COVID-19 IMPACT ON THE LABOUR MARKET OF TOURISM DEPENDENT NATIONS:

THE SOUTHERN EUROPE CASE

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GPEARI — Gabinete de Planeamento, Estratégia, Avaliação e Relações Internacionais, MINISTÉRIO DAS FINANÇAS

Office for Economic Policy and International Affairs, MINISTRY OF FINANCE

Gabinete de Estratégia e Estudos

AGENDA

1	Research Question
2	Data & Methodology
3	Results
4	Conclusions

Research Questions

HOW DID COVID-19 IMPACT THE LABOUR MARKET?

ARE ITS EFFECTS EXACERBATED IN A TOURISM-FOCUSED LABOUR MARKET?

WHAT IS HAPPENING TO UNEMPLOYMENT IN SOUTHERN EUROPEAN COUNTRIES?

Literature Review

Labour Slack rather than Unemployment Rate

"[Labour Slack] takes into account non-utilised labour time due to unemployment, due to changes of the number of hours actually worked and due to changes in labour force participation"

COVID-19 cases and Unemployment

In Su, Chi-Wei, et al. (2021) the authors found a strong positive significant correlation between COVID-19 cases and unemployment in some European nations over the pandemic period.

Lockdowns and the Economy

Studies have shown that pandemics are terrible for an economy, but not lockdowns.

Literature Review

Pandemic and Economic Sectors

> For areas allowing remote work, the impacts of the pandemic were much diminished, when comparing to areas that are impossible to be performed that way (i.e. **tourism**).

Pandemic and Level of Education

> Findings have shown that the higher one's level of education, the better one's chances of getting a job and keeping the status of employed person in times of crisis on labour market.

Pandemic and Level of Education

> Those with higher educational attainment have greater "ability to benefit from disequilibria" (Bowles et al., 2001), while the least qualified workers are the most vulnerable to unemployment during economic downturns (Gangl, 2001). Tourism related activities employ a lot more unskilled labour, and people that are less educated.

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Observations at the NUTS 2 level

PORTUGAL - NUTS level 2

7 Portuguese NUTS 2

ΕΛΛΑΔΑ - NUTS level 2

13 Greek NUTS 2

ESPAÑA - NUTS level 2

19 Spanish NUTS 2

ITALIA - NUTS level 2

21 Italian NUTS 2

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Dependent Variable 1	Description	Source
Growth of the Unemployment Rate	Percentage variation of the unemployment rate (population aged 15-74) between 2019 and 2020.	Eurostat

$$Unemployment\ Rate = \frac{Unemployed}{Labour\ Force} \times 100$$

Dependent Variable 2	Description	Source
Growth of the Labour Market Slack	Percentage variation of the labour market slack (population 15-74) in proportion of the extended labour force between 2019 and 2020.	Eurostat

$$Labour\ Slack\ on\ the\ Extended\ Labour\ Force = \frac{Labour\ Market\ Slack}{Extended\ Labour\ Force} \times 100$$

Unemployed **+** Involuntary part-time workers **+** Available but not seeking **+** Seeking but not available **=** Labour Market Slack
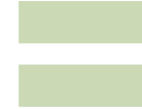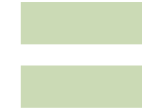
Labour Force **+** Involuntary part-time workers **+** Available but not seeking **+** Seeking but not available **=** Extended Labour Force

Dependent variable 1: Growth of the Unemployment Rate 2019-2020

Variable	Country	Obs	Mean	Min	Max	Stand Dev
ΔUnempRate	Greece	13	4.00	-19.92	47.86	19.70
	Spain	19	9.34	-12.22	36.44	11.01
	Italy	21	-6.40	-22.13	31.03	11.05
	Portugal	7	2.72	-22.78	18.31	15.62

Dependent variable 2: Growth of the Labour Market Slack 2019-2020

Variable	Country	Obs	Mean	Min	Max	Stand Dev
ΔLabourSlack	Greece	13	7.08	-14.00	40.30	17.41
	Spain	19	9.54	-8.82	38.86	10.15
	Italy	21	8.00	-4.67	45.76	10.99
	Portugal	7	9.45	-4.69	23.08	10.11

COVID-19 RELATED VARIABLES
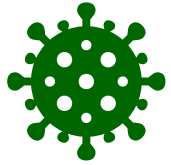
Variable	Description	Source
CasesCOVID	Number of cases of COVID-19 per 100 000 inhabitants in 2020.	EDPC
Lockdown	Number of days in lockdown during 2020.	RMD

Descriptive statistics of COVID-19 related variables

Variable	Country	Obs	Mean	Min	Max	Stand Dev
CasesCOVID	Greece	13	2061.85	765.36	5132.47	1512.1
	Spain	19	14796.01	4857.01	21207.96	4405.7
	Italy	21	13591.57	6844.75	26793.32	4511.5
	Portugal	7	12047.05	4170.58	18506.77	5171.0
Lockdown	Greece	13	67.31	67	71	1.11
	Spain	19	60.37	59	72	4.10
	Italy	21	64.52	56	86	12.12
	Portugal	7	45	45	45	0

LABOUR MARKET RELATED VARIABLES

Variable	Description	Source
YoungEmp	Percentage of the employed population aged 15-24 on the total employment in 2019. Proxy for temporary contracts.	Eurostat
NACE_GHI	Percentage of employment associated to wholesale and retail trade, transport, accommodation, and food service activities in 2019.	Eurostat
Educ	Percentage of employed population with tertiary education (ISCED levels 5-8) in 2019.	Eurostat
ΔActivRate	Variation of the economically active population rate between 2019 and 2020.	Eurostat

Descriptive statistics of Labour Market related variables

Variable	Country	Obs	Mean	Min	Max	Stand Dev
NACE_GHI	Greece	13	33.65	22.41	54.75	8.71
	Spain	19	28.65	22.41	44.89	5.30
	Italy	21	26.07	22.72	30.21	2.48
	Portugal	7	28.48	22.73	40.59	6.00
YoungEmp	Greece	13	3.98	2.32	5.63	1.05
	Spain	19	4.96	3.16	6.71	0.92
	Italy	21	4.65	3.03	8.74	1.23
	Portugal	7	6.19	5.37	6.88	0.57
Educ	Greece	13	31.08	23.98	46.60	6.38
	Spain	19	42.12	29.68	57.13	7.35
	Italy	21	22.65	17.14	30.30	2.58
	Portugal	7	24.65	16.42	37.40	6.45
ΔActivRate	Greece	13	-2.37	-7.90	0.99	2.37
	Spain	19	-1.98	-4.53	4.42	1.88
	Italy	21	-2.80	-5.83	0.17	1.38
	Portugal	7	-2.48	-3.75	-0.46	1.15

NATIONAL DUMMY VARIABLES

3 Dummy Variables

Base Group

National Effect

Strictness of Employment Protection

Central Government Measures to COVID-19

Income Support

Debt/Contract Relief

Strictness of Employment Protection

🇵🇹	3.14
🇮🇹	2.56
🇬🇷	2.45
🇪🇸	2.05

Source: OECD

Central Government Measures to COVID-19

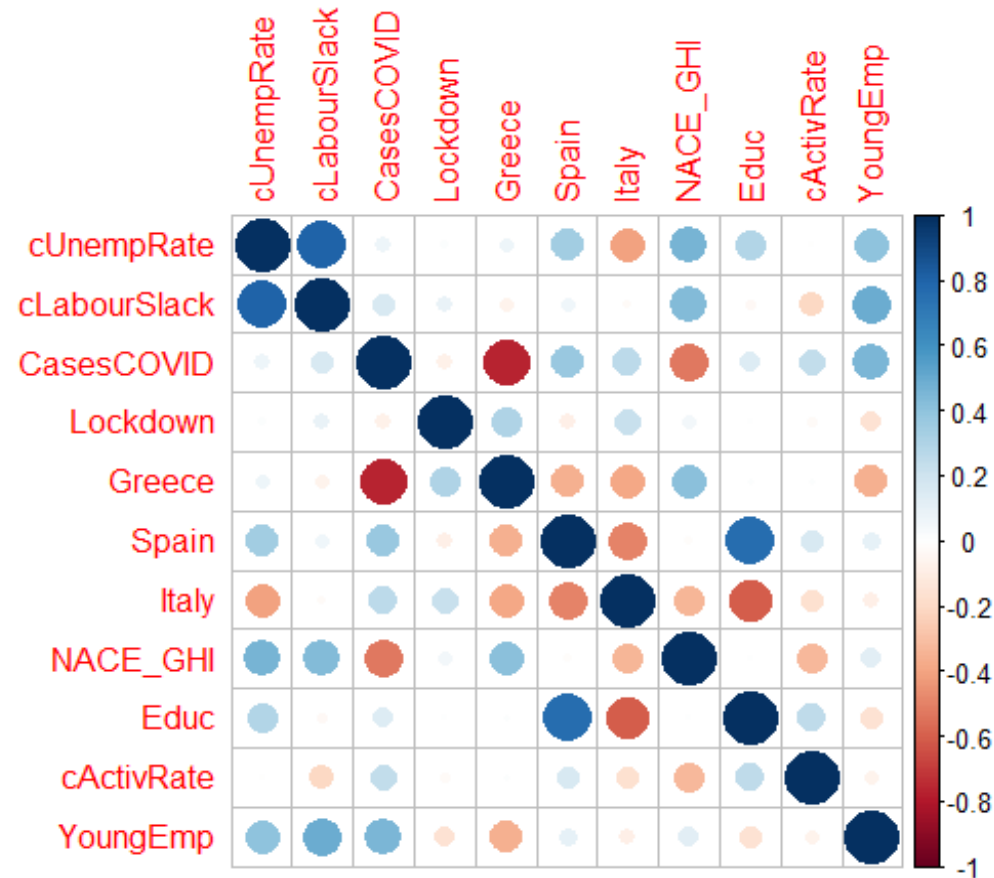|	
🇪🇸	83.56
🇵🇹	73.74
🇮🇹	62.74
🇬🇷	39.63

Source: University of Oxford

Variables' correlation-matrix

Econometric models we have tested

(1)

$$\Delta UnempRate_{nc} = \alpha + \beta_1 CasesCOVID_{nc} + \beta_2 Lockdown_{nc} + \varepsilon_{nc}$$

(2)

$$\Delta UnempRate_{nc} = \alpha + \beta_1 CasesCOVID_{nc} + \beta_2 Lockdown_{nc} + \gamma Country + \varepsilon_{nc}$$

(3)

$$\Delta UnempRate_{nc} = \alpha + \beta_1 CasesCOVID_{nc} + \beta_2 Lockdown_{nc}$$
$$+ \beta_3 NACE\_GHI_{nc} + \beta_4 YoungEmp_{nc} + \beta_5 Educ_{nc} + \beta_6 \Delta ActivRate_{nc} + \varepsilon_{nc}$$

(4)

$$\Delta UnempRate_{nc} = \alpha + \beta_1 CasesCOVID_{nc} + \beta_2 Lockdown_{nc}$$
$$+ \beta_3 NACEGHI_{nc} + \beta_4 YoungEmp_{nc} + \beta_5 Educ_{nc} + \beta_6 \Delta ActivRate_{nc}$$
$$+ \gamma Country + \varepsilon_{nc}$$

(1)

$$\Delta LabourSlack_{nc} = \alpha + \beta_1 CasesCOVID_{nc} + \beta_2 Lockdown_{nc} + \varepsilon_{nc}$$

(2)

$$\Delta LabourSlack_{nc} = \alpha + \beta_1 CasesCOVID_{nc} + \beta_2 Lockdown_{nc} + \gamma Country + \varepsilon_{nc}$$

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$$\Delta LabourSlack_{nc} = \alpha + \beta_1 CasesCOVID_{nc} + \beta_2 Lockdown_{nc}$$
$$+ \beta_3 NACE\_GHI_{nc} + \beta_4 YoungEmp_{nc} + \beta_5 Educ_{nc} + \beta_6 \Delta ActivRate_{nc} + \varepsilon_{nc}$$

(4)

$$\Delta LabourSlack_{nc} = \alpha + \beta_1 CasesCOVID_{nc} + \beta_2 Lockdown_{nc}$$
$$+ \beta_3 NACEGHI_{nc} + \beta_4 YoungEmp_{nc} + \beta_5 Educ_{nc} + \beta_6 \Delta ActivRate_{nc}$$
$$+ \gamma Country + \varepsilon_{nc}$$

Country = {Greece, Spain, Italy}
Portugal is the base group

Breush-Pagan tests detected the presence of heteroskedasticity

Possible models
- Ordinary Least Squares (OLS) Robust Standard Errors
- Feasible Generalized Least Squares (FGLS)
- Weighted Least Squares (WLS)

Smaller sample (60 observations)

- FGLS ✓

- OLS Robust Standard Errors

Unknown Heteroskedasticity Function

- FGLS ✓

- WLS

CHOSEN ECONOMETRIC MODEL

⬇

FEASIBLE GENERALIZED
LEAST SQUARES (FGLS)

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Variation of the Unemployment Rate regressed on the COVID-19 variables

	(1)
	FGLS-log(BP)
CasesCOVID	0.001**
	(0.0003)
Lockdown	0.105
	(0.179)
Constant	-14.483
	(11.128)
Observations	60
R-squared	0.160
Adjusted R-squared	0.116
Residual Std. Error (df = 54)	1.976

Notes: *p<0.1; **p<0.05; ***p<0.01 / In parenthesis - Standard Errors

Variation of the Labour Market Slack regressed on the COVID-19 variables

	(1)
	FGLS-log(BP)
CasesCOVID	0.001**
	(0.0003)
Lockdown	0.265*
	(0.149)
Constant	-16.280*
	(9.255)
Observations	60
R-squared	0.506
Adjusted R-squared	0.480
Residual Std. Error (df = 54)	1.643

Notes: *p<0.1; **p<0.05; ***p<0.01 / In parenthesis - Standard Errors

Variation of the Unemployment Rate regressed on the COVID-19 variables and on the Country dummies

	(2) FGLS-log(BP)
CasesCOVID	0.001**
	(0.0004)
Lockdown	0.436
	(0.273)
Greece	0.457
	(12.782)
Spain	-4.715
	(7.712)
Italy	-15.233*
	(7.759)
Constant	-29.249**
	(12.868)
Observations	60
R-squared	0.358
Adjusted R-squared	0.286
Residual Std. Error (df = 54)	1.807

Notes: *p<0.1; **p<0.05; ***p<0.01 / In parenthesis - Standard Errors

Variation of the Labour Market Slack Rate regressed on the COVID-19 variables and on the Country dummies

	(2) FGLS-log(BP)
CasesCOVID	0.001**
	(0.0004)
Lockdown	0.509**
	(0.244)
Greece	-3.932
	(11.411)
Spain	-11.097
	(6.885)
Italy	-7.243
	(6.927)
Constant	-26.085**
	(11.488)
Observations	60
R-squared	0.544
Adjusted R-squared	0.494
Residual Std. Error (df = 54)	1.614

Notes: *p<0.1; **p<0.05; ***p<0.01 / In parenthesis - Standard Errors

Variation of the Unemployment Rate regressed on the COVID-19 and the Labour Market variables and on the Country dummies

	(3) FGLS-log(BP)
CasesCOVID	0.0003
	(0.0004)
Lockdown	0.093
	(0.140)
NACE_GHI	0.776*
	(0.460)
YoungEmp	5.512***
	(1.477)
Educ	0.604***
	(0.122)
ΔActivRate	-1.555**
	(0.688)
Constant	-78.222***
	(15.915)
Observations	60
R-squared	0.530
Adjusted R-squared	0.467
Residual Std. Error (df = 54)	1.412

Notes: *p<0.1; **p<0.05; ***p<0.01 / In parenthesis - Standard Errors

Variation of the Labour Market Slack regressed on the COVID-19 and the Labour Market variables and on the Country dummies

	(3) FGLS-log(BP)
CasesCOVID	0.001**
	(0.0003)
Lockdown	0.185
	(0.115)
NACE_GHI	0.777**
	(0.377)
YoungEmp	2.990**
	(1.212)
Educ	0.023
	(0.100)
ΔActivRate	-1.872***
	(0.565)
Constant	-52.242***
	(13.058)
Observations	60
R-squared	0.627
Adjusted R-squared	0.578
Residual Std. Error (df = 54)	1.158

Notes: *p<0.1; **p<0.05; ***p<0.01 / In parenthesis - Standard Errors

Variation of the Unemployment Rate regressed on the COVID-19 and the Labour Market variables and on the Country dummies

	(4) FGLS-log(BP)
CasesCOVID	0.001
	(0.0005)
Lockdown	-0.091
	(0.216)
NACE_GHI	0.928*
	(0.463)
YoungEmp	5.521***
	(1.582)
Educ	0.538**
	(0.226)
ΔActivRate	-1.876**
	(0.769)
Greece	16.936*
	(9.788)
Spain	3.920
	(6.980)
Italy	4.673
	(6.522)
Constant	-84.586***
	(17.681)
Observations	60
R-squared	0.603
Adjusted R-squared	0.524
Residual Std. Error (df = 54)	1.393

Notes: *p<0.1; **p<0.05; ***p<0.01 / In parenthesis - Standard Errors

Variation of the Labour Market Slack regressed on the COVID-19 and the Labour Market variables and on the Country dummies

	(4) FGLS-log(BP)
CasesCOVID	0.001**
	(0.0004)
Lockdown	0.016
	(0.172)
NACE_GHI	1.012***
	(0.370)
YoungEmp	4.985***
	(1.263)
Educ	0.450**
	(0.180)
ΔActivRate	-1.460**
	(0.614)
Greece	8.970
	(7.813)
Spain	-3.478
	(5.571)
Italy	10.314*
	(5.206)
Constant	-76.898***
	(14.113)
Observations	60
R-squared	0.732
Adjusted R-squared	0.678
Residual Std. Error (df = 54)	1.112

Notes: *p<0.1; **p<0.05; ***p<0.01 / In parenthesis - Standard Errors

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Impact on Tourism and Retail

The proportion of people employed in the tourism and retail trade sector was observed to produce a higher and more significant impact in the variation of the labour market slack in detriment of the unemployment rate.

Availability to Search for a Job

As we analysed, in this specific crisis, there was a higher increase on people available but not seeking work than in unemployment. Individuals could not search for work or were not available due to the containment measures, thus not counting as unemployed, but counting for the labour market slack.

How vs How Long in Lockdowns

The number of days in lockdown did not affect the labour market, as its characteristics are more important than the length of the economic activities' closure.

THANK YOU

Pedro Duarte Silva

Alexandre Mergulhão

GPEARI/GEE

Nova Economics Club