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Gender differences in the effect of teleworking on job loss during the COVID-19 pandemic in Spain

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ABSTRACT

This paper analyzes gender differences regarding the effect of the COVID-19 pandemic on the likelihood of job loss, differentiating between employment transitions towards unemployment, inactivity and furlough schemes, and the role that teleworking may have had as a protector of job loss in Spain. Based on more than 1,800 types of jobs defined by occupation and economic activity combinations, we propose an Evidence-Based Teleworking Index that considers the intensity of telework use in a given type of job, but also reflects the actual ability of firms to adapt to telework. Using multinomial probit models with sample selection, we found that more women than men suffered job loss during the pandemic. The findings also confirm that the ability to telework has acted as a potential cushion against employment losses, but the effect has been mainly driven by males. The shielding effects of telework have been especially relevant in reducing transitions from employment to furlough schemes, while the power of telework to protect against inactivity and unemployment seems to be much more modest, even during the pandemic.

1. Introduction

The economic downturn caused by the COVID-19 outbreak has had serious impacts on labor markets around the world as well as substantial implications for gender equality, both during the downturn and the subsequent recovery. According to the International Labour Organization (2021), employment around the world was estimated to have declined in 2020 by 114 million jobs relative to the pre-crisis employment level in 2019. Two important aspects of this global employment loss are worth noting. First, unlike previous crises, most of these losses have translated into increased inactivity rather than unemployment (81 million people shifting to inactivity alongside 33 million unemployed). Second, unlike the Great Recession of 2008–2013, where male-dominated industries such as construction and manufacturing were the most severely affected, this dangerously unique COVID-19 economic crisis has had a harsher impact on economic sectors (hospitality, personal services, leisure activities, etc.) that comprise a sizeable share of female employment (Alon et al., 2020; Adams-Prassl et al., 2020).[1] Moreover, women have shouldered more of the increased childcare and/or household responsibilities caused by the pandemic (Sevilla and Smith, 2020; Farré et al., 2021; Meraviglia and Dudka, 2021; del Boca et al., 2020, 2022; Berniell et al., 2023). This has meant that women bore the brunt of the impact of the pandemic on the labor market, with employment losses that stand at 5.0% versus 3.9% for men around the world in 2020 (ILO, 2021).

In Spain, another important aspect that has characterized the economic recession caused by COVID-19 is that many employers made use of furlough/short time working options (ERTEs by their Spanish acronym) to reduce costs in the face of slackened demand and to avoid the closure of their businesses. Around 3.6 million employees in Spain were placed on the ERTE furlough scheme when the coronavirus pandemic hit (Ministry for the Inclusion, Social Security and Migration). However, an important factor that might have cushioned the negative effects of the pandemic in the labor market has been the ability to work from home. Faced with the closure of economic activity, teleworking became the mode of working for millions of workers (Sostero et al., 2020). This telework revolution has been a "silver lining" that might not only have contributed to mitigating job losses but also mitigated the increased gender inequalities in this respect.

The contribution of this research to the vast economics literature that

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[1] Other studies focused on other pandemics also found an increase in the gender gap in unemployment in the years following their onset (see Brzezinski, 2021).

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has emerged in response to the pandemic is twofold. First, we estimate the effect of the COVID-19 pandemic on job losses in Spain and study to what extent telework may have helped to mitigate the risk of employment loss. We differentiate between transitions from employment to furlough schemes, unemployment and inactivity, and potential gender differences in this regard.[2] The interest in Spain stems from the fact that the country remained under the strictest lockdown in Europe, with nationwide restrictions until June 2020. As a result, Spain is the European country that shed most jobs due to the pandemic. According to the Spanish Labor Force Survey, in the fourth quarter of 2020, Spain's labor market was still feeling the strain with 303,000 more people out of the labor force since the first restrictions were introduced in March 2020. On February 2021, registered unemployment steadily rose to over four million for the first time in five years, and nearly 859,000 people were still on ERTE furlough schemes.[3] Moreover, the labor market recovery has been much slower in Spain than in the rest of Europe. The number of people aged 16–64 years out of employment (unemployed or inactive) started to decrease with respect to pre-pandemic levels in the second quarter of 2022, while Europe began to recover almost one year earlier (Eurostat, 2022).

Second, to study the role of teleworking on joblessness we propose an *Evidence-Based Teleworking Index* (EBTI) for Spain for more than 1,800 types of jobs defined jointly by occupation and economic activity[4] at a very disaggregated level (2-digit). To date, teleworkable indicators developed for the European case have been based on the task-based teleworkable indicator proposed by Dingel and Neiman (2020) for the American case using the Occupational Information Network Database (O*NET) (Anghel et al., 2020; Boeri et al., 2020; Bras and Schaefer, 2020; Brussevich et al., 2020; Palomino et al., 2020). Although O*NET provides extensive information on the tasks performed in a wide number of occupations, its main limitation is that it was developed for the US and occupational tasks are not necessarily equivalent to those in Europe.[5] There are additional limitations, since there is no unique correspondence between the 2010 Standard Occupational Classification System (SOC2010) and the 2008 International Standard Classification of Occupations (ISCO-08) and subsequently the Spanish National Classification of Occupations 2011 (CNO-2011). As is well known, the transfer of occupations from one classification to another leads to the loss of information at each stage of the transformation and introduces unavoidable biases (see Fernández Álvaro, 2018; Palomino et al., 2020). For the purposes of this study, the teleworkable indicator of Dingel and Neiman (2020) presents an additional limitation as it is based on pre-pandemic information.

An important differentiation of the teleworking index proposed in this article is that is based on actual evidence of "working from home" observed during the first year of the pandemic (2020) when telework reached its maximum peak in Europe and Spain. The main advantage of using an evidence-based approach is that it not only allows considering the teleworkability of the tasks associated with a given occupation and economic activity, but also reflects the actual ability of firms to adapt to telework. That is, a given "job" could be considered teleworkable from a theoretical point of view (because of the tasks associated with the job), but when put into practice taking into account the specific characteristics of the firm (its size, technological development, type of customers, the region where it is located, etc.), the reality may be different. Heggeness and Suri (2021) compared the results from the classification of occupations of Dingel and Neiman (2020) with actual evidence of working from home during 2020 in the US and found a good match for around 78% of individuals who said they were teleworking due to COVID-19, but for those who said they were not teleworking, the match was lower than expected. As pointed out by Brussevich et al. (2020), there is substantial variation in workers' ability to work remotely by country, and emerging market economies have significantly lower teleworkability indices than advanced economies. Dingel and Neiman (2020) also found high heterogeneity across cities. An additional advantage of the proposed index is that it can be easily replicated to other countries, thus facilitating international comparisons.

We exploit cross-sectional microdata from the annual sub-sample of the Spanish Labor Force Survey (EPA) for 2019 and 2020. This survey contains very detailed information on occupations and economic activities as well as information on working from home, allowing us to construct the EBTI. Moreover, given that it includes retrospective information about respondents' labor market situation one year before the interview, the probability of job loss (transition from employment to non-employment situations)[6] can also be analyzed. Finally, the dataset includes family characteristics that are relevant for the study of gender differences, such as having children and children's ages.

Based on this database, we estimate the probability of job loss before and during the pandemic and analyze whether there have been significant gender differences. Moreover, we examine to what extent telework reduces the risk of job loss, and whether it has mitigated the unprecedented job destruction suffered by the Spanish labor market due to the COVID-19 pandemic. Controlling for selection into employment, we find that the pandemic has induced higher probabilities of employment losses, which have mainly occurred towards furlough schemes (10.7 percentage points, pp hereafter). Transitions to inactivity are of lower magnitude (1.4 pp) and transitions to unemployment are negligible (around 0.7 pp). We observe that females experienced an additional negative effect regarding the probability of remaining employed, which is completely absorbed by the extra effect of transitioning to an ERTE furlough scheme.

In line with Dingel and Neiman (2020) and Angelucci et al. (2020), our results confirm that the ability to telework has acted as a potential cushion against employment losses. Nonetheless, the shielding effects of telework have been especially relevant in reducing only the transitions from employment to ERTEs, while the power of telework to protect against inactivity, especially unemployment, seems to be insignificant, even during the pandemic. By gender, we find that those effects are only present in the case of males.

The paper is organized as follows. Following the introduction, Section 2 reviews the literature on labor transitions during the COVID-19 pandemic and the incidence of telework. Section 3 describes the dataset and the main variables. Section 4 presents the empirical model and the main results are described in Section 5. Section 6 concludes.

2. Background

In contrast to the 2008 global financial crisis, the COVID-19 crisis affected labor markets worldwide, resulting in greater job losses and unemployment hikes everywhere (ILO Monitor 2021). According to Eurostat, employment in Spain decreased by 5.5% in the second quarter of 2020 compared with the previous quarter.[7] By way of comparison, the

[2] Dolado et al. (2020) examined labor transitions during the first wave of the pandemic and noted that outflows from employment to non-employment reached historical highs in 2020. Q2, practically doubling those in 2019. Q2, and exceeding by far those during the Great Recession.

[3] National Public Employment Service and Social Security Data (Ministry for the Inclusion, Social Security and Migration) respectively.

[4] "Industry" is the term used in the US to refer to economic activities. However, "economic activity" is the official term used in Eurostat. We will elaborate more on this later on in Section 3.2.

[5] The European Commission and the Cedefop has developed the European Skills, Competences, Qualifications and Occupations (ESCO) dataset. See European Commission (2021) and https://esco.ec.europa.eu/es.

[6] The EPA also provides longitudinal data. Unfortunately, information on occupations and economic activities is restricted to only ten categories and it does not offer information on family characteristics. See Section 3.

[7] With respect to 2019. Q2, the figure would have been 6 %.

employment destruction rate was 1.6% in France and 1.5% in Italy. Moreover, a considerable amount of these employment losses translated into transitions out of the workforce – according to EPA – which rose from 16.5 million to 17.6 million in the second quarter of 2020. Nonetheless, the impact of the pandemic in terms of employment losses has been partially mitigated by the activation of employment protection mechanisms.[8] As a result, according to social security data, in April 2020, 3.58 million people were enrolled in furlough schemes (ERTEs).[9] If this figure were added to the total amount of employment losses, the "full effective work" would have decreased by 5.5 million people in the second quarter of 2020 relative to the previous quarter. By December 2020, ERTEs still covered 702,000 workers.

The burden of the pandemic has fallen disproportionally on Spanish women due to several factors. First, like other Mediterranean countries, Spain is characterized by higher shares of employment in female-dominated sectors that have been heavily hit by the lockdown. According to Hupkau and Victoria (2020), 29% of Spanish women worked in locked-down sectors compared to 21% of men. Thus, the more restrictive lockdown measures adopted in Spain, together with the country's employment and economic reliance on such specialized sectors, might have exacerbated the negative consequences of the pandemic on women's employment losses. Second, the early stage of the pandemic introduced an unprecedented context characterized by the lack of both formal and informal childcare provision. Unlike other European countries, such as the UK and Germany where childcare facilities and schools remained open during lockdown for workers employed in essential services, this was not an option in Spain. Given that women had to bear the brunt of extra childcare and housework caused by the lockdown, it is likely that employment losses were higher among female workers. In this regard, there is evidence that the probability of being inactive has increased more for women than for men. Dolado et al. (2020) analyzed labor flows during the first wave of the pandemic using EPA data and multinomial logit models and observed that women have a greater propensity to transition into inactivity, but found no statistically significant gender differences in transitions to ERTEs or unemployment. Hupkau and Ruiz-Valenzuela (2022) exploited transversal data from the EPA until 2021.Q1 using logit models and noted that the likelihood of inactivity among women increased relatively more than that of males, but only during the second quarter of 2020. Similar results were also found by Lariau and Liu (2022).

However, the ability to work from home may have cushioned the negative effects of the pandemic on gender inequalities in employment loss. Despite the fact that teleworking has been gaining momentum worldwide for a decade, with an increase of 3 pp on average in EU countries from 2009 to 2018 (1.7 pp in Spain, according to Anghel et al., 2020), in 2018 still fewer than one in twenty employees in the EU reported working from home regularly, and less than one in ten occasionally (Sostero et al., 2020), with similar patterns by gender.

The onset of the pandemic unleashed the potential for a large increase in telework. While in 2019 only 4.8% of Spanish workers and 5.4% of EU workers worked at home regularly (Eurostat, 2021), evidence based on an e-survey conducted by Eurofound estimated that the percentage of people working exclusively from home rose to 40% in the early stage of the pandemic in France, Spain, Italy, and Ireland, and more than 50% in Belgium (Ahrendt et al., 2020). This sharp increase has been characterized by gender inequality, with a larger share of women than men in the EU27 (45% vs. 30%) being in teleworkable occupations since the onset of the pandemic (European Commission, 2020).

Telework might have been crucial in alleviating the effects of the pandemic, both in terms of job destruction and gender inequality, for several reasons. On the one hand, with respect to the protective effect against job destruction, recent evidence suggests that sectors with a higher fraction of workers who cannot work remotely experienced significantly larger declines in employment during the pandemic than sectors where more of the workforce can perform tasks remotely (Adams-Prassl et al., 2022; Papanikolaou and Schmidt, 2022). The reasoning behind this might be that teleworkability played a relevant role in determining whether workers could maintain their productivity during the pandemic and provided workers greater scheduling flexibility which helps them alleviate the work–family conflict (Choudhury et al., 2020). In this regard, Barrero et al. (2020) observed from workers' responses that 85% of teleworkers in the US were at least as efficient working at home during the pandemic as they had been when working on employer premises. For the UK, using firms' responses, Gascoigne (2021) showed evidence that homeworking during the pandemic had no detrimental impact on productivity for a non-negligible number of businesses, and in some cases productivity even improved. Finally, some study surveys suggest a positive experience on the work-life balance of working remotely from home in response to the coronavirus.[10] In contrast, other studies highlighted that the protective effect of telework has not been equal for all workers. In a study for the American case, Heggeness and Suri (2021) pointed out that highly educated mothers in telework-compatible occupations reduced their labor force participation and increased leave from work to avoid the stress of additional childcare responsibilities during work hours.

Moreover, it is likely that telework has helped to reduce gender inequality in labor market outcomes via two means: i) the higher telework rate among female workers (endowment effect); and ii) the stronger marginal effect of telework on female workers (coefficient effect). Although female workers in Spain have been harder hit by the pandemic due to the above reasons, evidence confirms the predominance of men in non-teleworkable jobs (Hupkau and Victoria, 2020). This would support the endowment effect. Thus, until the lockdown measures were relaxed and activity in male-dominated sectors such as construction and manufacturing returned to normal, it is likely that male workers were significantly affected by the crisis.

In sum, an empirical analysis thus becomes necessary to disentangle the puzzle of whether telework has really cushioned the gender inequalities caused by the pandemic in terms of employment losses. An important challenge to this aim is to discern the type of jobs that can be done from home from those that cannot. In this respect, researchers have made significant efforts to assess which occupations can be teleworked (Adams-Prassl et al., 2020; Boeri et al., 2020; Brussevich et al., 2020; Dingel and Neiman, 2020; Koren and Pető, 2020; Leibovici et al., 2020; Mongey et al., 2021). An important contribution is the work of Dingel and Neiman (2020). Using data from O*NET that contains occupation-specific descriptors on almost 1,000 occupations, these authors classified the viability of working from home for all these occupations in the US. Koren and Pető (2020) also used O*NET to construct an index that shows how important physical presence is to perform a given job.

Also for the US economy, Leibovici et al. (2020) used O*NET to characterize contact-intensive occupations that were relatively more likely to be affected by the COVID-19 pandemic and Mongey et al. (2021) constructed measures of an occupation's potential exposure to social distancing measures based on the ability to conduct that job from

[8] Dolado et al. (2020) pointed out that the unemployment rate would have increased by over 40 % in 2020. Q2 if those covered by ERTEs and those who did not search for work but were available to work were added to the unemployed.

[9] This amount of people enrolled in ERTE is monthly taken.

[10] In a FlexJobs survey among 4000 respondents working from home, 73 % said that working from home improved their work-life balance. López-Igual and Rodríguez-Modroño, 2021 analyzed 35,700 workers from the European Working Conditions Survey and concluded that occasional teleworkers are the subgroup with the best job quality, while highly mobile teleworkers display the worst job quality and work-life balance.

home and the degree of physical proximity to others the job requires. For Italy, Boeri et al. (2020) developed a "work from home" index using an elaborated matching between O*NET data and Italian data from both the Italian Survey of Professions (ICP, the Italian equivalent of O*NET), and the Italian Labor Force Survey. Also for Italy, and using the ICP and the European Working Conditions survey, Sostero et al. (2020) developed a technical teleworkability index. They followed a similar approach to Dingel and Neiman (2020) to assign teleworkability values to over 130 occupations (ISCO-08 3-digit) based on the conceptual framework and taxonomy of tasks for occupational analysis proposed by Fernández-Macías and Bisello (2020). Brussevich et al. (2020) constructed a teleworkability index for 35 advanced and emerging market economies based on the occupation-level index derived by Dingel and Neiman (2020) and data from the OECD's Programme for the International Assessment of Adult Competencies (PIAAC). For European countries, Palomino et al. (2020) adapted Dingel and Neiman's (2020) teleworking indicator to the European context at the ISCO-08 3-digit level and adjusted it to the type of economic activity (essential or closed) at the 1-digit level to construct a Lockdown Working Ability index that summarizes each worker's capacity to remain active under the lockdown.[11] For Spain, Anghel et al. (2020) also adapted Dingel and Neiman's teleworking indicator to the three-digit CNO-2011 by computing arithmetic averages of Dingel and Neiman's indicator for all six-digit SOC2010 occupations included in each of the three-digit CNO-2011 occupations.

However, Dingel and Neiman's indicator exhibits two important limitations to evaluate teleworkability and hence its role in alleviating the impact of the COVID-19 pandemic on the Spanish labor market. First, it is based on O*NET, so the results obtained using this indicator do not necessarily reflect the reality of Spain. Second, it is constructed using pre-pandemic data. An important contribution of this paper is that we propose a teleworking indicator that aims to overcome these two problems. Two important differences between our indicator with respect to Dingel and Neiman's are worth mentioning. First, we measure telework by jointly considering the occupation and the economic activity, because the same occupation can be more or less teleworkable depending on the economic sector. Second, as our proposed indicator is measured in the year 2020 when many activities were suspended due to the state of emergency, the indicator itself jointly reflects the possibilities of teleworking even in economic activities that were declared non-essential and suspended.

3. Data and descriptive analysis

The data used for this study were drawn from the annual sub-sample of the Spanish Labor Force Survey (EPA). The EPA is the most important statistical database for analyzing the labor market in Spain. It is conducted on a sample of around 60,000 households per quarter and involves approximately 180,000 individuals. Each household in the survey remains for a period of six quarters, and in the last interview (called "EPA's annual sub-sample") respondents are asked to complete a more extensive questionnaire. For the purposes of this study, the last questionnaire provides information on two relevant factors. First, it includes retrospective information about respondents' labor market situation one year before the interview (specific labor market situation in addition to occupation and economic activity). Second, it includes information on working from home, which allows constructing the Evidence-Based Teleworking Index (EBTI) as will be explained in Section 3.2. Moreover, information on occupations and economic activities is available at the 3-digit level for the reference week as well as the year before the interview. The EPA also provides longitudinal data (EPA-Flows). Nevertheless, to protect respondents' anonymity, the Spanish Statistical Office (INE) limits the level of detail in key variables for the aims of the paper. In particular, information on occupations and economic activities is restricted to only ten categories and therefore does not allow us to consider the high heterogeneity of teleworking capability across occupations and economic activities or to distinguish between essential and non-essential activities.[12] Second, the EPA-Flows does not include household information and therefore does not allow considering family characteristics such as having children.

The descriptive analysis presented in Section 3.1. and the econometric analysis of Section 4 is based on a subsample of 83,438 adults aged 16–64[13] years (41,250 for the year 2019 and 42,188 for the year 2020). Taking into account that the annual sub-sample of the EPA collects data across the four quarters, and the first quarter of 2020 only covers 15 days of the lockdown period, we exclude individuals interviewed in the first quarter of 2020 as well as the first quarter of 2019 to select a comparable period. As can be seen in Table 1, 52.6% are women and 71.0% are aged 35–64 years, but this figure is slightly higher among women (72.6%). A total of 37.2% have tertiary education (39.8% among women). Of the sample, 50.9% are married (52.5% among women) and 47.2% have children. Individuals whose partner is inactive account for 5.8% of the sample, with large gender differences (only 2.5% of women have an inactive partner, while the figure is 9.4% for males). Most individuals in the sample were employed in *t-1*, but the percentage of non-employed individuals is much higher among women (20.1% compared to 11.2% among men). Among those employed in period *t-1*, the majority were private employees followed by those employed in the public sector. Nevertheless, the female sample displays higher percentages of

Table 1
Sample characteristics.

	Total	Males	Females
Number of observations	83,438	39,567	43,871
2019 (Q2-Q4)	41,250	19,556	21,694
2020 (Q2-Q4)	42,188	20,011	22,177
Age			
16–24 y.o.	15.2 %	16.4 %	14.1 %
25–34 y.o.	13.8 %	14.2 %	13.4 %
35–44 y.o.	22.4 %	22.7 %	22.2 %
45–54 y.o.	26.9 %	26.5 %	27.2 %
55–64 y.o.	21.7 %	20.2 %	23.2 %
Education			
Primary education or less	5.5 %	5.3 %	5.7 %
Secondary ed. 1st stg.	31.7 %	34.7 %	28.9 %
Secondary ed. 2nd stg.	25.6 %	25.7 %	25.6 %
Tertiary education	37.2 %	34.3 %	39.8 %
Spanish	90.5 %	91.2 %	89.9 %
Married	50.9 %	49.2 %	52.5 %
Presence of children			
No children	49.6 %	52.8 %	46.7 %
Children aged 0–6	13.7 %	13.6 %	13.8 %
Children aged 7–15	16.4 %	15.7 %	17.0 %
Children older 15 y.o.	17.1 %	14.6 %	19.5 %
Labor market status			
Inactive partner	5.8 %	9.4 %	2.5 %
Non-employed	15.8 %	11.2 %	20.1 %
Public employee	15.1 %	12.3 %	17.6 %
Private employee	56.9 %	60.6 %	53.6 %
Self-employed	12.2 %	16.0 %	8.7 %
Employed in non-essential activities	43.1 %	44.2 %	42.0 %
Employed in a job with an *EBTI* over mean	25.8 %	24.0 %	27.7 %

Note: First quarter of 2019 and 2020 are excluded from the analysis.
Source: Annual sub-sample of the Spanish Labor Force Survey. Own calculations.

[11] See Palomino et al. (2022) for the specific indicator for the Spanish case.

[12] We classify economic activities at the 3-digit level as essential and non-essential based on the restrictions imposed by the Spanish government under Royal Decree-law 463/2020 of 14 March 2020 and Royal Decree-law 8/2020 of 17 March 2020 and the classification of Blázquez et al. (2022).

[13] We exclude those who were retired or with a permanent disability. We also exclude the cities of Ceuta and Melilla, as well as workers who were employed in the armed forces in *t-1* due to their high sample errors.

public sector employees than the sample of men. As regards the economic activity, 43.1% were employed in a non-essential activity (42.0% among women), and 25.8% were employed in jobs with an incidence of telework over the mean with gender differences (27.7% of women worked in a highly teleworkable job, 24.0% among men).

3.1. Labor transitions from employment to non-employment

The restrictions on economic activity under the declaration of the state of emergency on March 14, 2020 resulted not only in the paralysis of activity, but also of the job search process. According to the EPA, nearly 1.1 million jobs were lost in the second quarter of 2020 with respect to the first quarter. However, in contrast to previous crises, most job losses translated into increasing inactivity rather than unemployment. Unemployment rose by just 55,000 people during the early stage of the pandemic, so most people who lost their job were classified as inactive. The number of inactive people increased by 1.06 million, of which 920,000 were potentially active population according to ILO definitions.[14] This unprecedented destruction of employment was partially mitigated by the government's ERTE furloughing scheme.[15] As mentioned before, 3.58 million of people benefited from the furloughing scheme in April 2020 and 3.7 million from mid-March to the end of May 2020.

Hence, the study of the effect of the COVID-19 pandemic on the job loss probability should consider the following transitions between periods *t-1* and *t*: remain employed, and transitions from employment to either ERTE,[16] unemployment, or inactivity. As mentioned above, the EPA's annual sub-sample (2019 and 2020) includes retrospective information about respondents' labor market situation one year before the interview, which allows us to examine all these types of transitions.[17]

As shown in Table 2, the confinements and partial closures during 2020 (first quarter excluded) provoked a decrease in the percentage of individuals who kept their jobs: 94.6% of people remained employed in the period 2018–2019 in contrast to just 85.0% in the period 2019–2020. The job loss caused by the COVID-19 pandemic was more pronounced among female workers, with just 83.7% of women employed in 2019 remaining in employment one year later (a decrease of 10.3 pp in contrast to 8.9 pp observed among males).

In contrast, the transition to ERTEs increased from being practically null in 2019 (0.1%) to affect 6.4% of individuals in 2020. We do not observe gender differences in this type of transition. The pandemic increased the risk of displacement (becoming unemployed including discouraged workers) from 3.3% in 2019 to 4.9% in 2020. In particular, the increase in this transition from employment to unemployment was higher for females (2.2 pp for females vs. 1.2 pp for males). The transition to inactivity increased from 2.1% in 2019 to 3.7% in 2020. It is worth noticing that, overall, women exhibit a higher risk of moving from employment to inactivity compared to men. However, the pandemic increased this type of transition for both groups: from 1.4% to 2.8% for men and from 2.8% to 4.7% for women.

Table 2
Labor market transitions.

		Total	Males	Females
2019	Remain employed	94.6 %	95.1 %	94.0 %
	Go to ERTE	0.1 %	0.1 %	0.0 %
	Become unemployed	3.3 %	3.4 %	3.2 %
	Become inactive	2.1 %	1.4 %	2.8 %
2020	Remain employed	85.0 %	86.2 %	83.7 %
	Go to ERTE	6.4 %	6.4 %	6.3 %
	Become unemployed	4.9 %	4.6 %	5.3 %
	Become inactive	3.7 %	2.8 %	4.7 %
Total	Remain employed	89.7 %	90.6 %	88.7 %
	Go to ERTE	3.3 %	3.3 %	3.3 %
	Become unemployed	4.1 %	4.0 %	4.3 %
	Become inactive	2.9 %	2.1 %	3.8 %

Notes: First quarter of 2019 and 2020 are excluded from the analysis.
The category become unemployed includes discouraged workers.
Source: Annual sub-sample of the Spanish Labor Force Survey. Own calculations.

3.2. Evidence-Based Teleworking Index for Spain

The annual sub-sample of the EPA includes information on "working from home" which allows us to construct an Evidence-based Teleworking Index (EBTI). The EPA asked the whole sample of employed workers if they had worked from home in the past 4 weeks, and individuals declared whether they worked from home more than half of the days, occasionally, or never worked from home.[18] Before describing the index in detail, we present the evidence on "working from home" given that this phenomenon reflects the actual capability of firms and employees to do telework in Spain. Fig. 1 displays the incidence of working from home from 2006 to 2022. As can be seen, the incidence of working from home increased continuously until 2019. However, the pandemic resulted in a large increase in teleworking, with 16% of workers reporting that they usually worked from home during the second quarter of 2020; a figure that remained around 10% in the following quarters of that year. It is worth noticing that while the incidence of teleworking was similar for males and females before the pandemic, working from home has become much more common among females in the aftermath of the COVID outbreak. In the second quarter of 2020, the percentage of females who usually worked from home accounted for 18.7% of total employment, while the percentage for males was 14.1%. Nevertheless, it also should be noted that gender convergence in working from home started again at the end of 2022.

To construct the EBTI, we use individual information for the entire sample of employed people in 2020, obtained from the question about working from home in the four weeks before the reference week of the interview. As mentioned, we exclude individuals interviewed in the first quarter of 2020 as it only includes two weeks from the lockdown period. Hence, the EBTI is calculated for the period Q2-Q4 of 2020.[19] We compute the EBTI for specific types of jobs, which are defined by occupation-activity combinations. Specifically, we define an occupation-activity matrix at the 2-digit level according to the CNO-2011 and CNAE-2009, respectively. This enables us to obtain information on "working from home" for 62 occupations and 87 economic activities.[20] Hence, our occupation-activity matrix comprises 5,394 possible strata (types of jobs), where each stratum represents a combination of a specific occupation in a particular economic activity. Taking

[14] Persons younger than 75 years who are available to work but do not search for work for different reasons. The possible reasons are: Believes will not find it; Affected by a furlough scheme; Sickness or disability; Caring for children or sick, disabled or elderly adults; Other family or personal responsibilities; Studying or undergoing training; Retired; Other reasons; Don't know.

[15] Izquierdo et al., (2021, 2022) exploited longitudinal data from the EPA to analyze the labor market re-entry of workers affected by ERTEs and observed a much higher return to employment than that observed among workers who lost their jobs.

[16] Workers in ERTE schemes of reduced working hours are included in the reference category (employed) as they continued working during the lockdown but fewer hours.

[17] The sample year 2019 measures labor transition from 2018 to 2019, and the sample year 2020 measures labor transition from 2019 to 2020.

[18] The percentage of "do not know" is under 1 %.

[19] We have replicated the analysis including the first quarter for both the calculus of the EBTI and the econometric estimates and results are robust. These results are not shown but available upon request.

[20] For economic activities (industries) we use the National Classification of Economic Activities, which follows the conditions laid down in the NACE Rev.2 approval Regulation. See the matrix at the 1-digit level in Table A1 of Appendix for the strata distribution.

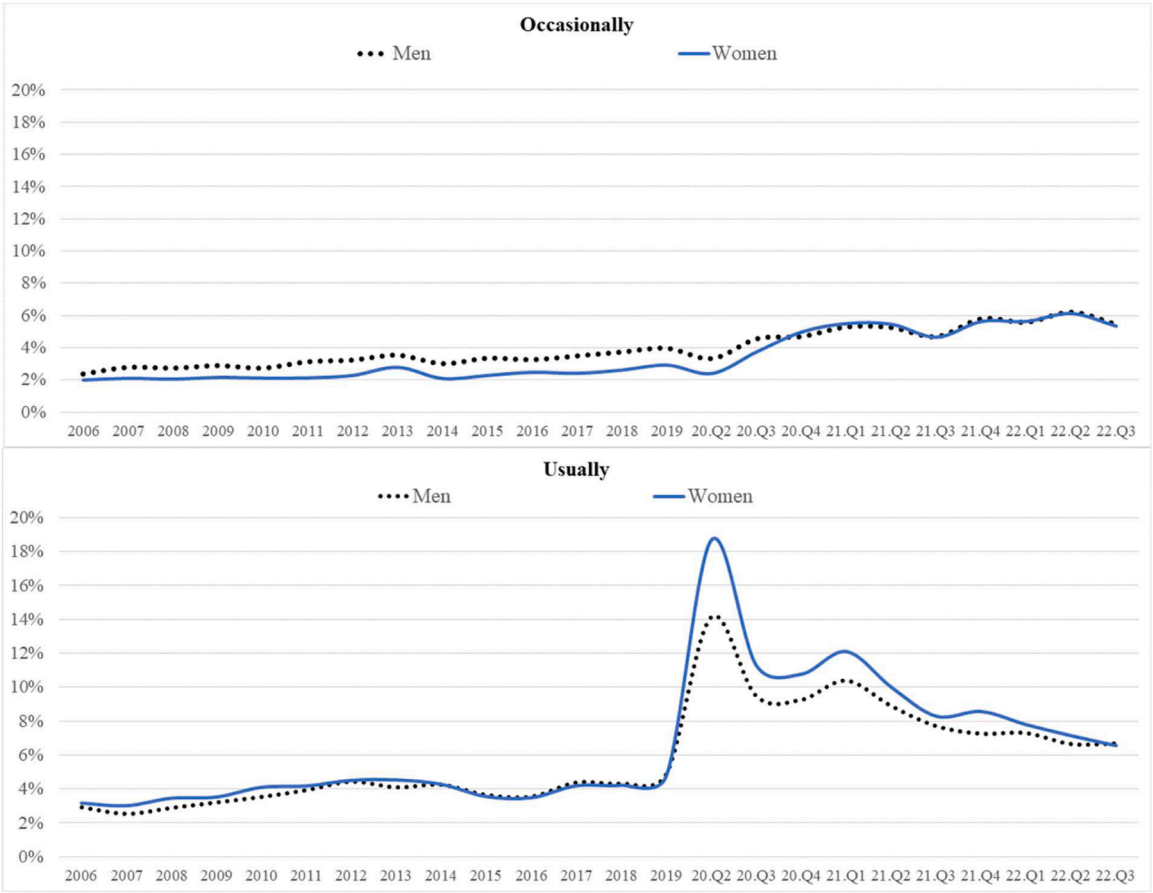

Fig. 1. Employed persons working from home by gender (% total employment), Notes: Occasionally (worked from home occasionally), Usually (worked from home more than half of the days).
Source: Spanish Labor Force Survey, INE.

into account the highly disaggregated level of our data, there are several strata in which the number of employed people is zero. In 2020 (excluding first quarter), employment is distributed across 1,861 strata. For each of these strata, we can identify those workers who worked from home more than half of the days, those who worked from home occasionally, and those who never worked from home in the last four weeks.

In the related literature (see, for instance, Anghel et al., 2020), the index of teleworking based on data for the year 2019 considers working from home occasionally and usually, thus resulting in a larger estimate of telework (8.3% in 2019). Our EBTI mainly comprises workers who worked from home more than half of the days in the last four weeks. Nevertheless, as shown in Fig. 1, the intensity of telework (measured as working from home "usually") decreased in the third and fourth quarters of 2020 as many firms started implementing a hybrid work model in-office combined with remote work. However, the incidence of working from home "occasionally" increased over these quarters.

To account for this phenomenon, the EBTI considers 100% of workers who usually worked from home (more than half of the days) in 2020 (Q2-Q4) and 25% of those who did so occasionally.[21] In particular, the EBTI is defined as follows:

$$EBTI = \sum_{k=1}^{n} \sum_{j=1}^{m} \frac{Tu_{kj} + 0.25To_{kj}}{E_{kj}} x100$$

where Tu_{kj} and To_{kj} are, respectively, the number of workers who usually worked from home and who occasionally worked from home in the last month in occupation k and economic activity j. E_{kj} comprises the total employment in occupation k and economic activity j. As we mentioned above, of all possible occupation-activity combinations at the 2-digit level, we have 1,861 strata with observations, and the EBTI is constructed for these strata.

For expositional purposes, in Fig. 2 (panel A and B) we display the mean value of the EBTI for occupations and economic activities, respectively, and in Table A1 in the Appendix we present the EBTI for occupation-activity combinations at the 1-digit level.[22] The value of the EBTI in 2020 is 13.52 for the whole economy but there exists a wide heterogeneity, especially across occupations. The figure is more than three times as high among "C-Other technicians and scientific professionals" (42.39) and is also especially high among "A-Directors and managers" and "D-Technicians and support professionals" for whom the incidence of teleworking is double the mean value, and for "B-Health and Education science technicians and professionals", with an EBTI of 25.80. In contrast, the EBTI does not even reach a value of 1 among "P-Labourers", "M-Plant and machine operators and assemblers", and "N-

[21] We have considered other versions of the index with (i) only those usually working from home; (ii) 50 % occasionally and 100 % usually; (iii) 75 % occasionally and 100 % usually; and (iv) 100 % occasionally and 100 % usually.

[22] To check the possible endogeneity regarding the proportions of working from home across gender, Tables A2 and A3 report the EBTI values for men and women separately. In most cases we do not find gender differences across occupations or economic activities. We only observe a significant gender difference for technicians, office clerks, skilled agricultural and craft workers, and for operators. Thus, we conclude that the potential endogeneity does not seem to be present.

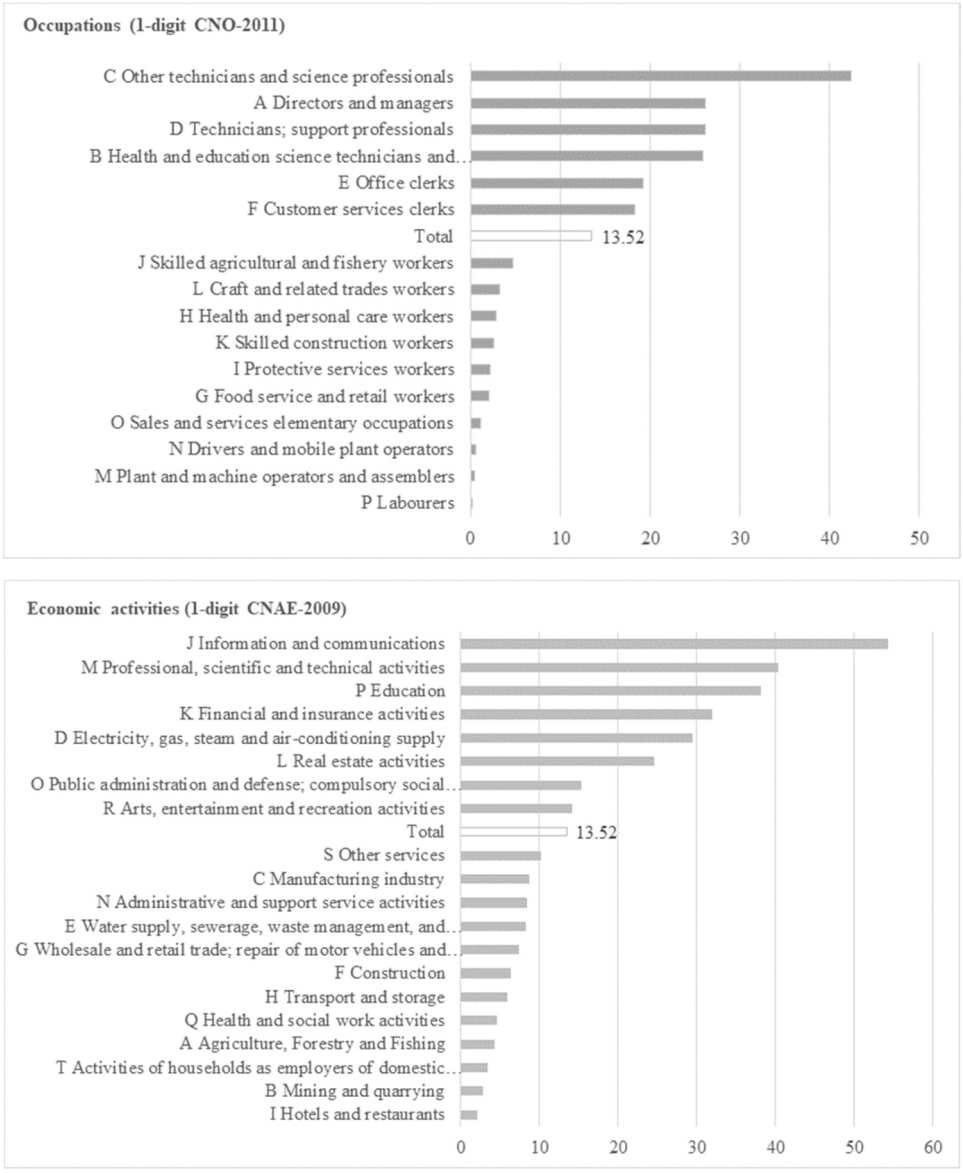

Fig. 2. Evidence-Based Teleworking Index across occupations and economic activities. Notes: (a) weighted arithmetic mean of the EBTI for each occupation at the 1-digit level; (b) weighted arithmetic mean of the EBTI for each economic activity at the 1-digit level.
Source: Annual sub-sample of the Spanish Labor Force Survey (Year 2020, excluding first quarter). Own calculations.

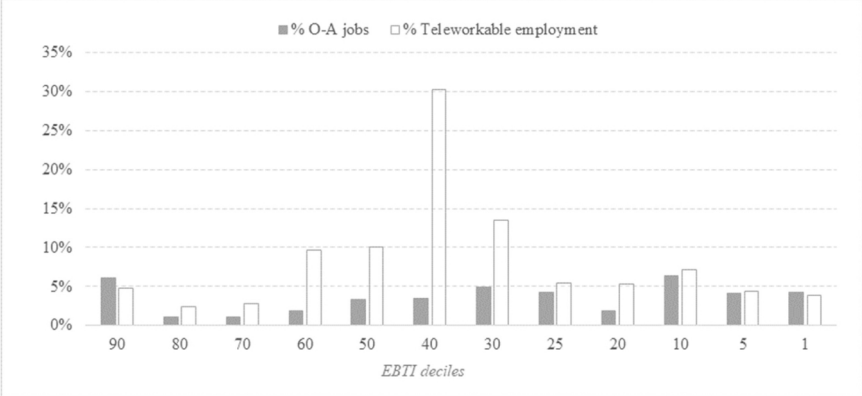

Fig. 3. Percentage of Occupation-Activity jobs (O-A) and teleworkable employment by EBTI deciles. Occupation-activity combinations with an EBTI lower than 1 not shown. They represent 57.5% of total combinations and encompass 0.5% of teleworkable employment.
Source: Annual sub-sample of the Spanish Labor Force Survey (Year 2020, excluding first quarter). Own calculations.

Drivers and mobile plant operators". These results are consistent with the patterns observed by Dingel and Neiman (2020) as well as other authors (Mongey et al., 2021; Brussevich et al., 2020; Anghel et. al, 2020). In terms of economic activities, the highest level of the EBTI is found in "J-Information and communications" (close to 55) followed by "M-Professional, scientific and technical activities" (40.19) and "P-Education" (38.05). On the other hand, "I-Hotels and restaurants" and "B-Mining and quarrying" display the lowest values of the EBTI.[23] Despite these values at the aggregate level, the incidence of telework in a specific occupation varies across economic activities reflecting that the same occupation can be more or less teleworkable depending on the economic sector. For instance, the EBTI (at the 1 digit-level) among "C-Other technicians and scientific professionals" is 42.39 overall but reaches the value of 63.62 in "J-Information and communications" and 76.25 in "L-Real estate activities", while the figure drops to 9.05 in "I-Hotels and restaurants".

The EBTI reaches a non-zero value in 808 occupation-activity combinations, which encompasses a mean value of 1.96 million persons teleworking in 2020 (Q2-Q4). Fig. 3 displays the percentage of occupation-activity jobs where the EBTI reaches a specific value. As can be seen, the EBTI reaches at least the value of 90 in only 6.1% of jobs (114 possible occupation-activity combinations of a total of 1,861). This indicates that at least 90% of workers in these 114 types of jobs can perform their work from home, which corresponds to 4.8% of teleworkable employment. A remarkable aspect is that the percentage of occupation-activity jobs where the EBTI reaches a value between 30 and 49 is 8.4%, and these jobs comprise 43.7% of teleworkable employment. Note that occupation-activity jobs where the EBTI is between 1 and 49 account for 29.1% of total jobs but 69.8% of teleworkable employment.

Finally, we examine the percentage of job losses between *t-1* and *t* by EBTI deciles (Fig. 4a). We create an extra category for occupation-activity combinations with a zero EBTI value. Therefore, we end up with an eleven-scale index. First, we find that the amount of job losses decreases with the EBTI level; and therefore the percentage of individuals who remain employed increases. Secondly, we observe that, in 2020 (Q2-Q4), the evolution of the percentage of individuals who remained employed and those who transitioned to ERTE inversely co-move. That is, when the percentage of individuals remaining employed decreases (e.g., those whose EBTI is in the second decile), the percentage of those on an ERTE scheme increases. In 2019 (Q2-Q4), however, the percentage of those who stayed employed co-moved with transitions to unemployment and going inactive. No differences by gender were found in the trends (Fig. 4b).

4. Empirical model and methodology

Our endogenous variable is the risk of employment loss ($U_{i,t}$) defined as a transition from an employment situation in period *t-1* to non-employment in period *t*. Within non-employment, we consider ERTEs (suspension of contracts), unemployment (including discouraged workers), and inactivity. We will take those people who remain employed as the reference category. Since the probability of job loss can only be observed among employees and since they might not be a random sample of the population, the potential sample selection problem should be addressed. To control for the possibility of this sample selection bias, we follow a two-step estimation procedure (Heckman, 1979). Hence, our model includes two equations: (1) the outcome equation that considers the mechanisms determining the job loss likelihood from one period to the next; and (2) the selection equation for the probability of being employed in period *t-1*. In order to estimate a multinomial probit model with sample selection, we use Roodman's (2011) CMP statistical package. Thus, the estimated model is as follows:

$$E^{*}_{i,t-1} = \mathbf{Z}_i'\boldsymbol{\gamma} + \rho + \nu_i \qquad \text{(Select. eq.)}$$

$$U_{i,t} = \beta_1 Fem_i + \beta_2 Covid_i + \beta_3 Fem_i{*}Covid_i + \beta_4 TI_i + \beta_5 TI_i^2 + \beta_6 Covid_i{*}TI_i + \beta_7 Covid_i{*}TI_i^2 + \mathbf{X}_i'\boldsymbol{\beta} + \varepsilon_i \qquad \text{(Outcome eq.)}$$

where $E^{*}_{i,t-1}$ is a latent variable that captures labor market status in the previous period (employed, unemployed or inactive). In this step, we model the probability of being employed $\Pr(E_{i,t-1}=1) = pr\left(E^{*}_{i,t-1} > 0\right)$. The vector of explanatory variables ($\mathbf{Z}_i'$) includes some individual fixed effects (gender, age, education, immigrant status, marital status), region fixed effects (NUTS2), and several family characteristics that may influence employment probability since labor supply is a joint decision of the household: information about the partner being inactive in *t-1* and several dummies to measure whether the individual had children in *t-1*.[24] Finally, we include time fixed effects through ρ.

The dependent variable $U_{i,t}$ is defined as a categorical variable that takes the value of *0* if individual *i* remains employed in period *t*; *1* if the individual moves from employment in period *t-1* to an ERTE in period *t*; *2* if the individual moves from employment to unemployment; and *3* if the individual moves from employment to inactivity. To capture the possible causal structural break triggered by the COVID-19, we include

[23] The numbers for these figures are relegated to Table A1 in the Appendix.

[24] Children aged 0–6 years old, children 7–15 years, and children over 15 years. The reference category is No children.

Fig. 4. a Labor market transitions by EBTI deciles (all individuals), b. Labor market transitions by EBTI deciles (by gender). Note: The category become unemployed includes discouraged workers.
Source: Annual sub-sample of the Spanish Labor Force Survey (First quarters are excluded from the analysis). Own calculations (see Table A4 of Appendix).

Table 3
Labor market transitions (estimation results in marginal effects).

	Model 1	Model 2			Model 1	Model 2		
		All	Females	Males		All	Females	Males
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ERTE				Inactive			
Female	-0.025 *	-0.023 *	-	-	0.020 ***	0.020 ***	-	-
	(0.010)	(0.010)			(0.003)	(0.003)		
Covid	0.112 ***	0.107 ***	0.128 ***	0.113 ***	0.013 ***	0.014 ***	0.012 ***	0.008 ***
	(0.006)	(0.007)	(0.011)	(0.007)	(0.002)	(0.002)	(0.003)	(0.002)
Female*Covid	0.041 ***	0.039 ***	-	-	-0.008 **	-0.007 *	-	-
	(0.010)	(0.010)			(0.003)	(0.003)		
EBTI	-0.028	-0.213 * *	-0.199	-0.231 *	-0.020 +	0.008	0.018	-0.008
	(0.018)	(0.081)	(0.126)	(0.110)	(0.011)	(0.018)	(0.027)	(0.021)
$EBTI^2$	-0.018	0.260 **	0.212	0.290 *	0.028 +	-0.002	-0.011	0.015
	(0.028)	(0.094)	(0.178)	(0.120)	(0.016)	(0.027)	(0.042)	(0.029)
Covid*EBTI	-	0.197 *	0.177	0.230 *	-	-0.035	-0.057 +	-0.005
		(0.082)	(0.129)	(0.112)		(0.022)	(0.032)	(0.024)
Covid*$EBTI^2$	-	-0.302 **	-0.280	-0.325 **	-	0.036	0.052	0.007
		(0.099)	(0.185)	(0.126)		(0.033)	(0.051)	(0.035)
Non-essential	0.042 ***	0.041 ***	0.042 ***	0.040 ***	0.011 ***	0.011 ***	0.011 ***	0.009 ***
	(0.003)	(0.003)	(0.004)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
	Unemployment				**Employment**			
Female	-0.002	-0.002	-	-	0.007	0.006	-	-
	(0.003)	(0.003)			(0.009)	(0.009)		
Covid	0.004 *	0.007 **	0.018 ***	0.006 **	-0.129 ***	-0.129 ***	-0.158 ***	-0.126 ***
	(0.002)	(0.002)	(0.004)	(0.002)	(0.006)	(0.007)	(0.010)	(0.007)
Female*Covid	0.005	0.005	-	-	-0.038 ***	-0.038 ***	-	-
	(0.003)	(0.003)			(0.009)	(0.009)		
EBTI	-0.046 ***	-0.013	-0.009	-0.018	0.093 ***	0.218 **	0.191 +	0.257 **
	(0.013)	(0.020)	(0.037)	(0.026)	(0.022)	(0.070)	(0.105)	(0.098)
$EBTI^2$	0.049 *	0.026	0.030	0.031	-0.059 +	-0.285 ***	-0.230	-0.336 **
	(0.019)	(0.029)	(0.057)	(0.036)	(0.034)	(0.085)	(0.151)	(0.111)
Covid*EBTI	-	-0.043 +	-0.065	-0.031	-	-0.119	-0.056	-0.194 +
		(0.025)	(0.045)	(0.032)		(0.073)	(0.111)	(0.102)
Covid*$EBTI^2$	-	0.019	0.032	0.010	-	0.248 **	0.197	0.307 *
		(0.038)	(0.072)	(0.048)		(0.093)	(0.164)	(0.121)
Non-essential	0.013 ***	0.013 ***	0.016 ***	0.013 ***	-0.066 ***	-0.066 ***	-0.069 ***	-0.063 ***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)	(0.005)	(0.004)

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, $+p < 0.10$. Robust standard errors in parenthesis.
Marginal effects are computed as average partial effects.
Note: Tables A5 and A6 in the Appendix display the whole estimation results and the selection mechanism, respectively.
First quarter of 2019 and 2020 are excluded from the analysis.

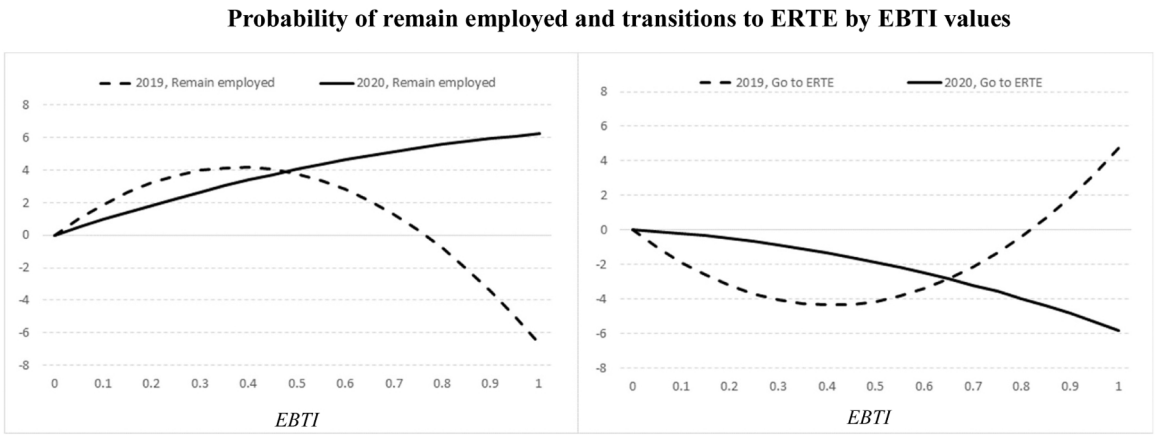

Fig. 5. Probability of remain employed and transitions to ERTE by EBTI values. Note: The EBTI has been normalized to 1.
Source: Annual sub-sample of the Spanish Labor Force Survey (First quarters are excluded from the analysis). Own calculations.

$Covid_i$, a dummy variable that takes the value of 1 for the Covid period (year 2020 excluding first quarter) and 0 for the pre-Covid period (year 2019 excluding first quarter). To account for potential gender differences in labor market transitions, we include the dummy variable Fem_i which takes the value of 1 if the individual is a woman, and the interaction (Fem_i*$Covid_i$). Thus, parameter β_3 allows us to test the existence of gender differences as regards the effect of the pandemic in terms of job loss.

To analyze whether people's ability to telework has mitigated the effect of the pandemic on employment by reducing the risk of job loss, our main equation includes the EBTI (variable TI_i and its square TI_i^2) and the interactions with the Covid period ($Covid_i$*TI_i and $Covid_i$*TI_i^2). It should be remarked that all workers employed in the same occupation-activity have the same EBTI value. Parameters β_4 to β_7 measure to what extent the intensity of telework use in the job where workers are employed reduces the individual's risk of employment loss and to what

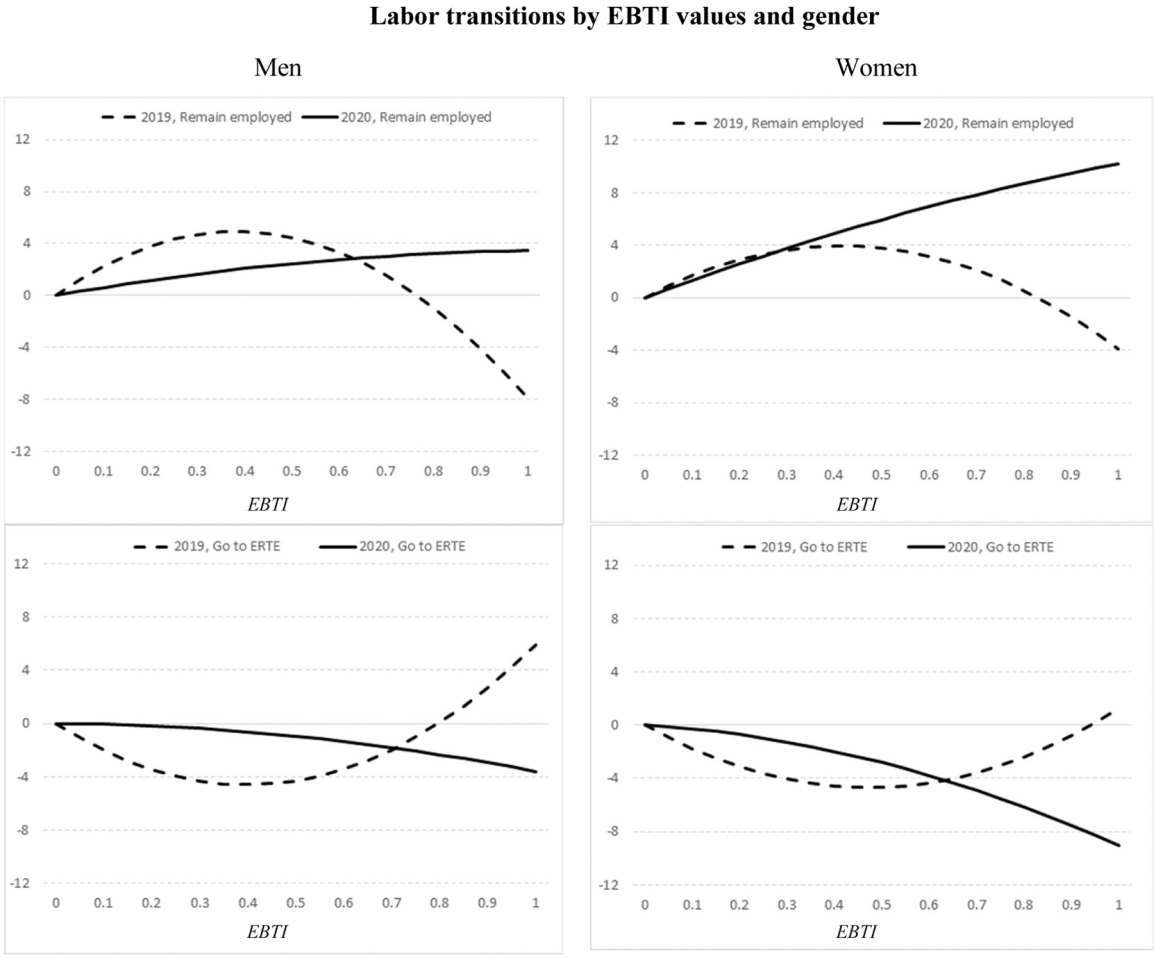

Fig. 6. Labor transitions by EBTI values and gender. Note: The EBTI has been normalized to 1.
Source: Annual sub-sample of the Spanish Labor Force Survey (First quarters are excluded from the analysis). Own calculations.

extent this effect varies between the Covid and pre-Covid period.

Vector X_i' comprises a set of explanatory variables that includes socioeconomic characteristics (age, education, immigrant status) and labor characteristics (whether individuals are either self-employed, salaried workers in the private sector, or public sector employees).[25] An important control in our analysis is the nature of the economic activity where individuals were employed in period *t-1*. We distinguish between essential and non-essential activities and also account for region fixed effects. ε_i and ν_i are error terms with zero mean and $corr(\varepsilon_i, \nu_i) \neq 0$.

5. Results and discussion

For expositional purposes, we describe the main findings regarding our variables of interest (see Table 3).[26] This allows us to address the main questions of the paper. In particular: i) *What were the direct effects of the pandemic on the individual probability of employment loss?*; ii) *Have women been more affected than men?*; iii) *How did the risk of job loss vary by the suitability for telework, and to what extent did the effect differ between the Covid and pre-Covid period?*

We present two models: one without the interactions of the teleworking index and the Covid period (Model 1), and a second one that includes these interactions (Model 2). We will comment on the estimation results for Model 2 in terms of marginal effects.

Confirming the stylized facts shown in the descriptive analysis, we find that the COVID-19 pandemic caused higher job losses (12.9 pp), which have mainly occurred toward transitions to ERTEs (10.7 pp). Transitions to inactivity are of lower magnitude (1.4 pp), and transitions to unemployment are negligible (around 0.7 pp).

We also find that, overall, females have a higher likelihood of making a transition from employment to inactivity than males (around 2.0 pp higher before the pandemic), whereas they are less likely to move from employment to an ERTE (2.3 pp). Nevertheless, and similarly to Dolado et al. (2020), we do not find gender differences regarding the transition from employment to unemployment.

In terms of gender differences due to the pandemic, we observe that females experienced an additional negative effect regarding the probability of remaining employed (3.8 pp), which is completely absorbed by the additional effect of transitioning out of employment in the form of ERTEs (3.9 pp). Although the effect is small, we also find that females were less likely to transition to inactivity than their male counterparts during the pandemic, but no effect for transitions to unemployment.

Our results reveal that the intensity of telework use (EBTI) in a given occupation-activity combination plays a role in determining the risk of employment loss, especially in the transition to ERTEs. We also find that the intensity of telework use exerts a non-linear effect on job loss. Fig. 5 draws the estimated effect of the EBTI, normalized to 1, before and during the pandemic. Note that we only consider the effect on the probability of remaining employed and transitions out of employment in the form of ERTE, as the other employment transitions are not significantly affected.[27]

In the pre-Covid period, we observe that for low enough EBTI values (0–0.4), the probability of remaining in employment increases with the intensity of telework use (Fig. 5). This effect is less pronounced for higher EBTI values (0.4–0.75), and for high enough levels of the index, there is a negative probability of remaining employed. In the Covid period, however, the probability of remaining employed is positive and increases with the intensity of telework use (although higher levels of the index display a lower increase in the probabilities). This trend is just the opposite if we consider the probability of transitioning to an ERTE (although of lower magnitude).

Summarizing, in line with other works (Dingel and Neiman, 2020; Angelucci et al., 2020), our results confirm that the suitability for telework has been a potential cushion against employment losses. Nonetheless, the shielding effects of telework have been especially relevant only in reducing transitions from employment to ERTEs. In contrast, the power of telework to protect against inactivity and unemployment seems to be insignificant, even during the pandemic.

To address the question of whether the power of telework to protect against employment loss has varied across gender, we carry out separate estimations for females and males (columns 3–4 and 7–8 in Table 3). First, we find that all the results described above are mainly driven by the male sample. That is, the EBTI affects the probability of remaining employed, and the transition that reflects this effect is the transition to furloughs. In contrast, females are not affected by telework in our data. In Fig. 6 we replicate the analysis of Fig. 5 but for the male and female subsamples separately. Although not significantly different from zero in the case of females, it should be noted that the EBTI makes the probability of remaining employed positive and increasing during the pandemic.[28] A potential explanation for telework's (no) effect on protecting women against job losses during the pandemic is childcare responsibilities. The first year of the pandemic has been an exceptional situation that implied an intense simultaneous multitasking of childcare with work and the consequently frequent interruptions from family members. In a study for the American case, Heggeness and Suri (2021) found that, at the end of 2020, highly educated mothers in telework-compatible jobs displayed a higher probability of being inactive and on leave, which they interpreted as an individual choice to balance the stress of additional childcare responsibilities during work hours. Unfortunately, we do not have data on childcare responsibilities. Moreover, there could also be other plausible explanations, as women are usually less attached to the labor market due to their worse working conditions (higher incidence of temporary and involuntary part-time work).

Overall, we find that telework has served as a cushion against employment loss during the COVID-19 pandemic for males, thus reducing their risk of being furloughed.

Finally, in line with Serra et al. (2022), we observe that being employed in a non-essential economic activity reduces the likelihood of remaining employed (around 6.6 pp). In contrast, as expected, the probability of making a transition into an ERTE is around 4.1 pp higher among these non-essential economic activities, followed by transitions into unemployment and inactivity that are, respectively, 1.3 pp and 1.1 pp higher.

6. Conclusions

In this paper, we analyze gender differences regarding the effect of the COVID-19 pandemic on the job loss probability in Spain, and to what extent telework has helped to mitigate joblessness. To that aim, we propose an Evidence-Based Teleworking Index for more than 1,800 types of jobs based on occupation-activity combinations at the two-digit level from the annual sub-sample of the EPA. An important difference of the proposed teleworking index is that is based on real evidence of "working from home" observed during Q2 to Q4 of 2020 when telework reached its maximum peak in Spain. This evidence-based approach has the advantage that in addition to considering the teleworkability of tasks associated with a given job, it also reflects firms' actual capacity to adapt to telework. As we measure telework by jointly considering the

[25] Unfortunately, the survey does not provide retrospective information regarding the type of contract or working hours.

[26] The results for the rest of the covariates in the outcome equation and for the selection mechanism are relegated to Appendix (Tables A5 and A6).

[27] The figures corresponding to transitions to unemployment and inactivity are relegated to Appendix (Figure A1). Recall that these effects are not statistically significant.

[28] Again, we relegate the effect on transitions to unemployment and inactivity to Appendix (Fig. A2). Recall that these effects are not statistically significant.

occupation and the economic activity, the index takes into account that the same occupation can be more or less teleworkable depending on the economic sector. Additionally, the indicator itself jointly reflects the possibilities of teleworking even in economic activities that were suspended during the lockdown.

We use the EBTI to analyze the influence of telework on the probability of job loss differentiating among transitions to ERTEs, unemployment, and inactivity. The confinements and partial closures during 2020 provoked a decrease in the percentage of individuals who remained employed, and the job loss was more pronounced among female workers. The transition to ERTEs increased from being practically null in 2019 to affecting 6.4% of individuals in 2020, with no gender differences. The pandemic increased the risk of becoming unemployed, but the increase was higher for females. The transition to inactivity increased from 2.1% to 3.7% in 2020, slightly higher among women. Our results also indicate that the amount of employment losses decreases with the EBTI level; and therefore the percentage of individuals who remain employed increases.

Our estimates show that individuals' probability of remaining employed has decreased as a consequence of the pandemic, especially among female workers. Transitions to furlough schemes have absorbed almost all these movements, while transitions to inactivity, especially to unemployment, have been of a lower magnitude. Thus, to some extent, our findings for Spain suggest that women have borne the brunt of job loss caused by the pandemic. This result seems to provide evidence of the real fear that the pandemic set back women's roles in the labor market, thus throwing away decades of a hard-won battle in terms of gender equality. This suggests the need to re-examine systematic gender roles embedded within society.

Telework might have been a silver lining during these difficult times. Despite the steady move toward more flexible working arrangements in the years prior to the onset of COVID-19, in less than a quarter the pandemic disrupted lifestyles and reshaped how we do business. In line with other recent works that have focused on the labor market consequences of the pandemic, our results show that the suitability of telework has protected workers against the risk of job loss. In the Covid period, the probability of remaining employed is positive and increases with the intensity of telework use (although higher levels of the index display a lower increase in the probabilities). However, this "protective" role of telework seems to have occurred only among male workers. In contrast to our preliminary hypothesis, we conclude that telework has not contributed to mitigating gender inequalities in employment losses caused by the pandemic.

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CRediT authorship contribution statement

These authors contributed equally to this work. **Maite Blázquez:** Conceptualization, Writing – original draft, Visualization, Formal analysis, Methodology, Investigation, Software, Data curation, Software Validation, Writing – review & editing, Project administration. **Ainhoa Herrarte:** Conceptualization, Writing – original draft, Visualization, Formal analysis, Methodology, Investigation, Software, Data curation, Software Validation, Writing – review & editing, Project administration. **Ana I. Moro-Egido:** Conceptualization, Writing – original draft, Visualization, Formal analysis, Methodology, Investigation, Software, Data curation; Software Validation, Writing – review & editing, Project administration.

Declaration of Competing Interest

None.

Data availability

The authors do not have permission to share data.

Appendix

Table A1
Evidence-Based Teleworking Index at the 1-digit level.

Occupations/Activities	A	B	C	D	E	F	G	H	I	J	Tot
A Directors and managers	36.55	0.00	24.14	55.02	13.76	26.45	24.94	28.94	14.53	44.46	26.11
B Health and education science technicians and professionals	4.65	-	5.44	-	0.00	-	3.63	0.00	0.00	65.76	25.80
C Other technicians and science professionals	6.05	10.58	30.72	39.96	47.23	23.77	39.65	34.91	9.05	63.62	42.39
D Technicians; support professionals	3.18	9.94	18.77	38.79	17.20	11.64	25.32	22.85	12.54	54.89	26.06
E Office clerks	9.58	0.00	14.20	41.66	17.48	19.42	16.22	10.06	8.03	40.26	19.15
F Customer services clerks	31.98	-	6.47	5.10	11.43	16.69	9.64	17.76	1.42	54.12	18.23
G Food service and retail workers	0.00	-	3.73	-	-	0.00	2.85	0.00	0.88	1.45	2.02
H Health and personal care workers	0.00	-	0.00	-	-	-	0.00	2.31	2.80	0.00	2.78
I Protective services workers	18.75	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	100.00	2.17
J Skilled agricultural and fishery workers	5.65	-	0.00	-	-	-	0.00	-	0.00	-	4.71
K Skilled construction workers	0.00	0.00	3.54	3.36	0.00	2.58	0.00	0.00	0.00	-	2.49
L Craft and related trades workers	0.00	0.00	2.23	4.78	0.00	5.23	1.54	5.32	0.00	16.17	3.16
M Plant and machine operators and assemblers	0.00	0.35	0.28	32.07	0.00	0.00	0.00	0.00	-	-	0.35
N Drivers and mobile plant operators	0.31	0.00	0.00	0.00	0.00	1.50	0.06	0.82	0.00	-	0.56
O Sales and services elementary occupations	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.66	1.05
P Labourers	0.03	0.00	0.00	0.00	0.00	0.15	0.08	0.00	0.00	0.00	0.05
Total	4.19	2.77	8.65	29.41	8.17	6.33	7.23	5.81	2.01	54.21	13.52
	K	L	M	N	O	P	Q	R	S	T	Tot
A Directors and managers	19.54	37.21	32.27	34.76	23.99	30.26	28.75	18.26	25.10	-	26.11
B Health and education science technicians and professionals	3.30	25.00	24.51	0.00	22.13	43.64	2.69	0.00	8.87	25.92	25.80
C Other technicians and science professionals	34.89	76.25	51.15	51.11	30.34	40.07	21.60	34.21	26.22	-	42.39
D Technicians; support professionals	40.63	28.17	30.32	26.81	22.69	30.08	8.88	10.68	21.91	-	26.06
E Office clerks	27.13	15.01	27.30	24.04	22.36	16.30	16.51	21.00	29.03	12.01	19.15
F Customer services clerks	31.64	5.25	20.59	29.04	22.02	32.33	6.31	13.38	18.33	-	18.23
G Food service and retail workers	0.00	0.00	28.64	2.54	0.00	0.00	0.00	1.85	0.00	0.00	2.02

(*continued on next page*)

Table A1 (*continued*)

	K	L	M	N	O	P	Q	R	S	T	Tot
H Health and personal care workers	0.00	0.00	35.81	1.38	11.80	1.62	1.34	6.18	3.82	5.37	2.78
I Protective services workers	0.00	-	0.00	2.33	1.16	0.00	0.00	0.00	-	0.00	2.17
J Skilled agricultural and fishery workers	-	-	-	2.18	0.00	0.00	-	0.00	0.00	0.00	4.71
K Skilled construction workers	0.00	15.02	0.00	5.13	1.62	0.00	0.00	0.00	0.00	0.00	2.49
L Craft and related trades workers	0.00	-	17.46	0.00	0.00	0.00	20.26	0.00	8.95	0.00	3.16
M Plant and machine operators and assemblers	-	-	0.00	0.00	0.00	0.00	0.00	-	0.00	-	0.35
N Drivers and mobile plant operators	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.56
O Sales and services elementary occupations	0.00	-	0.00	0.09	0.00	0.57	0.00	0.00	24.19	2.48	1.05
P Labourers	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Total	31.88	24.50	40.19	8.37	15.20	38.05	4.51	14.10	10.13	3.25	13.52

A Agriculture, livestock, forestry and fisheries; B Mining and quarrying; C Manufacturing industry; D Electricity, gas, steam and air-conditioning supply; E Water supply, sewerage, waste management, and remediation activities; F Construction; G Wholesale and retail trade; repair of motor vehicles and motorcycles; H Transport and storage; I Hotels and restaurants; J Information and communications.

K Financial and insurance activities; L Real estate activities; M Professional, scientific and technical activities; N Administrative and support service activities; O Public administration and defense; compulsory social security; P Education; Q Health and social work activities; R Arts, entertainment and recreation activities; S Other services; T Activities of households as employers of domestic servants and producers of goods and services for own consumption. U Activities of extra-territorial organizations and bodies not shown. Military occupations not shown.

Source: Annual sub-sample of the Spanish Labor Force Survey (Year 2020 excluding first quarter). Own calculations.

Table A2

Evidence-Based Teleworking Index at the 1-digit level. Male subsample.

Occupations/Activities	A	B	C	D	E	F	G	H	I	J	Tot
A Directors and managers	12.95	0.00	22.16	48.86	11.95	23.16	24.74	32.56	10.33	50.64	23.52
B Health and education science technicians and professionals	0.00	-	11.55	-	-	-	4.41	0.00	-	-	28.38
C Other technicians and science professionals	4.31	18.47	28.07	39.40	29.65	29.60	45.44	16.06	0.00	65.43	45.66
D Technicians; support professionals	1.51	11.80	17.41	32.09	10.55	9.47	28.16	13.44	0.74	52.96	26.38
E Office clerks	0.00	-	6.69	30.99	14.70	20.99	8.51	4.75	17.40	25.29	13.22
F Customer services clerks	0.00	-	4.52	0.00	0.00	5.86	3.48	0.00	0.00	49.84	12.11
G Food service and retail workers	0.00	-	0.00	-	-	0.00	3.92	0.00	0.86	2.21	2.29
H Health and personal care workers	0.00	-	0.00	-	-	-	0.00	4.91	6.47	0.00	1.94
I Protective services workers	21.17	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	-	2.02
J Skilled agricultural and fishery workers	4.90	-	0.00	-	-	-	0.00	-	0.00	-	3.82
K Skilled construction workers	0.00	0.00	2.18	0.00	0.00	2.48	0.00	0.00	0.00	-	2.21
L Craft and related trades workers	0.00	0.00	1.45	4.78	0.00	5.26	1.64	5.49	0.00	14.30	2.72
M Plant and machine operators and assemblers	0.00	0.39	0.32	32.07	0.00	0.00	0.00	0.00	-	-	0.43
N Drivers and mobile plant operators	0.31	0.00	0.00	0.00	0.00	1.53	0.07	0.85	0.00	-	0.58
O Sales and services elementary occupations	0.00	-	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.23
P Labourers	0.00	0.00	0.00	0.00	0.00	0.15	0.14	0.00	0.00	0.00	0.05
Total	2.92	2.68	6.85	26.74	3.47	5.03	8.96	2.82	1.57	53.08	12.39
	K	L	M	N	O	P	Q	R	S	T	Tot
A Directors and managers	23.62	41.07	21.70	23.34	17.52	28.80	13.26	8.58	33.81	-	23.52
B Health and education science technicians and professionals	1.99	-	30.27	0.00	18.18	47.98	3.31	0.00	0.00	-	28.38
C Other technicians and science professionals	26.97	94.20	54.76	34.66	32.88	47.41	41.59	35.14	41.19	-	45.66
D Technicians; support professionals	46.13	34.92	31.01	36.53	15.57	37.62	12.48	10.80	21.29	-	26.38
E Office clerks	24.05	0.00	28.51	34.81	11.60	7.10	34.39	26.32	12.47	-	13.22
F Customer services clerks	14.28	0.00	28.34	35.93	14.86	29.42	6.19	0.43	39.20	-	12.11
G Food service and retail workers	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	2.29
H Health and personal care workers	-	0.00	-	1.94	11.76	4.62	0.00	0.00	2.80	0.00	1.94
I Protective services workers	0.00	-	0.00	2.76	1.29	0.00	0.00	0.00	-	0.00	2.02
J Skilled agricultural and fishery workers	-	-	-	0.78	0.00	0.00	-	0.00	0.00	0.00	3.82
K Skilled construction workers	0.00	0.00	0.00	5.29	1.35	0.00	0.00	0.00	0.00	0.00	2.21
L Craft and related trades workers	0.00	-	22.41	0.00	0.00	0.00	0.00	0.00	9.51	0.00	2.72
M Plant and machine operators and assemblers	-	-	0.00	0.00	-	0.00	0.00	-	0.00	-	0.43
N Drivers and mobile plant operators	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	-	0.58
O Sales and services elementary occupations	-	-	0.00	0.45	0.00	2.48	0.00	0.00	0.00	0.00	0.23
P Labourers	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Total	31.98	32.34	45.15	8.38	9.91	40.58	6.28	11.16	12.66	0.00	12.39

A Agriculture, livestock, forestry and fisheries; B Mining and quarrying; C Manufacturing industry; D Electricity, gas, steam and air-conditioning supply; E Water supply, sewerage, waste management, and remediation activities; F Construction; G Wholesale and retail trade; repair of motor vehicles and motorcycles; H Transport and storage; I Hotels and restaurants; J Information and communications.

K Financial and insurance activities; L Real estate activities; M Professional, scientific and technical activities; N Administrative and support service activities; O Public administration and defense; compulsory social security; P Education; Q Health and social work activities; R Arts, entertainment and recreation activities; S Other services; T Activities of households as employers of domestic servants and producers of goods and services for own consumption. U Activities of extra-territorial organizations and bodies not shown. Military occupations not shown.

Source: Annual sub-sample of the Spanish Labor Force Survey (Year 2020 excluding first quarter). Own calculations.

Table A3
Evidence-Based Teleworking Index at the 1-digit level. Female subsample.

Occupations/Activities	A	B	C	D	E	F	G	H	I	J	Tot
A Directors and managers	73.90	-	28.83	84.97	16.31	54.15	25.62	22.39	20.87	28.73	31.09
B Health and education science technicians and professionals	12.37	-	0.00	-	0.00	-	3.30	-	0.00	65.76	24.66
C Other technicians and science professionals	9.54	4.26	35.62	41.39	58.78	10.99	31.52	54.98	13.29	60.44	38.39
D Technicians; support professionals	6.82	6.55	22.47	78.41	32.30	23.26	16.95	40.41	31.60	62.43	25.50
E Office clerks	15.63	0.00	19.73	44.88	19.67	19.04	23.35	16.05	4.27	53.92	22.85
F Customer services clerks	78.13	-	6.90	5.50	20.67	21.24	12.72	28.03	2.47	55.49	20.54
G Food service and retail workers	0.00	-	4.33	-	-	0.00	2.28	0.00	0.90	0.00	1.84
H Health and personal care workers	-	-	-	-	-	-	0.00	1.24	1.74	0.00	3.01
I Protective services workers	4.06	-	0.00	-	-	-	-	-	-	100.00	3.27
J Skilled agricultural and fishery workers	8.36	-	-	-	-	-	0.00	-	-	-	8.60
K Skilled construction workers	-	-	38.16	25.00	-	14.93	-	-	-	-	18.85
L Craft and related trades workers	0.00	-	6.49	-	-	0.00	0.92	0.00	-	100.00	6.24
M Plant and machine operators and assemblers	0.00	0.00	0.19	-	-	-	0.00	-	-	-	0.15
N Drivers and mobile plant operators	-	0.00	0.00	-	0.00	0.00	0.00	0.00	-	-	0.00
O Sales and services elementary occupations	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.92	1.24
P Labourers	0.15	-	0.00	-	-	0.00	0.00	0.00	-	-	0.04
Total	8.51	3.15	13.52	36.81	23.52	19.43	5.42	17.43	2.39	56.54	14.87
	K	L	M	N	O	P	Q	R	S	T	Tot
A Directors and managers	13.65	31.31	47.85	59.87	30.42	31.48	37.61	33.42	17.50	-	31.09
B Health and education science technicians and professionals	4.78	25.00	19.28	-	24.02	41.73	2.44	0.00	14.95	25.92	24.66
C Other technicians and science professionals	45.79	48.14	46.57	71.64	28.16	34.22	16.18	33.12	13.52	-	38.39
D Technicians; support professionals	34.02	23.44	29.64	12.54	29.43	24.08	7.14	10.48	22.87	-	25.50
E Office clerks	28.94	19.57	27.04	17.77	27.16	19.59	7.46	18.22	39.05	12.01	22.85
F Customer services clerks	39.01	6.51	19.03	26.90	24.98	33.02	6.33	26.76	13.56	-	20.54
G Food service and retail workers	0.00	0.00	50.88	9.65	0.00	0.00	0.00	2.94	0.00	0.00	1.84
H Health and personal care workers	0.00	0.00	35.81	0.00	11.81	0.16	1.53	11.87	4.13	7.80	3.01
I Protective services workers	-	-	-	0.00	0.00	-	-	0.00	-	-	3.27
J Skilled agricultural and fishery workers	-	-	-	24.58	0.00	-	-	-	-	0.00	8.60
K Skilled construction workers	-	100.00	0.00	0.00	5.77	-	0.00	-	-	0.00	18.85
L Craft and related trades workers	-	-	0.00	-	0.00	0.00	53.77	0.00	7.42	-	6.24
M Plant and machine operators and assemblers	-	-	0.00	-	0.00	0.00	0.00	-	0.00	-	0.15
N Drivers and mobile plant operators	-	-	-	0.00	-	-	0.00	-	0.00	-	0.00
O Sales and services elementary occupations	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	28.42	2.49	1.24
P Labourers	-	-	0.00	0.00	0.00	-	0.00	-	-	-	0.04
Total	31.79	19.75	35.61	8.36	22.38	36.81	3.94	17.73	8.72	3.74	14.87

A Agriculture, livestock, forestry and fisheries; B Mining and quarrying; C Manufacturing industry; D Electricity, gas, steam and air-conditioning supply; E Water supply, sewerage, waste management, and remediation activities; F Construction; G Wholesale and retail trade; repair of motor vehicles and motorcycles; H Transport and storage; I Hotels and restaurants; J Information and communications.
K Financial and insurance activities; L Real estate activities; M Professional, scientific and technical activities; N Administrative and support service activities; O Public administration and defense; compulsory social security; P Education; Q Health and social work activities; R Arts, entertainment and recreation activities; S Other services; T Activities of households as employers of domestic servants and producers of goods and services for own consumption. U Activities of extra-territorial organizations and bodies not shown. Military occupations not shown.
Source: Annual sub-sample of the Spanish Labor Force Survey (Year 2020 excluding first quarter). Own calculations.

Table A4
Labor market transitions by EBTI deciles.

	Year	*EBTI*= 0	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	Total
Remain employed	2019	92.7%	90.6%	90.8%	97.3%	95.8%	94.6%	95.4%	96.2%	96.9%	96.4%	97.2%	94.6%
	2020	80.2%	84.3%	70.9%	89.6%	89.9%	81.1%	86.4%	86.1%	91.3%	91.7%	92.2%	85.1%
	Total	86.2%	87.4%	80.8%	93.4%	92.7%	87.7%	90.9%	91.0%	94.0%	94.0%	94.5%	89.7%
Go to ERTE	2019	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.4%	0.0%	0.0%	0.1%	0.1%	0.1%
	2020	8.1%	3.6%	11.9%	3.9%	4.5%	10.2%	6.8%	6.7%	4.4%	3.2%	3.3%	6.4%
	Total	4.2%	1.8%	5.9%	2.1%	2.4%	5.2%	3.6%	3.5%	2.2%	1.7%	1.8%	3.3%
Become unemployed	2019	4.7%	5.8%	5.9%	1.5%	2.6%	2.9%	2.9%	1.9%	2.3%	1.8%	1.7%	3.3%
	2020	7.1%	6.6%	10.5%	4.0%	3.0%	4.8%	3.8%	4.2%	2.3%	2.5%	2.0%	4.9%
	Total	5.9%	6.2%	8.2%	2.8%	2.8%	3.9%	3.3%	3.1%	2.3%	2.2%	1.9%	4.1%
Become inactive	2019	2.7%	3.6%	3.4%	1.0%	1.5%	2.5%	1.4%	1.9%	0.9%	1.8%	1.0%	2.1%
	2020	4.7%	5.5%	6.7%	2.5%	2.6%	3.8%	3.0%	2.9%	2.1%	2.5%	2.5%	3.6%
	Total	3.7%	4.5%	5.0%	1.8%	2.1%	3.2%	2.2%	2.4%	1.5%	2.2%	1.8%	2.9%

Notes: The category become unemployed includes discouraged workers.
First quarters are excluded from the analysis.
Source: Annual sub-sample of the Spanish Labor Force Survey. Own calculations.

Table A5
Whole estimation results. Reference category: Remain employed

	Model 1	Model 2			Model 1	Model 2		
	All	All	Females	Males	All	All	Females	Males
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ERTE				Inactivity			
Female	-0.358*	-0.340*	-	-	0.396***	0.392***	-	-
	(0.166)	(0.166)	-	-	(0.057)	(0.057)	-	-
Covid	1.851***	1.794***	2.069***	1.947***	0.565***	0.597***	0.570***	0.552***
	(0.076)	(0.084)	(0.113)	(0.103)	(0.049)	(0.052)	(0.051)	(0.057)
Female*Covid	0.656***	0.635***	-	-	-0.066	-0.058	-	-
	(0.164)	(0.164)	-	-	(0.064)	(0.064)	-	-
Age	-0.183***	-0.181***	-0.178***	-0.187***	-0.131***	-0.132***	-0.101***	-0.152***
	(0.006)	(0.006)	(0.009)	(0.008)	(0.005)	(0.005)	(0.007)	(0.007)
Age^2	0.002***	0.002***	0.002***	0.002***	0.001***	0.001***	0.001***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
1st st. Second.	-0.221**	-0.220**	-0.240*	-0.210*	-0.292***	-0.293***	-0.390***	-0.259**
	(0.076)	(0.076)	(0.122)	(0.098)	(0.072)	(0.072)	(0.101)	(0.101)
2nd st. Second.	-0.232**	-0.230**	-0.218+	-0.257*	-0.429***	-0.431***	-0.543***	-0.400***
	(0.083)	(0.083)	(0.127)	(0.112)	(0.079)	(0.079)	(0.107)	(0.114)
Medium VT	-0.387***	-0.384***	-0.457***	-0.339**	-0.354***	-0.355***	-0.445***	-0.284*
	(0.083)	(0.083)	(0.127)	(0.110)	(0.077)	(0.078)	(0.105)	(0.114)
Advanced VT	-0.350***	-0.347***	-0.347**	-0.368***	-0.467***	-0.469***	-0.569***	-0.370***
	(0.081)	(0.081)	(0.126)	(0.107)	(0.078)	(0.078)	(0.108)	(0.113)
University	-0.535***	-0.531***	-0.533***	-0.554***	-0.464***	-0.467***	-0.575***	-0.344**
	(0.080)	(0.081)	(0.122)	(0.110)	(0.076)	(0.076)	(0.105)	(0.115)
Foreign	0.073	0.074	0.080	0.058	0.272***	0.273***	0.207***	0.326***
	(0.053)	(0.053)	(0.073)	(0.075)	(0.048)	(0.048)	(0.064)	(0.073)
Private employee	0.394***	0.402***	0.465***	0.289**	0.270***	0.270***	0.266***	0.267**
	(0.062)	(0.062)	(0.084)	(0.093)	(0.051)	(0.051)	(0.062)	(0.088)
Self-employed	0.631***	0.640***	0.729***	0.508***	-0.287***	-0.287***	-0.196*	-0.373***
	(0.067)	(0.068)	(0.096)	(0.098)	(0.069)	(0.069)	(0.089)	(0.110)
EBTI	-0.598*	-3.474**	-3.103	-3.991*	-0.622*	-0.353	-0.114	-0.872
	(0.282)	(1.288)	(1.923)	(1.846)	(0.247)	(0.382)	(0.484)	(0.622)
$EBTI^2$	-0.125	4.287**	3.356	5.044*	0.713*	0.633	0.322	1.287
	(0.455)	(1.500)	(2.702)	(2.017)	(0.363)	(0.591)	(0.778)	(0.898)
Covid*_EBTI_	-	3.019*	2.508	3.827*	-	-0.438	-0.877	0.330
	-	(1.312)	(1.962)	(1.878)	-	(0.461)	(0.590)	(0.736)
Covid*$EBTI^2$	-	-4.785**	-4.208	-5.487**	-	0.146	0.477	-0.552
	-	(1.573)	(2.815)	(2.107)	-	(0.729)	(0.963)	(1.098)
Non-essential act.	0.727***	0.728***	0.722***	0.735***	0.382***	0.382***	0.342***	0.437***
	(0.035)	(0.035)	(0.052)	(0.048)	(0.033)	(0.033)	(0.044)	(0.050)

	Model 1	Model 2		
	All	All	Females	Males
	Unemployment			
	Coef.	Coef.	Coef.	Coef.
Female	-0.041	-0.045	-	-
	(0.048)	(0.048)	-	-
Covid	0.349***	0.391***	0.577***	0.368***
	(0.039)	(0.042)	(0.049)	(0.045)
Female*Covid	0.157**	0.165**	-	-
	(0.056)	(0.056)	-	-
Age	-0.084***	-0.085***	-0.076***	-0.089***
	(0.004)	(0.004)	(0.007)	(0.006)
Age^2	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
1st st. Second.	-0.356***	-0.358***	-0.202+	-0.467***
	(0.064)	(0.064)	(0.104)	(0.080)
2nd st. Second	-0.553***	-0.556***	-0.477***	-0.636***
	(0.070)	(0.070)	(0.111)	(0.092)
Medium VT	-0.382***	-0.384***	-0.355***	-0.437***
	(0.068)	(0.068)	(0.106)	(0.090)
Advanced VT	-0.514***	-0.517***	-0.465***	-0.618***
	(0.069)	(0.069)	(0.108)	(0.091)
University	-0.596***	-0.599***	-0.654***	-0.628***
	(0.068)	(0.068)	(0.106)	(0.092)
Foreign	0.437***	0.437***	0.422***	0.451***
	(0.042)	(0.042)	(0.060)	(0.059)
Pr.sector employee	0.145***	0.145***	0.179**	0.100
	(0.045)	(0.045)	(0.061)	(0.067)
Self-employed	-0.657***	-0.658***	-0.543***	-0.754***
	(0.067)	(0.067)	(0.099)	(0.094)

(*continued on next page*)

Table A5 (*continued*)

	Model 1	Model 2		
	All	All	Females	Males
	Unemployment			
	Coef.	Coef.	Coef.	Coef.
EBTI	-0.935***	-0.674*	-0.542	-0.863+
	(0.230)	(0.333)	(0.478)	(0.465)
EBTI ^{2}	0.913**	1.040*	0.879	1.254+
	(0.342)	(0.501)	(0.746)	(0.677)
Covid**EBTI*	-	-0.432	-0.683	-0.125
	-	(0.423)	(0.601)	(0.597)
Covid**EBTI* ^{2}	-	-0.237	-0.048	-0.473
	-	(0.667)	(0.980)	(0.913)
Non-essential act.	0.359***	0.359***	0.357***	0.361***
	(0.030)	(0.030)	(0.044)	(0.041)

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, $+p < 0.10$. Robust standard errors in parenthesis.
Estimations include regional fixed effects (NUTS2, Spanish Autonomous Communities)

Table A6
Selection mechanism. All estimations.

	Model 1	Model 2		
	All	All	Females	Males
	(1)	(2)	(3)	(4)
	Coef.	Coef.	Coef.	Coef.
Female	-0.681 ***	-0.681 ***	-	-
	(0.010)	(0.010)	-	-
Year	-0.063 ***	-0.063 ***	-0.061 ***	-0.083 ***
	(0.010)	(0.010)	(0.013)	(0.015)
Age	0.010 ***	0.010 ***	-0.015 ***	0.011 ***
	(0.001)	(0.001)	(0.002)	(0.002)
Age^2	0.000 ***	0.000 ***	0.000 ***	0.000 ***
	(0.000)	(0.000)	(0.000)	(0.000)
1st st. Secondary education	-0.294 ***	-0.294 ***	-0.281 ***	-0.449 ***
	(0.021)	(0.021)	(0.028)	(0.033)
2nd st. Secondary education	-0.274 ***	-0.274 ***	-0.184 ***	-0.581 ***
	(0.023)	(0.023)	(0.030)	(0.036)
Medium Vocational Training	0.159 ***	0.159 ***	0.255 ***	-0.075 +
	(0.025)	(0.025)	(0.033)	(0.040)
Advanced Vocational Training	0.329 ***	0.329 ***	0.410 ***	0.096 *
	(0.025)	(0.025)	(0.033)	(0.040)
University graduates	0.574 ***	0.574 ***	0.720 ***	0.127 ***
	(0.023)	(0.023)	(0.030)	(0.038)
Foreign	-0.168 ***	-0.168 ***	-0.164 ***	-0.202 ***
	(0.017)	(0.017)	(0.022)	(0.028)
Married	0.123 ***	0.123 ***	-0.051 **	0.455 ***
	(0.013)	(0.013)	(0.016)	(0.023)
Partner inactive	0.053 *	0.053 *	-0.134 ***	-0.045
	(0.024)	(0.024)	(0.040)	(0.031)
Children 0–6 years	0.609 ***	0.609 ***	0.480 ***	0.719 ***
	(0.018)	(0.018)	(0.022)	(0.030)
Children 7–15 years	0.540 ***	0.540 ***	0.499 ***	0.553 ***
	(0.016)	(0.016)	(0.020)	(0.029)
Children over 15 years	0.224 ***	0.224 ***	0.217 ***	0.182 ***
	(0.016)	(0.016)	(0.019)	(0.030)
/atanhrho_25	-0.254 ***	-0.254 ***	-0.256 ***	-0.228 * **
	(0.046)	(0.046)	(0.070)	(0.052)
/atanhrho_35	0.238 ***	0.238 ***	-0.016	0.471 * **
	(0.059)	(0.059)	(0.072)	(0.089)
/atanhrho_45	0.183 **	0.183 **	0.230 *	0.520 ***
	(0.059)	(0.059)	(0.097)	(0.126)

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, $+ p < 0.10$. Robust standard errors in parenthesis.
Estimations include regional fixed effects (NUTS2, Spanish Autonomous Communities).

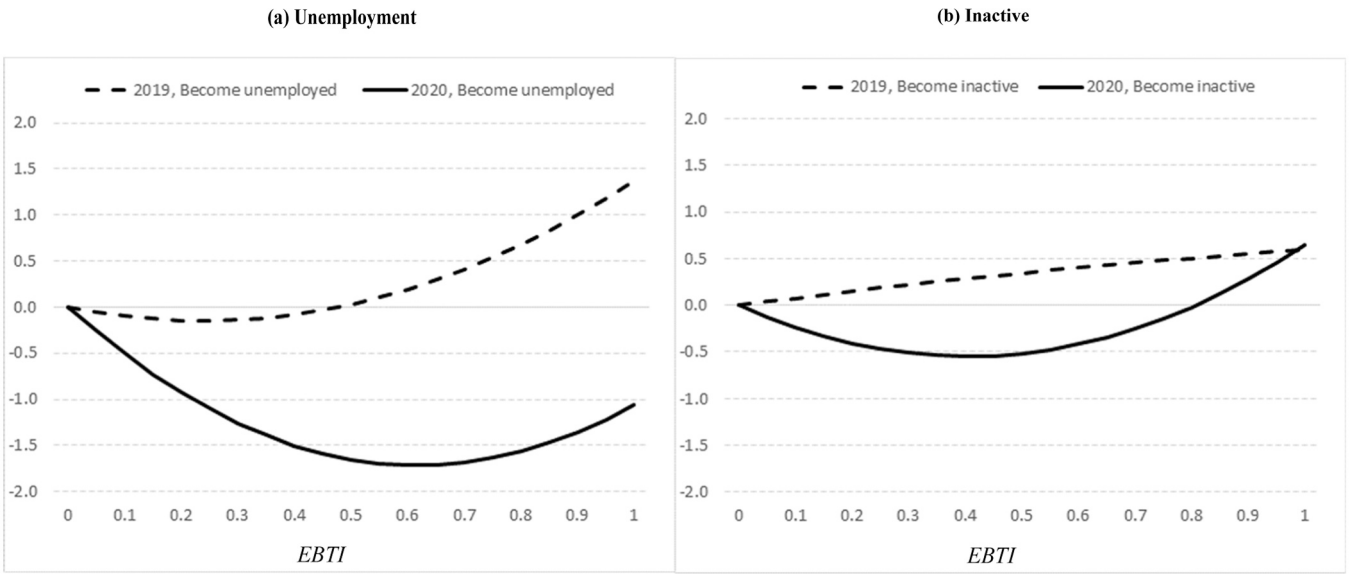

Fig. A1. Transitions to unemployment and inactivity by EBTI values. Note: The EBTI has been normalized to 1. Source: Annual sub-sample of the Spanish Labor Force Survey (First quarters are excluded from the analysis). Own calculations.

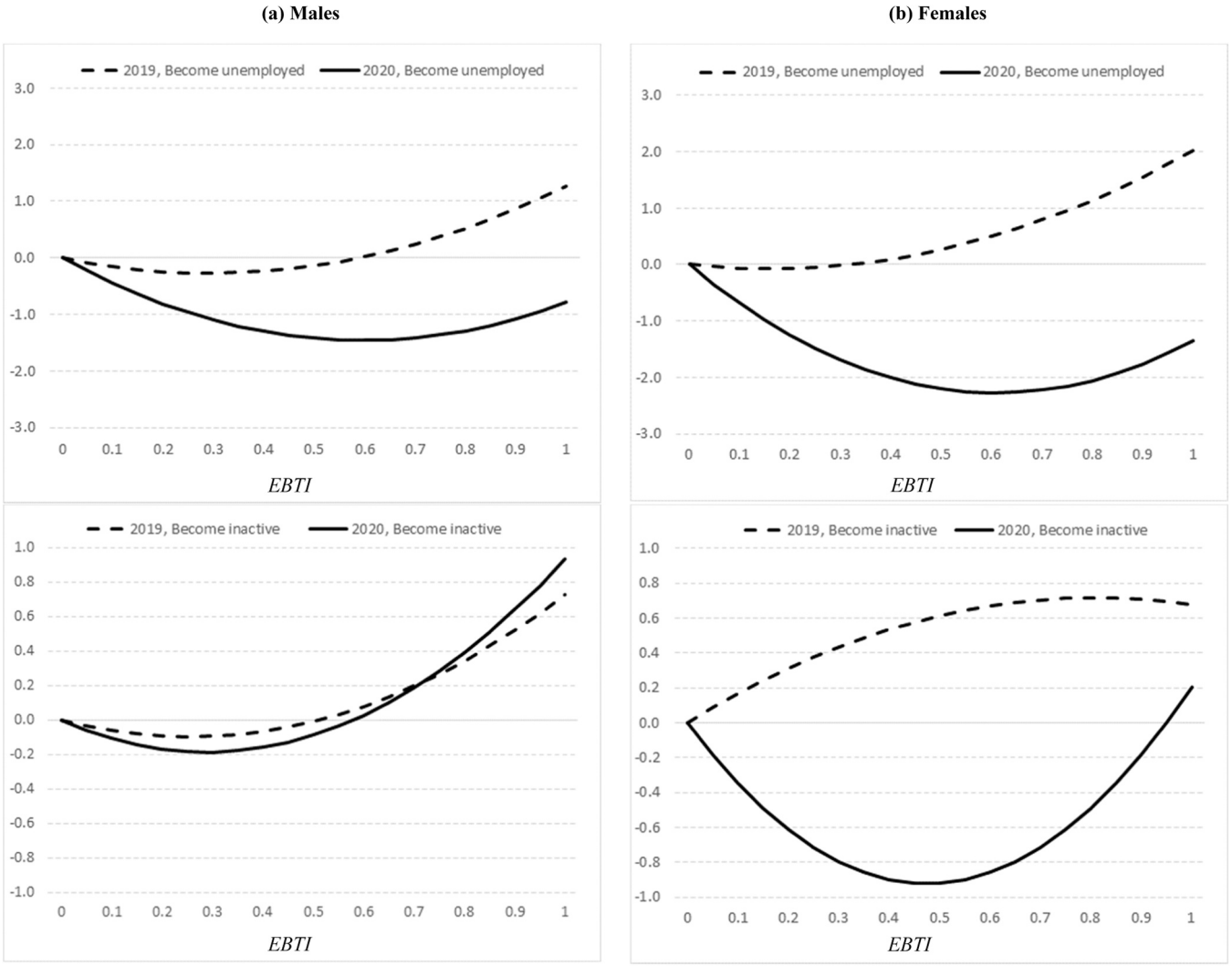

Fig. A2. Transitions to unemployment and inactivity by gender and EBTI values. Note: The EBTI has been normalized to 1. Source: Annual sub-sample of the Spanish Labor Force Survey (First quarters are excluded from the analysis). Own calculations.

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