
Temporary paid furlough in the midst of an unprecedented sanitary crisis: evidence from the Spanish reality

Executive summary

January 2022

Research project framework: “Nuevas dinámicas del mercado laboral tras el confinamiento en Andalucía: el empleo del futuro post COVID19 y respuesta a nuevos confinamientos.” Ref.: CV20-3547.

Funding institutions: “Junta de Andalucía, subvención en régimen de concurrencia no competitiva a Agentes Públicos del Sistema Andaluz del Conocimiento, para proyectos de investigación sobre el SARS-COV-2 y la enfermedad COVID-19, Cofinanciación FEDER - Programa Operativo FEDER 2014-2020”

*Note: This document is a brief and non-technical executive summary of the academic working paper, where further details on the analysis and technical aspects are developed in depth.

Key findings

- We found a robust and positive average effect of furlough schemes in the probability of being re-employed at the short-term.
- This positive re-employment effect was widespread at the regional level everywhere in the country and in every economic sector.
- However, although still significant, this effect lessens at the medium-term, thus, when the furlough scheme was held in time for two consecutive quarters.

Recommendations

- ERTE furlough schemes can be considered as an effective tool to face transitory shocks, increasing the re-employability of the granted and stabilizing the labor market meanwhile.
- These effectiveness is not conditioned to any region or sector, recommending its use at a general level.
- On the other hand, its duration and timing are key determinants for its effectiveness and therefore should be carefully measured.

Principales resultados

- Se ha encontrado un efecto medio significativo y positivo de los esquemas de ERTE sobre la probabilidad de retornar a situaciones de empleo a corto plazo.
- Este efecto positivo habría sido generalizado para todas las regiones y sectores del país.
- Sin embargo, a pesar de seguir siendo significativo, dicho efecto se reduce para el medio plazo, esto es, al considerar esquemas de ERTE sostenidos en el tiempo a lo largo de dos trimestres consecutivos.

Recomendaciones

- El mecanismo de los ERTE puede ser considerado como una herramienta efectiva a la hora de enfrentar shocks transitorios, incrementando la re-empleabilidad de sus beneficiarios y estabilizando el mercado laboral mientras tanto.
- Dicha efectividad no está condicionada a ninguna región o sector, recomendándose su uso a nivel general.
- Por otro lado, su duración y momento temporal son determinantes clave para su efectividad y por tanto deben ser conscientemente considerados.

Temporary paid furlough in Spain (ERTE)

The Covid-19 outbreak has caused an unprecedented sanitary crisis all over the world, forcing the governments to implement restrictive measures as mandatory lockdown and social distancing. Concerned about a boost in unemployment digits, most countries made a massive use of job retention schemes as a way to temporarily protect the employees' positions meanwhile the labor market were adjusting to the shock.

In Spain, it is known as "Expediente de Regulación Temporal de Empleo" or just "ERTE". This policy, consists in a temporary suspension of the labor relationship between the employer and the employee, or alternatively, a reduction of working hours justified by a major cause. This cause must be related to economic, technical, organizational or production issues, including Covid related consequences from March, 2020. During this period of suspension, the employee is getting a social security allowance while the employer only has to assume a social contribution, which is a minor part of the employee's wage. Additionally, under some circumstances the employer's social contribution can be relieved or discharged. As a result, it works as a transitory mechanism of flexibility to adjust the labor market, whose cost is essentially assumed by the public administration. In any case, this policy main purpose is to maintain the employees' position despite not being working, avoiding a sharp boost of unemployment during the shock and encouraging the following quick recovery.

Although this mechanism was available before the pandemic, the Spanish ERTE were only widely used then, reaching around 3 million of workers (more than 20% of the affiliated workers) in the second quarter of 2020 (see Figure 1). The following quarters it covered around 5% of the affiliated workers, which is still a significantly higher proportion than it was during the previous recession. Quite similar patterns are observed in its use at the regional level for Andalusian data (see Figure 2).

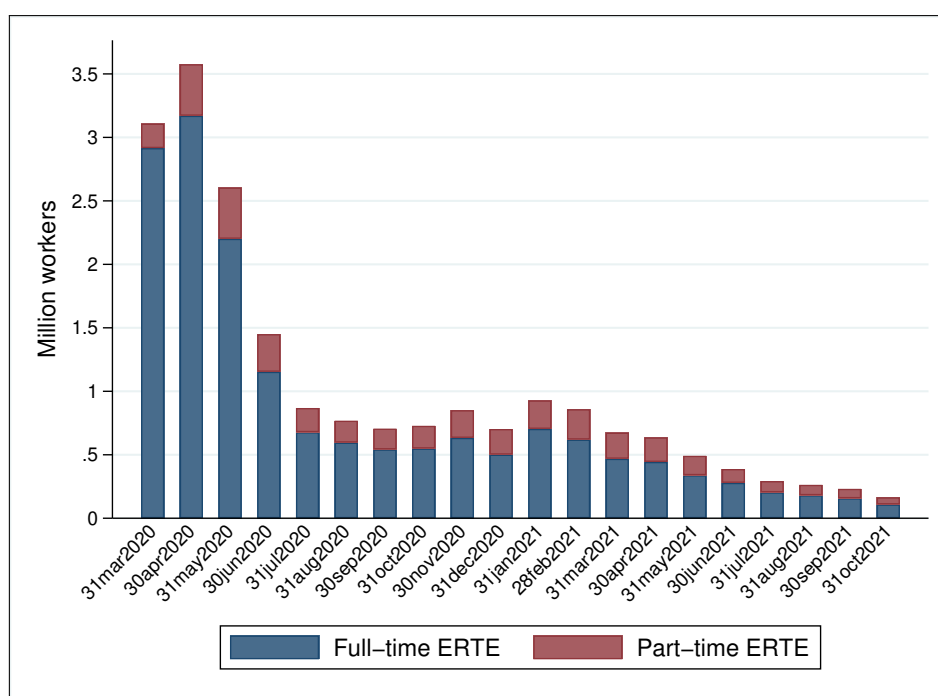


Figure 1: Covid19-related furloughed workers in Spain. Source: Social Security registers.

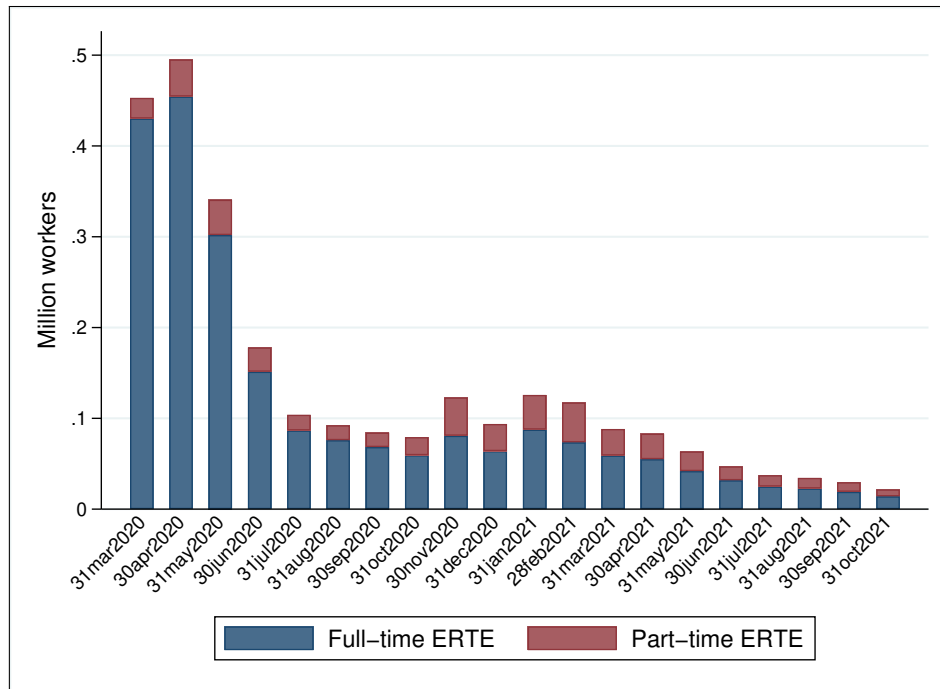


Figure 2: Covid19-related furloughed workers in Andalusia. Source: Social Security registers.

Since the first approval of these Covid-19 related ERTes in March, 2020, their expiration date has been postponed several times, remaining in the current legislation. Therefore, some evaluation of the impact of this policy in all dimensions was urgently needed to improve the design of these programs for the next future. Thus, our contribution assesses their ability to preserve pre-pandemic employment levels after the initial shock, measuring individual return-to-employment probabilities after a full-time ERTE.

“Re-employability bonus” after ERTE

A causal evaluation of the average effects of this policy leads us to conclude a strong and positive effect on re-employment probability after being full-time furloughed, specially when the schemes are held for a short period of time (a single quarter, according to our analysis). These results come from the selection of a representative sample of individuals who were working at the first quarter of 2020, were either displaced/jobless (control group) or furloughed (treatment group) in the second quarter, and whose labor market status is observed in the third quarter in order to determine whether they had returned to work or not (outcome). These data was retrieved from the Spanish Labor Force Survey (SLFS)/Encuesta de Población Activa (EPA).

Eventually, matching techniques were applied in order to ensure the comparability among individuals, passing multiple robustness and sensitivity checks too. As a result, our estimations evidences an average differential effect between both groups that may range from 24 to 29 percentage points. This means that an individual who was temporary furloughed during the initial shock increased significantly their probability to return to a working status regarding to those who were displaced for any other reason.

These results support the idea of temporary furloughs schemes as effective tools to provide stability to the labor market when sudden adjustments are needed due to unexpected but transitory

shocks. Indeed, not only have they proven useful to brake the raise of unemployment, but also to ease a quick return to work afterwards.

Widespread effects

Computing this effect by region (17 Autonomous Communities) and sectors (9 sectors from the National Classification of Economic Activities at one-digit) barely make the difference. By contrast, that “re-employability bonus” shows little regional and sectoral heterogeneity, with no significant differences among them.

The crucial role of good timing and duration

Surprisingly, when we replicated a similar matching analysis but considering two-consecutive-quarters furloughed workers, the magnitude of the aforementioned “re-employability bonus” did drop significantly. This time, the estimations showed a positive effect that range from 17 to 20 percentage points at a national level, far away from the previous scenario, but still highly significant. The comparison of both, the short and medium-term analysis, might indicate that long-lasting furlough schemes result in efficiency losses, reinforcing the need for good timing and carefully planning when considering this policy, as other researchers were suggesting before. Note that if a furloughed scheme is held too much in time (becomes permanent) or the measure is not taken at the right time (when the shock is indeed transitory), a necessary workforce reallocation may have been hampered, so the policy might lose its effectiveness. Unfortunately, the lack of a representative sample of furloughed individuals for more than two consecutive quarters did not allow us to extend this analysis to the long-term in order to validate this hypothesis.

Firm dynamics and survival: pre and post Covid-19 overview

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Key findings

- Business shutdowns were relatively higher for Andalusian firms in regard to the national mean, specially in the early stages of the pandemic.
- This fact might be explained by the sectoral and size composition of the Andalusian businesses, more oriented towards leisure related services and micro-enterprises, which were the least surviving profiles during the pandemic.
- Additionally, firms whose employees were sent to ERTE schemes were significantly associated with higher survival rates.

Recommendations

- Running strategies for the reorientation and diversification of the Andalusian business network are advisable in order to be able to face these transitory shocks from a better position.
- ERTE schemes could work as a tool to brake the business exit during a shock but further implications should be revise in depth.

Principales resultados

- La destrucción de empresas fue relativamente mayor para Andalucía en comparación a la media nacional, especialmente durante la fase inicial de la pandemia.
- Este hecho podría estar explicado por la composición sectorial y tamaño de las empresas andaluzas, más orientadas a servicios de ocio y microempresas, los perfiles con menor supervivencia durante la pandemia.
- Además, las empresas cuyos empleados fueron a ERTE se asocian significativamente con mayores tasas de supervivencia.

Recomendaciones

- Se recomienda el uso de estrategias para la reorientación y diversificación del tejido productivo andaluz con el fin de poder enfrentar este tipo de shocks transitorios desde una mejor posición.
- Los ERTE podrían ser útiles como herramientas para frenar el cierre de negocios durante un shock transitorio, sin embargo, mayores implicaciones deben ser revisadas en detalle.

Pre-pandemic trends: openings and closures

In order to know about the firm dynamics before the pandemic we used annual data from the Harmonized Demography of Firms (*Demografía Armonizada de Empresas*, henceforth DAE), by the National Statistical Institute (INE). Generally speaking, a pro-cyclical behaviour can be observed for the firms dynamics, with a clear decrease in the number of firms during the recession period (2009-2013), which turns to an increasing trend from 2014 onwards. Likewise, the business cycle affected the rates of opening and closure, with high closure rates (above 9% of annual firm stock) and low openings (below 9%) until 2014, inverting this trend thereafter.

Although this behavior has proved to be quite similar for both Spanish and Andalusian data, Andalusian firms have always experienced higher opening and closure rates over the last decade (see Figures 1 and 2). This pattern might be explained by the main characteristics of the firms settled in each territory, mainly the sectoral composition of their economies and the distribution of firm sizes. As displayed in Table 1, Andalusian companies are more oriented towards service activities and micro-enterprises compared with the national mean.

On the other hand, a quick overview over Figures 3, 4, 5 and 6 is enough to note that lower opening and closure rates are associated with bigger companies (in no. of employees) and particularly industrial sectors. By contrast, higher rates over the period mainly appear in non-industrial sectors¹ and small companies.

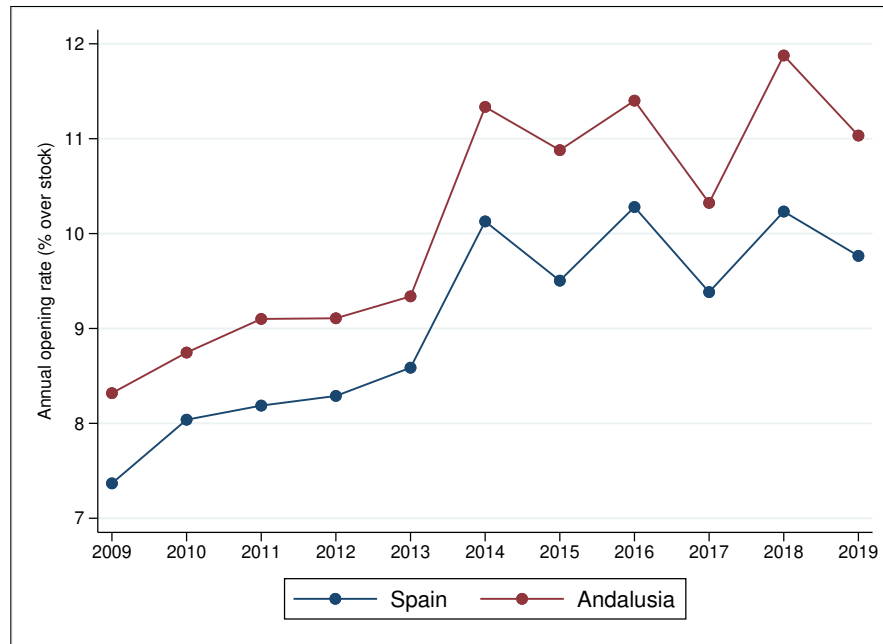


Figure 1: Annual opening rate in percentage over the annual stock of firms. By region comparison.
Source: DAE.

¹Data from missing sectors as primary activities and public administration is not provided by the source.

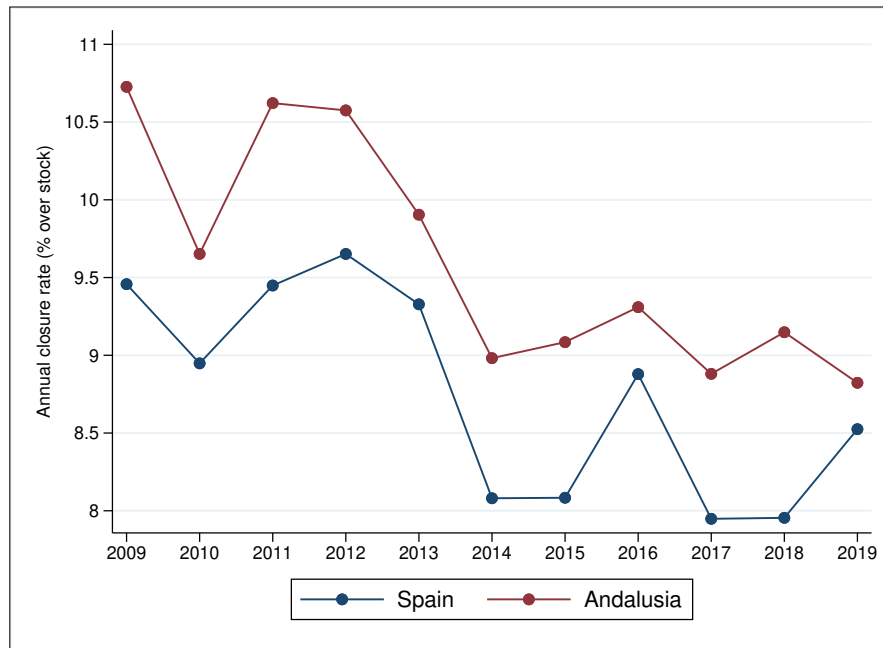


Figure 2: Annual closure rate in percentage over the annual stock of firms. By region comparison.
Source: DAE.

Table 1: Sectoral and size composition shares of the Spanish and Andalusian firms. Mean shares for the period 2009-2019.

	Share (%)	
	Spain	Andalusia
Industry	6.28	5.72
Construction	13.85	11.99
Services	79.87	82.29
Total	100	100
Less than 10 empl.	96.04	96.60
10 or more empl.	3.96	3.40
Total	100	100

Source: DAE.

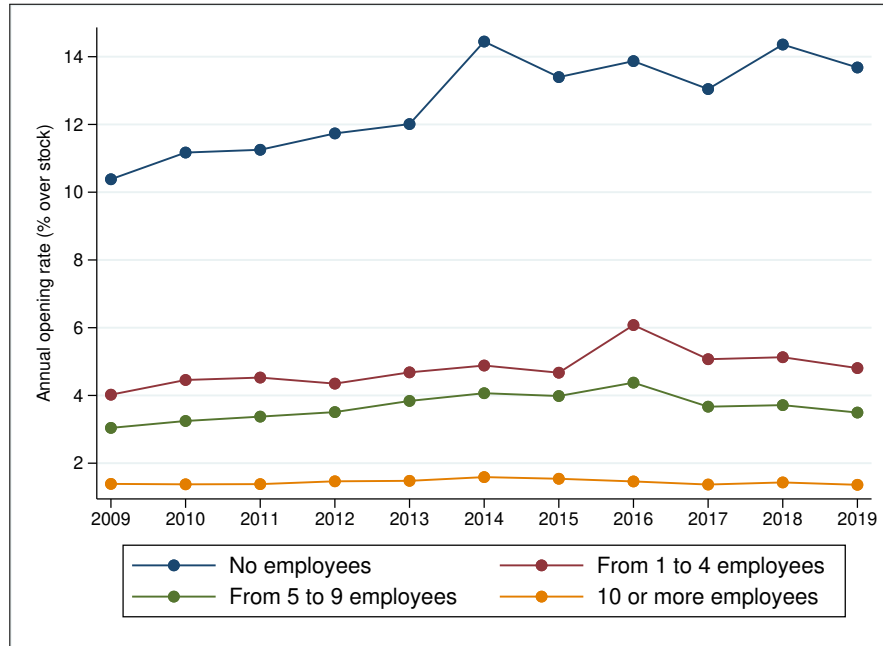


Figure 3: Annual opening rate in percentage over the annual stock of firms in Spain. By number of employees comparison. Source: DAE.

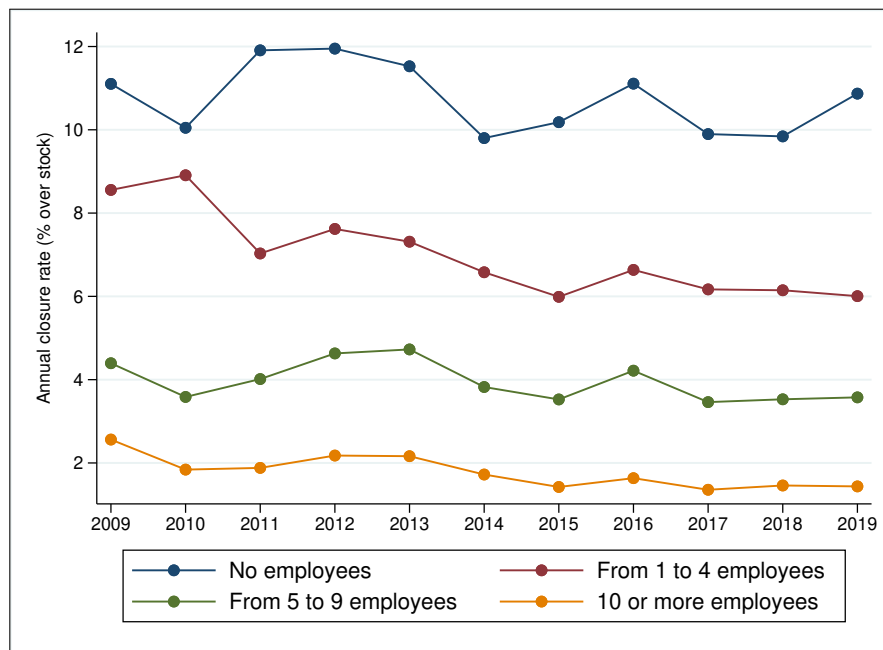


Figure 4: Annual closure rate in percentage over the annual stock of firms in Spain. By number of employees comparison. Source: DAE.

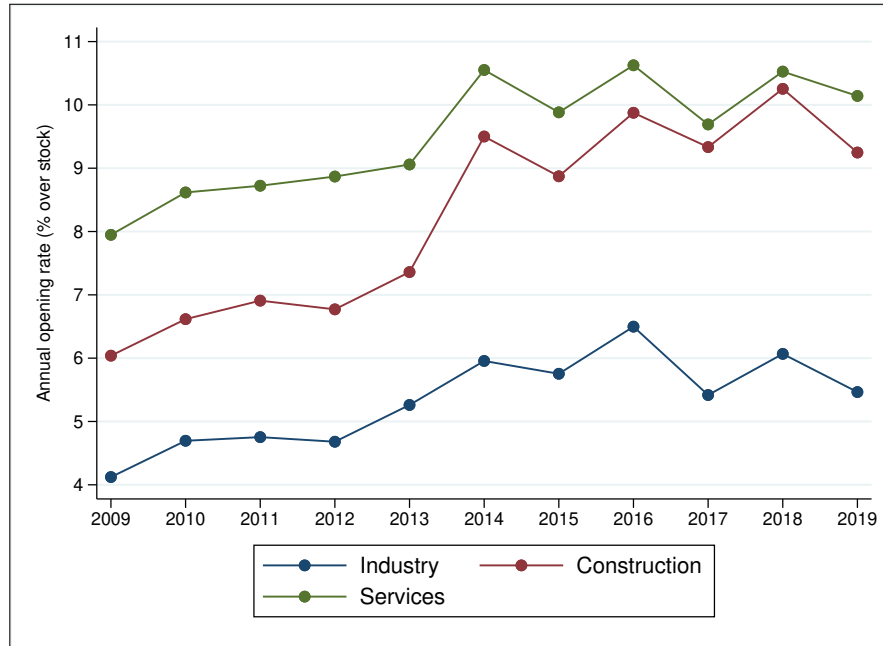


Figure 5: Annual opening rate in percentage over the annual stock of firms in Spain. By sector comparison. Source: DAE.

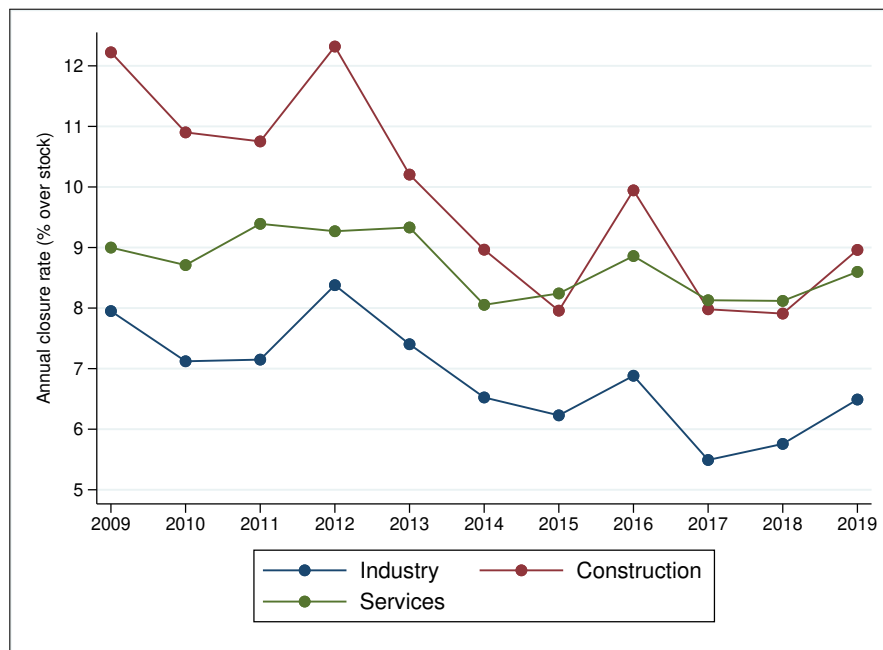


Figure 6: Annual closure rate in percentage over the annual stock of firms in Spain. By sector comparison. Source: DAE.

Firm survival during the pandemic

The survival of the companies is one of the multiple socioeconomic dimensions which have been negatively shocked by the pandemic. From an economic perspective, this is one of the most important issues which governments have dealt with, since the generalized lockdown and the social distancing measures led to the sudden closing of many firms. Nonetheless, despite being generalized throughout the whole economy, the impact of this shock may not have been equal for all companies. In this regard, the economic sector or the company size may have been crucial when talking about the survival of the companies throughout the pandemic.

Recently, the National Statistical Institute (INE) started to provide new updated data with the publication of the experimental statistics of Demographic Situation of Companies (henceforth CODEM), which includes 2020 data. Since the information is retrieved from National Directory of Companies (DIRCE) registers too, this new database resembles the previous one, however, the way information is provided substantially differs. Now, frequency has changed from annual to quarterly, size categories are differently arranged and self-employment will not be considered here. The provided information on firm survival takes an initial cohort of 1,190,870 firms settled in Spain and follows them in order to observe how many of them keep operating in the subsequent quarters. These data is available by size category (measured by number of employees), economic activity (by National Classification of Economic Activities) and situation of their employees regarding to furlough schemes (*Expedientes de Regulación Temporal de Empleo* or just ERTE).²

To sum up the main results, in the first quarter of 2020, during the first impact of the Covid outbreak, about 11.80% of the initial sample of Spanish firms which were active in January 1st were already closed by April 1st. However, this percentage was even higher for Andalusia, reaching a 17.29%. For the following quarters, the subsequent drops in firm survival are proportional for both territories and less sharp than it was for the first quarter of 2020. In any case, despite following a similar trend, the greater impact of the initial shock results in lower firm survival for Andalusian firms with regard to the national mean at any quarter. (see Table 2 and Figure 7)

By number of employees these differences are quite significant too. (see Table 3 and Figure 8). In numbers, after the first quarter of 2020, only a 85.29% of the firms which operated with less than 5 employees remain active. By contrast, this percentage grow up to 95.23% for 6-9 employees companies, and even more for larger firms. Again, largest firms are more likely to survive and are more able to adapt to shocks.

On the other hand, there are important differences when considering employees in ERTE too. As mentioned before, the initial cohort for this case starts in April 2020, when the Covid-related ERTes were available. Then, we observe that companies which have been granted with their employees in ERTE experienced higher survival rates. This gap was about 3 percentage points in the second quarter but widening in the following ones. (see Table 4 and Figure 9)

Lastly, Figures 10, 11 and 12 display these survival differences regarding the initial cohort of January 1st by sector. For this purpose, we have considered the National Classification groups, remarking Construction, Hospitality and Food Services, Art and entertainment and Education as the most vulnerable sectors during the pandemic. By contrast, Industrial sectors, Financial and Insurance, and Health and Social Work were the most resilient profiles of firms during this period.

²For the latter case the initial cohort was taken in April instead of January 2020, because the widespread Covid-related ERTE did not appear until mid-March, 2020.

Preliminary results from regression analysis using these data allowed us to confirm the significant effects of all these variables (firm region, no. of employees, ERTE situation and sector) in the survival probability of firms, pointing at the same direction as the conclusions obtained from this descriptive analysis.

Table 2: Number of firms and quarterly survival regarding the initial cohort of January, 2020. By region comparison.

Region	Jan2020	Survival Apr2020		Survival Jul2020		Survival Oct2020		Survival Jan2021	
	Firms	Firms	%	Firms	%	Firms	%	Firms	%
Spain	1,190,870	1,050,404	88.20	1,014,398	85.18	983,011	82.55	952,502	79.98
Andalusia	194,451	160,827	82.71	154,596	79.50	149,229	76.74	143,626	73.86

Source: CODEM.

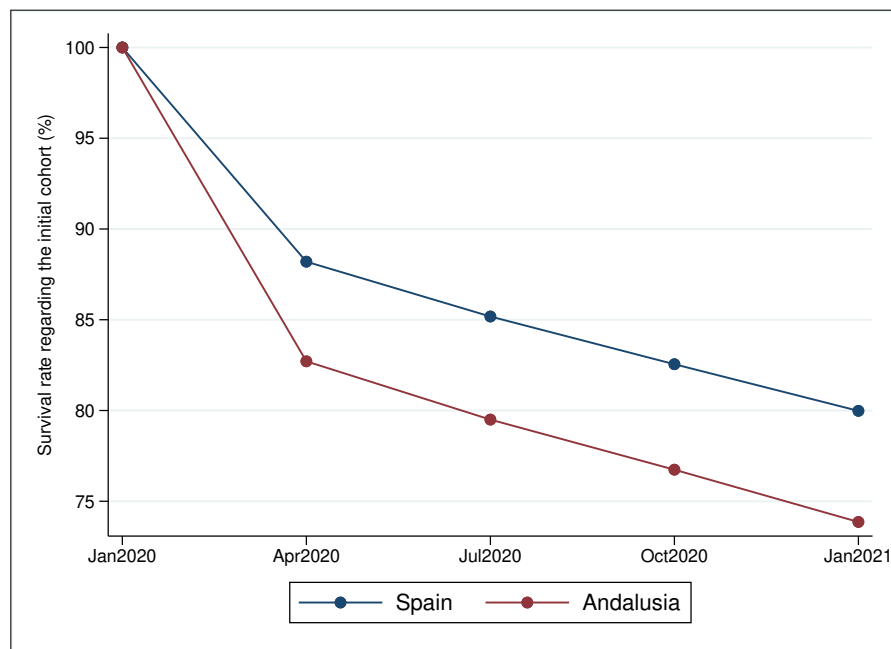


Figure 7: Percentage of surviving firms regarding an initial cohort (January 2020), Spain and Andalusia comparison. Source: CODEM.

Table 3: Number of firms and quarterly survival regarding the initial cohort of January, 2020. By number of employees comparison.

No. of employees	Jan2020	Survival Apr2020		Survival Jul2020		Survival Oct2020		Survival Jan2021	
	Firms	Firms	%	Firms	%	Firms	%	Firms	%
1-5	886,684	756,210	85.29	723,750	81.62	695,670	78.46	668,592	75.40
6-9	125,748	119,746	95.23	117,857	93.72	116,016	92.26	114,126	90.76
10-99	164,940	161,052	97.64	159,443	96.67	158,052	95.82	156,571	94.93
100-249	8,715	8,634	99.07	8,600	98.68	8,549	98.10	8,509	97.64
250 or more	4,783	4,762	99.56	4,748	99.27	4,724	98.77	4,704	98.35

Source: CODEM.

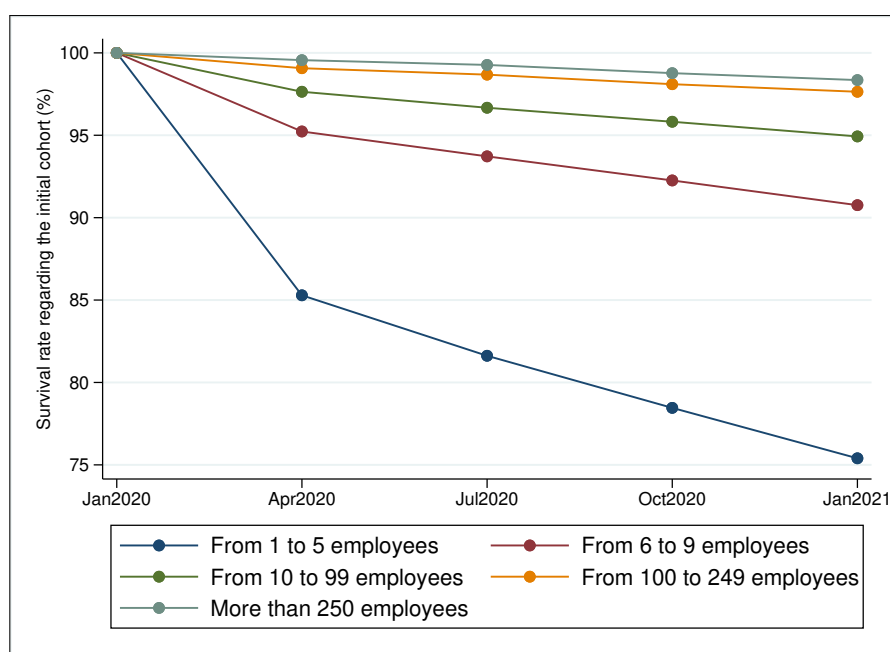


Figure 8: Percentage of surviving firms regarding a initial cohort (January 2020) for Spain, comparison by number of employees. Source: CODEM.

Table 4: Number of firms and quarterly survival regarding the initial cohort of April, 2020. By employees ERTE situation comparison.

Employees situation	Apr2020	Survival Jul2020		Survival Oct2020		Survival Jan2021		Survival Apr2021	
	Firms	Firms	%	Firms	%	Firms	%	Firms	%
No ERTE	852,306	812,240	95.30	781,490	91.69	753,187	88.37	724,018	84.95
ERTE	250,432	247,138	98.68	241,124	96.28	233,298	93.16	225,996	90.24

Source: CODEM.

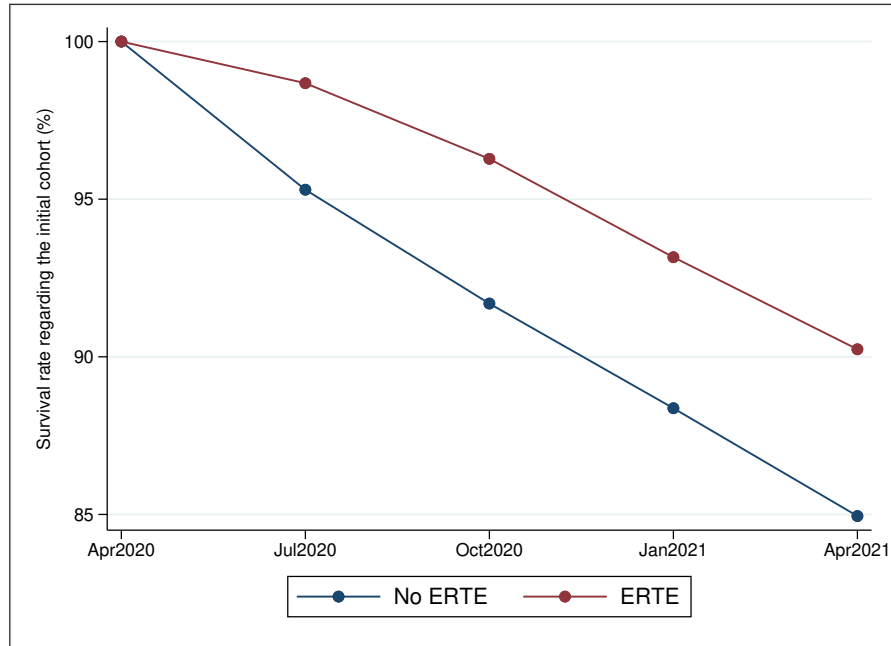


Figure 9: Percentage of surviving firms regarding an initial cohort (April 2020) for Spain, comparison by employees ERTE situation. Source: CODEM.

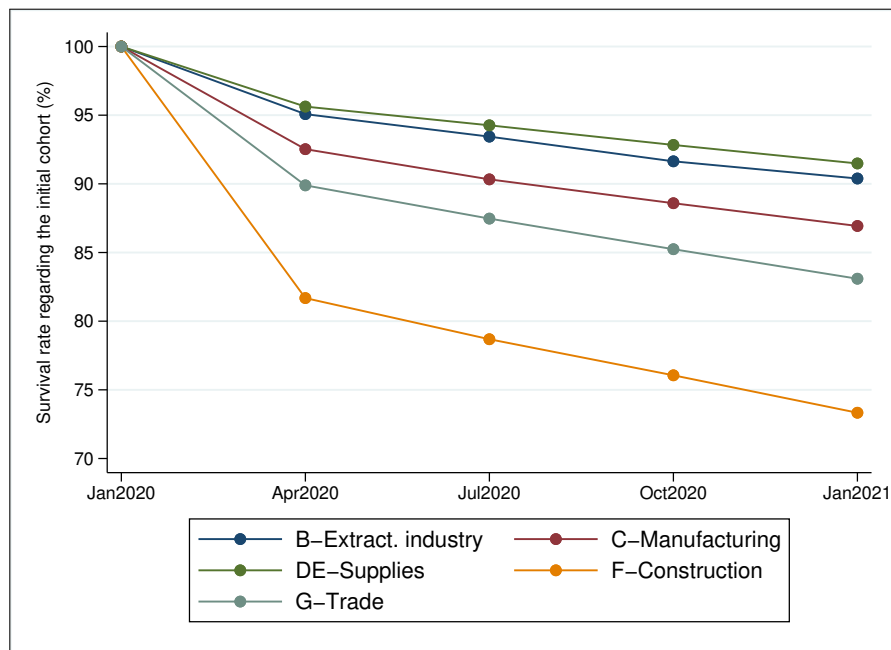


Figure 10: Percentage of surviving firms regarding an initial cohort (January 2020) for Spain, comparison by sector (I). Source: CODEM.

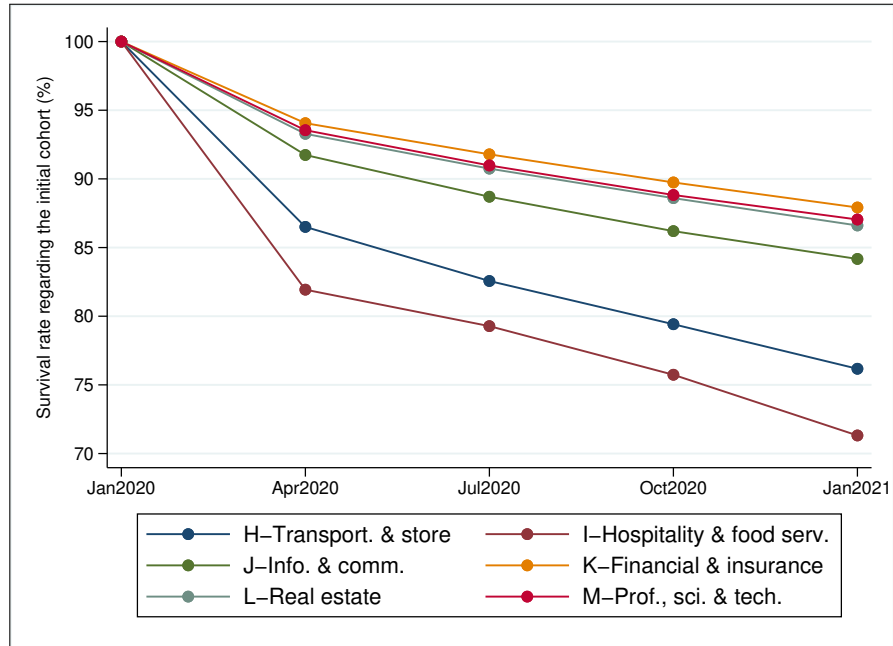


Figure 11: Percentage of surviving firms regarding a initial cohort (January 2020) for Spain, comparison by sector (II). Source: CODEM.

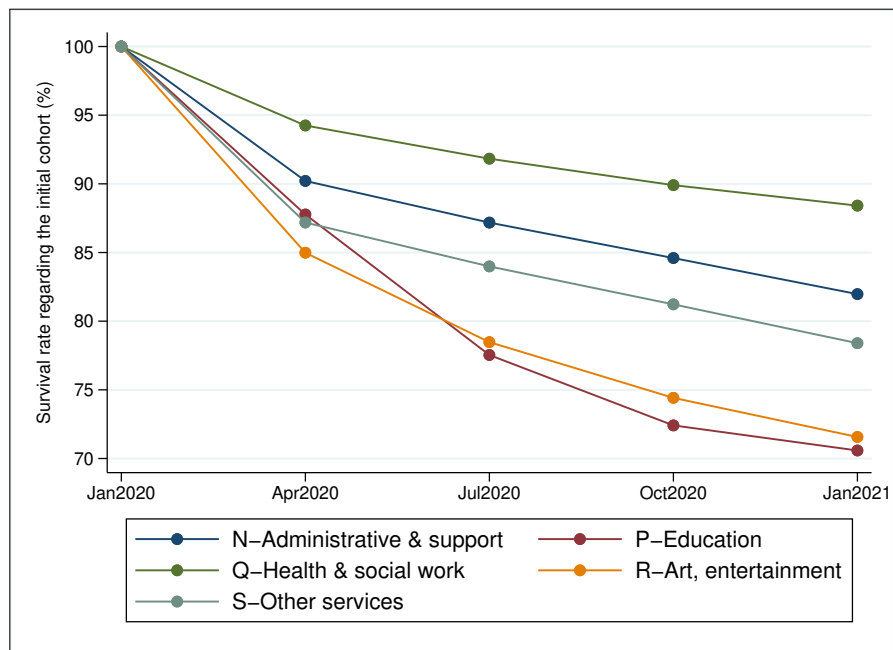


Figure 12: Percentage of surviving firms regarding a initial cohort (January 2020) for Spain, comparison by sector (III). Source: CODEM.

Lockdown intensity and mental health effects of older Europeans

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Key findings

- Social distancing, lockdown, and a temporary stop to some economic activities have long been among the most common policy tools to confront infectious diseases, where the policy design still play an important role.
- Lockdown policies increased insomnia, anxiety, and depression by 5.7, 5.6 and 5.3 percentage points, respectively.
- The effect is stronger for women, individuals employed at the outbreak of the pandemic, and those aged between 50 and 65.

Recommendations

- Highlighting the importance of face-to-face social interactions on individuals' mental health is keystone to design public policies focused in improving the use of technological resources to avoid the social isolation of the elderly population.
- The resulting lockdown has not been adequately addressed by existing mental health services. Governments must urgently address this need.
- Gender gap in mental health is important and reveals the high costs of strict lockdown for certain populations.

Principales resultados

- El distanciamiento social, el confinamiento y el cese temporal de algunas actividades económicas han sido durante mucho tiempo las herramientas políticas más comunes para hacer frente a las enfermedades infecciosas y cuyo diseño juega un papel importante.
- El confinamiento causó un aumento del insomnio, la ansiedad y la depresión en 5,7, 5,6 y 5,3 puntos porcentuales, respectivamente.
- El impacto en la salud mental es mayor para mujeres, individuos empleados en el momento de irrupción de de la pandemia y para aquellos que tienen entre 50 y 65 años.

Recomendaciones

- Resaltar la importancia de las interacciones sociales cara a cara en la salud mental de los individuos es clave para diseñar políticas públicas enfocadas en mejorar el uso de los recursos tecnológicos para evitar el aislamiento social de la población mayor.
- El aislamiento resultante no ha sido abordado adecuadamente por los servicios de salud mental existentes. Los gobiernos deben abordar urgentemente esta necesidad.
- La brecha de género en la salud mental es importante y revela los altos costos del encierro estricto para ciertas poblaciones.

Restriction of mobility and social contacts during the pandemic

The COVID-19 pandemic declared by the World Health Organization (WHO) on March 11, 2020 led governments around the world to implement a wide range of response measures, including “stay at home” orders and the closure of all non-essential businesses to restrict citizens’ mobility and thereby reduce the transmission and incidence of the virus. While these unprecedented “social distancing” strategies have been crucial for limiting the spread of the virus and alleviating pressure on health systems, they have had other adverse consequences for the well-being of affected populations.

Thus, governments relied on a wide range of non-pharmaceutical interventions (NPIs) to slow down the pace of infections during the Covid-19 epidemic. Spain, as numerous other countries, allowed only a limited set of essential sectors to keep operating during the pandemic. These were sectors deemed necessary to sustain citizens’ livelihoods and to produce and deliver necessary goods to navigate the pandemic (e.g. grocery shops, manufacturing plants building medical equipment, and banks). Large scale lockdowns, however, entail costs including lost revenues for firms, lower productivity, and higher unemployment.

As we can observe in Figure 1, there was not homogeneity in the application of restriction measures among European countries¹. For the aim of the analysis, information from the Oxford COVID-19 Government Response Tracker (OxCGRT) database is used to build a containment index of COVID-19 policies. This index measures the strictness of the COVID-19 containment policies implemented in each country for the months April and May 2020, in which the disruption of the virus affected to a larger extent.

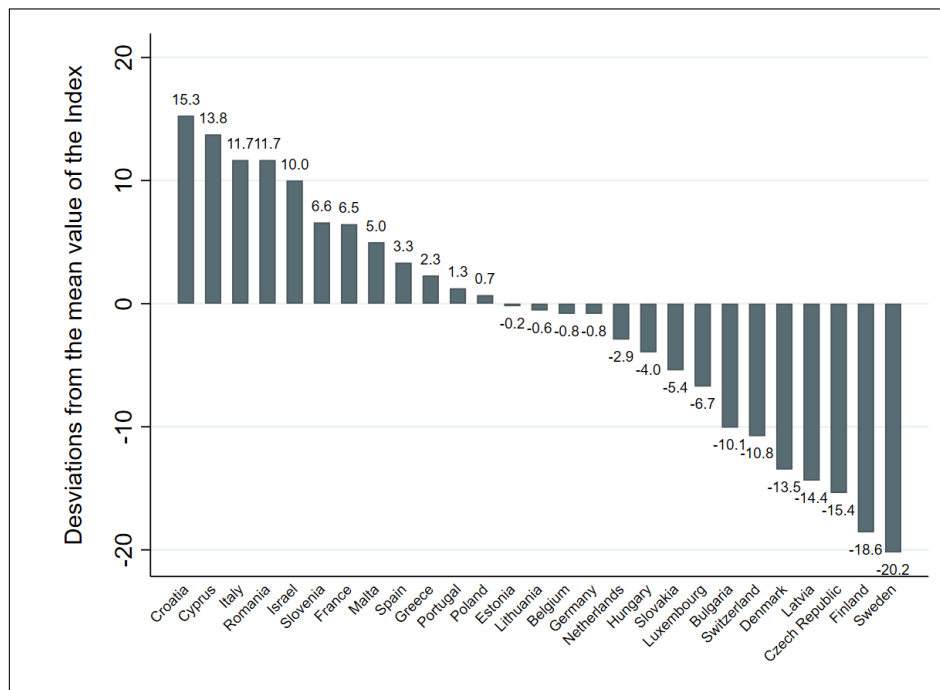


Figure 1: Which countries are more restrictive in terms of mobility?

¹We show 27 European countries that participated in the SHARE survey.

The main goal of the study in which this report is based is to investigate whether the COVID-19 lockdown policies implemented by governments during the first wave of the pandemic have caused mental health problems in senior and older Europeans. As we have seen, lockdown policies have differed among European countries and this heterogeneity is not always linked to the incidence of COVID-19 as we can observe in Figure 2.

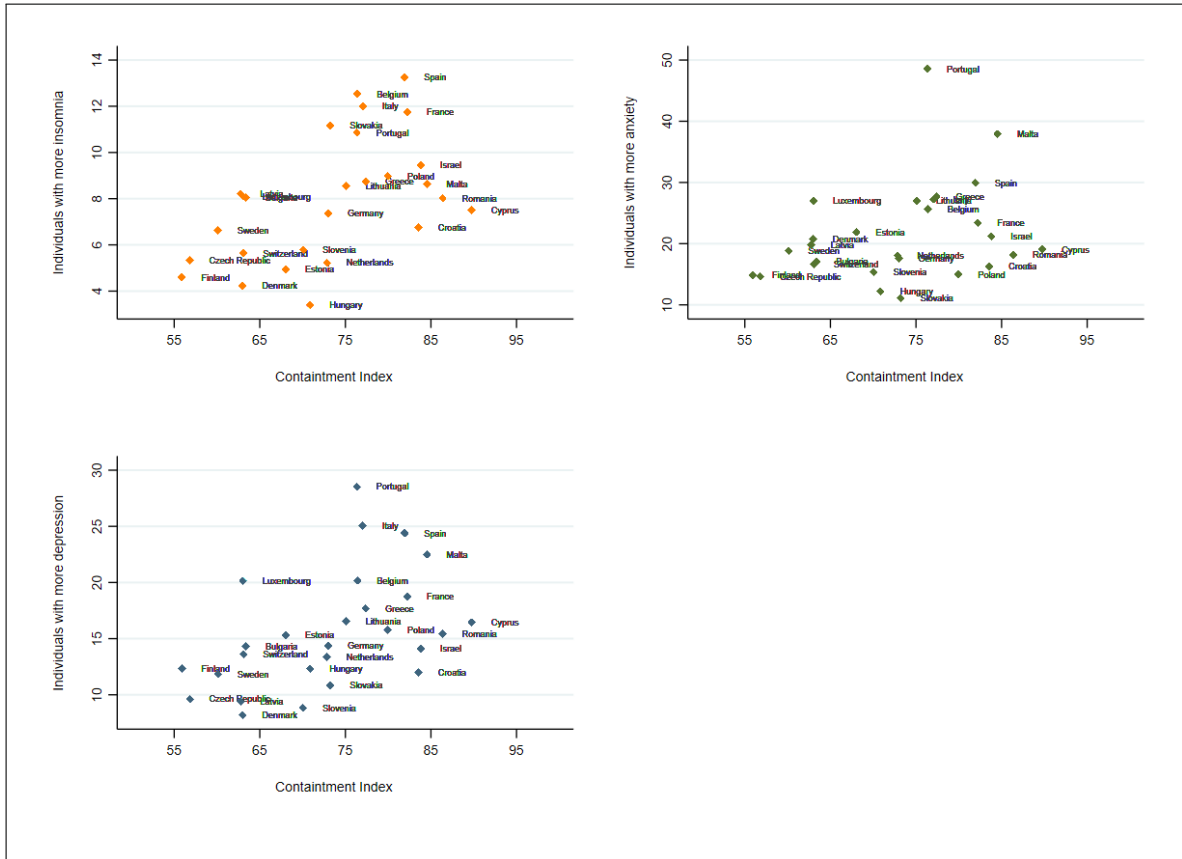


Figure 2: Is the lockdown related with a worsened mental health?

Although there was an uneven relationship between the containment measures implemented as a consequence of the outbreak of Corona and a worsened mental health, the relation is anything but clear due to the heterogeneity that characterizes both terms. The interest in establishing causal relationships relies on the desire of clarifying if the lockdown was the responsible of those mental health losses or the individuals had, for any other reason, a lower level of mental health outcomes without being affected by the COVID-19.

Microdata on anxiety, depression, and insomnia after the COVID-19 outbreak for 16 European countries and Israel is used. Data comes from the COVID-19 portion of the Wave 8 of the Survey of Health, Ageing and Retirement in Europe (henceforth SHARE), which interviewed respondents between June and August 2020 about their COVID-19 living situation. We include three mental health outcomes in our analysis: anxiety, depression and insomnia. Depression and anxiety are prototypical mental health disorders as they are among the most common health causes of days off work, unemployment, and years of life lived with disability. We also include insomnia because of its various associations with mental illness and because of the way it can exacerbate the symptoms of

many mental conditions.¹ Moreover, insomnia self-reporting has proved to be useful and reliable, while anxiety and depression are usually under-diagnosed because of low self-reporting, which means that our results for these two outcomes might be biased downwards.

The working sample size includes 41,792 respondents residing in the following 17 countries: Belgium, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Greece, Italy, Israel, Luxembourg, Poland, Portugal, Slovenia, Spain, Sweden and Switzerland. In addition, we use information from the Oxford COVID-19 Government Response Tracker (OxCGRT) to construct an index of containment strictness. Our index focuses exclusively on policies that restrict mobility and social contacts in order to slow down the spread of the COVID-19 epidemic. Hereafter we refer to these policies as lockdown policies.

The data clearly shows that mental health is a major problem for older populations in Europe. Of the COVID-19 survey respondents, 27% reported to have insomnia during the month before the interview, 30% reported that they suffered from anxiety and 28% reported depression. More importantly, many of these individuals declared that these mental problems were aggravated after the outbreak of the pandemic (34%, 73% and 63% for insomnia, anxiety and depression respectively). However, as there are many possible causes for psychological distress during a pandemic, our goal is to quantify the causal impact of lockdown policies, in particular those that restricted mobility and social contacts, in Europe on these measures of mental health.

The Causal Impact of Variations in COVID-19 Lockdown Policies on the Mental Health of Older Populations in Europe

Our causal analysis is based on the idea that individuals who had frequent pre-COVID face-to-face contacts will suffer more from strict lockdown policies than their counterparts in less strict countries.

Without going into specifics, the assignment rule for treatment and control groups is based on the distribution of the pre-COVID social score : individuals are assigned to the treatment group if their social score is above the median and to the control group if their social score is below the median. Our policy of interest is the lockdown imposed by countries, which is measured using the Oxford containment index described above. As already mentioned, strict lockdown countries - treated countries- are those with a containment index above the median value. Using this approach, our strategy is to examine how differences in outcome between the treated and control individuals in strict lockdown countries evolve, compare to differences in outcome between treated and control individuals in non-strict lockdown countries.

The analysis is based on two assumptions. First, lockdown policies affect mental health of individuals differently depending on their pre-COVID level of face-to-face contacts, and secondly, there are no systematic differences in the way the pandemic affects the behaviour of treatment versus control groups apart from those stemming from lockdown policies.

As we can observe in Figure 3, individuals with higher levels of social interactions are related with higher levels of anxiety, depression and insomnia. In addition, individuals living in countries with more relaxed containment measures are related with lower levels of insomnia but the anxiety and depression persist related with the lockdown although the country is not one of those with more restrictions.

Our estimates suggest that lockdown policies increased the incidence of insomnia, anxiety, and depression by 5.7, 5.6, and 5.3 percentage points, respectively. This is equivalent to an increase of 74%, 31% and 38% of insomnia, anxiety and depression for individuals of the treatment group who live in countries with strict lockdown policies relative to their counterparts in less strict countries.

	Countries							DiD (pp.)
	Mean	Strict lockdown ($T_j = 1$)			Less strict lockdown ($T_j = 0$)			
		Treated ($S_k = 1$)	Comparison ($S_k = 0$)	Diff (pp.)	Treated ($S_k = 1$)	Comparison ($S_k = 0$)	Diff (pp.)	
Outcomes								
Insomnia	9.70%	13.70%	10.70%	3.0*** (0.4)	6.90%	8.60%	-1.6*** (0.4)	4.6*** (0.6)
Anxiety	22.80%	32.90%	23.30%	9.6*** (0.6)	18.40%	14.90%	3.5*** (0.6)	6.2*** (0.8)
Depression	18.50%	26.00%	19.30%	6.7*** (0.5)	14.50%	13.70%	0.8*** (0.6)	5.9*** (0.8)

Notes: Diff (pp.) columns display a two-sample t test. Standard errors taking into account sample weights in parentheses.
 *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Figure 3: Are those individuals in the Treatment group different than those in the Control group? and, Among countries with different levels of containment measures against the virus?

The fact that the causal effect of strict lockdown on mental health vanishes when pre-COVID 19 social contact was maintained mostly by phone, mail, or internet (rather than face-to-face interaction) also supports our main finding. We also explore whether the effect of lockdown policies is concentrated in particular population groups. Interestingly, the estimated causal effect is present in almost all types of individuals considered, that is, lockdown policies restricting face-to-face contacts caused mental health problems for senior and older Europeans, independently of their age or physical health. The one noteworthy exception to this general finding is the differential effect related to gender as the estimated causal effect for men is not statistically significant. To a lesser extent, individuals who were employed at the outbreak of the pandemic and individuals aged between 50 and 65 were more affected by lockdown policies.

Beyond the stresses inherent to the illness itself and other factors, in this study we find that lockdown restrictions imposed during COVID-19 pandemic have worsened the mental health of senior and older Europeans. All the robustness tests performed allow us to conclude that we have been able to isolate the effect of the lockdown intensity on the mental health of older Europeans.

(In)Equality in children's access to technological resources in Spain during the lockdown

Executive summary

January 2022

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*Note: This document is a brief and non-technical executive summary of the academic working paper, where further details on the analysis and technical aspects are developed in depth.

Key findings

- The evolution of children's access and use of ICT resources presents an upward trend.
- The importance of the level of education of children's reference adults is more relevant after COVID-19 where all the schools were closed and the quality and quantity of parental time devoted to children's education is keystone in children's academic performance.
- Private schools adapt faster the online teaching as they have more technological devices and less students enrolled which makes education more feasible to be performed online.

Principales resultados

- La evolución del acceso y uso de los recursos TIC por parte de los niños presenta una tendencia al alza.
- La importancia del nivel educativo de los adultos de referencia en el hogar es más relevante después de la pandemia, donde todas las escuelas fueron cerradas y la calidad y cantidad de tiempo de los padres dedicado a la educación de los niños es clave en el rendimiento académico de los estos.
- Los colegios privados se adaptan más rápidamente a la enseñanza online ya que tienen más dispositivos tecnológicos y menos alumnos matriculados lo que hace más factible que la enseñanza se realice online.

Recommendations

- Ensure that all the children have the same opportunity to access to ICT resources allocated to academic purposes.
- Offer tutoring to those parents with low educational level to increase and improve the academic help they offer to their children.

Recomendaciones

- Garantizar que todos los niños tengan la misma oportunidad de acceder a los recursos TIC destinados a fines académicos.
- Ofrecer tutorías a aquellos padres con bajo nivel educativo para aumentar y mejorar la ayuda académica que ofrecen a sus hijos.

School closures and learning losses

Children's computer and Internet use has followed an upward trend during the last decades. The literature related to education tries to disentangle if the expansion of both, computers and Internet, used by children in schools, has a positive effect on their educational achievement. Before the outbreak of Corona, online learning resources did not have an important role in education, neither at home nor at schools. However, in 2019 there were still large differences in access to the internet by socioeconomic status. For instance, whereas the 99% of households in the fourth income quartile had internet access in Spain in 2019, just 78% of households in the bottom income quartile had.

During the first wave of COVID-19 most developed countries closed schools for about 5 months as one of the non-pharmaceutical interventions used to control the spread of the virus. Many scholars raised concerns related to the potential learning loss for children. Recently, evidence has built highlighting that students either lost or made no progress during lockdown. More importantly, losses were larger for children from less advantaged backgrounds.

During lockdowns, education needs to be performed online. As the closure of schools disrupted during the usual school calendar cycle and this could not be anticipated, families had to adapt their actual digital resources to the new home-learning process. For online education to be successful, three main factors emerge: access to ITC tools, parental support, and schools support. Access to the internet and availability to a computer are the most obvious pre-requisites for online education. It has been already documented pre-COVID differences in access to internet by family socioeconomic status. Parent's socioeconomic characteristics play a role in the provision of computers and Internet connection, and in the ability to adapt to the new environment by acquiring ICT tools as needed.

The suspension of face-to-face instruction in schools during the pandemic also led to an increase in the importance quality and quantity of parental time devoted to children's education. Since online education became an imperfect substitute for in-person learning parents had to compensate through their abilities, capabilities, and efforts some of the inputs provided by the teachers. Low-educated parents may not be equally able to help their children with online tasks compared to higher educated parents. Also, low educated parents may face worse working conditions and may have faced difficulties to work from home, especially if they worked in manual occupations that cannot be performed online.

Inequality in children's access and use of ICT resources

As we can observe in Figure 1, inequality in children's access and use arises when we compare children with high educated (university studies) reference adults¹ with those with those whose reference adults are lower educated.

The study in which this report is based documents whether inequalities in the use of internet and computers arose between children from more and less advantaged backgrounds during the lockdown in Spain. With that aim we compare the use of internet, mobile phones, and computers before and after the lockdown between children from higher educated and less than higher educated families in a difference in differences strategy using longitudinal data from the Spanish Community Survey on ICT Usage in Households.

The main source of data for our study is the Spanish Survey on Equipment and Use of Information and Communication Technology in Households, which is collected and made publicly yearly available by the Spanish Statistical Bureau (hereafter INE, by its Spanish initials). The statistical operation follows the methodological recommendations of the Statistical Office of the European Union (Eurostat), allowing comparisons between Spain and other countries and satisfying the re-

¹We refer as reference adult to the survey respondent whether they are or not parents of the child for whom information is being reported.

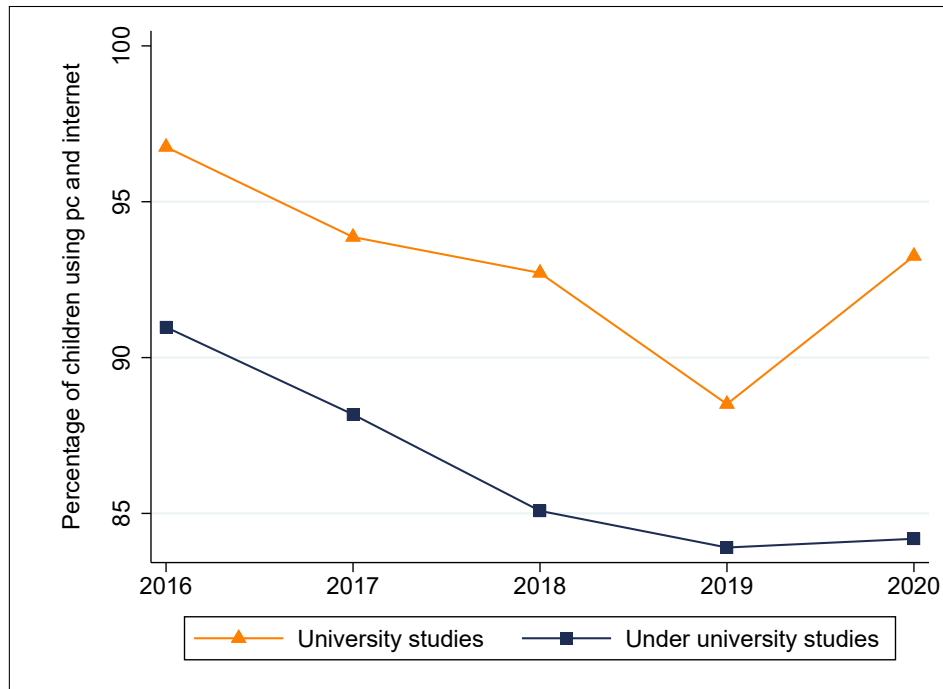


Figure 1: Inequality in children’s access and use of ICT resources depending on the education of the reference adult.

quirements of international organisations. The objective of the Information and Communication Technology (hereafter ICT) Survey is to obtain data on the development and evolution of the Information Society, which includes ICT household equipment (telephone, computer equipment, Internet access) and the use of the Internet and electronic commerce by residents of these homes. In order to analyze more aspects of the use of new technologies, the questionnaire is dynamic and includes new sections with different periodicity.

Furthermore, we complement the ICT survey with information of the Public Registry of Non- university Training Centres, dependant from the Spanish Ministry of Education and High Vocational Training² to control if the impact of the lockdown in the kid’s access and use of ICT resouces was affected by a different type of schooling, state and private, and, if that was the case, taking this into account to run the estimations, in order to account for a potential demand effect. As any other control variable, the type of schooling can not be related with the treatment status.

We analyze the mechanisms driving these differences in ICT use. We test whether differences in ICT access and availability, schooling resources and/or parental time constraints are behind the observed patterns of ICT use by children from different socioeconomic backgrounds. Using a triple differences strategy and longitudinal data from the Spanish Community Survey on ICT Usage in Households we test whether differences in ICT use after the lockdown are due to higher-educated families (a) having better access to ICT resources such as better internet connections or more computers and tablets and/or (b) living in provinces with more private schools that are more likely to offer daily online interactions with students.

As we can observe in Figure 2, differences among children who live in a region that is located above the median value of the students enrolled in private schools distribution are more than clear.

²More details:

<https://www.educacionyfp.gob.es/en/contenidos/centros-docentes/buscar-centro-no-universitario.html>

Implementing e-learning required a suitable facility like smart devices and good internet line just not to be interrupted during classes. Levels of technological resources at home are closely related to the socioeconomic status of the household, leaving families with lower incomes more likely to face obstacles in internet access and use. This aspect of the digital divide, often referred to as the “homework gap” (the gap between school-age children who have access to high-speed internet at home and those who don’t), has been exacerbated by the outbreak of the pandemic, as all the school-based instructional time was reduced to zero. This reduction in instructional time has been tested to have negative effects on education outcomes.

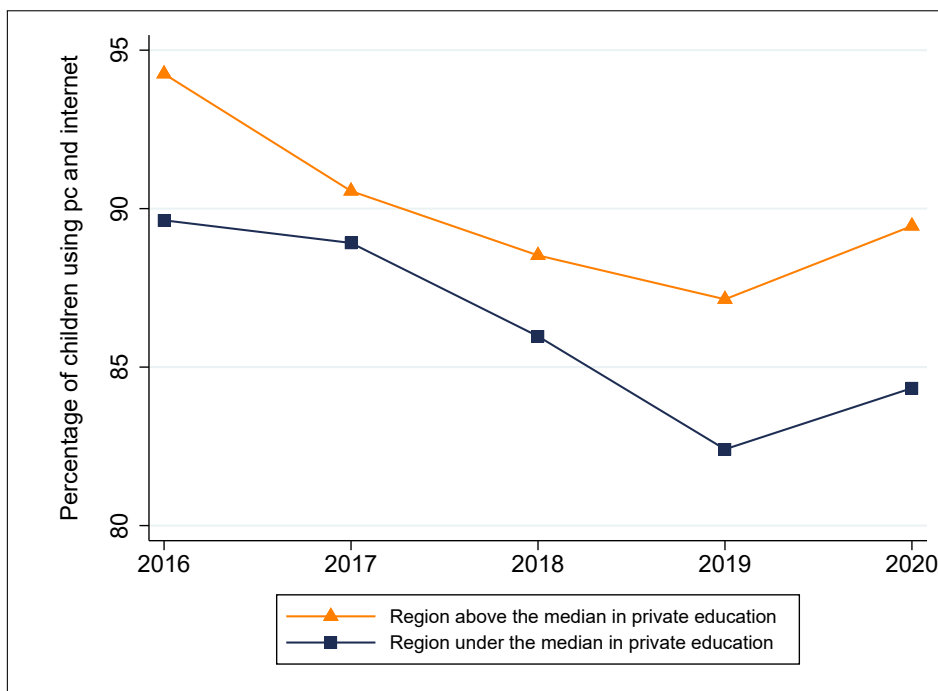


Figure 2: Living in a region with more students enrolled in private education, is related with higher level of children’s use and access of ICT resources?

Evaluating the long-term impacts of economic or policy shocks among necessity and opportunity entrepreneurs

Executive summary

January 2022

Research project framework: “Nuevas dinámicas del mercado laboral tras el confinamiento en Andalucía: el empleo del futuro post COVID19 y respuesta a nuevos confinamientos.” Ref.: CV20-3547.

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*Note: This document is a brief and non-technical executive summary of the academic working paper, where further details on the analysis and technical aspects are developed in depth.

Key findings

- We find strong evidence of an hysteresis effect in the opportunity and necessity workers group across Spain and its Autonomous Regions.
- The effect appears to be nonlinear and the speed of convergence of the phenomena back to their average levels varies across Regions and Economic Sectors.
- Some degree of predictability can be found in unemployment rates when they are used as threshold variables to describe different levels of persistence.

Recommendations

- Persistence analysis can be applied as an ex post validation test for the effectiveness of policy measures aimed at fostering self-employment.
- Aggregates such as unemployment rates and GDP growth can represent a good indicator to decide on the intensity of the policy measure conditional on the speed of adjustment of self-employment.

Principales resultados

- Tanto los trabajadores autónomos que emprenden por necesidad como aquellos que lo hacen por oportunidad, presentan un comportamiento de histéresis en los mercados de trabajo autónomos y nacional.
- El carácter no lineal y su velocidad de convergencia hacen que este fenómeno retorne a sus diferentes valores promedio a nivel regional y nacional.
- Encontramos evidencia que las tasas de desempleo podrían presentar un cierto nivel de predicción si son utilizadas en la determinación del umbral de variables que describan diferentes niveles de persistencia.

Recomendaciones

- El análisis de persistencia puede ser aplicado como test de validación ex post de la efectividad de las políticas públicas dedicadas a fomentar el autoempleo.
- La tasa de desempleo y el crecimiento del PIB pueden ser indicadores importantes que intervienen en la decisión sobre la intensidad de la política condicionada a la rapidez de ajuste del desempleo.

Self-employment in Spain

The dynamics of the self-employment rate during the business cycle keep being a source of controversy among scholars, summarized in the so-called push and pull hypotheses, as well as in the distinction between opportunity and necessity entrepreneurs, two different components of business creation with potentially opposite dynamics over the business cycle. Empirical estimates of the self-employment/unemployment relationship only aspired to capture a "net" effect of the recession-push and the prosperity-pull effects. However, recent literature has provided operational definitions of opportunity and necessity entrepreneurship using readily available nationally representative data. Recently, time series techniques have been employed to explore the macro-dynamics of opportunity and necessity self-employment during the business cycle. By exploring the macro-dynamics of self-employment, we checked whether entrepreneurship evolves as a trend stationary or as a non-stationary time-series process. If entrepreneurship is trend stationary, economic and policy shocks can be regarded as transitory from an aggregate perspective: the rate of entrepreneurship eventually reverts to its underlying, long-run rate. Our estimates prove that, aside from the short run influence of the business cycle, there is indeed some persistent effect on the levels of self-employment in Spain. So, if the rate of entrepreneurship is non-stationary, shocks to it will have permanent effects.

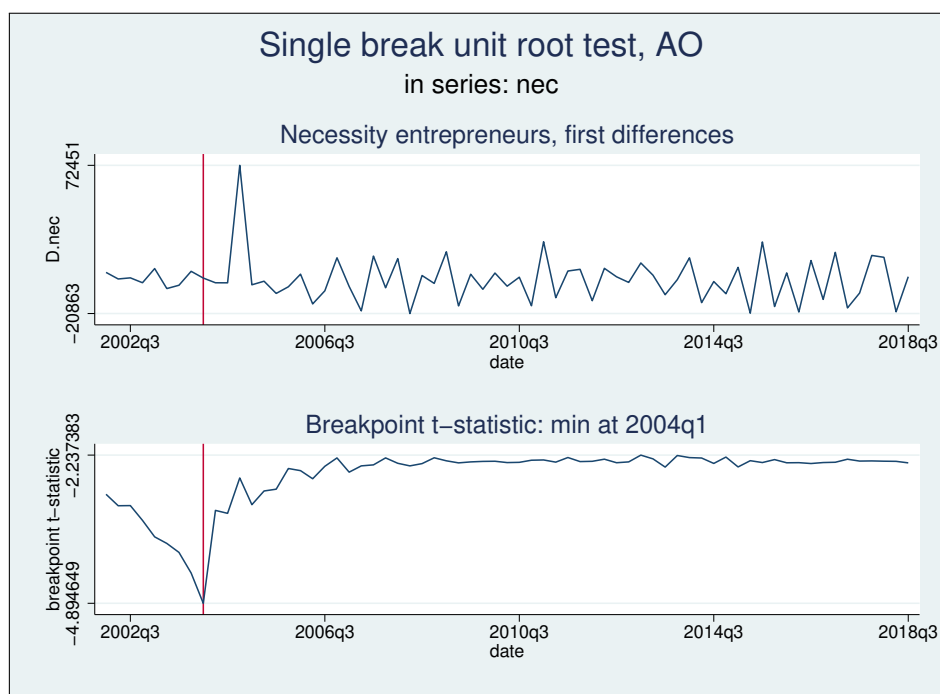


Figure 1: Unit Root Analysis, Spain, 1 break

Our analysis proves, with a comfortable degree of confidence, that the opportunity and necessity entrepreneurs in Spain tend to reach a given positive or negative peak after a shock, but in some Regions and Economic sectors reversion to the pre-crisis levels take more time than what we should expect based on cyclical analysis alone and in some cases the values never revert back to its past levels. You can see evidence of such hysteresis phenomenon in Figures 1 and 2.

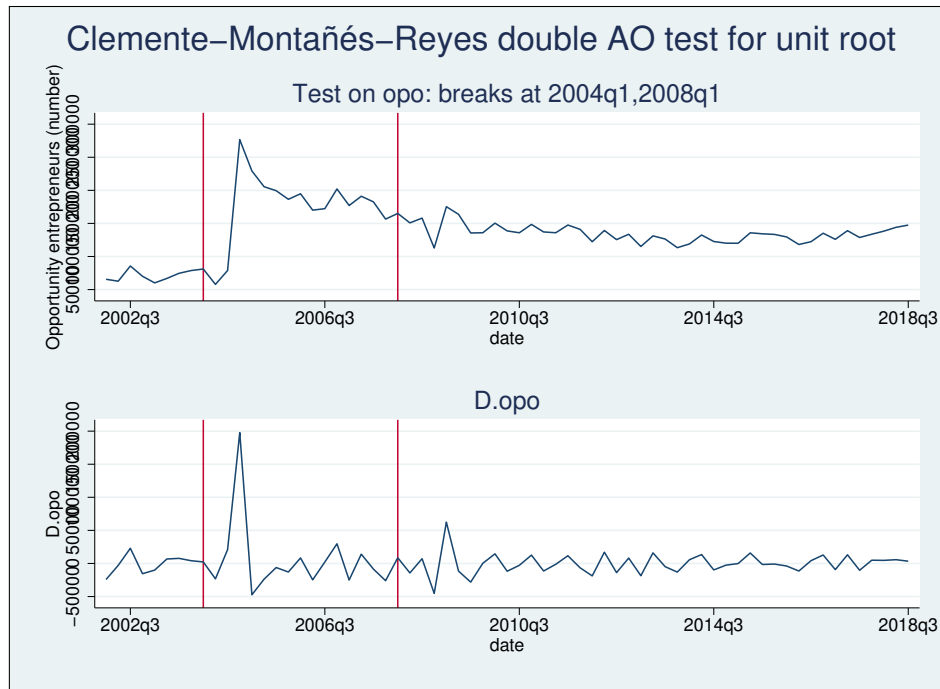


Figure 2: Unit Root Analysis, Spain, 2 breaks

Asymmetries in self-employment

Our analysis focused on unit root and stationarity testing of self-employment levels to test for their persistence after a shock. However, since the heterogeneous composition of the economies of the autonomous communities in Spain and other relevant difference call for it, we tested for the linearity of the persistence and found out that necessity and opportunity entrepreneurs levels converge back to their pre-crisis levels at different speeds according to different thresholds. Thus, out of a possible set of test variables (industrial production levels, changes in unemployment, GDP growth rate), we found that unemployment rates appear to describe very well the behavior of self-employment across the board. exciting threshold autoregression well the different behavior of necessity and opportunity entrepreneurs across Regions and Sectors. At the national level, we find out that necessity entrepreneurs converge back to their natural number much faster than opportunity entrepreneurs when the shock happened in times of natural (average) unemployment, while in general they have much slower adjustment speed during dire times of low unemployment, and as such their number does not swing back to the long run average as fast. This is visible in Table 1.

Table 1: Self-employment in Spain: speed of adjustment after a shock

	Low Unemployment	Natural Unemployment	High Unemployment
Opportunity	-0,550*	-0,319	-0,768*
Necessity	-0,147*	-1,206*	-0,882*

Regional and Sectoral Heretogeneity and current developments in Andalucia

As the hysteresis phenomenon is confirmed at the national level, in Table 2 we offer an overview of it for Andalucia and a selected handful of other Spanish regions, focusing on the opportunity entrepreneurs' equilibrium in the low skilled service sectors (tourism, roughly). As we can see, rate of convergence tend to be quite comparable across all regions in the sector, and only focusing on periods of low unemployment we manage to uncover sensible differences across outliers. As a matter of fact, when unemployment is low and the state of the economy is faring better, self-employed workers who became such out of opportunity in Catalunya (-0,26) stay so for much longer than the same comparable people in Andalucia (-0,79). Such gap, when high skill sectors are compared, becomes even more evident (-1,13 in Andalucia against -0,25 in Cataluya) This calls, at least in terms of comparable results, for different ways to devise and manage policies across regions.

Table 2: Opportunity workers In Spain, speed of adjustment after a shock, low skill services

	Low Unemployment	Natural Unemployment	High Unemployment
Andalucia	-0,797*	-0,726*	-1,120*
Balearic. I.	-0,812*	-0,501	-1,224*
Cantabria	-0,835*	-0,481*	-0,915*
Catalonia	-0,0262*	-1,331*	-0,983*
Valencia	-0,448	-0,945*	-0,769*
Murcia	-0,622*	-0,975*	-1,349*
SPAIN	-0,582*	-0,367	-1,135*

Conclusions

We can conclude that a more decentralized approach in handling employment policies would be needed in Spain. Such possibility would allow for the much needed fine tuning that each region in the country would deserve, allowing Regional governments to foster and promote self-employment in any region and given any economic sector according to the ex-post and ex-ante intensity of the reversion of self-employment to its mean.

Who does work from home? Probability of teleworking in the Spanish labor market before and throughout the pandemic

Executive summary

January 2022

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Key findings

- We found that family composition (having at least one child) slightly skews up the probability of teleworking, while, in contrast with pre-pandemic data, in 2020 women would appear to have been more likely to undergo work at home practices when compared to men.
- We identify three different occupational categories: occupations which involve duties that can be naturally carried out teleworking; occupations that, given the current state of technology, can only be carried out at the workplace; finally, occupations that, given their characteristics, would present the largest room for improvement towards a higher level of teleworkability.
- We confirm that, before the pandemic crisis, all autonomous communities followed a similar path of convergence to higher levels of teleworking, and only during 2020 some regions such as Madrid or Catalonia distanced themselves notably from the rest.

Recommendations

- Workers belonging to the work-at-home apt group (be it for technological or procedural reasons) are found to be those with the most potential of working remotely as a tool to make jobs more flexible. Regional governments should as such focus work at home and telework policies on that share of the workforce to develop effective policies.
- We find that telecommuting can be used as a tool to make jobs more flexible. Furthermore, consistently with previous studies on the matter, teleworking can be a perfect policy target to gender strategies, conciliating family and work responsibilities.

Principales resultados

- Se ha observado que la composición familiar (tener al menos un hijo) incrementa ligeramente la probabilidad de teletrabajar, mientras que, en oposición a los datos pre-pandemia, en el año 2020 las mujeres fueron más propensas a trabajar desde el domicilio que los hombres.
- Se han identificado tres tipos de ocupaciones: aquellas que implican tareas que pueden ser desarrolladas en remoto; aquellas que, dado el actual desarrollo tecnológico, solo pueden ser llevadas a cabo en su puesto de trabajo tradicional; y finalmente, aquellas que por sus características presentan un mayor margen de adaptación al teletrabajo.
- Se confirmó que antes de la pandemia todas las Comunidades Autónomas seguían un patrón similar de convergencia hacia mayores niveles de teletrabajo. Solo durante 2020 ciertas regiones como la Comunidad de Madrid o Cataluña se distanciaron notablemente del resto de España.

Recomendaciones

- Los trabajadores clasificados como susceptibles de trabajar desde el domicilio (ya sea por razones tecnológicas o procedimentales) son aquellos con mayor potencial de desarrollar su trabajo en remoto como herramienta de flexibilización. Los gobiernos regionales deberían poner el foco en estos para desarrollar políticas efectivas.
- El teletrabajo puede ser utilizado como herramienta para hacer el empleo más flexible. Además, de acuerdo con otros estudios, este puede ser un objetivo para las políticas de género, ayudando a conciliar las responsabilidades familiares y laborales.

Work at home and Teleworking practices

With the arrival of an unprecedented crisis following the coronavirus outbreak, many economic actors had to resort to different employment policies in order to reduce systemic risks related to the virus transmission mechanism. Aside from industrial policy choices related to profitability and economic survival (short time work schemes, furloughs and dismissals on the labor side, asset adjustments and shutdowns on the capital and managerial side), firms from all over the world had to consider once more how much work from home policies would be an optimal choice to counteract the widespread diffusion of the virus. Our work employed annual data sourced from the Spanish Labour Force Survey at the national and regional level to check for short term trends in work at home in both Spain and Andalucía during the 2017-2020 interval.

Some of the most relevant contributions to work at home studies come from natural experiments, which happen to have been able to detect, at least internally, a causal relationship between teleworking and productivity. Focusing on a study case for Spain, scholars have found out that work at home grew by 2.4% between 2009 and 2019, estimating that 30% of employed manpower could work at home, at least occasionally. Aside from sectoral considerations, past literature has shown that work at home is usually more often chosen by or permitted to workers between 35 and 65 years old of age, and such proportion is even higher when university level education is considered.

Our calculations use the Spanish Labor Force Survey annual data from 2017 to 2020 in order to compute the probability of teleworking each year by the main characteristics of the individuals. We explore both National and regional Andalusian data and fit a logistic regression on teleworking taking into account a set of relevant socio-demographic controls. This allowed us to give a first look at the short run Evolution of the Phenomenon in Spain and Andalusia.

A first glance at teleworking in Spain and Andalusia

From 2017 to 2019 the use of teleworking experienced a slight increase in Spain which may reveal a short-run trend before the pandemic. During this period, the percentage of the employed who teleworked at least occasionally increased 1 percentage point (shorten as p.p.), from 7.35% in 2017 to 8.38% in 2019. Advances in the enterprise digitalization process and the increasing hyper-connectivity might have been influential factors for this slow but sustained trend in the increase of home-based work. However, the sanitary crisis and the subsequent imposition of social distancing measures increased dramatically this fraction of teleworkers, jumping up to 15.22% in 2020, almost doubling pre-pandemic digits. (see Figure 1) Furthermore, as a consequence of lockdown, a major part of these teleworkers did it over half of the working days, so not only more people were teleworking, but they were also doing it more intensively.

These patterns seem to be quite similar when differentiating by sex, except for year 2020, where we found that women experienced an even higher leap in the use of teleworking with regard to men. Despite teleworking had been more common among males in the 2017-2019 period (around 1 p.p. above), the pandemic would have inverted this fact. As a result, we observed that women teleworking reached 1.63 p.p. above men in 2020. (Figure 2)

Probability of Teleworking: sociodemographic determinants

We predicted the probability of teleworking for individuals on the SLFS using observed characteristics such as gender, if the individual has children, occupation, type of employee (self-employed or salaried worker), sector of employment (private or public), type of working day (part-time or

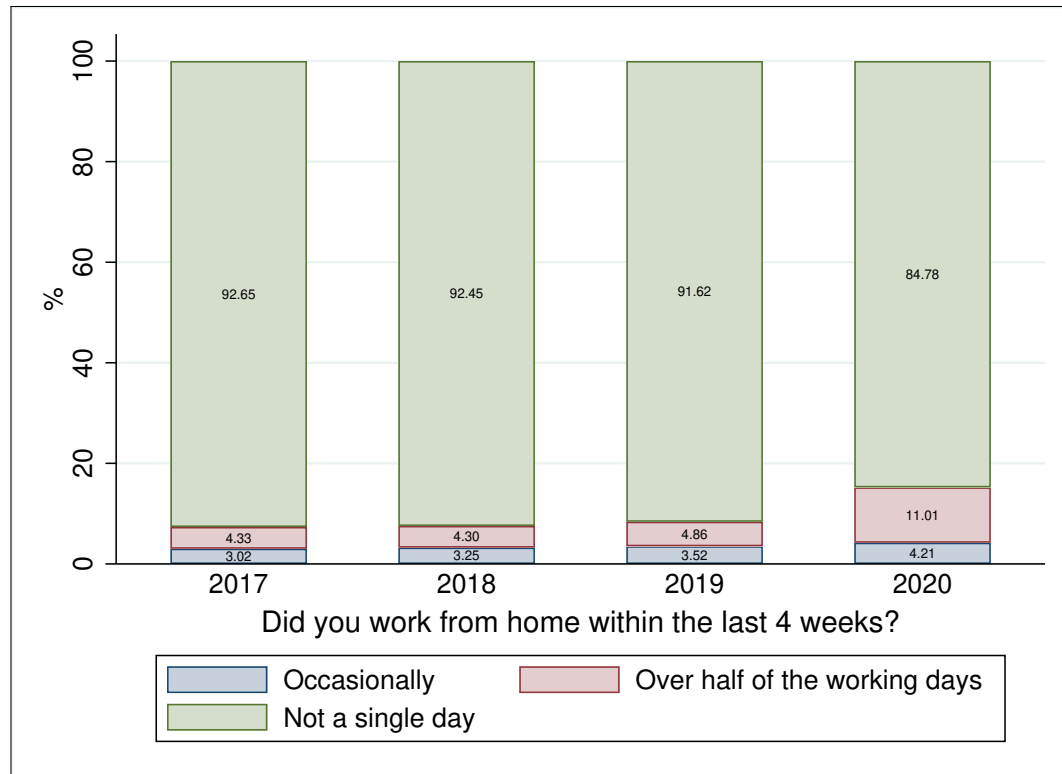


Figure 1: Teleworking intensity in Spain. Data source: Spanish LFS.

full-time), and region of residence. In substance, we found out that there were no patterns across sociodemographic characteristics that can determine short-run trends, with the exception of the type of occupation.

We first focus on the estimation of the probabilities of teleworking among men and women and whether having children matters when we assess them. We found having children to be closely related to a higher probability of performing a remote job. Nevertheless, in Spain, we cannot consider teleworking as a way of making more flexible individuals' working days as the difference between having, at least, one child under 16 years old and being a childless individual is only about 1 p.p. (percentage point).

Exploring if there are gender differences in the probability of teleworking, whether they are parents or not, we find that women, taking into account demographic and labor characteristics of each woman in our sample, were less likely to perform a remote job from home before the pandemic took place, which is a cornerstone to understand why telecommuting in Spain is not a mechanism to combine work with family commitments. Thus, if the outbreak of Corona had not happened, the evolution of the rates of remote jobs performed by women would differ from the actual ones, keeping men at a higher level than women. We estimate that women during the lockdown were 10 p.p. more likely to telecommute when compared with women with the same characteristics before the outbreak of Corona. This became even more significant as the 2020 marginal difference between women and men, compared to the same difference during the three years before the pandemic, appears to be positively skewed in favor of women by a 2 p.p. margin.

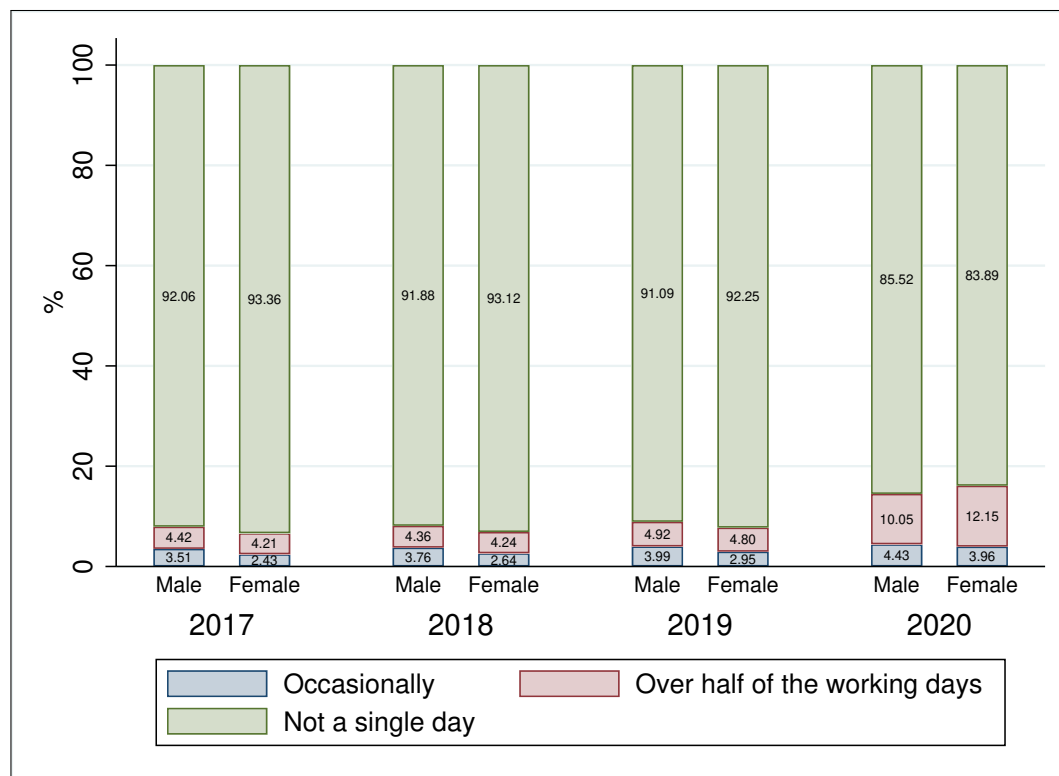


Figure 2: Teleworking intensity in Andalusia by sex. Data source: Spanish LFS.

Probability of Teleworking: job related determinants

Switching to job related determinants, Our analysis states that an exogenous shock as the outbreak of the Corona virus is an opportunity to adapt the working system to telecommuting but only for those with the potential of being performed remotely potentially digital occupations.

There were large differences in the prevalence of teleworking across occupations before the pandemic. If we observe in Figure 3 the three-year window before Covid-19, we ideally consider three main groups. In the first place, we have those occupations where 20% of the workers had performed a remote job such as Management and Directors, and Scientific and Intellectual technicians. In the second place, 10% of Support professionals and Agriculture and Manufacturing skilled workers in Spain telecommuted, and if we focus on the bottom of the distribution of jobs performed at home, we find those occupations with higher-level social interactions or those low- and middle-skilled occupations in which teleworking remains a largely unrealistic option, making these workers more vulnerable during the lockdown.

Figure 4 shows which occupations were already more likely to be *teleworkable* before the outbreak of Covid-19 and which ones had a probability not marginally different from zero. The lockdown exacerbated the likelihood of performing a job remotely for those occupations with characteristics that enabled a fast adaptation of the work system and a prompt transformation of face-to-face into virtual services necessary to continue performing them. Nevertheless, it is important to remark that occupations such as technicians, support professionals, and others related to accounting, administrative, and other office employees experimented an increase in their likelihood to telecommute close to a 20 p.p., which is relatively the same magnitude compared to those we have mentioned

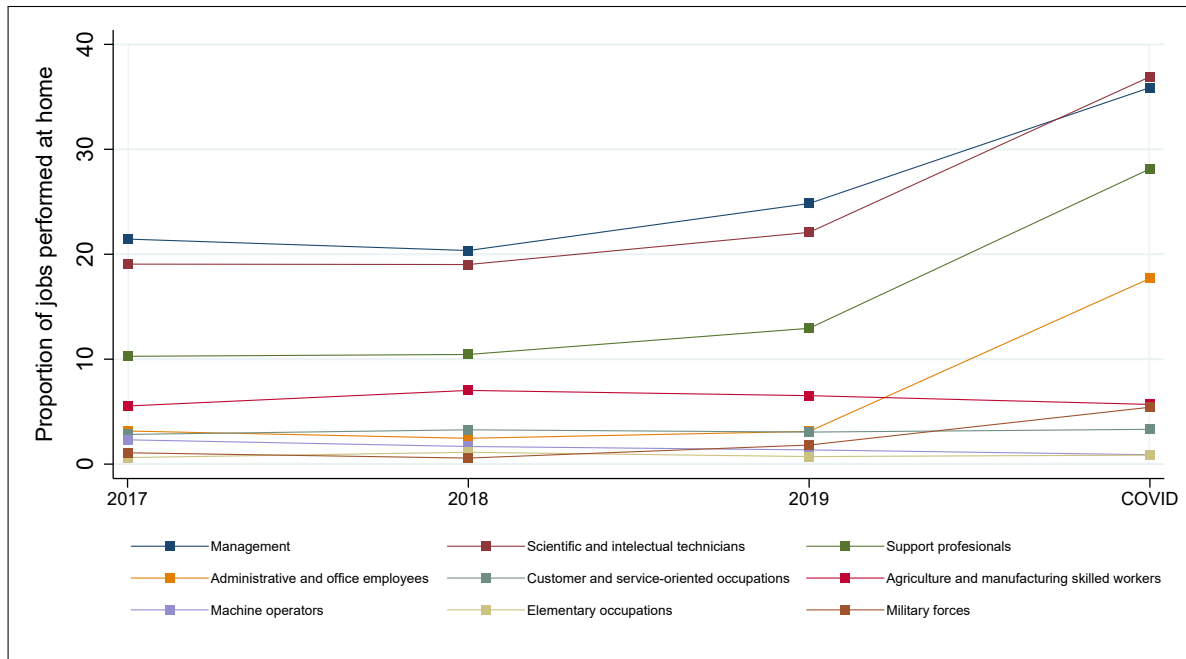


Figure 3: Proportion of individuals who perform a remote job classified by 1-digit occupations. Data source: SLFS.

before (moved from 20% to near 40%).

Henceforth, we conclude that the lockdown caused by the outbreak of the pandemic revealed three types of *teleworkable* occupations in Spain: occupations in which the use of ICT resources can offer almost the same job performance and quality of services demanded; occupations in which telecommuting can be implemented to make jobs more flexible, and occupations in which the productive and organizational structure prevents their online performance.

Differences in employment types

Regarding the type of employee, self-employed or salaried worker, our results are consistent with those found in the literature. Evidence suggests that for many own-account workers their home is often their place of work. However, the definition of own-account teleworkers is wider and includes not only those “working at home” without ICT, such as small artisans and farmers, but also those “working from home” using ICT resources, such as designers or software developers.

Self-employed individuals were already more likely than salaried workers to telecommute before the outbreak of Covid-19, in particular, they were, on average, 17 p.p. more likely to perform a remote job than employees. However, even when more than 80% of the working population in Spain are salaried workers, they are 18 p.p. less likely to perform their jobs remotely during the lockdown compared to own-account workers. This result reveals that dependent workers can not adapt or make their jobs more flexible as self-employed, who in principle have much greater discretion over how and where their work is carried out, and this can be more related with workers’ autonomy than with technical teleworkability.

Conversely, part-time jobs provide an opportunity for flexible hours of work and for combining work with family commitments. Thus, we could expect that those part-time employees are more likely to adapt their jobs and perform them from home as they have already a more flexible working

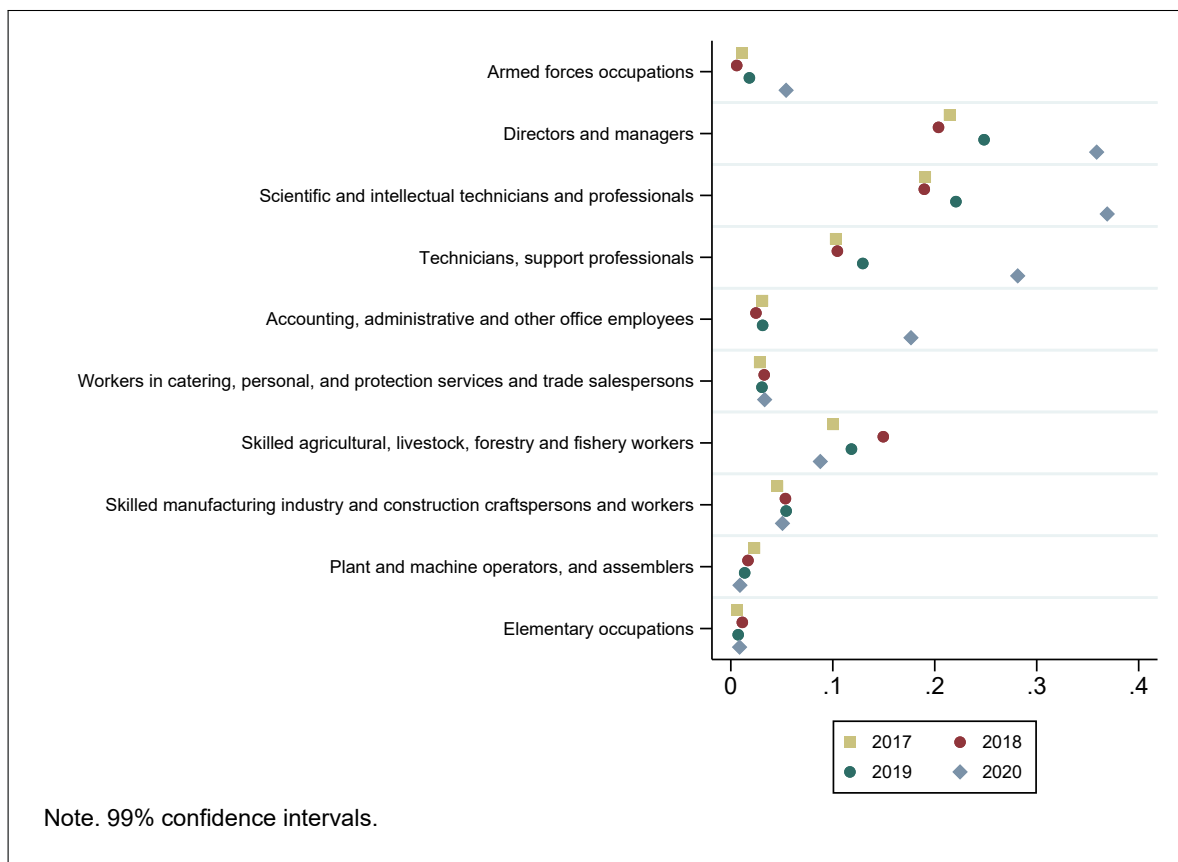


Figure 4: Predicted probabilities for teleworking across occupations. Data source: SLFS.

day compared to those working under full time schedules. However, a full-time worker in Spain is, on average, 4 p.p. more likely than a part-time worker to perform their work from home, estimated for the three years period before the Covid-19. This differences are intensified by the outbreak of Corona, where the lockdown is related to an increment of almost 7 p.p. in both type of work days and to a wider gap between full-time and part-time workers during the lockdown.

Regional differences

The ranking of regions where workers are more likely to telecommute demonstrates, surprisingly, no gap between those better positioned in economic performance (those with lower levels of unemployment such as Basque Country, Navarre, Madrid, and Catalonia, among others) and those in the bottom (such as Canary Islands, Andalusia, and Extremadura).

Regarding the estimated probabilities of telecommuting among the 17 Spanish regions, we find an homogeneous result in performing a remote job all over the territory, presenting a regional convergence during the three year window before the pandemic. Nevertheless, the outbreak of Corona revealed that those regions with higher economic performance are those reporting to be significantly more likely to adapt jobs remotely. In particular, during the lockdown, workers in Madrid and Catalonia were, on average, twice as likely to telework than other workers located in any other Spanish region.