

Remote working in Italy: Just a pandemic accident or a lesson for the future?

Luigi Bollani, Simone Di Zio, Luigi Fabbris

1. Introduction

During the Covid-19 pandemic, remote working (RW) became a way to ensure that Italians continued to perform their productivity duties while protecting human health. The government's aim was to limit the movement of workers and reduce the presence of people in offices without compromising services. During 2021 and 2022, about half of Italian workers experienced, at least partially, RW (Fondirigenti, 2020; Eurofound, 2021). RW, also known as telecommuting or telework, is an arrangement between employee and employer in which the employee's work duties are performed remotely, usually at home or in specific locations off the employer's premises, using information and communication technologies (Felstead and Henseke, 2017; Donnelly and Johns, 2021). According to Eurofound and the ILO (2017), right before the pandemic, Italy had the lowest percentage of RW employees in Europe. In 2019, Istat, the Italian Statistical Institute, estimated that, overall, less than 2.5% of Italian workers engaged in RW. Before the pandemic, RW was a *'luxury for the relatively affluent few'*, since few workers—predominantly white-collar workers and higher income earners—had the opportunity to work remotely (Desilver, 2020). The pandemic outbreak, which resulted in several times more people working remotely, was a de facto global RW experiment. For some time, working from home became the norm. Although the loosening of Covid-19 containment measures put an end to this mass experiment, things could change considerably in the medium term, with many workers—about half of workers, according to futurist scholars (Glenn et al. 2019)—working from home regularly. For this reason, we aimed to measure Italians' willingness to work remotely in the upcoming years. To that end, we analysed data collected through a survey of adult workers conducted in the second half of 2021. The survey was aimed at investigating how Italians evaluated their working experiences during the pandemic and how they perceived the possibility of working remotely in the future. Thus, we measured the frequency and intensity of the RW phenomenon, the opinions of those who practiced it and their feelings about the possibility of practicing it in the future. The analysis aimed to address the following research questions:

RQ1: Is there a relationship between having performed RW during the pandemic and willingness to do so in the future?

RQ2: Did work activity and workers' individual characteristics influence their disposition towards RW?

RQ3: What resources and problems shape workers' disposition towards RW?

The rest of this paper is organised as follows. Section 2 introduces the data and the model used for data analysis. Section 3 presents the main results of the statistical analysis. Section 4 discusses the results with reference to the mainstream literature on RW.

2. Data, models and methods

2.1. Data

A sample of adult Italian workers was surveyed using a computer-assisted web-based

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interviewing questionnaire. The sample was formed by merging five samples selected by a pool of Italian universities. The data collection lasted from June to November 2021. A total of 817 people participated in the survey filling an electronic questionnaire. Of these, 193 were workers; three of them did not respond to a basic question and were excluded from the analysis. Thus, the analysis included 190 respondents. The data collection method lends to suspect a certain self-selection of the sample that favours more educated people. The analysis focused on descriptors of the propensity to work remotely and their possible predictors.

The variables used in the relational model were as follows:

Y: Propensity to work remotely in a post-pandemic future. The relevant question was as follows: “*The health emergency will end. If you continue to work after that, would you rather work from home or at your workplace?*” The four ordinal responses to this question were collapsed into two: $Y = 1$ indicated a propensity to work remotely, and $Y = 0$ otherwise.

X_A: Health effects of the pandemic. The block included the following descriptors: having been infected by Coronavirus (X_1) and facing the psychological (X_2) or physical (X_3) consequences.

X_B: Personal or social resources against social shocks. This block included possessing a higher education degree (X_4), living alone (X_5), living with a partner (X_6), having children (X_7), resilience (X_8), proactive attitude (X_9), resorting to vaccines (X_{10}) and trusting scientists during the pandemic (X_{11}). Variable X_8 denoted the standardised scores obtained by a factor analysis of a set of nine items related to self-efficacy and resilience selected from the 25-item Connor-Davidson resilience scale (Connor and Davidson, 2003). Variable X_9 denoted the standardised scores obtained by a factor analysis of a set of eight items related to optimism–proactivity selected from the 20 items comprising the BHS (Beck et al., 1974). The variables X_{12} – X_{16} referred to motives for preferring RW to office work, as described in Table 2.

X_C: Personal or social problems related to RW. This block included chronic diseases (X_{17}) and depression (X_{18}). The latter was a dichotomous variable computed using the nine-item Beck Hopelessness Questionnaire proposed by Spitzer et al. (1999) and translated into Italian by Mazzotti et al. (2003). A value $X_{18} = 1$ indicates major depression. The variables X_{19} – X_{28} are motives for preferring office work to RW, as described in Table 2.

Z: Control variables. This block included working as an employee (Z_1 : dichotomous), working in industry (Z_2 : dichotomous), gender = male (Z_3 : dichotomous) and age (Z_4 : up to 34 years, 35–64 years and 65 years or older).

2.2 Analytical model

The analytical model included the propensity to work remotely in the future as a dependent variable (Y) and two sets of regressors as control variables: X_1 – X_{28} selected individually through a forward stepwise selection according to their significance and Z_1 – Z_4 . The relationship may be written as $Y = f(X_1, X_2, \dots, X_{28} | Z_1, \dots, Z_4)$. The logistic regression model is written as follows (Hosmer and Lemeshow, 2000): $\text{logit}[p(Y=1)] = \beta_0 + \beta_1 X_1 + \dots + \beta_J X_J + \beta_{J+1} Z_1 + \dots + \beta_{J+4} Z_4$, where $\text{logit}(p) = \ln[p/(1-p)]$, and β_j ($j = 0, 1, \dots, J$) measures the relationships between Y and X_j ($j = 1, \dots, 28$) and between Y and Z_k ($k = 1, \dots, 4$) when all other variables in the model remain fixed. To select the predictors, a stepwise selection technique was adopted with a significance level < 0.10 . The statistical analyses were performed in R (R Core Team, 2022). A logistic regression model with a binary response variable was performed using the *glm* function from the MASS package. The *My.stepwise* package and *My.stepwise.glm* function were used for the stepwise model selection. Finally, the *DescTools* package and *PseudoR2* function were used to measure the model’s goodness of fit.

3. Results

Table 1 reports the joint frequency distribution of recent RW experience and the disposition to practice it in the future. The pandemic experience allowed workers to understand the opportunities related to RW, at least with respect to pre-pandemic practices. Indeed, of the

workers who experienced RW (67.9% of the total), 52.6% reported that they would be willing to do it again if offered, at least under certain conditions. Conversely, 15.3% of the respondents were not interested in repeating the experience. Out of three workers who did not experience RW during the pandemic, two stated a preference for office work and one for RW. The difference between the number of workers who did not wish to repeat the experience and those who would be willing to do it for the first time was about 5% of the total number of respondents. Overall, the respondents who would be willing to practice RW in the future represent 63.2%.

Table 1. Per cent estimates of during-the-pandemic remote working and availability to do it in the future among Italian workers, 2021.

<i>During pandemic experience</i>	<i>Availability for the future</i>			
	<i>No</i>	<i>At conditions</i>	<i>Fully</i>	<i>Total</i>
Null	21.6	10.0	0.5	32.1
1 – 50% time	9.0	16.3	0.5	25.8
51 – 100% time	6.3	31.6	4.2	42.1
Total	36.8	57.9	5.3	100.0

Tables 2 and 3 report the frequency distribution of the possible predictors and the estimate of the regression coefficients of the predictors selected for the model.

Table 2. Mean of the variables used in the statistical analysis of Italian workers, 2021.

<i>Variable</i>	<i>mean</i>	<i>Variable</i>	<i>Mean</i>
X ₁ : Infection: personal	0.137	X ₁₇ : Number of chronic diseases	0.342
X ₂ : Suffered psychologic damages	0.211	X ₁₈ : Depression	0.137
X ₃ : Suffered physical damages	0.100	X ₁₉ : Job inadequate for RW	0.037
X ₄ : Possessing a higher education degree	0.679	X ₂₀ : Office better for teamwork	0.063
X ₅ : Being single	0.263	X ₂₁ : Office to interact with customer	0.032
X ₆ : Living in couple	0.695	X ₂₂ : Office production monitoring	0.116
X ₇ : Having children	0.505	X ₂₃ : No home isolation	0.111
X ₈ : Resilience score	0.000	X ₂₄ : Help desk inadequate for RW	0.032
X ₉ : Proactive attitude	0.000	X ₂₅ : Office better internet connection	0.200
X ₁₀ : Vaccinated: Yes	0.800	X ₂₆ : House workplaces inadequate	0.153
: Not yet	0.137	X ₂₇ : Interferences with family life	0.074
: Never	0.063	X ₂₈ : Difficult family-work balance	0.042
X ₁₁ : Trusted scientists	0.684	Z ₁ : Working as an employee	0.716
X ₁₂ : Saving time and money	0.321	Z ₂ : Working in industry	0.195
X ₁₃ : Working in a more comfortable context	0.216	Z ₃ : Gender (male)	0.532
X ₁₄ : Optimizing working schedules	0.121	Z ₄ : Age till 34	0.290
X ₁₅ : Clarity in operational goals	0.132	“ 35-64	0.668
X ₁₆ : Balancing family and work	0.042	“ 65 and over	0.042

- The model showed a significant fit for Italian workers' propensity for RW. The Nagelkerke pseudo-R² index was 49.8%, indicating that a high proportion of the criterion variable deviance was explained.
- Gender, age, working in industry (vs. any other sector) and working as an employee (vs. self-employment) did not predict a disposition to RW once other personal and familial descriptors were entered into the model.
- The only socio-demographic variable that correlated with RW propensity was the possession of a higher education degree, with less educated workers being more willing to work remotely than higher educated ones. This suggests that the willingness to engage in RW is stronger among employees with a secondary school education than with a university education. Moreover, given that the willingness to engage in RW in the future was greater among workers with both lower self-efficacy ($r = -0.172$) and

lower proactivity ($r = -0.138$), the educational profile of most people oriented towards RW was intermediate.

- Covid-19 infection also played an important role. Workers who contracted the disease were less prone to RW than those who did not. This is rather surprising, considering that during the pandemic, people were forced to work from home to reduce the risk of infection. We can conjecture that workers who avoided infection felt stronger and more open to new experiences than those who were infected.
- Other predictors were related to conditions that may have favoured or disfavoured RW. Predictors that may have favoured RW were saving commute-related time and money and the adequacy of one's home as a workplace. Predictors that may have disfavoured RW were the presence of children in the family, the partial inadequacy of RW for effective teamwork and the difficulty in supporting people through help desks. These indicators are consistent with a diffused idea of RW—a mode of working in which time management and commuting costs are optimised, while other factors, such as internet connection quality, suitability of one's home as a workplace, idea sharing and opportunities for exchanges with managers and colleagues, make working from home less effective.
- The fact that the presence of children reduced the willingness to work remotely can be considered a counterintuitive finding. Although RW was considered a way of balancing family and work lives, children seemed to be incompatible with it.

Table 3. Beta estimates of the logistic regression model with remote working preference as criterion variable (forward stepwise selection of regressors, $n=190$; Nagelkerke $R^2=0.498$; control variables and type of job were forced into the model; *** < 0.001 ; ** < 0.01 ; * < 0.05 ; $^{\circ} < 0.10$; NS: Not Significant).

<i>Regressor</i>	$\hat{\beta}$	<i>se</i> ($\hat{\beta}$)	<i>Significance</i>
<i>Intercept</i>	-0.997	0.959	NS
Gender: male	-0.414	0.421	NS
Age (classes)	-0.103	0.413	NS
Employee	0.810	0.433	NS
Industry	0.616	0.497	NS
RW experienced during pandemic	1.183	0.276	***
Infection: self	-2.150	0.699	**
House workplaces inadequate for RW	2.026	1.146	$^{\circ}$
Children	-0.919	0.439	*
Office better for teamwork	-1.974	0.878	*
Possessing higher education title	-1.102	0.462	*
Saving time and money	1.835	0.725	*
Help desk inadequate for RW	-2.389	1.228	$^{\circ}$

4. Discussion and conclusion

This study aimed to examine how Italians experienced RW during the pandemic and whether they were willing to work remotely in the future. Our findings suggest that although RW was compulsory during the pandemic, the experience influenced workers' future interests. RW can be seen as an experiment that several workers evaluated positively and in which they showed interest, even for the future. About 63% of our respondents stated that they would consider accepting such an offer. Thus, the pandemic, along with all its negative aspects, also brought new opportunities (Willcocks, 2020; Grzegorzczuk et al., 2021). Our data show that the RW experience was also associated with negative perceptions. Indeed, the number of people who were willing to engage in RW in the future was lower than that of workers who experienced it during the pandemic. This seems reasonable, since the pandemic forced people to stay at home for a few months, while future possibilities imply consent and wider time spans.

Our analysis reveals the main characteristics of people particularly oriented towards RW. Employees with an intermediate education and low-to-medium skills or clerk positions represented the vast majority of workers willing to work remotely. Fana et al. (2020) and Sostero et al. (2020) suggested that low-skilled clerks and medium-skilled professionals favoured RW because their jobs were characterised by standardised procedures. Our results also show that many workers prone to future RW lacked proactivity and self-efficacy. These personality traits may enhance job autonomy, thereby increasing motivation, self-discipline and affect for one's own work (Parker et al., 2010), which are necessary for building trust between employee and employer. However, a risk of RW is that it may induce free-riding and other opportunistic behaviours if RW is not designed and monitored appropriately. Our findings also suggest that Italian workers were aware of the need for RW to be effective. They recognised its advantages in terms of time and money saving but also understood that self-discipline, internet connection quality, adequacy of the home as a workplace, a conflict-free dwelling and an efficient redesign of working schedules were required to make RW feasible. Work redesign must also consider the need for job humanisation (Donnelly and Johns, 2021), which includes highly valued out-of-family socialisation. An RW culture relies on a balance between workers' expectations and results-based accountability. Our survey suggests that training, investments in technology, location adaptation and an agreed system of norms and organisational factors, especially to combat isolation and improve work–life balance, personal development and career progression, are necessary before a major transition to RW. Other challenges are related to how to organise production to enhance creativity and innovation, promote employee learning, engage workers in informal exchanges with senior managers and colleagues and, ultimately, guarantee a company's productive efficiency. All this requires a wise integration of employees' and employers' perspectives (Allen et al., 2015; Wang et al., 2020; Delany, 2021). Finally, learning from the Covid-19 shock, legislators should consider not only the productivity and social acceptance of flexible RW but also the possibility of maintaining productivity during the next crisis. A limitation of our study may be the sample representativeness. In fact, the response rate to the survey questionnaire was low. This may be due to the possibility that the pandemic accelerated a falling trend of people's availability to collaborate in surveys. This could limit the possibility to generalise our level estimates, while it should not threaten the possibility to make statements about between-variable relationships. For the future, a study based on a larger sample could provide further insights: I) Since local economic and organisational conditions can lead to differences in the willingness to work remotely, a regionally based control in the regression model would be important; II) The analysis of the possible relation between the willingness to remote working and the temporal distance from the Covid experience could highlight if this willingness depend on time ; III) It would be interesting to analyse subsets of the sample, e.g. only those subjects who experienced RW during the pandemic; IV) Finally, a simulation experiment could highlight if our research results depended in particular on the adopted stepwise technique, which, as is well known (Steyerberg et al., 1999), may have limited power in selecting important covariates in small samples.

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