

From Potential to Reality: Regional Enablers and Inhibitors of Telework across European Regions (Extended Abstract)

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After the onset of the COVID-19 pandemic, due to the accelerated development of telework (also called remote working, working from home, or telecommuting), there has been a growing debate on whether the pandemic will lead to a “decline of cities and agglomeration effects” (Florida et al., 2021; Nathan and Overman, 2020). This debate points to the spatial imbalances of telework capacity and subsequently of development patterns for various regions in the pandemic.

However, while telework is increasingly seen as a key determinant for the future trends of regional inequality and development (Stantcheva, 2022), little is still known on whether all regions will be able to rip in the same way any potential benefits of flexible working. While some scholars have speculated that teleworking may lead to the spread of advanced economic activities from core urban areas to (previously) marginal areas, very little is known on what territorial factors are associated with telework uptake, and whether these factors are evenly spread across space or, instead, concentrated in specific regions.

Therefore, this paper seeks to investigate the geography of telework and systematically survey the regional enablers and inhibitors of telework in the context of the COVID-19 pandemic, with a specific focus on the European regions. Addressing this research puzzle is important from a policy perspective, since it will allow policymakers to better understand what factors may hinder achieving the full potential benefits associated to telework in areas where its uptake is still limited.

Drawing on the recent – but growing – body of literature exploring the factors enabling telework (e.g., Cuerdo-Vilches et al., 2021; Althoff et al., 2021; Adams-Prassl et al., 2022; Mongey et al., 2021; Kawaguchi and Motegi, 2021, etc.), the paper identifies two main sets of determinants, respectively linked to contextual and compositional factors. The contextual hypothesis posits that telework uptake may be associated with factors such as the presence of adequate digital infrastructure and other territorial characteristics influencing workers’ living conditions. This is demonstrated by the literature that finds well-functioning telecommuting infrastructure and good environmental amenities are important factors to drive telework.

The second hypothesis, instead, highlights the key role played by differences in industry (or occupation) or demographic compositions across cities and regions, as the probability of adopting telework can be different for workers from various industrial, occupational, or demographic backgrounds. These individual-level differences in telework can be aggregated into regional-level differences. The empirical analysis, therefore, tests the two hypotheses.

The empirical analysis primarily relies on data from diverse sources, including household surveys and official statistical database. It draws on the Living, Working and COVID-19 surveys to access the data on telework uptake before and during the COVID-19 pandemic. The paper measures the variable on the telework status prior to the pandemic based on the question which states that “how frequently did you work from home before the outbreak of COVID-19?”. The proportions of answering “several times a week” and “daily” are calculated to proxy for telework uptake levels before the pandemic in the main analysis. Another question, “during the COVID-19 pandemic, where did you work?”, is about working locations; the paper primarily uses the proportions of employees who worked “at home” to measure telework uptake levels during the pandemic. Besides, telework potential may be a good predictor for actual telework uptake during the pandemic. To compare regional telework potential with actual uptake, the paper follows the approach by Dingel and Neiman (2020) to elicit telework potential, utilizing data from European Union Labour Force survey 2019. Finally, to determine whether telework is linked to regional factors, individual observations of survey data sets are further merged with a set of regional characteristics from official statistical database, the Eurostat database.

The paper starts by documenting the geography of telework. It suggests that the share of workers who work from home in European Union has increased to more than 40% during the pandemic from approximately 10% before the pandemic. Moreover, the share during the pandemic is even higher for workers living in urban areas at around 60%. The heterogeneity across regions has been found in actual telework uptake during the pandemic. For example, during June – July 2020, whereas most regions had relatively low telework uptake shares (less than 20%), some regions in Portugal, Spain, Italy, France, Belgium, Germany, Austria, and Poland had reached higher than 50%. Similarly, within regions, urban and rural components also witnessed distinct telework uptake shares during the pandemic, and urban components normally had higher shares than rural components. But this might not be applied to the situations before the pandemic when rural telework levels were similar to the urban counterpart. Furthermore, the results confirm that during the pandemic regional telework potential is a good predictor of regional actual telework uptake. Although there was almost no correlation between regional telework potential and regional actual telework uptake before the pandemic, clear positive correlations emerged after the

outbreak. That is, regions with higher telework potential tend to have more workers working at home during the pandemic.

In addition, through investigations into personal characteristics, the paper demonstrates the teleworkable population. It finds that during the pandemic, workers in the sectors of financial services, public administration, and education, middle-aged workers, workers with a tertiary education degree, workers having children aged 0-11, and female workers were more likely to adopt telework. And within the same groups in terms of personal characteristics, workers living in urban areas tended to show higher telework uptake shares than those in rural areas. In the meanwhile, this also suggests that differing in telework uptake between rural and urban areas cannot solely be explained by composition effects.

The paper further combines the survey data on actual telework uptake with regional statistics from the Eurostat database to formally examine the effects of contextual and compositional factors on telework uptake before and during the pandemic. Several results emerge from these examinations. Regarding the pre-pandemic situations, there was no significant difference in telework uptake between individuals living in urban and rural areas, and only holding a college degree and access to broadband mattered for telework uptake. But during the pandemic, all of the factors considered became significant predictors of telework uptake. From the preferred estimation, the results indicate that individuals living in urban areas significantly have 6.8% higher chances in adopting telework than those in rural areas. Workers in the sectors of financial services, public administration, and education, middle-aged workers, workers with a tertiary education degree, workers having children aged under 11, and female workers are all more likely to adopt telework. Workers living in regions with higher shares of households having access to broadband, and those living in more densely populated areas are more likely to adopt telework as well. When the telework uptake and personal characteristics are aggregated into the regional level, the findings still hold. Further analysis reveals that the effects of the four factors, having children under 11, gender, access to broadband, and population density, are mainly driven by the urban sub-samples.

Taken together, these results highlight that telework potential and actual uptake are not common to various regions. Given this, these results have clear implications that designing better regional development policies to facilitate telework should take the heterogeneity into account. Since telework can be envisaged to continue beyond the pandemic, to better understand regional development patterns during and after the pandemic, it is crucial to gain a better understanding of the extent to which regions differ in telework potential and actual uptake, as well as of the effects of the driving factors. In this case, this study will be particularly profound and beneficial to policy-making associated with spurring the adoption of telework.