases.

Keywords: digital platforms; sharing economy; sustainability; network effects; crisis



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1. Introduction

In early 2020, the COVID-19 pandemic seriously affected the world economy [1]. Although this unprecedented shock triggered the deepest global recession in decades, one can observe contrasting impacts across various sectors of activity [2], affecting sustainability in different ways. Even within individual sectors, the pandemic's effects varied. This was particularly evident in the sharing (or collaborative) economy [3], which “refers to business models where activities are facilitated by collaborative platforms that create an open marketplace for the temporary usage of goods and services often provided by private individuals” [4].

Sharing economy platforms (SEPs) have developed significantly over the last two decades. Various types of platforms now coexist, differing in their organizational models, from relatively centralized to more decentralized structures [5], and in their ownership status, which spans for-profit enterprises to nonprofit or cooperative models [6,7]. These new actors have been the subject of a growing number of studies. Authors have examined the development trajectories of SEPs and the factors facilitating their growth [3].

They have also explored the competitive dynamics of the sector, notably the “winner-takes-all” phenomenon [8], and they have investigated the economic [9] and social impacts of SEPs, including labor conditions and employment models.

More recently, scholars have begun to examine the resilience of SEPs in specific sectors of activities [10], as well as their contribution to the broader resilience of the ecosystems in which they operate [11,12]. Studies such as [13,14] have also investigated the impact of the COVID-19 crisis on platform stakeholders.

However, systematic comparative analyses are still necessary, as the impact of major shocks, such as the COVID-19 pandemic, can vary considerably depending on the business in which an SEP operates. Understanding these differences can significantly enhance our knowledge of how these platforms function and their capacity for resilience. The global COVID-19 crisis represents a valuable natural experiment, as it affected the entire economy and all sectors of activity, unlike more localized or sector-specific disruptions. Over the last decade, SEPs have gained particular traction in three markets—short-term accommodation, food delivery, and crowdfunding [15]. Casual observations suggest that the effects of the pandemic on SEPs were negative in the first market, positive in the second, and ambiguous in the third.

This study addresses two key questions: (RQ1) How can we explain such contrasting impacts of the shock (short-term effect)? (RQ2) What can we learn about SEP performance and strategies to ensure medium- and long-term sustainability during crises?

To do so, we conceptualize SEPs as two-sided platforms that facilitate the interaction between two groups of users [16–18]. Because users create value for one another on SEPs (one speaks of positive cross-side network effects; see [19]), the intensity of participation in the two groups of users is key for the performance of SEPs [20,21]. Our framework thus focuses on how a crisis affects users’ decisions to participate in a platform. Three typical situations are possible when a crisis starts (short term): participation on both sides decreases or increases (Situations 1 and 2) or participation decreases on one side but increases on the other side (Situation 3). For each situation, we examine the evolution during and after the crisis (medium and long term).

To illustrate, we apply our framework to the impacts of the COVID-19 crisis on three emblematic SEPs: Airbnb (Situation 1), Uber Eats (Situation 2), and Prosper (Situation 3). The selection of these cases was based on the following criteria. First, a sectoral criterion: As explained, these cases belong to three emblematic sectors of the platform economy, i.e., accommodation, food delivery, and crowdfunding [15], which experienced different dynamics during the crisis. This made them particularly interesting to study. Second, an organizational criterion: We selected leading actors in each sector, as they are representative of broader trends. The goal was not to analyze marginal or atypical cases but, rather, to highlight the main dynamics at play. Third, a data availability criterion: There is abundant research on these cases, which enables us to support our analysis with solid sources. Indeed, their evolution has been widely commented on in academic studies and the business press.

However, our framework applies, more generally, to short-term accommodation or ride-hailing platforms [22] (Situation 1), food-delivery platforms and platforms facilitating the sharing of physical goods (Situation 2), and crowdlending and crowdfunding platforms (Situation 3). In Appendix A, we present the institutional background of Prosper and the dataset that we used.

2. Conceptual Framework

Our conceptual framework is designed to be deliberately broad, aiming to capture the general dynamics of SEPs during crises rather than focusing on specific market mechanisms. Unlike the seminal models by [23,24], which formalize platform interactions under the as-

assumptions of symmetric users, linear network effects, and primarily pricing strategies, our approach abstracts from these specifics to enable cross-sectoral and crisis-oriented analysis. While existing models are invaluable for deep, context-specific insights—often operationalizing network effects and user activity with specific mathematical formulations—our framework subsumes these as special cases. This generality allows us to systematically analyze the short-, medium-, and long-term impacts of exogenous shocks (such as COVID-19) on both sides of the platform, providing a flexible lens for understanding resilience and adaptation strategies across diverse SEP contexts. This model's contribution is to provide a unifying, crisis-focused perspective that complements and extends the applicability of established models.

To develop our model, we consider an SEP that facilitates the interaction between two groups of users. In what follows, we refer to the participants on each side of the platform as “users”. We use the terms “buyers” and “sellers” generically to distinguish between the two groups and denote them, respectively, with the indices b and s . For example, in the context of Airbnb, buyers are guests and sellers are hosts; for Uber Eats, buyers are diners and sellers are restaurants; for Prosper, buyers are borrowers and sellers are lenders. While terminology may vary across platform types, the label “users” will be used throughout to refer to individuals on either side of the platform unless a distinction between the groups is analytically necessary.

We then introduce the following variables to conceptualize what affects users' decisions: (1) A_k and A_l are the level of activity on the SEP for users of group k and l , with $l \neq k \in \{b, s\}$; (2) V_k is the relative value of the platform's services compared with the next best alternative (using another platform, an integrated firm, or any other solution); (3) S is the set of price and non-price strategies that the SEP deploys.

We assume realistically that the level of activity of group k -users on the SEP, A_k , increases with V_k (the larger the relative value of the SEP's services, the larger the participation), increases with A_l (because of positive cross-side network effects), and is affected by changes in S (as the SEP's price and non-price strategies are meant to shape users' incentives to join and use the platform). Indeed, changes in S can increase or decrease participation in group k and/or in group l . For instance, increasing the subscription fee for users in group k will, other things being equal, reduce participation in that group while leaving participation in the other group unchanged (in the short run). In contrast, if a platform constrains sellers to reduce delivery fees for shipping their products, it will discourage sellers but encourage buyers to participate.

Importantly, the effects of the different factors do not play out at the same time. In contrast with studies that focus on the overall influence of the pandemic [13,14], we provide a richer analysis by distinguishing between three periods. First, at the start of the crisis (“short term”), only changes in V_k affect A_k because users do not immediately realize the potential variations in the participation of the other group and because the SEP needs some time to adjust its strategies. It is thus legitimate that users consider A_l and S as fixed in the short term. These two factors, however, influence participation in group k during the crisis (“medium-term”). As a result, users in group k further adjust their participation level after observing changes in the participation of the other group and the strategies deployed by the SEP. Finally, once the crisis is over (“long term”), the question of interest is how reversible the changes in the various variables are. Indeed, long-term changes often depend on path dependency and lock-in effects. These theories have shown how organizations can be locked in established patterns [25]. Initiating significant changes during a crisis can leave lasting marks and alter the trajectory of an organization.

Consequently, one may wonder, if the crisis made V_k decrease (or increase), will the ecosystem go back to its initial state once the crisis is over, or will the damages (or the

benefits) be more permanent? Regarding A_k , will users revert to their pre-crisis activity levels, or will they persist with their new behaviors? As for S , will the strategic adjustments adopted by SEPs during the crisis be reversed, maintained, or reinforced once the crisis ends?

These reflections shape the broad research and guide the structure of our study. We are interested in whether the resilience of SEPs during crises depends on the adaptive interplay between cross-side network effects and platform strategies across the short, medium, and long term. Over the longer term, the reversibility of crisis-induced changes is likely to depend on both user behavior and platform interventions. Furthermore, when a shock affects participation on each side of the platform differently, we expect recovery paths to be asymmetric, shaped by the platform's strategies and the strength of cross-side network effects.

3. Results

In this section, we apply our conceptual framework to three emblematic SEPs—Airbnb, Uber Eats, and Prosper—that experienced distinct types of demand shocks during the COVID-19 pandemic. These cases correspond, respectively, to our three archetypal crisis scenarios: negative shocks on both sides of the platform (Situation 1), positive shocks on both sides (Situation 2), and asymmetric shocks affecting one side more than the other (Situation 3). For each case, we structure the analysis in line with the framework's temporal logic—examining short-term participation dynamics, medium-term feedback effects and platform responses, and long-term sustainability outcomes.

This structure allows us to assess the explanatory power and empirical relevance of the framework in three contrasting contexts. Specifically, we examine whether the actual evolution of user participation and strategic adjustments aligns with the theoretical mechanisms proposed in our model. For instance, Airbnb exemplifies a crisis scenario in which both user groups withdraw simultaneously, leading to a vicious cycle that requires strong intervention, thus supporting the model's prediction about negative feedback loops under symmetric shocks. Uber Eats illustrates a virtuous feedback cycle under symmetric positive shocks, which allowed the platform to scale rapidly and reinforce its market position. In contrast, Prosper's experience highlights the challenges posed by asymmetric shocks: while the borrower side initially expanded, lender hesitancy undermined overall liquidity.

3.1. Short-Term Analysis

In the short term, participation levels are only affected by changes in the way that users value the platform's services in comparison with the next best alternative (that is, V_b for buyers and V_s for sellers). We can then classify SEPs according to the combined changes in V_b and V_s that they are faced with.

Situation 1—The crisis hits both sides: Both V_b and V_s decrease. This situation corresponds to the effect of COVID-19 on short-term accommodation platforms, such as Airbnb. Lockdown measures and travel restrictions forced guests (buyers) to stay at home and, thereby, deprived hosts (sellers) of the possibility to rent their accommodation [26,27]. As activities on these platforms came to a standstill, it was as if V_b and V_s —and, thus, A_b and A_s —dropped to zero. For instance, bookings on Airbnb in Beijing alone plunged by 96% from January to March 2020. Airbnb reported that its internal valuation fell from USD 31 billion in March 2020 to USD 18 billion in May 2020, and it was forced to lay off 25% of its staff [28,29]. The key advantage that fueled the accommodation-sharing boom—access to underused private properties—proved irrelevant during the pandemic [30].

Situation 2—The crisis benefits both sides: Both V_b and V_s increase. The pandemic had positive impacts on some SEPs—among them, food-delivery platforms [31]—which saw V_b and V_s increase for the same reason. As interacting in person in restaurants was no longer an option, both diners (buyers) and restaurants (sellers) found it more attractive to interact through food delivery platforms [32]. As a result, both A_b and A_s increased. A case in point is Uber Eats, an online food ordering and delivery service launched by Uber in 2014. Although Uber's main ride-hailing service belongs to the first situation, its business in food delivery had a sizable surge during the pandemic. Looking at five major U.S. cities, Raj et al. show that, compared with the pre-lockdown period, the average daily consumer activity on the platform increased from 25% in Miami to nearly 75% in San Francisco in the first two months of the COVID-19 crisis [32]. Looking at the average monthly number of small restaurants that joined the platform in the five cities, listings increased by 128% in March 2020 and by 51% in April 2020 compared with February 2020 [32].

Situation 3—The crisis hits one side and benefits the other: V_b and V_s move in opposite directions. Crowdlending platforms illustrate this situation. On the buyer side, because banks are, in general, more vulnerable to negative shocks than peer-to-peer lending [33], borrowers found it harder to receive mortgages from banks during the crisis, which increased the relative value V_b of using peer-to-peer lending. Meanwhile, on the seller side, lenders began to prefer less risky options and keep their money available, as is usually the case when uncertainty increases. As a result, crowdlending platforms became less attractive [34]. The short-term consequences are, thus, an increase in A_b and a decrease in A_s . This is evidenced by the evolution of participation on Prosper.com, the largest crowdlending platform in the USA. Using both the listing data and loan data between January 2019 and June 2021, we find that the monthly average number of loans successfully funded on Prosper was 13,844 before the COVID pandemic and only 7373 after the crisis started. This reduction reflects an increased imbalance in participation on the two sides of the platform.

3.2. Medium-Term Analysis

In the medium term, users also adjust their participation to the observed changes in the activity level of users in the other group, as well as to the potential strategic moves of the platform. We consider these two factors in turn.

3.2.1. Changes in Participation Due to Network Effects

Because of cross-side network effects, the attractivity of a platform for one group mainly depends on the participation of the other group. The short-term changes in participation thus induce further changes. In this respect, Situations 1 and 2 markedly differ from Situation 3. When both V_b and V_s move in the same direction (Situations 1 and 2), short-term changes generate a feedback loop that amplifies them. Medium-term changes due to cross-group network effects thus go in the same direction as the initial short-term changes, leading to a vicious (Situation 1) or a virtuous circle (Situation 2).

Situation 3, in contrast, exhibits opposite short-term changes, as participation decreases on one side while increasing on the other. One could then think that levels of activity on the two sides would somehow stabilize once users take into account what happens on the other side of the platform: the short-term increase in participation due to a larger V_b would be compensated by a medium-term decrease in participation due to the reduction in A_s . Similarly, on the other side, A_s is first pushed down by a smaller V_s but would later be pushed up by a larger A_b . However, the changes in the *composition* of user groups and their impacts must also be factored in.

On crowdlending platforms, asymmetric information problems are particularly acute, as users on each side can hardly evaluate the reliability of their potential counterparties [35].

It is then the platform's responsibility to establish trust among users, and the success of a crowdlending platform is complicated [36]. One way to do so is to attract the "right" users in each group, that is, creditworthy borrowers and experienced lenders [37]. However, the pandemic has made this much harder to achieve. On the one hand, with the negative impact of increasing economic uncertainty on entrepreneurial projects [38], some current borrowers became unable to repay their loans [39], thereby impairing existing lenders' confidence in crowdlending. On the other hand, more borrowers (and with higher default risks) were induced to join the platforms, while experienced lenders, anticipating the reduction in borrower quality, shied away. Consequently, the volume of unverified loans in peer-to-peer lending sharply increased [40]; the risk of fraudulent crowdfunding campaigns also increased [41]. In short, the unraveling effect of adverse selection on both sides generated a vicious circle, even though the short-term incentives to participate in crowdlending moved in opposite directions on the two sides.

Prosper.com was brutally faced with the difficulty of matching borrowers and lenders at the start of the pandemic. The rate of listings receiving sufficient funding and successfully transferred to loans went from 90% to 78% (see Figure A1 in Appendix A), and the platform's net revenue dropped by USD 26.8 million (an 89% reduction) compared with the previous year [42].

3.2.2. Changes in Participation Due to Platforms' Strategic Moves

In the medium term, platforms can modify their strategies to alleviate the damages of a negative feedback loop or take advantage of a positive feedback loop. We document the strategic moves of our three emblematic platforms, and, in the case of Prosper, we assess their effectiveness by analyzing original data. We also mobilize the theory of two-sided platforms to explain the rationale behind the strategies chosen by the platforms.

Situation 1—The crisis hits both sides. On average, the number of nights booked on Airbnb decreased by about 47% in 2020 compared with 2019 [43], which induced Airbnb to implement a set of counteracting measures. It imposed new sanitary protocols [44] and a full guest refund policy [28,45]. As discussed in recent research [46], technological developments encourage the emergence of new platforms and services. Airbnb also introduced new services, for instance, by letting hosts lead online live interactive activities, such as cooking classes, escape games, or magic shows [47]. Finally, Airbnb activated its emergency housing system, called the Open Homes Program, to provide spaces at a reduced cost (or for free) to more than 100,000 medical staff worldwide [45,48]. Note that Airbnb's strategic response was mainly in favor of guests and to the detriment of hosts, who had to bear additional costs and who heavily criticized Airbnb for that [28,49].

Situation 2—The crisis benefits both sides. To take advantage of the high demand for the delivery of groceries caused by stay-at-home policies, Uber Eats proposed its delivery services to supermarkets and convenience stores [32,50]. The main challenge was then to ensure that logistical support could keep up with the more intensive use of the platform. As a result, perhaps the most important strategy for Uber Eats was to increase the pay for riders to be more attractive to them [51]. In some places, Uber Eats took advantage of the favorable circumstances to charge higher fees to restaurants. As a consequence, Allegretti et al. (2021) report that in mid-November 2020, the Mayor of Lisbon announced that he would pursue the company for its "predatory approach" [52]. All in all, Uber Eats adopted policies aimed primarily at attracting more diners, mainly by reassuring them about health risks and ensuring a fast delivery service; as restaurants badly needed food-delivery platforms to stay in business, there was no need to court them.

Situation 3—The crisis hits one side and benefits the other. Prosper made several changes in April 2020 to improve the reliability of its marketplace. Credit policies and loan amounts

were tightened; income verification requirements were improved; borrower rates were increased, on average, by 2%; borrowers were offered payment relief and loan extension options [53]. Moreover, Prosper received USD 8,447,100 in loan funding from the Small Business Administration (SBA) Paycheck Protection Program (PPP) to stabilize operations during the pandemic (see <https://dev.swfinstitute.org/news/79365/online-lender-prosper-marketplace-gets-8-47-million-from-sba-paycheck-protection-program> (accessed on 20 April 2025)). These adjustments were clearly aimed at maintaining lenders' confidence in the system, rebalancing the demand and supply for funds, and ensuring the platform's sustainability. To evaluate the effectiveness of those policies, we studied the evolution of several indicators of Prosper's operations (see the figures displayed in Appendix A). We highlight five stylized facts here. First, Prosper almost doubled the percentage of canceled listings in April 2020 (Figure A2). Second, from the month that followed the policy adjustment, almost all of the listings reached a rating equal to or higher than B (Figure A3). Third, although the tightened credit system and the higher interest rates improved the success ratio on listings, they also raised borrower's costs; this led to a sharp decrease in the average listing amount, which fell from about USD 14,000 before the policy adjustment to around USD 12,800 by June 2020 (Figure A4). Fourth, the number of listings posted on Prosper decreased right after the policy adjustment in April 2020 but increased three months after; it stayed lower, however, than the corresponding monthly levels observed in 2019 (Figure A5). Fifth, the success rate of listings came back to (and even went over) the pre-crisis level (Figure A1).

In sum, Prosper managed to rebalance the crowdlending ecosystem (and limit the reduction in its profits) through swift and adequate policy adjustments. Tighter credit policies discouraged risky borrowers from joining, which contributed, after a while, to restoring lenders' confidence and participation.

The rationale behind the platforms' decisions. As just described, the three platforms favored one group of users when modifying their strategies: guests for Airbnb, diners for Uber Eats, and lenders for Prosper. Although our conceptual framework assumes symmetric cross-side network effects for analytical clarity, we acknowledge that real-world platforms often exhibit asymmetric dependencies between user groups. It is indeed customary for two-sided platforms to treat their user groups asymmetrically. In the launch phase, for instance, one group is generally attracted first and serves as bait to attract the other group. In addition, the price structure is often skewed, with one group being the "subsidy side" and the other group being the "money side" [54]. The theory tells us that a platform should target more favorable strategies (e.g., larger marketing expenditures, lower prices, better terms) for the group that exerts larger cross-side network effects and/or is harder to attract or retain [23]. The three platforms seem to have followed this recommendation. In the case of Airbnb, guests are harder to retain than hosts. The pandemic may indeed deeply affect hosts' preferences regarding travel in general and the type of accommodation in particular, while hosts arguably face larger switching costs (see <https://www.tanayj.com/p/airbnb-and-the-covid-19-recovery> (accessed on 20 April 2025)). As for Uber Eats, we noted that there was no need to court restaurants, as they were drawn to the platform by the circumstances (see <https://arxiv.org/abs/2006.07204> (accessed on 20 April 2025)). On the other hand, the pandemic was seen as an opportunity to attract new diners and use them later to incentivize restaurants to stay on the platform. Finally, it is fair to say that it was thus crucial for Prosper to make sure that lenders would remain on board (see <https://www.mdpi.com/2071-1050/15/5/4028> (accessed on 20 April 2025)).

Moreover, this asymmetry becomes particularly visible in platforms' strategies handling crises in Situations 1 and 2, where the crisis affects both sides of the market in the same

direction. In Situation 1, Airbnb focused its crisis-response strategy on guests—offering full refunds, enhancing sanitation protocols, and launching new services such as online experiences—rather than on hosts. This choice reflects the fact that guests generate stronger cross-side network effects for hosts; attracting more guests increases occupancy rates and income for hosts, which, in turn, incentivizes continued or expanded host participation.

A similar logic applies in Situation 2. Uber Eats prioritized diners over restaurants by enhancing user experience, extending delivery categories, and maintaining pricing incentives for customers. The company's strategic response shows an understanding that diner participation drives restaurant engagement, especially during lockdowns, when restaurants became dependent on these platforms for revenue. These examples illustrate that even in cases of symmetric external shocks, platforms often adopt asymmetric strategies, revealing that one side typically has greater strategic leverage through stronger network effects. Thus, while our baseline framework assumes symmetry for tractability, we empirically acknowledge—and conceptually accommodate—asymmetric cross-side effects in our analysis.

3.3. Long-Term Analysis

The longer-term effects of the crisis raise the question of the extent to which changes in all of the variables of interest (V_k , A_k , and S) are reversible. Indeed, in the long term, evolution can be subject to path dependency and lock-in effects. These theories have demonstrated how organizations and individuals can become entrenched in established ways of functioning (e.g., [25]). Consequently, significant changes initiated during or in response to a crisis can leave lasting marks and alter an organization's trajectory. More precisely, according to path dependency theory, once a particular trajectory is taken, it can become difficult or even impossible to reverse, particularly due to increasingly high adaptation costs [55,56]. For instance, if trust, which can be essential to the functioning of a platform, as in the case of crowdfunding, is broken, it may prove impossible to rebuild. This can also be linked to high initial investment costs, as exemplified by Airbnb hosts who, due to the crisis, were forced to sell the properties that they used to rent out on the platform and were no longer able to return to their previous activity once the crisis had passed.

A related approach, known as behavioral lock-in theory, focuses more specifically on individual behavior. According to this theory, actors may become trapped in new routines that prevent them from making behavioral changes, even when such changes would be beneficial [57,58]. For example, platform users may no longer use platforms in the same way after a crisis, having developed new habits and routines [59]. Individuals might, for instance, be less inclined to dine out at restaurants and continue ordering food at home even after the crisis. While this behavior benefits delivery platforms, it could have negative consequences for traditional restaurants. Both path dependency and lock-in effects can be at play in the long run, necessitating platform intervention even after the crisis is over.

Situation 1—The crisis hits both sides. In the short-term accommodation market, the relative value that hosts attach to platforms such as Airbnb (V_b) seems to have returned to its pre-crisis level, although the sources of this value may have slightly changed, as new ways of using Airbnb emerged during the crisis and have persisted since then (e.g., longer-term and more local trips) [30]. Regarding the relative value for hosts (V_s), several dynamics were at work, with different long-term implications. On the one hand, the crisis forced several Airbnb hosts to put their properties on the long-term rental market or on the sales market to recoup their stake [48,60]. These hosts were likely disappointed by Airbnb and will not list their properties again. Since the crisis, other potential hosts may also be more reluctant to embark on entrepreneurial projects related to Airbnb, knowing that they will bear the majority of the costs in the event of a new pandemic. On the other

hand, some Airbnb hosts had enough resources to weather the crisis and wait for tourism to rebound. Some also adjusted their offerings on the platform, notably by renting their accommodation for longer periods. Sanford and DuBois report that the average length of stay for rentals during the crisis increased by 58% (with stays over one month becoming increasingly popular) [61]. Finally, the economic crisis that followed the health crisis, at the same time, induced more people to try to obtain additional income by offering to share their accommodation through platforms, particularly on Airbnb [30].

As far as activity is concerned, both A_b and A_s for Airbnb came back to their pre-crisis levels by the second quarter of 2021 [43]. However, at that time, it was not yet clear whether this was a sign of a long-lasting recovery or merely a rebound effect driven by the euphoria of being able to travel again. Since then, we can confirm that it was indeed a genuine recovery. In fact, Airbnb even recorded record growth in 2022 and 2023, thanks in particular to domestic travel and new trends in hybrid work [62]. The observed increase in stays outside of top destinations, in the countryside, or for longer periods also seems to have been a rather lasting effect [61,63].

Finally, regarding strategic decisions, Airbnb seems to have switched sides. While it deployed more guest-friendly strategies during the COVID-19 crisis, it decided to cater more to the hosts' needs with the end of the lockdown and the return to normal life. For instance, Airbnb launched digital campaigns focused on recruiting new hosts and making the process of becoming a host easier [43]. It also revised the full guest refund policy that it applied during the peak of the crisis and returned to the previous protocol. This alternation between pro-guest and pro-host strategies suggests that Airbnb aimed at getting the balance right between the two sides in order to speed up the return to normality that they have since managed to achieve. While operating at a loss during the crisis, Airbnb started to post positive net profit as early as 2022, reaching USD 461 million in the fourth quarter of 2024, representing a 19% net margin [62].

Situation 2—The crisis benefits both sides. In terms of relative values, V_b remained high in the food-delivery market, even after the crisis, as the crisis revealed the convenience of food-delivery apps to many diners [64,65]. Buyer participation grew particularly strongly over the COVID-19 period, from 21 million in 2019 to 66 million in 2020 and 81 million in 2021 [66]. Although this growth has since slowed, the number of users has continued to rise, driven by new habits adopted by existing and new customers, reaching 85 million in 2022, 88 million in 2023, and 95 million in 2024 [66].

In contrast, the evolution of V_s and A_s has been more nuanced. Overall, Uber Eats remained a key player in delivery after the COVID-19 crisis, but some restaurants sought to diversify their options to reduce their dependence on the platform, sometimes even organizing their own delivery services (because Uber Eats charges high commission fees; see, for example, the case of Gotanda Eats, a local delivery platform developed by local restaurants in Tokyo, Japan [67]). As a result, growth in the number of partner restaurants was particularly strong during the COVID-19 period, rising from 220,000 in 2019 to 600,000 in 2020 and then to 900,000 in 2021. However, the platform saw a slight decline in the number of affiliated restaurants after the crisis, reaching 825,000 in 2022, before returning to a level close to the peak reached during the crisis, with 890,000 partner restaurants in 2023, and exceeding this peak in 2024, with around 1 million partner restaurants in 11,500 cities [66].

As far as strategies are concerned, Uber Eats made a similar volte-face to that of Airbnb. After coddling the demand side (diners) at the start of the pandemic, the company turned its attention to the supply side once sanitary restrictions were eased and restaurants were allowed to reopen. First, Uber adopted more flexible pricing for restaurants (with higher fees associated with stronger marketing support). Second, Uber enlarged its

delivery services by building partnerships with grocery, alcohol, and convenience stores and even florists [50]. It also developed support for small local restaurants with specific grants [68]. Given the well-known difficulties of making food delivery profitable, these strategic moves have helped shape Uber's operations for the long term. The revenue of Uber Eats' "Delivery" segment has continued to grow steadily since the pandemic. In 2024, Uber Eats generated USD 13.7 billion in revenue, which represented a 13.2% increase over the previous year [66].

Situation 3—The crisis hits one side and benefits the other. On crowdlending platforms such as Prosper, the restoration of the relative value of the services for lenders (V_s) depended on the platform's ability to preserve trust and maintain its reputation, which, in turn, depended on the severity of loan default probability. To address this issue, we examined the effect of Prosper's three-month payment relief on the existing loans on the platform. Specifically, we have compared the first 12 months' performance of loans that originated in January 2019 and those that originated in January 2020. The default ratio during the pandemic year 2020 was much higher than the default ratio during 2019 (see Figure A6 in Appendix A). The results are consistent with a recent report (see <https://canvasbusinessmodel.com/products/prosper-marketplace-pestle-analysis> (accessed on 20 April 2025)) that suggests a 3.5% increase in the default ratio across the entire industry during the COVID-19 pandemic. The payment relief program implemented in April 2020 did not initially lead to any significant change in the default ratio (which continued to increase after the implementation of the policy). However, its policies paid off in the end, as defaults did not pile up. Prosper has successfully restored lenders' trust in the platform, and V_s has gradually returned to its pre-crisis level [69]. While Prosper experienced a noticeable increase in defaults during the COVID-19 pandemic, the scale of this increase appears to be more moderate compared with broader industry patterns. For example, on Mintos—one of the largest European P2P lending platforms—default rates surged from approximately 10% to 22% during the pandemic (see <https://p2pplatforms.com/p2p-lending-default-rates> (accessed on 20 April 2025)). Similarly, defaults on Indonesian platforms nearly tripled in 2020 (see <https://www.thejakartapost.com/business/2022/10/02/surge-in-p2p-loan-defaults-could-trigger-natural-selection-analysts.html> (accessed on 20 April 2025)). According to our analysis, although the default ratio of Prosper loans originated in 2020 increased during the pandemic, it never doubled and remained significantly lower than the sharp increases observed elsewhere in the global P2P industry. This comparative evidence suggests that while Prosper was affected by the crisis, its default performance was relatively resilient and was likely supported by its early intervention through payment relief programs and other platform-level risk management policies. According to its annual report, Prosper implemented salary reductions in 2020 to manage expenses during the pandemic. However, the company rapidly recovered from the pandemic and eliminated this salary reduction in 2021 (see <https://www.prosper.com/Downloads/Legal/prosper10k12312021.pdf> (accessed on 20 April 2025)). Just over a year ago, the platform, for example, secured a new USD 75 million financing from Neuberger Berman, a major American private investment management company [70]. Overall, Prosper has managed to maintain its strong position in the crowdfunding sector, remaining the largest platform in the United States [71].

4. Discussion

4.1. Insights into Our Two Research Questions

Our findings are summarized in Table 1 and provide several key insights regarding our two research questions.

Table 1. Actionable summary of the conceptual framework.

	The Crisis Hurts Both Sides.	The Crisis Benefits Both Sides.	The Crisis Hurts One Side and Benefits the Other.
SHORT TERM <i>Start of the crisis</i>	Fact. Participation decreases on both sides.	Fact. Participation increases on both sides.	Fact. Participation increases on one side and decreases on the other.
MEDIUM TERM <i>During the crisis (network effects are at work)</i>	Action. Modify strategies to break the vicious circle. Strategy oriented toward the demand side (i.e., guests).	Action. Modify strategies to make the most of the virtuous circle. Strategy oriented toward the demand side (i.e., diners).	Action. Modify strategies to rebalance participation across sides. Strategy oriented toward the supply side (i.e., lenders).
LONG TERM <i>After the crisis</i>	Fact. Some crisis-driven changes in user behavior and platform operations prove difficult to reverse, especially when they reshape expectations, habits, or market structure. Action. Platforms adjust strategies to mitigate persistent losses and capitalize on new types of gains. Typically, strategies become more balanced, with greater emphasis on strengthening the supply side (e.g., hosts) to restore ecosystem health.	Fact. Participation levels may stabilize at higher-than-pre-crisis levels, but sustaining this growth requires continued strategic investment on both sides. Action. Platforms shift toward a more balanced strategy, giving greater emphasis to the supply side (e.g., restaurants) to retain supply capacity and ensure quality.	Fact. Asymmetric participation persists if user perceptions or external conditions do not fully normalize. Action. Platforms adopt a more balanced strategy, placing greater emphasis on re-engaging the previously harmed side (e.g., borrowers) to restore equilibrium.

The first question (RQ1) was the following: How can we explain such contrasting impacts of the shock (short-term effect)? Our analysis shows that the impact of the shock on the platform is closely tied to users' perceptions of relative value and trust, especially under uncertainty. At the onset of a crisis, it is essential to assess how user participation is affected; when both sides are negatively (or positively) impacted, participation tends to decline (or increase) across the board. In cases of asymmetry, participation may rise on one side while falling on the other. Cross-side network dynamics are critical at this stage, as they can trigger rapid vicious or virtuous cycles.

The second question (RQ2) was the following: What can we learn about SEP performance and strategies to ensure medium- and long-term sustainability during crises? In the medium term, platforms can adjust their strategies to influence user dynamics. Effective responses aim to counteract vicious cycles, reinforce virtuous ones, or rebalance participation when the effects of a crisis are uneven. Platforms generally have to support one side more extensively (e.g., guests for Airbnb, diners for Uber Eats, or lenders for Prosper), sometimes at the expense of the other side. This highlights the importance of the adaptive interplay between cross-side network effects and platform strategies, as well as how this interplay evolves over time.

In the long term, strategic adjustments may be necessary even after the crisis has passed—particularly when short-term shocks have lasting effects or when medium-term changes prove difficult to reverse. Even when user participation rebounds, long-term sustainability often requires ongoing strategic refinement, as user expectations and competitive conditions continue to evolve. At that stage, platforms generally adopt a more

balanced strategy, placing greater emphasis on re-engaging the side that was previously neglected in order to restore equilibrium and revive growth.

4.2. Platform Diversity: The Role of the Degree of Centralization

Besides two-sided dynamics and crisis timelines, platforms may also differ in their degree of centralization [5]—i.e., the extent to which decisions, coordination, and control are concentrated at the core of the organization. These differences may moderate how sharing economy platforms respond to crises and shape their adaptive capacity.

Among the three platforms that we analyzed, Uber Eats stands as the most centralized. As a subsidiary of Uber Technologies, its operations are deeply integrated into a centralized infrastructure with tight managerial control over logistics, pricing, and service standards. Buyers (diners) and sellers (restaurants) do not meet or interact directly. This allowed Uber Eats to act swiftly during the pandemic [32,52], expanding into adjacent markets (e.g., grocery delivery), adjusting pay for riders, and renegotiating restaurant terms. Centralized control enabled coherent strategy deployment across global markets and the rapid reallocation of resources toward high-demand areas.

Airbnb exhibits a moderate level of centralization. While it is a global, for-profit firm with strong centralized branding and platform design, it also relies heavily on decentralized supply—i.e., individual hosts managing listings autonomously and buyers (guests) and sellers (hosts) meeting and interacting directly [47,63]. This semi-centralized structure shaped Airbnb's crisis response in distinctive ways. The platform quickly implemented top-down measures (e.g., global guest refund policies and new sanitation standards), but these imposed costs on hosts and triggered tensions. The partial autonomy of hosts limited Airbnb's ability to enforce consistent responses across the supply side, revealing trade-offs inherent to platform models that combine centralized branding with decentralized asset provision.

Prosper, while also a centralized company in legal and managerial terms, operates in a domain—peer-to-peer lending—where it plays more of a facilitative and regulatory role [71]. Compared with Uber Eats and Airbnb, Prosper's crisis strategy leaned more heavily on managing information flows and setting expectations between borrowers and lenders. During the COVID-19 pandemic, Prosper strengthened its role as an intermediary; it implemented enhanced borrower identity verification, hosted public loan performance data, and enforced stricter credit grading to maintain lender confidence—a crucial move given that investor withdrawals posed a significant risk to platform liquidity [33]. Its centralization enabled it to revise credit policies, tighten borrower screening, and signal trustworthiness—actions that helped restore lender confidence. However, it had limited direct control over lender behavior, which is influenced by broader market sentiment and individual risk assessments.

These differences in governance structures allow us to reflect more broadly on the potential advantages and disadvantages of centralization in the context of a crisis such as the COVID-19 pandemic.

One key advantage of centralization is speed and coordination in decision making. Platforms with centralized control, such as Uber Eats, could quickly implement consistent strategic shifts across markets—such as expanding into grocery delivery, adjusting rider compensation, or repricing services—without relying on input or consent from dispersed user groups. Centralization also facilitates resource reallocation, allowing platforms to rapidly deploy capital, marketing efforts, or technical infrastructure where it is most needed. This proved particularly useful in seizing new demand, as seen in Uber Eats' rapid growth during lockdowns. Similarly, Prosper benefited from centralized authority in adjusting platform rules—tightening credit policies and improving risk assessments—to restore trust.

Although it did not control the behavior of lenders directly, its ability to enforce new eligibility standards and communicate clearly with users helped rebalance the platform.

However, centralization is not without costs. One disadvantage is the potential for misalignment between platform decisions and user expectations, especially when platform participants bear the costs of top-down decisions. This tension was clearly visible in Airbnb's crisis response; while the platform acted quickly to reassure guests through full refunds and safety protocols, many hosts felt alienated by these decisions, as they were implemented without host input and resulted in significant financial losses (available online: <https://www.biznews.com/locked/2020/04/29/covid-19-curses-airbnb> (accessed on 20 April 2025)). Here, the limits of centralization are evident, particularly in hybrid models that rely on user-provided assets or labor.

In contrast, platforms with more decentralized structures might be slower to act but more attuned to local needs or user-driven adaptations. For example, independent restaurants dissatisfied with Uber Eats' commission fees turned to local delivery cooperatives during the pandemic. Notable cases include Gotanda Eats in Tokyo, a local delivery platform initiated by restaurants themselves [67], and CoopCycle, a federation of bicycle delivery cooperatives operating in several European cities [72]. These alternatives are more decentralized in that they are either owned and governed by participating restaurants and couriers (as in platform cooperatives) or operate on a peer-coordinated, nonprofit basis, giving stakeholders a direct voice in operational decisions and profit-sharing. Unlike Uber Eats, which enforces uniform policies and commissions across markets, these decentralized models often allow more autonomy at the local level, lower commission fees, and greater responsiveness to community needs [7]. However, they often lack the scale, marketing power, and capital access that centralized players can mobilize quickly during a crisis [67].

Overall, our cases suggest that centralization enhances strategic responsiveness and execution speed but can generate backlash or fragility if user trust is undermined. The trade-offs between decisiveness and inclusiveness become especially salient in periods of rapid disruption.

5. Conclusions

Crises such as the COVID-19 pandemic challenge the sustainability of digital platforms by disrupting participation on one or both sides of the market. Because of the amplification power of network effects, initial disruptions can quickly lead to persistent consequences. In such situations, platform managers must respond with timely and well-designed strategies.

In this study, we propose a conceptual framework that examines how disruptions unfold over time, across the short, medium, and long term, and how platform strategies can mitigate risks or seize emerging opportunities. By modeling SEPs as two-sided markets, the framework emphasizes the role of cross-side network effects, which help explain the contrasting impacts of the COVID-19 crisis on the three platforms studied, thereby answering our first research question (RQ1): How can we explain such contrasting impacts of the shock (short-term effect)?

Our case-based application to Airbnb, Uber Eats, and Prosper illustrates three distinct crisis scenarios: negative shocks on both sides, positive shocks on both sides, and asymmetric shocks. These distinctions matter because they generate different dynamics; some platforms face vicious cycles of declining participation, others benefit from virtuous cycles, and still others must manage imbalances across user groups. Long-term sustainability depends not only on immediate resilience but also on the reversibility of behavioral and strategic changes.

These different dynamics have required distinct strategic responses in shaping platform resilience. Analyzing these responses has allowed us to address our second research

question (RQ2): What can we learn about SEP performance and strategies to ensure medium- and long-term sustainability during crises?

Our framework offers both theoretical and practical contributions. It enriches the theoretical understanding of platform responses to external shocks by emphasizing temporal dynamics, rather than treating crises as static events. It also introduces a novel classification of crisis scenarios that captures heterogeneity in user-side impacts and highlights the resulting feedback mechanisms generated by network effects.

More importantly, by combining conceptual analysis with empirical case studies, the study bridges the gap between abstract models of platform behavior and observed firm strategies. While previous work often examines isolated platforms or single-market settings, our comparative and structured approach yields broader insights. This positions the framework as a foundation for future empirical testing and policy analysis, especially in sectors where digital platforms play a central role in economic coordination.

Lastly, these observations also carry practical implications for platform managers and policymakers. For platform managers, the framework offers a way to anticipate the temporal unfolding of crises and plan strategic responses accordingly. By distinguishing between short-term disruptions, medium-term feedback effects, and long-term lock-in risks, the model encourages proactive intervention rather than reactive crisis management. For example, platforms can prepare contingency strategies that are asymmetrically targeted at the more vulnerable side of the market or build features that increase user stickiness and trust before a shock occurs. For policymakers, the framework can help identify which platform markets may require targeted support or regulation during crises. For instance, interventions may be warranted in cases where cross-side network effects create systemic fragility or where platforms serve essential services such as housing or finance.

In this study, we analyzed three emblematic cases—Airbnb, Uber Eats, and Prosper—that survived the COVID-19 crisis, allowing us to study the strategic responses of sharing economy platforms. We acknowledge, however, that some platforms did not weather the crisis and eventually exited the market. While a systematic analysis of failed platforms is beyond the scope of this study, it represents a valuable direction for future research. For instance, Getaround, a peer-to-peer car-sharing platform, struggled with collapsing demand during the pandemic, which ultimately led to a market exit [73]. Similarly, Deliveroo withdrew from several markets during and after the pandemic, including Spain, the Netherlands, Australia, and Hong Kong. These cases highlight how the pandemic not only exposed short-term operational vulnerabilities (such as a sudden drop in demand or supply) but also amplified existing structural challenges. Platforms operating on thin margins, with limited access to capital or facing unfavorable regulatory environments, were especially at risk. Moreover, these examples suggest that larger, well-established platforms with broad user bases and diversified operations—such as those analyzed in this study—tend to be more resilient than smaller or more regionally concentrated businesses. Their scale allows them greater flexibility in adjusting strategies, absorbing shocks, and sustaining trust among users in times of uncertainty.

At the same time, several limitations of the framework must be acknowledged. First, while the COVID-19 pandemic provides a rich natural experiment, the specific nature of that crisis—its global scale, prolonged timeline, and deep behavioral impact—may not fully represent more localized or short-term disruptions. The framework's applicability to other types of crises (e.g., financial, geopolitical, or climate-related) remains to be empirically tested. Second, our model is tailored to SEPs, which are structurally two-sided and involve user-generated supply. While the underlying logic may extend to other digital platforms (e.g., app stores, B2B marketplaces, social media), adaptations may be required to capture sector-specific dynamics, particularly where network effects or governance models differ

substantially. We leave it to future research to test the validity and practicality of this framework over a larger set of platforms and crises.

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Appendix A Empirical Analysis of Prosper.com

Prosper is one of the largest online peer-to-peer lending platforms. Since its establishment, it has attracted more than one million users and has generated more than USD 4 billion in loan volumes. The platform aims to match potential borrowers with lenders through a simple process.

To observe how Prosper has been affected by the pandemic and how it reacted, we collected Prosper’s listing and loan data between August 2019 and May 2021. The listing data cover detailed characteristics of borrowers who apply for loans on the platform, including their credit history, homeownership, income, occupations, and so on. Based on the borrowers’ information, the platform estimates the borrowers’ loss rate and assigns them a Prosper rating. Specifically, the Prosper rating has seven grades: A.A (lowest risk), A, B, C, D, E, and H.R. (highest risk). Each listing is alive on the platform for two weeks, during which it receives lenders’ investments. If a listing is funded over 70 percent before its expiration, then a loan is successfully originated. For those successfully funded loans, the loan data then record their final status and performance information. The dataset is publicly accessible and can be directly downloaded from the website.

We present here the various indicators that we refer to in the study. On each figure, the vertical dashed line corresponds to the start of the pandemic, that is, April 2020. Figure A1 depicts the success ratio of listings on Prosper, that is, the percentage of listings that successfully turn into loans in a given month.

Figure A2 depicts the percentage of listings that are canceled in a given month. Specifically, Prosper may cancel some listings when borrowers fail to meet specific criteria to borrow on the platform.

Figure A3 depicts the distribution of borrowers across ratings on Prosper (per month), with 1 representing the lowest grade (HR) and 7 representing the highest grade (A.A). The size of each circle is determined by the share of the corresponding rating in the total population of borrowers; that is, a rating has a larger circle in a given month if Prosper attached it proportionately to a larger share of borrowers during this month.

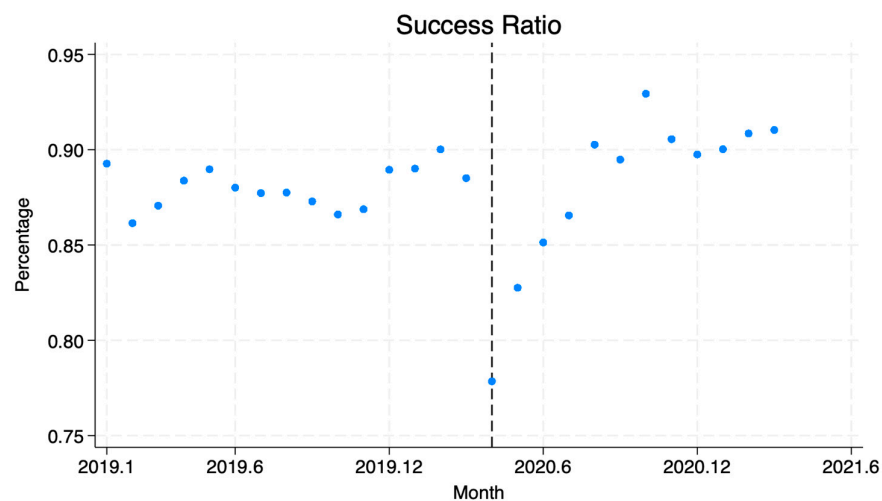


Figure A1. Success ratio of listings on Prosper.

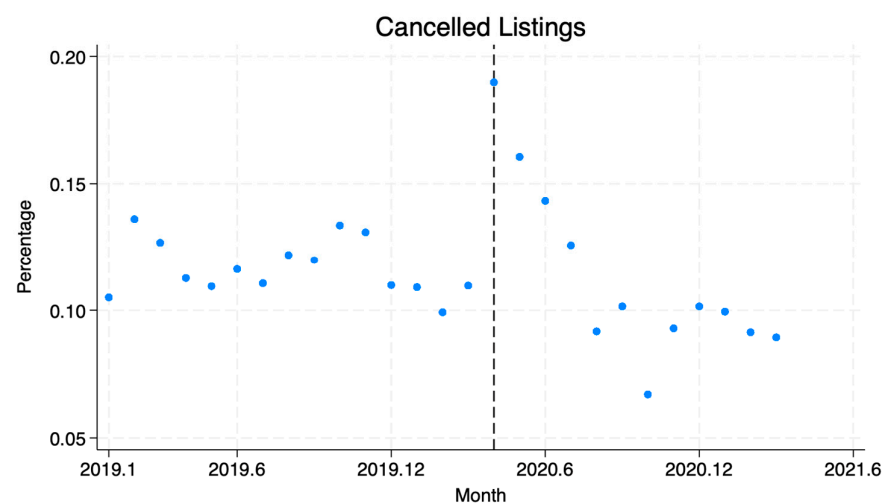


Figure A2. Percentage of canceled listings on Prosper.

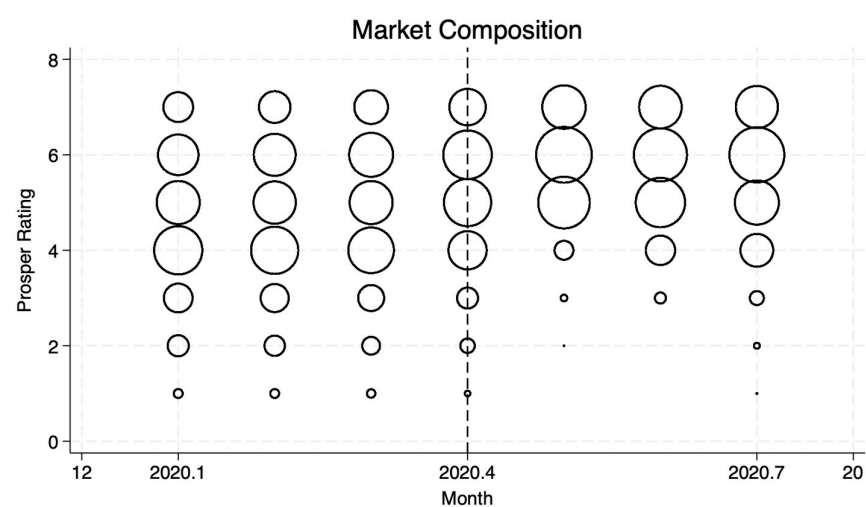


Figure A3. Distribution of borrowers across ratings on Prosper.

Figure A4 depicts the average amounts (in USD) of all of the listings accepted on Prosper in a given month.

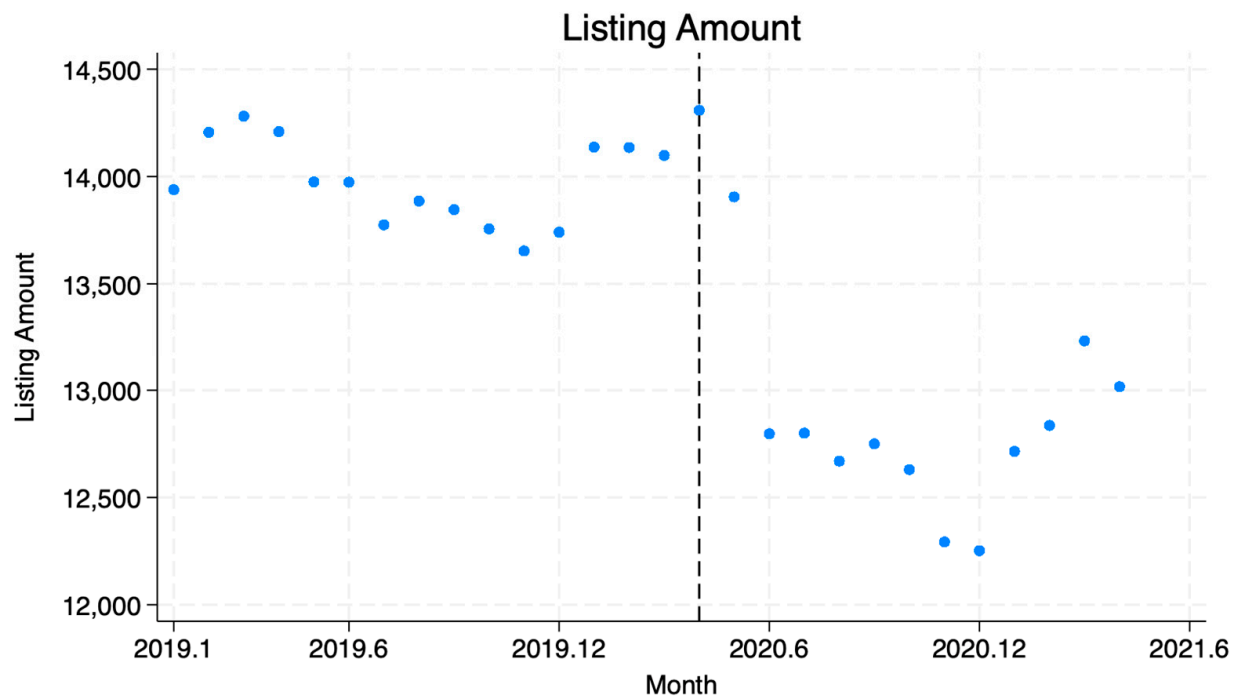


Figure A4. Average amounts of listings on Prosper.

Figure A5 depicts the number of listings displayed on Prosper in a given month.

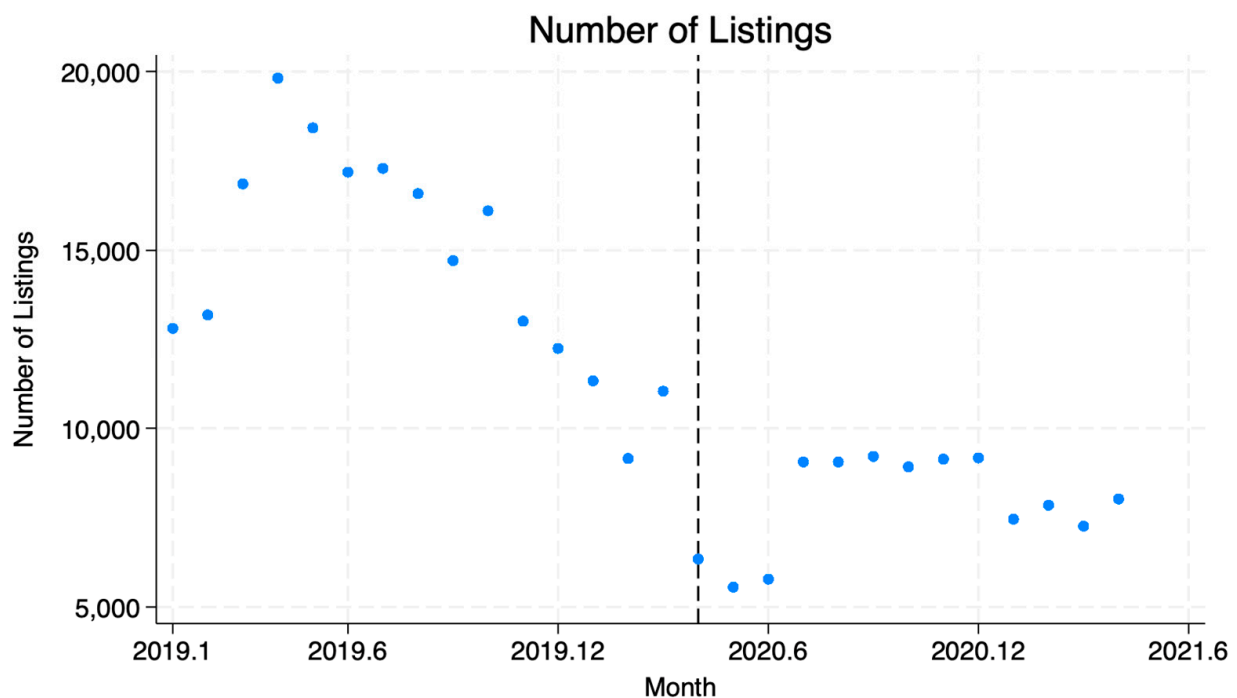


Figure A5. Number of listings displayed on Prosper.

Figure A6 depicts the default ratio in the first 12 months of loans originated in January 2019 (blue dots) and loans originated in January 2020 (red dots). The default ratio in a given month is calculated by dividing the number of defaulted loans that reached 121 days past due to the total number of loans.

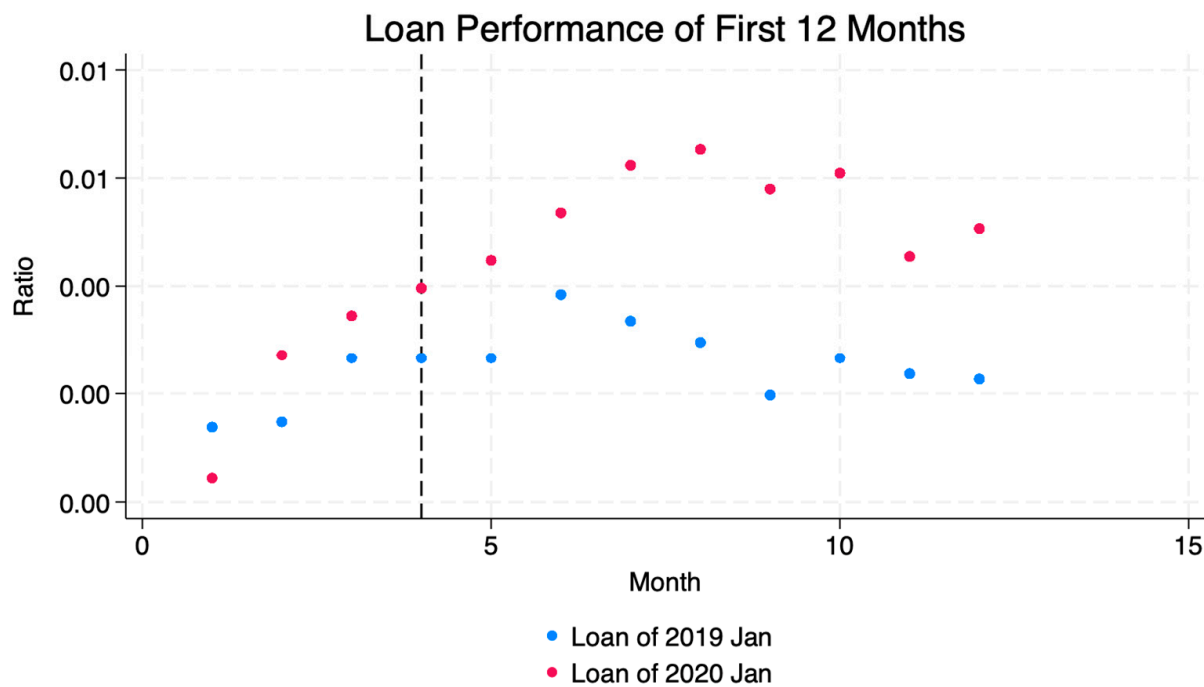


Figure A6. Default ratio of loans on Prosper.

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