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IZA DP No. 13408

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ABSTRACT

Working at Home in Greece: Unexplored Potential at Times of Social Distancing?*

This paper investigates the incidence, trend and determinants of remote work in Greece. A crisis-stricken country in the years preceding the Covid-19 crisis, Greece entered the first wave of the public health shock as a laggard in digitalisation and remote work arrangements among European countries. While Covid-19 induced a spike in the use of remote work arrangements in many countries, this paper presents evidence that working from home (WfH) in Greece was subdued in the past decade. By analysing the profile of the job tasks and skill needs of Greek homeworkers, the paper also shows marked deviations in homeworking patterns and determinants in Greece, relative to other EU countries. This includes a higher prevalence of WfH among Greek females and non-nationals, limited use by young workers and families with children and a stronger relation with atypical work hours. While remote workers in Greece receive a 7% monthly wage premium, their jobs are found to involve standardised and moderate ICT tasks and to rely more on social serving tasks. The paper highlights that there is significant scope to enhance remote work in Greece, which can amount to up to 37% of all salaried jobs, subject to changing work organisation, norms and policies. In the coronavirus era, overcoming barriers to remote work will be key for the Greek labour market to adapt to social distances practices and digitalisation.

JEL Classification: C25, J01, J23, J24, J31

Keywords: work at home, remote work, teleworking, tasks, skills, COVID-19, Greece

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1. Introduction

One stark impact of the Covid-19 pandemic and its associated confinement measures has been the growing numbers of individuals forced to work from home (WfH). At a time of choosing between exposing one's health by working in close physical proximity to other people in a workplace and remote work, the latter option presented itself with major benefits. These did not only include the possibility of stemming job and economic losses (Adams Prassl et al., 2020), but also an ability to alleviate extraordinary child care demands caused by school and crèche closures and safeguarding personal and family health. Home-based work could have also contributed towards the flattening of the Covid-19 curve and be a measure of control for further spikes in SARS-Cov-2 cases, in addition to ensuring continued economic performance (Redmond and McGuinness, 2020).

With more than 80% of the world population in lockdown at a given point (ILO, 2020a), what had been a limited work arrangement before the pandemic, affecting about 15-17% of EU workers on average (Eurofound-ILO, 2017; Eurofound, 2020), became widely used to safeguard against the possibility of complete job loss, furlough or business closure. While reliable statistics on how many individuals actually worked remotely from home during the Covid-19 crisis are yet to be developed[1], several economists have hinted to the fact that over a third of all jobs in advanced economies could potentially be performed from home (Dingel and Neiman, 2020; Boeri et al., 2020) and that the Covid-19-induced shift to homework is likely to have a long-term impact on future work organisation (Baert et al., 2020).

The cost of the Covid-19 lockdown and confinement measures, and subsequent economic disruption, is likely to have been lower for those countries that already benefitted from higher shares of employed persons utilising some form of remote work.[2] Similarly, countries

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[1] Some polls have reported that the percentage of people who say they have worked "remotely" has roughly doubled, up to 62%, from the beginning of the virus-related changes in March until April. 59% of those who WfH said they would like to keep working this way https://news.gallup.com/poll/306695/workers-discovering-affinity-remote-work.aspx

[2] The term 'remote work' is used in this paper as it is an overarching description of the phenomenon whereby workers perform their work activities outside of their employers' premises, either from home or elsewhere. The focus of the analysis is on 'working from home (WfH)', which is a key facet of remote work. Homeworking includes teleworking/ICT-mobile work, which typically refers to work carried out from home, making use of remote information and

that enjoyed a relatively advanced level of technological or digital maturity in terms of infrastructure and skills, organisational preparedness, as well as managerial competence and attitudes, would have also managed to adapt faster and with greater ease to the forced demand for remote work due to the coronavirus crisis. As WfH is not feasible for all groups of workers, most notably for those employees considered 'essential' or at the frontline of tackling the pandemic consequences, countries with an industrial and occupational structure conducive towards remote work should also have managed to adapt better.

Entering what has been the most serious public health crisis of recent times, Greece was a country carrying already the heavy toll of its preceding economic and financial debt crisis. Enforced austerity policies during the previous decade as part of the country's economic restructuring or Memoranda programmes, heightened concerns about the potentially crippling effects such policy measures had on the country's strained public health care system (Economou et al., 2014; Kotsakis, 2018; Kyriopoulos et al., 2019).

Greece was also ranked at the bottom of European Union (EU) countries in terms of its overall digital preparedness (European Commission 2019), including in indicators such as connectivity and internet access, use of digital services in the public sector, use of ICT technologies at home or work, integration of digital technologies within businesses and, most importantly, insufficiency of its digital skills base (Cedefop, 2018). The country's heavy reliance on a small-and-medium-sized firm base is also believed to be a contributory factor to its lower exposure and use of digital technologies (IOBE, 2018), evidenced by the low concentration of workers in digitally intensive occupations (SEV, 2020a). Overall, the country suffers from a marked 'digital divide', with significant socioeconomic differences in access to and use of digital technologies and information tools (Demousis and Giannakopoulos, 2004; Cedefop, 2016; Paidousi, 2020; Lintzeris, 2020). The above deficiencies explain why the country was ranked 53rd of 63 countries in the IMD World Digital Competitiveness ranking[3],

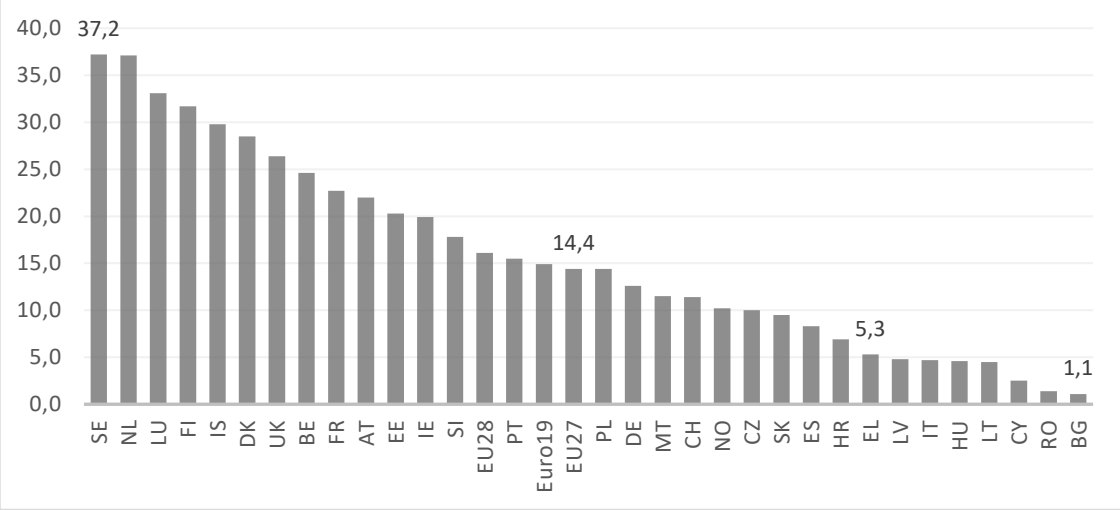
communication technologies, but also integrates bringing work home after office hours (Song and Gao, 2018). Teleworking can be generally distinguished according to the place of work (home, office, elsewhere) and intensity/frequency of use of ICT (Eurofound-ILO, 2017). As the LFS data does not have information about workers' use of ICT when WfH, the use of the term 'teleworking' is generally avoided in the paper.

[3] https://www.imd.org/wcc/world-competitiveness-center-rankings/world-digital-competitiveness-rankings-2019/

which measures the capacity and readiness of economies to adapt and explore digital technologies as a key driver for economic transformation in business, government and wider society.

Furthermore, the Greek economy has traditionally been more heavily reliant than other EU countries on the provision of economic activities that entail interactive service provision, most notably via its significant tourism industry as well as its relatively larger wholesale and retail trade and public administration service sectors. This is another factor which weighed heavily on the country's ability to mitigate the adverse economic and social consequences of the Covid-19 shock[4].

Figure 1. **% of employed persons WfH, EU-27 and UK, NO, IS, CH, 2019**



NB: Summation of employed persons WfH sometimes or usually.
Source : European Labour Force Survey, Eurostat [lfsa_ehomp]

Because of the above reasons, but also cultural and social traits, Greece was also one of the EU countries with the lowest incidence of employed individuals WfH in the pre-coronavirus era (Eurostat, 2020). As shown in Figure 1, Greece was ranked 24th out of 31 countries in terms of the share of employed persons working either sometimes or usually from home in 2019. Only 5.3% of all employed persons worked remotely in Greece, higher than in neighbouring Italy, Bulgaria and Cyprus, but considerably lower than the EU-27 average of

[4] See Greece's Mechanism for Labour Market Diagnosis for an analysis of the impact of Covid-19 on the Greek labour market https://lmd.eiead.gr/covid19/

14% and the very high shares of homeworking (over 37%) observed in the leading countries of Sweden and Netherlands.

Despite the many challenges that the crisis-stricken country was faced with, it experienced a very low Covid-19 toll during the first wave of the 2020 coronavirus infection[5]. But το ensure good public health outcomes in the medium-term and assist the implementation of necessary social distancing practices, WfH will have to be used by a larger part of the Greek workforce. Organisational and public policies to promote the further entrenchment of home- and online working in Greece will also be necessary so that it does not fall behind the bandwagon of other EU and advanced economies, given that distance work arrangements are expected to become more widespread in the aftermath of the pandemic.

The aim of this paper is to examine the evolution and determinants of WfH in Greece in the decade preceding the Covid-19 public health episode. Using Labour Force Survey data for the period 2008-2018, the study examines how the share of stay-home workers changed over time in relation to the changing socioeconomic, industrial and occupational structure of the economy.

A value added of the study is the investigation of the type of tasks and skill needs characterising the jobs of Greek remote workers, which provides additional insight into the nature of their work. The paper also engages in a comparison of the divergence between the typical tasks profile of the jobs of average EU and Greek homeworkers. Moreover, it provides an assessment of the deviation between the historical and 'technically feasibility' of remote working in the country, which highlights the degree of investment required so that Greek workers and organisations can exploit its full potential. Finally, it also examines how the earnings of Greek workers is related to remote work arrangements, after accounting for the content and task profile of their jobs.

Section 2 engages in a review of the literature on the determinants and impact of WfH, with specific coverage of recent analyses spurred by the Covid-19 episode. Section 3 outlines the data and provides summary statistics. Section 4 describes the empirical methodology used

[5] At the time of writing, Greece had about 3287 confirmed SARS-Cov-2 cases and 190 deaths.

to analyse the evolution, determinants and potential of homeworking in Greece. Section 5 describes main empirical findings. Section 6 concludes.

2. Literature review

As a response to the Covid-19 crisis a significant volume of new research has taken place investigating the extent to which home-based work can be further deployed as a means of safeguarding jobs and ensuring continued business operations. This research supplements a first generation of studies that preceded the Covid-19 wave, which had produced relatively inconclusive evidence on the balance of the positive (work flexibility and autonomy, work-family balance, reduced commuting time, job satisfaction) and negative (family confrontation, stress, longer work hours, social isolation, diminished teamwork, endangered career prospects) attributes of remote working (Eurofound-ILO, 2017).

Felstead and Henseke (2017), for instance, show that remote working is associated with higher organisational commitment, job satisfaction and job-related well-being, but these benefits also come at the cost of work intensification and a greater inability to switch off. They find that the detachment of work from workplaces is a growing trend that cannot only be explained by compositional factors and organisational responses. Song and Gao (2018) show that WfH is generally associated with a lower level of net affect and unpleasant feelings, compared to those working in a workplace. However, this may vary depending on the type of remote work, with teleworking specifically increasing individuals' stress.

In an experimental study controlling for learning and selection effects, Bloom et al. (2015) identified significant performance-enhancing effects of WfH. Little evidence was found of shirking by stay-home workers, instead they were observed to work more, have fewer breaks and sick days and work better (due to a quieter and more convenient work environment). They also reported improved job satisfaction, although one side effect was that promotion opportunities conditional on performance worsened.

Monteiro et al. (2019) argue however that whether remote work increases firm productivity is theoretically ambiguous. They show using a rich and representative sample of Portuguese firms over the period 2011-2016 that remote work had a negative average productivity effect within firms. Such negative outcomes are accentuated for smaller-sized and non-innovative firms, as well as those that employ a higher share of a low-skilled workforce.

Following the Covid-19 outbreak, a series of papers have recently tackled the issue of how many jobs can be feasibly done at home. Based on relevant job descriptors from the O*NET surveys, such as if an occupation requires performing physical activities, Dingel and Neiman (2020) apply a classification method to determine the plausibility that some occupations can be performed remotely. They find that about 34% of US jobs, accounting for 44% of overall wages, can plausibly be performed at home, although this is an upper bound estimate and the share varies considerably across cities and industries. They also show that while most jobs in finance, corporate management and professional and scientific services could plausibly be performed at home, this is not the case in agriculture, hotels and restaurants or retail sectors.

Using a similar adapted methodology, Boeri, Caiumi, and Paccagnella (2020) estimate the home-based work potential as 24% for Italy, 28% for France, 29% for Germany, 25% for Spain, and 31% for Sweden and the United Kingdom. Analysing a range of task indicators of jobs, available from the Italian occupational survey ICP-O*NET and the European Survey of Working Conditions, Sostero et al. (2020) also construct indices of the type and extent of physical teleworkability and social interaction at a detailed occupational level. The research highlights that about 40% of the EU workforce could feasibly work from home, with some variations across countries driven by the occupational composition of the workforce, work organisation and institutional arrangements. The authors note that occupations that have mostly benefitted from teleworking in the past are only a subset of the totality of occupations for which it is technically feasible to work remotely, most notably technicians and associated professionals and clerical work.

A range of other country-specific studies have also revealed similar figures regarding the teleworkability of occupations. Martins (2020) finds that about 30% of all jobs can be potentially performed at home in Portugal. Dingel and Neiman (2020), Saltiel (2020)[6] and Gottlieb et al. (2020) all show that poor and lower-income countries generally have a lower share of jobs that can be performed at home, while Hatayama et al. (2020) find that jobs' amenability to homeworking increases with the level of economic development in countries.

[6] Saltiel (2020) constructs his measure of teleworkability by classifying workers as unable to work from home if they either do not use a computer at work, lift heavy objects, repair electronic equipment, operate heavy machinery or report that customer interaction is very important.

This conclusion is echoed by ILO (2020b) analysis showing that close to 18% of workers work in occupations and live in countries with an infrastructure that allows them to effectively perform their work from home, although with significant differences between the regions of the world. Specifically, Northern American and Western European workers have the largest capability for carrying out remote work.

Delaporte and Rena (2020) similarly estimate the teleworkability of jobs in 23 Latin American and Caribbean countries and document considerable variation, in the range of 6-17%, across countries but also occupations, industries, regions and workers' socioeconomic characteristics. It is shown that the feasibility of homeworking is positively correlated with highly skilled and high-paying occupations, as well as with individuals' education level, urban status and level of job formality. Women are also found to be more likely than men to work from home in developing countries, reflecting pre-established gender roles.

Focusing on the historical incidence of WfH in Ireland, Redmond and McGuinness (2020) show that 14% of employees in Ireland usually or sometimes work from home, mostly in the education, ICT and finance sectors, while this figure falls to 6% for 'essential' employees and 2% for those in the accommodation and food service sectors. Results from their econometric model indicate that homeworking is less likely among women, essential employees, non-Irish nationals and young workers, and far more likely in higher-paid occupations compared to elementary occupations. Couples with children are more likely to work from home, compared to single parents.

Survey-based evidence has been collected to detect some early shifts in the economy, including in the share of people WfH. Brynjolfsson et al. (2020) report the results of a nationally-representative sample of the US population with focus on their adaptability to the Covid-19 pandemic. Based on Google Consumer Surveys carried out between 1-5 April, the authors show that 34.1% of those who were commuting four weeks earlier were WfH at the time of the survey. They also argue that there is significant scope for converting (mostly younger-aged) workers who are currently commuting to remote workers.

Baert et al. (2020) conducted a state-of-the-art web survey among Flemish employees to examine their perceptions of telework on various life and career aspects during such a time of sudden, obligatory and high-intensity telework. The survey data shows that most

respondents attribute positive characteristics to teleworking, such as increased efficiency and lower risk of burnout. However, some fear that it diminishes their promotion opportunities and weakens ties with colleagues and employer. Individuals with resident children also feel a greater strain due to the need to strike a balance between work and family obligations. It is noted that teleworking could constitute a means of overcoming ethnic labour market discrimination due to the lessened exposure of migrants with customers and co-workers.

Several papers have also focused on the impact that remote work has on economic outcomes. Adams Prassl et al. (2020) demonstrate that workers in alternative work arrangements and in occupations in which only a small share of tasks can be done from home are more likely to have reduced their hours, lost their jobs and suffered falls in earnings due to the coronavirus pandemic. Fadinger and Shymik (2020) detect a negative relationship between WfH and Covid-19 cases and infections in Germany, while they also show that under confinement the regions that experienced larger output loss were those where the share of homeworkers was lower. They also compute that a maximum of 42% of jobs in Germany could potentially be done from home, mainly in the finance, ICT and teaching industries. This is lower than the upper bound estimate of Alipur et al. (2020) also for Germany, who calculate that WfH is feasible for roughly 56% of the overall working population. The latter is based on survey data capturing workers for whom remote performance is not possible, even if granted the option by their employers. They show that less than half of this potential was exploited in the pre-pandemic German economy.

Despite some variation in estimates of the feasibility of homeworking across different countries, most studies agree that teleworking potential – "teleworkability" - is significantly underexploited. There is also broad consensus that the crisis may accentuate inequities in labour markets, given that those with lower levels of education and wages, younger adults, ethnic minorities and migrants and informal or precariously employed workers are typically less concentrated in occupations amendable to remote work (Yasenov, 2020).

Such relatively vulnerable population groups are also found to be overrepresented in jobs with higher social distancing risk, as shown by Pouliakas, and Branka (2020). Although the latter authors do not explicitly focus on measuring the incidence of remote work, their skills-

based analysis identifies determinants of jobs with higher social distancing risk in Europe. These are defined as jobs demanding intense interpersonal skills (customer-service, teamworking and communication skills) and a low level of digital skills. Such skills attributes are also underlying traits of non-teleworkable jobs and hence there should be an inverse correlation among the two phenomena, as confirmed in section 5 below.

3. Data and descriptive statistics

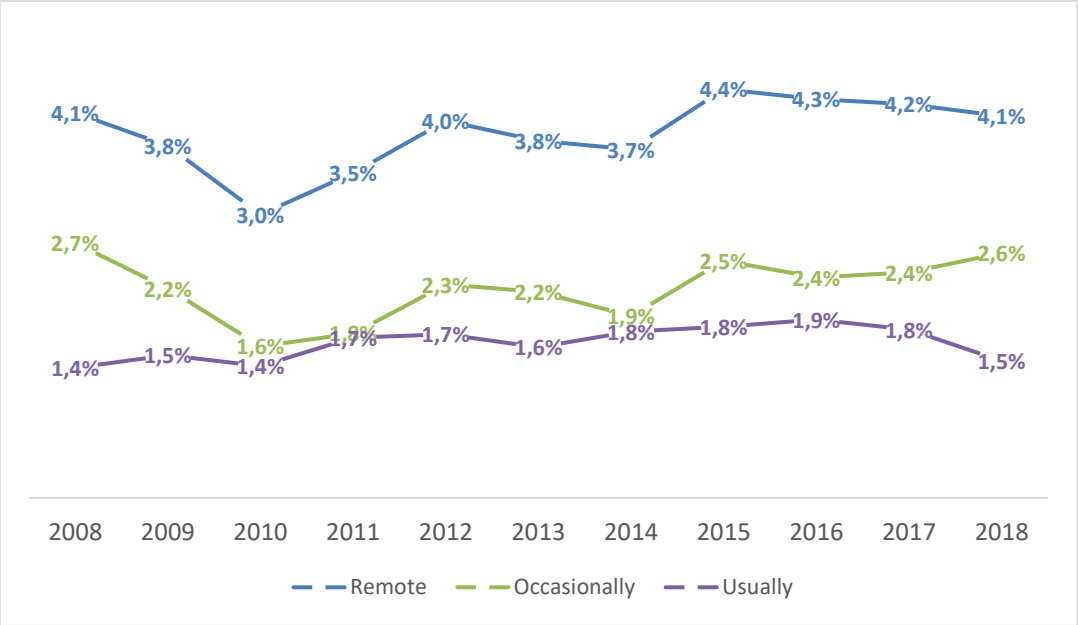
To analyse the prevalence, evolution and determinants of homeworking in Greece, the Greek sample of the European Labour Force Survey (EU-LFS) is drawn covering the period 2008-2018[7]. The EULFS is the largest European household survey classifying the population of working age (aged 15 and over) in each of 31 European countries (EU27 plus UK, Norway, Switzerland and Iceland) according to their main employment status. Participating countries are responsible for collecting data on over 100 variables collected quarterly and annually. The EU-LFS data collection is carried out mainly via computerised questionnaires collected though personal visits, telephone and web interviews as well as self-administered questionnaires. The survey is of very high quality and ensures comparability across countries, given that it is based on probability (random) sampling and it uses the same concepts and variable definitions. It follows International Labour Organisation (ILO) guidelines and classifications (main labour force status, occupation, economic activity, education attainment, region etc.), it is used to derive key EU labour market statistics and indicators and has withheld the test of time.

In carrying out the survey in Greece, the Hellenic Statistical Authority (ELSTAT), following the guidance of Eurostat, samples about 27,000 households and 43,600 persons aged 15-74 in an average quarter. The survey collects rich information about the demographic, geographical and educational characteristics of individuals, labour market status, employment characteristics of main and second jobs, characteristics of the unemployment experience for those actively searching for work as well as the job searching methods used by the inactive population.

[7] The year 2018 is the latest year made available by Eurostat at the time of writing this article.

For the purposes of measuring the percentage of employees that worked from home in Greece and their job determinants, a sample of paid employed individuals aged 15-64 has been retained[8]. A specific variable included in the EU-LFS, *HOMEWK*, is used to quantify the incidence of Greek employees WfH. This variable, intended to assess the reconciliation of work with family life as well as flexible work arrangements, measures whether individuals 'usually', 'sometimes' or 'never' do any productive activities as part of their current job from home in the year of the survey. 'Usually' is defined as WfH at least half of the days worked in the four weeks preceding the end of the reference week, while 'sometimes' refers to cases where individuals work at home less than half of the days but at least one hour in the reference period. Those captured under 'never' have on no occasion worked at home in the four weeks preceding the end of the reference week of the survey.

Figure 2 **Share of Greek employees WfH (occasionally or usually), 2008-2018**



Source: Greek Labour Force Survey

The variable excludes cases where the place of work is offered via a separate entrance to one's home (e.g. a medical practice). It also necessitates that the specific working arrangement is part of a formal arrangement between the employee and his/her employer,

[8] While self-employed individuals have a higher incidence of homeworking (about 5%) relative to employees (about 4%), the former have been dropped from the sample because many of the factors examined in the empirical analysis are only valid for employees.

either as part of the contractual agreement or involving other formal procedures of notice. The teleworking arrangement is also confirmed via the provision of a personal computer to the employee so that he/she can carry out the job tasks.

Table 1 shows that over the period 2008-2018 about 3.9% of Greek adult employees engaged in some work from home. In 2018, the closest date before the onset of the Covid-19 episode, this share was 4.4%, accounting for about 110k employees. WfH was therefore considerably lower in Greece relative to other EU countries. While the percentage of home workers declined between 2008-2010, there was an upward trend between 2010-2016, mostly driven by occasional stay-at-home employees, that subsequently levelled off (Figure 2).

Table 1 **Share of Greek employees WfH (occasionally or usually), 2008-2018**

	Never	Occasionally	Usually	WfH
Total	96.14%	2.23%	1.63%	3.86%
Gender				
Male	97.01%	1.81%	1.18%	2.99%
Female	95.04%	2.77%	2.19%	4.96%
Age group				
15-24	98.36%	0.98%	0.67%	1.64%
25-34	97.20%	1.77%	1.03%	2.80%
35-44	96.35%	2.25%	1.40%	3.65%
45-54	95.04%	2.69%	2.27%	4.96%
55-64	94.65%	2.77%	2.58%	5.35%
Highest education attainment				
Low	98.84%	0.53%	0.63%	1.16%
Medium	98.54%	0.86%	0.60%	1.46%
High	91.36%	5.08%	3.56%	8.64%
Household status				
One adult without children	95.37%	2.69%	1.94%	4.63%
One adult with children less than 15	94.84%	2.48%	2.67%	5.16%
One adult with children 15-24	93.78%	3.60%	2.62%	6.22%
Couple without children	95.52%	2.87%	1.62%	4.48%
Couple with children less than 15	95.71%	2.55%	1.74%	4.29%
Couple with children 15-24	95.26%	2.69%	2.05%	4.74%
Two adults (not couple) without children	97.01%	1.55%	1.45%	2.99%
Two adults (not couple) with children less than 15	98.04%	1.15%	0.81%	1.96%
Two adults (not couple) with children 15-24	97.35%	1.48%	1.17%	2.65%
Continuing learning activities				
Yes	92.50%	3.55%	3.94%	7.50%
No	96.30%	2.18%	1.53%	3.70%
Multiple jobs				
Yes	92.95%	4.19%	2.86%	7.05%
No	96.20%	2.20%	1.61%	3.80%
Size of local unit				
1-10	97.29%	1.53%	1.19%	2.71%
11-19	94.47%	3.26%	2.28%	5.53%
20-49	93.47%	3.43%	3.10%	6.53%
50+	96.04%	2.26%	1.69%	3.96%
Occupation				
Managers	92.86%	3.97%	3.17%	7.14%
Professionals	86.08%	8.17%	5.75%	13.93%

Technicians and associate professionals	97.62%	1.58%	0.81%	2.38%
Clerical support	98.78%	0.78%	0.44%	1.22%
Services and sales	98.59%	0.78%	0.63%	1.41%
Skilled agriculture, forestry and fishing	99.26%	0.55%	0.19%	0.74%
Craft and related trades	99.18%	0.48%	0.33%	0.82%
Plant and machine operators and assemblers	98.98%	0.64%	0.38%	1.02%
Elementary occupations	98.49%	0.36%	1.15%	1.51%
Region				
East Macedonia, Thrace	96.20%	2.42%	1.37%	3.80%
Central Macedonia	95.21%	2.60%	2.19%	4.79%
West Macedonia	96.32%	2.58%	1.10%	3.68%
Thessaly	98.25%	1.00%	0.74%	1.75%
Epirus	95.97%	3.02%	1.00%	4.03%
Ionian islands	97.75%	1.49%	0.76%	2.25%
Western Greece	95.64%	2.99%	1.37%	4.36%
Peloponnese	96.47%	1.76%	1.77%	3.53%
North Aegean	96.98%	2.00%	1.02%	3.02%
South Aegean	96.25%	2.50%	1.25%	3.75%
Mainland Greece	96.88%	1.85%	1.27%	3.12%
Attica	95.78%	2.23%	1.99%	4.22%
Crete	96.93%	1.78%	1.29%	3.07%

Source: Greek Labour Force Survey.

Table 1[9] also reveals that the incidence of WfH is larger for females, older-aged workers and those with higher levels of education. It is prevalent among natives and single parent households with children. People who work at home are more likely to have been employed before joining their current employer, have a permanent or full-time contract or longer tenure and engage in multiple jobs. They are significantly more likely to undertake supervisory duties as part of their job in mostly medium-sized firms, work fewer average hours, engage in more continuing learning and are more highly paid than non-homeworkers.

In terms of sectoral distribution, it is notable that the share of Greek workers doing some work from their own premises is largely driven by those employed in the education sector (18%). However, it is also high in the ICT sector (6%) and in professional services (6%) and other service activities (5%). The highest percentages of employees WfH are also evident for professionals (14%; specifically, teaching professionals and legal, social and cultural professionals), managers (7%; notably, administrative and commercial managers), ICT technicians and sales workers. Finally, the incidence of remote work is highest for workers residing in Central Macedonia, Western Greece and Attika and lowest for those living in Thessaly and the Ionian islands.

[9] Also see Annex 1 and 5 for full sample descriptive statistics and breakdowns.

4. Estimation methodology

4.1 Determinants of remote work

To investigate the determinants of homeworking in Greece, the following probit multivariate regression equation is estimated on a dependent binary variable, *H*, that aggregates all Greek employees who have worked at least one hour from home in the reference period, namely those who usually or sometimes worked from home[10]:

$$H_i = \beta_0 + \beta_1 d_i + \beta_2 j_i + \beta_3 r_i + \beta_4 T_f + u_i \qquad [1]$$

where d_i captures a set of demographic factors (gender, age group, nationality, highest education attainment, marital status, number of children below 15 years old) of individual *i*, j_i is a set of job-related characteristics (years of tenure, part time job, temporary contract, supervisory responsibilities, firm size, usual work hours, working atypical hours (such as shifts, nights, evenings or weekends), economic sector and occupational group) and r_i captures the household region. Time dummies, *Tf*, are also included in the specification to capture any individual-invariant factors (e.g. macroeconomic conditions) that varied during the period under investigation and u_i is the error term. Hubert-White robust standard errors are estimated throughout.

4.2 Job tasks and skill needs of remote work

A second step in the analysis aims to explore the profile of the tasks and skills needed by the jobs of Greek homeworkers, relative to those who work from a more typical office setting. For this purpose, the Greek LFS data are merged at the level of a "job"[11] with the Eurofound European jobs monitor (EJM) task database as well as Cedefop's European skills and jobs survey (ESJS).

As explained in Eurofound (2016), a data set containing descriptions of the task intensity of jobs i.e. all two-digit occupation-by-sector combinations in Europe, has been constructed

[10] Table 2 also provides the empirical output of separate probit regressions for those who work occasionally and usually from home.

[11] Following Eurofound (2016), a 'job' is defined as the combination of an individual's industry (40 NACE Rev.2 activities) and detailed occupation group (2-digit ISCO08). The task dataset contains information on a total of 1520 sector-occupation combinations. After harmonising the dataset with the list of 19 broader groups of economic activities available in the LFS dataset, the merging of the two datasets is made for 741 'jobs'.

from various international sources, including Eurofound's European working conditions survey (ESWC), OECD's Survey of adult skills (PIAAC), the American O*NET database and the EU labour force survey (LFS)[12]. This is based on a task framework that classifies and measures tasks along two main dimensions, the content of the tasks themselves and the methods and tools used to perform them (Fernandez-Macias and Bisello, 2016; 2020). The content part of the task framework identifies three main classifications of task content: physical, intellectual and social, each with various sub-indicators. The methods and tools of work capture the extent to which workers use machine or ICT tools. For this paper, the 2015 task indices extracted for Greece are used.

Similarly, the analysis merges the Greek LFS data with unique information on the skill needs of jobs in Greece as collected by the European skills and jobs survey (ESJS)[13], an EU-wide survey developed and financed by the European Centre for the Development of Vocational Training (Cedefop). The first ESJS, carried out in 2014, collected data on skill requirements and skill mismatch from a representative sample of about 49 000 adult workers (aged 24 to 65) from the (then) 28 Member States of the EU. For Greece, specifically, it surveyed about 2 000 adult employees.

In addition to standard demographic and job characteristics, the survey collected extensive information on the skill requirements of EU jobs. Respondents were asked to assess '*On a scale from 0 to 10, where 0 means not at all important, 5 means moderately important and 10 means essential, how important are the following skills for doing your job?*', where the skills set included literacy, numeracy, information and communication technology (ICT) skills, communication skills, teamworking skills, customer handling skills, foreign language skills, problem-solving skills, planning/organisation skills and technical/job-specific skills.

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12 The dataset is available from Eurofound (2016) *What do Europeans do at work: a task-based analysis* https://www.eurofound.europa.eu/publications/report/2016/labour-market/what-do-europeans-do-at-work-a-task-based-analysis-european-jobs-monitor-2016

13 For full details of the *European skills and jobs survey* see: https://www.cedefop.europa.eu/en/events-and-projects/projects/european-skills-and-jo bs-esj-survey; and Cedefop (2015) and Cedefop (2018). The full dataset is available for download at: https://www.cedefop.europa.eu/en/events-and-projects/projects/european-skills-and-jobs-esj-survey/access-to-data

Once the data are merged, the probit estimation in equation (1) is replicated with the inclusion of the tasks (*t*) or skill needs (*s*) variables in the specification:

$$H_i = \beta_0 + \beta_1 d_i + \beta_2 t, s_i + \beta_3 j_i + \beta_4 r_i + u_i \qquad [2]$$

To provide a benchmark to the Greek estimates, equations (1) and (2) are also estimated on the full sample of adult employees in other EU Member States available in the EULFS dataset.

4.3 Assessing the feasibility of homework in Greece

As discussed in section 2, a key question of policy importance following the Covid-19 crisis has been how many jobs can be "potentially" performed at home in terms of physical and technical feasibility i.e. their "teleworkability". For instance, using a classification scheme that distinguishes occupations according to whether they involve "working outdoors" or "operating vehicles, mechanised devices, or equipment", Dingel and Neiman (2020) estimate that slightly above one third of jobs in Greece can be potentially done remotely, while Hatayama et al. (2020), who construct a WfH amenability index for 53 countries, demonstrate that Greece is bundled with the group of labour markets that have very low amenability to remote work.

This study therefore also aims to measure the extent of deviation between the current incidence of homework in Greece and its potential feasibility threshold. In the absence of a specific Greek occupational survey with detailed information on job tasks, the methodology superimposes on the Greek LFS data (at 3-digit occupational level) the external classifications of the "teleworkability" of occupations as derived by Sostero et. al (2020). These authors build their classification based on analysis of a detailed set of job tasks of workers, as collected in a sample survey of occupations in Italy[14] and the ESWC[15]. It focuses on those

[14] The Italian ICP (Indagine Campionaria delle Professioni), conducted in 2007 and 2012 by the National Institute for Public Policy Analysis (INAPP) in collaboration with the Italian National Statistical Institute (ISTAT), is structured according to the information content of the US Occupational Information Network (O*NET) survey. It describes how about 16,000 employed people carry out the 800 professional units that make up the elementary structure of the Italian Classification of Occupations (CP2011).

[15] The European survey of working conditions is a survey carried out by the European Foundation for the Improvement of Living and Working Conditions (Eurofound) in 35 countries (including Greece) interviewing nearly 44,000 workers. It provides detailed information on a broad range of issues, including exposure to physical and psychosocial risks, work organisation, work–life

tasks that are predictive of the extent to which different work activities can be carried out from a remote site.

Specifically, the classification of 5-digit occupations according to their physical teleworking feasibility is based on a series of relevant indicators that distinguish work that cannot be done remotely, including their manual or finger dexterity, performing of general physical activity, handling and moving objects, inspecting equipment, structures or materials, operating vehicles, devices or equipment. A 5-digit occupation is classified as not physically teleworkable if any of these activities is sufficiently important (namely, it has a score of over 40% on the importance scale). Using an official mapping, the 5-digit occupational classification is subsequently aggregated to the 3-digit ISCO08 taxonomy. This classification is further refined based on ESWC data that identifies jobs involving lifting or moving people.

The authors also construct a supplementary index of social interaction task content, using relevant indicators such as if a job involves selling or influencing others, training or teaching, assisting or caring, performing or working directly for the public and tasks involving the coordination of others. Any occupation that is totally or partially teleworkable from a technical perspective can be additionally assessed in terms of how efficient the provision of labour services will be if they were to be performed remotely, as a function of the degree of social interaction involved (see Sostero et al. 2020 for the full classification table and methodological details).

This classification of occupations is subsequently matched to the jobs of Greek workers at the 3-digit occupational level using the LFS dataset. It is acknowledged that the structure of the Greek labour market and the nature of jobs tasks of Greek employees may differ relative to Italian and other European counterparts, so further tests of the plausibility of this matching process have been undertaken. Specifically, the externally-derived classification of the teleworkability of occupations has been firstly validated using specific information on the

balance, and health and well-being. The analysis described in the text uses data from the 6th ESWC carried out in 2015.

job tasks of Greek employees and after replicating the methodology of Hatayama et al. (2020) on the Greek PIAAC sample[16].

Secondly, the extent to which the average characteristics of Greek homeworkers differ relative to those of other European counterparts has been examined. To do so, a standard decomposition analysis as outlined by Oaxaca (1973) and Blinder (1973) has been carried out using the EULFS data (see Annex 2 for a description of the approach). This deconstructs the gap in the incidence of remote working between Greek workers and others into a part that is attributable to differences in their mean productive characteristics (the explained part) and a part that is due to different returns to such characteristics (the unexplained part). In this manner it becomes possible to detect the extent to which observable characteristics contribute to differences in remote working between Greek and non-Greek workers and how much of the wedge can be attributed to other unobserved influences.

4.4 Estimating the wage return to remote work

A final step of the study is to estimate the implications that WfH has on workers' wages. Using information on the deciles of monthly take-home pay[17] available in the Greek LFS data, a Mincer-type earnings regression is performed, as follows:

$$W_i = \vartheta_0 + \theta_1 WfH_i + \theta_2 age_{di} + \theta_3 ten_i + \vartheta_4 ten^2{}_i + \theta_5 sex_i + \theta_6 Ed_i + \theta_7 L_i + \theta_8 T_f + \varepsilon_i \qquad [3]$$

where the monthly net earnings, *W*, of individual *i* is regressed on the *WfH* indicator variable and on variables capturing gender, age band, years of tenure and its quadratic term (to capture the concavity of job-specific acquired human capital), as well as the highest level of education attainment level (*Ed*) and an indicator variable capturing a person's investment in

[16] Due to limited sample sizes in the Greek PIAAC data at the 3-digit occupational level, and since the job task information available in PIAAC is more limited relative to the O*NET approaches, it has been preferred to utilise the teleworkability classification of Sostero et al. (2020) for the main analysis of the paper. The Greek-specific PIAAC analysis is used for robustness purposes.

[17] This includes the last monthly pay after deduction of income tax and National Insurance Contributions. It includes regular overtime, extra compensation for shift work, seniority bonuses, regular travel allowances and per diem allowances, tips and commission, compensation for meals. It excludes income from investments – assets, savings, stocks and shares.

continuing learning activities (L). Time dummies, T_f, are also included to control for time-varying effects that are fixed across individuals and ϵ is the error term.

Given that the wage information in the LFS dataset is only available in the form of ten deciles, equation (3) is estimated using an ordered probit estimator and corresponding marginal effects are reported for each interval of the wage distribution (see Annex 5). Standard Mincer wage equations are also estimated on continuous (monthly/hourly) wage variables. The latter is derived by keeping the median values of each of the monthly income bands included as options in the Greek LFS survey. Information on employees' usual weekly hours in their main job is also used to derive a measure of (log) net hourly wages.

5. Empirical findings

5.1 Determinants of homeworking in Greece

Table 2 displays the association between a number of demographic, socioeconomic and job characteristics of adult employees in Greece and their incidence of WfH. In the decade preceding the 2020 coronavirus crisis, which is expected to have caused a structural change in the share and composition of remote working in most countries, it is interesting to observe that homeworking in Greece was characterised by several idiosyncratic features relative to other countries.

WfH, especially on a usual basis, is found to be more prevalent among females and non-nationals. Younger Greek workers up to middle age are less likely to engage in remote work, despite being more digitally literate compared to older cohorts (OECD, 2016). WfH is more widespread among tertiary educated individuals, while it is striking that there is little difference in the estimated probability of homeworking among those qualified at below upper secondary and medium-education level. Having a first child or more than 3 young children in the household is also positively associated with a propensity to regularly work at home.

Other things equal, adult employees who work from home are more likely to have been in inactivity before starting their current job, which hints to the fact that such workers, who may have already become accustomed to carrying out activities at home, are more inclined to retain this working mode in their new employment. By contrast, individuals making a

school to work transition have lower chances of agreeing with their employer to work from their own premises. As mostly occasional homeworkers have greater chances of engaging in moonlighting, this alludes to the fact that the ability to work from home can be combined with engagement in additional work activities for some people (e.g. freelancing or working in the online platform economy).

Table 2 **Determinants of WfH, Probit estimates, Greece, 2008-2018**

	(1) *WfH*	(2) *WfH occasionally*	(3) *WfH usually*	(4) *WfH males*	(5) *WfH females*
Male	-0.13***	-0.09***	-0.12***	…	…
	(0.008)	(0.010)	(0.011)		
Non-native	0.20***	-0.04	0.30***	0.02	0.23***
	(0.015)	(0.024)	(0.019)	(0.026)	(0.021)
Married	-0.01	0.05***	-0.06***	0.00	0.02
	(0.010)	(0.012)	(0.013)	(0.016)	(0.013)
Age: 25-34	-0.02	-0.06**	0.03	-0.00	-0.02
	(0.023)	(0.027)	(0.033)	(0.034)	(0.031)
Age: 35-44	0.07***	0.01	0.11***	0.02	0.09***
	(0.023)	(0.027)	(0.034)	(0.035)	(0.032)
Age: 45-54	0.17***	0.02	0.30***	0.07*	0.22***
	(0.024)	(0.029)	(0.034)	(0.036)	(0.033)
Age: 55-64	0.23***	0.05	0.35***	0.12***	0.29***
(ref: 15-24)	(0.026)	(0.032)	(0.037)	(0.039)	(0.036)
Education: Medium	-0.00	0.01	-0.02	0.05**	-0.06***
	(0.014)	(0.018)	(0.019)	(0.020)	(0.021)
Education: High	0.18***	0.17***	0.13***	0.16***	0.15***
(ref: Low)	(0.016)	(0.021)	(0.021)	(0.023)	(0.024)
Child15: 1	0.03***	0.01	0.05***	0.08***	0.01
	(0.010)	(0.012)	(0.014)	(0.016)	(0.014)
Child15: 2	0.01	-0.03*	0.05***	0.09***	-0.05***
	(0.012)	(0.015)	(0.016)	(0.018)	(0.017)
Child15: 3	0.05**	-0.01	0.11***	0.19***	-0.07**
(ref: 0)	(0.022)	(0.026)	(0.030)	(0.030)	(0.031)
Moonlight	0.22***	0.21***	0.14***	0.18***	0.29***
	(0.023)	(0.026)	(0.030)	(0.029)	(0.038)
Continuous learning	0.22***	0.07***	0.32***	0.19***	0.24***
	(0.015)	(0.018)	(0.018)	(0.022)	(0.020)
Last stat: unemployed	-0.01	-0.01	-0.02	-0.00	-0.02
	(0.023)	(0.028)	(0.032)	(0.036)	(0.030)
Last stat: student	-0.09**	-0.23***	0.09	-0.24***	-0.01
	(0.045)	(0.057)	(0.059)	(0.084)	(0.056)
Last stat: inactive	0.13**	0.01	0.23***	0.10	0.12
(ref: employed)	(0.055)	(0.074)	(0.067)	(0.073)	(0.084)
Years of tenure	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Part-time	0.05***	-0.16***	0.25***	0.06**	0.04
	(0.018)	(0.022)	(0.024)	(0.031)	(0.024)
Temporary	-0.04***	-0.04**	-0.02	-0.06***	-0.01
	(0.013)	(0.016)	(0.018)	(0.022)	(0.018)
Supervisor	0.23***	0.22***	0.18***	0.26***	0.21***
	(0.011)	(0.013)	(0.015)	(0.014)	(0.017)
Firm size: 11-49	0.08***	0.04***	0.12***	0.06***	0.08***
	(0.011)	(0.013)	(0.015)	(0.017)	(0.015)
Firm size: 20-49	0.19***	0.08***	0.27***	0.12***	0.24***

	(0.012)	(0.014)	(0.015)	(0.018)	(0.016)
Firm size: 50+	0.14***	0.09***	0.19***	0.16***	0.10***
	(0.012)	(0.015)	(0.017)	(0.017)	(0.018)
Firm size: DK<11	0.00	0.06***	-0.08***	0.01	0.01
	(0.017)	(0.019)	(0.025)	(0.025)	(0.024)
Firm size: DK>10	-0.02	0.01	-0.04**	-0.07***	0.02
(ref: 1-10)	(0.013)	(0.015)	(0.019)	(0.020)	(0.018)
Weekly hours	0.01***	-0.00***	0.02***	0.00***	0.01***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Atypical hours	0.31***	0.32***	0.20***	0.29***	0.37***
	(0.007)	(0.008)	(0.009)	(0.009)	(0.011)
Urban: Towns/suburbs	0.02*	0.07***	-0.05***	0.02	0.02
	(0.009)	(0.011)	(0.013)	(0.014)	(0.013)
Urban: Rural area	0.03***	0.07***	-0.03**	0.06***	0.02*
(ref: Cities)	(0.010)	(0.012)	(0.013)	(0.014)	(0.014)
Industry dummies	x	x	x	x	x
Occupation dummies	x	x	x	x	x
Region dummies	x	x	x	x	x
Time dummies	x	x	x	x	x
Constant	-2.33***	-1.79***	-3.35***	-2.06***	-2.67***
	(0.063)	(0.076)	(0.093)	(0.084)	(0.124)
Observations	565,898	565,898	565,898	312,094	253,804

NB: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1
Source: Greek Labour Force Survey.

In addition to doing more than one jobs, the empirical estimates also draw attention to the potential disruption in work-life balance that WfH may entail for some individuals. *Ceteris paribus*, homeworkers in Greece are found to work longer and atypical work hours. Households comprised of couples with children (especially those with separated parents) have a lower estimated probability of WfH, compared to childless households. This is concerning as it may pose a strain on parents trying to combine work with child-care responsibilities[18].

Working remotely is found to be more prominent for individuals in part-time jobs and with a permanent contract, after controlling for work hours and other individual and job characteristics, as well as for those with supervisory responsibilities in their main job. Part-timers are more inclined to work on a frequent basis from home, while temporary workers are particularly less likely to do occasional remote work. Workers in micro-sized firms are the least likely to have the ability to do remote work, in contrast to those in medium-sized establishments.

[18] The results on household status are not reported in Table 2, as they are correlated with the number of children, but are available from the author upon request.

A finding of interest is the positive partial correlation between (mostly usual) remote work and workers' further participation in formal or non-formal education and training activities. During the coronavirus confinement period, specific policy measures and programmes, in Greece and other European countries, have been implemented to promote the use of distance- and other forms of remote learning. The positive partial relationship between remote work and continuing education and training implies that there may be a reinforcing link between homeworking and continuing learning.

Examining this association in more depth reveals that it is underpinned by persons being in regular education (especially by people undertaking advanced research studies i.e. ISCED 7-8) but more so by those following non-formal taught learning activities (courses, seminars, conferences, private lessons). It is observed that remote workers are more likely to engage in non-formal education and training that is job-related and takes place mostly or solely outside working hours. It is also confirmed that the relation is not distorted by the inclusion of employees aged below 24 years, or those still in regular education as main status and that it holds when dropping from the sample all individuals whose main subjective labour market status is not employment[19].

With respect to the sectoral and occupational distribution of homeworking, the empirical estimates confirm that employees in the education, ICT and professional services have higher probability of doing remote work. Similarly, professional occupations have the highest probability of WfH, whereas technicians and associate professionals and clerks, whose jobs in general share similar characteristics in terms of social interaction and use of digital technologies with professionals, have significantly lower chances for WfH (Redmond and McGuinness, 2020).

Finally, the estimates reveal a statistically significant geographical variation in terms of the incidence of remote work in Greece, with workers in Attika and South Aegean engaging more in home-based work, in contrast to similar employees in West Macedonia, Thessaly and North Aegean. Working in non-urban areas is also positively associated with the offer to work from home, especially on an occasional basis.

[19] All results are available from the author upon request.

5.2 Gender differences in homeworking

Given the importance of WfH for reconciliation of work-life balance and as a means of flexibility in work arrangements, Table 2 further examines any gender differences in its determinants in the Greek labour market. Some important differences include the fact that female homeworkers are more likely to be non-nationals, in contrast to males. With respect to age, men engage in remote forms of work only when they are of considerably older age, whereas women do so from their 30s (possibly reflecting strong gender roles in relation to the assumption of child care responsibilities). Medium-qualified female employees in Greece are particularly less inclined to work from home than the lower educated, as opposed to equivalently qualified men. It is also striking that females with younger children have a lower probability of WfH, compared to those with no offspring. Thus, the estimated positive total mean effect of child-bearing on homeworking is driven entirely by Greek men, especially those with more than 3 children.

Further interesting gender differences include the fact that female homeworkers in Greece are more likely to moonlight, signifying that they may be encountering hours or income constraints in their main job (Pouliakas, 2017) and use the opportunity of WfH to engage in other work activities. Women who work remotely also work longer and atypical work hours. However, they are more inclined to engage in further education and training than males, which may reflect that they try to utilise the added flexibility of WfH to further promote their skills and career opportunities. Male employees have greater chances of doing remote work than women in part-time and permanent jobs, larger-sized firms and in rural areas.

5.3 "Essential" workers and WfH

Redmond and McGuinness (2020) examine the specific relationship between WfH and jobs in which "essential" services were provided during the coronavirus lockdown. Such jobs include workers in the health care and public administration sectors (armed forces, police officers etc.) but also food and transportation services and some retail workers, necessary for meeting basic population needs. They show that just 6% of essential employees WfH in Ireland, compared to an average of 16% for non-essential employees.

Using the Greek LFS data, a dummy variable has been created identifying the share of Greek workers employed in such 'essential' job posts. The characterisation of essential services utilised by Redmond and McGuinness (2020), who combine specific industry and occupational codes, is mimicked. However, a more detailed and augmented approach is employed that identifies essential occupations based on 3-digit occupational codes, combined with the industrial taxonomy in some cases to narrow down the selection of workers (see Annex 3). About 33.5% of Greek employees are found to belong to this group of essential occupations.[20]

Table 3: **WfH and essential jobs, Probit estimates, Greece, 2011-2018**

	(1) *WfH*	(2) *WfH occasionally*	(3) *WfH usually*	(4) *WfH males*	(5) *WfH females*
Essential	-0.21***	-0.20***	-0.22***	-0.19***	-0.26***
	(0.019)	(0.022)	(0.028)	(0.027)	(0.029)
Full set of control variables	x	x	x	x	x
Constant	-2.46***	-2.13***	-3.23***	-2.35***	-2.79***
	(0.081)	(0.097)	(0.118)	(0.106)	(0.156)
Observations	362,401	362,401	362,401	196,433	165,968

NB: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Probit estimates; all regressions include a full set of control variables as in Table 2.
Source: Greek Labour Force Survey.

As noted by Redmond and McGuinness (2020) for Ireland, there is a higher concentration of females and part-time workers among essential occupations. Such jobs are also, on average, lower-paid and with a higher share of low-educated workers. However, in Greece, in contrast to Ireland, essential workers are more likely to be non-natives, middle-aged and live in households with children. They work more and atypical hours per week and participate less in continuing education and training activities.

Despite such differences in characteristics, just 1.5-2% of essential employees are found to WfH in 2018 compared to 5-6% of non-essential workers. Estimation of equation (1) with the inclusion of an 'essential services' dummy variable in the specification further confirms that

[20] The share of essential jobs falls to 24% if the occupations related to sales categories are excluded from the indicator variable, as it is not entirely clear which sales jobs are essential given that some retail outlets were forcefully shut during the pandemic lockdown and others not. The analysis using this indicator variable can only be performed for the period 2011-2018 due to the ISCO classification revision in 2011.

the prevalence of WfH is statistically significantly lower for workers at the frontline of service delivery and care during a pandemic (see Table 3). Other things equal, essential workers have a 1% lower marginal probability of WfH. This negative relationship is pronounced for female essential employees, who have a 2% lower predicted probability of WfH relative to males.

5.4 Trend of WfH in Greece

As revealed in Figure 2, the incidence of WfH has stayed relatively constant at around 4% over the past decade, with a significant fall in occasional remote work between 2008-2010 that was subsequently reversed. Table 4 first reveals the impact of various unobserved time-varying factors (time dummies) on the incidence of home working, when the dependent variable is regressed only on them. The estimated intercepts reveal a statistically significant negative trend between 2008-2014 that was subsequently reversed but flattened until 2018. However, when taking into account the changing composition of the working population and jobs in the Greek labour market during these years, which was marked given the significant impact of economic restructuring policies (Christopoulou and Monastiriotis, 2018), it becomes evident that homeworking has been in steady decline during the previous decade and it has not managed to bounce back to its 2008 level.

Table 4 **Evolution of WfH in Greece, 2008-2018**

	(1) *time dummies only*	(2) *& industrial composition*	(3) *& industrial & demographic composition*	(4) *full specification*
2009	-0.04***	-0.06***	-0.06***	-0.06***
	(0.012)	(0.014)	(0.014)	(0.015)
2010	-0.14***	-0.17***	-0.18***	-0.19***
	(0.013)	(0.015)	(0.015)	(0.016)
2011	-0.08***	-0.12***	-0.13***	-0.13***
	(0.013)	(0.015)	(0.015)	(0.016)
2012	-0.01	-0.07***	-0.08***	-0.08***
	(0.014)	(0.016)	(0.016)	(0.016)
2013	-0.03**	-0.11***	-0.13***	-0.14***
	(0.014)	(0.016)	(0.016)	(0.017)
2014	-0.05***	-0.11***	-0.13***	-0.14***
	(0.014)	(0.016)	(0.016)	(0.017)
2015	0.03**	-0.02	-0.03**	-0.06***
	(0.014)	(0.016)	(0.016)	(0.016)
2016	0.02	-0.04***	-0.06***	-0.10***
	(0.013)	(0.015)	(0.015)	(0.016)
2017	0.01	-0.05***	-0.07***	-0.10***

	(0.013)	(0.015)	(0.015)	(0.016)
2018	-0.00	-0.06***	-0.09***	-0.12***
	(0.013)	(0.015)	(0.015)	(0.016)
(ref: 2008)				
Industry controls		x	x	x
Occupation controls		x	x	x
Worker controls			x	x
Job controls				x
Constant	-1.74***	-1.70***	-1.98***	-2.33***
	(0.009)	(0.046)	(0.052)	(0.063)
Observations	582,591	568,947	568,947	565,898

NB: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Probit regressions; Col. 1 only controls for time dummies; Col. 2 controls for industry/occupation dummies; Col. 3 also controls for gender, age, education and native status; Col. 4 controls for full set of set of controls as in Table 2.
Source: Greek Labour Force Survey.

While the incidence of WfH is anticipated to have risen in Greece following the coronavirus lock down period, it is hence clear that Greek businesses and workers were insufficiently gearing up to face the public health shock and ensuing spike in demand for remote working arrangements in preceding years.

5.5 Tasks and skills of remote jobs

While the above-mentioned findings paint a wide-ranging portrait of the type of jobs and workers engaged in remote working in Greece, it does not fully reveal the nature of tasks and skills demanded by homeworking jobs. Knowing the structure of the tasks and skill needs of jobs can yield additional insight for policymakers who wish to understand what exactly workers do as part of their jobs, in contrast to the broad characterisations provided by their sector of economic activity and occupation[21].

To detect the nature of the tasks and skills demanded by Greek homeworkers, the Greek LFS data have been merged at the level of 'jobs' to the Greek samples of the Eurofound European Job Monitor (EJM) task dataset and Cedefop's 1st European skills and jobs survey (ESJS). This has been done for the 2015 and 2014 LFS waves, respectively, as described in section 4.

[21] As noted by Fernandez-Macias and Bisello (2020), the amount of individual variance in task content that can be explained by the occupation/sector combination ranges between 30% and 40%. Hatayama et al. (2020) further estimate that occupations capture only half or less of the types of tasks that workers do on-the-job. Occupation-industry dummies are hence an imperfect proxy of what individuals do in their work, as noted by the now significant literature on the 'task approach to labour economics' (Russo, 2017; Bisello and Fernandez-Macias, 2016, 2020; Eurofound, 2016; Handel, 2016; Pouliakas and Russo, 2015; Autor and Handel, 2013; Autor, 2013).

Table 5 **Job tasks, skill needs and WfH, Probit estimates, Greece and other Europe**

	(1) *Job tasks EL (EJM)*	*(2)* *Skill needs EL (ESJS)*	*(3)* *Job tasks other Europe (EJM)*
CONTENT OF WORK			
Physical tasks			
Strength	-2.57***		0.65***
	(0.633)		(0.061)
Dexterity	-0.32		-2.02***
	(0.451)		(0.061)
Intellectual tasks			
Literacy: Business	-0.41		-0.25***
	(0.355)		(0.041)
Literacy: Technical	-1.37***		-0.06
	(0.320)		(0.037)
Literacy: Humanities	1.49***		0.69***
	(0.337)		(0.038)
Numeracy: Accounting	-0.08		0.18***
	(0.216)		(0.025)
Numeracy: Analytic	0.14		0.01
	(0.336)		(0.030)
Problem-solving: information retrieval	-0.39		0.01
	(0.405)		(0.049)
Problem-solving: creativity	1.13***		0.65***
	(0.373)		(0.057)
Social tasks			
Serving/attending	1.27***		-0.97***
	(0.391)		(0.044)
Selling/influencing	-0.13		-0.13***
	(0.333)		(0.045)
Teaching/training/coaching	2.16***		0.94***
	(0.371)		(0.043)
Managing/coordinating	-2.23***		-1.12***
	(0.513)		(0.053)
METHODS & TOOLS OF WORK			
Methods			
Autonomy	-0.33		-0.11**
	(0.366)		(0.047)
Teamwork	-0.37***		-0.10***
	(0.138)		(0.013)
Routine: repetitiveness	0.12		-0.06***
	(0.181)		(0.019)
Routine: standardisation	0.48***		0.05***
	(0.169)		(0.016)
Tools			
Using machinery	-0.11		-0.53***
	(0.407)		(0.047)
Basic ICT	-0.28		0.36***
	(0.234)		(0.030)
Advanced ICT	0.30		0.10***
	0.11		(0.034)
SKILL NEEDS			
Basic literacy		-0.11	
		(0.074)	
Advanced literacy		-0.19**	
(ref: No literacy skills needed)		(0.084)	
Basic numeracy		-0.09	
		(0.089)	
Advanced numeracy		-0.22**	
(ref: no numeracy skills needed)		(0.092)	

Moderate ICT		0.29***	
		(0.060)	
Advanced ICT		0.05	
(ref: Elementary ICT skills needed)		(0.070)	
Job-specific		0.01	
		(0.009)	
Communication		0.056**	
		(0.012)	
Teamworking		-0.10***	
		(0.009)	
Foreign language		-0.03***	
		(0.009)	
Customer service		0.00	
		(0.008)	
Problem-solving		-0.02	
		(0.014)	
Learning		0.090***	
		(0.012)	
Planning		0.01	
		(0.011)	
COVID-19 SOCIAL DISTANCING RISK		-0.33***	
(high social & low digital skill needs)		(0.060)	
Constant	-2.94***	-2.46***	-0.90***
	(0.585)	(0.350)	(0.083)
Observations	40,279	36,544	737,566

NB: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Probit regression includes full set of controls as in Table 2. Col. 1&3 matches the respective samples of the European Jobs Monitor task dataset with the Greek LFS (2015) and EU LFS data at the "jobs (sector-2-digit occupation)" level. Col. 2 matches the Greek sample of the European skills and jobs survey data with the Greek LFS (2014) data at "jobs (sector-2-digit occupation)" level. The Covid-19 social distancing risk index is derived as in Pouliakas and Branka (2020).
Source: Greek Labour Force Survey; European Jobs Monitor task dataset; European skills and jobs survey.

Table 5 displays the estimated coefficients of the specific tasks and skill needs variables obtained from the estimation of equation (2) on the respective samples. The estimates reveal interesting insights about the nature of the work done and skills required by Greek employees who WfH. Specifically, they are found to be less likely to engage in physical activities requiring strength, highlighting that most manual work cannot be moved to remote work spaces. Those carrying out relatively basic information processing tasks of a codifiable nature, such as technical-related intellectual tasks (writing letters, memos, invoices, manuals, instructions, reports etc.), are also found to have lower chances of WfH.

What is clear is that working away from office premises tends to be more prevalent among Greek workers who engage in social serving tasks (responding directly to demands from the public or customers) and teaching tasks (imparting knowledge or instructing others). The same holds for employees carrying out more advanced intellectual tasks (reading or writing articles or books, creativity and planning). By contrast, the need to coordinate or supervise

the behaviour of colleagues or sell/influence others constitute an impediment to homeworking.

An interesting observation is that the jobs of Greek homeworkers tend to be characterised by work methods that involve a marked degree of standardisation. This implies that mostly jobs in which work procedures and outputs are predefined and encoded in a formalised system lend themselves to remote work.

Similar conclusions are drawn when examining the importance of different skills needed by the jobs of Greek homeworkers. The analysis reveals that distance work is relatively less likely to require advanced literacy and numerical skills. By contrast, the nature of the work carried out by Greek stay-home employees is mostly characterised by a higher importance of communication skills (which includes teaching and instruction) and basic digital skills. Such findings concur with the description of the task content of their jobs, as described before, specifically the high reliance on routine standardised tasks.

Because of the greater need to engage in social interaction and physical proximity with people, there is also a negative correlation between the importance of teamworking and foreign language skills with homeworking. Moreover, the evidence further supports the positive association between remote working and continuous learning for one's job, such as learning and applying new methods and techniques, adapting to new technology or equipment or materials and engaging in own learning.

5.6 Remote work as safeguard to social distancing?

With the onset of the Covid-19 confinement and associated social distancing measures, a large part of the labour force was either made redundant, put on furlough or some form of short-time working arrangement or forced to work remotely from home. Greece, a country that acted relatively swiftly in the implementation of preventive measures to counteract the exponential spread of the virus, experienced a spike in joblessness at first instance, which was slowed down by the implementation of government policies to encourage employee retention (e.g. short-time work arrangements) by firms (SEV, 2020b). The pressure for ensuring work continuity from a distance was therefore accentuated during the lock-down. As the country moves steadily towards the gradual lifting of strict confinement measures and

towards a new norm of social distancing in workplaces, it is interesting to examine if the jobs of workers most exposed to social distancing risk are conducive to the take up of remote working, which would lower adjustment costs.

To investigate this issue, the Covid-19 social distancing risk index (COV19R) has been derived as described in Pouliakas and Branka (2020). COV19R is a weighted index combining information on the importance of skills involving physical proximity or contact with other people (communication, team-working and customer handling skills) as well as jobs' digital skill intensity. Larger values of COV19R indicate a larger potential loss in employee productivity and possible job destruction due to social distancing measures.

As shown in Table 5, there is a statistically significant negative correlation between higher COV19R values and the probability of remote working in Greece. This draws attention to the fact that workers who may be most affected by social distancing measures in the post-peak-coronavirus period are the ones least likely to be using the WfH option.

5.7 Comparison with other European employees

In order to explore whether the determinants of homeworking deviate between Greek and other EU employees, Table 6 provides as a comparison the estimated coefficients for a sample of other European employees (excluding Greeks). The results are extracted by running separate probit regressions of equation (1) for 2018, the last year publicly available in the EULFS.

To compare any deviation in the patterns of WfH between Greek and other European homeworkers, considering that the residual variance of the two subgroups may differ in binary dependent variable models (Allison, 1999), a seemingly unrelated estimation is performed using both sample estimates. The hypothesis of equality of coefficients between the estimated Greek and other European WfH models is subsequently tested and rejected $(\chi^2(44) = 3569.75 ***)$.

Table 6 **Determinants of WfH, Probit estimates, other Europe, 2018**

	(1) *All employees*	(2) *Males*	(3) *Females*	(4) *Wald test of coefficient equality EL-other Europe*
Male	0.01***	…	…	13.59***
	(0.004)			
Non-native	-0.14***	-0.15***	-0.12***	30.71***
	(0.008)	(0.011)	(0.011)	
Married	0.09***	0.10***	0.09***	6.41**
	(0.004)	(0.006)	(0.005)	
Age: 25-34	0.28***	0.24***	0.32***	26.26***
	(0.010)	(0.014)	(0.013)	
Age: 35-44	0.46***	0.42***	0.51***	38.07***
	(0.010)	(0.014)	(0.014)	
Age: 45-54	0.48***	0.43***	0.53***	14.11***
	(0.010)	(0.014)	(0.014)	
Age: 55-64	0.44***	0.39***	0.49***	13.51***
(ref: 15-24)	(0.010)	(0.015)	(0.015)	
Education: Medium	0.12***	0.17***	0.07***	16.65***
	(0.008)	(0.011)	(0.011)	
Education: High	0.38***	0.42***	0.36***	49.37***
(ref: Low)	(0.008)	(0.011)	(0.012)	
Moonlight	0.25***	0.22***	0.27***	0.42
	(0.007)	(0.011)	(0.010)	
Continuing learning	0.22***	0.22***	0.24***	12.23***
	(0.004)	(0.007)	(0.006)	
Years of tenure	-0.00***	-0.00***	-0.00***	6.47**
	(0.000)	(0.000)	(0.000)	
Part-time	0.10***	0.21***	0.03***	38.11***
	(0.007)	(0.012)	(0.009)	
Temporary	-0.10***	-0.14***	-0.07***	2.34
	(0.007)	(0.010)	(0.009)	
Supervisor	0.18***	0.19***	0.17***	7.35***
	(0.004)	(0.006)	(0.006)	
Firm size: 11-49	-0.26***	-0.20***	-0.30***	96.57***
	(0.006)	(0.009)	(0.008)	
Firm size: 50+	-0.18***	-0.13***	-0.23***	56.50***
	(0.006)	(0.008)	(0.008)	
Firm size: DK<11	-0.28***	-0.22***	-0.33***	35.24***
	(0.014)	(0.021)	(0.019)	
Firm size: DK>10	-0.28***	-0.22***	-0.32***	152.16***
(ref: 1-10)	(0.011)	(0.016)	(0.015)	
Usual weekly hours	0.01***	0.01***	0.01***	47.47***
	(0.000)	(0.000)	(0.000)	
Atypical hours	0.25***	0.25***	0.26***	7.64***
	(0.003)	(0.004)	(0.004)	
Urban: towns/suburbs	-0.06***	-0.06***	-0.05***	17.47***
	(0.004)	(0.006)	(0.006)	
Urban: rural areas	-0.07***	-0.06***	-0.06***	7.08***
	(0.005)	(0.007)	(0.006)	
Industry dummies	x	x	x	
Occupation dummies	x	x	x	
Country dummies	x	x	x	
Constant	-1.21***	-1.46***	-0.98***	
	(0.028)	(0.038)	(0.042)	
Observations	1,331,893	676,837	655,056	

NB: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; other European countries include all EU27 countries (excluding Greece) plus NO, IS, CH, UK; Col. (4) shows the output of Wald tests following a SURE estimation of WfH for both the Greek and other Europe samples. *Source*: EU Labour Force Survey.

The extent of the difference in the marginal effects between the two samples is also assessed by comparing relatively homogenous samples of Greek and other European workers, in terms of the composition of their measurable characteristics. In particular, marginal effects of the explanatory factors have been estimated for the other European sample after constraining their values to the respective mean values of the Greek sample. Comparing the marginal effects of the two samples based on a fixed profile of observable characteristics does not affect the main conclusions.[22]

Specifically, the comparison highlights that, in contrast to the Greek job market[23], there are higher chances of males, natives and those in non-supervisory posts working remotely in other European countries. While younger Greek workers at early stages of their career, as well as those with medium-level qualifications and children, also have a lower likelihood of home-based work. This stands in contrast to the flexibility enjoyed by their European counterparts. Greek remote workers also work significantly more atypical hours than other Europeans.

WfH is a flexible work arrangement used more frequently by Europeans in micro-sized firms and mostly applies to managerial occupations, whereas in Greece it affects mostly professional occupational groups and those in medium-sized firms. WfH also applies to Greeks living in towns and rural areas, as opposed to other Europeans for whom remote work is predominantly a phenomenon in densely populated areas.

5.8 How many jobs can be done remotely in Greece?

As discussed in section 4.3, a key question of policy importance following the Covid-19 crisis is how many jobs can be potentially performed at home. Following the methodology described above that classifies occupations according to their teleworkability, we measure

[22] For instance, the estimated marginal probability of WfH at the means of the sample characteristics for the other European sample is 0.44. It is equal to 0.5 when constrained at the average value of the factors of the Greek sample.

[23] These comparisons have been corroborated by estimating equation (1) on the 2018 wave of the Greek LFS data. The effect of the variables indicating the number of children and last employment status (not shown in the table) have also been estimated in a separate regression that contains a subset of EULFS countries, for which these optional variables were collected.

the extent of deviation between the current incidence of homeworking in Greece and its technical feasibility threshold.

Specifically, the teleworkability classification of 3-digit occupations as obtained from external sources is matched to the respective jobs of Greek workers using the LFS sample. As mentioned in section 4 and described in Annex 2, the differences in remote working between Greek and other European workers is not driven by discrepancies in the nature of their job tasks and other labour market endowments. Furthermore, the teleworkability classification derived using non-Greek sources has been corroborated using Greek-specific PIAAC data, after applying the methodology of Hatayama et al. (2020) (Fig A4.1, Annex 4). Both robustness tests provide support to the approach of using the teleworkability indices derived from non-Greek samples for the purposes of making inferences about the WfH amenability of jobs in Greece.

This analysis hence reveals that between 35-37% of all Greek employee jobs (affecting about 869-922k workers) can potentially be performed away from traditional office premises. Specifically, about 25.4% of Greek jobs are found to be fully teleworkable, 12% highly teleworkable, 25% little teleworkable and 37.6% fully not teleworkable. This indicates that the Greek labour market has marked scope in terms of expanding the use of remote working, considering that only 4.4% (about 110k) of employees worked from home in 2018.

For instance, the data reveal that only about 8-9% of Greek employees in potentially teleworkable jobs were exploiting this capability in the years preceding the Covid-19 crisis[24], implying that there is considerable space to further mobilise about 800-837k employees towards WfH arrangements. Annex 4 highlights that the type of occupations with greatest loss in terms of their teleworkability potential include general office clerks, teaching- and finance-related professions and other secretarial posts.

[24] Similarly, for about 2.5% of the jobs classified as non-teleworkable, individuals are found to actually WfH.

5.9 Wage effects of remote work

A final step in the analysis of this paper includes investigation of whether workers who perform their tasks at home receive a wage premium or penalty, compared to other equivalent employees who work at employers' premises[25].

Table 7 **Wages and WfH, ordered probit estimates, Greece, 2009-2018**

	(1) *Mincer*	*(2)* *full spec*	*(3)* *WfH frequency*	*(4)* *detailed occupation*	*(5)* *job tasks*
WfH	0.19***	0.10***		0.17***	0.19***
	(0.009)	(0.009)		(0.011)	(0.029)
WfH occasionally			0.21***		
			(0.011)		
WfH usually			0.16***		
			(0.014)		
Mincer worker controls	x	x	x	x	x
Job controls		x			
Job tasks					x
Industry controls		x			
Occupation controls					
-1-digit-		x			
-3-digit-				x	
Region controls		x			
Time dummies	x	x	x	x	
Observations	429,656	417,043	429,656	309,776	37,527

NB: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Col. 1-3 includes data for 2009-2018; Col. 4 for 2011-2018; Col. 5 includes data only for 2015. Col. 1 controls for gender, age bands, tenure, tenure squared, highest education, continuous learning and time dummies. Col. 2 includes full set of controls as in Table 2. Col. 4 includes 3-digit occupations. Col. 5 includes job tasks after merging the LFS data with the European Jobs Monitor task dataset at "jobs (sector-occupation)" level.
Source: Greek Labour Force Survey.

Column 1 in Table 7 shows the estimated coefficient on WfH when only the basic set of controls corresponding to a Mincer earnings specification is included. Column 2 also includes controls for job characteristics, industry and occupational dummies, as well as regional fixed effects. Column 3 also reports the coefficients when the WfH indicator is broken down into its frequency. Finally, given that the feasibility of WfH depends on the nature of the job and the work context, the wage impact of remote work is also estimated albeit with the inclusion

[25] As the income variable is not available for 2008 in the LFS dataset, the analysis in this section is performed on the 2009-2018 period.

of detailed 3-digit occupational codes as well as after controlling for the nature of a job's tasks, as described in section 5.5.

The estimations illustrate that remote work in Greece is associated with a significant monthly net earnings premium and that the effect is robust to the inclusion of a detailed set of control variables that provide a fuller description of the nature of a job's activities[26]. Other things equal, it is calculated that the marginal probability of reporting the top income decile [*Pr(income = 10)*] is about 2% higher for remote workers in Greece. Reversely, the probability of reporting the lowest 3 deciles is about 1-2% lower for stay-home workers. This positive relationship between remote work and earnings is slightly greater for those who only occasionally perform work at home.

When the Mincer earnings specification is applied to a continuous (log) net monthly earnings dependent variable (see Annex 5), the latter constructed by considering the median values of each of the take-home salary bands, it is found that Greek remote workers earn about 7% higher net monthly wages, compared to equivalent workers who work at office premises[27]. At an average net monthly salary of about EUR 1114, this implies that remote workers in Greece earn about EUR 80 more per month than equivalent office-based employees[28].

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[26] The estimated coefficients on the remaining variables reveal statistically significant effects as anticipated from the literature, namely a concave age and tenure effect, highest returns to more education and a gender wage gap. Given the stark economic crisis that affected the country, the time dummies indicate a consistently declining trend of monthly earnings that was accentuated between 2012-14. Moreover, the analysis reveals a statistically negative relationship between wages and physical tasks and autonomous and routine tasks, while intellectual and team-working tasks are associated with wage premiums. A greater intensity of working with machinery and ICT tools is also associated with higher wages. See Annex 5 for more details.

[27] This wage premium is reduced to 6% when 3-digit occupational codes are included in the regression and to 3% when a full set of job, socioeconomic and regional factors are considered. Occasional (regular) remote workers earn about 8% (5%) more monthly earnings compared to those who do not WfH.

[28] Running a Mincer earnings regression using (log) net hourly pay as dependent variable, derived by dividing individuals' monthly net earnings with their usual weekly work hours, reveals that Greek remote workers earn about 17% higher net hourly wages than equivalent office-based employees. This higher estimate reflects the lower mean hours of WfH employees. Such findings are in accordance with similar analyses in the literature, such as Irlacher and Koch (2020), who report an hourly wage premium to WfH of about 12% for German workers after accounting for narrowly defined jobs and detailed work activities

Investigating the reasons behind the higher wage premium of remote workers in Greece is outside the scope of this paper and constitutes an interesting avenue for future research. However, considering the relatively standardised and interactive task content of the jobs of remote Greek employees, as described in section 5.5. above, a possible explanation for the higher wages of remote workers over their counterparts in traditional workplaces may be unobserved productivity differences, as opposed to job competition. These may include, inter alia, a premium attached to the higher aptitude of individuals working from a distance and their ability to deploy ICT-based technologies for their work, when necessary.

6. Conclusions

The onset of the Covid-19 crisis has been accompanied by significant changes and challenges to labour markets, most notably an increasing reliance on online forms of working, taking place from a distance. While WfH was a rather limited form of work arrangement in the pre-Covid-19 era, recent estimates highlight that over a third of all jobs in advanced economies could be amenable to remote working. Such figures are likely to be an upper bound, as they capture the technical feasibility of remote work, while many organisations and individuals may decide to strike some balance between home- and office-working, or not use the WfH option even if available. Stories of several organisations shutting down their office spaces for the sake of remote work arrangements abound and several authors have argued that remote work is here to stay, due to advancements in technology and social developments, efficiency of online/social media communities and the low benefits of knowledge spillovers among knowledge workers who work in close proximity to others (Clancy, 2020).

On the other hand, others note that there have been several efforts to 'telecommute' work in the past, starting from the 1970s, that did not materialise into widespread adoption (Cappelli, 2020). As also supported by the evidence in this paper, most remote work is feasible for self-contained tasks, while due to difficulties in performance management it is dependent on high trust relations between managers and workers. Despite social distancing practices, concerns also exist about the negative impact remote work may have on teamworking and workplace innovation. Essential services and much low-wage work is also not amenable to remote work.

Greece, a country that was still bearing the brunt of its previous economic and debt crisis, entered into these challenging times with an ailing public health system, systemic and high unemployment and a labour market that was still mostly analogue as opposed to digital. While the country used the opportunity of the crisis to forcefully expand the adoption of digital technologies across many parts of its economy and society, it will require huge investment and commitment by government, organisations and individuals so that it is no longer a digitalisation laggard. The analysis in this paper has showed that up to 35-37% of all jobs in the Greek job market have high teleworkability potential.

Greek businesses, in particular smaller-sized ones, will have to embrace the WfH option as a viable and flexible option for its workforce, should they wish to remain competitive and to facilitate social distancing norms. And yet it is for such firms that the benefits of remote work may not materialise. In order to manifest into higher productivity gains, WfH requires significant investment into a higher-skilled workforce and substantial efforts to stimulate an innovation culture that supersedes the confines of physical workspaces.

Moreover, the paper draws attention to the fact that a supportive policy and regulatory environment is needed to facilitate the take-up of WfH in Greece. Such policy actions must provide stronger child care facilities and financial support to households with children, especially females employees with young children, and to those providing essential services in times of a pandemic. Striking a better work-life balance, especially for females, is also necessary to avoid stress-related negative outcomes of working atypical hours from home. Moreover, reversing the limited take-up of remote work by younger individuals and those in early career stages will require elevated trust in industrial relations in the Greek job market.

At a time where continued adherence to social distancing practices may be required over the medium-term period, extending the option to WfH for employees most likely to be affected by the consequences of Covid-19 will be key for mitigating the continued adverse consequences of the pandemic for Greece.

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Annex 1.
Descriptive statistics

Table A1.1 **Sample summary statistics**

	Mean	s.d.	Min	Max
WfH	0.039	0.193	0	1
WfH never	0.961	0.193	0	1
WfH occasionally	0.022	0.148	0	1
WfH usually	0.016	0.127	0	1
Male	0.559	0.496	0	1
Non-native	0.104	0.305	0	1
Married	0.629	0.483	0	1
Age group				
15-24	0.057	0.232	0	1
25-34	0.251	0.434	0	1
35-44	0.314	0.464	0	1
45-54	0.272	0.445	0	1
55-64	0.106	0.308	0	1
Highest education attainment				
Low	0.240	0.427	0	1
Medium	0.415	0.493	0	1
High	0.345	0.475	0	1
Child < 15				
0	0.644	0.479	0	1
1	0.190	0.392	0	1
2	0.140	0.347	0	1
3	0.026	0.160	0	1
Years of tenure	10.590	9.225	0	48
Usual weekly hours	39.031	9.236	0.5	80
Atypical hours (Cronbach alpha; z-scored)	0.000	1.000	-0.89075	1.989943
Part time	0.079	0.270	0	1
Temporary	0.122	0.327	0	1
Supervisory duties	0.114	0.317	0	1
Multiple jobs	0.018	0.132	0	1
Continuing learning activities	0.042	0.200	0	1
Labour market status before job				
Employed	0.943	0.232	0	1
Unemployed	0.042	0.201	0	1
Student	0.009	0.097	0	1
Inactive	0.006	0.075	0	1
Size of local unit				
1-10	0.354	0.478	0	1

10-19	0.149	0.356	0	1
20-49	0.118	0.322	0	1
50+	0.182	0.386	0	1
DK: <11	0.074	0.262	0	1
DK: >10	0.123	0.329	0	1
Economic activity of local unit				
Agriculture, forestry & fishing	0.025	0.155	0	1
Manufacturing (including mining)	0.125	0.330	0	1
Electricity, gas & steam	0.012	0.107	0	1
Water supply & sewerage	0.011	0.105	0	1
Construction	0.061	0.240	0	1
Wholesale and retail trade	0.152	0.359	0	1
Transportation & storage	0.049	0.215	0	1
Accommodation & food storage	0.078	0.268	0	1
ICT	0.023	0.149	0	1
Financial & insurance & real estate	0.031	0.174	0	1
Professional scientific & technical	0.031	0.173	0	1
Administrative & support service	0.023	0.151	0	1
Public administration & defence	0.140	0.347	0	1
Education	0.115	0.319	0	1
Human health & social work.	0.075	0.263	0	1
Arts, entertainment	0.013	0.115	0	1
Other service activities	0.037	0.189	0	1
Occupation				
Managers	0.016	0.126	0	1
Professionals	0.194	0.395	0	1
Technicians and associate professionals	0.103	0.304	0	1
Clerical Support Workers	0.152	0.359	0	1
Service and sales Workers	0.208	0.406	0	1
Skilled agricultural, forestry and fishing workers	0.009	0.096	0	1
Craft and related trades	0.119	0.324	0	1
Plant and machine operators and Assemblers	0.083	0.276	0	1
Elementary	0.116	0.320	0	1
Region				
East Macedonia, Thrace	0.063	0.242	0	1
Central Macedonia	0.154	0.361	0	1
West Macedonia	0.028	0.164	0	1
Thessaly	0.052	0.223	0	1
Epirus	0.057	0.231	0	1
Ionian islands	0.021	0.145	0	1
Western Greece	0.053	0.224	0	1
Peloponnese	0.057	0.232	0	1
North Aegean	0.022	0.146	0	1

South Aegean	0.028	0.164	0	1
Mainland Greece	0.056	0.231	0	1
Attica	0.332	0.471	0	1
Crete	0.078	0.268	0	1
Degree of urbanisation				
Towns/suburbs	0.247	0.431	0	1
rural	0.316	0.465	0	1
cities	0.437	.4960396	0	1
Income				
Monthly take-home income deciles	5.271	2.604	1	10
Monthly take-home salary	1114.6	581.1	200	2500

Annex 2.
Decomposition analysis

As is customary, the total difference in the incidence of remote work between the two groups is decomposed in the conventional Oaxaca manner, following estimation of equation (2) separately for the Greek and other European worker samples, as follows:

$$\overline{H}_G - \overline{H}_E = (\overline{X}_G - \overline{X}_E)\hat{\beta}_G + (\hat{\beta}_G - \hat{\beta}_E)\overline{X}_E \quad [4]$$

where the first part of the equation ('explained' or 'endowment' part) reflects the component of the average difference in remote work between the two groups attributed to differences in the means of the explanatory variables (namely, *X = t, d, j, r, T*), which are in turn weighed by the estimated coefficients $\hat{\beta}$ following estimation of equation (2) for the Greek sample only. It measures the relative importance of observable differences in job tasks and other individual and job characteristics between the two sets of workers.

The second term (i.e. the 'unexplained' part) refers to the part of the gap in remote working that arises because of the differential manner with which different employee characteristics contribute to the probability of WfH. In this respect, it provides an indication of the extent to which the Greek and other European labour markets impose constraints on the ability of workers to engage in remote work given their observable characteristics. The latter may arise either because of discriminatory practices in the job market, or differences in work organisation and other institutional factors. Of particular interest for the purposes of this study is the extent to which the Greek and non-Greek samples deviate in terms of their measured task content of their jobs.

What Table A2 reveals is that the observed difference in the incidence of remote work between Greeks and other European workers can be attributed predominantly to their difference in the way their observed characteristics facilitate a higher probability of WfH. By contrast, it is found that the difference in endowments between the two groups accounts for a relatively small proportion of their difference in shares engaging in remote work. Significant deviations in endowments between Greeks and other European workers are only observed in the variables part-time, atypical hours and accommodation and food service (industry), which

are characterised by a higher incidence in the Greek sample, while in other European labour markets remote workers are more likely to have supervisory responsibilities, be employed in micro-sized firms (1-10 employees) and belong to non-professional occupational groups.

Table A2.1: **Decomposition analysis of WfH differences between Greek and other European employees, 2018**

Raw differential (R) {E+C+U}:	-59.5
Amount attributable:	-84.7
- due to endowments (E):	-3.0
- due to coefficients (C):	-81.7
Shift coefficient (U):	25.2
Adjusted differential (D) {C+U}:	-56.5
Endowments as % total (E/R):	5.1
Unexplained as % total (D/R):	94.9

NB: Based on Oaxaca-Blinder decomposition of the WfH incidence between Greeks and other European workers; separate probit regressions are first run for each group with WfH as dependent variable on the full set of controls as in Table 2. Dummies variables have been transformed to reflect deviations from the 'grand mean'.
Source: EULFS

Annex 3.
Classification of “essential” occupations

To classify the jobs of Greek employees according to whether they involve the provision of ‘essential’ services during a pandemic, the following detailed occupational and industrial codes have been used:

Table A3.1: **Classification scheme for identifying essential jobs**

ISCO08 3-digit code	**Occupational group**	**NACE Rev.2 2-digit code**	**Economic activity**
221	Medical doctors	Q	Human health & social work
222	Nursing and Midwifery Professionals	Q	Human health & social work
315	Ship and Aircraft Controllers and Technicians	Q	
321	Medical and Pharmaceutical Technicians	Q	Human health & social work
322	Nursing and Midwifery Associate Professionals	Q	Human health & social work
522	*Shop salespersons*	*G*	*Wholesale & retail trade*
523	*Cashiers and Ticket Clerks*	*G*	*Wholesale & retail trade*
524	*Other Sales Workers*	*G*	*Wholesale & retail trade*
532	Personal Care Workers in Health Services		
541	Protective Services Workers	O, N, Q	Public administration & defence; Administrative & support services; Human health & social work
611	Market Gardeners and Crop Growers		
612	Animal Producers		
613	Mixed Crop and Animal Producers		
622	Fishery Workers, Hunters and Trappers		
751	Food Processing and Related Trades Workers		
816	Food and Related Products Machine Operators		
831	Locomotive Engine Drivers and Related Workers		
832	Car, Van and Motorcycle Drivers		
833	Heavy Truck and Bus Drivers		
911	Domestic, Hotel and Office Cleaners and Helpers		
921	Agricultural, Forestry and Fishing Labourers		
933	Transport and Storage Labourers		
941	Food Preparation Assistants		
961	Refuse Workers		
0	Armed Forces		

Annex 4.
Teleworkable occupations in Greece and "lost potential"

Table A4.1 **Distribution of Greek employees across occupations with full or high "WfH technical feasibility" and low incidence of "actual WfH"**

Occupation	*Freq*	*Percent*
General Office Clerks	170.5378	20.37
Primary School and Early Childhood Teachers[(h)]	65.83671	7.86
Secondary Education Teachers	57.47853	6.87
Finance Professionals	51.47156	6.15
Client Information Workers	51.33367	6.13
Financial and Mathematical Associate Professionals	40.99653	4.9
Secretaries (general)	37.92226	4.53
Administrative and Specialized Secretaries	34.4462	4.11
Other Teaching Professionals[(h)]	31.87285	3.81
Tellers, Money Collectors and Related Clerks[(h)]	31.50897	3.76
Social and Religious Professionals[(h)]	26.59	3.18
Numerical Clerks	26.56789	3.17
Other Clerical Support Workers[(h)]	22.22941	2.66
Software and Applications Developers and analysts	19.9796	2.39
ICT Operations and User Support Technicians[(h)]	19.16059	2.29
Administration Professionals[(h)]	16.13869	1.93
Sales, Marketing and Public Relations Professionals	13.11113	1.57
Government regulatory associate professionals[(h)]	12.24364	1.46
Other Health Professionals[(h)]	11.61799	1.39
Legal Professionals	10.66305	1.27
Sales and Purchasing Agents and Brokers	10.14796	1.21
Professional Services Managers	8.62549	1.03
University and Higher Education Teachers[(h)]	8.19005	0.98
Authors, Journalists and Linguists	7.633077	0.91
Vocational Education Teachers	6.9227	0.83
Travel Attendants, Conductors and Guides[(h)]	6.81191	0.81
Business Services and Administration Managers	6.258123	0.75
Keyboard Operators	5.586323	0.67
Sales, Marketing and Development Managers	5.20207	0.62
Legal, Social and Religious Associate Professionals	3.737652	0.45
Hotel and Restaurant Managers[(h)]	2.966725	0.35
Mathematicians, Actuaries and Statisticians	2.492598	0.3
Other Services Managers[(h)]	2.02696	0.24
Managing Directors and Chief Executives	1.809725	0.22
Business Services Agents	1.822695	0.22
Life Science Technicians and Related Associate Professionals[(h)]	1.7101	0.2
Librarians, Archivists and Curators	1.265247	0.15
Legislators and Senior Officials	0.9715	0.12
Database and Network Professionals	0.876185	0.1
ICT Professionals	0.495845	0.06
Total	837.26	100

NB: Table includes, in order of prevalence, the list of 3-digit occupational groups identified as "teleworkable" but with a high share of workers who do not WfH. [(h)] indicates occupations with high teleworkability, the remaining are fully teleworkable.
Source: Greek Labour Force Survey; Sostero et al. (2020)

Figure A4.1 **Teleworkability of occupations, Greece**

NB: Based on a WfH amenability index as derived by Hatayama et al. (2020), namely combination of groups of job tasks (physical and manual, face to face, low ICT use at work, low ICT at home) within detailed occupational groups. Higher values indicate a greater amenability of jobs to WfH. Caution is needed as some mean WfH index values are based on very small samples.
Source: Author's own analysis using Greek sample of PIAAC data (2014/15), N = 1467 employees aged 16-65.

Annex 5.
Additional empirical output

Table A5.1 **Share of Greek employees WfH (occasionally or usually), 2008-2018**

	Never	Occasionally	Usually	WfH	N
Total	96.14%	2.23%	1.63%	3.86%	582,592
Native status					
Non-native	96.62%	1.90%	1.48%	3.38%	216,327
Native	95.85%	2.43%	1.72%	4.15%	366,265
Marital status					
Married	96.62%	1.90%	1.48%	3.38%	216,327
Non-married	95.85%	2.43%	1.72%	4.15%	366,265
Children<15					
0	96.23%	2.15%	1.61%	3.77%	374,977
1	95.96%	2.38%	1.66%	4.04%	110,669
2	96.11%	2.31%	1.59%	3.89%	81,649
3	95.31%	2.76%	1.94%	4.69%	15,297
Labour market status before job					
Employed	96.03%	2.30%	1.67%	3.97%	549,348
Unemployed	98.08%	1.14%	0.78%	1.92%	24,484
Student	97.53%	1.16%	1.31%	2.47%	5,500
Inactive	97.42%	1.14%	1.44%	2.58%	3,260
Part-time job					
Yes	96.97%	1.63%	1.40%	3.03%	46,174
No	96.07%	2.29%	1.65%	3.93%	536,418
Temporary contract					
Yes	97.15%	1.53%	1.32%	2.85%	71,051
No	96.00%	2.33%	1.67%	4.00%	511,540
Supervisory duties					
Yes	93.20%	3.90%	2.90%	6.80%	65,930
No	96.52%	2.02%	1.47%	3.48%	514,275
Weekly hours					
< 25	89.77%	5.91%	4.32%	10.23%	67,832
26-39	92.63%	4.41%	2.96%	7.37%	67,424
>39	97.63%	1.35%	1.02%	2.37%	447,336
Years of tenure					
< 3	97.21%	1.56%	1.22%	2.79%	172,142
3-10	96.57%	2.02%	1.41%	3.43%	168,654
10-17	95.73%	2.51%	1.75%	4.27%	106,899
>17	94.55%	3.14%	2.31%	5.45%	134,897
Economic activity of local unit					
Agriculture, forestry & fishing	99.39%	0.43%	0.18%	0.61%	14,349

Mining	98.72%	0.81%	0.46%	1.28%	3,449
Manufacturing	98.65%	0.86%	0.49%	1.35%	69,207
Electricity, gas & steam	98.36%	1.05%	0.59%	1.64%	6,786
Water supply & sewerage	99.00%	0.56%	0.45%	1.00%	6,479
Construction	99.13%	0.54%	0.34%	0.87%	35,675
Wholesale & retail trade	98.86%	0.63%	0.51%	1.14%	88,584
Transportation & storage	98.29%	1.07%	0.63%	1.71%	28,293
Accommodation & food storage	98.84%	0.69%	0.46%	1.16%	45,511
ICT	94.14%	3.86%	2.01%	5.86%	13,164
Financial & insurance	97.51%	1.77%	0.71%	2.49%	17,939
Real estate	97.72%	2.28%	0.00%	2.28%	307
Professional scientific & technical	93.71%	4.49%	1.80%	6.29%	18,032
Administrative & support service	98.11%	1.46%	0.43%	1.89%	13,661
Public administration & defence	97.61%	1.36%	1.04%	2.39%	81,304
Education	81.75%	10.41%	7.84%	18.25%	66,838
Human health & social work	97.98%	1.46%	0.57%	2.02%	43,535
Arts and entertainment	97.78%	1.34%	0.88%	2.22%	7,758
Other service activities	97.47%	1.45%	1.08%	2.53%	9,514
Activities as households	92.72%	0.56%	6.72%	7.28%	11,880
Degree of urbanisation					
Cities	95.67%	2.35%	1.98%	4.33%	254,703
Towns/suburbs	96.05%	2.42%	1.53%	3.95%	143,775
Rural	96.86%	1.93%	1.21%	3.14%	184,114
Income decile					
1	97.73%	1.07%	1.20%	2.27%	32,946
2	98.09%	0.93%	0.98%	1.91%	45,912
3	97.99%	1.06%	0.95%	2.01%	51,117
4	98.02%	1.01%	0.97%	1.98%	46,272
5	97.47%	1.55%	0.99%	2.53%	47,746
6	96.53%	2.03%	1.44%	3.47%	51,421
7	95.10%	2.97%	1.93%	4.90%	58,390
8	93.56%	4.00%	2.44%	6.44%	44,548
9	92.94%	4.01%	3.05%	7.06%	23,889
10	90.83%	4.67%	4.49%	9.17%	27,416

Source: Greek Labour Force Survey

Table A5.2. **Wages and WfH, ordered probit regression, marginal effects**

Income deciles	dy/dx	Std. Err	z	P>z	[95% Conf. Interval]	
1	-0.022036	0.001026	-21.47	0.00	-0.024048	-0.020024
2	-0.016478	0.000769	-21.42	0.00	-0.017986	-0.01497
3	-0.01156	0.00054	-21.41	0.00	-0.012618	-0.010502
4	-0.00554	0.000259	-21.37	0.00	-0.006048	-0.005032
5	-0.001059	5.44E-05	-19.47	0.00	-0.001165	-0.000952
6	0.004075	0.000193	21.16	0.00	0.0036977	0.004453
7	0.011215	0.000524	21.42	0.00	0.0101887	0.012242
8	0.013491	0.000629	21.46	0.00	0.0122591	0.014723
9	0.009507	0.000444	21.43	0.00	0.0086376	0.010377
10	0.018384	0.000858	21.43	0.00	0.0167025	0.020065

NB: Marginal predictions of ordered probit regression outcomes based on delta-method.
Source: Greek Labour Force Survey

Table A5.3 **Wages and WFH, OLS estimates, Greece, 2009-2018**

	(1) *Mincer spec*	(2) *Full spec*	(3) *WfH occasionally*	(4) *WfH usually*	(5) *3-digit ISCO*	(6) *Job tasks*
WfH	0.07***	0.03***	…	…	0.06***	0.07***
	(0.004)	(0.003)			(0.004)	(0.013)
WfH occasionally			0.08***			
			(0.005)			
WfH usually				0.05***		
				(0.006)		
Male	0.24***	0.12***	0.24***	0.24***	0.15***	0.19***
	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.006)
Age: 25-34	0.19***	0.08***	0.19***	0.19***	0.19***	0.16***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.006)	(0.018)
Age: 35-44	0.29***	0.14***	0.29***	0.29***	0.29***	0.30***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.006)	(0.018)
Age: 45-54	0.30***	0.18***	0.30***	0.30***	0.32***	0.33***
	(0.005)	(0.004)	(0.005)	(0.005)	(0.006)	(0.018)
Age: 55-64	0.28***	0.18***	0.28***	0.28***	0.31***	0.33***
(ref: 15-24)	(0.005)	(0.004)	(0.005)	(0.005)	(0.006)	(0.020)
Education: Medium	0.17***	0.06***	0.17***	0.17***	0.08***	0.13***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.009)
Education: High	0.46***	0.16***	0.46***	0.47***	0.21***	0.30***
(ref: Low)	(0.002)	(0.002)	(0.002)	(0.002)	(0.004)	(0.011)
Continuing learning activities	-0.01***	0.00	-0.01**	-0.01**	-0.05***	-0.09***
	(0.004)	(0.003)	(0.004)	(0.004)	(0.005)	(0.016)
Years of tenure	0.04***	0.02***	0.04***	0.04***	0.04***	0.04***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Years of tenure squared	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Non-native		-0.09***				
		(0.003)				
Married		0.05***				
		(0.002)				
Child15: 1		0.02***				
		(0.002)				

Child15: 2		0.04***				
		(0.002)				
Child15: 3		0.05***				
(ref: 0)		(0.004)				
Multiple jobs		0.02***				
		(0.006)				
Last status: unemployed		-0.11***				
		(0.004)				
Last status: student		-0.19***				
		(0.009)				
Last status: inactive		-0.10***				
(ref: employed)		(0.010)				
Part-time job		-0.75***				
		(0.004)				
Temporary		-0.07***				
		(0.003)				
Supervisor		0.16***				
		(0.002)				
Firm size: 11-19		0.07***				
		(0.002)				
Firm size: 20-49		0.11***				
		(0.002)				
Firm size: >50		0.17***				
		(0.002)				
Firm size: DK<11		0.02***				
		(0.003)				
Firm size: DK>10		0.09***				
(ref: 1-9)		(0.002)				
Usual weekly hours		0.01***				
		(0.000)				
Atypical hours		0.02***				
		(0.001)				
Urban: towns		-0.02***				
		(0.002)				
Urban: rural		-0.01***				
		(0.002)				
Physical tasks						-0.23***
						(0.056)
Intellectual tasks						0.89***
						(0.081)
Social tasks						-0.03
						(0.057)
Methods: autonomy						-0.72***
						(0.042)
Methods: teamwork						0.21***
						(0.019)
Methods: routine						-0.18***
						(0.030)
Tools: machines						0.58***
						(0.042)
Tools: ICT						0.69***
						(0.039)
2010	-0.01***	-0.00**	-0.01***	-0.02***	…	
	(0.002)	(0.002)	(0.002)	(0.002)		
2011	-0.06***	-0.04***	-0.06***	-0.06***	…	
	(0.003)	(0.002)	(0.003)	(0.003)		
2012	-0.18***	-0.15***	-0.18***	-0.18***	-0.12***	
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	
2013	-0.30***	-0.26***	-0.30***	-0.30***	-0.24***	
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	
2014	-0.30***	-0.24***	-0.30***	-0.30***	-0.23***	

	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	
2015	-0.09***	-0.03***	-0.09***	-0.09***	-0.02***	x
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	
2016	-0.12***	-0.06***	-0.12***	-0.12***	-0.05***	
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	
2017	-0.13***	-0.07***	-0.13***	-0.13***	-0.06***	
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	
2018	-0.13***	-0.08***	-0.13***	-0.13***	-0.06***	
(ref: 2009)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	
Industry controls		x				
Occupation controls						
- 1-digit -		x				
- 3-digit -					x	
Regional controls		x				
Constant	6.03***	6.20***	6.03***	6.03***	6.51***	5.74***
	(0.005)	(0.010)	(0.005)	(0.005)	(0.009)	(0.041)
Observations	429,656	417,043	429,656	429,656	309,776	37,527
R-squared	0.35	0.62	0.35	0.35	0.44	0.40

NB: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; The dependent variable is a continuous measure of log monthly take-home pay derived by using the median values of the income deciles available in the survey.
Source: Greek Labour Force Survey