

Labour Market Dynamics and Socio-Economic Vulnerability: The COVID-19 Impact and Policy Challenges in the Region of Crete, Greece

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Abstract

The present research aims to identify the pre and during COVID-19 economic vulnerable groups and assess the effectiveness of the imposed supporting measures from the central government, using ground-breaking labor force and business data of the regional labour market in Crete, Greece, from 2016 to 2021. Through the conducted labour force and businesses surveys, this research identifies the labour market trends, assesses the economic vulnerability of specific workforce or business groups, either as a result of the pre or during the COVID-19 period and further assesses policy interventions enforced to stimulate market re-activation and economic growth development. Our findings show that youngsters are employed primarily in seasonal jobs, whereas in many cases, the sectoral-specific job requirements are for low-skilled personnel and consequently are more susceptible to employment risk and insecurity. On the other hand, the older labour force group, aged over 55, is found to experience high economic precarity. Businesses in the Cretan labour market also experienced a severe shock, where a significant amount of income and turnover was lost during the pandemic. The implemented short-term supportive measures by the Greek State seem to have reversed to a certain extent the economic insecurity business condition in 2021 back to the levels of the pre-COVID-19 period, while a significant number of entrepreneurs consider them ineffective. The Region of Crete could be able to build a solid labour market that will be resilient in the next economic cycle crisis or emerging shock by redistributing resources for enhancement of other sectors other than tourism and the re-orientation of local entrepreneurship towards innovation and knowledge.

Keywords

Labour Market, Economic Vulnerability, COVID-19, Policy-Making

1. Introduction: Preliminary Remarks

The pandemic of COVID-19, which started at the end of 2019, challenged the health services of all states. World Health Organization (WHO) initially declared an international state of emergency followed by the declaration of pandemic on the 11th of March 2020 (WHO, 2020). Soon after its onset, the new virus transformed citizens everyday lives in economic, social and health terms, with governments worldwide proceeding with prevention and protection activities (Dimari & Papadakis, 2022). Under this threat, efforts to restrain the coronavirus through restrictive lock-downs and social distancing measures resulted in economic activity disruption and seriously impacted the global labour market. In particular, the restrictive measures seem to have influenced almost 2.7 billion workers (ILO, 2020) while also reducing the working hours in the third quarter of 2021 by 4.7 percent below the level of 2019, which is estimated to correspond to 137 billion full-time jobs (ILO, 2021). Both the COVID-19 impact and recovery process are different for each country and depend on the magnitude and effectiveness of the financial stimulus, and the vaccination rate associated with less stringent restrictions (ILO, 2021).

In what concerns Greece, the COVID-19 shock was back-to-back to the recent economic crisis for the Greek economy, which was greatly affected by the multi-parameter 2007/8 recession (Papadakis et al., 2021), thus raising extreme concerns for its viability after the end of the pandemic. The shock led to increased unemployment and the reduction of new hiring (HSA, 2022a), while also hampered those in precarity due to the previous economic crisis. The groups affected the most by the pandemic were the young and women workforce (Bulman, 2020). In addition, taking into account that the Greek economy is mostly based in the tertiary sector, with tourism as its central developmental pillar in the previous years (HSA, 2022b), it was reasonable that this sector and in particular, the tourism-specific economic sub-sectors labour force and entrepreneurs experienced the greatest shock and a significant degradation.

COVID-19 significantly affected Small and Medium Enterprises (SMEs) in Greece, with SME value declining by 19.7% and employment by 1.4% (Eurostat 2021a). According to the European Commission (2022), in 2020, Greek SMEs accounted for 99.93% of total enterprises and 83.0% of overall employment. The most affected sector of the Greek economy was accommodation and food services, with a drop of 21.3% in SME employment (Eurostat, 2021a). As expected, due to the nature of the imposed measures, businesses in the accommodation and food services sector had the most severe impact on employment in the Greek labour market, reducing employment (in 2020) by 21.3% (HSA, 2022a). Differentiated impacts across different groups of workers and entrepreneurs have resulted in increased poverty and inequality levels, as well as increased labour market slack, especially among the Youth (Papadakis et al., 2021).

Greece had initially imposed a 5-month hard lock-down, with flight and other activities restrictions from March to July 2020, while several other restrictive

partial and region-specific lock-downs and restrictive measures followed in 2020 and 2021 (A3M, 2022). As a result of the above, a significant share of Greece's labour force and businesses were in financial distress and economic vulnerability in the COVID-19 period (Eurofound, 2022). Under the threat of the economic and social impact of the above restrictive and social distancing measures to combat the pandemic, the Greek State implemented a set of measures to stimulate the economy, employment, and workforce income by directly or indirectly supporting businesses and their income as well as employees who were forced to stop working during these periods but remained in their corresponding enterprises. The restrained unemployment measures created a new state of employment in the Greek labour market, the State of "suspended employment". Businesses whose economic activity was restricted or terminated due to COVID-19 imposed measures, could suspend the employee's contract and the government subsidized their income until reinstated back. Within this framework, the employee's income was significantly reduced and part of it was granted by the government. Adding up economic and social insecurity to the labour force (Kretsos, 2014; Heery et al., 2000), the State of suspended employment can also be considered precarious.

As the pandemic comes to an end and energy crisis is upheld, causing more fluctuations in the last decade's turbulent Greek economic cycle, it is essential to monitor and assess future outcomes of tailored made policy responses. Furthermore, it is important to assess their outcomes in the light of standard indicators such as level of unemployment, productivity and the Gross Domestic Product, as well as their social contribution resilience, such as precariousness and vulnerability, given that there is a strong association between unemployment and precarious work with the risk of poverty and subsequently social vulnerability (Papadakis et al., 2021). Although most policy instruments applied to relieve labour force and businesses from the COVID-19 shock were ceased, capitalizing on this knowledge could help build a policy toolbox for timely and evidence-based policy responses in the future emerging crises. The present research aims to identify the pre- and during COVID-19 economic precarious groups in the labor market of Crete and assess the impact of the pandemic on their status as well as the effectiveness of the imposed supporting measures from the central government. Data from the regional labor market in Crete from 2016 to 2021 have been used, as it was important to associate the pandemic effect with the labor market trends during previous years.

While there is growing literature on identifying efficient responses of governments on the dual challenge of the COVID-19 pandemic for the Greek State (Bulman, 2020; Moreira et al., 2021; Papadakis et al., 2022), the present research through the conducted labour force and businesses surveys in the Region Crete 1) identify the labour market trends, 2) monitors the new State of suspended employment in the categories of employability, 3) assess the economic vulnerability of specific workforce or business groups, either as a result to the pre or the

during COVID-19 period and 4) further assesses policy interventions enforced to stimulate market re-activation and economic and labour market growth development.

The rest of the present paper is organized as follows. Section 2 presents the characteristics of the economy and the labour market in the region of Crete. Section 3 presents the methodology and the descriptive statistics of the data gathered from the labour force and the business surveys. Section 4 presents the pre and during COVID-19 employability trends, assesses the groups that had experienced the greatest shock from the COVID-19 pandemic, and further identifies the groups in economic vulnerability. Finally, section 5 discusses the findings and addresses important policy challenges for the economy's gradual recovery and resilience of the labour market.

2. The COVID-19 Crisis and the Structure of the Cretan Labour Market

Due to the previous economic crisis and the implemented measures for the fiscal adjustment path, the Cretan region economy has experienced a reduction of 3 billion euros of the nominal regional GDP from 2008 to 2016 (HSA, 2019). Although a gradual improvement was registered from 2016 to 2019, with a GDP increase of approximately 500 million euros, the regional GDP remains significantly reduced by 2.5 billion euros compared to 2008. As is shown in **Figure 1** below, the pre-COVID-19 economic improvement of Crete is further supported by the fact that an 8% increase of the nominal GDP per capita in 2019 compared to 2016, was observed, amounting to 14.695,00 euros in 2019 (HSA, 2019; HSA, 2021a). On the other end, unemployment, which almost doubled during the economic recession from 2010 to 2016, with significant social and economic effects on the workforce, in the pre-COVID-19 period (2016-2020) showed significant signs of recovery and a trend to gradually return to the levels before the COVID-19 period.

The COVID-19 pandemic disrupted this growth. The main reason for this disruption is the measures imposed by the Greek State to avoid physical contact ("social distancing"). As a result of these measures, important economic sectors of the Cretan economy, mainly relying on tourism, experienced a significant degradation. The economic condition of enterprises operating in these sectors, which led the regional economic growth in the previous periods, were suddenly found in a very difficult situation and even their existence became precarious. In conjunction with the fact that seasonality constitutes a central feature of the local economy and the labour market, the measures added up to a fragile economic situation prevailing in the region. The fact that the measures to limit the spread of COVID-19 had a serious effect in the economy of Crete, was also associated with the pathologies of the structure of Cretan enterprises, which, like the majority of companies in the rest of Greece, face serious difficulties in accessing funding resources, they lag behind in the field of digitization and have a poor

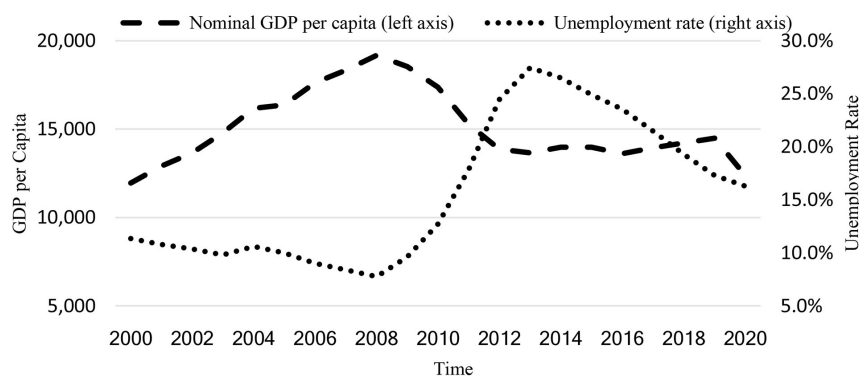


Figure 1. Nominal GDP per Capita (left axis) and Unemployment rate (right axis), Region of Crete Greece.

performance in e-commerce. They also face serious burdens in relation to central administration and bureaucracy (European Commission, 2019). It should be noted that although surrounded by a significant concentration of noteworthy research excellence centers, the region of Crete lacks large-scale knowledge-intensive industries that could boost the region's innovation performance (Papamichail et al., 2019). With such an entrepreneurial environment, the majority of Cretan SMEs seem to have an inward-looking orientation, with difficulties in adopting new technologies, diversifying products and improving their market positioning. Thus, it is easily understood in principle why the COVID-19 shock has put most of the Cretan enterprises in a vulnerable condition hampering their survival. The research presented in this paper aims at further investigating the effects of Covid-19 on the Cretan labor market, analyzing qualitative and quantitative characteristics coming from both businesses and the workforce.

3. Policy Making in the Labour Market

The literature on policy making in the labor market highlights the importance of active and redistributive social policies at both national and regional levels to promote economic resilience and mitigate the negative impacts of economic crises. This includes minimum wage regulations, employment protection legislation, and active employment policies, which can help enhance economic security, reduce inequality, and promote productivity. For example, Ku (2022) finds that higher minimum wages are associated with higher labor productivity, while on the other hand, Zrinščak et al. (2020) when assessing Croatia labour market, argues that minimum wages may lead low skilled and youth workers out of the labour market. Regarding stringent employment protection, the macroeconomic theory argues that implementing stringent policies can act as an automatic stabilizer and reduce unemployment within economic fluctuations and severe shocks (Mankiw & Ball, 2011). Nevertheless, policy tools effect on unemployment is quite unclear as such and depends on the overall labour market structure (Boeri & Jimeno, 2005).

Targeting the improvement of labour market outcomes and the reduction of

unemployment through enhancing job creation, increasing employability, and facilitating the matching of job seekers with available vacancies, policy makers spent a significant amount of budget towards implementing active employment policies. There are various types of such policies, including lifelong training programs (based on needs assessment), job search assistance, wage subsidies, public works programs, entrepreneurship promotion, and mobility support among others. However, it is not always clear which specific groups should be the target population and what is the exact effect on them (Crépon & Berg, 2016). The main reason lies in the absence of agents' behavioral data (Anand, 2020).

Policy responses in the labour market are highlighted during economic crises, such as the COVID-19 pandemic and previous crises, across a range of countries and regions. In this direction, to mitigate the negative impacts of the pandemic, policymakers have implemented a range of policy measures, including income support, employment retention, occupational safety and health measures and financial support to firms (Kalkınma & Örgütü, 2020). The literature highlights the need for policy responses that are tailored to the specific needs and circumstances of different countries and regions, as well as of diverse social groups. Research on the impact of economic crises on labor markets in specific countries and regions provides insights into the unique challenges and opportunities for policy making in different contexts. For example, research by Yang et al. (2022) examines the impact of the COVID-19 pandemic on firms in China and highlights that differences exist with respect to the enterprises' size, sector and region. The authors argue that larger firms are more affected than smaller ones (in China) due to the greater business loss from the COVID-19 shocks. On the other hand, less profitable, small firms were affected the most in several EU countries (including Greece). Similarly, a study by Ebbinghaus and Lehner (2022) discusses job retention policies with respect to the size of the state-assisted labour force and their wage replacement. In particular, the authors using data from OECD and Eurofound, show that 25% of labour force in Greece has entered a job retention program, and their monthly income were significantly reduced with respect to their wages.

4. Methodology: Quantitative Survey Data

The quantitative data of the present research were gathered through the “Regional Mechanism of Monitoring the labour market in Crete”, a large-scale Research Project funded by the Region of Crete and carried out by the Entrepreneurship and Market Research Unit of the University of Crete (see <https://mpacrete.soc.uoc.gr/>).

We followed a series of anonymous phone interviews in two distinct yearly surveys conducted among both the labour force and the enterprises in the Region of Crete from 2016 to 2021. The computer-assisted telephone interview (CATI) method was used to efficiently collect the data for both surveys and

reach a high number of respondents (Ketola & Klockars, 1999). The total responses in the labour force survey reached 6.091 respondents, while the survey on businesses reached 6.350, with a response rate greater than 65% for both surveys each year.

Labour force survey (LFS)

The LFS objective was to quantitatively assess the employability and economic condition of the workforce in the Region of Crete. The LFS collected information regarding respondents' demographics, employment and unemployment state, financial conditions, their opinions over their qualifications, educational attainment and during the COVID-19 period, information related to the impact of the pandemic on their State within the labour market and key determinants of their life-course. The sample for the LFS was chosen to be between age 18 and 67 plus. We excluded people in retirement, inactive or employed in public bodies. The stratification for the LFS was made according to gender, geographical area, business sector, and nationality following previous year's annual data of the national survey on the labour force.

Table 1 presents the demographics of the LFS survey individual variables, for the periods before and during the COVID-19 pandemic. The characterization of the business sector is given in the footnote and the mean indicates the average response. Note that in some categories, the number of responses is less than the Total number N, while the numbers in the bracket represent the identification of each variable response.

During the COVID-19 shock, respondents were segmented by their employability status into three mutually exclusive groups, unemployed, employed, and the state-subsidized suspended employment. The research presented here, quantifies workforce economic precariousness as the condition by which economic stability and security is absent (Kretsos, 2014). Also, it measures precarity (associated with vulnerability) as the condition in which a person cannot or finds it difficult to get along with financial commitments. The discrimination between capability and precarity is made with respect to their ability to cover their financial obligations or save money (capability) and being insecure or in a bad economic condition (precarity). Economic precarity may lead to more flexible and low-quality forms of employability (Mayhew & Anand, 2020) and mainly affects labour market situations of the young workforce (Standing, 2014; Papadakis et al., 2020a). The economic crisis followed by the COVID-19 shock led us to observe a rising tide of economic precariousness among different workforce groups.

It is noticeable that during the COVID-19 period, suspended employment is on average 10.2%, while unemployment is reduced with regards to the pre COVID-19 period. We also note a marginal improvement with respect to income and precarity of workers in the labour market in Crete, with the net annual income levels rising significantly. In addition, 55% of the sample are men, the average age is around 44 years old, and their average net annual personal income is close to 10.000 euros which is close to the over the years averaged at risk of

Table 1. Descriptive statistics (LFS survey): Pre and during COVID-19 individual variables.

	2016-2019			2020-2021		
	n	%	mean	n	%	mean
Total number of responses N	3973			2117		
Employment status	3973			2117		
Employed (1)	2422	60.96%	1.59	1259	59.47%	1.77
Unemployed (2)	750	18.88%		302	14.27%	
Seasonally employed (3)	801	20.16%		340	16.06%	
Suspended employment (4)	0	0%		216	10.20%	
Sex	3973			2117		
Female (1)	1803	45.38%	1.55	987	46.62%	1.53
Male (2)	2017	54.62%		1130	53.38%	
Education	3973			2117		
Primary (1)	429	10.81%	2.29	131	6.19%	2.36
Secondary (2)	1949	49.09%		1088	51.39%	
Tertiary (3)	1595	40.10%		898	42.42%	
Age	3970			2117		
18 - 24 (1)	370	9.31%	4.05	175	8.27%	4.17
25 - 29 (2)	351	8.84%		179	8.46%	
30 - 34 (3)	407	10.25%		188	8.89%	
35 - 44 (4)	1101	27.73%		566	26.74%	
45 - 55 (5)	1090	27.46%		582	27.49%	
56 - 67 (6)	651	16.41%		427	20.15%	
Net annual income	2522			1170		
0 - 5000 € (1)	509	20.18%	3.64	142	12.14%	4.26
5001 - 7500 € (2)	564	22.36%		211	18.03%	
7501 - 10,000 € (3)	592	23.47%		270	23.08%	
10,001 - 15,000 € (4)	485	19.23%		301	25.72%	
15,001 - 20,000 € (5)	191	7.57%		144	12.31%	
20,001 - 30,001 € (6)	105	4.16%		60	5.13%	
Over 30,000 € (7)	76	3.01%		42	3.59%	
Economic	3973			2117		
Precarity (1)	1034	26.03%	1.74	433	20.45%	1.80
Capability (2)	2939	73.97%		1684	79.55%	
Business sector (last for unemployed)¹	3973			2117		
A (1)	611	15.38%	4.85	283	13.37%	4.85
B, C, D, E. (2)	272	6.84%		184	8.69%	
F (3)	281	7.07%		132	6.24%	
G (4)	759	19.10%		436	20.60%	
H (5)	215	5.41%		108	5.10%	
I (6)	825	20.77%		452	21.35%	
J, K, L, M, N (7)	402	10.12%		219	10.34%	
O (8)	254	6.39%		123	5.81%	
P, Q (9)	161	4.05%		84	3.97%	
R, S (10)	193	4.09%		96	4.53%	

¹A—Agriculture, forestry and fishing, B, C, D, E. Mining, Manufacturing, Electricity, gas /water, F. Construction, G—Wholesale and retail trade; repair of motor vehicles and motorcycles, H—Transporting and storage, I—Accommodation and food service activities, J, K, L, M, N—Information and communication/Financial and insurance activities/Real estate activities/Professional, scientific and technical activities, Administrative and support service activities, O. Education, P, Q. Education, Human health and Social services, R,S - Arts, entertainment and recreation/Other services

poverty (EU-SILC). The business sectors that account for most of the employees in the Region of Crete are “G—Wholesale and retail trade; repair of motor vehicles and motorcycles” and “I—Accommodation and food service activities”, whereas tourism market performance has a direct effect on the prosperity and incomes of their businesses and employees.

Enterprises survey (ES)

The sample for the ES was randomly chosen through three different business catalogs and multiple catalogs were used to assure representation of the population. The ES sample was stratified according to the businesses geographical location and activity, following the e-Commerce General Registry (GEMI) and the National Institute of Labour & Human Resources (NILHR) data census.

Table 2 presents the demographics of the ES survey sample with respect to their size classification, the business sector they are activated, their vulnerability and their net annual earnings for the pre and during COVID-19 period. In particular, the sample is constituted mostly by businesses with more than one employee. Personal or self-employed businesses appear second in the rank, while the smallest portion are family businesses where only family members are employed. Family businesses and self-employed are decreasing in relation to enterprises with one or more employees within these two periods, independent of the COVID-19 shock, according to our research findings for 2016-2021. As a result to the sample stratification, business sectors G and I, are mostly populated in the ES survey sample, while the average net annual earnings of the Cretan businesses for both periods, with small variations, are less than 10.000 euros.

Businesses’ vulnerability is measured within the same notion as for the LFS survey. In particular, businesses are categorized as vulnerable stated, when their financial obligations could not or are marginally met, following of course the answers received. On the other end, capability is characterized as the situation where their financial obligations are met, or they can make a profit. Financial obligations are contractual business obligations that must be met regardless of revenues. Therefore, during economic crises and shocks, the decreased sales volume increases bankruptcy likelihood while can also lead to employees’ economic and job precarity with reduced wages and job insecurity.

Both LFS and ES datasets provide the basis of the current analysis. The LFS identify the profile of the Cretan labour force in terms of socio-demographics, economic precarity and work status and concludes that during the study period, one-fifth of the labour force experienced economic precarity. The ES identifies the profile of the Cretan enterprises in terms of their size, business sector, economic vulnerability and net annual earnings. In the same line, more than one fourth of the Cretan enterprises were economically vulnerable.

5. Unfolding COVID-19 Impacts on the Cretan Labour Market

Our research findings indicate that the Cretan labour market from 2016 to 2019 has shown signs of employment growth and the economic condition for both the

workforce and the enterprises. Due to the COVID-19 shock, a significant share of the social and economic structure of the Cretan labour market went into insecurity, with different groups of the workforce and the enterprises experiencing intensified precarity. The subsections below thoroughly present the employability and economic condition of the workforce (section 4.1) and the businesses (section 4.2) pre and during the COVID-19 shock.

5.1. Workforce: Who Is Affected

Employability, unemployment and suspended employment.

Table 2. Descriptive statistics (ES survey): Pre and during COVID-19 individual variables.

	2016-2019			2020-2021		
	n	%	mean	n	%	mean
N	4284			2066		
enterprize size	4284			2066		
Self-employed (1)	1572	36.69%		680	32.91%	
Family business (2)	600	14.00%	2.13	246	11.86%	2.22
With one or more employees (3)	2112	49.31%		1141	55.23%	
Bussiness sector²	4284			2066		
A (1)	97	2.26%		43	2.08%	
B, C, D, E. (2)	475	11.09%		209	10.12%	
F (3)	288	6.72%		181	8.76%	
G (4)	1472	34.36%		748	36.21%	
H (5)	139	3.24%	5.10	69	3.34%	4.99
I (6)	653	15.24%		267	12.92%	
J, K, L, M, N (7)	555	12.96%		323	15.63%	
O (8)	135	3.15%		49	2.37%	
P, Q (9)	226	5.28%		51	2.47%	
R,S (10)	244	5.70%		126	6.10%	
Economic	4284			2066		
Vulnerability (1)	1106	25.82%	1.74	593	28.70%	1.71
Capability (2)	3178	74.18%		1473	71.30%	
Net annual earnings	3628			1687		
Less than 5000 € (1)	758	20.89%		342	20.27%	
5001 - 7500 € (2)	1263	34.81%		546	32.37%	
7501 - 10,000 € (3)	575	15.85%		309	18.32%	
10,001 - 15,000 € (4)	476	13.12%	2.82	254	15.06%	2.85
15,001 - 20,000 € (5)	195	5.37%		71	4.21%	
20,001 - 30,001 € (6)	173	4.77%		74	4.38%	
Over 30,000 € (7)	188	5.19%		91	5.39%	

²A—Agriculture, forestry and fishing, B, C, D, E. Mining, Manufacturing, Electricity, gas/water, F. Construction, G—Wholesale and retail trade; repair of motor vehicles and motorcycles, H—Transporting and storage, I—Accommodation and food service activities, J, K, L, M, N—Information and communication/Financial and insurance activities/Real estate activities/Professional, scientific and technical activities, Administrative and support service activities, O. Education, P, Q. Education, Human health and Social services, R,S - Arts, entertainment and recreation/Other services

The Cretan labour market experienced a sustained decrease in unemployment and a total increase in the workforce and the total population during the COVID-19 shock, as shown in **Table 3** below. **Table 3** presents the unemployment rate measured from the **Hellenic Statistical Authority (HSA) (2022a)** and the LFS survey, and the HSA figures of the total and workforce population for the Region of Crete for the 2nd quarter of 2016 to 2021. The LFS survey unemployment rate differentiates from the HSA measurements for most of the years mainly due to methodological differences and seasonality adjustments of the **HSA (2022a)**. A critical feature differentiating the LFS survey from the national one is that it sub-categorizes employment, in those who entered the suspended employment status while also measuring economic vulnerability and other key determinants of the labour force life-course.

During the COVID-19 period, unemployment returned to the levels of 2017, while we can observe a significant reduction in the total population and the total workforce. In 2020, the new State of “suspended employment” which can also be considered a temporary, insecure condition of granted unemployment, made its appearance. According to the findings of the LFS survey, this new condition managed to contain the registered unemployment levels even below the levels of 2021, while a significant amount of the workforce (16%) were in the new “suspended employment” working condition (**Figure 2**). The situation changed abruptly in the second quarter of 2021 when the second wave of measures to combat COVID-19 was applied. The State of suspended employment fed increased unemployment in 2021, leveled at 17% in 2020 and sharply reduced to 5% in 2021.

Young adults are ranked first in terms of unemployment and stay the longest period outside the labour market and education or training, and were affected the most by the previous economic crisis (**Bell & Blanchflower, 2015; Hyz & Karamanis, 2019; Bulman, 2020; Papadakis et al., 2020b; Green, 2017**). Concerning the young workforce aged between 18 and 29, seasonal employability seems to be disproportionately affected by the COVID-19 first shock, as shown in **Figure 2**. The number of young persons seasonally employed, mainly in the tourism and other complementary economic sectors reached almost one-third in the pre-COVID-19 era, and radically reduced during the pandemic.

Table 3. Workforce and unemployment in the Region of Crete, 2016-2021 (HSA, LFS survey).

Quarter	Population (HSA)	Workforce (HSA)	Workforce to the total population	Unemployment Rate (HSA)	Unemployment Rate (LFS survey)	State-subsidized suspended employment (LFS survey)
2016Q2	519.100	286.000	55.1%	20.4%	23%	-
2017Q2	522.500	289.200	55.4%	15.6%	19%	-
2018Q2	523.700	289.200	55.2%	11.5%	19%	-
2019Q2	521.300	289.500	55.5%	9.4%	15%	-
2020Q2	519.200	282.700	54.4%	19.5%	12%	16%
2021Q2	517.900	283.300	54.7%	16.2%	17%	5%

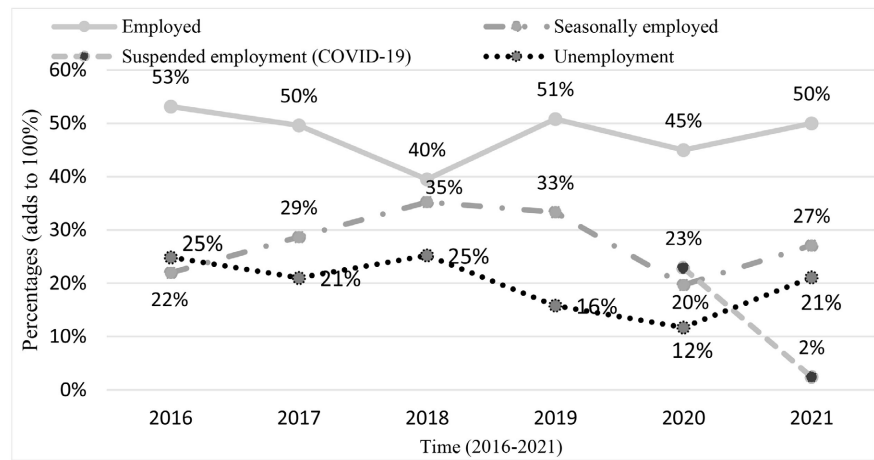


Figure 2. Young adult's employment, unemployment and suspended employment status (2016-2021).

Almost one-fourth of the younger workforce were faced with the precarity state of suspended state-subsidized employment in the 2nd quarter of 2020. This new State of employment condition seemed to lead this group to unemployment in the 2nd quarter of 2021. In particular, as presented in **Figure 2**, unemployment of the young workforce reached the levels observed during the recent economic crisis, at 21%, while seasonally employed increased to 27%. The observed high percentages of job insecurity (unemployment and suspended employment) for youngsters during the pandemic may stem from their lack of experience (Bell & Blanchflower, 2015).

A great part of the young workforce is seasonally employed and the first measures implemented to combat the pandemic, which was the lock-down of the market and flight reduction or prohibition, had a great impact on the retail, tourism, leisure, and transport sectors. Seasonal employability for the young workforce seems to have returned to the levels of 2019 as a result of the supportive measures and the partial removal of most of the sanitary measures imposed to protect public health. In this direction, the reinstated airline flights and opening of the tourism influx acted as a cash flow injection into the economy and subsequently as a job creation vehicle in the looming labour market crisis (Moireira et al., 2021).

Another group that COVID-19 shocks significantly impacted is the foreign workforce. Foreign workers constitute more than 10% of the total workforce in the Region of Crete in 2021 (HSA, 2022a) and it is a group working in low-skill seasonal occupations. Foreign workers are characterized as more flexible since they are faced with atypical forms of employment (Anastasiou, Siassiakos, Filipidis, & Nathanailides, 2015), which offers them job and income security. As shown in **Figure 3**, 60% of the foreign workers changed their employment state to subsidized suspended employment during the first wave of sanitary measures in 2020. Although most of the foreign workers were either fully or seasonally employed in the previous years, in 2020, they amounted only to one-third while also observing a decreased level of unemployment in the same period. In 2021,

unemployment and full and seasonal employment increased, while the suspended employment condition was reduced but remained at high levels of almost 25%. It is worth noting that, in 2021, neither full nor seasonal employment returned to the levels of 2019, and issues such as low-quality forms or unregistered employment may arise due to the pandemic shock (Mayhew & Anand, 2020).

Economic Precarity

The present research also measures the economic precarity of Crete's workforce in the labour market. The LFS survey results show that there is a trend of reduction for the workforce economic precarity during the observed period (Table 1). However, certain workforce groups had severe economic repercussions in 2020. Figure 4(a) presents the workforce being in an economic precarity condition by age, group and ethnicity. Although young workers between 18 - 29 years old have difficulties concerning their job security, they do not always suffer from economic frailty and precarity. This result could stem from the fact that their family (acting as a safety net or even as a policy substitute) may support them while also not having significant financial commitments (Bell & Blanchflower, 2015; Papadakis et al., 2017: pp. 12-13). The workforce group with the higher frailty and precarity conditions is between 55 and 67 years old, which on the other hand, has significant financial commitments. During all years of the LFS survey, the elders group that faces economic repercussions and difficulties getting along exceeds 80%. Their economic situation worsened even before the COVID-19 shock and did not seem to have changed during the pandemic.

Foreign workers were also significantly impacted by the COVID-19 measures. The economic precarity of the immigrant workforce in the Cretan labour market almost halved in 2020, during the first lock-down, as a result of more than 60% entering the subsidized suspended employment state. Although the situation is returned to the levels of 2019, immigrant workers are still under more economic pressure in 2021 than locals, with almost 25% continuing to be in the same precarious employment state.

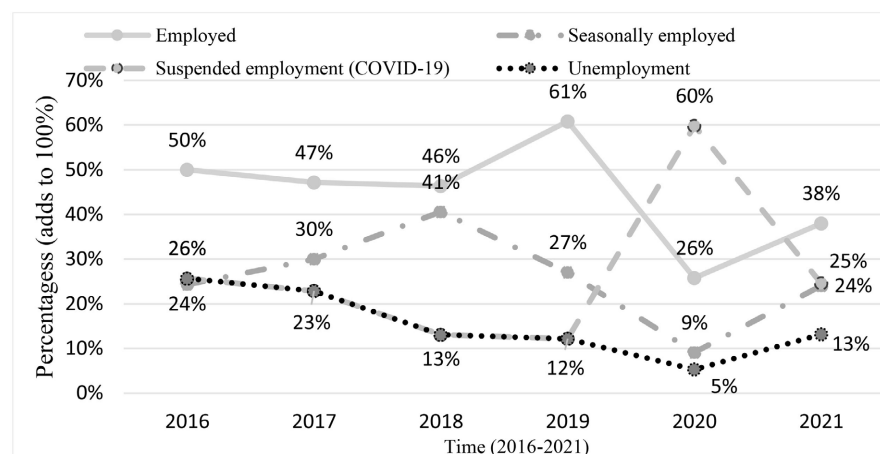


Figure 3. Foreign workers' employment, unemployment and suspended employment status (2016-2021).

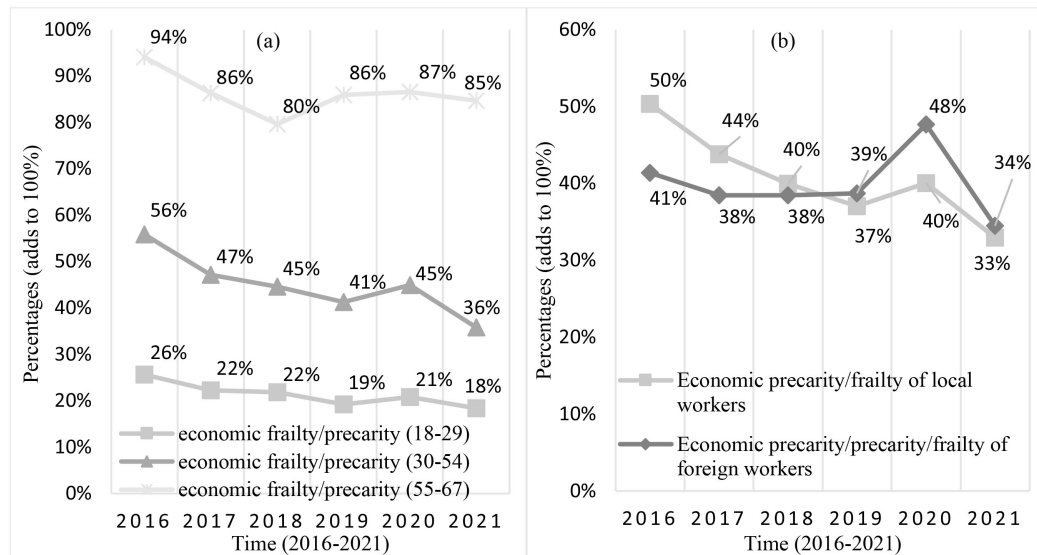


Figure 4. Precarity by (a) age group and (b) locals and Immigrants (2016-2021).

As expected, precarity and insecurity for the leisure, hospitality and transportation seasonally employed workers in the Cretan labour market due to its association with tourism were high. More than one-third of the seasonally employed workforce experienced economic precarity, as it is presented in **Figure 5**. The unemployed workforce has the highest levels of economic precarity. In particular, within 2016 and 2020, more than half experience economic precarity and financial insecurity. Although this percentage decreased in the second quarter of 2021, the unemployment rate almost doubled in the same period. This means that even more unemployed persons were in economic insecurity with respect to the pre-COVID-19 period. Although this new State of “employment” prevents workers from facing a life-changing threat entering unemployment (*Mayhew & Anand, 2020*) and the government subsidizes a percentage of their income, this research results show that it is accompanied by high economic precarity. Almost half of the workforce entering this State faces severe economic risks in 2020, while this percentage is reduced in 2021 to 35%.

Other effects

The LFS survey also measured the impact of the COVID-19 shock on work interruption, income reduction, hours worked, and distance working. **Figure 6** presents how the aforementioned figures evolved during the pandemic for the Cretan labour market. Almost half of the workforce was found in a position that had to discontinue their work, and this percentage remained unchanged for 2021-2022.

A finding of the LFS survey that should merit policymakers’ attention is the increasing number of workforce persons that experienced an income reduction during the two past years of the COVID-19 pandemic. This outcome stems from the fact that the Cretan economy is mainly based on tourism and hospitality services sectors, that were significantly affected by the pandemic. Thus, a significant percentage of individuals had to reduce the hours worked or even had to termi-

nate and suspend their employment. In 2020 a small amount of the labour force reduced the hours worked, with respect to the pre-COVID-19 era, while this percentage severely increased in 2021. Although not quantified, these findings may require a closer examination from policymakers and a context of policy development (mainly in terms of active employment policy) to reintegrate redundant workers into the labour market as quickly and efficiently as possible.

The income of the labour force was reduced for only one-third of the labour force in the first year of the COVID-19 pandemic, while it has been increased in 2021. This result may stem from the fact that the hours worked are also increased in 2021, causing the workforce income reduction. Finally, as expected, remote working remained low in the Cretan labour market due to its structure and the low-skills qualification met in the great majority of existing jobs in the service provision and the hospitality sector. Researchers generally argue that low-paid and low-skilled jobs usually cannot be made with teleworking (Hensvik et al., 2021) and therefore are more susceptible to risk and insecurity (Mayhew & Anand, 2020; Lemieux, 2020; Dütsch, 2022).

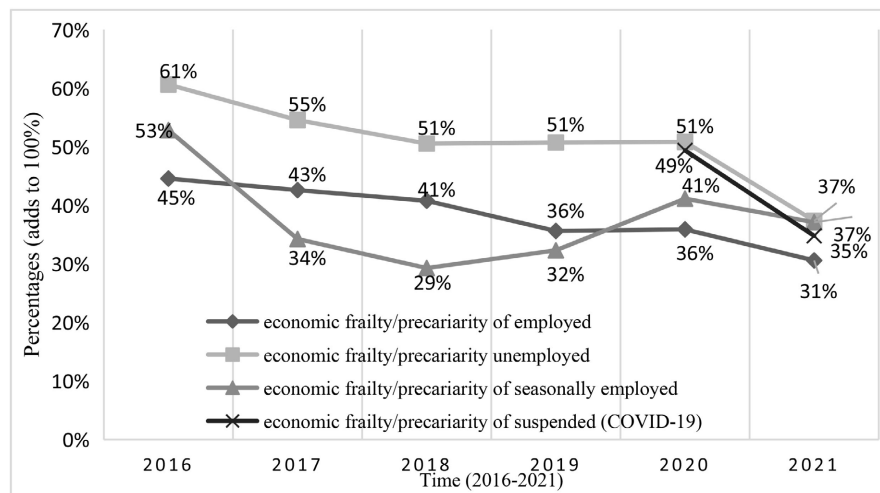


Figure 5. Precarity by employability status (2016-2021).

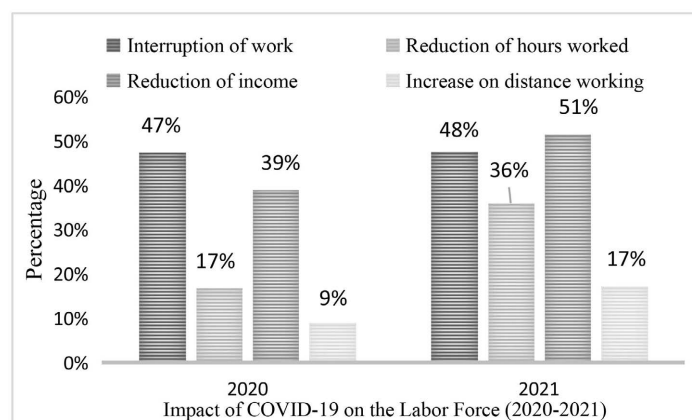


Figure 6. Interruption, hours, income reduction and remote working (2020-2021).

COVID-19 prevention and control measures impacted young adults and foreign workers the most, mainly because the majority work at the leisure, hospitality and transportation seasonally employed workers. However, workers between 55 and 67 years old are found in higher economic precarity during the COVID-19 shock, while foreign workers economic precarity increased significantly during the first COVID-19 shock. According to the LFS, 10% of the labour force entered the precarious state of employment of “suspended employment”, in which they were subsidized by the State until reinstated back to their position. Almost 50% and 35% were in a precarious economic state during the first and the second COVID-19 shock. Combined with the work interruption and income reduction experienced by almost half of the Cretan labour force during this shock, this leads to the conclusion that a significant proportion experienced extremely severe precarious conditions.

5.2. Enterprises: Who Is Affected the Most?

Financial vulnerability

The Cretan enterprises face many difficulties and serious burdens in accessing financial sources and towards a sustainable growth strategy (European Commission, 2019). COVID-19 and the imposed restrictive market freedom measures exacerbated these problems, by significantly reducing the turnover of Cretan enterprises. With weaker supply chain capacity and smaller cash buffers, smaller enterprises are impacted vastly by the pandemic in relation to their larger competitors (OECD, 2021).

Under this situation, the Greek State imposed aid measures targeting the revival of the Greek economy. The measures imposed to protect the financial security of businesses by the Greek State are, among others 1) the postponement of securities, loans, taxes and social security contributions, 2) the state financial aid in the form of refundable prepayment, 3) reduction of business rent, 4) suspension of employment contracts, 5) direct subsidization of sector-specific COVID-19 affected businesses and f) SYN-ERGASIA scheme that allowed employers that experienced significant turnover losses during the pandemic to retain their personnel by subsidizing up to 50% of wages as an exchange of not reducing their employees (European Commission, 2022). According to the Hellenic Ministry of Labour and Social Affairs, the SYN-ERGASIA scheme’s original target was to support 700,000 employees. However, by June 2020, it only targeted 52,000 employees.

The ES survey shows that in 2021 the supported companies amount to almost 65% of the sample. Of the companies that had been supported, 40% expressed the opinion that the measures were either poor or inefficient (Figure 7). Two issues should be noted at this point. The first has to do with how many businesses were applicable to the measures and the second is which percentage of their turnover loss was recovered. These issues are strongly related to the priorities, available resources and subsequently to the financial ability of each

government, while also to the level of existing data that can lead to efficient policy decisions (Anand, 2020). As it is presented in **Figure 7**, the measures imposed seem to be poor for almost four out of ten entrepreneurs in the region of Crete.

As presented in **Figure 8** below, after a period of continuous improvement of the economic condition of Cretan enterprises, with more than 80% being capable of remaining viable in 2019, they experienced a severe shock. In particular, in 2020 one-third of Cretan enterprises stated that they find it difficult or impossible to cover their financial obligations. In 2021 the situation returned to the levels of 2019, where less restrictive market measures were imposed and measures implemented to retain the enterprise's turnover by the Greek government. Still, in 2021, almost 20% of businesses in the region of Crete continue to be in a financially vulnerable situation.

Our results show that the COVID-19 pandemic has been harsher on personal no-employee enterprises. In particular, as presented in **Figure 9**, the businesses that were in an insecure financial situation were mainly with no-employees or family businesses within the whole period that the ES survey was implemented. However, all types of businesses were harshly hit by the COVID-19 restrictions on business operations in 2020. Fewer enterprises with one or more employees were in a vulnerable situation in general, yet the first COVID-19 restrictions hit almost one-third of them in 2020. The market re-opening and the implemented turnover supporting measures seem to reboot the market conditions back to the situation in the 2019 levels.

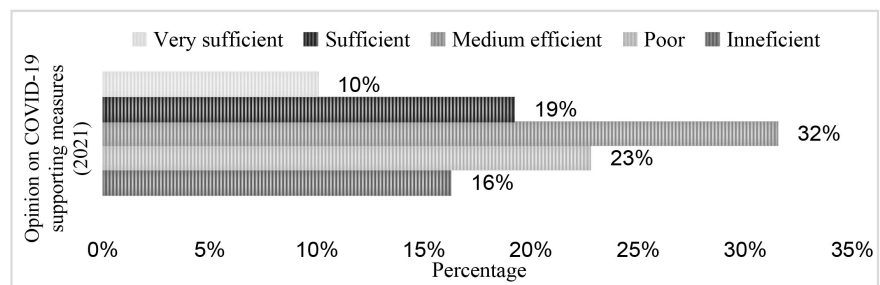


Figure 7. Entrepreneurial opinion on COVID-19 supporting measures (2021).

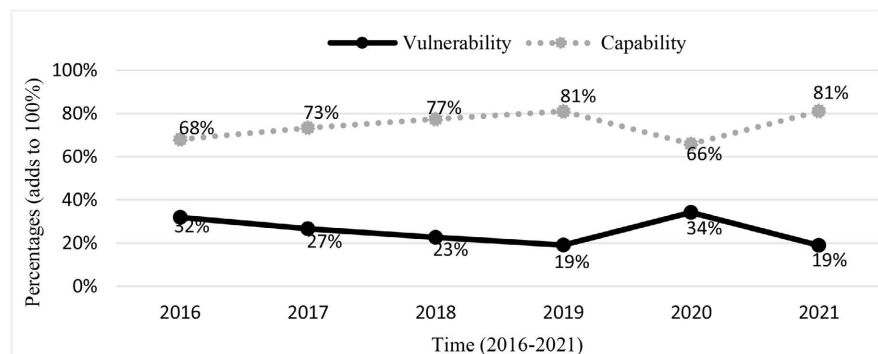


Figure 8. Entrepreneurial frailty/precarity and capability (2016-2021).

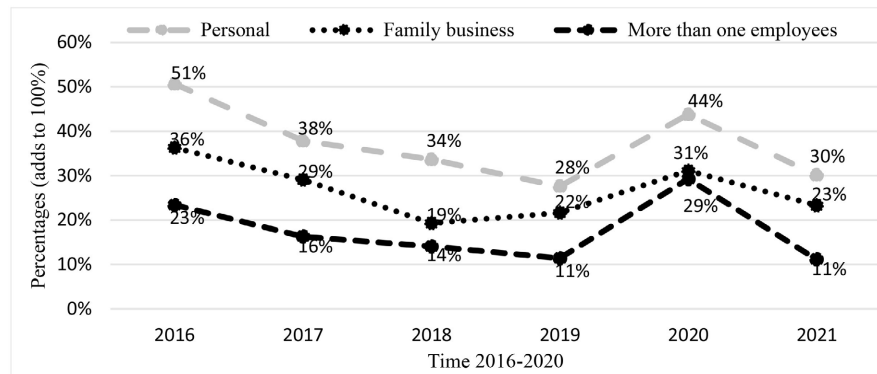


Figure 9. Financial vulnerability by business type, 2016-2021.

As it is previously discussed the accommodation and food service activities suffered the most from COVID-19, especially in 2020. As expected, during the first wave in terms of financial vulnerability the enterprises in tourism-related sectors of I-Accommodation and food services, G-Wholesale and retail trade, R,S Arts and Entertainment and H-transportation and Storage had experienced the most severe impact (see **Figure 10**). In 2021 though, enterprises' financial insecurity level was returned to 2019 levels. First in rank for 2020 with 40% are the accommodation and food services enterprises that state that they are in a vulnerable financial position in 2020—followed by the construction and wholesale sector. However, in 2021, enterprises from all sectors seem to overcome the initial adverse impact of the first shock. Although almost all pandemic-related implemented measures were designed to be temporary and combined with the gradual market opening, they seem to have efficiently worked toward combating enterprises' vulnerability in all sectors.

Other effects

The ES survey further measured the impact of COVID-19 on the Cretan enterprises with respect to their operation schedule, turnover loss, the number of employees, the salary costs and the teleworking hours (see **Figure 11**). In 2020, more than 60% of the enterprises in Crete stated that they had to reduce their operational time, 89% had experienced a reduction in their turnover, 40% reduced the costs of salary and 34% reduced the number of their employees, with respect to the pre-COVID-19 period. The ES data for 2020 were collected at the beginning of the second wave of restrictive operational measures to combat the COVID-19 pandemic. The situation changed in 2021, after the supported measures' imposition and the market's gradual opening. Seven to ten businesses state that their turnover is still lower than in the pre-COVID-19 period, while only 32% stated that they have restrictions in their operation, reflecting the gradual opening of the market.

Furthermore, the enterprises that stated they had to reduce employees and salary costs are less than 20%. Teleworking is not an option for Cretan businesses amounting to 12% in 2020 and 9% in 2021. The present research does not quantify the level of the turnover loss and the extent to which healthy businesses

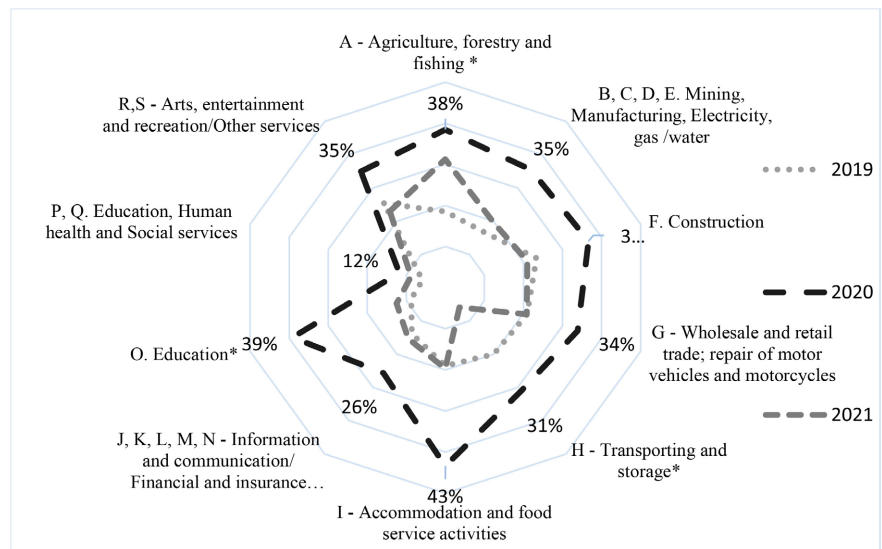


Figure 10. Financial vulnerability by sector 2019-2021. Sectors denoted with a * in Figure 9 only had a small number of observations, and this research does use them for qualitative purposes.

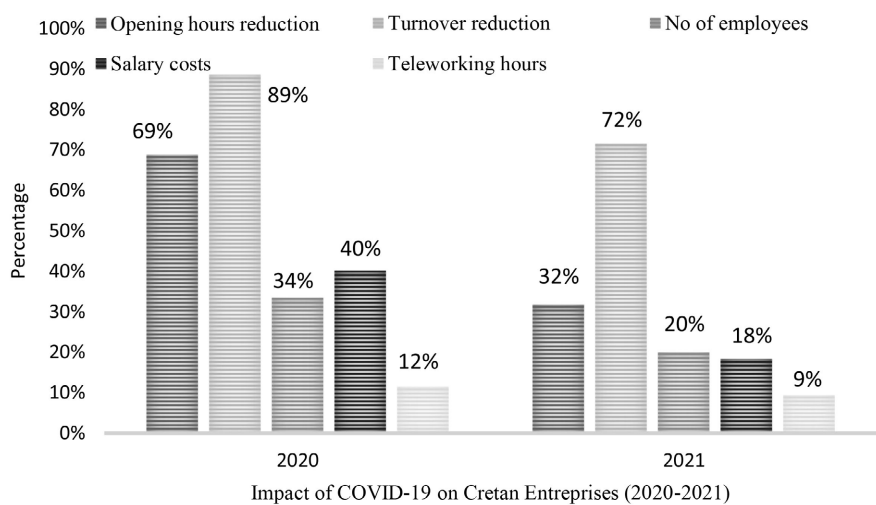


Figure 11. Operation, Turnover, Employees, Salary costs, Teleworking 2020-2021.

were called to use resources and profits earned in previous years to survive. In other words, we do not quantify if the next crisis will find them in a situation to be able to survive.

There is a growing concern and uncertainty about the Greek labour market returning to a pre-COVID-19 normal. In particular, the question raised is if the businesses will be able to survive without the imposed supportive measures in 2022 and to what extent should the Greek State continue to support them. On a positive note, according to the Hellenic Republic Ministry of Labour and Social Affairs, the SYN-ERGASIA scheme continued until May 2022. Nevertheless, the market is now called on to take up the challenges of retaining and creating jobs and businesses, without further supporting measures. While the response of the Greek State was in the direction of short-term business survival

and job preservation, a long-term State (regarding the whole public policy complex) and regional developmental strategy is of utmost necessity. Such a development should be able to tackle future dynamic COVID-19 effects while also broadening the local economy's cutting-edge sectors to be able to tackle similar existing (such as the current energy crisis due to the War in Ukraine) or unpredictable future risks.

The financial situation of the Cretan businesses affected a large amount of the workforce, as is described in the LFS. The ES results indicate that the COVID-19 prevention and control measures implemented in the labour-intensive service-based Cretan economy led many businesses to significant economic damage. In particular, in the first shock of 2020 which was more severe one-third of the businesses stated that they found it difficult or impossible to cover their financial obligations. In the second "phase" of the pandemic in 2021, the measures were less severe, while also a significant amount of government subsidy measures led to a vulnerability percentage similar to the pre-COVID-19. However, small family and no-employee businesses that could not benefit from labour cost subsidization measures found themselves in a harsher financial situation in both COVID-19 shocks. As expected, the sector of accommodation and services had the most severe impact.

6. Public Policy Challenges and Discussion

The structural characteristics of the Cretan labour market resemble the ones of the national one, with the tertiary sector, particularly the tourism sector leading the local economy to economic growth and financial stability or to an impasse. In fact, the tourism sector led the way to the marginal growth of the Cretan economy during the pre-COVID-19 period (2016-2019). On the other hand, the tourism sector led to a significant shock for a large portion of the workforce and related businesses due to the lock-downs and the imposed COVID-19 measures. Seasonality can be considered a tourism sector inherited characteristic of the local labour market, increasing insecurity and vulnerability of the workforce and the related businesses, since it is (per se) a precarious form of employment (Papadakis et al., 2021). The workforce insecurity stems from both the reduced working hours and income acquisition periods. Combined with the demand for low-skilled and low-paid jobs in this particular sector, the situation during the COVID-19 shock can be considered highly precarious for some workforce groups. On the other end, the Cretan business environment, within which there is an inward-looking orientation, with difficulties in adopting new technologies, diversifying products, and improving their market positioning, is also highly vulnerable during the pandemic period. The present research identifies the workforce and business groups that experienced higher economic insecurity and vulnerability, while discussing possible measures to alleviate the COVID-19 pandemic effect on the Cretan labour market.

In particular, our findings regarding the workforce show that youngsters are

employed primarily in seasonal jobs, whereas in many cases, the sectoral-specific job requirements are for low-skilled personnel and consequently are more susceptible to employment risk and insecurity (Mayhew & Anand, 2020; Lemieux, 2020; Papadakis et al., 2021). Although the employability of the young workforce is mostly affected by the COVID-19 pandemic due to their seasonal low-skilled positions, the older labour force group is found to experience high economic precarity. Most persons in the labour force with age greater than 55 are in economic precarity, with many difficulties getting along with their obligations. High economic insecurity is observed for foreign workers that stated to have experienced high economic precarity when a big part of tourism activities was restricted in 2020. Although the percentage of precarious foreign workers is reduced in 2021, it remains high.

In general, the supportive short-termed job loss prevention measures and the improved net social protection network in Greece, having as its spearhead the Guaranteed Minimum Income scheme (Ziomas et al., 2017), have played a significant role in preventing the rise of economic precarity among the workforce. However the remarkable growth in poverty and inequality, especially in 2020 (Eurostat, 2021b) might have long-term effects and subsequently remains a challenge. One important prevention measure that safeguarded many job positions in the Greek and Cretan labour market whilst facilitating businesses to reduce operational costs by suspending their employee contracts was the “suspended employment” scheme. Within this scheme, the employee received an amount of 534€ each month granted by the State. However, the workforce in that new employment state reached 16% in 2020 and 5% in 2021, while almost half of the enterers stated they were in economic precarity, probably as a result of their income reduction to the levels of the grant amount. While in precarity, the high levels of suspended employment in 2020 seem to lead to higher unemployment levels in the 2nd Q of 2021. On the other hand, we observe a gradual improvement in the workforce status being in economic precarity to be reversed to the pre-COVID-19 period, while the unemployment rate in Crete (as well as in Greece) has been remarkably decreased till the end of 2021 (HSA, 2021b). Overall, our findings indicate that although the job retention measures managed to retain unemployment level, yet consequences arise with respect to economic precarity of those entering this state and thus extending, preexisting and current, inequalities and reinforcing disadvantages among groups devastated by the previous economic crisis.

After the first lock-down in 2020, businesses in the Cretan labour market experienced a severe shock, where a significant amount of income and turnover was lost. The operating business structure of wholesale and retail trade, accommodation, food services, and transportation were affected the most by the COVID-19 crisis. The short-term supportive measures implemented by the Greek State seem to have reversed (to a certain extent) the economic insecurity business condition back to the levels of 2019. However, two-thirds of the busi-

nesses that were recipients of any supportive scheme evaluated them as insufficient.

The supportive measures implemented were mainly directed to relieve businesses from their labour cost and retain employment levels, subsidise a part of their turnover loss or indirectly increase their real disposable income through tax relief. With many family and no-employee businesses in continuous economic vulnerability status in the pre-COVID-19 period, the supportive measures could not subsidise their operational costs and thus exclude part of labour force.

In addition, an enterprise's long-term view of employment is crucial in retaining unemployment during economic crisis periods (Burda & Hunt, 2011). The authors suggest that when employers' actions over their enterprises' employability are made with a long-term strategy, they tend to encounter them as less disposable assets when confronted with economic shocks. Such entrepreneurial development strategies are not favoured from the majority of Cretan businesses, since they belong to the tourism-related sectors where the labour force is seasonal (and subsequently precarious). The regional pillar of economic development in the pre-COVID-19 period was the tourism-related sectors, and based their production and services on low-skill seasonal and, consequently, precarious labour force. The COVID-19 shock excessively increased the precariousness of the tourism-based labour force in terms of job insecurity and economic distress.

While economies are frequently in front of shocks and crises, a rise in the standard of living and further financial targeting of the COVID-19 affected workforce and businesses groups can assist them to get through (Botha et al., 2021), and further stimulate demand and boost employment (ILO, 2021). The impact of government spending on the labor market and unemployment may also vary across different industries and regions. Overall, while government spending is not the only factor that affects unemployment, it can have a significant impact on job creation and decrease of the unemployment rates in the economy (International Monetary Fund, 2020; Keynes, 1937). However, the impact of government spending on unemployment can depend on a variety of factors, such as the type of spending, the size of the government's budget deficit, the State of the economy and the informational decision making of policy makers (Anand, 2020).

According to the ILO (2021), the next policy intervention phase following the restraint of the COVID-19 pandemic is the re-activation of business activity and the recovery of economic growth. Entrepreneurship significantly affects job retention in shock periods and job development in economic development steps. Thus, to re-activate the local and national economy, policymakers need to address the indigenous entrepreneurial issues of facilitating access to financial means and reducing bureaucratic and central administration burdens. On the other hand, to achieve recovery of economic growth and resilience of the economy and the labour market, a wider policy-making elaboration of strategically

investing in other strategic sectors could diversify and disperse a future pandemic or price shock risk.

With a regional development structure plan that focuses on sectoral enhancement other than tourism (i.e. agriculture) and the re-orientation of the local entrepreneurship focused on innovation and knowledge, the Region of Crete can build a solid labour market that will be resilient in the next economic cycle crisis or emerging shock. At a regional policy-making level, lifelong learning and targeted reskilling-training courses can have a crucial role in envisaging this message to entrepreneurship and the labour force. In this direction, lifelong learning programs that boost the development of entrepreneurship through promoting sector-specific relevant new and best practices, coaching and innovation enhancement are prerequisites. Furthermore, the labour force can develop new and updated skills and find new employment opportunities in industries that are experiencing growth.

Finally, an active and redistributive social policy at both the national and regional level (given the extent of social vulnerability) is vital to address future contemporary social and economic challenges and reduce poverty and inequality. Thus, by investing in such policies, governments and regions can build a more inclusive and equitable societies where all members are benefiting.

7. Conclusion

The present research used innovative labour and business primary data and identified the groups that experienced high economic precarity in the Region of Crete, Greece, due to the shocks of the COVID-19 pandemic. The predominant tourism-related character of the regional economy led to a severe shock in the employability of the younger labour force and the economic precarity of the eldest and foreign workers. The job retention policy response “suspended employment”, although reduced the effect of COVID-19 on employability, significantly increased the economic vulnerability of those entering this highly precarious employability status. On the other hand, a bundle of exceptional business support measures was implemented to reduce costs and subsidize the turnover loss. Many consider the implemented measures unsuccessful since they were not designed to assist family or no-employee businesses struggling to survive a back-to-back regional and national economic crisis.

In the light of the foregoing, the present research stands on two points. Firstly, the necessity of policy responses during economic crises to retain employability and sustained economic growth is essential. However, aiming at social contribution resilience, such as alleviating precariousness and vulnerability, is also significant in reducing unexpected abrupt changes in labour market structure. Secondly, the resilience of the Cretan labour market can be achieved when aiming at resolving indigenous entrepreneurial issues such as facilitating access to financial means and reducing bureaucratic and central administration burdens while also investing in the enhancement of other than tourism sectors. The latter

requires the re-orientation of local entrepreneurship and the implementation of active employment policy instruments that will pave the way for a successful transition.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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