

The Role of Telework for Productivity During and Post COVID-19
Chiara Criscuolo, Peter Gal, Timo Leidecker, Francesco Losma and Giuseppe Nicoletti
Online Appendix

S1 – Robustness Tests

In this Online Appendix, we present the robustness of our main findings to removing countries that make up a large part of our sample (Italy and France; see Table A1-2), confirming that the main results remain unaltered after the exclusion.

Figure S1-I – Assessment of managers and workers



Source and sample: Telework Survey of OECD Global Forum on Productivity. Sample without observations from France and Italy (1,476 observations – without aggregation – for workers; 414 observations for managers). Results based on Q4managers: "How would you assess your company's experience with telework during the COVID-19 crisis from the point of view of the overall performance of the company?"; Q4workers: "How would you assess your employees' experience in your company with telework during the COVID-19 crisis from the perspective of their work-life balance and wellbeing?".

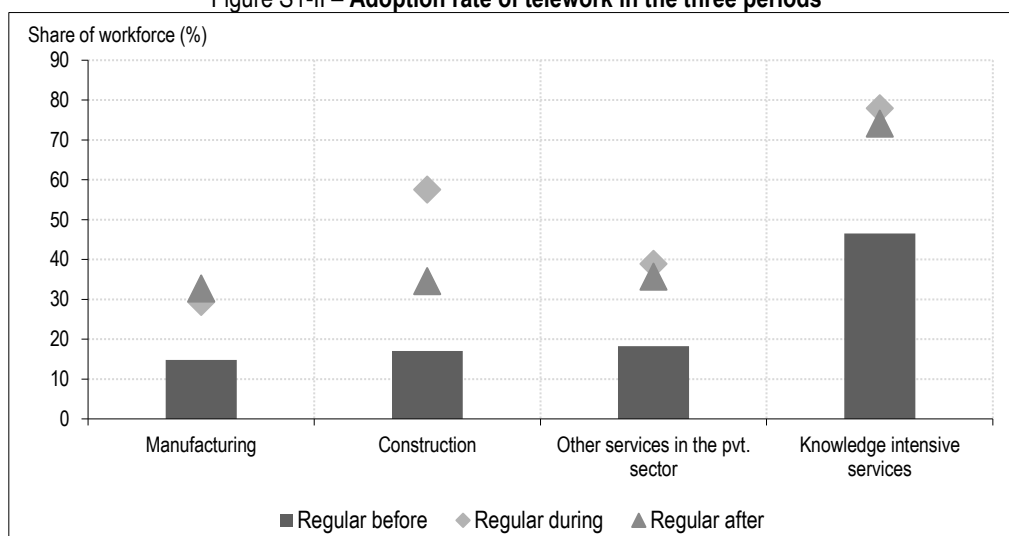
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Table S1-1 – Expected adoption rate in the future as a function of experience, current and past adoption rate

Variable	Adoption rate in the future							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Experience during	0.115*** (0.011)			0.053*** (0.012)	0.059*** (0.012)	0.061*** (0.012)	0.060*** (0.012)	0.046*** (0.012)
Adoption rate during		0.660*** (0.051)		0.502*** (0.066)	0.480*** (0.067)	0.0420*** (0.064)	0.421*** (0.062)	0.417*** (0.074)
Adoption rate before			0.550*** (0.050)	0.186** (0.058)	0.203** (0.062)	0.168** (0.061)	0.174** (0.061)	0.187** (0.068)
Constant	0.053 (0.044)	0.138*** (0.025)	0.311** (0.024)	-0.021 (0.035)				
Country FE	No	No	No	No	Yes	Yes	Yes	No
Sector FE	No	No	No	No	No	Yes	Yes	No
Size FE	No	No	No	No	No	No	Yes	No
Country x Sector FE	No	No	No	No	No	No	No	Yes
N	373	373	373	373	373	373	373	373
R ²	0.144	0.363	0.205	0.412	0.725	0.738	0.740	0.765

Source and sample: Telework Survey of OECD Global Forum on Productivity. Sample without observations from Italy. Results based on Q2Managers: "Approximately, what percentage of employees teleworked?"; Q3aManagers: "Approximately, what percentage of employees was teleworking, and at what frequency, during the Spring 2020 lockdown period?"; Q7Managers: "What should be the ideal distribution of telework from the perspective of the overall performance of the company?"; Q14Managers: "Please state the country in which your company's headquarter is located?"; Q16Managers: "How many employees does your company have?"; Q20Managers: "Which sector best describes your company's main activity?". Robust standard errors in parentheses. * p < 0.05, ** p < 0.01, *** p < 0.001. N=373 is the number of observation of managers' responses (averaged at the firm level) with the complete set of information needed to run the regression excluding responses from Italy.

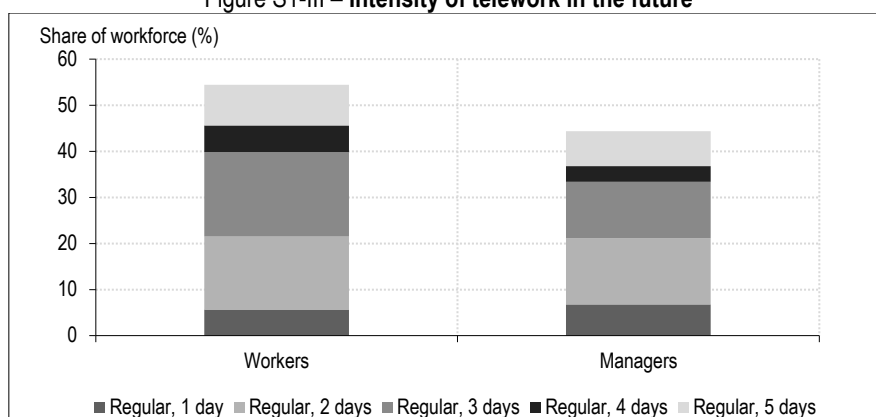
Figure S1-II – Adoption rate of telework in the three periods



Source and sample: Telework Survey of OECD Global Forum on Productivity. Sample without observations from Italy (564 observations on regular telework before the crisis; 550 observations on regular telework during the crisis; 537 observations on desired regular telework after the crisis). Results based on Q2Managers: "Approximately, what percentage of employees teleworked?"; Q3Managers: "Approximately, what percentage of employees was teleworking, and at what frequency during the Spring 2020 lockdown period?"; Q7Managers: "What should be the ideal distribution of telework from the perspective of the overall performance of the company?"; Q20Managers: "Which sector best describes your company's main activity?".

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Figure S1-III – Intensity of telework in the future



Source and sample: Telework Survey of OECD Global Forum on Productivity. Sample without observations from France and Italy (1,277 observations for workers and 383 observations for managers). Results based on Q7Managers: "What should be the ideal distribution of telework from the perspective of the overall performance of the company?"; Q7Workers: "Among those wishing to telework in the future, what percentage of them would telework and at what frequency?".

S2 – More details on the survey and the list of questions

The manager questionnaire was shared *via* the network of business associations through Business at the OECD (BIAC) and the worker questionnaire *via* the network of trade unions of the Trade Union Advisory Committee to the OECD (TUAC).¹

The survey was administered online *via* the platform LimeSurvey and it featured two different versions: one for managers, owners or business associations in the private sector (circulated *via* the network of business associations part of BIAC) and the other one for individual workers, workers' representatives or trade union associations in both the private and the public sector (circulated *via* the network of trade unions part of TUAC). The former aimed at investigating the effect of the sudden adoption of telework on companies' performance as well as the opinions of managers on the benefits and downsides of this practice and their expectations for the future. The latter was intended to shed light on the impact of telework on the well-being and satisfaction of workers. The survey was provided in both English and in the local official languages of GFP partner countries participating in the survey.² The survey target included all members of the two associations with no exclusions. To reach them the links to the online survey were shared with the relevant (OECD) delegates of the two organizations who then shared them with their network, who in turn sent them to their members in the different countries. Given the way the survey was administered it is

¹ Since 1961, Business at OECD (BIAC) is a network spanning more than 50 national businesses and employers' federations representing over 7 million companies from all sectors of the economy. BIAC represents the business sector in all aspects of OECD policymaking as an institutional stakeholder and the officially recognized business advisory body to the OECD. In a specular manner, the Trade Union Advisory Committee (TUAC) is an interface for trade unions at the OECD. It is an international trade union organization with consultative status at the OECD covering 58 national organisations with 54 millions workers in 28 OECD member countries. We refer the reader to the BIAC and TUAC websites, at <https://www.businessatoecd.org> and <https://tuac.org>, respectively, for additional information (e.g. membership coverage across countries). Two subsequent and slightly modified waves of the survey were released (i) through the Malaysian network of companies through the Malaysian Productivity Council (MPC), which carries out research in the area of Productivity and Productivity Training and System Development. More detailed Malaysia-specific results can be found in the 2021 OECD Economic Survey of Malaysia (OECD, 2021a); and among a high knowledge-intensive segment of the public sector, the Energy Regulators Regional Association (ERRA), which allowed us to gain some insights into specificities of telework in the public sector. ERRA membership comprises associations based in Europe, Asia, Africa, Middle East, North and South America.

² Danish, Dutch, French, German, Hungarian, Italian, Japanese, Portuguese, Spanish and Swedish.

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impossible to know how many workers ultimately received the survey and how many of those responded. Respondents were not paid nor received any incentives to answer the questionnaire.

Respondents could answer all or part of the questionnaire. To maximise the survey coverage we decided to use all answers received, irrespective of whether all answers of the questionnaire were provided or only partial responses were received. In other words, in the analysis we used all available information, from both fully completed and non-fully completed questionnaires.

This means that the sample size is specific to each answer to the questionnaire and that the sample size varies across different questions. In addition, the number of observations might change for a second reason which relates to the fact that respondents could come from the same firms. The strategy followed in this case differs depending on whether the relevant question in the survey asks to report on objective facts (number of days worked from home), in which case the responses were collapsed (average across the multiple responses coming from a single company) and reported at the firm level. The rationale for this choice is that otherwise multiple observations from a single firm might have too much of an influence/weight on the aggregate figure (e.g. sectoral/country) on teleworking than they should. However, when respondents were asked about some “subjective” facts (like the opinion towards working from home – positive, negative, etc.) each respondent’s observation is considered separately, independently of whether responses come from the same firm or not.

The survey was administered starting in mid-November 2020. In particular, the BIAC survey was administered as follows:

The Survey in English and Italian was firstly filled in mid-November 2020. The bulk of the answers (50%) came between the 25th and the 30th of November. The last survey was completed in January 2021.

- The translations of the survey in the official GFP languages (namely French, German, Dutch, Hungarian, Spanish, Portuguese, Swedish, and Japanese) were released in the last days of December 2020 and mostly completed by the end of January/beginning of February.
- Moreover, the GFP steering group member in Portugal (GEE/GPEARl) proposed to push the completion of the survey among their network: this second push was launched the beginning of March 2021 and generated most of the answers in the same month.
- Then in March, we got in contact with the Malaysian Productivity Corporation (MPC) which offered to distribute our survey among their network. In March we started the translation and we released the survey in the final days of the same month. This survey was mostly completed in April 2021.

For the TUAC survey

- The Survey in English and Italian was released in November 2020, together with the Business Survey. Differently from this second survey, the bulk of answers was recorded between mid-December 2020 and mid-January 2021. The last survey was completed on the 25th of January 2021
- The translated surveys were released together with the Business ones. The pattern we observed is broadly similar, with most of the observations coming in in January 2021 and the first days of February 2021. The same observation made above for Portugal applies also to the Workers Survey.
- For the release of the worker’s survey among Malaysian enterprises, the same timeframe described above applies here.

Not all workers that replied to the workers survey (4,181) provided information on their position in the firm, but those who did (2,285) are mainly non-managing employees (46%); followed by mid-level or line managers (27%) and employee representative (25%). Executive managers only represent 2% with owner and owner/executive managers being zero.

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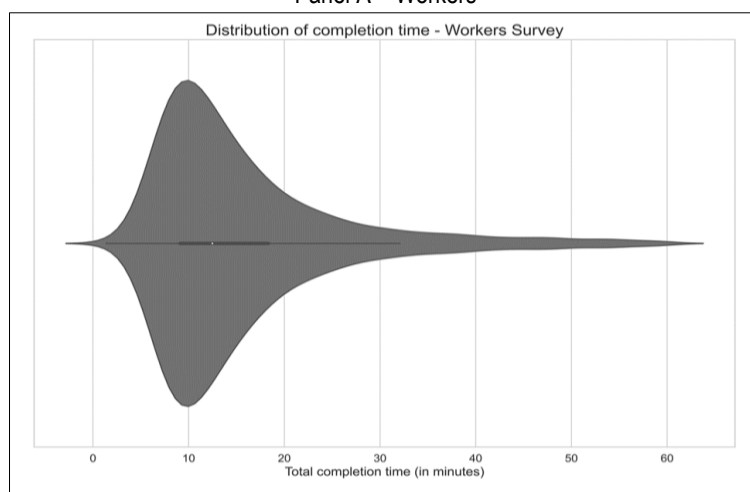
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In order to shed some light on the issue of the quality of responses, we conducted additional analysis on the distribution of survey completion times across respondents and we cleaned the data to avoid using surveys that took an unorderly long time or an unusually short time to be answered.

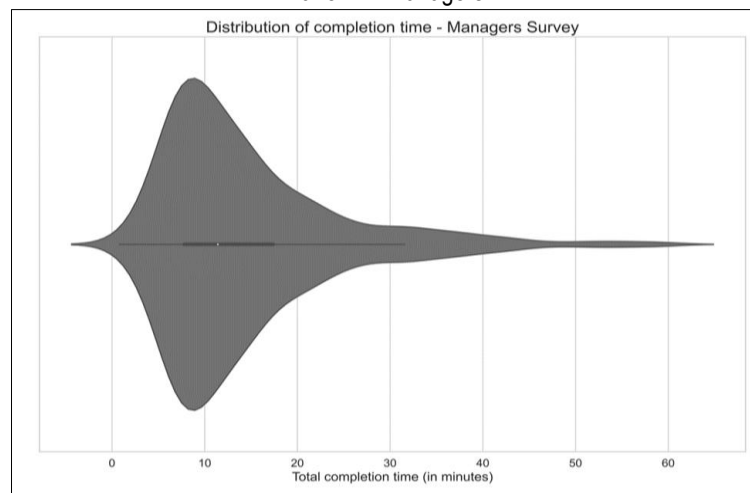
The distributions of completion times for workers and managers in the cleaned sample are reported in Figure S2-I-A and S2-1-B, respectively. The distribution of completion time is at max around an hour in the cleaned sample, which seems reasonable for both managers and workers.

Figure S2-I – Distribution of completion time

Panel A – Workers



Panel B – Managers



On average respondents amongst managers answered 70.4% of all survey questions and respondents among workers 63.3% of all survey questions. The median manager answered 90.6% and the median worker 88.1% of the survey questions. 34.5% of managers and 36.3% of workers provided complete questionnaires. We also calculated average completion amongst different type of workers and sectors. As the questions to identify role and sectors come later in the survey it is unsurprising that completion rates are above 90% across the different group of workers and managers.³

³ A table with this information is available from the authors upon request.

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