

# THE ROLE OF TELEWORK FOR PRODUCTIVITY DURING AND POST- COVID-19: RESULTS FROM AN OECD SURVEY AMONG MANAGERS AND WORKERS

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## ABSTRACT/RÉSUMÉ

### **The Role of Telework for Productivity during and post-COVID-19: results from an OECD survey among managers and workers**

Motivated by the sudden adoption of telework in the wake of the COVID 19 pandemic, the Global Forum on Productivity (GFP) undertook an online survey among managers and workers in 25 countries about their experience and expectations, with a particular focus on productivity and well-being. This paper presents analysis and results from this endeavour. It finds that managers and workers had an overall positive assessment from teleworking both for firm performance and for individual well-being, and wish to increase substantially the share of regular teleworkers from pre-crisis levels. Respondents, on average, find that the ideal amount of telework is around 2-3 days per week, in line with other recent evidence and with the idea that the benefits (e.g., less commuting, fewer distractions) and costs (e.g., impaired communication and knowledge flows) need to be balanced at an intermediate level of telework intensity. To meet the challenges of this “hybrid” working mode, as the survey finds, further changes from management are needed, such as the co-ordination of schedules to encourage a sufficient degree of in-person interaction, and further investment in ICT tools and skills as well as more soft skills to master online communication.

*JEL Classification codes:* D24, M1, O3.

*Keywords:* productivity, telework, working from home, well-being, survey.

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### **Le rôle du télétravail dans la productivité pendant et après la pandémie de COVID-19 : résultat d'une enquête menée par l'OCDE auprès de cadres et d'employés**

S'intéressant à l'adoption soudaine du télétravail dans le sillage de la pandémie de COVID-19, le Forum mondial sur la productivité a mené une enquête en ligne auprès de cadres et d'employés dans 25 pays, sur leur expérience et leurs attentes, notamment du point de vue de la productivité et du bien-être. Nous présentons dans ce document l'analyse et les résultats de cette enquête. Il ressort de celle-ci que les cadres et les employés ont une opinion globalement favorable du télétravail, tant du point de vue de la performance des entreprises que de celui du bien-être individuel, et qu'ils souhaitent que la proportion de salariés pratiquant le télétravail régulier augmente considérablement par rapport aux niveaux d'avant la crise. En moyenne, les répondants estiment que le nombre idéal de jours de télétravail serait entre 2 et 3 jours par semaine, ce qui concorde avec d'autres données récentes ainsi qu'avec l'idée que les avantages (réduction des déplacements domicile-travail, distractions moins nombreuses, etc.) et les coûts (diminution de la communication et de l'échange de connaissances, par ex.) doivent être équilibrés à un niveau intermédiaire d'intensité de télétravail. L'enquête montre en outre que, pour relever les défis liés à ce mode de travail « hybride », les cadres devront opérer d'autres changements, notamment coordonner les calendriers pour encourager un degré suffisant d'interaction en présentiel, et investir davantage dans les outils informatiques et les compétences en TIC, mais aussi dans les compétences comportementales permettant de bien communiquer en ligne.

*Codes de classification JEL :* D24, M1, O3.

*Mots clés :* productivité, télétravail, travail à domicile, bien-être, enquête.

# Table of contents

The role of telework for productivity during and post-COVID-19: Results from an OECD survey among managers and workers	4
1. Introduction	4
2. Telework and productivity: existing evidence and the main mechanisms	8
3. Survey background and sample	11
4. Results from the survey	12
4.1. Telework adoption before and during the COVID-19 pandemic	12
4.2. The experience of managers and workers with telework during the crisis	18
4.3. Expectations about telework post-COVID19: how much and in what ways?	28
5. Discussion about further implications and potential policy actions	33
5.1. Unequal effects across gender, occupations, incomes and geography	33
5.2. The role of public policies: Enable, Empower and Protect	34
References	37
Annex A. Additional tables and figures	42
Annex B. Robustness tests	51
Annex C. Questionnaires of the survey	54
Managers' questionnaire	54
I. Telework before the COVID-19 crisis	54
II. Telework during the COVID-19 crisis	55
III. Your expectations about telework in the post-COVID-19 period	56
IV. Background questions	58
Workers' questionnaire	59
I. Telework before the COVID-19 crisis	59
II. Telework during the COVID-19 crisis	60
III. Your expectations about telework in the post-COVID-19 period	61
IV. Background questions	63
Tables	
Table 1. The structure of the survey and the paper	7
Table 2. More productive firms relied more on telework before and during the crisis	17
Table 3. Will the experience during COVID-19 represent a turning point for the future adoption rate of telework?	20
Table 4. Adaptive measures are positively linked to the experience of managers	23
Table 5. The importance of impeding factors for teleworking experience	24
Table 6. Policies to raise the gains from telework	34

Table A.1. Observations and median employment by sector	42
Table A.2. Observations and median employment by country	42
Table A.3. The impact of lockdown rules on the adoption of telework	44
Table A.4. The persistence of telework adoption at the firm level before and during COVID19	45
Table B.1. Expected adoption rate in the future as a function of experience, current and past adoption rate	52

## Figures

Figure 1. Telework and productivity: the main channels	9
Figure 2. The optimal level of telework intensity for worker efficiency is likely to be at an intermediate level	11
Figure 3. The adoption of teleworking arrangements across sectors	14
Figure 4. The adoption of teleworking arrangements across firm size	15
Figure 5. The adoption of teleworking arrangements across countries during and before 2020*	16
Figure 6. A hump-shaped relationship between telework and productivity pre-COVID19	18
Figure 7. The experience from using telework during the COVID-19 crisis	19
Figure 8. Future telework intensity depends on the experience during the pandemic, especially among managers	21
Figure 9. What adaptive measures were implemented to facilitate telework during the pandemic?	22
Figure 10. Perceived advantages of telework by managers	25
Figure 11. Managers who perceive telework benefits as more important are also more likely to expand its use in the future	25
Figure 12. Perceived disadvantages for managers	26
Figure 13. Perceived advantages for workers	27
Figure 14. Perceived disadvantages for workers	28
Figure 15. Both managers and workers expect more widespread telework in the future	29
Figure 16. Telework adoption in the future according to managers	29
Figure 17. Desired adoption rate of telework at the intensive margin	30
Figure 18. The desired intensity of telework: comparing the views of managers and workers	31
Figure 19. Workers and managers feel the need to introduce additional measures in the future	32
Figure 20. More productive firms tend to foresee more managerial changes	32
Figure A.1. Adoption rate of telework before the crisis at the intensive margin	43
Figure A.2. Adoption rate of telework during the crisis at the intensive margin	43
Figure A.3. Adoption of teleworking arrangements across firm age	44
Figure A.4. Adoption of teleworking arrangements across countries	45
Figure A.5. Assessment of the period by managers and workers for each sector	46
Figure A.6. Assessment of the period by managers and workers for each different firm size	46
Figure A.7. Relation between assessment during the pandemic and desired adoption rate of telework after the pandemic, by sector	47
Figure A.8. Relation between assessment and desired adoption in the future across countries	49
Figure A.9. How impeding is the lack of appropriate ICT infrastructure across countries for telework? Perceptions by respondents	50
Figure B.1. Assessment of managers and workers	51
Figure B.2. Adoption rate of telework in the three periods	52
Figure B.3. Intensity of telework in the future	53

# The role of telework for productivity during and post-COVID-19: Results from an OECD survey among managers and workers

By Chiara Criscuolo, Peter Gal, Timo Leidecker, Francesco Losma and Giuseppe Nicoletti<sup>1</sup>

## 1. Introduction

1. The Covid-19 pandemic and the measures to contain it have caused a profound breakdown of global economic activity, with potentially far-reaching longer-term implications for the way businesses are organised. Faced with the need to reduce the spread of the virus, governments worldwide introduced strict lockdown measures and required social distancing. For many companies, the introduction of teleworking (working from home, remote work, or telecommuting) arrangements<sup>2</sup> was the only way to maintain the

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The main findings from this survey were showcased in a Key Highlights brochure background document at the 2021 Annual Conference of the Global Forum on Productivity joint with the Italian G20 Presidency (<http://oe.cd/hsop>). The current paper presents an extended, more comprehensive version of the survey results.

<sup>2</sup> In the questionnaire on which this study is based teleworking is defined as “carrying out work while remaining physically at home – or at a secondary residence, co-working space, café etc. – and not being present at the company’s

business open and avoid furloughing or laying-off staff. Teleworking increased the resilience of the economies to the pandemic as it allowed businesses and workers to rely on what Eberly, Haskel and Mizen (2021) called “potential capital”, represented by residential homes and workers’ internet connections. The mobilisation of this “potential capital” may have contributed up to 10% of GDP across Japan, the UK, Germany, Spain, France, Italy and the US (Eberly, Haskel and Mizen, 2021).

2. Yet, in most cases, teleworking arrangements were new and hitherto never implemented (ILO, 2020).<sup>3</sup> This experience has led many managers and workers to realise that they could be productive and efficient even when working from outside their offices. Seen from this angle, the pandemic holds the potential to become a watershed for the future of work since it forced firms to experiment with and embrace new work arrangements. It also broke down the stigma<sup>4</sup> associated with teleworking and encouraged people – managers and workers alike – to invest in better use of digital technologies and to learn how to use them. All these factors will most likely favour a widespread adoption of telework in the future (Barrero, Bloom and Davis, 2021a).

3. However, the longer-term overall effects of this working arrangement on firm productivity, innovation and worker well-being are still a matter of discussion. On the one hand, the adoption of telework could increase firm-level productivity due to more satisfied and more focused employees, by allowing companies to tap from a broader pool of geographically distant talent and by using less capital due to the need for less office space. It would increase output and well-being as workers save on commuting time and could potentially decrease congestion and carbon emissions, which might in turn have beneficial effects on productivity. On the other hand, despite the recent diffusion of new technological tools that allow for more efficient communication between colleagues, knowledge flows in the firm – which are necessary to sustain creative collaboration, innovation and productivity growth in the long run – might still be hampered due to less frequent serendipitous and ad-hoc personal interactions, especially across different teams (Hertel, Geister and Konradt, 2005; OECD, 2020). In addition, corporate culture and employee engagement may also be disrupted in a full teleworking environment, a factor that led a corporate leader from the financial sector to vocally call remote work “an aberration that we are going to correct” (Glazer, 2021, citing David Solomon, CEO of Goldman Sachs). This is in stark contrast with the views of managers from the digitally intensive tech-sector, some of them saying “There are some things that actually work really well virtually” (Business Insider, 2020, citing Tim Cook, CEO of Apple).

4. The views of employees, overall, tend to be even more positive. A recent survey shows that around 40% of Americans value the flexibility of teleworking so much that they would look for a new job if their current employer demanded a full return to the office (Barrero, Bloom and Davis, 2021b). Given the more mixed reception of telework by managers, this can herald a clash between the expectations of managers and the desire of workers. Nevertheless, depending on labour market conditions, firms in some sectors and in some areas will likely compete for the best talents by offering more flexibility in working conditions, including a more lenient approach towards telework (Verlaine and Benoit, 2021). In light of all these factors,

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or a client’s premises during normal working hours, irrespective whether it is occasional or regular”. Strictly speaking, this definition is broader than the simple “working-from-home” since it encompasses even other working premises (e.g. co-working space or café) and captures broadly “remote working” practices. Nonetheless, in this paper we will use all these terms interchangeably (see Allen, Golden and Shockley, 2015 for a discussion on these different names).

<sup>3</sup> Adams-Prassl et al. (2020a) report that workers in industries that could perform only a small share of their tasks from home (typically less educated people in labour intensive sectors) were more likely to lose their job during the pandemic, similarly to findings in other studies (Bick, Blandin and Mertens, 2021; Papanikolaou and Schmidt, 2020).

<sup>4</sup> Coltrane et al. (2013) report a “flexibility stigma” depressing earnings and limiting career opportunities for fathers who decide to reduce hours worked after fatherhood. Rogier and Padgett (2004) show that women who take advantage of flexible schedules are perceived as less dedicated, although not as less capable.

there is little doubt that the experience gained during the pandemic with telework will crucially affect the organisation of work in the years to come.

5. To gain systematic and timely evidence on this issue, which could potentially have longer-term structural implications, the OECD Global Forum on Productivity (GFP)<sup>5</sup> developed and implemented a survey. It contains information about the subjective experience and expectations of managers and workers about telework to provide lessons about the implications for productivity and the measures to be put in place to maximise benefits. It consists of two separate but complementary questionnaires. The first one was addressed to managers, with the questions focusing on the managers' view of the performance of the company, and a second one asked about the experience of workers on their well-being and productivity. 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).<sup>6</sup> Respondents came from 25 countries and from a wide range of sectors, although with a moderate overall sample size and with larger companies better represented. Nevertheless, our key findings are consistent with other recent studies using data from country-specific surveys with more extensive samples (see details in Sections 3 and 4), and lays the ground for further potential work in this area for a wider and deeper analysis on the actual productivity outcomes linked to more intensive telework. This current work builds on the GFP's previous analysis, which laid out the most important channels and trade-offs inherent in telework and highlighted findings from the pre-pandemic literature (OECD, 2020).

6. The survey was organised around three main thematic blocks covering three time periods (i-ii-iii), as illustrated in Table 1. In the first part (i), it investigated the adoption rate of telework before the outbreak of COVID-19 and during the first two waves of the crisis (approximately the Spring and the Autumn 2020 in Western European countries). In the second part (ii), it asked respondents about the impact the adoption of telework had on the performance of the company and the well-being of workers, and which supportive measures the companies decided to implement amidst the pandemic to blunt this shock. In the third part (iii), it inquired about expectations for the future. Accordingly, the survey asked managers and workers to predict the use of telework after the pandemic, which advantages and disadvantages of this practice they consider as crucial – both in the short and in the long term – from the perspective of the overall company performance and of workers' wellbeing, and what companies and governments should do to support this work arrangement.

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<sup>5</sup> The OECD Global Forum on Productivity (GFP) aims to foster international co-operation between public bodies with responsibility for promoting productivity-enhancing policies. The GFP provides a platform on which participants will convene to exchange information and discuss best practices as well as a framework within which to undertake productivity analysis that is complementary to the OECD's regular work programme.

<sup>6</sup> 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.

Table 1. The structure of the survey and the paper

	I. Before COVID-19	II. During COVID-19	III. After COVID-19
Use	1. ✓	✓	3. ✓
Impact		2. Overall performance & assessment	Expected costs & benefits
Support		Short-term adaptation	Long-term adaptation; Main obstacles

7. After a short summary in Section 2 of the growing existing evidence about the diffusion of telework and the main channels through which it could affect efficiency and welfare – not only from economics but also from the management and public health literature – we provide more detailed background about the survey in Section 3. Section 4 then presents the findings along the structure (1-2-3) of Table 1. First, it describes the use of telework pre-COVID and during the initial stages of the crisis from our sample, confirming a widespread and substantial increase in telework take-up across all countries, sectors and firm size categories (1). Then it continues with a focus on the more subjective views about (2) *overall experience* and the *adaptive measures* taken during the crisis, as well as (3) *future expectations* on the use, the expected costs and benefits and the required adaptive measures.

8. The findings show that a large majority of managers and workers had a positive experience from teleworking, even during the initial stages of the pandemic, and consequently, they expect to continue doing so in the future.<sup>7</sup> In particular, the share of the workforce who will telework on a regular basis (at least once per week) is expected to be in between the level observed before and during the pandemic – and much closer to the higher levels observed during the pandemic. Importantly, both managers and workers expect this to occur in a hybrid way, with 2-3 days per week as the most desired intensity, in contrast to the more extreme degree (often 5 days per week) during the initial stages of the pandemic. Around half of the respondents – workers more than managers – emphasise the need for further managerial changes to fully benefit from telework arrangements, such as the coordination of schedules across workers, management training, additional investments in ICT infrastructure and digital skills. These measures are more likely to be implemented by initially more productive firms, which can lead to a further widening of productivity gaps between more and less productive firms.

9. The final section provides a discussion on a few implications beyond productivity such as inequality along gender, occupation and other dimensions. It also presents public policy options to maximise the productivity-related benefits and broader societal gains from telework.

<sup>7</sup> As we will discuss in this paper, a growing literature shows that not all jobs are equally “teleworkable” (i.e. they can be carried out while not being present physically in the work place), and more teleworkable activities generally require higher skills and pay higher wages (Dingel and Neiman, 2020; Sostero et al., 2020). As such, our sample may over-represent better paid and higher qualified employees.

## 2. Telework and productivity: existing evidence and the main mechanisms

10. The impact of teleworking arrangements on firm-level productivity is *a priori* ambiguous. From pre-pandemic times, a randomized control trial (RCT) experiment among call centre workers in a Chinese company shows that working from home is associated with a 13% performance increase since employees work more and concentrate better in a quieter environment, along with higher work satisfaction (Bloom et al, 2015). Other studies confirm this result in similar settings, emphasising the flexibility inherent in this arrangement (Angelici and Profeta, 2020). Confirming that remote work increases the productivity of call-centre workers (by about 7.5%), Emanuel and Harrington (2021) seek to explain why this working arrangement was nonetheless poorly implemented before the pandemic. They argue that employees who decide to work from home suffer a promotion penalty (12% less likely to be promoted in the surveyed company in their study) relative to their office peers – a disadvantage that Bloom et al (2015) have also identified.<sup>8</sup>

11. In contrast, other studies found opposite results in terms of the impact of telework on productivity prior to the COVID-19 crisis. Battiston, Blanes i Vidal and Kirchmaier (2017) stress the importance of face-to-face communication with teammates and how the lack of this interaction may have detrimental effects on productivity. Analysing “999” call handlers and radio operators working for the Greater Manchester Police, they found productivity to be higher when colleagues are in the same room (preferably with desks closer). Studying chess players playing online to investigate the effect of telework on cognitive tasks, Kunn, Seel and Zegners (2020) report a deterioration in the quality of grand masters’ chess moves. They conclude that teleworking might be detrimental for workers performing complex cognitive tasks. The conclusion is that the impact of these arrangements on productivity largely depends on the nature of the tasks (Lewis, Sisko and Tanaka, 2021). Companies in need of tight, frequent coordination, communication and bonding among colleagues may suffer relatively more from the widespread adoption of telework.

12. COVID-19 has provided a mass, large scale “social experiment” with teleworking, even if in a rather peculiar and unprecedented environment, which in many aspects was detrimental to a good experience: in most cases, childcare was unavailable, and telework was required in an extreme intensity (often at 100%) – rather than chosen voluntarily. Despite these unfavourable conditions, early survey evidence collected during the pandemic points to a positive impact on self-assessed productivity according to managers. An online survey by Ozimek (2020) finds that 56% of managers perceive telework “better than expected”. Another survey by Barrero, Bloom and Davis (2021a) confirms this finding and claim that work from home will stick in the future due to five main reasons: 1) better-than-expected experience during the pandemic, 2) already paid investments in tangible and intangible capital to enable telework (i.e. the fixed cost of establishing telework), 3) diminished stigma associated with this practice, 4) enduring fear of crowds and contagion risks, and 5) a pandemic-related surge in IT innovations facilitating telework and a related increasing productivity of remote workers – as also emphasised by Davis, Ghent and Gregory (2021). Surveys focusing on the employee’s perspective are also positive: Taneja, Bloom and Davis (2021) find a roughly 2% more efficient workforce on a self-reported basis.

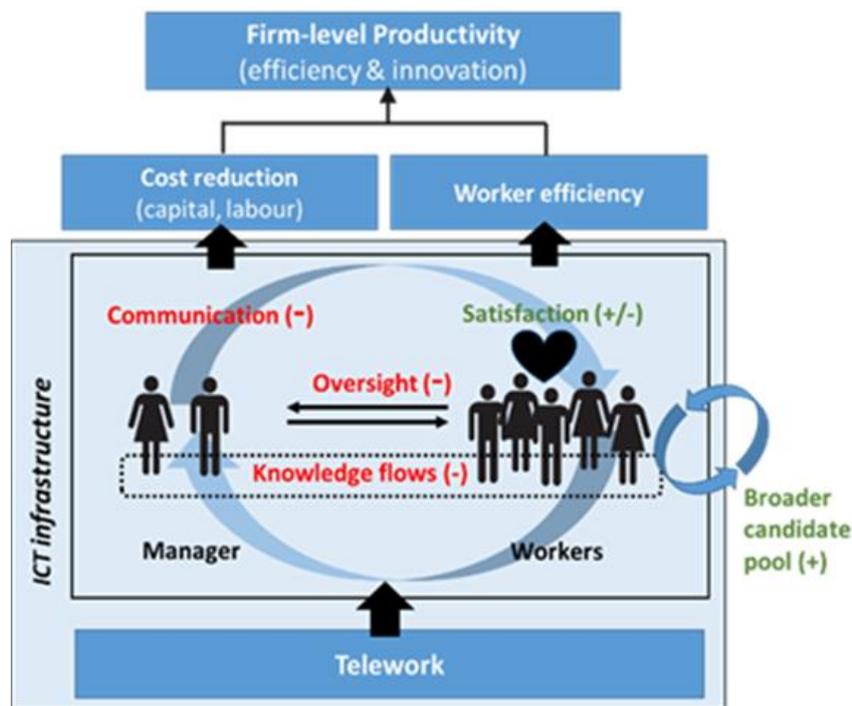
13. Yet again, even during pandemic times, there are also opposite findings: using a sample of more than 10,000 professionals working in an Asian IT services company, Gibbs, Mengel and Siemroth (2021) report an approximate 20% productivity decline due to telework during the COVID-19 crisis because of more costly communication and coordination with colleagues. Morikawa (2021) presents an even more negative figure for Japan: productivity fell by more than 30% for employees working from home during the initial stages of the pandemic. The wide range of findings clearly indicates the role of various factors

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<sup>8</sup> Therefore, workers less concerned with career progression – who may also tend to be less productive – are more likely to select into working from home programmes, which could have contributed to the stigma associated with telework during pre-COVID times.

affecting the relationship between telework and productivity, ranging from sectoral specialization, ICT infrastructure but also managerial style and cultural norms.

**Figure 1. Telework and productivity: the main channels**



Source: OECD (2020a), "Productivity Gains from Teleworking in the Post COVID-19 Era: How can Public Policies Make It Happen?", OECD Policy Responses to Coronavirus (COVID-19), OECD Publishing, Paris, <https://doi.org/10.1787/a5d52e99-en>

14. Building on our previous OECD policy brief (OECD, 2020a), the schematic framework in Figure 1 brings together these conflicting factors. First, the presence of adequate ICT and broadband infrastructure is a necessary prerequisite for the adoption of teleworking arrangements; their quality is likely to be also key for teleworking experience and performance (Bai et al., 2021; ILO, 2020). Second, telework could directly improve firm performance by raising worker satisfaction<sup>9</sup> through better work-life balance, less commuting (Clark et al., 2019) and fewer distractions at home.<sup>10</sup> Telework also empowers workers with greater autonomy, which can contribute to lower stress levels (Gajendran and Harrison, 2007). On the other hand, worker satisfaction could also decrease with a high intensity of telework, as workers might feel more isolated, fear lower possibilities for career development, have to work from inappropriate working environments and might not be able to separate anymore work and private life. The balance of these pros and cons thus depends on personal circumstances and preferences as well as on the voluntary nature and

<sup>9</sup> Bosworth and Warhurst (2020) review the literature on the link between job quality – which comprises seven indicators such as terms of employment; pay and benefits; job design and nature of work; social support and cohesion; health, safety and psychosocial wellbeing; work-life balance; voice and representation – and labour productivity. They conclude that health, safety and psychosocial wellbeing, and work-life balance are positively associated with productivity.

<sup>10</sup> This is most likely to be the case during “normal times”, while the COVID-19 pandemic represents an exceptional situation from many points of view. Studies have confirmed the negative impact of the pandemic *per se* on mental health and personal satisfaction (e.g. Mohring et al, 2021).

the intensity of telework, which explains why it is hard to pin down whether telework, *in general*, is more positive or negative for mental and physical well-being (Oakman et al., 2020).

15. Third, telework improves firm performance by reducing capital use (less office space and equipment) – thus raising multi-factor productivity – especially if the savings are directed towards productivity-enhancing investments and reorganisation. Fourth, by enlarging the pool of workers from which they can draw, firms may achieve a better match between job requirements and worker skills, and can also reduce labour costs.<sup>11</sup> Finally, the costs related to hiring may also decrease if higher worker satisfaction reduces the rate of voluntary quits.

16. On the other hand, telework may decrease the efficiency of workers by reducing in-person interactions with colleagues. The lack of physical proximity hampers communication, knowledge flows within and across firms, and managerial oversight. In the longer run, a lower density of economic activity within a geographic area can reduce agglomeration benefits and in turn the performance of firms within the region (Rosenthal and Strange, 2020). All these factors have been shown to affect the rate of innovation and knowledge creation (Grossman and Helpman, 1991; Jaffe, Trajtenberg and Henderson, 1993; Thompson and Fox-Kean, 2005; Arrow, 1974), especially for creative jobs where information is imperfect, swiftly evolving and not codified (Storper and Venables, 2004). Finally, working from home can have also negative implications for a firm’s engagement with important stakeholders such as clients and suppliers, thereby weakening the overall performance of the company (Hovhannisyan and Keller, 2019).

17. The channel through worker satisfaction and well-being is likely to be key for productivity gains and, it also promises a “double-dividend” for workers and firms alike. The discussion above suggests that telework should ideally be adopted at such intensity that its positive effects on worker efficiency offset the losses. Efficiency gains may be higher when workers do not telework throughout the whole working week and are free to choose remote work voluntarily. Moreover, efficiency gains are driven by satisfaction, which may rise at low levels of teleworking uptake but suffer at very high levels of telework because of fewer opportunities for face-to-face social interactions.

18. All in all, this implies an inversely U-shaped relationship between the intensity of telework and efficiency at the worker level – as shown in Figure 2 – with a “sweet spot” at intermediate levels of telework (Bloom, Mizen and Taneja, 2021; Kazekami, 2020).<sup>12</sup> Of course, worker satisfaction – and hence likely performance as well – should rise at all levels of uptake if telework is *voluntary*, thereby shifting the entire curve upwards (Angelici and Profeta, 2020). An appropriate and reliable ICT infrastructure raises the entire curve at all levels of uptake but can also increase the optimal intensity of telework (move the top of the curve to the right). In any case, the optimal intensity of telework at intermediate levels implies a hybrid working mode – spending some days at the office, some days at home; with some colleagues in presence and some working remotely at a given point in time. This arrangement is not without complications, however, since it poses new challenges for managers related to coordination and communication – something that we will investigate in our survey, and which is a recurring topic in the business literature and press.<sup>13</sup>

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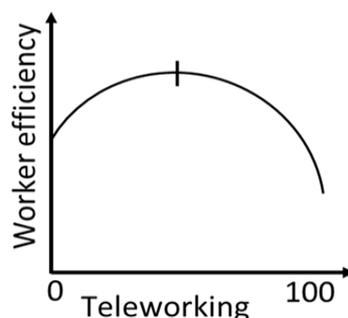
<sup>11</sup> Existing evidence shows that workers are willing to exchange about 8% of their wage for the option of working from home (Mas and Pallais, 2017). This could allow companies to additionally reduce their average costs.

<sup>12</sup> Developing a general equilibrium model, Behrens, Kichko and Thisse (2021) confirm the hump-shaped relation between telecommuting and productivity. They conclude that working from home is a “mixed blessing” given that too much telework can be detrimental to the performance of the company and that production is likely to be maximised when telework takes place at an intermediate level (in their case one or two days per week).

<sup>13</sup> “There isn’t a one-size-fits-all approach to returning to the office” (Bloomberg, 2021, citing the CFO of Zoom). Amazon, Google, Microsoft announced a hybrid working mode but are still trying to figure out exactly how and which workers are eligible (The Verge, 2021). Choudhury (2020) discusses in a Harvard Business Review article the pros and cons of “work-from-anywhere” depending on the business needs.

## Figure 2. The optimal level of telework intensity for worker efficiency is likely to be at an intermediate level

Schematic relationship between telework intensity (0-100% of working time) and worker efficiency



Source: OECD (2020a), "Productivity Gains from Teleworking in the Post COVID-19 Era: How can Public Policies Make It Happen?", OECD Policy Responses to Coronavirus (COVID-19), OECD Publishing, Paris, <https://doi.org/10.1787/a5d52e99-en>

### 3. Survey background and sample

19. The telework survey of the OECD Global Forum on Productivity was launched in October 2020, consisting of a questionnaire of about 16 questions with multiple-choice responses. It 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.<sup>14</sup> The full list of questions is reproduced in Annex C.

20. To gain further insights from the perspective of less developed economies, a slightly modified version of the survey was released in February 2021 among a sample of Malaysian firms and employees with the assistance of the Malaysia Productivity Corporation (MPC).<sup>15</sup> Lastly, in March 2021, we shared

<sup>14</sup> Danish, Dutch, French, German, Hungarian, Italian, Japanese, Portuguese, Spanish and Swedish.

<sup>15</sup> While most of the studies documenting the adoption rate of telework, the assessment and the expectations of workers and managers, have focused their attention to developed countries, Gottlieb et al. (2021) use data from Brazil, Costa Rica and Peru to show that the ability of less developed countries to work from home is generally low (as confirmed by Dingel and Neiman, 2020), despite remarkable heterogeneities across and within occupations and worker characteristics.

this updated version of the survey with managers and workers in a knowledge-intensive segment of the public sector: energy regulators (ERRA network).<sup>16,17</sup>

21. Our baseline sample consists of 1,306 private sector managers and 3,404<sup>18</sup> workers, from 23 OECD countries along with one GFP partner country (Brazil) and one non-OECD country (Malaysia). Table A.1 and Table A.2 in Annex A detail the sectors and the countries sampled in our survey and provide further summary statistics.<sup>19</sup>

22. The main value-added of our survey is its focus on the subjective perceptions and expectations in a systematic way including managers and workers and with a broad cross-country coverage. Our moderate sample size implies that it is no substitute for existing large-scale representative surveys run by statistical agencies (Criscuolo, 2021; Ker, Montagnier and Spiezia, 2021; OECD, 2021b), although when cross-checking the ranking of countries in telework use we find close results with those more complete sources. Given the differing sample sizes across countries and the over-representation of larger companies in our sample – as documented by the generally high median employment – we include detailed country, sector and firm size category fixed effects in regressions and carried out various robustness checks excluding over-represented countries like Italy or France (Annex B), all of which confirm our main findings.

## 4. Results from the survey

### 4.1. Telework adoption before and during the COVID-19 pandemic

23. First, we document the adoption rate of telework before the pandemic and the mass shift towards this practice during the first wave of the pandemic (which can be broadly identified as Spring 2020). We also compare our results, based on smaller-scale survey data, to alternative and larger-scale data sources collected by statistical authorities which have become available over time (e.g. Criscuolo, 2021; Eurofound, 2020; Eurostat, 2021; Ker, Montagnier and Spiezia, 2021; OECD, 2021b).

24. On average across all countries in our sample, our survey reveals a dramatic increase in the share of regular teleworkers – which are defined as workers working from home *at least once per week* - from almost 31% before the pandemic to almost 58% during the first wave.<sup>20</sup> Telework intensity can be further characterised at the *intensive* margin, that is, the intensity of telework at the individual worker level,

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<sup>16</sup> Many countries in this network are less developed economies, but their responses were still useful to better investigate the specificities (in terms of assessments, opinions and expectations) of public sector managers vis-à-vis private sector ones collected in our general survey. Due to important differences in terms of labour legislation and cultural background, among others, these observations are not included in the main figures presented in this paper, instead we refer to comparisons when appropriate.

<sup>17</sup> These two latest waves of the survey also ask about the gender and the educational attainment of respondents.

<sup>18</sup> More precisely, we received a total of 4 181 answers from workers in several companies. However, we also received multiple responses from individual companies or plants. To equalize the weight of each company, we first average across multiple observations coming from the same company, resulting in a total of 3 404 observations for workers.

<sup>19</sup> The sample size can vary depending on the question.

<sup>20</sup> Criscuolo (2021) shows that in April 2020 almost 40% of workers in the Euro area teleworked, a figure growing to around 45% by summer 2020. The 2021 OECD Employment Outlook (OECD, 2021b) reports overall lower adoption rates during the crisis, but they also find a substantial increase across OECD countries from around 16% of the workforce before the crisis to around 37% during the first wave (April 2020). In the United States, the share of the workforce working from home rose from around 15% before the pandemic to around 50% (Brynjolfsson et al., 2020). Eurofound (2020) documents that during the COVID-19 pandemic approximately 34% of the workforce in the European Union worked exclusively from home.

expressed in the number of days per week. While before the pandemic only 10% of the total workforce worked from home for the entire working week and 13% just one or two days per week, the former increased to 43% during the first wave whilst the latter shrank to only 4%, thus confirming the claim that the surge in telework was almost entirely driven by the “Work-from-Home-Only” workers (Bick, Blandin and Mertens, 2021).

25. The feasibility of teleworking practices (often dubbed as *teleworkability*) crucially depends on the tasks and activities performed within each firm. Dingel and Neiman (2020) classify the feasibility of telework for nearly 1,000 occupations from the US O\*NET database and conclude that around 37% of US jobs can be done from home. Importantly, they observe that “teleworkable” jobs (ie those that can be carried out while not present physically) typically pay higher wages. Sostero et al. (2020) trace back the teleworkability of 130 occupations (at the ISCO 3 digit) to their degree of physical handling tasks: occupations that can only be reasonably done in a specific location are not amenable to telework. Using this definition they estimate that around 36% of dependent employment in the EU is potentially teleworkable.

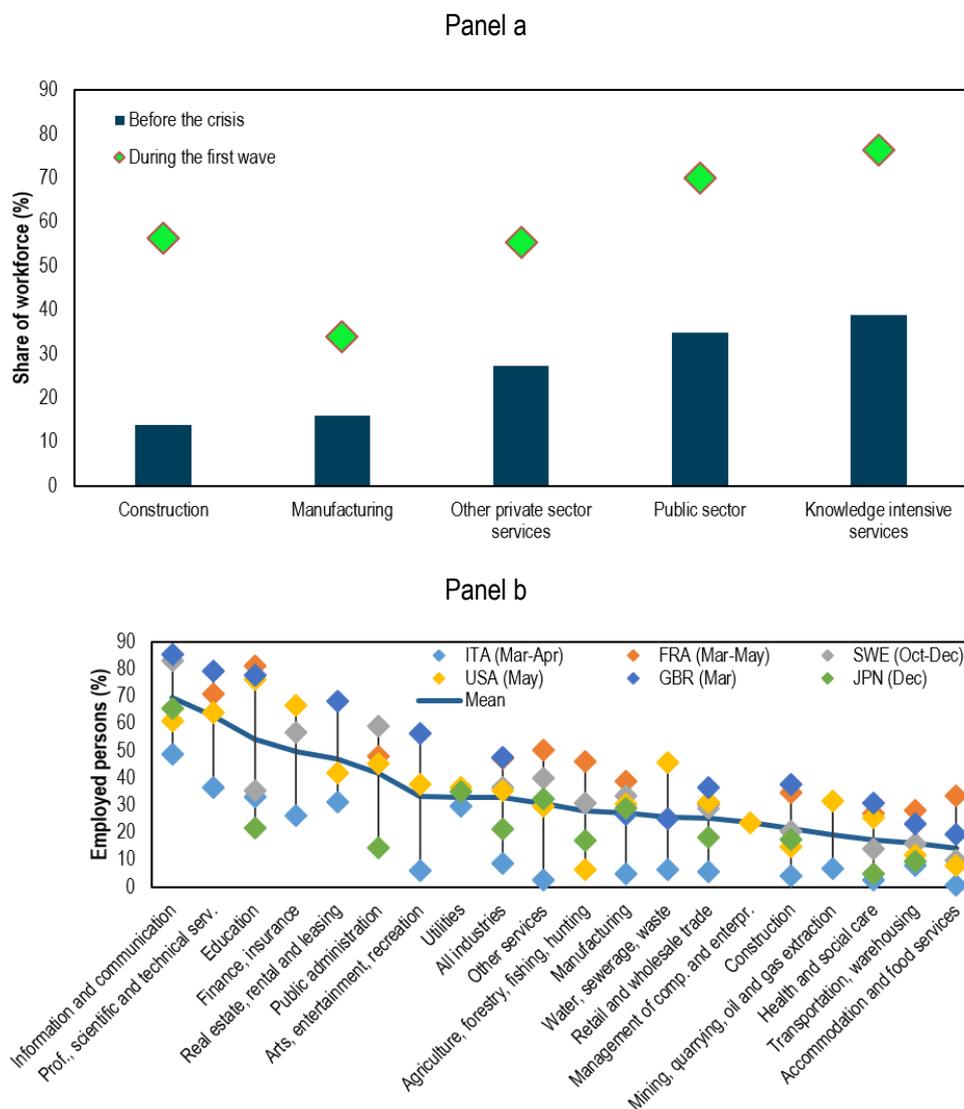
26. Consistent with such variations across sectors, our survey reveals that around 40% of the total workforce in the knowledge-intensive services sector – which includes highly teleworkable activities like IT, finance and other professional and intellectual services – could telework regularly even before the pandemic, compared to only around 15% in the construction and the manufacturing sector (Figure 3 Panel a). The share of teleworkers skyrocketed during the pandemic especially in the sectors more prone to remote work, such as knowledge-intensive services and the public sector. Moreover, in line with the hypothesis above that the soar in telework adoption during the crisis was almost entirely driven by the share of “five-day remote workers”, we find that indeed in all sectors the large majority of regular teleworkers during the crisis worked from home for the entire working week (Figure A.1 and Figure A.2 in Annex A).

27. Using sources from national statistical agencies of six countries,<sup>21</sup> Ker, Montagnier and Spiezia (2021) – reported in Figure 3 Panel b - document the adoption rate of telework at the peak of the COVID-19 crisis at the industry level in a more granular way. They show that in knowledge-intensive industries (e.g. information and communication; professional, scientific and technical services; finance and insurance) the share of workers who could telework at the peak of the pandemic ranged between 50% to 70% (on average across countries). In the public administration, around 40% of workers worked from home while in the manufacturing industry this number drops to less than 30%. This figure is even lower in the construction industry, where only 20% of the workers employed could telework. For some of these sectors (construction and other private sector services, in particular), these figures indicate lower telework intensity than the GFP survey. This is due to the fact that our survey reached mainly office workers whose tasks can be carried out remotely whereas some of these sectors are characterised by a high share of non-teleworkable activities (see more on this in Section 4.2).

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<sup>21</sup> France, Italy, Japan, Sweden, United Kingdom and United States.

Figure 3. The adoption of teleworking arrangements across sectors

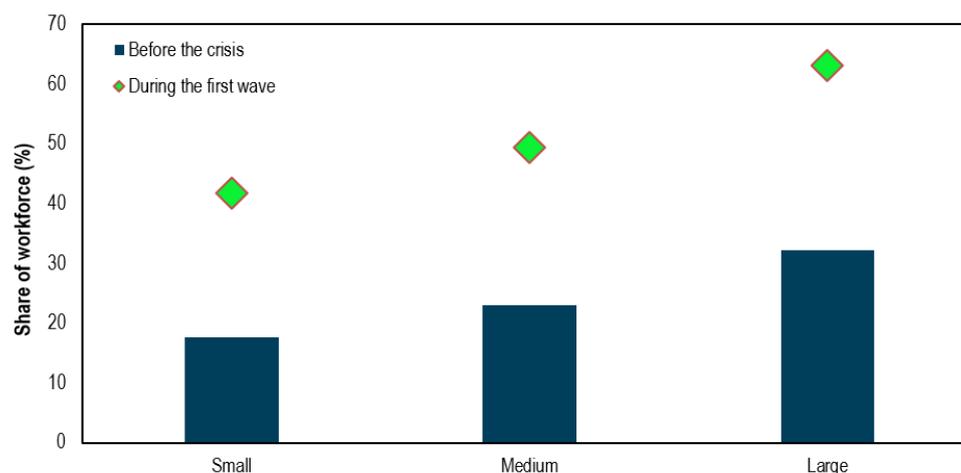


Source. Panel a: Telework Survey of OECD Global Forum on Productivity. Results based on the aggregation of answers from managers and workers. Results based on Q2: “Approximately, what percentage of employees teleworked?”; Q3a: “Approximately, what percentage of employees was teleworking, and at what frequency, during the Spring 2020 lockdown period?”; Q20: “Which sector best describes your company’s main activity?”; Panel b: Ker, Montagnier and Spiezia (2021).

28. Figure 4 shows that teleworking arrangements were more common in large companies compared to small ones and that the pandemic maintained this ranking unaltered, in line with other recent evidence (Mongey and Weinberg, 2020). More than 30% of workers in large companies could regularly work from home while only less than 20% in a typical small company. During the crisis, the adoption rate of telework at the extensive margin more than doubled in all the size categories. This corresponds to the findings of Criscuolo (2021) who relies on the European Labour Force Survey to point out that telework uptake during the crisis was more pronounced amongst large businesses.<sup>22</sup>

<sup>22</sup> We also find that younger firms – below 10 years old – tended to adopt telework to a larger extent (Figure A.3 in Annex A), although this should be treated with caution since the overwhelming majority of firms in our sample are older, at least 10 year old.

Figure 4. The adoption of teleworking arrangements across firm size



Source: Telework Survey of OECD Global Forum on Productivity. Results based on Q2: “Approximately, what percentage of employees teleworked?”; Q3a: “Approximately, what percentage of employees was teleworking, and at what frequency, during the Spring 2020 lockdown period?”; Q16: “How many employees does your company have?”. Small-sized enterprises have less than 50 employees; medium-sized companies have less than 250 employees (but more than 50); large companies have more than 250 employees.

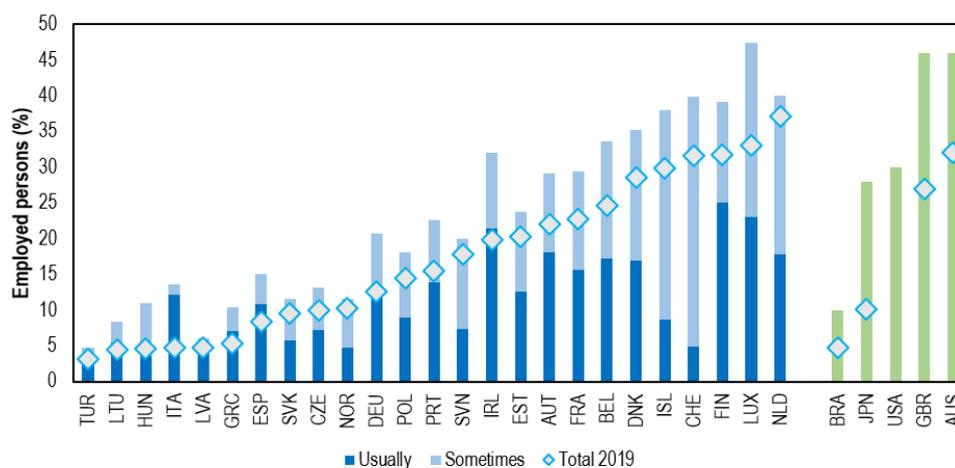
29. Figure 5, taken from Ker, Montagnier and Spiezia (2021), showcases the adoption rate of telework (either usual or irregular) by country and reveals that telework was most common in the Netherlands, Luxembourg and Finland before the crisis - where more than 30% of the workforce could telework regularly - while it was least used in Hungary, Italy and Brazil. The COVID-19 pandemic has induced the most radical shift in teleworking practices in Hungary, Italy and Japan, where it triggered a more than two-fold increase.

30. Our survey results (Figure A.4 in Appendix A) show a similar pattern, even if the average level of take-up of telework seems to be somewhat higher in our survey. When controlling for the different sector and size composition within each country, the ranking of telework adoption during the two waves across countries remains similar, suggesting that the cross-country heterogeneity is likely to be related to other factors such as the availability of ICT infrastructure and skills and a managerial culture conducive to teleworking. Despite our much more moderate sample, and our distinct focus on *regular* teleworkers, these overall patterns and the ranking of the countries are largely consistent with further studies that rely on official sources (eg Eurofound, 2020, Criscuolo, 2021).<sup>23</sup> Finally, OECD (2021b) further documents the disparities in the use of telework by yet another dimension: educational attainment. It reveals an important heterogeneity by this margin as well: on average across OECD countries around 55% of highly educated workers could work from home against only 19% of low educated workers.

31. Of course, the increase in the intensity of telework could also be related to the severity of COVID-19, as found by Brynjolfsson et al. (2020) across US states, and the related lockdown measures implemented to reduce the spread of the virus. Building on OECD (2021c) data about the restrictiveness of lockdown measures in April/May 2020 Table A.3 in Appendix I shows a positive correlation between the severity of lockdown rules and the adoption rate of telework during the first wave, controlling for the adoption rate before the crisis, sector and size fixed effects. This result suggests that companies in countries with more strict rules experienced a higher increase in the use of telework.

<sup>23</sup> Exceptions are Greece and Sweden, both having relatively small samples.

Figure 5. The adoption of teleworking arrangements across countries during and before 2020\*



Source: OECD calculations based on Ker, Montagnier and Spiezia (2021). Blue bars represent data from harmonised sources (the European Labour Force Survey), whereas the green bars are based on alternative sources. See more details and a discussion of the underlying differences and comparability issues in Ker, Montagnier and Spiezia (2021).

\* The exact dates when telework intensity was measured might vary across countries.

32. To shed light on the role of productivity in allowing firms to adopt telework before and during the crisis, we ran firm-level regressions linking initial productivity levels to telework intensities, controlling for size and country-sector fixed effects (Table 2). The relationship between firm-level labour productivity and the adoption rate of telework (before and during the crisis) was found to be robustly positive and significant. Of course, this positive correlation may be driven by omitted, unobserved common drivers, notably the adoption of advanced managerial practices. Indeed, the link between advanced management practices and productivity has long been established (see Scur et al., 2021 for a recent and comprehensive review), and the link with telework also seems plausible.<sup>24</sup> In any case, the conclusion from our findings is that high telework intensity and productivity are clearly not incompatible. Given that more intensive telework, if implemented appropriately, has the potential to raise productivity further (see Section 2), the initial advantage of high productivity firms with telework practices can contribute to a widening of the already large productivity gaps across companies (Syverson, 2011; Andrews et al 2019; Criscuolo et al, 2021).

<sup>24</sup> See Bloom, Kretschmer and Van Reenen (2009), who found that better-managed companies have also better work-life balance practices – which also include home-working entitlements, among other benefits.

**Table 2. More productive firms relied more on telework before and during the crisis**

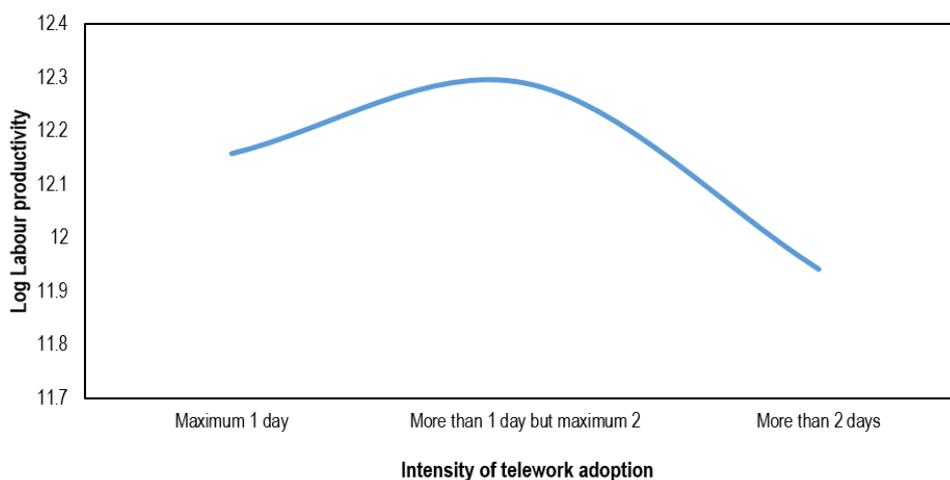
Variable	Adoption rate <b>before</b> the crisis		Adoption rate <b>during</b> the crisis	
	(1)	(2)	(3)	(4)
Log Labour Productivity (Sales/Employment) before the crisis	0.045** (0.015)	0.042** (0.016)	0.057** (0.019)	0.051** (0.018)
Adoption rate before the crisis			0.432*** (0.057)	0.407*** (0.056)
Size FE	NO	YES	NO	YES
Country x Sector FE	YES	YES	YES	YES
N	557	557	554	554
R <sup>2</sup>	0.266	0.274	0.465	0.486

Source: Telework Survey of OECD Global Forum on Productivity. Results based on the manager sample. 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?"; Q14Managers: "Please state the country in which your company's headquarter is located?"; Q16Managers: "How many employees does your company have?"; Q17Managers: "How big were your company's revenues in a typical year prior to the COVID crisis (in millions of euros)?"; Q20Managers: "Which sector best describes your company's main activity?". Labour productivity is calculated roughly as self-reported revenues divided by the total workforce at the firm level. To avoid extreme (low or high) values in our productivity estimate due to errors or the presence of outliers, we restrict our sample to the core 90% of observations (discarding the top and the bottom 5% of observations). Robust standard errors in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.001$ .

33. Regarding the intensive margin, our survey tends to empirically support the postulated inverted U relationship between telework and productivity during the pre-pandemic era, as argued in Section 2, with the peak value falling in the 1-2 days per week of telework intensity for the typical worker (Figure 6). We also find evidence that the adoption rate of telework before the pandemic is a good predictor of the adoption rate during the first two waves of the pandemic (Table A.4 in Annex A tests directly this statement, which is also confirmed indirectly in Table 2). This is likely driven by a strong initial fixed costs component of setting up telework facilities such as investments in ICT, server, clouding, cyber-security software and soft skills. In firms that have paid those fixed costs, telework more likely remains a common practice.

**Figure 6. A hump-shaped relationship between telework and productivity pre-COVID19**

Telework intensity for the firm and firm-level productivity



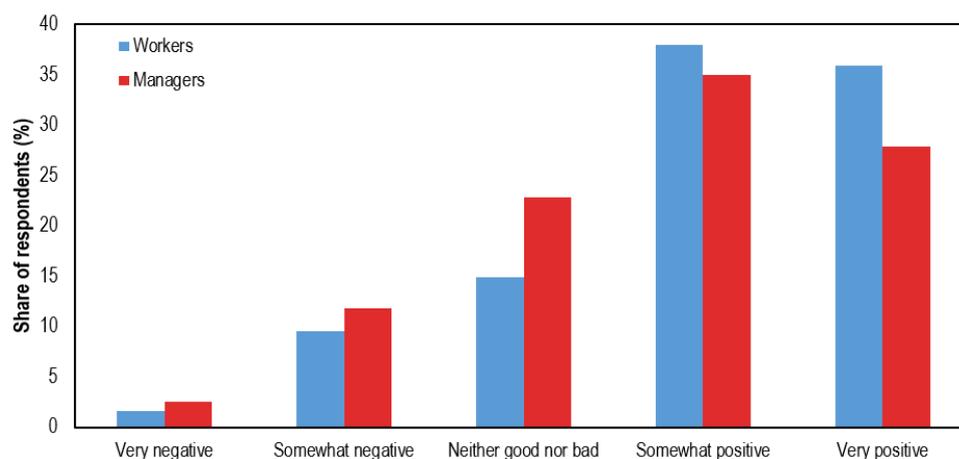
Note: The large majority of respondents fell into the first category (Maximum 1 day) in the pre-COVID19 era. Regression results looking at within country-industry patterns - by controlling for country x sector fixed effects – confirm the significantly higher productivity values at intermediate levels of telework.

Source: Telework Survey of OECD Global Forum on Productivity. Results based on Q2Managers: “Approximately, what percentage of employees teleworked?”; Q16Managers: “How many employees does your company have?”; Q17Managers: “How big were your company’s revenues in a typical year prior to the COVID crisis (in millions of euros)?”.

#### **4.2. The experience of managers and workers with telework during the crisis**

34. Our survey finds that the experience of employers and employees was overwhelmingly good: about 63% of managers and 74% of workers had an overall positive assessment of their teleworking experience from the point of view of company’s performance and worker’s subjective well-being, respectively (Figure 7). On the other hand, just around 12% of workers and 15% of managers report a negative experience during the crisis. This resonates well with findings from other studies (Ozimek, 2020; Barrero, Bloom and Davis, 2021a). These consistent results from various sources suggest a broadly shared positive assessment, which could help to reduce the social stigma associated with telework and to contribute to a greater “social acceptance” of this practice in the future, as previous studies have also noted.

Figure 7. The experience from using telework during the COVID-19 crisis



Source: Telework Survey of OECD Global Forum on Productivity. 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?”

35. Owing to the different inherent “teleworkability” of each sector, the experience of managers and workers is likely to be a function of the sector, and to some extent the size, of companies. Building on their past experience, managers and workers in more teleworkable sectors may be more likely to possess the hard and soft skills necessary to telework more intensively and more successfully. Also, large companies may have had more liquidity and available finance that were necessary to quickly adapt to the massive swift to telework (Autor and Reynolds, 2020).

36. Our survey shows that workers provided a remarkably similar average assessment across all sectors, but managers in the knowledge-intensive service activities reported a more positive assessment than in other less teleworkable activities, such as construction or manufacturing (Figure A.5). This likely reflects that workers in these sectors are employed in administrative and clerical positions, which could more easily adapt to the new teleworking environment, in line with our previous finding of a relatively high reported telework intensity during the crisis even in these sectors (Section 4.1)<sup>25</sup>. Interestingly, firm size seems to matter for both managers and workers, with a more positive experience in large companies (Figure A.6). Again, these results suggest that larger firms were more successful in weathering the crisis, thanks to their better organisational and financial capacity to adapt.

37. Following Barrero, Bloom and Davis (2021a), we test whether this positive experience during the pandemic will give rise to more widespread adoption of telework in the future, thereby reflecting a “breaking the stigma” generally associated with this practice. Results in Table 3 strongly support this view. They show that the positive assessment provided by managers during the pandemic period will support the widespread adoption of telework in the future, even when controlling for adoption rates during and prior to the pandemic.

<sup>25</sup> This could also help resolve the discrepancy between our survey results for the construction sector and other results from official sources (Ker, Montagnier and Spiezia, 2021) that we presented in Section 4.1.

**Table 3. Will the experience during COVID-19 represent a turning point for the future adoption rate of telework?**

Variable	Adoption rate in the <b>future</b>					
	(1)	(2)	(3)	(4)	(5)	(6)
Experience during COVID-19	0.122*** (0.006)			0.057*** (0.007)	0.058*** (0.007)	0.055*** (0.008)
Adoption rate <b>during</b>		0.659*** (0.032)		0.462*** (0.041)	0.388*** (0.042)	0.391*** (0.046)
Adoption rate <b>before</b>			0.633*** (0.035)	0.246*** (0.042)	0.232*** (0.042)	0.238*** (0.044)
Constant	-0.031 (0.022)	0.100*** (0.014)	0.254*** (0.014)	-0.053** (0.020)		
Country FE	NO	NO	NO	NO	YES	NO
Sector FE	NO	NO	NO	NO	YES	NO
Size FE	NO	NO	NO	NO	YES	YES
Country x Sector FE	NO	NO	NO	NO	NO	YES
N	877	877	877	877	877	877
R <sup>2</sup>	0.212	0.400	0.242	0.473	0.725	0.533

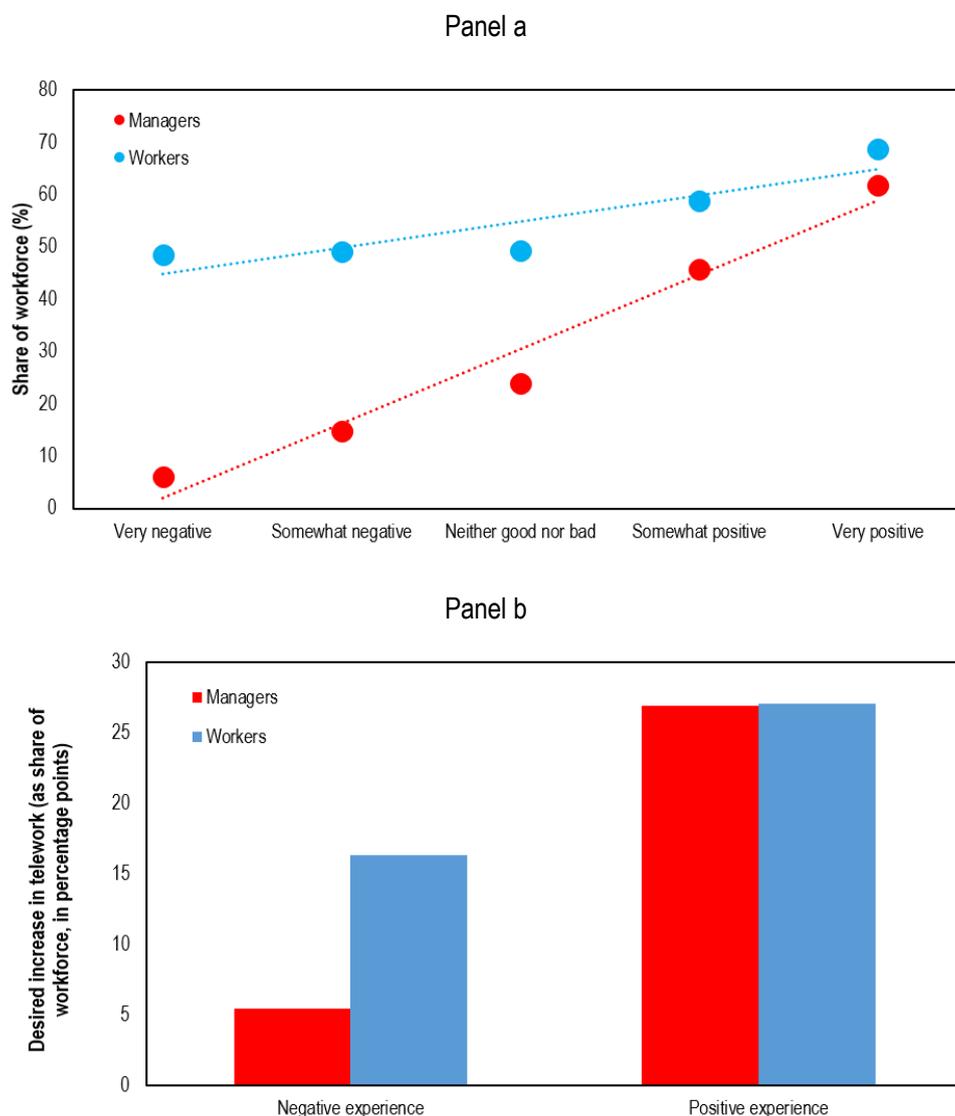
Source: Telework Survey of OECD Global Forum on Productivity. Results based on Q2Managers: "Approximately, what percentage of employees teleworked?"; Q3aManagers: "Approximately, what percentage of employees was teleworking, and at what frequency, during the Spring 2020 lockdown period?"; Q7Managers: "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 < 0.1, \*\* p < 0.05, \*\*\* p < 0.001.

38. Figure 8 Panel a further reinforces this idea by showing the average desired (by employees) and planned (by employers) level of telework in the future for each different subjective assessment level (from very negative to very positive). While managers who had a very negative experience during the pandemic plan to offer regular telework to less than 10% of their workforce, managers with a very positive assessment of the period are keen on granting regular telework to more than 60% of the workforce in their company. Interestingly, the link between assessment and telework level in the future is less pronounced for workers. Even those who had a very negative assessment and had a very bad experience with telework from the point of view of their satisfaction and well-being think that, in the future, more than 50% of workers will work from home regularly. Put differently, workers foresee higher levels of telework in the future, irrespective of their experience during the pandemic. This pattern holds *within* each sector (Figure A.7 in Annex A) and it also extends to countries (Figure A.8 in Annex A).

39. Figure 8 Panel b plots the desired change in the adoption rate of telework in the future relative to the pre-COVID-19 period that managers (workers) would like to implement (expect to be implemented) based on their experience during the crisis. On average, managers and workers who had a very positive or somewhat positive experience during the crisis would like to see an increase in the share of teleworkers by more than 25 percentage points, irrespective of the adoption rate before the pandemic. This figure drops to only 5 percentage points for managers who had a negative experience. As for workers who had a negative experience, they still expect an increase in the adoption rate of telework in the future of about 15 percentage points. Overall, these results are in line with Barrero, Bloom and Davis (2021a), who show that expectations for telework intensity after the pandemic are positively related to the productivity "surprise" of telework during the pandemic (defined as the actual experience during the crisis minus *ex-ante* expectation).<sup>26</sup>

<sup>26</sup> To be more specific, In the Barrero, Bloom and Davis (2021a) study, those who reported that telework turned out "Hugely better" than previously expected plan an extra 1.5 days of telework per week compared to those who reported that telework went "Hugely worse".

**Figure 8. Future telework intensity depends on the experience during the pandemic, especially among managers**



Source: Telework Survey of OECD Global Forum on Productivity. 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?"; 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?"

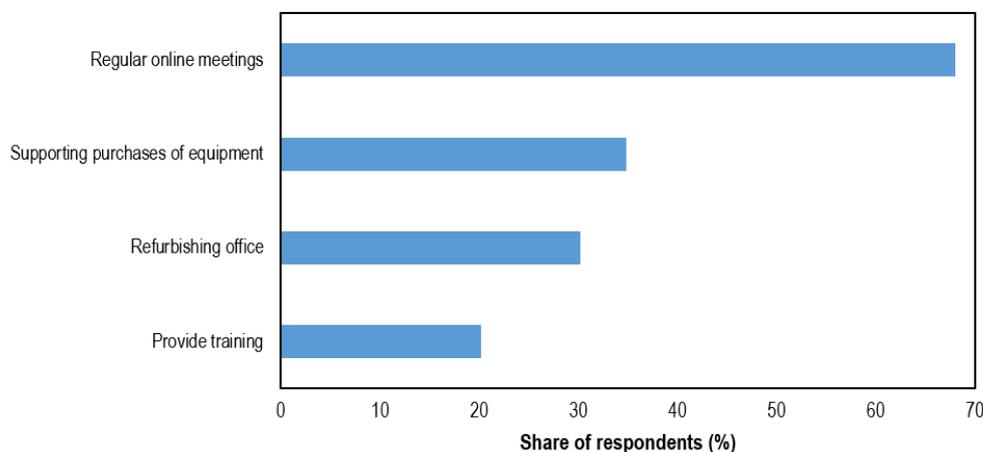
40. Given the importance of the experience managers had during the pandemic for the future of telework adoption, it is crucial to better investigate the causes that contributed to a positive or negative assessment of the period. In our survey, the experience of managers can be driven by two sets of factors: (i) those that facilitate and enable the use of teleworking practices – a set of *adaptive measures* implemented by managers during the pandemic; and (ii) those that create a barrier and impede a smooth adoption of them.

#### 4.2.1. Enabling factors and barriers to telework

41. Figure 9 documents that by far the most common adaptive measure was the organisation of regular online meetings with colleagues and supervisors, implemented by almost 70% of the companies. In a similar vein, DeFilippis et al. (2020) report a 12.9% increase in the number of meetings per person, but a 20.1% decrease in their average length. They also note a 5.2% increase in email traffic, mostly due to internal exchange. Moreover, we find that around one-third of firms in our sample have supported workers' purchases of IT and other office equipment (e.g. chairs, desks) during the pandemic (which can be interpreted as investments in *tangible* capital). In addition, 20% of them have provided training to equip managers and workers with the skills to work remotely (*intangible* capital). This is in line with survey data from Riom and Valero (2020), who report that during the first wave (from March to late July 2020) more than 60% of companies based in the UK adopted new digital technologies<sup>27</sup> and new management practices.

42. Among these enabling factors, regular virtual meetings, company support for office equipment, worker and managerial training were found to be significantly linked to the telework experience at the firm level (Table 4). The adoption rate of telework before the pandemic at the firm level, which can be interpreted in this context as a proxy for managerial ability to deal with remote teams, has also played a positive role regarding the experience during the crisis (see also Bai et al., 2020). Among the impeding factors, telework experience is negatively affected by poor ICT infrastructure quality, the simple unfeasibility of carrying out from home the tasks performed in the company and, to a lesser extent, concerns about firm performance (Table 5).

**Figure 9. What adaptive measures were implemented to facilitate telework during the pandemic?**



Source: Telework Survey of OECD Global Forum on Productivity. Results based on Q5managers: "What measures has your company put in place to help the company and its employees to adapt to more telework, with a view to maintain high productivity and well-being?"; Q5workers: "What measures has your company put in place to help the company and its employees to adapt to more telework with a view to maintain high productivity and well-being?".

<sup>27</sup> Such as Enterprise Resource Planning, Customer Relationship Management Systems, Cloud computing. See Gal et al. (2019) for a discussion on the effect of these digital practices on productivity.

**Table 4. Adaptive measures are positively linked to the experience of managers**

Variable	Telework experience of managers from the point of view of the <b>performance of the company during</b> the pandemic			
	(1)	(2)	(3)	(4)
Organising regular online meetings	1.24*** (0.11)	1.08*** (0.11)	0.95*** (0.11)	0.86*** (0.12)
Supporting purchase of IT and office equipment	0.55*** (0.09)	0.53*** (0.09)	0.49*** (0.09)	0.48*** (0.09)
Refurbishing office spaces	0.11 (0.09)	0.16 (0.09)	0.04 (0.09)	-0.01 (0.09)
Provide training	0.39*** (0.10)	0.29** (0.09)	0.24** (0.09)	0.25** (0.09)
Adoption rate of telework <b>pre-pandemic</b>		0.95*** (0.13)	0.84*** (0.13)	0.84*** (0.13)
Constant	2.05*** (0.10)	2.00*** (0.10)		
Country FE	NO	NO	YES	NO
Sector FE	NO	NO	YES	NO
Size FE	NO	NO	YES	YES
Country x Sector FE	NO	NO	NO	YES
N	877	877	877	877
R <sup>2</sup>	0.24	0.28	0.88	0.89

Source: Telework Survey of OECD Global Forum on Productivity. Results based on Q2Managers: "Approximately, what percentage of employees teleworked?"; 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?"; Q5Managers: "What measures has your company put in place to help the company and its employees to adapt to more telework, with a view to maintain high productivity and well-being?"; 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 < 0.1, \*\* p < 0.05, \*\*\* p < 0.001.

43. Overall, our survey results suggest that companies paid most of the fixed costs, in the form of ICT upgrades, of setting up telework facilities to continue their operations (Barrero, Bloom and Davis, 2021a). This was also an opportunity to catch up with competitors that already had a higher level of telework before the crisis (Bai et al., 2021). The fact that many firms paid the fixed cost associated with telework during the pandemic has been advocated as one reason why telework will stick after the pandemic (Barrero, Bloom and Davis, 2021a). Combined with our finding that telework experience is positively related to future adoption (Table 3), these results suggest that the introduction of adaptive measures is likely to be an important factor in future teleworking as well.

**Table 5. The importance of impeding factors for teleworking experience**

Variable	Assessment of telework provided by managers concerning the performance of the company during the pandemic			
	(1)	(2)	(3)	(4)
Legal barriers		0.06 (0.04)	0.03 (0.04)	0.02 (0.04)
Lack of health and safety regulation		0.09 (0.05)	0.10* (0.05)	0.08 (0.05)
Physical presence is required		-0.23*** (0.04)	-0.20*** (0.04)	-0.19*** (0.05)
Management is not familiar		0.05 (0.05)	0.02 (0.05)	0.03 (0.05)
Monitoring workers is difficult		-0.07 (0.04)	-0.08 (0.05)	-0.08 (0.05)
Lacking ICT infrastructure		-0.22*** (0.06)	-0.21*** (0.06)	-0.20*** (0.06)
No appropriate home-working environment		0.03 (0.05)	0.06 (0.05)	0.02 (0.06)
Concerns about firm performance		-0.12* (0.05)	-0.13** (0.05)	-0.10 (0.05)
Adoption rate of telework <b>before</b> the crisis	1.56*** (0.12)	0.90*** (0.14)	0.82*** (0.15)	0.81*** (0.14)
Constant	3.01*** (0.06)	4.73*** (0.23)		
Country FE	NO	NO	YES	NO
Sector FE	NO	NO	YES	NO
Size FE	NO	NO	YES	YES
Country x Sector FE	NO	NO	NO	YES
N	877	546	546	546
R <sup>2</sup>	0.10	0.25	0.91	0.92

Source: Telework Survey of OECD Global Forum on Productivity. Results based on Q2Managers: "Approximately, what percentage of employees teleworked?"; 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?"; Q8Managers: "In your view, which, if any, of the following factors are preventing wider use of telework after the crisis at your 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 < 0.1, \*\* p < 0.05, \*\*\* p < 0.001.

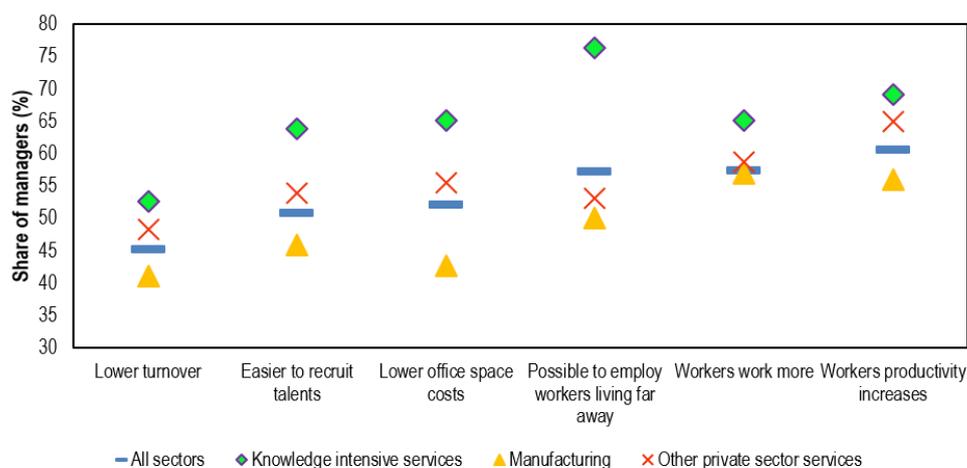
#### 4.2.2. Experience of managers

44. To explore what lies behind the positive experience by managers and workers, Figure 10 highlights the most important perceived benefits from telework. More than 60% of managers in our sample believe that, despite the challenging and certainly not ideal environment, the productivity of their workers increased because of telework, and they deem this is because workers are more concentrated and commit fewer errors at home. This result echoes other surveys that focus mainly on the US scenario (Barrero, Bloom and Davis, 2021a; Bartik et al., 2020; Ozimek, 2020). Moreover, 57.5% of the managers in our sample believe that workers work more because of the time saved on the commute.<sup>28</sup> Calculating the time between the first and the last email sent, or meeting attended, DeFilippis et al. (2020) estimate that the average workday was prolonged by almost 50 minutes during the pandemic.<sup>29</sup>

<sup>28</sup> In practice, to the extent that hours worked are unrecorded during telework, managers may of course find it hard to disentangle what fraction of productivity increases come from increased hourly productivity or from more hours worked.

<sup>29</sup> Longer working days may actually be detrimental for productivity as long as workers start feeling fatigue and become less concentrated on the job they are doing. Using project management and personnel data from Japan, Shangguan, DeVaro and Owan (2021) show that when workload increases and teams have to work longer hours, teams' average productivity decreases.

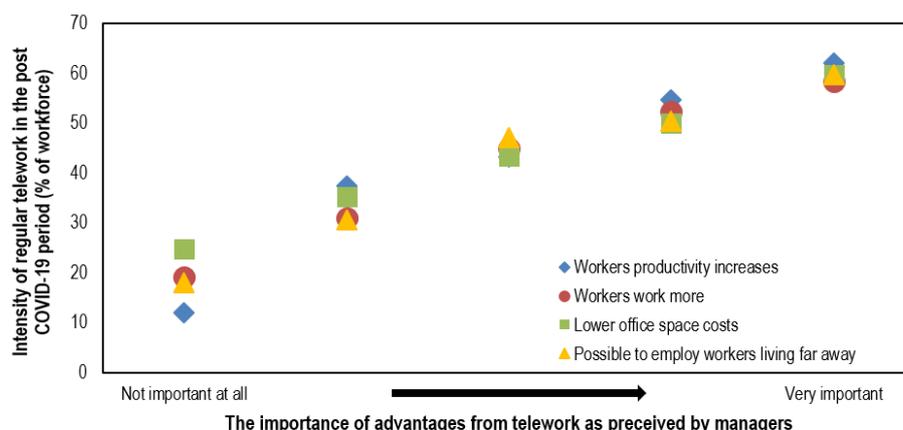
Figure 10. Perceived advantages of telework by managers



Source: Telework survey of OECD Global Forum on Productivity. Results based on Q10Managers: "In your view, how important are the following potential benefits for your company's performance from telework?"; Q20Managers: "Which sector best describes your company's main activity?".

45. Productivity can also be enhanced if companies save on unnecessary expenses and divert these savings on investments and innovation, enlarge the pool of workers from which they can choose and upskill workers by hiring new talents. Figure 10 documents that more than half of managers in our sample believe all these factors are potential advantages of telework. Indeed, by downsizing office space needed to run properly the business (as an important share of the workforce will be allowed to work from home) companies can cut a significant share of their costs. Also, thanks to new and better-performing ICT tools, companies can streamline the hiring process and strike a better match between workers' skills and firms' vacancies. The recognition of all these advantages is even more pronounced among managers in the knowledge-intensive services sector, who are better equipped to fully reap the benefits of this working arrangement. Overall, managers during the pandemic became better aware of the full spectrum of possibilities offered by telework. Our survey reveals that the more managers perceived the top four advantages brought about by telework to be present in their company, the more likely they are to introduce telework in their company at the extensive margin (Figure 11).

Figure 11. Managers who perceive telework benefits as more important are also more likely to expand its use in the future



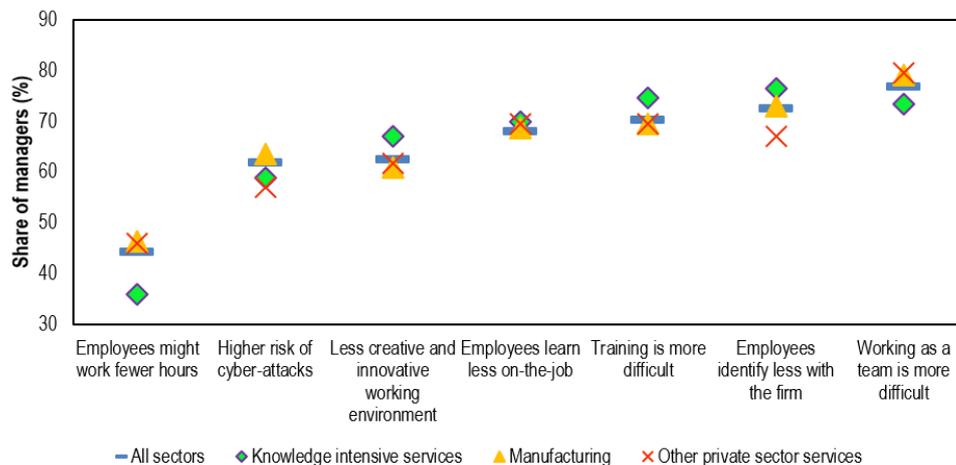
Source: Telework survey of OECD Global Forum on Productivity. Results based on Q7Managers: "What should be the ideal distribution of telework from the perspective of the overall performance of the company?"; Q10Managers: "In your view, how important are the following potential benefits for your company's performance from telework?".

46. Turning to the potential downsides of telework, Figure 12 reveals that more than 75% of managers in our sample fear that an excessive level of working from home could decrease the collaboration between team members, thereby hampering firm-level productivity growth in the long run. Also, 73% of managers believe that corporate culture and the identification of workers with the company’s beliefs may be jeopardized if workers do not come to the office or company’s premises. This is documented by Srivastava et al. (2018): using email exchanges to track the patterns of individual-level cultural fit with colleagues, they found that “enculturation” (i.e. personal cultural fit with the organisation) of employees recently hired (within their first six months) is particularly important for predicting subsequent outcomes of their career development. As such, recently hired workers who are less familiar with the work culture and who are less integrated are more likely to quit. This result casts a shadow on the career development of many young workers who started working in a full teleworking environment and have a looser connection to their employer.

47. Moreover, around 70% of managers believe that training staff in a teleworking environment is more difficult and that employees learn less on the job. More than 60% of managers in our sample believe that the teleworking environment is less innovative and creative. As many new innovative ideas and collaborations often come out from informal discussions with colleagues in the same firm or with peers working in other similar companies, the lack of these opportunities may harm innovation and productivity growth in the long run (Criscuolo, 2021; OECD, 2020). Finally, while the risk of cyber-attacks is relatively less important for managers in the private sector, the survey conducted among managers of public sector energy regulators reveals that this is perceived as particularly relevant in their environment.

**Figure 12. Perceived disadvantages for managers**

Share of managers mentioning these downsides as very important (5), important (4) or somewhat important (3)



Source: Telework survey of OECD Global Forum on Productivity. Results based on Q11Managers: "In your view, what are the most important potential downsides for your company's performance from telework? (Several options are possible); Q20Managers: "Which sector best describes your company's main activity?".

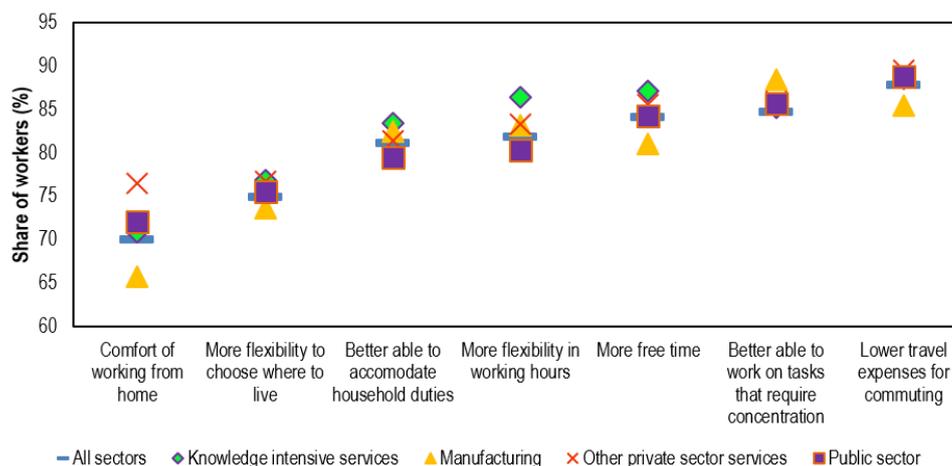
4.2.3. Experience of workers

48. Turning to the point of view of workers, Figure 13 shows that the saving on commuting costs and time is perceived as the crucial advantage of telework by almost 90% of workers in our sample. Commuting is deemed very expensive (between 2.4% and 4.8% of the United States GDP according to Redding and Turner (2015)) and very unpleasant (Kahneman et al., 2004). Barrero, Bloom and Davis (2020) estimate

that shifting to remote work has allowed Americans to save 62.4 million hours per workday they would have otherwise spent commuting.

**Figure 13. Perceived advantages for workers**

Share of workers mentioning these upsides as very important (5), important (4) or somewhat important (3)



Source: Telework survey of OECD Global Forum on Productivity. Results based on Q10Workers: "In your view, what are the most important potential benefits for employees from telework? (Several options are possible); Q20Workers: "Which sector best describes your company's main activity?"

49. More than 80% of workers in our sample believe that the fourth main advantage of telework consists of higher flexibility in working hours, while 75% consider also the flexibility in choosing where to live. Consistent with this, the Sixth European Survey on Working Conditions unveil that workers appreciate having control over their schedule and location (Eurofound and ILO, 2017), and these findings are also in line with the OECD's Job Quality framework (Cazes, Hijzen and Saint-Martin, 2015). More than 80% of workers in our sample believe that another important advantage provided by telework is the possibility to accommodate other competing household duties.<sup>30,31</sup>

50. Looking at the downsides from the perspective of workers wellbeing, Figure 14 confirms the mechanism that we laid out in Section 2: telework has also several perceived disadvantages and hence too much of it can potentially decrease worker satisfaction. More than 80% of workers in our sample fear the lack of social interactions and the fusing of work and private life as the main downsides of telework. This resonates well with insights from management literature: Mazmanian et al. (2013) lament the situation in which the use of mobile devices allowing employees to work anywhere and anytime leads them to work everywhere all the time; additionally, since they are always available online, workers may feel increasingly stressed (Barley, Meyerson and Grodal, 2011). Too much telework can have negative consequences not

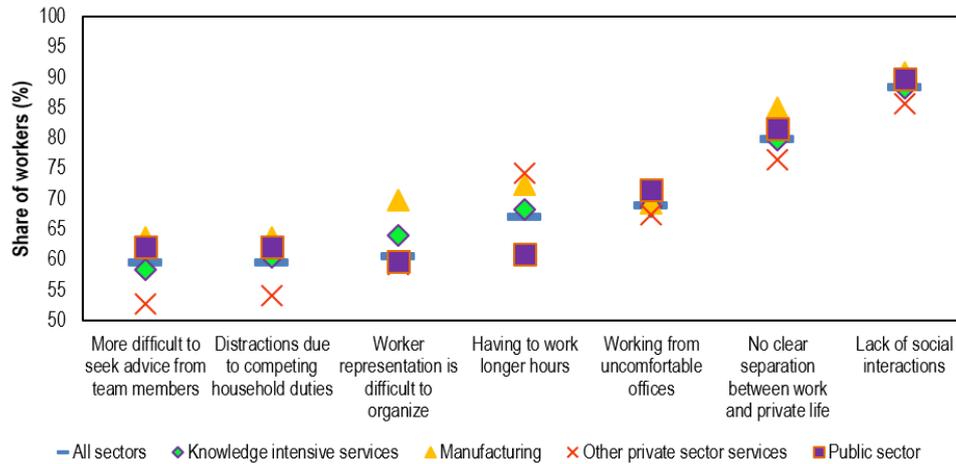
<sup>30</sup> When the gender of the respondent was available – in our smaller public sector sample among energy regulators – we observed that this last point is perceived as more important by women than by men.

<sup>31</sup> Nevertheless, there is an important difference between offering real flexibility to workers and expecting them to promptly available at any time. In practice, there might be a fine line between the two arrangements, and the potential blurring between work and private lives can take a toll on well-being. Indeed, in a recent review of the literature, Mas and Pallais (*forthcoming*) find that workers with location and schedule flexibility tend to be more stressed and have a higher share of long workdays and late-night work. Our survey reveals these issues when discussing the views of workers on the downsides from telework.

only for wellbeing but also for company performance, since cognitive and relational factors – like shared mental schemes, identification with the same goals and values and quality of relationships – are key facilitators of knowledge transfer (Taskin and Bridoux, 2010).

#### Figure 14. Perceived disadvantages for workers

Share of workers mentioning these downsides as very important (5), important (4) or somewhat important (3)



Source: Telework survey of OECD Global Forum on Productivity. Results based on Q11Workers: "In your view, what are the most important potential downsides for employees from telework? (Several options are possible); Q20Workers: "Which sector best describes your company's main activity?".

51. Working from uncomfortable spaces and for longer hours, which are perceived as important disadvantages by around 70% of workers in our sample, may also contribute to stress and reduced wellbeing. Additionally, around 60% of workers highlight the risk of difficult worker representation and advice from team members. We find that around 60% of them feel to be distracted by other competing household duties. Finally, very few workers foresee the risk of lower visibility and lower chances of career advancement, despite previous evidence from the literature documenting negative effects (Bloom et al, 2015).<sup>32</sup>

#### 4.3. Expectations about telework post-COVID19: how much and in what ways?

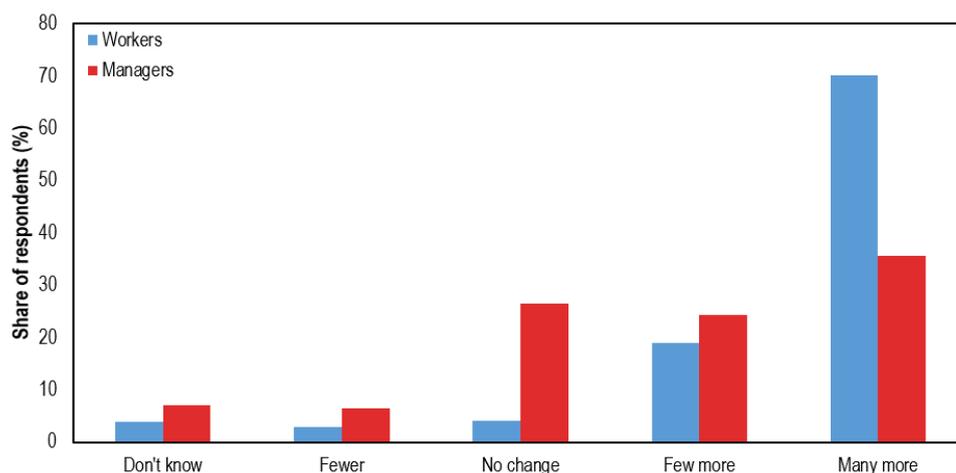
52. In the previous section we concluded that the positive experience managers and workers had during the pandemic - and the investments in tangible and intangible capital many companies made in this period – will likely cause telework to remain widespread even after the pandemic. Within our survey, we can analyse the adoption rate of telework not only at the extensive margin (the total share of the workforce doing telework) but also at the intensive margin (the number of days the average worker in the firm works from home).<sup>33</sup>

<sup>32</sup> Gender difference from our more limited sample reveal that women fear much more a potential reduction in equal opportunities, and they feel more distracted by household duties.

<sup>33</sup> The study of the intensive margin is particularly relevant to understand, for instance, the likely consequences of telework on the future of cities. Only if a large share of firms envisage to move their workforce remotely and allow for five days of teleworking per week, workers could move away from crowded and expensive cities towards rural areas. On the other hand, more intermediate levels of telework intensity could still spur a shift from city centres to suburban areas to benefit from more spacious living spaces and take advantage of less frequent commutes for work.

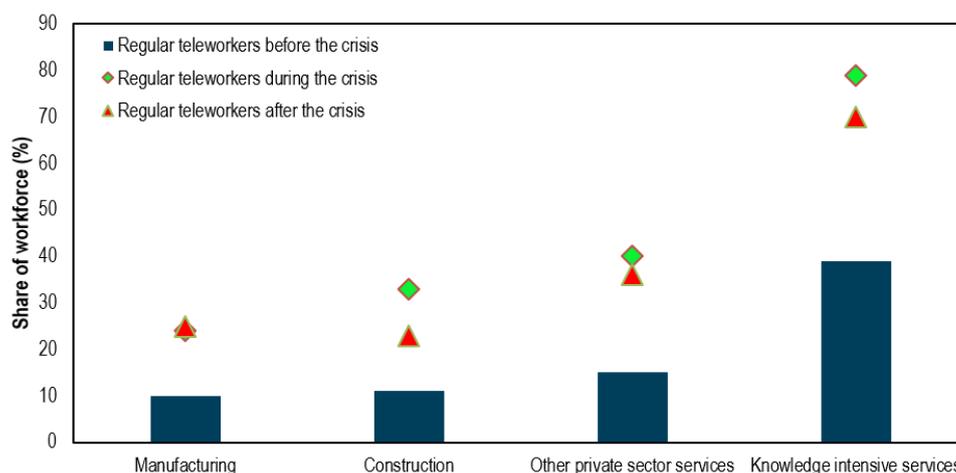
53. Focusing on the expected change at the extensive margin reveals that around 40% of managers and 70% of workers foresee many more workers teleworking from home in the future compared to the pre-pandemic period (Figure 15). Only 6% of managers and 4% of workers forecast a lower adoption rate of telework in the future than previously. Company leaders also think that the *ideal* level of telework is somewhere between the pre and during pandemic levels, though closer to the latter: about 70% of workers in the knowledge-intensive services sector will have this possibility (Figure 16).<sup>34</sup>

**Figure 15. Both managers and workers expect more widespread telework in the future**



Source: Telework survey of OECD Global Forum on Productivity. Results based on Q6Managers: "How do you expect the employees in your company will wish to change their teleworking habits after the COVID-19 crisis?"; Q6Workers: "How do you expect the employees in your company will wish to change their teleworking habits after the COVID-19 crisis?".

**Figure 16. Telework adoption in the future according to managers**

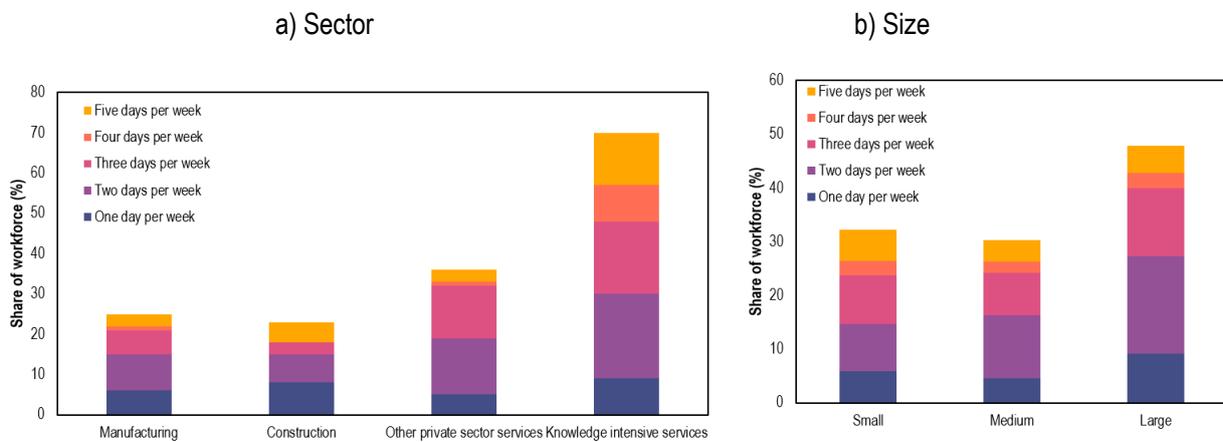


Source: Telework survey of OECD Global Forum on Productivity. Results based on Q2Managers: "Approximately, what percentage of employees teleworked?"; Q3Managers: "Approximately, what percentage of employees was teleworking, and at what frequency during the Spring 2020 lockdown period?"; Q7Managers: "What 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?".

<sup>34</sup> Using survey data for the US labour market, Altig et al. (2020) document that working from home is expected to triple after the pandemic, from 9.7% of the workforce to 27%.

54. Turning to the intensive margin, our estimates indicate that the preferred working mode from the point of view of the company’s performance – as indicated by managers – is hybrid, with 2-3 days teleworking among those who carry out regular telework (Figure 17a and Figure 17b). Only around 13% of the workforce in the knowledge-intensive service sector will *completely* work from home (i.e. five days per week) in the future. This figure drops to less than 5% in all the other sectors, reaching less than 3% in the manufacturing sector. Across companies of different sizes, large companies will likely allow regular telework to almost 50% of their total workforce, 20% more than a small or medium-sized company. These findings confirm the hypothesis we presented in Section 2 about the inverted U relationship between worker performance and telework intensity. Even though in the pre-pandemic period, the relationship peaked around 1-2 working days (Figure 6), the positive experience during the large scale telework adoption could easily have raised the number of days at the peak, moving the top of the curve to the right.<sup>35</sup>

Figure 17. Desired adoption rate of telework at the intensive margin

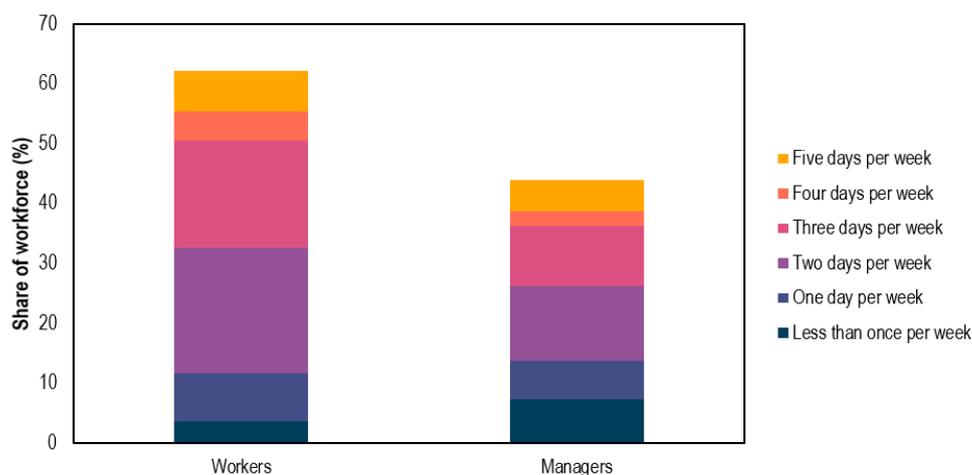


Source: Telework survey of the OECD Global Forum on Productivity. Results based on Q7Managers: "What should be the ideal distribution of telework from the perspective of the overall performance of the company?"; Q16Managers: "How many employees does your company have?"; Q20Managers: "Which sector best describes your company’s main activity?"

55. Comparing manager and workers expectations, Figure 18 shows that, while expectations about the future share of telework differ, with workers being more drastic than managers, both agree on considering hybrid teleworking (around 2-3 days per week) most desirable. For instance, managers consider that 42% of the workforce should have teleworking arrangements, but only 5% works completely from home, 22% two or three times per week and 7% less than once per week (irregular teleworkers).

<sup>35</sup> Unfortunately, we do not have information on productivity during and post-pandemic to fit the hump-shaped inverted U relationship.

Figure 18. The desired intensity of telework: comparing the views of managers and workers



Source: Telework survey of OECD Global Forum on Productivity. 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?"

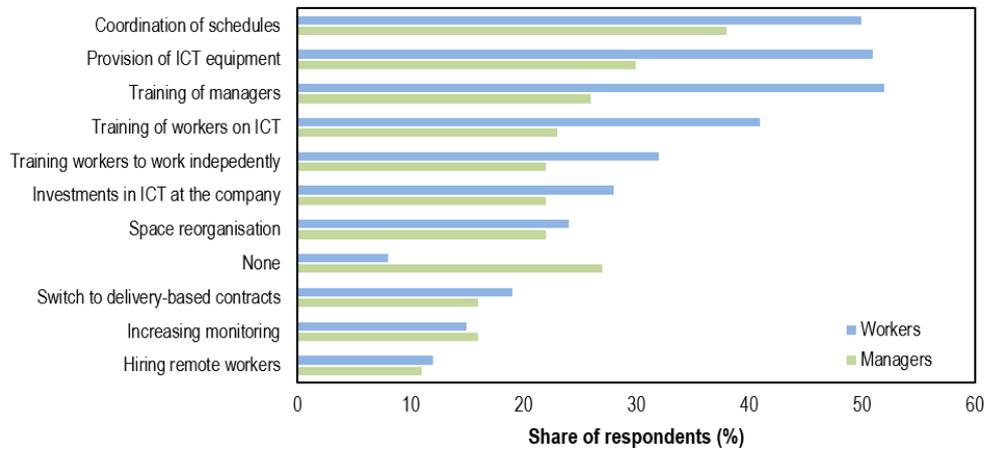
56. Figure 19 reports changes in organisation and managerial practices that are foreseen (by managers) or desired (by workers) to better accommodate telework. Managers (38%) and workers (50%) agree that teams' schedules should be coordinated, meaning that during office days teams should meet. While keeping the advantages of telework – in terms of higher flexibility and lower costs - this measure could be helpful to maintain appropriate knowledge flows within each team and allow team members to learn and socialise – and mitigate the most salient risks of telework coming from isolation and lack of team engagement, both from the managerial and worker point of views (Figure 12 and Figure 14).<sup>36</sup>

57. Notwithstanding the efforts made during the pandemic, more than half of workers (30% of managers) think companies should invest more in the provision of ICT equipment. Additionally, more than 30% of workers (20% of managers) wish to see introduced technical training on ICT as well as soft skill training for both executives and employees on how to manage remote teams and how to work independently from home. Criscuolo (2021) and OECD (2021c) show that, during the pandemic, telework uptake at the country level was higher in countries with a large portion of adults proficient in ICT. Interestingly, firms that were initially more productive are also more likely to introduce these measures (Figure 20), risking to increase performance gaps with less productive firms even further.<sup>37</sup>

<sup>36</sup> Previous evidence supports the relevance of these concerns: Jaravel, Petkova and Bell (2018) establish the relevance of team-specific capital that results from tight-knit teams. Agrawal, Kaput and McHale (2008) show that spatial and social proximity increase the probability of knowledge flows between individuals.

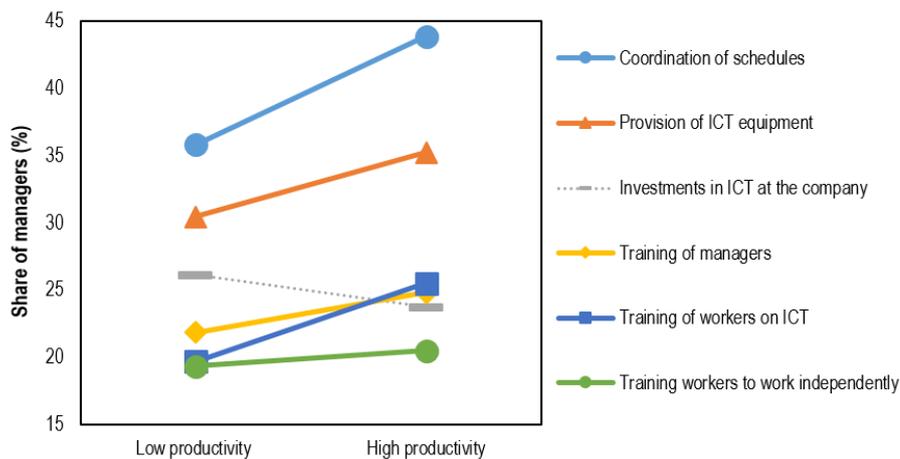
<sup>37</sup> The only exception is "ICT investments at the company", of which the less productive firms plan to carry out more.

**Figure 19. Workers and managers feel the need to introduce additional measures in the future**



Source: Telework survey of OECD Global Forum on Productivity. Results based on Q9Managers: "What types of organisational changes and HR management practices do you plan to introduce to better accommodate teleworking?"; Q9Workers: "What types of organisational changes and HR management practices would you find useful to introduce to better accommodate teleworking?".

**Figure 20. More productive firms tend to foresee more managerial changes**



Source: Telework Survey of OECD Global Forum on Productivity. Results based on Q9Managers: "What types of organisational changes and HR management practices do you plan to introduce to better accommodate teleworking?"; Q16Managers: "How many employees does your company have?"; Q17Managers: "How big were your company's revenues in a typical year prior to the COVID crisis (in millions of euros)?". Low productive firms are in the bottom 50% of the productivity distribution. High productive firms are in the top 50% of the productivity distribution.

58. Less than 20% of managers and workers plan or desire to change the contractual structure of the work relation introducing delivery-based instead of hour-based agreements. Just around 15% of managers and workers would like to introduce/see introduced in the future new technologically advanced ways to better monitor employees' activity. Consistently with the conclusion that telework in the future will rarely be carried out five days per week, only around 11% of managers want (and 12% of workers would like) to hire fully remote workers.

## 5. Discussion about further implications and potential policy actions

### 5.1. Unequal effects across gender, occupations, incomes and geography

59. If the telework “revolution” spurred by COVID-19 carries the persistent effects suggested in the GFP survey and most other available evidence, its implications could be far reaching, carrying consequences not only for productivity but also in an array of other fields.

60. Given that not all occupations and sectors are amenable to teleworking, the move towards more teleworking can exacerbate existing inequalities. The size and sector heterogeneities (as reported in Figure 3 and Figure 4) are a case in point, especially during the pandemic where telework has often been the only way for workers in non-essential sectors to continue working (Adams-Prassl et al., 2020b). Moreover, more teleworkable sectors generally pay higher wages and hire a larger share of better-educated and higher-skills workers (Bartik et al., 2020a; Dingel and Neiman, 2020; OECD, 2021b). Analysing the United States labour market, Mongey and Weinberg (2020) confirm these claims. They highlight that workers in low teleworkable occupations are less likely to be white, to be covered by employer-provided healthcare and to be homeowners. Also, these workers are more likely to have been recently unemployed and less likely to be employed full-time or in large firms. Brussevich, Dabla-Norris and Khalid (2020) add that young workers are less likely to work from home. As such, the widespread adoption rate of this working arrangement holds the potential to further increase the polarisation and the inequalities between high-income, high-skilled, older workers employed in large firms versus low-income, low-skilled young workers employed in small firms (Sostero et al., 2020).<sup>38</sup> A particularly important aspect of skills is likely to be the ability to use digital technologies efficiently.

61. Telework has also implications in terms of working conditions and the sharing of household duties between men and women. The flexibility inherent in teleworking in principle allows workers to accommodate other household tasks. If men could telework more (less) easily than women, then the gender gap would potentially diminish (and vice versa). Evidence accumulated during the crisis showed that women were disproportionately affected by the COVID-19 crisis as many female-dominated industries like retail, accommodation services, and food and beverage services activities had to close during strict lockdowns and are in general less teleworkable (Adams-Prassl et al., 2020a; Queisser, Adema and Clarke, 2020; Papanikolaou and Schmidt, 2020). Accordingly, most of the additional housework and childcare activities associated with school closures during the pandemic has fallen on women’s shoulders (Del Boca et al., 2020).

62. However, some studies also reveal that the amount of time spent by men on housework depends on the working arrangement of the partner: men whose partners continue to work at their regular workplace tend to spend more time on housework than before the pandemic. In the UK, Sevilla and Smith (2020) find that, although the additional burden of childcare has fallen mostly on women, the gender childcare gap (defined as the difference between women’s and men’s childcare share) declined - 27.2% versus 30.4% before the crisis - because the allocation of the extra burden is more equal than in pre-COVID-19 times. Moreover, the gap is narrower when men are working from home. For the future, Alon et al. (2020) suggest there may be a reallocation of childcare and housework duties from women to men in those families where the man will work from home and the woman will still have to work from a specific location.

63. The adoption of teleworking arrangements may also contribute to increasing inequalities across other dimensions. Given that more productive firms, with better managers and more skilled workers, seem to be better placed to reap the productivity advantages of telework, this may contribute to increasing the gap with less productive firms. At the individual level, the literature has firmly established the link between

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<sup>38</sup> Berlingieri, Calligaris and Criscuolo (2018) document the link between firm-size, wage and productivity in both the manufacturing and the services sector. While confirming the positive association size-wage and size-productivity in the manufacturing sector, they do not retrieve the same link in the services sector.

individual skills and teleworking capacity: high-skilled employees telework more and may benefit more from these working arrangements (Adams-Prassl et al., 2020a). Within those who can possibly telework, additional inequalities may stem from the housing conditions under which telework takes place - indicated by workers to be an important factor in Figure 14. In this regard, Bloom (2020) reports that during the pandemic almost 25% of remote workers used a shared room as office and only less than 50% of respondents worked from a private room other than the bedroom (Armillei, Boeri and Le Barbanchon, 2021).

64. Lastly, telework may also have significant implications for cities and the geographic concentration of economic activity. OECD (2020b) documents the teleworkability of cities and finds that capital cities have the highest potential for teleworking. It also showcases the presence of an urban-rural gap insofar as telework is generally easier in more densely populated areas, partly thanks to better quality internet connections (broadband) (Criscuolo, 2021). Drawing on our survey evidence, we do not predict a mass shift of workers from city centres to distant rural areas is unlikely given that telework will in most cases not be carried out on a full-time basis (Davis, Ghent and Gregory, 2021). Instead, it is more likely that many workers will move from expensive and overcrowded areas in city centres to outskirts and suburbs, thus creating a sort of “doughnut effect” (Ramani and Bloom, 2021) and leading to a hybrid working mode. Analysing the effect of the COVID-19 pandemic on house prices and rents, Gupta et al. (2021) observe a flattening of the differential between city centres and suburbs, especially in the cities where teleworking was more prevalent, hence reinforcing these conjectures.

65. Given that many low-paid and low-skilled urban workers are employed in personal services (e.g. food services, cleaning, security, entertainment, transportation) that heavily depend on workers going to the office, these potential changes in the economic structure of city centres would likely fall on these disadvantaged workers (Althoff et al., 2021; Autor and Reynolds, 2020). For instance, Bloom (2020) estimates that work from home could halve the total daily spending in bars, restaurants and shops. This could also help explain why low-skilled workers were amongst the group most affected by the pandemic, especially in the richest areas of the US (Chetty et al., 2020). To conclude, this suggests that another potential consequence of teleworking is increased inequality between high-skilled professionals and low skilled workers who cannot benefit from telework and indeed suffer from the absence of office workers.

**5.2. The role of public policies: Enable, Empower and Protect**

66. Telework holds the potential to influence various aspects of our society and daily lives and, accordingly, calls for policy attention on several areas, as summarised in Table 6 and discussed below

**Table 6. Policies to raise the gains from telework**

<b>ENABLE</b>	INFRASTRUCTURE: ICT, childcare CULTURE: Corporate culture, digital public services
<b>EMPOWER</b>	SKILLS: Online training, lifelong learning ORGANISATION: Management training
<b>PROTECT</b>	RIGHTS: Right to disconnect REGULATION: Health insurance, safety regulation

Source: OECD Global Forum on Productivity.

67. First, public policies should *enable* the use of telework, by removing ICT bottlenecks to facilitate a smooth and broad adoption of teleworking arrangements (which necessarily require reliable, stable and

high-speed internet connection) in both urban and rural areas (OECD, 2021a; OECD, 2021b). Indeed, OECD (2021c) and Criscuolo (2021) highlight that telework uptake before and during the COVID-19 pandemic is correlated with ICT infrastructure quality – both at home and in the firm premises – across EU countries. Moreover, the GFP telework survey also confirms a significant link between the perceived lack of appropriate ICT infrastructure and the experience with telework during the pandemic (Table 5).<sup>39</sup> Therefore, investing in broadband expansion to harness the full potential of teleworking arrangements should be a priority (Bloom, 2020).

68. A regulatory framework that is supportive of telework acts as another key enabling factor. However, access to telework has not been guaranteed in all OECD countries or not all categories of workers where it could be feasible. Before the pandemic, telework was more widespread in countries where employees had an enforceable right, typically granted through collective bargaining (see more details in the OECD Employment Outlook, 2021b). Governments should act to put in place a supportive regulatory framework with respect to the working conditions of teleworkers to make sure that telework can indeed become a voluntary choice agreed upon by employers and employees.

69. Moreover, policies should promote better housing affordability and support investments in equipment and home environments conducive to teleworking, to avoid that workers bear the extra costs of telework (e.g. equipment, heating, cooling, telecommunication costs), with companies envisaging some forms of financial compensation for these expenditures, especially if telework is not voluntarily chosen.<sup>40</sup> This may involve support to low-income households to ensure that they can easily connect to the infrastructure. Further enabling elements include assuring access to child care with sufficient geographic density so that parents working from home easily rely on them which in turn helps with concentration and focus while teleworking. Public policies can also promote the adoption of telework through influencing the corporate culture, potentially with information campaigns, or through a more general nurturing of digital culture by providing more public services online.

70. Second, policies should *empower* managers and employees to carry out telework successfully. This involves supporting the training of workers in adopting the skills needed for efficient teleworking, such as digital skills. In particular, to avoid teleworking benefits being reaped only by high-skilled male workers in large firms, governments should design policies to increase the teleworking capacity of SMEs and the ICT skills of low-skilled workers and women, while building supporting welfare infrastructures – notably related to childcare, as mentioned above – that could help especially teleworking women. Finally, managers' training - which emerged as a top priority for both managers and workers (see Figure 19) - should follow the best available managerial practices developed to successfully manage “hybrid” (partly on-site, partly online) teams.

71. Last but certainly not least, employees should be *protected* from excessive amounts of telework especially in inadequate conditions - which hampers well-being, personal satisfaction and productivity in the long run. This can be achieved by adapting the legal environment: employment regulations should ensure that the amount of telework remains a choice made jointly and in agreement by employers and

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<sup>39</sup> Comparing the importance of these perceptions about ICT infrastructure quality across countries from our survey reveals that they seem to be particularly relevant in Malaysia, Hungary, Japan and Ireland according to our survey (Figure A9). Given our relatively modest sample size, cross-country comparisons should be treated with caution; nevertheless, most of these countries also have a relatively low position in the cross-country ranking of broadband coverage, which lends further support to the concerns noted by respondents (OECD Broadband statistics, <http://www.oecd.org/sti/broadband/broadband-statistics/>).

<sup>40</sup> This is in line with guidelines developed by the International Labour Organization (ILO, 2020).

employees (“right to disconnect” clauses) and is done in a safe manner (e.g. health insurance coverage for remote work). To prevent excessive monitoring, privacy protection of workers should be enforced.<sup>41</sup>

72. More telework, if used to substitute geographically close and more expensive workers with more distant and cheaper ones could lead to a new wave of outsourcing and delocalisations, or what some call “telemigration” (Baldwin, 2019; Kakkad et al, 2021).<sup>42</sup> This could increase firms' bargaining power and compress wages, with implications for inequality in OECD countries, although may present an opportunity for remote workers in emerging markets. Social dialogue will be pivotal to addressing these challenges, bearing in mind that the traditional representation of workers could become more difficult if they are more dispersed geographically or more “atomised” in terms of their interactions with each other. Collective bargaining approaches should thus potentially be rethought and updated to reflect this changing nature of work.

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<sup>41</sup> Encouragingly, our survey finds that only a small fraction of employers think about monitoring tools when workers are being away from the office (Section 4.3, in particular Figure 19).

<sup>42</sup> Again, our survey finds that this is currently not among the main issues that workers are concerned about, consistent with the relatively low share of managers who think about this possibility (see Section 4.3, in particular Figure 19).

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## Annex A. Additional tables and figures

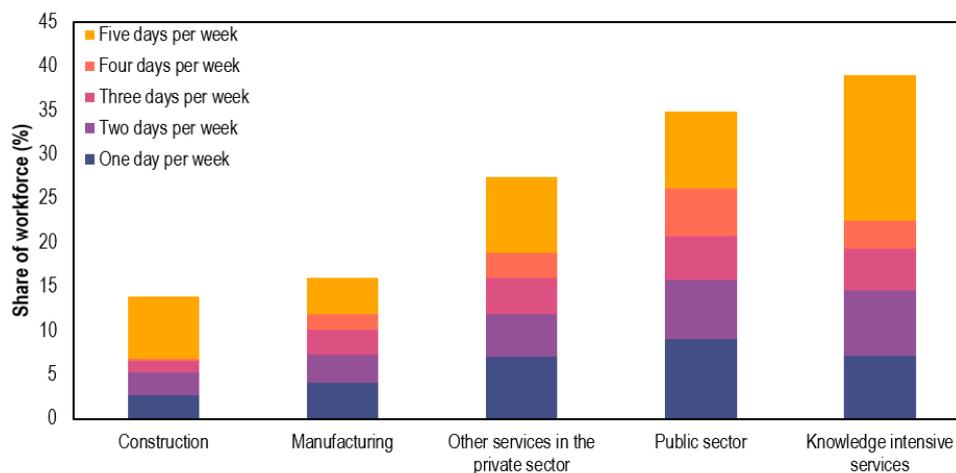
Table A.1. Observations and median employment by sector

Sector	Total observations (1)	Of which: Managers (2)	Of which: Workers (3)	Median size (employees) (4)
Construction	122	53	69	273
Knowledge-intensive services	563	173	390	500
Manufacturing	778	452	326	252.5
Other private sector services	365	150	215	245
Public sector	498		498	1000

Table A.2. Observations and median employment by country

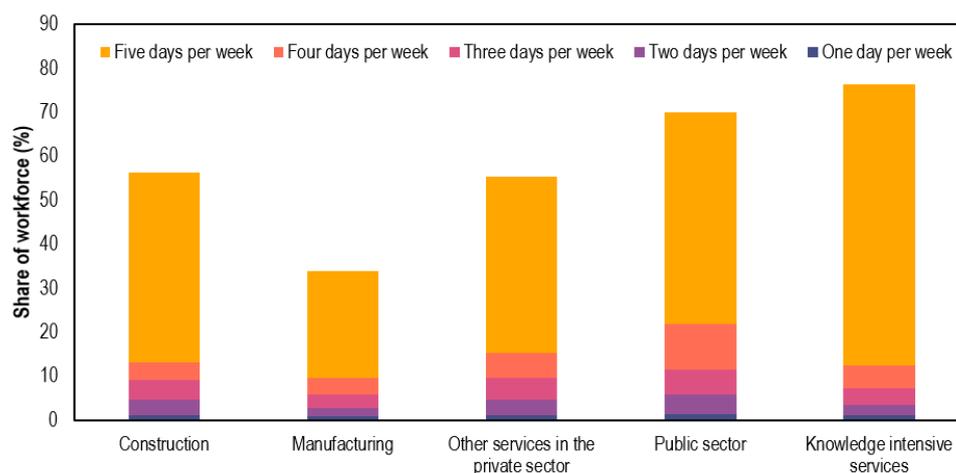
Country	Total observations (1)	Of which: managers (2)	Of which: workers (3)	Median size (employees) (8)
Australia	23		23	26
Austria	18		18	3000
Belgium	610		610	500
Brazil	87	87		140
Colombia	11	11		600
Costa Rica	29	29		700
Denmark	12		12	75
Finland	66		66	750
France	1234		1234	2800
Germany	387	44	343	1000
Greece	72	72		200
Hungary	33		33	80
Ireland	88		88	450
Italy	844	686	158	80
Japan	174	42	132	1100
Luxembourg	44		44	500
Malaysia	240	123	117	108
Netherlands	58		58	597.5
New Zealand	77		77	225
Portugal	147	79	68	111
Spain	324	83	241	600
Sweden	38	28	10	212.5
Switzerland	18		18	1000
United Kingdom	54		54	400
United States	22	22		1200
	<b>4710</b>	<b>1306</b>	<b>3404</b>	

**Figure A.1. Adoption rate of telework before the crisis at the intensive margin**



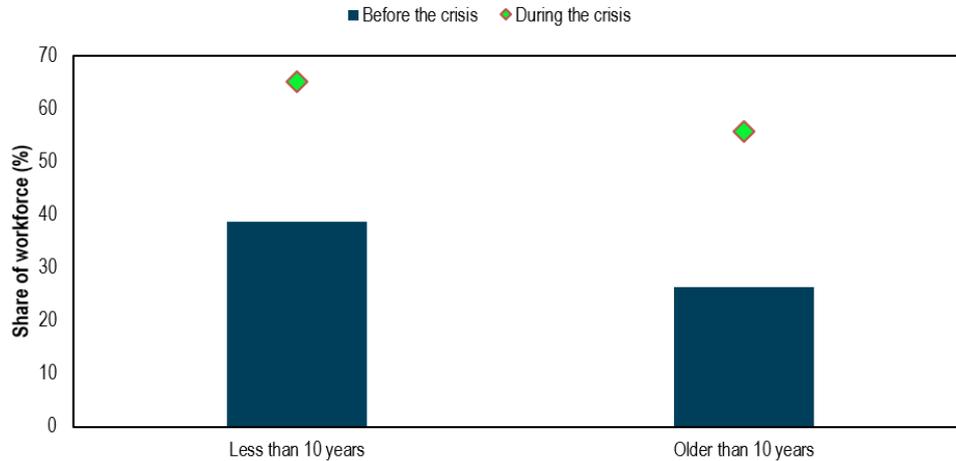
Source: Telework Survey of OECD Global Forum on Productivity. Results based on the aggregation of answers from managers and workers. Results based on Q2: "Approximately, what percentage of employees teleworked?"; Q20: "Which sector best describes your company's main activity?".

**Figure A.2. Adoption rate of telework during the crisis at the intensive margin**



Source: Telework Survey of OECD Global Forum on Productivity. Results based on the aggregation of answers from managers and workers. Results based on Q3a: "Approximately, what percentage of employees was teleworking, and at what frequency, during the Spring 2020 lockdown period"; Q20: "Which sector best describes your company's main activity?".

Figure A.3. Adoption of teleworking arrangements across firm age



Source: Telework Survey of OECD Global Forum on Productivity. Results based on the aggregation of answers from managers and workers. Results based on Q2: "Approximately, what percentage of employees teleworked?"; Q3a: "Approximately, what percentage of employees was teleworking, and at what frequency, during the Spring 2020 lockdown period?"; Q19: "How old is your company?".

Table A.3. The impact of lockdown rules on the adoption of telework

First Wave (Dependent Variable: Adoption rate of telework during the first wave)

Variable	Adoption rate of telework during the first wave		
	(1)	(2)	(3)
Adoption rate of telework before the crisis	0.50*** (0.01)	0.43*** (0.02)	0.41*** (0.02)
Severity of lockdown measures	0.29*** (0.04)	0.28*** (0.04)	0.27*** (0.04)
Sector FE	NO	YES	YES
Size FE	NO	NO	YES
N	2921	2921	2921
R <sup>2</sup>	0.24	0.78	0.79

Source: OECD calculations based on OECD (2021c) and Telework Survey of OECD Global Forum on Productivity. Results based on the aggregation of answers from managers and workers. Results based on Q2: "Approximately, what percentage of employees teleworked?"; Q3a: "Approximately, what percentage of employees was teleworking, and at what frequency, during the Spring 2020 lockdown period?".

**Table A.4. The persistence of telework adoption at the firm level before and during COVID19**

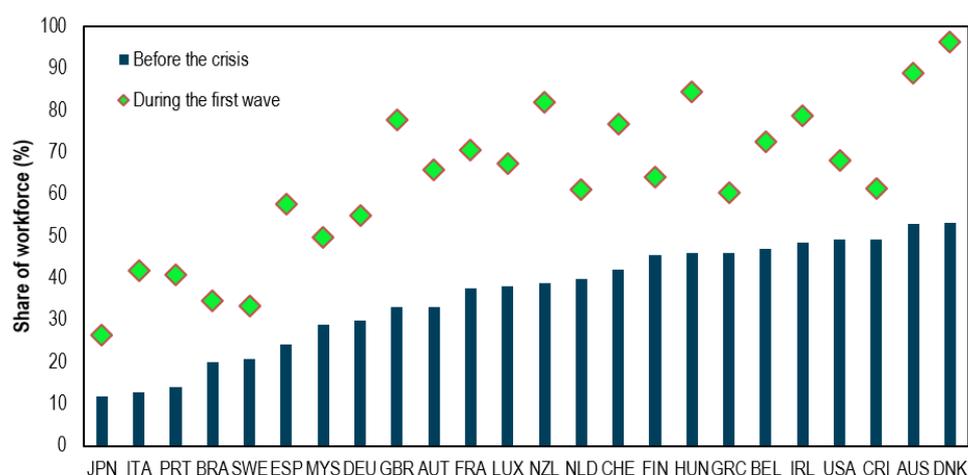
First Wave (Dependent Variable: Adoption rate of telework during the first wave)

Variable	(1)	(2)	(3)	(4)	(5)
Adoption rate of telework before the crisis	0.51*** (0.01)	0.44*** (0.02)	0.44*** (0.02)	0.48*** (0.01)	0.40*** (0.02)
Constant	43.17*** (0.92)				
Country FE	NO	YES	NO	NO	NO
Section FE	NO	NO	YES	NO	NO
Size FE	NO	NO	NO	YES	NO
Country x Sector FE	NO	NO	NO	NO	YES
N	3067	3067	3067	3067	3067
R <sup>2</sup>	0.23	0.77	0.77	0.76	0.80

Second Wave (Dependent Variable: Adoption rate of telework during the second wave)

Variable	(1)	(2)	(3)	(4)	(5)
Adoption rate of telework before the crisis	0.58*** (0.01)	0.50*** (0.02)	0.53*** (0.01)	0.55*** (0.01)	0.47*** (0.02)
Constant	35.75*** (0.90)				
Country FE	NO	YES	NO	NO	NO
Section FE	NO	NO	YES	NO	NO
Size FE	NO	NO	NO	YES	NO
Country x Sector FE	NO	NO	NO	NO	YES
N	3067	3067	3067	3067	3067
R <sup>2</sup>	0.29	0.76	0.75	0.75	0.78

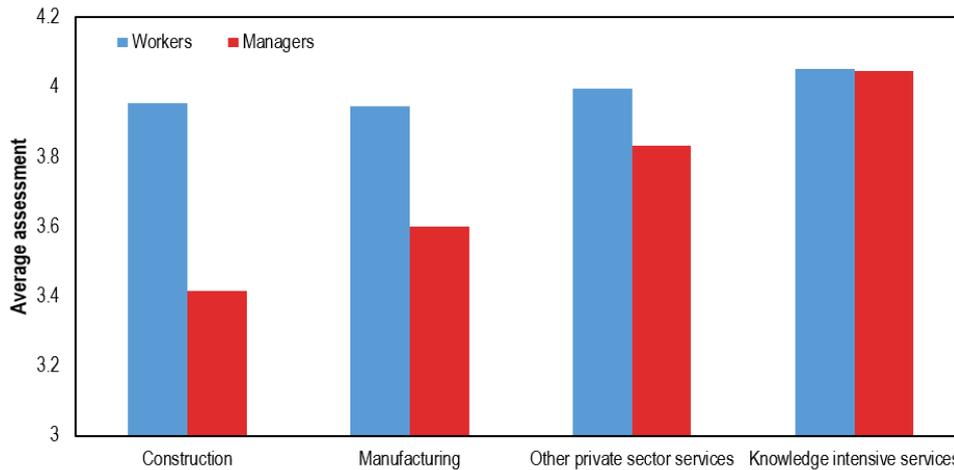
Source: Telework Survey of OECD Global Forum on Productivity. Results based on the aggregation of answers from managers and workers. Results based on Q2: "Approximately, what percentage of employees teleworked?"; Q3a: "Approximately, what percentage of employees was teleworking, and at what frequency during the Spring 2020 lockdown period?"; Q3b: "How is the situation in the current period, which in most countries can be referred to either as the second wave of the continuation of the first wave?"; Q14: "Please state the country in which your company's headquarter is located"; Q16: "How many employees does your company have?"; Q20: "Which sector best describes your company's main activity?". Robust standard errors in parentheses. \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.001.

**Figure A.4. Adoption of teleworking arrangements across countries**

Note: MYS is the ISO 3166 Alpha 3 abbreviation for Malaysia.

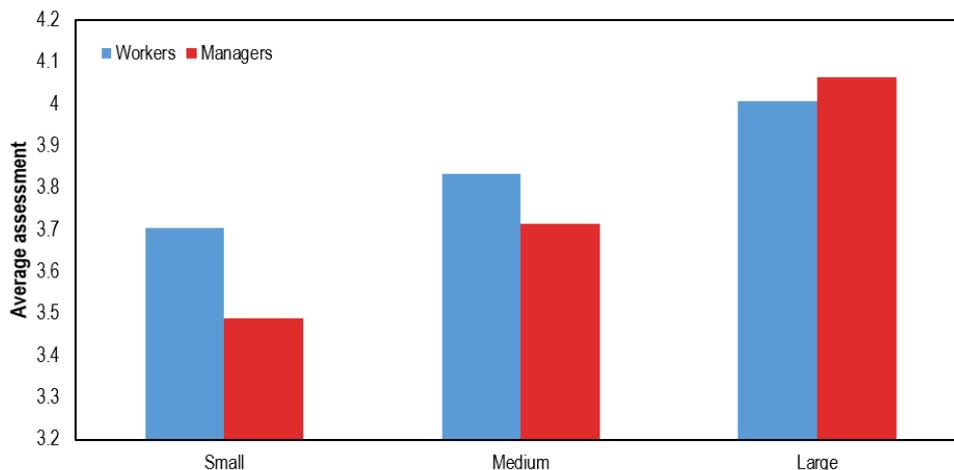
Source: Telework Survey of OECD Global Forum on Productivity. Results based on Q2: "Approximately, what percentage of employees teleworked?"; Q3a: "Approximately, what percentage of employees was teleworking, and at what frequency, during the Spring 2020 lockdown period?".

**Figure A.5. Assessment of the period by managers and workers for each sector**



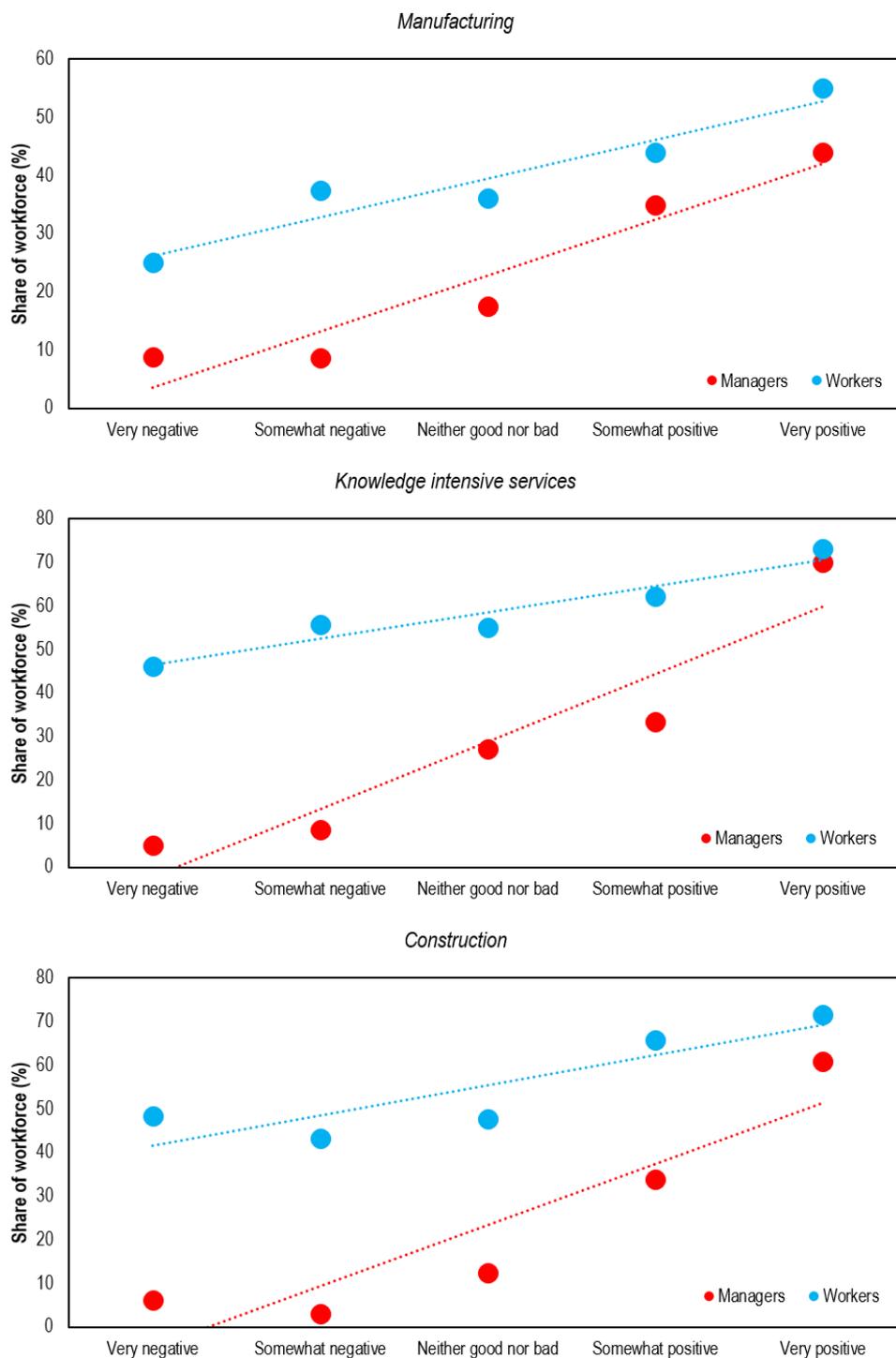
Source: Telework Survey of OECD Global Forum on Productivity. Results based on Q4managers: "How would you assess your company's experience with telework during the COVID-19 crisis from the point of view of the overall performance of the company?"; Q4workers: "How would you assess your employees' experience in your company with telework during the COVID-19 crisis from the perspective of their work-life balance and wellbeing?"; Q20: "Which sector best describes your company's main activity?". Average assessment measured on a scale from 1 (very negative assessment of the period) to 5 (very positive assessment of the period).

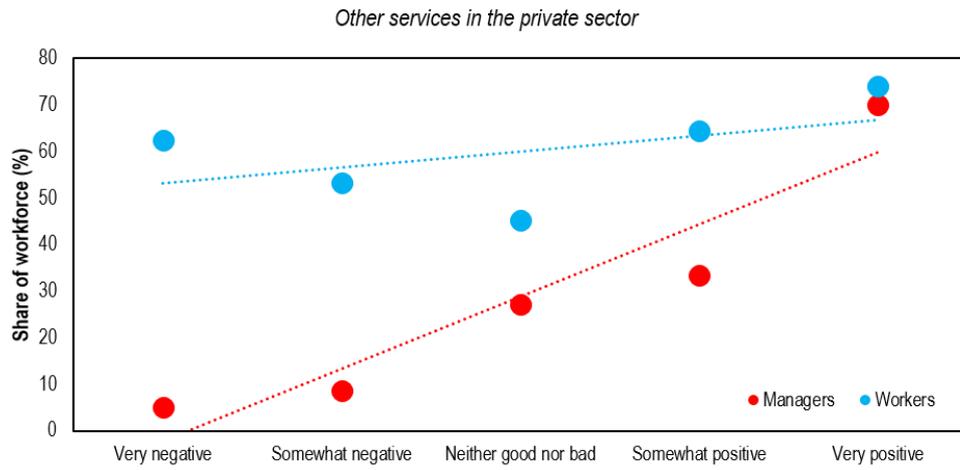
**Figure A.6. Assessment of the period by managers and workers for each different firm size**



Source: Telework Survey of OECD Global Forum on Productivity. 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?"; Q16: "How many employees does your company have?". Average assessment measured on a scale from 1 (very negative assessment of the period) to 5 (very positive assessment of the period).

Figure A.7. Relation between assessment during the pandemic and desired adoption rate of telework after the pandemic, by sector

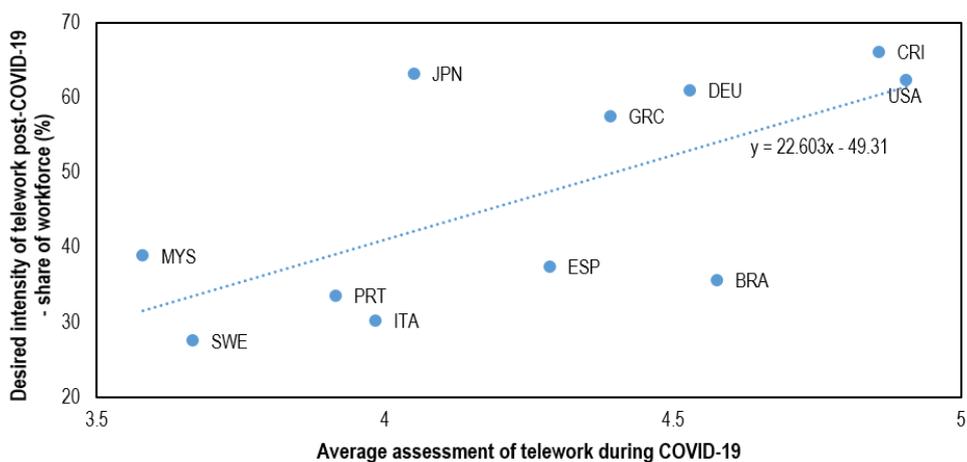




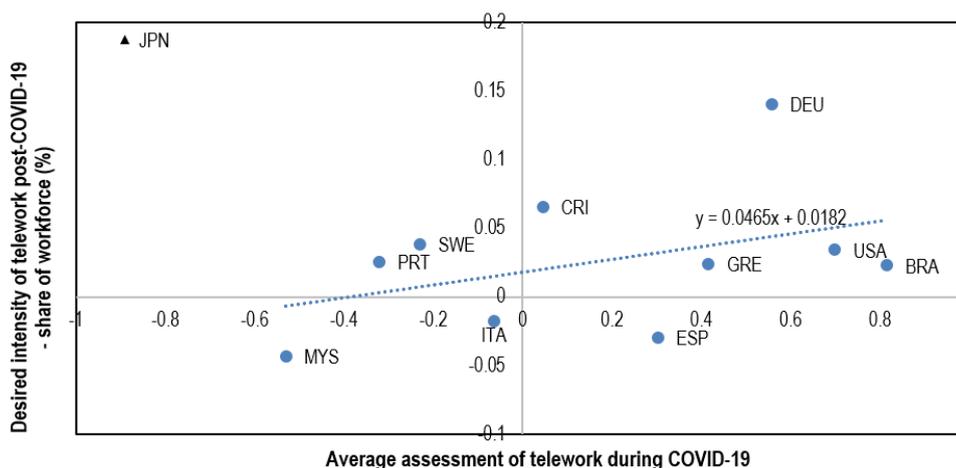
Source: Telework Survey of OECD Global Forum on Productivity. Results based on Q4managers: "How would you assess your company's experience with telework during the COVID-19 crisis from the point of view of the overall performance of the company?"; Q4workers: "How would you assess your employees' experience in your company with telework during the COVID-19 crisis from the perspective of their work-life balance and wellbeing?"; 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?"

Figure A.8. Relation between assessment and desired adoption in the future across countries

Panel A: Unconditional relationship

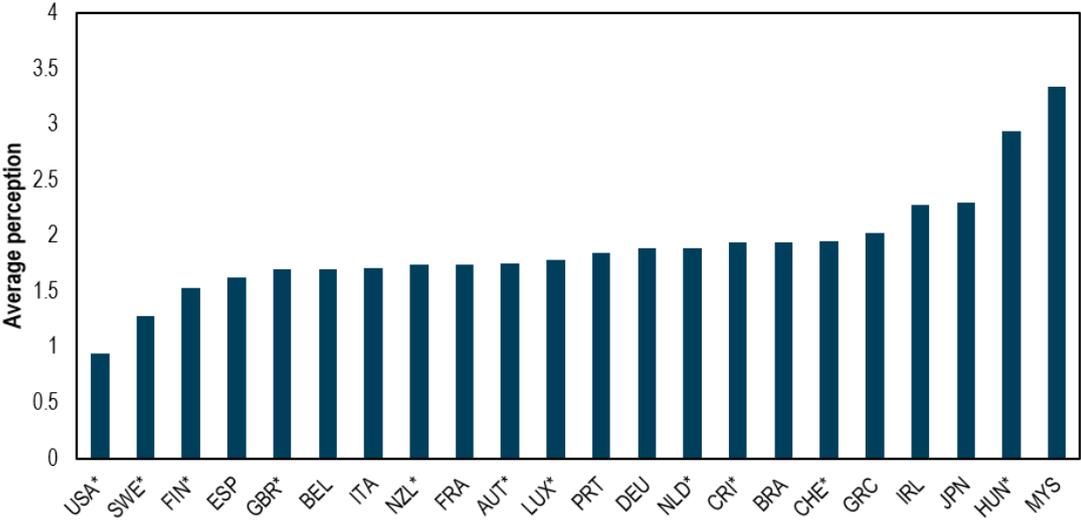


Panel B: Relationship conditional on pre-pandemic telework intensity



Source: Telework Survey of OECD Global Forum on Productivity. 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?"; 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?"; Q7Managers: "What should be the ideal distribution of telework from the perspective of the overall performance of the company?". Panel A correlates the average managerial experience during COVID-19 with telework at the country level with the desired intensity of telework in the future. Panel B controls for the adoption rate at the firm level before and during the crisis. Note that MYS is the ISO-3166 Alpha-3 abbreviation for Malaysia. Also, note that Japan in Panel B represents a clear outlier, hence it is not considered in the fitted line.

Figure A.9. How impeding is the lack of appropriate ICT infrastructure across countries for telework? Perceptions by respondents

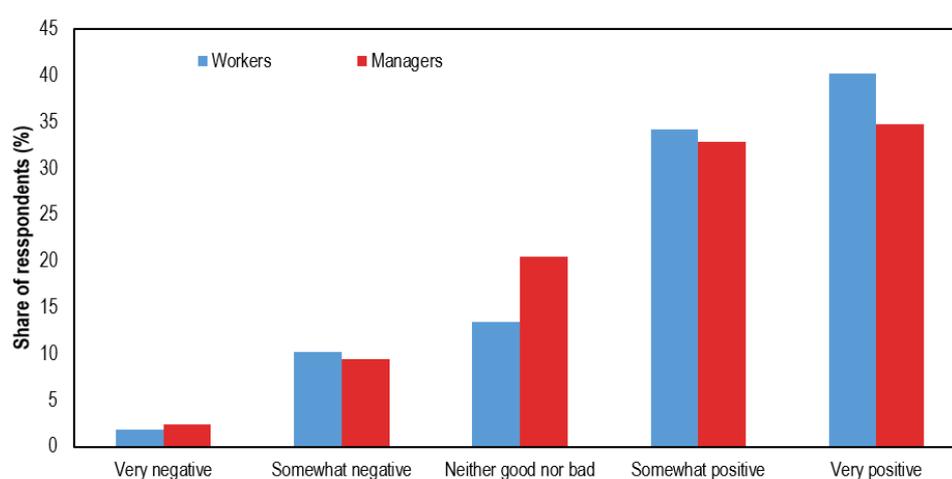


Note: Asterisks indicate countries with less than 50 observations. MYS is the ISO-3166 Alpha-3 abbreviation for Malaysia.  
Source: Telework survey of OECD Global Forum on Productivity. Results based on the aggregation of results from managers and workers. Results based on Q8: "In your view, which, if any, of the following factors are preventing wider use of telework after the crisis at your company?". Answers on a scale from 0 to 5.

## Annex B. Robustness tests

1. In this Annex we present the robustness of our main findings to removing countries that make up a large part of our sample (Italy and France; see Annex A Table A.2).

**Figure B.1. Assessment of managers and workers**

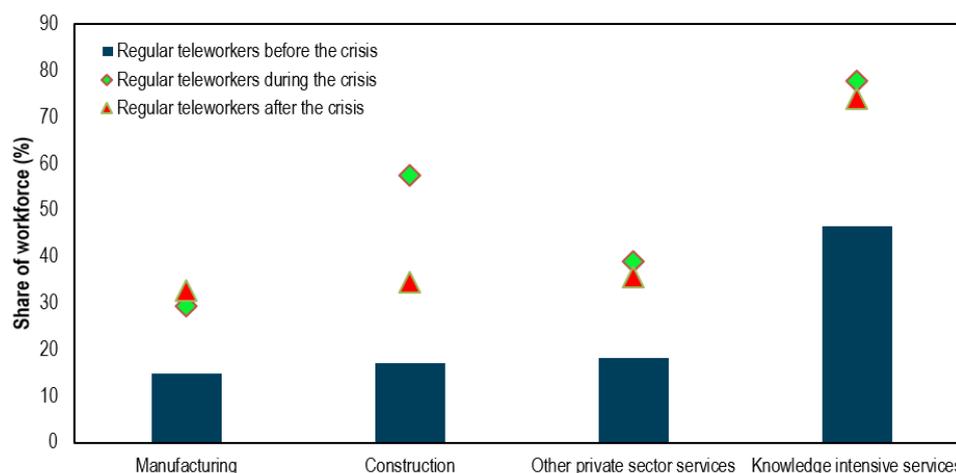


Source: Telework Survey of OECD Global Forum on Productivity. Sample without observations from France and Italy. Results based on Q4managers: "How would you assess your company's experience with telework during the COVID-19 crisis from the point of view of the overall performance of the company?"; Q4workers: "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?".

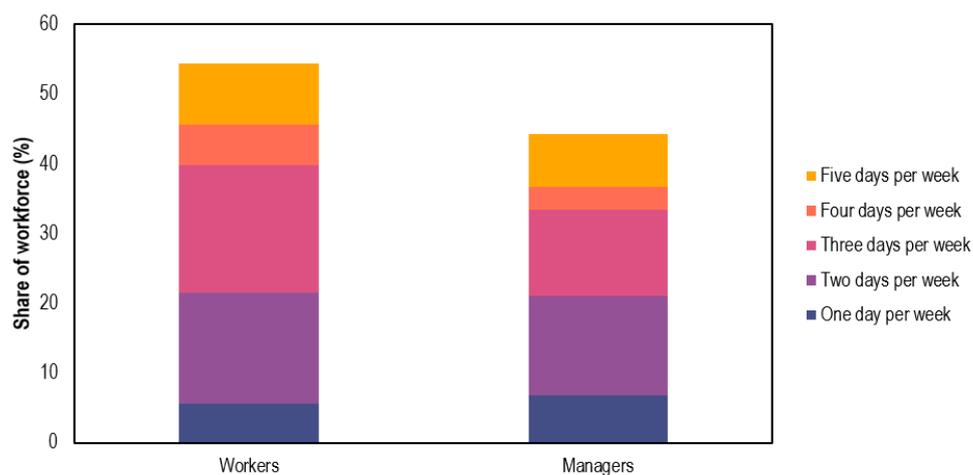
**Table B.1. Expected adoption rate in the future as a function of experience, current and past adoption rate**

Variable	Adoption rate in the <b>future</b>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Experience <b>during</b>	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 <b>during</b>		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 <b>before</b>			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 <sup>2</sup>	0.144	0.363	0.205	0.412	0.725	0.738	0.740	0.765

Source: 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. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.001$ .

**Figure B.2. Adoption rate of telework in the three periods**

Source: Telework Survey of OECD Global Forum on Productivity. Sample without observations from Italy. 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?".

**Figure B.3. Intensity of telework in the future**

Source: Telework Survey of OECD Global Forum on Productivity. Sample without observations from France and Italy. 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?".



## II. Telework during the COVID-19 crisis

3. a) Approximately, **what percentage** of employees was teleworking, and at **what frequency** during the Spring 2020 lockdown period? Please indicate as above.

Frequency of telework	Never	Irregular and rare (less than once a week)	Regular Number of days per week					Precise breakdown not available
			1	2	3	4	5	Teleworking at least occasionally
Fraction of employees teleworking (in%)								

- b) How is the **situation in the current period**, which in most countries can be referred to either as the second wave or the continuation of the first wave?

Note: In case you believe the situation for your company during this second wave /lockdown is exactly alike to Spring 2020 one, leave this question blank.

Frequency of telework	Never	Irregular and rare (less than once a week)	Regular Number of days per week					Precise breakdown not available
			1	2	3	4	5	Teleworking at least occasionally
Fraction of employees teleworking (in%)								

4. 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?** (*Please select "Don't know" in case you don't have the necessary information to answer the question*)

- Very negative
- Somewhat negative
- Neither good nor bad
- Somewhat positive
- Very positive
- Don't know

5. What **measures has your company put in place** to help the company and its employees to adapt to more telework, with a view to maintain high productivity and well-being? (*several options are possible*)
- Regular online meetings
  - Supporting purchases of IT or office equipment
  - Refurbishing offices to allow for larger spaces between workers
  - Provide training to managers and workers for working with teams remotely
  - Other(s): \_\_\_\_\_

**III. Your expectations about telework in the post-COVID-19 period**

6. How do you expect **the employees in your company will wish to change** their teleworking habits after the COVID-19 crisis? (*Please select "Don't know" in case you don't have the necessary information to answer the question*)
- Many more employees will wish to telework compared to the pre-COVID period
  - Few more employees will wish to telework
  - No significant change
  - Fewer employees will wish to telework than before
  - Don't know
7. What should be the ideal distribution of telework from the perspective of **the overall performance of the company?**

Frequency of telework	Never	Irregular and rare (less than once a week)	Regular Number of days per week				
			1	2	3	4	5
Fraction of employees teleworking (in %)							

8. In your view, which, if any, of the following factors are **preventing wider use of telework** after the crisis at your company? (*1: not important at all; 5: very important – choose the appropriate number*)
- Legal barriers (1 2 3 4 5)
  - Lack of appropriate health and safety regulations (1 2 3 4 5)
  - The jobs at our company require physical presence (1 2 3 4 5)
  - Management is not familiar with and does not facilitate telework (1 2 3 4 5)
  - Monitoring of workers is more difficult while teleworking (1 2 3 4 5)
  - No access to appropriate ICT infrastructure (1 2 3 4 5)
  - No appropriate working environment at home (1 2 3 4 5)
  - Concerns about firm performance due to lack of face-to-face communication (1 2 3 4 5)
  - Other(s): \_\_\_\_\_

9. What types of **organisational changes and HR management practices** do you plan to introduce to better accommodate teleworking? (*several options are possible*)

- None
- Require that on certain days of the week everyone should be present, to exploit the benefits from face-to-face interactions within and across teams (*synchronisation* of schedules)
- Reorganise *office spaces* to make them more suited to facilitate the exchange of ideas
- Increase the *monitoring* of workers using digital technologies
- Hire from a broader, *geographically more widespread* pool of workers
- *Retrain workers* to be able to use *ICT tools*
- *Retrain workers* to be able to *work more independently*
- *Retrain managers* to acquire certain soft skills to better manage remote workers
- The provision of *adequate ICT equipment* and platforms for remote work
- *Additional investment in ICT infrastructure* at the company site
- The switch from an hours-based contract to a delivery based contract
- Other(s): \_\_\_\_\_

10. In your view, how important are the following **potential benefits for your company's performance** from telework? (*1: not important at all; 5: very important – choose the appropriate number*)

- Workers productivity increases, for instance by committing fewer errors and producing more creative work due to better concentration at a more quiet environment (1 2 3 4 5)
- Workers will work more hours because they save on commuting time (1 2 3 4 5)
- Lower turnover of workers (1 2 3 4 5)
- It will be easier to recruit new workers from a broader talent pool (1 2 3 4 5)
- It becomes possible to employ workers living further away (1 2 3 4 5)
- Lower costs for office space (1 2 3 4 5)
- Other(s): \_\_\_\_\_

11. In your view, what are the most important **potential downsides for your company's performance** from telework? (*1: not important at all; 5: very important downside – choose the appropriate number*)

- Employees might work fewer hours (1 2 3 4 5)
- Employees learn less on-the-job (1 2 3 4 5)
- It is more difficult to train employees (1 2 3 4 5)
- Employees identify less with the firm, leading to lower motivation (1 2 3 4 5)
- Working as a team is more difficult (1 2 3 4 5)
- Less creative and innovative work environment (1 2 3 4 5)
- The risk of cyber-attacks increases (1 2 3 4 5)
- Other(s): \_\_\_\_\_

12. Do you have any other relevant points to share regarding your experience with and expectations about teleworking in your company that our questions do not cover?
- 
- 

#### IV. Background questions

13. Which answer below best describes **your position**?

- I represent a company as I am the
  - Owner
  - Executive Manager
  - Owner and Executive Manager
  - Mid-level or line Manager
  - Other: \_\_\_\_\_
- I represent a business association

14. Please state the **country** in which your company's (or association's) headquarter is located:
- 

15. Please state the **name** of your company (*preferable but not compulsory*) or association:<sup>43</sup>
- 

16. How many **employees** does your company have (approximate response is fine)? \_\_\_\_\_

17. How big were your company's **revenues** in a typical year prior to the COVID crisis (in millions of euros, approximate response is fine)? \_\_\_\_\_

18. Approximately, what **fraction of revenues have you lost** / do you expect to lose in 2020 compared to a typical business year (in percentage terms)? \_\_\_\_\_

19. How **old** is your company?

- Less than 3 years
- Between 3 and 10 years
- Older than 10 years

---

<sup>43</sup> Please note that individual responses will be treated strictly confidential and only aggregate results will be reported in the analysis. Knowing the company name would only serve to help us in our analysis, as it enables us to relate the questionnaire results to company performance using financial accounts from publicly or commercially available sources.



## II. Telework during the COVID-19 crisis

3. a) Approximately, **what percentage** of employees was teleworking, and at **what frequency** during the Spring 2020 lockdown period? Please indicate as above.

Frequency of telework	Never	Irregular and rare (less than once a week)	Regular Number of days per week					Precise breakdown not available
			1	2	3	4	5	Teleworking at least occasionally
Fraction of employees teleworking (in%)								

- b) How is **the situation in the current period**, which in most countries can be referred to either as the second wave or the continuation of the first wave?

Note: In case you believe the situation for your company during this second wave/lockdown is exactly alike to Spring 2020 one, leave this question blank.

Frequency of telework	Never	Irregular and rare (less than once a week)	Regular Number of days per week					Precise breakdown not available
			1	2	3	4	5	Teleworking at least occasionally
Fraction of employees teleworking (in%)								

4. How would you assess **employees' experience** in your company with telework during the COVID-19 crisis from the perspective of their **work-life balance and wellbeing**? (*Please select "Don't know" in case you don't have the necessary information to answer the question*)
- Very negative
  - Somewhat negative
  - Neither good nor bad
  - Somewhat positive
  - Very positive
  - Don't know
5. **What measures has your company put in place** to help the company and its employees to adapt to more telework, with a view to maintaining high productivity and well-being? (*several options possible*)
- Regular online meetings

- Supporting purchases of IT or office equipment
- Refurbishing offices to allow for larger spaces between workers
- Provide training to managers and workers for working with teams remotely
- Other(s): \_\_\_\_\_

**III. Your expectations about telework in the post-COVID-19 period**

6. How do you expect **the employees in your company will wish to change** their teleworking habits after the COVID-19 crisis? *(Please select "Don't know" in case you don't have the necessary information to answer the question)*

- Many more employees will wish to telework compared to the pre-COVID period
- Few more employees will wish to telework
- No significant change
- Fewer employees will wish to telework than before
- Don't know

7. Among those wishing to telework in the future, **what percentage** of them would telework and at **what frequency**? Please indicate as above.

Frequency of telework	Never	Irregular and rare (less than once a week)	Regular Number of days per week					Precise breakdown not available
			1	2	3	4	5	Teleworking at least occasionally
<b>Fraction of employees teleworking (in%)</b>								

8. In your view, which, if any, of the following factors are **preventing wider use of telework** after the crisis at your company? *(1: not important at all; 5: very important – choose the appropriate number)*

- Legal barriers (1 2 3 4 5)
- Lack of appropriate health and safety regulations (1 2 3 4 5)
- The jobs at our company require physical presence (1 2 3 4 5)
- Management is not familiar with and does not facilitate telework (1 2 3 4 5)
- Monitoring of workers is more difficult while teleworking (1 2 3 4 5)
- Employees do not want to telework (1 2 3 4 5)
- No access to appropriate ICT infrastructure (1 2 3 4 5)
- No appropriate working environment at home (1 2 3 4 5)
- Concerns about firm performance due to lack of face-to-face communication (1 2 3 4 5)
- Other(s): \_\_\_\_\_

9. What types of **organizational changes and HR management practices** would you find useful to introduce to better accommodate teleworking? (*several options possible*)

- None
- Require that on certain days of the week everyone should be present, to exploit the benefits from face-to-face interactions within and across teams (*synchronisation* of schedules)
- Reorganise *office spaces* to make them more suited to facilitate the exchange of ideas
- Increase the *monitoring* of workers using digital technologies
- Hire from a broader, *geographically more widespread* pool of workers
- *Retrain workers* to be able to use *ICT tools*
- *Retrain workers* to be able *to work more independently*
- *Retrain managers* to acquire certain soft skills to better manage remote workers
- The provision of *adequate ICT equipment* and platforms for remote work
- *Additional investment in ICT infrastructure* at the company site
- The switch from an hours-based contract to a delivery based contract
- Other(s): \_\_\_\_\_

10. In your view, what are the most important **potential benefits for employees** from telework? (1: *not important at all*; 5: *very important upside* – *choose the appropriate number*)

- Lower travel expenses for commuting (1 2 3 4 5)
- More flexibility in working hours during the day/week (1 2 3 4 5)
- More flexibility to choose where to live (1 2 3 4 5)
- More free time, e.g. because of less commuting (1 2 3 4 5)
- Better able to work on tasks that require concentration (1 2 3 4 5)
- Comfort of working from home, e.g. taking quick coffee breaks (1 2 3 4 5)
- Better able to accommodate household and caretaker duties (1 2 3 4 5)
- Other(s): \_\_\_\_\_

11. In your view, what are the most important **potential downsides for employees** from telework? (1: *not important at all*; 5: *very important downside* – *choose the appropriate number*)

- Having to work longer hours (1 2 3 4 5)
- Increased risk of being replaced by “remote” workers who live further away (1 2 3 4 5)
- Lack of social interactions (1 2 3 4 5)
- More difficult to self-discipline to work (1 2 3 4 5)
- Working from uncomfortable office space (1 2 3 4 5)
- No clear separation between work and private life (1 2 3 4 5)
- Distractions due to competing household and caretaker duties (1 2 3 4 5)
- Worker representation is more difficult to organize (1 2 3 4 5)
- More difficult to seek advice from team members (1 2 3 4 5)
- More disruptive communication, e.g. emails and virtual meetings (1 2 3 4 5)
- Lower prospects for career advancement (1 2 3 4 5)

- Reduction in equal opportunities (1 2 3 4 5)
- Lower motivation (1 2 3 4 5)
- Other(s): \_\_\_\_\_

12. Do you have any other relevant points to share regarding your experience with and expectations about teleworking in your company that our questions do not cover?

\_\_\_\_\_

\_\_\_\_\_

#### IV. Background questions

13. Which answer below best describes **your position**?

- I work for a company as
  - Owner
  - Executive Manager
  - Owner and Executive Manager
  - Mid-level or line Manager
  - Employee representative (from a trade union, for instance)
  - Non-managing employee
- I work for an association
  - Business Association
  - Trade Union

14. Please state the **country** in which your company's (or association's) headquarter is located:

\_\_\_\_\_

15. Please state the **name** of your company (*preferable but not compulsory*) or association:<sup>44</sup>

\_\_\_\_\_

16. How many **employees** does your company have (approximate response is fine)? \_\_\_\_\_

17. How big were your **company's revenues** in a typical year prior to the COVID crisis (in millions of euros, approximate response is fine)? \_\_\_\_\_

18. Approximately, what **fraction of revenues have you lost** / do you expect to lose in 2020 compared to a typical business year (in percentage terms)? \_\_\_\_\_

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<sup>44</sup> Please note that individual responses will be treated strictly confidential and only aggregate results will be reported in the analysis. Knowing the company name would only serve to help us in our analysis, as it enables us to relate the questionnaire results to company performance using financial accounts from publicly or commercially available sources.

19. How **old** is your company?

- Less than 3 years
- Between 3 and 10 years
- Older than 10 years

20. Which **sector** best describes your company's main activity?

- Manufacturing
- Construction
- Knowledge intensive services (IT, finance, professional services)
- Other services in the private sector (wholesale, retail, hotel, restaurant, transport, etc.)
- Public sector

