

Work from Home & Productivity: Evidence from Personnel & Analytics Data on IT Professionals

Michael Gibbs, Chicago Booth; Friederike Mengel, University of Essex; and Christoph Siemroth, University of Essex

While total hours worked increased by roughly 30% during a COVID-induced work-from-home period at a large Asian IT company, average output did not significantly change, and productivity fell by about 20%.

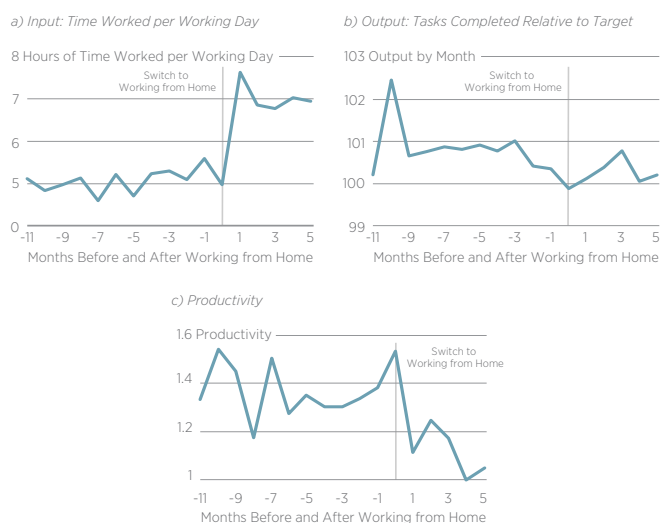
The Covid-19 pandemic forced a dramatic rush to work from home (WFH) in early 2020. Even if only a fraction of this global shift became permanent, it would have implications for urban design, infrastructure development, and reallocation of investment from inner cities to residential areas. Of course, it would also have significant implications for how businesses organize and manage their workforces.

There is significant debate about the effectiveness of WFH, including how much further we can improve implementation, and the extent to which firms will continue the practice. Initial experiences led to optimism, but many firms are starting to question the sustainability

of extensive WFH. One of the most important questions in this context is how WFH affects productivity.

This paper provides an analysis of the effects of the switch to WFH in a large Asian IT services company that abruptly switched all employees to WFH in March 2020. This study has several novel features, including a rich dataset for a sample of more than 10,000 employees for 17 months before and during WFH. The data include information on productivity, hours worked and how that time was allocated, and the employee's contacts with colleagues inside and outside the firm. In addition, it includes an estimate of the employee's commute time when they had worked at the office, and how many children (if any) they have at home.

Figure 1 • Average Outcomes by Month



The key measures are based on relatively objective measures of work time and the employee's output, which were collected from the firm's workforce analytics systems. The company has a highly developed process for setting goals and tracking progress, culminating in a primary output measure for each employee. The data also include information on hours worked, the authors' primary input measure. Productivity is measured as output divided by hours worked. Most prior studies of WFH were based on survey data, so this is an unusual opportunity to study employee performance using the measures that the firm employs.

These data also include (for a subset of employees) time allocation for various activities, including meetings, collaboration, and time focused on performing work without distractions. It also includes information on networking activities (contacts) with colleagues inside and outside the firm, as well as various employee characteristics.

Of note, most employees at this company are highly skilled professionals in an IT company where nearly all are college educated. The jobs involve significant cognitive work, developing new software or hardware applications or solutions, collaborating with teams of professionals, working with clients, and engaging in innovation and continuous improvement. These job characteristics may present significant challenges to effective WFH. By contrast, previous studies of WFH productivity either used self-reported measures of productivity or focused on occupations where workers have relatively simple and repetitive tasks, often follow scripts, and work independently, such as call center workers.

Finally, the data allowed them to compare outcomes for the same employee before and during WFH. The authors find the following:

- Employees significantly increased total hours worked, by about 30%, during WFH. Much of this increase came from working outside of normal office hours.
- Despite the disruption due to the pandemic and shift to WFH, there was no significant change in measured output (the primary evaluation metric for each employee). In other words, employees continued to meet their goals, which were not changed after the switch to WFH.
- Given their results on work time and output, the authors estimate that productivity declined considerably, about 20%. These results are consistent with employees becoming less productive during WFH and working longer hours to compensate.

Why did productivity decline? The authors find that employees spent more time engaged in various types of formal and informal meetings during WFH, especially video conferences. Likewise, they spent substantially less time working without interruption. They also spent less time networking (both within the firm and with clients), and less time receiving coaching or 1:1 meetings with supervisors. These findings suggest that increased coordination costs during WFH at least partially explain the drop in productivity.

The authors also found that the productivity of women was more negatively affected by WFH than men. However, this gender difference was not due to the presence of children in the home. Rather, the likely culprit is other demands placed on women in the domestic setting. Employees with children at home increased working hours significantly more than those who did not have children at home, accounting for a greater decrease in productivity.

Among other considerations, these and other findings suggest that communication, coordination, and collaboration are hampered under WFH, and employers should not underestimate the value of networking and uninterrupted work time on employee productivity.