

Academic productivity and pandemic evidence from female economists during the COVID-19 crisis

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Working from home has become increasingly popular among firms and workers, especially during the last decade. The interest for the economic implications stemming from smart-working has been renewed during the COVID-19 pandemic. Indeed, governments to curb down the virus spread have adopted several non-pharmaceutical interventions that resulted also in a wide encouragement to businesses to switch their activities from face-to-face to remote, generating the largest home-working experiment in modern history.

However, the home-working experienced by many during the first wave of the pandemic is conceptually different from the usual remote flexibility arrangements proposed by firms. First, while allowed to work remotely, people were also forced to stay home because of lockdown measures. Second, with school closures many parents have found themselves to look after children while expected to continue to work from home, increasing dramatically childcare demand and household chores that are disproportionately shouldered by women.

Hence, how has the productivity of men and women been affected while home-working during the pandemic? While punctual, appropriate and real-time data (especially from the private sector) is often unavailable, it is possible to focus the attention on the academic sector that, as governments mandated schools and universities closures, has shifted, almost immediately, its activities virtually without interrupting education and students' training.

In particular, in this research, I decided to focus on the economics field within the academic sector, given that economic research usually begins to circulate, well before peer-reviews, in the form of working papers allowing me to trace almost in real-time (on a daily basis) how economists' productivity evolved, especially during the lockdown period. Specif-

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ically, the research question aims to investigate how the productivity of female economists has been impacted by the current pandemic, also in light of the sudden increase of household chores borne by women due to school closures and social distancing measures.

Besides, there is already evidence of the health shock crisis effect on female economists' productivity, I am the first to test directly whether the sudden increase in childcare demand, due to the lockdowns, has played a role in causing the widening of the gender production gap.

To achieve causal identification I exploit the begin of lockdown policies enacted as the results of the COVID-19 pandemic as an exogenous shock to (female) academic productivity within a Difference-in-Differences approach. Data on daily published economics working papers, extracted through web-scraping techniques, are collected from the SSRN web archive. My sample is composed of 4,778 distinct pre-prints involving 8,651 authors (of which 2,217 female and 6,405 male economists) observed from January to November 17, 2020.

According to the DID estimates, within different bandwidth sizes measured in terms of number of days before and after the lockdown begin, there is evidence that the lockdown period has a significant negative impact on the number of working papers that a female economist, alone or jointly with other researchers, uploads on SSRN of about 20 percentage points, and this effect persists up to about 4 months later. These estimates yield, hence, consistent results with the idea that lockdown policies have affected negatively the labour market performance of female academic economists. However, for authors exposed to school re-openings within the same time frame, declines in productivity disappear suggesting that indeed childcare demand has been an important channel in causing women production drop.

Furthermore, by exploiting the individual author-level dimension of the data, that is tenure, I show that the dynamics of the daily number of female authors mirrors the dynamics of the gender production gap during the lockdown and the school re-openings period, highlighting, however, that tenured economists working within academia are those who most suffered (gained) during mobility restrictions (school re-openings) period.

In addition, I show that my results are very robust to a series of falsification tests, specifically a placebo test on pre-lockdown period and using data on 2019, that formally rule out the possibility that my estimates are driven by a seasonality concern. Finally, I explore also whether the negative effect on female academic productivity, due to the lockdown, can be explained by an increase in quality (measured by two different proxies), as if researchers traded-off quantity for quality. The empirical estimates suggest that in the aftermath of the lockdown measures research quality did not change significantly, supporting the idea that my findings are unlikely to be driven by the shifts in research quality at the expense of quantity.