Referee Report of "Dog eat dog: measuring network effects using a digital platform merger"

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1 Summary of paper

The paper studies on whether the reduction in the number of platforms would benefit the customer of these platforms. The researcher is particularly interested in two counterbalancing effects on consumer welfare resulted from the reduction of the number of platforms. On one hand, the consumers' welfare can potentially increase due to the increased matching efficiency because of network effects, while on the other hand, the consumer's welfare may decrease due to decrease in the variety of services provided by platforms.

An ideal scenario to identify the network effect is to measure the increased matching frequency and quality through the platform after the exogenous incremental increase in the number of users, holding other variables the same. The merger between two online pet service platforms provides a natural experiment for the authors to identify the effects. The authors conducted the difference in difference analysis using the individual-level data provided by the online platform that remains after the merger.

The paper finds that there are differential welfare effects for users using different platforms before the merger. As predicted by the theory, the users of the acquiring platform enjoy the network effects after the acquisition. However, the platform also experienced the post-acquisition user attrition from the users of the acquired platform, suggesting the reduction in the horizontal differentiation of competing platforms after the merger. Therefore, the paper concludes that there is no substantial overall welfare gain for consumers.

2 Assessment of contribution

The incremental contribution of the paper to the empirical literature is mainly resulted from the detailed individual level data they acquired. Since the researchers can identify the same individuals before and after the merger, they can measure the behavioral change of users. In addition, the paper is able to identify the prevalence of multi-homing before the acquisition and is able to analyze its role in determining the incremental network effect emerging from

the merger. Last but not least, the paper explores the network effect in terms of both intensive and extensive margins.

3 Critiques

For further researchers, the following may be some directions to extend the current study. First of all, network effect may not be linear in the number of users, but rather exponential. The marginal effect of exogenously adding the first person may not be the same as the marginal effect of adding the tenth person.

Furthermore, the paper uses the number of sellers as the proxy for the variety of dog sitting services provided. However, it is not necessarily the case since different sellers may have overlap in providing the same date of services. This fact can be perceived as the more general case than the multi-homing of sellers. More specifically, the network effects contribute to consumer welfare by increasing the frequency and quality of match. This implicitly assumes that there were demand not being matched before the merger. Thus, a better framework to analyze the demand and supply may be to directly use the demand date and the supply date.

We may also use the stock price data to gauge the network effect. Suppose we can observe separately the financial valuation of both platforms before the merger, and the financial valuation of the remaining company after the merger. The premium can be defined as the new firm's price minus the sum of the two platforms' financial valuation. Theoretically, this premium should reflect the change in profitability of the firm after the merger. The increase in the profitability includes the economies of scale, network effects and other factors. If we can estimate the cost structure of the platform, and we may be able to subtract this part from the premium and define the remaining amount as some measurement of network effects.

References

[1] Chiara Farronato, Jessica Fong, and Andrey Fradkin. *Dog eat dog: measuring network effects using a digital platform merger*. NBER Working Paper Series, 2020