This paper examines the relationship between entrepreneurship and unemployment. Using Eurostat business demography data, a strongly balanced panel model pertaining to 148 European regions from 2008 to 2017 is assembled and a fixed effects regression technique is used to analyse the relationship between net business population growth and lagged unemployment. Results from the analysis show evidence of a negative relationship. However, when we stratify regions based on their economic performance, we find that this relationship is positive in higher performing regions and negative in lower performing regions, suggesting that push-factor or necessity-based entrepreneurship may be more prevalent in leading rather than lagging regions. Implications for policy are discussed. Results for the influence of industrial concentration and variety on entrepreneurship are also obtained.

1. INTRODUCTION

The relationship between unemployment and entrepreneurship, often referred to as push-factor or necessity-based entrepreneurship, is still debated (Dvouletý, 2017). There is conceptual reasoning for the relationship between unemployment and entrepreneurship being both positive and negative. Literature concerning push-factor entrepreneurial motivations asserts that unemployment can lead to business creation as people look to become self-employed to avoid unemployment (Van der Zwan et al., 2016). Furthermore, Carree and Dejardin (2007) state the relationship could be positive as a result of a market-pull motivation where unemployment is highly correlated with firm closures and these firm closures create more ‘market room’ and thus incentivise business creation. Contrastingly, the multiplier effect set forth by Johnson and Parker (1994) provides a conceptual reasoning for a negative relationship between unemployment and entrepreneurship as job loss leads to lower levels of income and consumer demand (Gajewski & Kutan, 2018).
Evidence suggests the relationship changes across time and space (Baptista & Thurik, 2007). This would make sense conceptually as the entrepreneurial literature asserts that entrepreneurship can be region specific (Bosma & Sternberg, 2014). The conceptual framework set out by Gnyawali and Fogel (1994) discusses the factors that contribute to an ‘entrepreneurial environment’ and stress the importance of economic, sociocultural and political factors as well as the availability of assistance and services which would support the start-up process. The regional literature has long held that there is a strong relationship between the economic performance of regions and their subsequent endowment of knowledge, innovation capabilities and superior capital (Gumbau Albert, 2017). The literature has also acknowledged that entrepreneurial activity is stimulated by new knowledge and technologies (Malerba, 2010). Furthermore, there has been an emphasis on the role of variables such as population and industrial structure as well as human capital as influences on the rate of entrepreneurship within regions (Content et al., 2019; Delfmann et al., 2014; García-Estévez & Duch-Brown, 2020). Regarding industrial structure in particular, there is a lot of importance placed on the role of concentration versus diversification/variety in influencing rates of entrepreneurship (Fritsch & Kublina, 2018; Qian, 2017). Given that economic growth and the other mentioned factors vary across borders, there is a conceptual logic for the relationship between unemployment and entrepreneurship also varying given that the previously mentioned factors could render firm formation easier or more difficult in certain regions. Despite this knowledge gap, there has been (to the best of the author’s knowledge) no regional examination of the relationship between unemployment and entrepreneurship that explicitly looks at the variation of this relationship across differently performing regions which also accounts for these other industrial and socioeconomic factors.

This paper seeks to do two things. First, to analyse the relationship between unemployment and entrepreneurship. Second, to contribute to the previously mentioned knowledge gap by analysing this same relationship across European regions based on their level of economic performance while also controlling for other relevant industrial, demographic and human capital variables. The data used in this paper’s estimation is the Business Demography data taken from the Eurostat database that pertains to 148 regions from the period 2008–17. A fixed-effects regression technique is used to analyse the relationship between the net business population growth and lagged unemployment. To gauge how the relationship changes across regions an economic tier variable is used to stratify regions into high-, middle- and low-performing regions based on their log of gross domestic product (GDP) per inhabitant.

An analysis such as this can be considered particularly of value now considering how the COVID-19 crisis has negatively impacted European firms and employment levels (Kong & Prinz, 2020; Restrepo et al., 2021). Understanding how entrepreneurial activity in different regions responds to unemployment could help identify which regions in Europe are most in need of entrepreneurial supports in the wake of COVID-related firm closures and unemployment. Additionally, the paper’s model also has industrial variables relating to concentration and variety so it can contribute to ongoing debates regarding the influence of industrial factors on entrepreneurship (e.g., Fritsch & Kublina, 2018).

The remainder of the paper is structured as follows. Section 2 reviews the literature, which will determine the hypotheses of this paper. Section 3 describes the data used and method of analysis in this paper. Section 4 discusses the results of the analysis. Section 5 concludes.

2. LITERATURE REVIEW

Economic theory provides several explanations for a positive relationship between unemployment and entrepreneurship. First, the eclectic framework employed by Verheul et al. (2001) emphasizes the importance of demand- and supply-side factors in determining entrepreneurship across regions (Delfmann et al., 2014). Among these factors are economic conditions,
The occupational choice literature distinguishes between push- and pull-factors regarding entrepreneurship (Van der Zwan et al., 2016). One of these push-factors is unemployment (Niefert, 2010). Unemployment can incentivise people to pursue entrepreneurship and create their own job to avoid unemployment. This is one way unemployment can induce entrepreneurship (for example, see Santarelli et al., 2009; and Carree & Dejardin, 2020). Second, high levels of unemployment are often correlated with firm closures which increase the level of ‘market room’ available in the economy and positively influences the rate of entrepreneurship (Carree & Dejardin, 2007). Third, higher levels of unemployment induce firm deaths, which puts the market into disequilibrium and can result in the redistribution of key resources which are capitalized on by ‘alert’ entrepreneurs (Kirzner, 1999), thus increasing the number of business creations in the region. Given the above theoretical discussion, we propose the following hypothesis:

**Hypothesis 1:** Unemployment in one year positively influences net business population growth the following year.

Alternatively, economic theory also provides a conceptual reasoning for a negative relationship between unemployment and entrepreneurship. This is rooted in the literature of firm dynamic interrelationships originally discussed by Johnson and Parker (1994), who provide the multiplier effect whereby business closures can lead to further business closures. Conceptually, the reasoning here would be that unemployment is often correlated with business closures and an increase in unemployment can lead to reductions in income which could reduce levels of consumer demand and thus negatively impact entrepreneurial activity (Gajewski & Kutan, 2018). Thus, given the above theoretical discussion, the following hypothesis is proposed:

**Hypothesis 2:** Unemployment in one year negatively influences net business population growth the following year.

Given that recent literature has acknowledged that economic activity varies across space (Stuetzer et al., 2018), there is a conceptually valid reason that could explain regional variations in the unemployment and entrepreneurship relationship. From a neo-classical perspective, income choice theory suggests that an increase in the level of unemployment may increase firm formation rates as the opportunity cost associated with starting a firm has decreased, although lower levels of endowments may inhibit this (Baptista & Thurik, 2007). Therefore, if newly unemployed individuals have greater endowments, as they might in higher performing regions, firm formation rates may increase. Furthermore, Krugman (1991) stipulates that benefits arise from being located in higher performing ‘core’ regions, for example, pooled labour markets and information and/or technological spillovers which may positively influence the rate of firm births in an area meaning that that unemployment-induced entrepreneurship could be more likely to occur in higher performing regions given these benefits could ease the process associated with firm creation. Given the above we propose the following hypothesis:

**Hypothesis 3:** There is a positive relationship between unemployment in one year and net business population growth the following year in higher performing regions.

Alternatively, the poorer entrepreneurial conditions in lower performing regions, discussed by Iwasaki et al. (2016) in the case of Russia, could lead to greater rates of ‘turbulence’ or ‘flux’ (firm births and deaths) - see Beesley and Hamilton (1984) for further discussion of this. In these situations firm births and deaths occur regularly due to the cyclical perpetuating nature of firm deaths taking place and new firms being created to fill this gap. This could lead to a positive relationship between unemployment and future levels of entrepreneurship in lower performing regions. Additionally, Solomon et al. (2021) and Cowling and Bygrave (2002) argue
that levels of social spending and generosity of unemployment benefit schemes can also influence rates of entrepreneurship as they can decrease people’s willingness to take the risks associated with entrepreneurship given sufficient unemployment safety nets. Considering that levels of social spending and generosity of unemployment benefit schemes are more prevalent in higher income countries in Europe, it could be the case that push-factor entrepreneurship would be more prevalent in lower performing regions. The safer security nets in higher performing regions may act as a disincentive towards unemployed individuals starting their own business due to the opportunity cost associated with starting a business discussed by Baptista and Thurik (2007) being greater given sufficient unemployment supports relative to lower performing regions. Empirical backing for this argument could be found in the findings of both Cowling and Bygrave (2002) and Nekoei and Weber (2017). The former note that generous welfare systems reduce transitions from unemployment to entrepreneurship, while the later find that unemployment insurance lengthens unemployment periods as individuals search for higher waged jobs. Given the above we propose the following hypothesis:

**Hypothesis 4**: There is a positive relationship between unemployment in one year and net business population growth the following year in lower performing regions.

### 3. DATA AND METHODOLOGY

The data used for this paper are taken from Eurostat and consist of a strongly balanced panel pertaining to 148 European regions from the period 2008–17. Eurostat collects data on labour statistics and business demography within European countries and regions. The dependent variable used in this paper’s analysis is the net business population growth variable that is taken from the Eurostat database which indicates the number of new firms born into the economy relative to active population of firms (Eurostat, 2021a). Eurostat business demography data pertaining to business birth and death rates have been used previously in studies looking at entrepreneurship (e.g., Audretsch & Belitski, 2021). The key independent variable of interest is the unemployment rate variable, which indicates the percentage of inactive persons in the labour force in a region (Eurostat, 2021b). This variable will be lagged by one year in the model in order to capture the intertemporal aspect of the unemployment–entrepreneurship relationship.

An economic-tier variable is also calculated in order to indicate whether regions are top-, middle- or low-performing regions. This is done by stratifying regions based on their level of economic performance (measured via the log of their GDP per inhabitant). For this variable a value of 3 indicates a region is top performing, 2 indicates middle performing and 1 indicates lower performing relative to the other regions within the sample. Additionally, Eurostat data on employment share in NACE two-digit sectors is used to create industrial variables such as the Herfindahl index to indicate levels of industrial concentration and related and unrelated variety variables to indicate levels of industrial variety as the role of these industrial factors has been shown to play a significant role in firm activity (Content et al., 2019; Mickiewicz et al., 2019). Eurostat employment share data have been used previously to measure these same industrial factors by Crowley et al. (2021). Furthermore, social and economic factors such as GDP per inhabitant, population and education are also controlled for using Eurostat data. Table 1 shows the summary statistics for the variables in this paper’s model.

The method of analysis for this paper will be a fixed-effects regression. This was opted for following the results of a Hausman test (Table 2) and considering the multiregional and times-series element to the dataset. Fixed-effects models have been used previously to analyse firm dynamic activity by Goel and Saunoris (2020). The proposed model for this paper’s estimation
is as follows:

$$BC_{crt} = \beta_0 + \beta_1 UN_{crt-1} + \beta_2 LGDP_{crt} + \beta_3 Lpop_{crt} + \beta_4 Edu_{crt} + \beta_5 HHi_{crt} + \beta_6 RV_{crt} + \beta_7 UV_{crt} + \mu_{crt}$$ (1)

where BC is the business creation rate in country c, region r and year t; UN is the unemployment rate in year $t-1$; LGDP represents the log of GDP per inhabitant; Lpop represents the log of the population; and Edu represents the tertiary education rate in country c, region r and year t. Additionally, the Herfindahl index that measures the level of industrial concentration within a region is represented by HHi. Levels of industrial variety are measured via the related and unrelated variety variables in the model represented by RV and UV, respectively. It is the value of $\beta_1$ that is of particular interest to this paper’s analysis. If $\beta_1$ is positive (or negative) and significant,

Table 1. Summary statistics.

| Variable                          | Observations | Mean  | SD    | Minimum | Maximum |
|-----------------------------------|--------------|-------|-------|---------|---------|
| Business Population Growth Rate   | 817          | 9.65  | 2.73  | 4.83    | 24.52   |
| Unemployment Rate$_{t-1}$         | 817          | 10.28 | 5.72  | 2.20    | 36.20   |
| log of GDP per inhabitant         | 817          | 9.89  | 0.66  | 8.16    | 11.09   |
| log of Population                 | 817          | 14.20 | 0.81  | 11.31   | 16.30   |
| Education                         | 817          | 25.10 | 9.42  | 10.70   | 56.70   |
| Herfindahl                        | 817          | 4.58  | 2.95  | 0.06    | 9.87    |
| RV                                | 817          | 16.95 | 0.95  | 12.23   | 19.60   |
| UV                                | 817          | 2.88  | 0.14  | 2.33    | 3.21    |
| Year                              | 817          | 2014  | 2.24  | 2008    | 2017    |

Note: These summary statistics pertain to the data included in the regression for model 1 and covers 148 regions.

Table 2. Fixed-effects results for business population growth.

| Variables                  | (I) All regions | (II) Top regions | (III) Mid regions | (IV) Low regions |
|----------------------------|-----------------|------------------|------------------|-----------------|
| Unemployment Rate$_{t-1}$  | −0.0919**       | 0.1803***        | −0.0501          | −0.3543***      |
|                            | (0.0395)        | (0.0620)         | (0.0635)         | (0.0828)        |
| Herfindahl                 | −0.4501         | −0.3849          | 0.3202           | −5.3391*        |
|                            | (0.7519)        | (0.7357)         | (0.8208)         | (2.7306)        |
| RV                         | −0.2846**       | −0.0737          | 0.0752           | −2.0103***      |
|                            | (0.1177)        | (0.1438)         | (0.1499)         | (0.5321)        |
| UV                         | 1.5797          | 9.0990**         | −2.3696          | 12.9654*        |
|                            | (1.7731)        | (4.3386)         | (1.7544)         | (7.4035)        |
| log of GDP per inhabitant   | −6.9622***      | 0.0175           | −1.5846          | −3.8967         |
|                            | (1.9331)        | (2.4621)         | (4.8539)         | (5.2132)        |
| log of Population           | −7.7965***      | −5.3823*         | −1.7122          | −9.0410         |
|                            | (2.9429)        | (3.1937)         | (4.0028)         | (8.0753)        |
| Education                  | −0.0183         | −0.0177          | 0.0418           | −0.1443         |
|                            | (0.0319)        | (0.0313)         | (0.0633)         | (0.2327)        |
| Constant                   | 190.9822***     | 60.2923          | 51.9856          | 200.8350        |
|                            | (55.3459)       | (45.7785)        | (89.8826)        | (147.4612)      |
| Observations               | 817             | 306              | 293              | 218             |
| Regions                    | 148             | 56               | 63               | 48              |

Note: Robust standard errors are shown in parentheses; ***p < 0.01, **p < 0.05, *p < 0.1 Mean variance inflation factor (VIF) score for model = 1.51. Hausman test $p$-value = 0.000.
it will indicate a positive (or negative) relationship between unemployment and entrepreneurship. Robust standard errors are used to control for potential issues of autocorrelation and heteroskedasticity and variance inflation factor (VIF) tests are performed to ensure there is no issue of multicollinearity in the model.

4. RESULTS

The results of the four fixed-effects panel estimation models relating to equation (1) can be seen in Table 2. The results indicate a negative relationship between the lagged unemployment rate and entrepreneurship at the aggregate level, but regional variations are observed and discussed below.

The coefficient value associated with the unemployment rate in year t – 1 is −0.0919 (p < 0.05) in model I, which includes all regions. This would find support for the rejection of Hypothesis 1 (Unemployment in one year positively influences net business population growth the following year) and acceptance of Hypothesis 2 (Unemployment in one year negatively influences net business population growth the following year). However, when the regression is concerned with only top-performing regions in model II, we see that the coefficient sign and value changes to 0.1803 (p < 0.01). In model III we see that coefficient becomes insignificant in the case of middle-performing regions, and then in model IV the coefficient is back to being negative and has a value of −0.3543 (p < 0.01). These results suggest that the positive relationship between unemployment and entrepreneurship is prevalent only in higher performing regions finding support for Hypothesis 3 (There is a positive relationship between unemployment and entrepreneurship is prevalent only in higher performing regions). This could potentially be explained by the greater levels of income within higher performing regions which has been found to increase firm formation rates (Fritsch & Storey, 2014) or the non-pecuniary benefits associated with higher performing ‘core’ regions discussed by Krugman (1991) such as labour pools and information and/or technological spillovers which could better facilitate firm creation and make it a more viable option for recently laid-off workers. Conversely, the negative relationship found between unemployment and the net business population growth rate in models I and IV could be explained by unemployment potentially leading to reductions in income in an area which could then negatively impact levels of consumer demand and then reduce rates entrepreneurial activity (Gajewski & Kutan, 2018).

The finding of a negative relationship between unemployment and entrepreneurship in model IV would find support for the rejection of Hypothesis 4 (There is a positive relationship between unemployment in one year and net business population growth the following year in lower performing regions).

Results pertaining to industrial factors indicate that entrepreneurship is significantly influenced by only related variety at the aggregate level in model I. We see related variety has a coefficient of −0.2846 (p < 0.05) in model I, indicating it is negatively associated with the growth of the net business population. The coefficient value for related variety is not statistically significant in models II or III but becomes significant in model IV where it once again assumes a negative value of −2.0103 (p < 0.01). The results relating to related variety in models I and IV could potentially be explained by the competitive pressures associated with higher levels of relatedness within a region, which can disincentivise firm births (Nyström, 2007). Unrelated variety is not statistically significant in models I or III but is statistically significant in models II and IV, and assumes a positive value in both models, indicating that higher levels of unrelated variety are positively associated with growth in the net business population in the top-performing regions and low-performing regions in this sample. These findings for unrelated variety are potentially attributable to greater levels of variety of industry better facilitating the transfer of different types of knowledge and leading to new idea generation and innovations (Boschma et al., 2012). These
new ideas and innovations that occur within regions with higher levels of unrelated variety can ultimately lead to an increase in firm formation rates (Fritsch & Kublina, 2018; Antonietti & Gambarotto, 2020). The coefficient value for the Herfindahl index is significant only in model IV, where it assumes a value of $-5.3391$ ($p < 0.1$), indicating that industrial concentration is negatively associated with net business population growth in the low-performing regions in this sample. This finding could be attributable to the potential competitive pressures associated with greater levels of industrial concentration as higher concentration impedes ease of access to collective resources within a region which places an upward pressure on the costs of inputs (Cainelli et al., 2014; Combes et al., 2012) thus making business creation more difficult.

Regarding some of the other control variables, the coefficient value associated with the log of GDP per inhabitant is statistically significant only in model I and assumes a value of $-6.9622$ ($p < 0.01$). The results pertaining to the log of the population are only statistically significant in models I and II where it assumes the negative values of $-7.7965$ ($p < 0.01$) and $-5.3823$ ($p < 0.1$), respectively. The results for the tertiary education rate variable are insignificant across all models.

5. CONCLUSIONS

This paper has conducted an empirical analysis of the relationship between unemployment and entrepreneurship (measured as net growth of the business population) across 148 European regions over nine years. The results indicate that the relationship is negative at the aggregate level, but when we stratify regions based on the level of economic performance, we see the relationship is positive in higher performing regions and negative in lower performing regions. It would appear that the positive association between unemployment and entrepreneurship may be more prevalent in wealthier regions than elsewhere. These findings contribute to the already existing stock of research concerning the relationship between unemployment and entrepreneurship (e.g., Carree & Dejardin, 2020; Dvouletý, 2017), but also adds to it considerably by being the only paper (to the author’s knowledge) to stratify regions based on economic performance in order to see how the relationship changes across different borders. These findings provide valuable insights for policymakers concerned with how recent rising unemployment rates induced by the COVID-19 pandemic will affect rates of entrepreneurship across European regions. The results would suggest that only in high-performing regions does unemployment increase business start-up rates. This effect is not observed in mid- or low-performing regions. In lower performing regions unemployment actually appears to reduce the net growth of the business population. This potentially provides support for policy initiatives seeking to increase entrepreneurial activity within European regions, such as the Smart Specialisation plan as per the ERDF (2020), prioritizing investment in lower performing regions in the face of pandemic-related unemployment given that in these regions entrepreneurial activity is the most negatively impacted by unemployment.

Additionally, the analysis also provides some insight into how industrial factors such concentration and variety influence entrepreneurial activity. Results show some evidence that unrelated variety positively influences entrepreneurship in high- and low-performing regions, while related variety and concentration are found to have a negative relationship with entrepreneurship in low-performing regions. These findings provide some insight into ongoing debates within the regional literature concerning which types of variety drive entrepreneurial activity (e.g., Fritsch & Kublina, 2018).

Though this paper has contributed to the regional entrepreneurial literature, it is not without its own limitations. The first of these is that the Eurostat data used do not infer anything about the type of firms that are being set up in higher performing regions. From a conceptual point of view, Geroski (1995) discusses the idea that certain industries have greater barriers to entry than
others, which may mean that the unemployment and entrepreneurship relationship may vary not only across region but also across sector. Unfortunately, due to data limitations this study is unable to assess whether this is the case, but future studies could look to contribute to this knowledge gap. The second limitation of this study is that while the analysis shows the relationship between unemployment and business creation changes across high-, middle- and low-performing European regions, it provides no information on how the relationship operates in developed versus developing nations. A future study that examines this would be of particular benefit from a policy perspective in developing countries given that entrepreneurship is often put forward as a panacea for unemployment issues and wealth creation (Ojiaku et al., 2018).

**DISCLOSURE STATEMENT**

No potential conflict of interest was reported by the authors.

**NOTES**

1. Appendix 1 in the supplemental data online illustrates this with Eurostat social expenditure data.
2. For a tabulation for this variable, see Appendix 3 in the supplemental data online.
3. For a full list of all the variables and their definitions and calculations, see Appendix 2 in the supplemental data online.
4. For fixed-year effects relating to Table 2, see Appendix 4 in the supplemental data online.

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