

# Platforms killed the offline star? Online platforms and the productivity of incumbent firms

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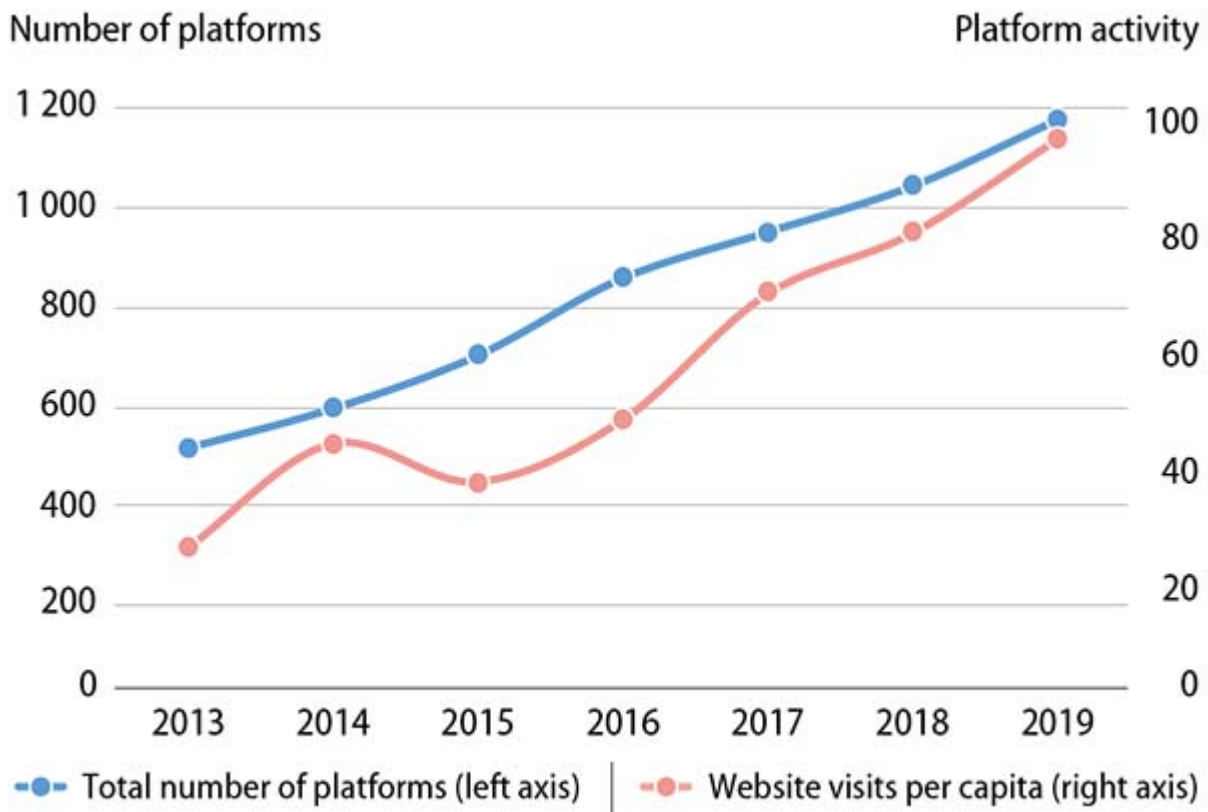


Over the past decade, online platforms have become ubiquitous. People and firms increasingly turn to online platforms to exchange goods and services (including accommodation, retail products, personal and professional services) (Figure 1A). The COVID-19 shock further increased online-platform use even as they allowed people and firms to keep working and producing while respecting physical distancing rules (Figure 1B).

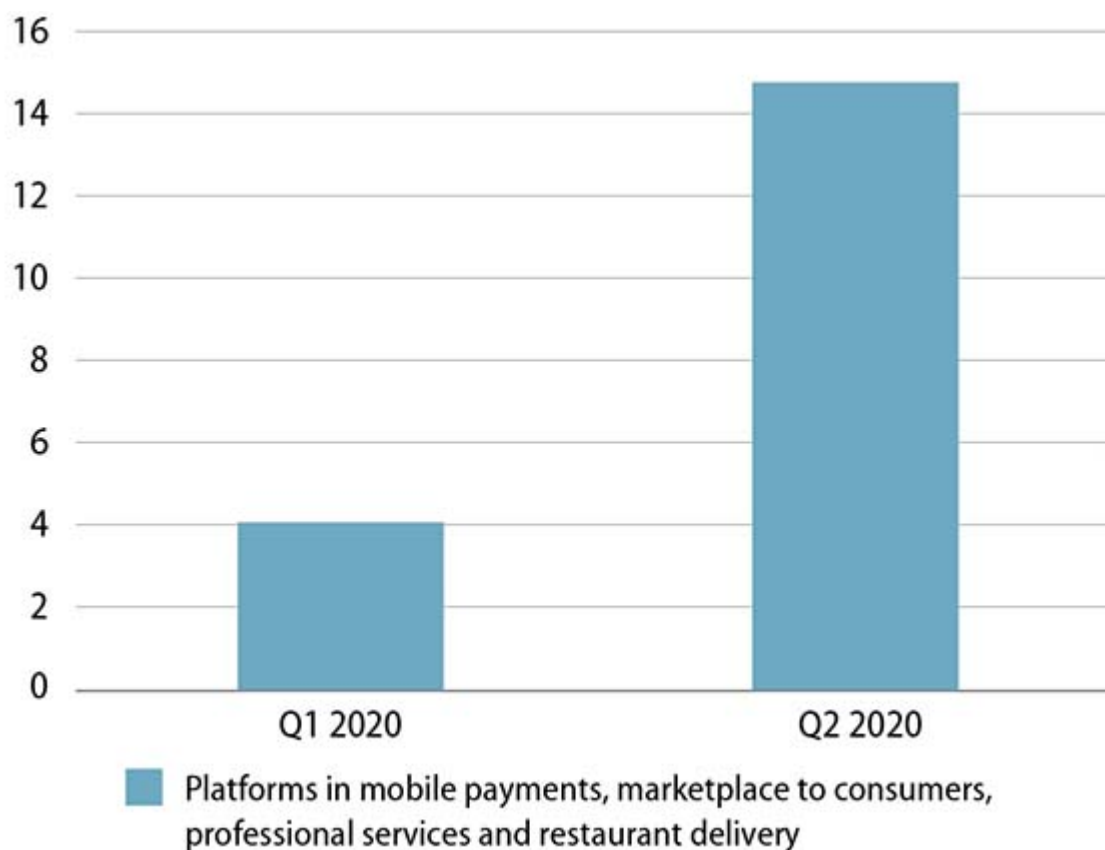
However, the impact of online platforms on economies and societies is complex, uncertain and hotly debated. In some cases, as the COVID-19 shock attests, online platforms can positively contribute to economies' resilience to shocks involving severe disruptions to physical economic activity. At the same time, their long-term impacts on jobs, competition, productivity dynamics, data privacy and security, and other socio-economic dimensions are still poorly understood and likely to be mediated by policy responses.

**Figure 1. Platform activity has accelerated, particularly during the COVID-19 crisis**

Panel A: Platform activity has been on the rise



Panel B: Platform activity surged during the COVID-19 crisis



Note: Panel A depicts the total number of platforms in all G20 countries (left axis) and the average platform activity (expressed in the number of visits to all platforms' websites in each country over each country's population) across 12 G20 countries for which data are available for all years (right axis). Panel B shows the growth in online-platform activity in areas allowing for physical distancing (measured as the change of the Google Trends searches for online platforms) in the first 6 months of 2020 relative to the first six months of 2019.

Source: Costa et al. (2021a) and OECD (2020).

Against this backdrop, in two recent papers (Costa et al., 2021a and Costa et al., 2021b) we use novel data sources to document the diffusion of online platforms across OECD and G20 countries (with the exception of China and Colombia) over the past 10 years and investigate their impact on firm-level productivity growth. We focus on platforms allowing two or more distinct but interdependent sets of users (firms or individuals) to exchange goods or services via the Internet. Using web-scraping techniques, we create the most comprehensive list yet of online platforms active in each of the 43 countries covered in this study over 2013-2019. We classify platforms in nine areas of activity (e.g. accommodation, personal services, transportation). The final list covers about 1 300 platforms and includes not only large

and well-known platforms but also smaller and country-specific ones. We proxy online-platform use with online platforms' website traffic data (i.e. the number of visits to online platforms' websites).

### **How do online platforms affect the productivity of incumbent firms?**

Online platforms could affect productivity through a variety of channels. First, platforms in direct competition with incumbent firms (such as Uber or Airbnb) can encourage innovation, raising incumbent firms' productivity or force the exit of the less productive ones. Second, platforms that connect existing service providers with consumers (such as Booking.com or Thefork) can contribute to incumbent firm productivity growth by enhancing market transparency – through for instance review systems and price comparisons – and providing improved services such as booking systems and logistics. At the same time, platforms could hinder aggregate productivity growth by weakening market selection, making it easier for small and less productive firms to enter the market and survive (Schwellnus et al., 2019).

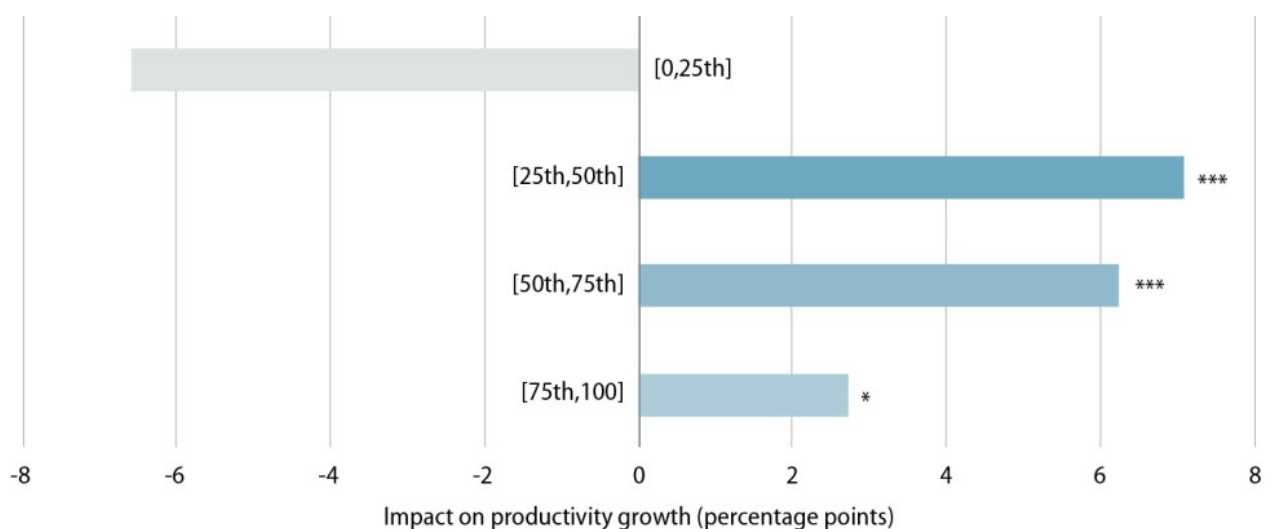
Our results indicate that online platform activity is positively associated with labour productivity growth of incumbent firms. Point estimates suggest that doubling online-platform activity is on average associated with a 2.3 percentage point increase in firm-level labour productivity growth. These productivity gains are attributable to increases in value added and not reductions in employment. Access to services provided by online platforms, such as logistics, marketing, tailored advertising, dispute resolutions and others can make it easier for incumbent forms to reach new clients and improve service quality, boosting firms' revenues and value added.

The productivity benefits generated by online platforms differ across firms. They are larger for SMEs – with a positive and

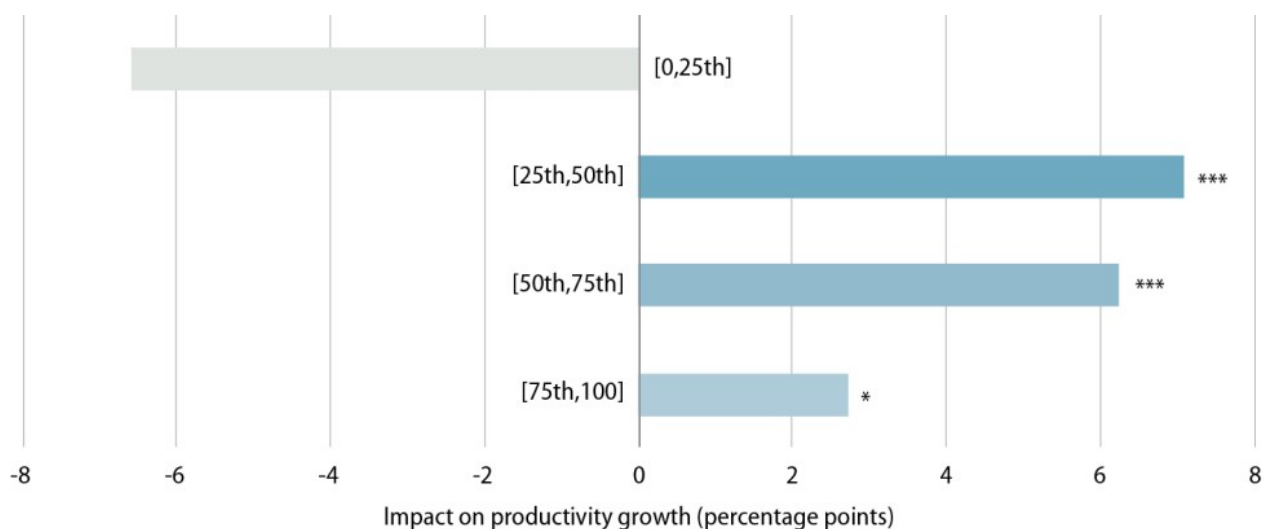
significant relationship evident for firms with up to 100 employees (Figure 2, Panel A) – and for mid-range productivity firms (Figure 2, Panel B).

**Figure 2. Online-platform activity benefits mostly productivity of small firms and can help lower-productive firms to catch up to the technological frontier**

Panel A: Change in firm-level labour productivity growth attributable to a one standard deviation in online-platform activity in the same sector, by firm size (number of employees)



Panel B: Change in firm-level labour productivity growth attributable to a one standard deviation increase in online platform activity in the same sector, by firm labour productivity level



Note: Bars' colour and stars indicate statistical significance level:\*\*\* 1%, \*\*5%, \*10%. Bars measure marginal effects of increasing activity by one standard deviation in percentage points, by size category (Panel A: number of employees; Panel B: labour productivity classes). Platform activity is measured by the number of visits to a platform's website. Panel B: Labour productivity classes are defined for each sector and year and labour productivity is lagged by two years to diminish the risk of endogeneity bias. Results using once-lagged productivity remain similar.

Source: Costa et al. (2021b).

The winner-take-all dynamics that characterise online platforms' operations can lead to market dominance based also on the accumulation and exploitation of proprietary data on user behaviour (OECD, 2018). Our analysis indicates that higher persistence among the largest platforms (i.e., less reshuffling amongst largest platforms) weakens the positive association of platform activity with firm-level productivity growth. This is indicative that less contestable online-platform markets lower the productivity benefits of online platform activity for incumbent firms.

Overall, our analysis suggests that platform diffusion can contribute to firm-level productivity growth, helping SMEs overcome barriers hampering their growth and facilitating the catch up of laggard firms towards the productivity frontier. The results also point to the importance of keeping online-platform markets open and contestable for realising such productivity benefits.

## References

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