WeLaR

The heterogenous impact of the COVID-19 crisis on labour market participation in the EU

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Deliverable: D4.3

Due date: 10.2023

Funded by
the European Union

Document control sheet

Project Number:	**101061388**
Project Acronym:	WeLaR
Work-Package:	WP4
Last Version:	
Issue Date:	26/10/2023

Classification

Draft	
Final	X
Confidential	
Restricted	
Public	X

Legal notice

This project, WeLaR, has received funding under the Horizon Europe programme. Views and opinions expressed are however those of the authors only and do not necessarily reflect those of the European Union or the European Research Executive Agency. Neither the European Union nor the granting authority can be held responsible for them.

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Acknowledgments

The authors would like to extend their gratitude to Mikkel Barslund, Karolien Lenaerts and Holger Stichnoth for their invaluable insights and meticulous review, which contributed to the overall coherence and clarity of this research paper.

Abstract

We assess the short- and medium-term effects of the COVID-19 pandemic on the labour market prospects of various groups of workers. We utilise regional variation in the importance of businesses particularly affected by lockdowns. We find that young and less-educated individuals were more affected by the COVID-19 crisis than other workers. For most socio-demographic groups, negative effects of COVID-19 had already subsided by 2022. However, this was not the case for immigrants and women with low educational attainment. The negative employment effects were largely explained by a decrease in activity rates, rather than manifesting as higher unemployment rates. The COVID-19 crisis was associated with a decrease in the incidence of precarious employment. The probable explanation is that temporary workers were most likely to lose their jobs during the crisis.

1. Introduction

The outburst of the COVID-19 pandemic in February 2020 forced many countries across Europe to introduce containment measures limiting the spread of the Sars-Cov-2 virus. These measures included social distancing and the closing down of many spheres of social life, which impacted the economic performance of numerous sectors. The accommodation and food services sector experienced the highest loss of hours worked, which fell by 50% during the first wave of the pandemic (OECD, 2021). By mid-2021, the unemployment rate in the EU returned to the pre-pandemic levels. However, the labour market situation varies by country, and aggregate numbers may mask heterogeneities relevant from the social policy perspective.

The impact of the COVID-19 crisis on employment has already been studied in a number of papers (Forsythe *et al.*, 2023; Gros & Ounnas, 2021; Hall & Kudlyak, 2022; OECD, 2021), including the heterogeneous impact on different demographic groups (Bluedorn *et al.*, 2023; Fiaschi & Tealdi, 2023; Lee *et al.*, 2021) and on persons with disabilities (Ameri *et al.*, 2022; Bryan *et al.*, 2022; Emerson *et al.*, 2021; Jones, 2022; Wong *et al.*, 2022). The findings from many countries indicate that women and persons with disabilities experienced significantly worse labour market effects of the COVID-19, compared to men and non-disabled persons. There is also evidence of the limited impact of the COVID-19 pandemic on the employment opportunities for labour market entrants in the Netherlands (Bussink *et al.*, 2022) and Mexico (Osuna-Gomez, 2023).

However, the existing evidence primarily refers to the pandemic period, during which restrictions on the economic activity were still in place. We contribute to the literature by extending the period of analysis to 2022, that is, the first year without significant COVID-related disruptions. Therefore, we investigate whether the COVID-19 pandemic has had long-lasting effects on labour market outcomes of various demographic groups.

We apply a uniform analytical framework to analyse labour market patterns in all EU member states (and Norway, for which analogous data are available). We focus on the employment rate, the activity rate, and the incidence of precarious forms of employment, such as 'bogus' self-employment, platform work, and temporary employment. We distinguish between various socio-demographic groups, taking into account gender, age, education level, and citizenship.

For the econometric analysis, we utilise variation in exposure to the COVID-19 recession between regions at the NUTS-2 level. Specifically, we use the pre-pandemic employment share of the accommodation and food services sector as an indicator of a region's vulnerability. Other activities affected by lockdowns, such as trade or personal services, are more evenly distributed across regions. In contrast, the importance of the

tourism industry is highly heterogeneous. In our analysis, we also take into account the regional variation in the severity of the pandemic and in the pre-pandemic share of temporary workers.

We uncover several heterogeneities in the negative labour effects of the COVID-19 crisis. First, young people and immigrants were significantly more affected than average workers. Second, the response of women's employment varied by educational attainment, with low-skilled women being the most affected. For men, the effects were more evenly distributed. Third, the negative effects had subsided by 2022 for men across all educational groups, whereas for women with low levels of education, significant negative effects were still present in 2022. Immigrants comprise another group for whom the negative effects have been long-lasting.

Our analysis underscores that the recovery of the labour market should not be analysed solely through the lens of the unemployment rate. In the cases of both low-skilled women and immigrants, negative employment effects were matched by very similar decreases in labour market participation, suggesting a sustained detachment from the labour market.

We find no evidence that the COVID-19 crisis contributed to a rise in precarious forms of employment. Rather, the shares of precarious employment decreased more in regions that were more exposed to the crisis, as temporary workers were the least protected. We also examine the relationship between policy responses aimed at protecting businesses and workers and the labour market effects of the crisis. Our analysis does not yield conclusive findings regarding the effectiveness of these policy responses.

Our report is structured as follows. In the next section, we introduce data sources and outline our econometric specification. In Section 3, we investigate the effects of the COVID-19 crisis on the employment rates of various socio-demographic groups. In Section 4, we examine the effects on the activity rates. In Section 5, we zoom on the situation of immigrants. In Section 6, we analyse the evolution of precarious forms of employment. In Section 7, we aim to assess the role of policy responses in preventing negative labour market effects of the COVID-19 recession. Section 8 concludes.

2. Methodology

2.1. Data

We use data on employment trends of various socio-demographic groups at the regional (NUTS-2) level. To obtain the data reaching 2022, we use the regional labour market statistics from the Eurostat database.[1] We analyse trends for the working-age population (20-64) as well as for young people, who may be most affected by the COVID-19 recession. Typically, young employees are categorised as those between the ages of 20 and 29, a standard we adhere to when describing the evolution of the labour market at the country level. However, regional statistics allow the calculation of employment rates only for the age group 20-34. Consequently, our regional analyses use this 20-34 age range as the benchmark for assessing youth employment. We also distinguish between the groups characterised by three levels of education: low (ISCED 0-2), upper secondary (ISCED 3 and 4), and tertiary (ISCED 5-8). Lastly, to investigate labour market outcomes of immigrants, we use data on the employment rate of persons with a foreign citizenship.

We also use the EU-LFS microdata to derive structural characteristics of the regions as of 2019, that is, the last pre-pandemic year. We compute the employment share of Section I (Accommodation and food services), the one most affected by lockdowns. It varies from less than 2% (8 regions in Poland and Romania) to over 20% (3 regions in Greece and Spain). We also calculate the share of temporary employment, which we define as either being a temporary employee or being self-employed without employees. This category includes individuals with fixed-term employment contracts, those employed through employment agencies, platform workers, and workers providing services through B2B-type contracts. Admittedly, genuine entrepreneurs may also fall into this category. However, they often share the vulnerability of temporary workers, as they lack an employer to insure their income against economic downturns. This variable ranges from less than 1% (7 regions in Romania) to over 25% (5 regions in Spain). A related outcome variable of interest is the share of precarious employment, which includes the above-defined temporary employment as well as unpaid family workers. However, this variable is available only up to 2021 as it is derived from the microdata rather than the Eurostat database. The severity of the COVID pandemic is proxied by the number of COVID-related deaths (ICD-10 codes: U071, U072,

[1] https://ec.europa.eu/eurostat/cache/metadata/en/reg_lmk_esms.htm

U_COV19_OTH) obtained from Eurostat. In Table 1, we report the distributions of regional characteristics. Additionally, the distributions of regional outcome variables are reported in the Appendix.

Table 1. Descriptive statistics of the explanatory variables

	Mean	p10	p25	p50	p75	p90
Employment share of Section I (2019)	5.2	2.5	3.3	4.2	6.1	8.4
Share of temporary workers (2019)	12.5	5.5	8.2	12.1	16.6	19.3
COVID deaths per 10,000 persons (2020)	8.9	1.5	4.7	7.8	12.0	17.0

Source: Own elaboration based on Eurostat data

2.2. Econometric specification

We run a series of regressions, analysing whether one-year, two-year, and three-year differences in the variables of interest can be attributed to the structure of regional economy and the severity of the COVID pandemic. Formally, we estimate the following model:

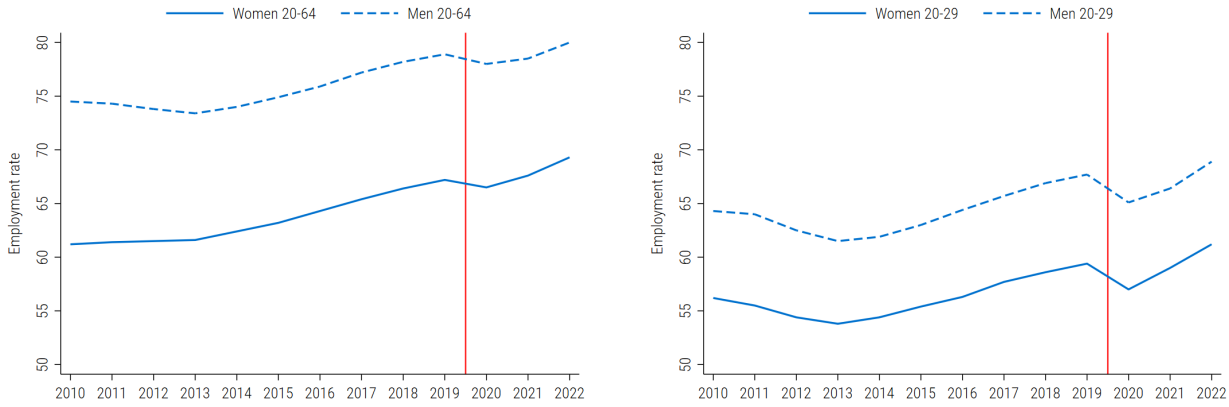
$$\Delta y_{i,t} = \alpha_t + \beta_t \times exposure_{i,2019} + \gamma_t \times covid\ deaths_{i,2020} + \delta_t \times temporary\ emp_{i,2019} + \epsilon_{i,t} \quad (1)$$

where $\Delta y_{i,t}$ stands for a change in either the employment or unemployment rate of a given group in region i between 2019 and year t; t takes on the values 2020, 2021, and 2022; the exposure to the COVID recession is measured as the employment share of the food services and accommodation sector in total employment for the year 2019; COVID deaths per 10 thousand persons measures the severity of the health crisis in the region in the year 2020. Additionally, we control for the share of temporary employment in the pre-pandemic period. All the explanatory variables are centered around their mean value, therefore a constant, α_t, captures the average change in the outcome of interest across all regions.

3. Impact on employment

The employment rate of the EU working-age population decreased in 2020, but recovered already in 2021 (Figure 1). For men aged 20-64, the employment rate in 2021 was slightly lower than in 2019 (78.5% compared to 78.9%), but in 2022 it significantly exceeded the pre-pandemic level (reaching 80.0%). In contrast, the drop in the employment rate for people aged 20-29 was more pronounced and the pre-pandemic levels were reached only in 2022.

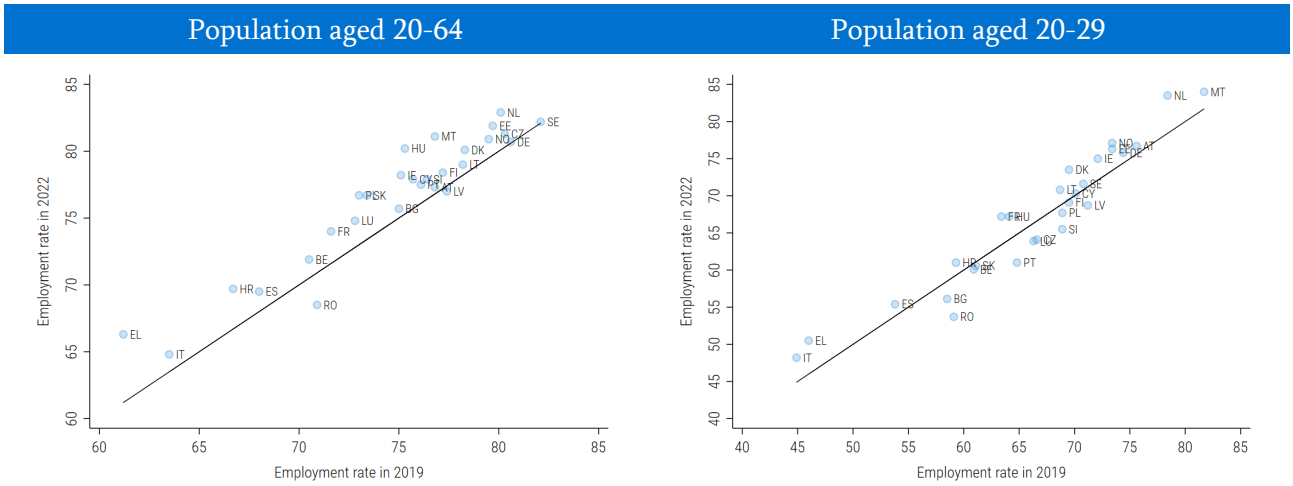
Figure 1. Employment rates in the EU-27



Source: Own elaboration based on the Eurostat data

The recovery in the employment rates was heterogenous between countries (Figure 2). In some countries, the employment rate for people aged 20-64 was much higher in 2022 than in 2019, for instance, Hungary, Greece, Malta, while in Romania it was significantly lower. More interestingly, in 11 out of 27 EU countries the youth employment rate in 2022 remained below the 2019 level. The largest differences were observed in Romania (5.4 pp), Portugal (3.8 pp), and Slovenia (3.4 pp).

Figure 2. Employment rate 2022 vs 2019, by country

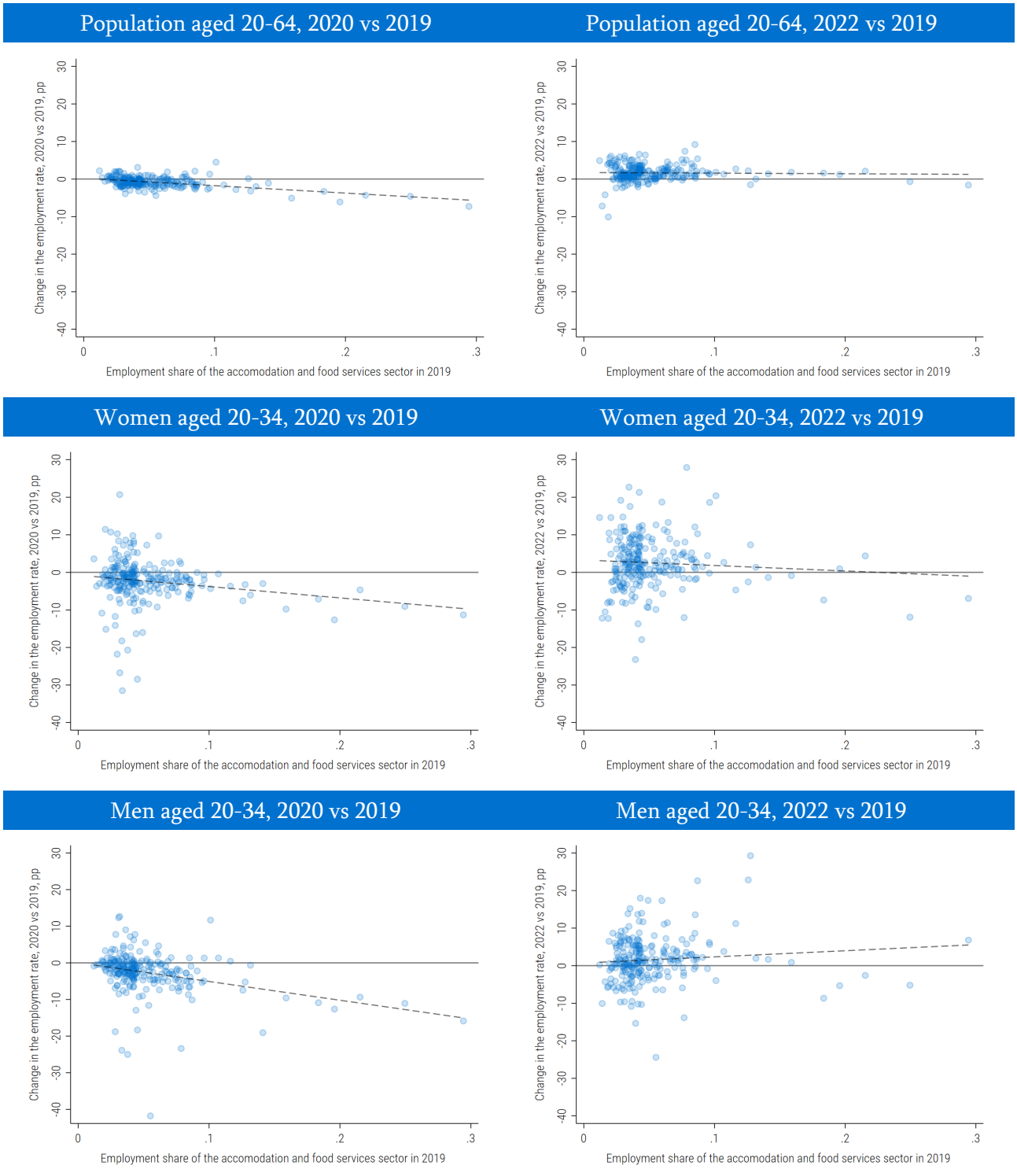


Note: The black line represents the same employment rates in 2019 and 2022. A country situated above the line has a higher employment rate in 2022 than in 2019. A country situated below the line has a lower employment rate in 2022 than in 2019.

Source: Own elaboration based on Eurostat data

We investigate whether regional changes in the employment rates were related to the pre-pandemic employment shares of accommodation and food services, i.e. activities most affected by the lockdowns. Descriptive evidence suggests that this was indeed the case in 2020 (Figure 3). This negative relationship was stronger among young people than among the population aged 20-64. As of 2022, the differences in the aggregated employment rates in comparison to the pre-pandemic level do not seem to be related to the regional economic structure.

Figure 3. Changes in the employment rate vs exposure to lockdowns



Note: The dashed line represents the coefficient of linear regression.

Source: Own elaboration based on the EU-LFS data

Now, we quantify the employment effects of the COVID pandemic within the econometric framework described in Section 2.2. We apply the econometric models in which we also consider the potential role of the COVID deaths, and the pre-pandemic share of temporary workers.

The results for people aged 20-64 and for women are reported in Table 2, and the results for men are reported in Table 3. In 2020, the average decrease in regional employment (identified by the coefficient pertaining to the constant term) amounted to 0.66 percentage points (pp) for women aged 20-64, and 0.93 pp for men. For both genders, a higher share of 1 pp in the pre-pandemic employment share of Section I corresponded to a decrease in the overall employment rate in 2020 by 0.2 pp. A similar or slightly stronger relation was observed in 2021, whereas in 2022, there was no statistically significant link between the share of Section I and employment rates at the aggregated level.

For people aged 20-34, the decreases in the employment rates were much more pronounced and more related to the share of accommodation and food services. The employment share of Section I being larger by 1 pp translated into the employment rate of women aged 20-34 being lower by 0.3 pp in 2020 and by 0.5 pp in 2021. For men, these effects amounted to 0.5 pp in both 2020 and 2021. In the regressions for 2022, we do not detect a significant relationship between the youth employment rate and pre-pandemic exposure to lockdowns.

The results reveal more nuances when viewed by groups' educational attainment. In 2020, the steepest declines in employment rates were seen among individuals with upper secondary education. Yet, it was the employment of those with lower educational levels that was most closely linked to the regional prominence of Section I. Hence, in regions heavily reliant on tourism, it was primarily the less-educated individuals, especially women, who faced job losses in the initial phase of the COVID crisis. By 2021, this trend had shifted, with employment effects becoming more evenly distributed among women of varied educational backgrounds. For men, the most pronounced effects were observed among those with upper secondary education. In 2022, the negative employment effects were still visible among women with low educational level.

The severity of the health crisis in 2020 does not appear to have had an impact on overall employment rates, but it was negatively correlated with the employment rates of young men and women in subsequent years. Interestingly, the share of temporary workers as of 2019 did not matter for the employment patterns in 2020 but it was conducive to the employment growth in 2021.

Table 2. The estimated relationships between the exposure to COVID-19 and changes in employment rate, women and working-age population

	Age: 20-64	Women				
		Age: 20-64	Age: 20-34	Age: 20-64		
		Edu: all	Edu: all	Edu: low	Edu: up sec.	Edu: high
A: **2020**						
Constant	-0.80***	-0.66***	-2.31***	-0.71***	-1.47***	-0.66***
	(0.18)	(0.16)	(0.27)	(0.25)	(0.21)	(0.22)
Share of Section I in 2019	-0.20***	-0.19***	-0.32***	-0.39***	-0.14***	-0.08
	(0.04)	(0.04)	(0.06)	(0.06)	(0.04)	(0.06)
COVID deaths in 2020	0.00	-0.01	-0.08**	-0.05**	0.02	-0.01
	(0.03)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)
Share of temporary employment in 2019	0.01	0.02	-0.01	0.02	-0.03	0.01
	(0.02)	(0.02)	(0.03)	(0.05)	(0.03)	(0.02)
B: **2021**						
Constant	0.04	0.42	-0.29	-0.62	-0.48	0.60
	(0.30)	(0.38)	(0.56)	(0.57)	(0.36)	(0.37)
Share of Section I in 2019	-0.25***	-0.26***	-0.52***	-0.34**	-0.30***	-0.21**
	(0.05)	(0.06)	(0.12)	(0.13)	(0.07)	(0.09)
COVID deaths in 2020	0.01	0.00	-0.09*	-0.12***	-0.02	0.02
	(0.03)	(0.03)	(0.05)	(0.03)	(0.04)	(0.04)
Share of temporary employment in 2019	0.11**	0.13*	0.05	0.32**	0.11	-0.01
	(0.05)	(0.07)	(0.11)	(0.13)	(0.06)	(0.06)
C: **2022**						
Constant	1.65***	2.17***	2.56***	1.21**	1.28***	1.75***
	(0.33)	(0.44)	(0.56)	(0.58)	(0.39)	(0.44)
Share of Section I in 2019	-0.05	-0.12	-0.19	-0.37***	-0.08	-0.07
	(0.06)	(0.08)	(0.16)	(0.11)	(0.09)	(0.08)
COVID deaths in 2020	0.01	0.00	-0.20***	-0.09*	-0.03	-0.01
	(0.03)	(0.04)	(0.05)	(0.05)	(0.05)	(0.04)
Share of temporary employment in 2019	0.07	0.08	0.02	0.25	0.03	-0.01
	(0.06)	(0.07)	(0.12)	(0.15)	(0.07)	(0.06)
Number of regions	246	246	239	229	246	246

Note: The table presents the estimated coefficients of the OLS regressions given by equation (1). The dependent variable is the change in the employment rate of the group denoted in the column header with respect to 2019. Panels A, B, and C report separate regressions with one, two, and three-year changes. Standard errors (in brackets) are clustered at the country level. *, **, *** denote statistical significance at the 0.1, 0.05, 0.01 levels, respectively.

Source: Authors' calculations based on the Eurostat data

Table 3. The estimated relationships between the exposure to COVID-19 and changes in employment rate, men

	Men				
	Age: 20-64	Age: 20-34		Age: 20-64	
	Edu: all	Edu: all	Edu: low	Edu: up sec.	Edu: high
A: **2020**					
Constant	-0.93***	-2.61***	-0.99***	-1.36***	-0.86***
	(0.20)	(0.38)	(0.25)	(0.23)	(0.24)
Share of Section I in 2019	-0.21***	-0.49***	-0.25***	-0.21***	-0.15***
	(0.04)	(0.04)	(0.06)	(0.06)	(0.05)
COVID deaths in 2020	0.01	-0.04	-0.01	0.01	0.01
	(0.03)	(0.06)	(0.03)	(0.02)	(0.03)
Share of temporary employment in 2019	0.00	-0.06	0.00	-0.05	0.05**
	(0.03)	(0.04)	(0.05)	(0.05)	(0.02)
B: **2021**					
Constant	-0.35	-1.42***	-0.68	-0.82**	-0.34
	(0.25)	(0.39)	(0.51)	(0.30)	(0.22)
Share of Section I in 2019	-0.23***	-0.53***	-0.11	-0.29***	-0.19***
	(0.05)	(0.13)	(0.11)	(0.05)	(0.04)
COVID deaths in 2020	0.03	-0.08*	-0.01	-0.01	0.04
	(0.03)	(0.04)	(0.04)	(0.04)	(0.03)
Share of temporary employment in 2019	0.10**	0.02	0.18	0.06	0.06**
	(0.04)	(0.08)	(0.12)	(0.06)	(0.02)
C: **2022**					
Constant	1.12***	1.54***	0.85	0.74**	0.68***
	(0.26)	(0.48)	(0.56)	(0.33)	(0.20)
Share of Section I in 2019	0.02	0.15	0.10	0.01	0.00
	(0.06)	(0.14)	(0.08)	(0.07)	(0.06)
COVID deaths in 2020	0.01	-0.11**	-0.06	-0.02	0.01
	(0.03)	(0.04)	(0.06)	(0.04)	(0.03)
Share of temporary employment in 2019	0.08	-0.01	0.16	0.05	0.03
	(0.05)	(0.10)	(0.12)	(0.07)	(0.02)
Number of regions	246	240	239	246	246

Note: The table presents the estimated coefficients of the OLS regressions given by equation (1). The dependent variable is the change in the employment rate of the group denoted in the column header with respect to 2019. Panels A, B, and C report separate regressions with one, two, and three-year changes. Standard errors (in brackets) are clustered at the country level. *, **, *** denote statistical significance at the 0.1, 0.05, 0.01 levels, respectively.

Source: Authors' calculations based on the Eurostat data

4. Impact on labour market participation

In this section, we investigate whether COVID-19 had short-term or medium-term effects on the activity rates of various socio-demographic groups. A decline in the employment rate is especially concerning when paired with a drop in the activity rate, signifying a substantial disengagement from the labour market for a specific group of individuals.

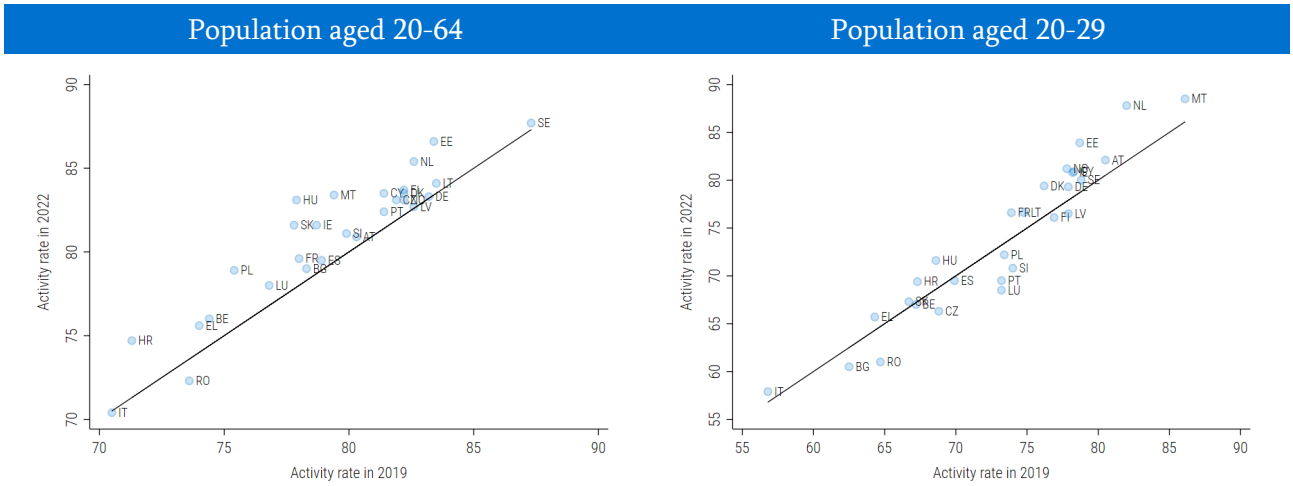
At the European Union level, approximately two-thirds of the decline in the 2020 employment rate among the working-age demographic (20-64 years) manifested itself as a reduction in the activity rate. Interestingly, for individuals aged 20-29, the decrease in the activity rate was more pronounced, standing at 1.8 pp, in contrast to a 2.4 pp fall in the employment rate. Nonetheless, the activity rate among the youth rebounded more rapidly than employment figures, nearing the pre-pandemic benchmarks in 2021 (Figure 4).

Figure 4. Activity rates in the EU-27

Source: Own elaboration based on Eurostat data

Similar to the employment rates, Romania stands out as the sole country experiencing a significant drop in its activity rate in 2022 compared to 2019, as depicted in Figure 5. The trends in activity rates among individuals aged 20-29 closely mirror those observed in employment rates. In every country, except for Slovakia, where the employment rate diminished in 2022 relative to 2019, there was a corresponding decline in the activity rate. The sizes of the decreases are very similar, implying that there might be long-lasting effects of the COVID-19 on labour market participation.

Figure 5. Activity rate 2022 vs 2019, by country



Note: The black line represents the same activity rates in 2019 and 2022. A country situated above the line has a higher employment rate in 2022 than in 2019. A country situated below the line has a lower employment rate in 2022 than in 2019.

Source: Own elaboration based on Eurostat data

The estimation results for people aged 20-64 and for women are detailed in Table 4, and the findings for men are reported in Table 5. In 2020, the average decline in regional activity rates was 0.49 pp for women aged 20-64 and 0.66 pp for men of the same age bracket. For both genders, the employment share of Section I higher by 1 pp resulted in a decrease in the overall activity rate by about 0.14 pp. This relationship was sustained or slightly accentuated in 2021. By 2022, however, no statistically significant linkage between the exposure to lockdowns and overall activity rates was observable.

Similarly to the employment results, the reductions in activity rates for the age group 20-34 were more profound and closely correlated with the employment share of the food and accommodation services sector. The employment share of Section I being higher by 1 pp was associated with a decline in the activity rate of women aged 20-34 by 0.26 pp in 2020 and 0.55 pp in 2021. Thus, for young women, almost all employment losses related to the sectoral exposure to the COVID-19 manifested themselves as a decline in activity rates, rather than a rise in unemployment rate. For their male counterparts, the effects on activity rates in 2020 and 2021 were lower than the employment effects, giving rise to a higher unemployment rate.

In contrast with the employment analysis, the negative effects on activity rates in 2022 are not limited to women with low education levels. Instead, less significant effects are also visible in other groups and for the total working age population. However, for women with low educational attainment the effects of the

pandemic are as large as in the case of the employment rates, implying that long-lasting effects of COVID-19 might have materialised in higher inactivity rates, rather than in elevated unemployment.

Table 4. The estimated relationships between the exposure to COVID-19 and changes in activity rate, women and working-age population

	Age: 20-64	Women				
		Age: 20-64	Age: 20-34	Age: 20-64		
		Edu: all	Edu: all	Edu: low	Edu: up sec.	Edu: high
A: **2020**						
Constant	-0.56***	-0.49***	-1.41***	-0.42	-1.25***	-0.42**
	(0.15)	(0.14)	(0.25)	(0.28)	(0.14)	(0.19)
Share of Section I in 2019	-0.14***	-0.13***	-0.26***	-0.34***	-0.07*	-0.04
	(0.04)	(0.03)	(0.04)	(0.07)	(0.04)	(0.04)
COVID deaths in 2020	0.00	-0.01	-0.11**	-0.07**	0.01	-0.01
	(0.01)	(0.02)	(0.04)	(0.03)	(0.02)	(0.02)
Share of temporary employment in 2019	-0.04	-0.03*	-0.04	-0.02	-0.09***	0.00
	(0.02)	(0.02)	(0.03)	(0.05)	(0.03)	(0.02)
B: **2021**						
Constant	0.25	0.65	0.30	-0.14	-0.15	0.74**
	(0.30)	(0.39)	(0.61)	(0.61)	(0.34)	(0.35)
Share of Section I in 2019	-0.20***	-0.21***	-0.55***	-0.26*	-0.23***	-0.22*
	(0.06)	(0.07)	(0.20)	(0.13)	(0.07)	(0.11)
COVID deaths in 2020	0.03	0.02	-0.08	-0.09**	0.02	0.02
	(0.03)	(0.03)	(0.06)	(0.04)	(0.04)	(0.03)
Share of temporary employment in 2019	0.07	0.08	0.05	0.25*	0.05	-0.01
	(0.05)	(0.07)	(0.13)	(0.14)	(0.06)	(0.06)
C: **2022**						
Constant	1.22***	1.82***	2.27***	1.21**	1.00**	1.26***
	(0.32)	(0.42)	(0.56)	(0.57)	(0.37)	(0.40)
Share of Section I in 2019	-0.12*	-0.18*	-0.28	-0.40***	-0.14	-0.18*
	(0.06)	(0.09)	(0.19)	(0.12)	(0.10)	(0.10)
COVID deaths in 2020	0.03	0.03	-0.22***	-0.08*	0.02	0.00
	(0.03)	(0.03)	(0.07)	(0.04)	(0.04)	(0.03)
Share of temporary employment in 2019	0.03	0.03	-0.04	0.20	-0.01	-0.01
	(0.06)	(0.07)	(0.12)	(0.15)	(0.08)	(0.07)
Number of regions	246	246	239	231	246	246

Note: The table presents the estimated coefficients of the OLS regressions given by equation (1). The dependent variable is the change in the activity rate of the group denoted in the column header with respect to 2019. Panels A, B, and C report separate regressions with one, two, and three-year changes. Standard errors (in brackets) are clustered at the country level. *, **, *** denote statistical significance at the 0.1, 0.05, 0.01 levels, respectively.

Source: Authors' calculations based on the Eurostat data

Table 5. The estimated relationships between the exposure to COVID-19 and changes in activity rate, men

	Men				
	Age: 20-64	Age: 20-34		Age: 20-64	
	Edu: all	Edu: all	Edu: low	Edu: up sec.	Edu: high
A: **2020**					
Constant	-0.65***	-1.89***	-0.76***	-0.93***	-0.53***
	(0.17)	(0.28)	(0.18)	(0.20)	(0.18)
Share of Section I in 2019	-0.14***	-0.34***	-0.15***	-0.14*	-0.09***
	(0.04)	(0.08)	(0.05)	(0.07)	(0.02)
COVID deaths in 2020	0.02	0.00	0.00	0.00	0.02
	(0.02)	(0.05)	(0.02)	(0.02)	(0.02)
Share of temporary employment in 2019	-0.04	-0.06	-0.09***	-0.07	0.01
	(0.03)	(0.05)	(0.03)	(0.05)	(0.02)
B: **2021**					
Constant	-0.17	-1.02**	-0.72	-0.50*	-0.04
	(0.24)	(0.44)	(0.50)	(0.26)	(0.21)
Share of Section I in 2019	-0.18***	-0.35**	-0.07	-0.21***	-0.20***
	(0.05)	(0.17)	(0.08)	(0.06)	(0.06)
COVID deaths in 2020	0.04	0.00	0.03	0.01	0.04
	(0.03)	(0.04)	(0.05)	(0.03)	(0.03)
Share of temporary employment in 2019	0.06	0.00	0.09	0.04	0.05**
	(0.04)	(0.10)	(0.10)	(0.06)	(0.02)
C: **2022**					
Constant	0.60**	0.90**	0.13	0.37	0.32*
	(0.24)	(0.43)	(0.49)	(0.26)	(0.19)
Share of Section I in 2019	-0.06	0.06	0.08	-0.11*	-0.07
	(0.06)	(0.14)	(0.08)	(0.06)	(0.06)
COVID deaths in 2020	0.03	-0.10**	0.00	-0.01	0.02
	(0.03)	(0.04)	(0.06)	(0.03)	(0.02)
Share of temporary employment in 2019	0.03	-0.08	0.06	0.03	-0.01
	(0.04)	(0.09)	(0.10)	(0.05)	(0.02)
Number of regions	246	240	242	246	246

Note: The table presents the estimated coefficients of the OLS regressions given by equation (1). The dependent variable is the change in the activity rate of the group denoted in the column header with respect to 2019. Panels A, B, and C report separate regressions with one, two, and three-year changes. Standard errors (in brackets) are clustered at the country level. *, **, *** denote statistical significance at the 0.1, 0.05, 0.01 levels, respectively.

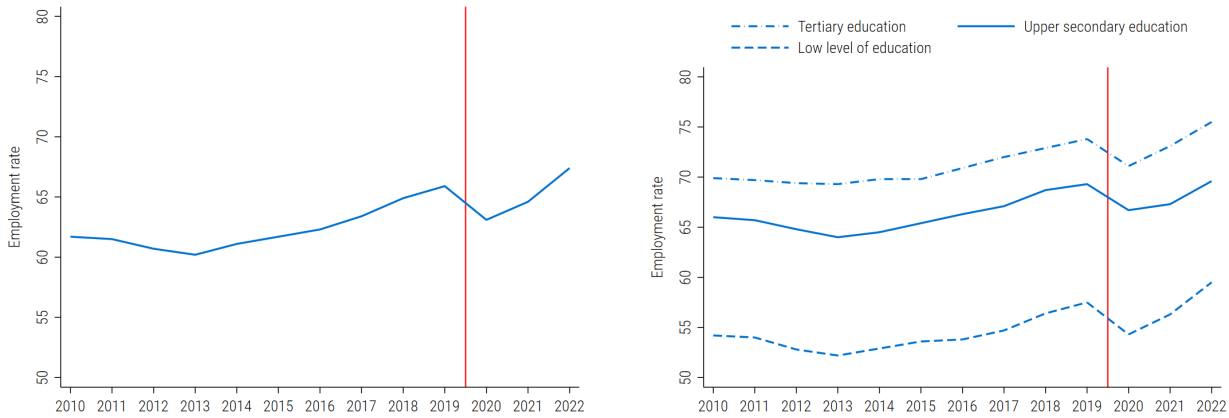
Source: Authors' calculations based on the Eurostat data

5. Impact on the employment of immigrants

Persons with a foreign citizenship made up 8.1% of the EU-27 employment in 2019, and in 2022 this share increased to 8.7%. In this section, we investigate how the COVID pandemic influenced the employment rates of immigrants.

The employment rate of immigrants in the EU decreased in 2020 by 2.8 pp, a much larger drop than in the overall employment rate (0.9 pp). The most affected were immigrants with low education levels, among whom the employment rate decreased by 3.2 pp. In contrast to the native population, employment rate of immigrants in 2021 remained significantly below the pre-pandemic level, and only recovered in 2022.

Figure 6. Employment rate of persons with foreign citizenship, EU-27

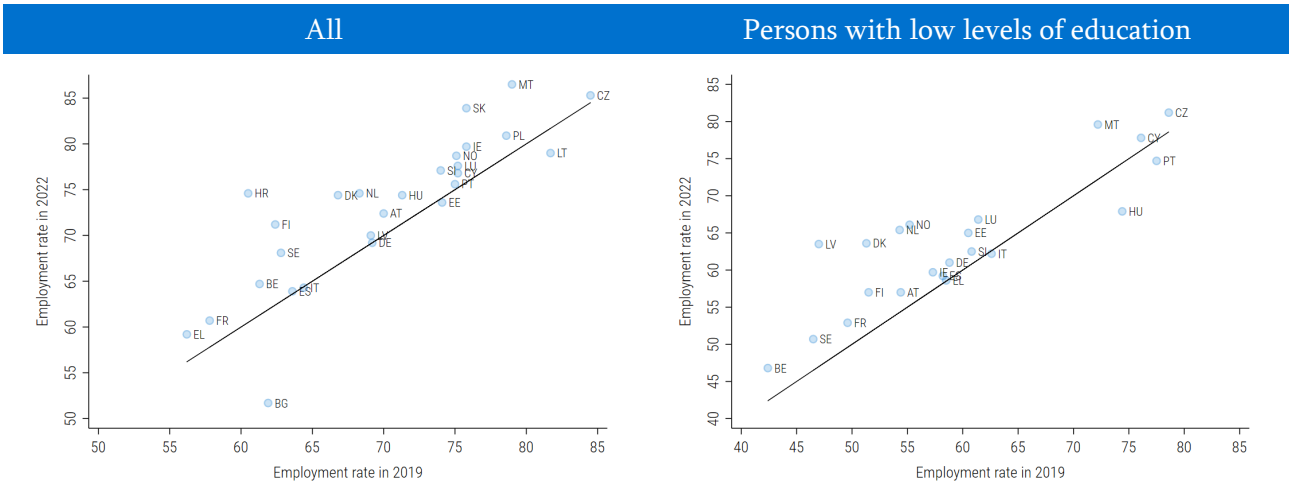


Source: Own elaboration based on Eurostat data

The recovery in the employment rates of immigrants was heterogeneous across countries (Figure 7). In 2022, the employment rates were below the 2019 levels in Bulgaria and Lithuania, and for immigrants with low levels of education also in Portugal and Hungary. Unfortunately, data on the employment of immigrants are not reported for some countries. In particular, fewer observations are available for employment by educational groups.

In contrast to the employment rates for the total population, employment of immigrants was clearly linked to the share of accommodation and food services, both in 2020 and in 2022 (Figure 8). It is also evident that in many regions, the employment rates of immigrants in 2022 remained far below the pre-pandemic levels. This suggests that the recovery was uneven across regions, and that the COVID pandemic might still have influenced employment prospects of immigrants in 2022.

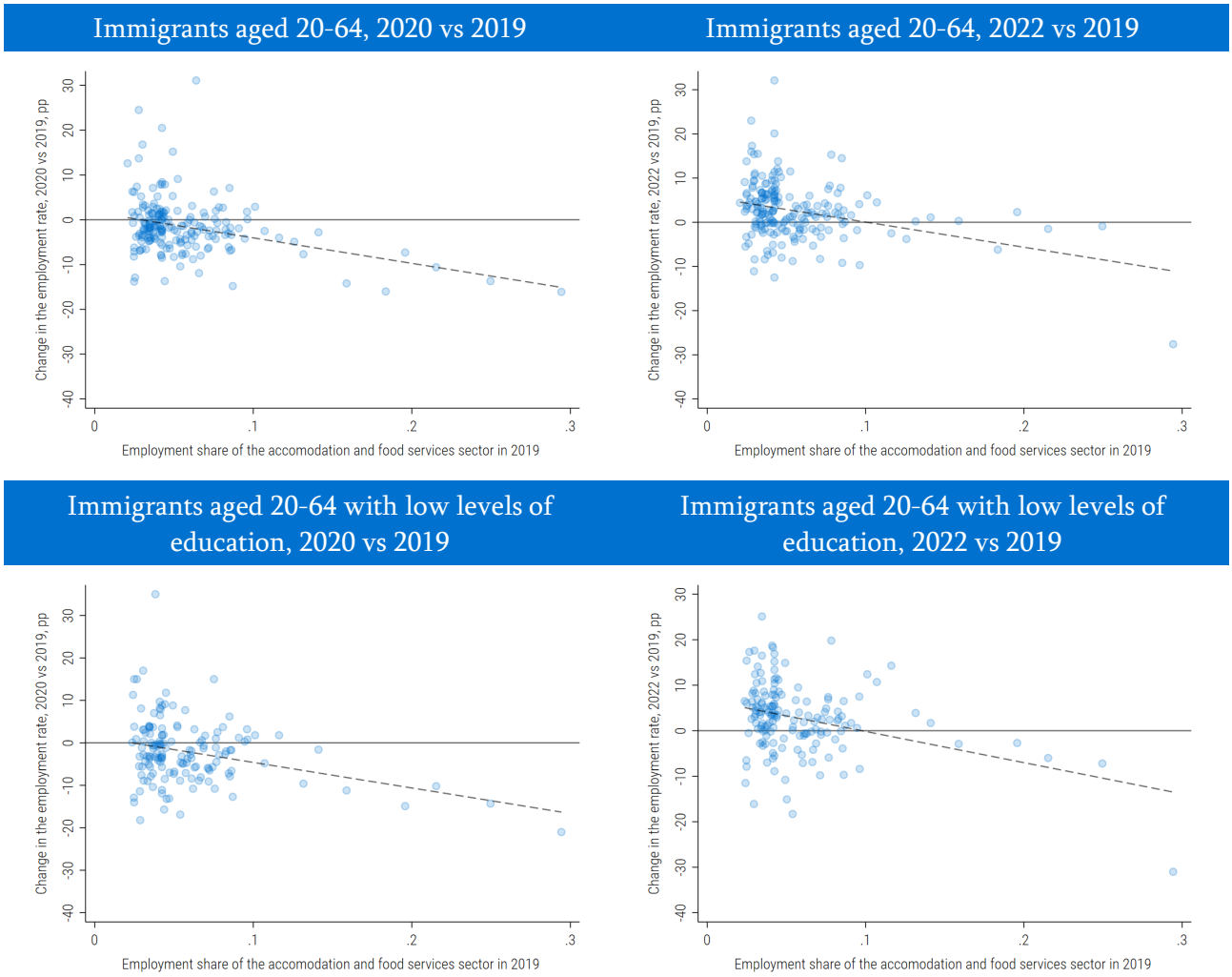
Figure 7. Employment rate 2022 vs 2019, persons with foreign citizenship, by country



Note: The black line represents the same employment rates in 2019 and 2022. A country situated above the line has a higher employment rate in 2022 than in 2019.

Source: Own elaboration based on Eurostat data

Figure 8. Changes in the employment rate of immigrants vs exposure to lockdowns



Note: The dashed line represents the coefficient of linear regression.

Source: Own elaboration based on EU-LFS data

Table 6. The estimated relationships between the exposure to COVID-19 and changes in labour market status of immigrants

	Employment rate				Activity rate
	Age: 20-64				
	Edu: all	Edu: low	Edu: up sec.	Edu: high	Edu: all
A: **2020**					
Constant	-1.52***	-1.65**	-1.84***	-2.19***	-0.77
	(0.51)	(0.76)	(0.45)	(0.67)	(0.53)
Share of Section I in 2019	-0.55***	-0.52***	-0.35**	-0.33	-0.43***
	(0.10)	(0.12)	(0.14)	(0.22)	(0.05)
COVID deaths in 2020	-0.04	-0.11	-0.04	0.12	-0.11***
	(0.05)	(0.08)	(0.08)	(0.08)	(0.04)
Share of temporary employment in 2019	-0.05	-0.19*	-0.11	-0.17	-0.01
	(0.08)	(0.11)	(0.08)	(0.14)	(0.04)
B: **2021**					
Constant	0.14	-0.28	-0.56	-0.28	0.44
	(0.69)	(0.84)	(0.73)	(1.15)	(0.64)
Share of Section I in 2019	-0.64***	-0.61***	-0.52**	-0.39	-0.45***
	(0.09)	(0.10)	(0.19)	(0.30)	(0.08)
COVID deaths in 2020	0.01	0.00	-0.04	0.05	0.00
	(0.06)	(0.10)	(0.06)	(0.14)	(0.06)
Share of temporary employment in 2019	0.21**	0.04	0.13	0.03	0.13**
	(0.09)	(0.10)	(0.13)	(0.18)	(0.06)
C: **2022**					
Constant	2.53***	3.54***	1.30*	1.63*	1.93***
	(0.76)	(0.71)	(0.72)	(0.92)	(0.66)
Share of Section I in 2019	-0.61***	-0.64***	-0.04	-0.16	-0.62***
	(0.17)	(0.16)	(0.24)	(0.32)	(0.13)
COVID deaths in 2020	-0.04	-0.08	-0.15	0.00	-0.05
	(0.08)	(0.08)	(0.10)	(0.11)	(0.09)
Share of temporary employment in 2019	0.14	-0.21*	0.05	0.16	0.15*
	(0.12)	(0.10)	(0.15)	(0.17)	(0.08)
Number of regions	193	144	151	140	199

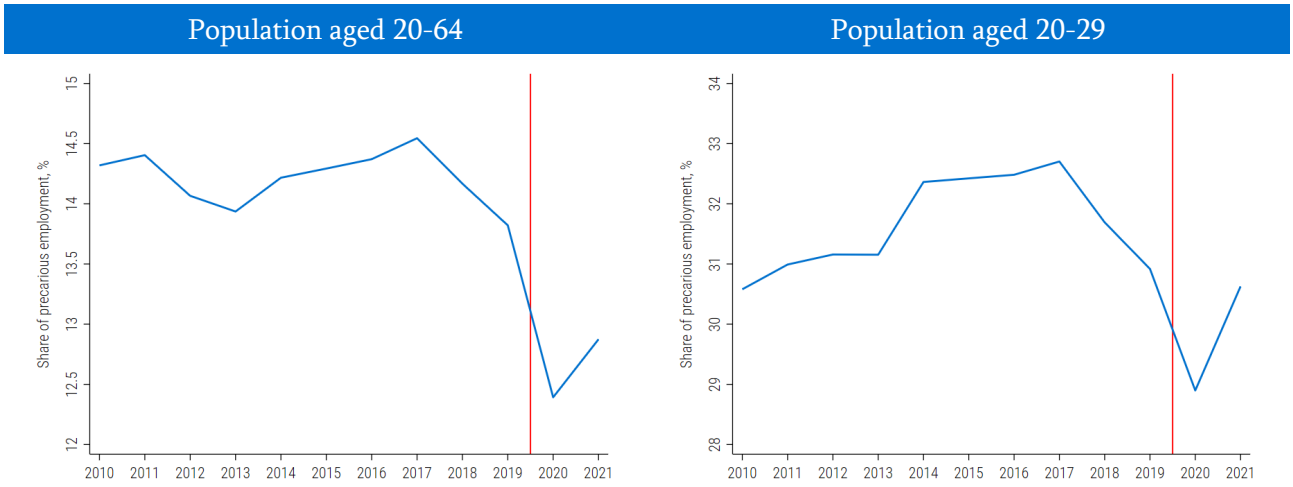
Note: The table presents the estimated coefficients of the OLS regressions given by equation (1). The dependent variable is the change in the employment rate of the group denoted in the column header with respect to 2019. Panels A, B, and C report separate regressions with one, two, and three-year changes. Standard errors (in brackets) are clustered at the country level. *, **, *** denote statistical significance at the 0.1, 0.05, 0.01 levels, respectively.
Source: Authors' calculations based on the Eurostat data

The regression results from Table 6 indicate a stronger relationship between the exposure to lockdowns and the employment rate of immigrants compared to the total population. Specifically, the employment share of Section I being higher by 1 pp was linked to a 0.6 pp lower employment rate of immigrants in the post-2019 period. This coefficient is nearly three times larger than that for the total population. Moreover, while the effect persisted for immigrants until 2022, it did not for the total population. However, the adverse impacts in 2022 were seen exclusively among immigrants with lower educational levels. Among immigrants, the negative employment effects of exposure to lockdowns were closely matched by decreases in the labour market participation. Interestingly, labour market participation in 2020 seem to have been negatively affected by the severity of health crisis, an effect not detected for the overall population.

6. Impact on the share of precarious employment

In this section, we examine the COVID-related changes in the incidence of precarious employment. Our measure of precarious employment includes temporary workers, platform workers, family workers, and self-employed without employees (often representing bogus self-employment). Before the pandemic, the share of precarious employment was declining, reflecting favourable labour market conditions and enhanced power of employees. However, 2020 saw a substantial decrease in precarious employment, likely due to the layoffs of individuals on temporary job contracts (Figure 9).

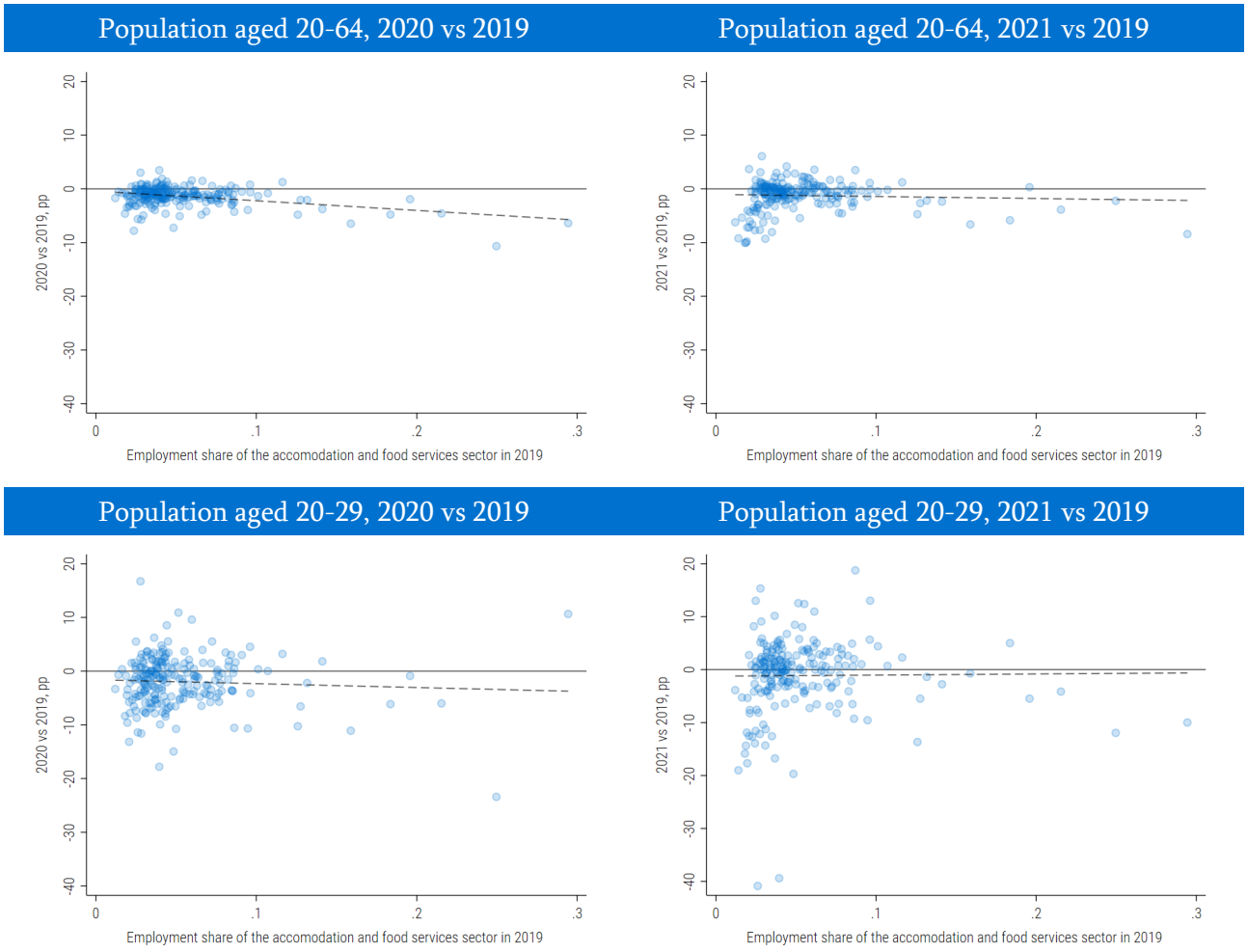
Figure 9. Share of precarious employment in the EU-27



Source: Own elaboration based on EU-LFS data

Changes in the share of precarious employment appear to have only a weak connection to the role of accommodation and food services, as seen in Figure 10. The econometric analysis from Table 6 confirms that there was no significant relationship between the share of precarious employment among young workers and the employment share of Section I. For the population aged 20-64, a negative correlation is somewhat more evident, but it is not statistically significant at the 0.05 level. Instead, the decreases in the precarious employment shares were more prevalent in these regions, where such contracts were more popular in 2019.

Figure 10. Changes in the share of precarious employment



Note: The dashed line represents the coefficient of linear regression.

Source: Own elaboration based on EU-LFS data

Table 7. The estimated relationships between the exposure to COVID-19 and changes in the share of precarious employment

	Age: 20-64	Age: 20-29
A: **2020**		
Constant	-1.40***	-2.15***
	(0.15)	(0.32)
Share of Section I in 2019	-0.12*	0.06
	(0.07)	(0.11)
COVID deaths in 2020	0.01	0.09
	(0.02)	(0.05)
Share of temporary employment in 2019	-0.13***	-0.24***
	(0.03)	(0.05)
B: **2021**		
Constant	-1.24**	-1.16
	(0.52)	(0.89)
Share of Section I in 2019	0.03	0.19
	(0.14)	(0.26)
COVID deaths in 2020	0.01	0.03
	(0.04)	(0.10)
Share of temporary employment in 2019	-0.14	-0.34*
	(0.10)	(0.17)
Number of regions	211	211

Note: The table presents the estimated coefficients of the OLS regressions given by equation (1). The dependent variable is the change in the share of precarious employment with respect to 2019. Panels A and B report separate regressions with one, and two-year changes. Standard errors (in brackets) are clustered at the country level. *, **, *** denote statistical significance at the 0.1, 0.05, 0.01 levels, respectively.

Source: Authors' calculations based on the Eurostat data

7. The role of mitigation policies

In this section, we examine the links between policy interventions and employment rates. In 2020, governments introduced various measures to shield businesses and employees from the consequences of the pandemic. We construct two indexes approximating the scale of public intervention: one index captures policies related to the functioning of firms, and the other policies related to the welfare of individuals. We utilise data from the Eurofound's COVID-19 EU PolicyWatch database, which lists 8 worker-related policies, and 18 business-related policies. The two indexes indicate the extent of measures implemented in each country, transformed to a scale of 0 to 100. A score of 0 signifies the absence of any measures, while a score of 100 indicates that all possible measures have been implemented in the country.

Table 8. The estimated relationships between the policy interventions and changes in employment rate

	All	Women		Men	
	Age: 20-64	Age: 20-64	Age: 20-34	Age: 20-64	Age: 20-34
A: **2020**					
Constant	-0.80***	-0.66***	-2.35***	-0.93***	-2.65***
	(0.16)	(0.15)	(0.24)	(0.17)	(0.32)
Policy measures for workers	0.01	0.01	0.03	0.01	0.02
	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)
Policy measures for businesses	-0.02	-0.01	-0.01	-0.03**	-0.06*
	(0.01)	(0.01)	(0.02)	(0.01)	(0.03)
Share of Section I in 2019	-0.21***	-0.23***	-0.40***	-0.20***	-0.48***
	(0.03)	(0.03)	(0.08)	(0.04)	(0.08)
B: **2021**					
Constant	0.01	0.40	-0.35	-0.37	-1.45***
	(0.30)	(0.38)	(0.52)	(0.25)	(0.38)
Policy measures for workers	0.01	0.01	-0.04	0.00	-0.03
	(0.02)	(0.02)	(0.03)	(0.01)	(0.03)
Policy measures for businesses	-0.01	-0.01	0.02	0.00	0.03
	(0.03)	(0.04)	(0.05)	(0.02)	(0.04)
Share of Section I in 2019	-0.27***	-0.29***	-0.39**	-0.24***	-0.44**
	(0.05)	(0.06)	(0.16)	(0.05)	(0.21)
C: **2022**					
Constant	1.64***	2.19***	2.50***	1.09***	1.49***
	(0.33)	(0.43)	(0.57)	(0.27)	(0.47)
Policy measures for workers	0.01	0.02	0.01	0.01	0
	(0.02)	(0.03)	(0.04)	(0.01)	(0.03)
Policy measures for businesses	-0.01	-0.03	0.04	0.01	0.08
	(0.03)	(0.04)	(0.05)	(0.03)	(0.05)
Share of Section I in 2019	-0.08	-0.15	-0.27	-0.01	0.05
	(0.06)	(0.09)	(0.26)	(0.05)	(0.13)
Number of regions	240	240	236	240	237

Note: The table presents the estimated coefficients of the OLS regressions given by equation (1). The dependent variable is the change in the employment rate of the group denoted in the column header with respect to 2019. Panels A, B, and C report separate regressions with one, two, and three-year changes. Standard errors (in brackets) are clustered at the country level. *, **, *** denote statistical significance at the 0.1, 0.05, 0.01 levels, respectively.
Source: Authors' calculations based on the Eurostat and Eurofound data

We include these indexes as explanatory variables in the regressions explaining employment rates. An important caveat is that the reported coefficients may not be unbiased estimates of the actual effects of policy interventions. Rather, one may expect them to be downward biased, as the introduction of various measures could be more likely in countries where the labour market situation became more difficult. In other words, it is not possible to establish the direction of causality.

We find no statistically significant relation between the policy measures and the aggregate employment rate or the female employment rates (Table 7). There is a negative link between employment rates of men in 2020 and the extent of interventions aimed at helping businesses. However, it disappears in subsequent years.

8. Concluding remarks

In this report, we investigate the short- and medium-term labour market effects of the COVID-19 crisis. Despite the overall strong performance of labour markets after the pandemic, we find that exposure to the crisis might have long-lasting consequences for the employment and labour market participation of certain socio-demographic groups. For the year 2022, we detect statistically significant effects of the pre-pandemic employment share of accommodation and food services on the employment and activity rates of immigrants and women with low levels of education.

Further analysis will require more detailed data. Specifically, the EU-LFS microdata for 2022, set to be released in December 2023, will enable a closer examination of more detailed socio-demographic groups, such as young women with low levels of education. It will also facilitate an analysis of the evolution of precarious employment in 2022. One group that deserves special attention is persons with disabilities. A harmonised EU survey that allows tracking of the situation of persons with disabilities is the EU-SILC. Unfortunately, the longitudinal data for 2021 are not usable for the present exercise because the majority of observations for all countries contain missing values regarding employment status.

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Appendix: detailed descriptive statistics

In the econometric analysis, we examine the 1-year, 2-year, and 3-year of the variables of interest. The distributions of these differences are reported in the figures in the main text. In this appendix, we report descriptive statistics for the levels of outcome variables in the year 2019, which serves as a reference period.

Table 9. Distributions of employment rates, 2019

Age	Gender	Edu	Obs.	Mean	p10	p25	p50	p75	p90
20-64	All	All	258	73.5	61.9	69.8	74.5	79.6	82.2
20-64	Women	All	258	67.8	53.8	62.9	70.1	75.5	78.2
20-34	Women	All	251	62.5	47.0	53.3	64.6	72.3	77.4
20-64	Women	Low	241	45.9	30.6	38.8	47.0	53.0	59.6
20-64	Women	Secondary	258	66.9	51.8	59.5	68.9	75.7	79.2
20-64	Women	Tertiary	258	81.7	73.9	78.9	83.6	85.9	87.7
20-64	Men	All	258	79.1	69.0	75.7	80.1	83.7	87.0
20-34	Men	All	252	72.5	58.3	68.0	75.1	79.9	83.1
20-64	Men	Low	251	65.3	52.8	59.5	65.9	72.9	76.4
20-64	Men	Secondary	258	78.9	70.4	74.6	80.3	84.1	86.6
20-64	Men	Tertiary	258	88.0	81.1	84.9	89.2	91.5	93.4

Source: Own elaboration based on Eurostat data

Table 10. Distributions of activity rates, 2019

Age	Gender	Edu	Obs.	Mean	p10	p25	p50	p75	p90
20-64	All	All	258	78.5	72.4	75.4	79.3	82.4	84.9
20-64	Women	All	258	72.8	64.0	68.3	74.1	78.1	81.5
20-34	Women	All	251	69.6	56.6	63.0	71.1	77.0	81.4
20-64	Women	Low	243	52.4	37.2	46.6	53.5	59.3	65.3
20-64	Women	Secondary	258	72.1	60.1	66.6	73.1	78.7	81.7
20-64	Women	Tertiary	258	85.7	81.1	83.7	86.3	88.2	90.0
20-64	Men	All	258	84.3	79.0	81.8	84.4	87.2	89.1
20-34	Men	All	252	80.0	71.7	76.7	81.0	84.4	87.4
20-64	Men	Low	254	73.5	62.4	67.8	74.8	79.8	83.0
20-64	Men	Secondary	258	83.8	78.0	81.0	84.3	86.9	89.0
20-64	Men	Tertiary	258	91.4	87.4	89.3	92.1	93.7	95.0

Source: Own elaboration based on Eurostat data

Table 11. Distributions of employment and activity rates of immigrants, 2019

Variable	Edu	Obs.	Mean	p10	p25	p50	p75	p90
Employment rate	All	201	65.0	49.1	59.1	64.7	73.3	78.4
Employment rate	Low	152	57.4	43.2	50.9	58.5	64.1	70.0
Employment rate	Secondary	159	68.4	52.1	62.0	69.3	76.0	82.0
Employment rate	Tertiary	148	74.1	60.0	67.9	73.9	80.7	86.6
Activity rate	All	208	73.6	61.9	68.7	75.4	79.8	83.8

Source: Own elaboration based on Eurostat data

Table 12. Distributions of precarious employment shares, 2019

Age	Obs.	Mean	p10	p25	p50	p75	p90
20-64	212	13.7	7.0	9.8	13.2	18.0	20.4
20-29	212	31.0	10.7	20.5	31.7	41.9	49.5

Source: Own elaboration based on EU-LFS data

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