**Supplementary Material**

Appendix 1 Mean Social Protection Spending

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Country | Mean Expenditure  | Country | Mean Expenditure | Country | Mean Expenditure | Country | Mean Expenditure |
| Luxembourg | 18049.48 | Belgium | 9957.81 | Slovenia | 4331.52 | Latvia | 1582.46 |
| Norway | 17354.38 | Germany  | 9948.81 | Portugal | 4322.59 | Romania | 1130.78 |
| Switzerland | 15539.60 | Ireland | 8774.57 | Czechia | 3075.74 | Bulgaria | 997.83 |
| Denmark | 15092.27 | United Kingdom | 8456.35 | Slovakia | 2378.13 |  |  |
| Sweden | 11838.40 | Iceland | 8082.59 | Croatia | 2321.80 |  |  |
| Netherlands | 11459.12 | Italy | 7645.36 | Hungary | 2201.83 |  |  |
| France | 10655.58 | Spain | 5522.04 | Estonia | 2128.07 |  |  |
| Finland | 10650.44 | Greece | 4667.85 | Poland | 2113.68 |  |  |
| Austria | 10559.00 | Cyprus | 4388.48 | Lithuania | 1863.36 |  |  |

*Note: This is Eurostat (2022) data on the average total annual social protection expenditure (euro per inhabitant at constant 2010 prices) in European countries throughout the time frame of this paper’s analysis.*

Appendix 2 Variable Definitions

|  |  |  |
| --- | --- | --- |
| Variable: | Definition: | Equation: |
| Business Population Growth Rate | The number of enterprise births in the reference period (t) divided by the number of enterprises active in t as a percentage. | Text  Description automatically generated |
|  |  |  |
| Herfindahl | The Herfindahl index measures concentration in a particular industry. A higher value indicates higher industrial concentration in a region, while a lower value indicates a lower level of industrial concentration in the region (van Egeraat et al., 2018).  | Icon  Description automatically generatedWhere HHIi is the Herfindahl index for region i; yij is the level of employment in region i in NACE two-digit industry j; and yi is the level of employment in region i. |
|  |  |  |
| Related Variety | Related variety is a measurement used to indicate variety of industrial structure. In this case employment share data at the NACE 2-digit level is used to calculate this. The conceptual idea behind related variety as a measure of diversity is that some sectors are different to one another, but they are still more closely related than others (Frenken et al., 2007). We calculate related variety in a manner which is consistent with Crowley et al. (2021).  | Text  Description automatically generated with low confidenceA picture containing text  Description automatically generatedWhere the two-digit NACE classification *h* fall exclusively under a one-digit NACE classification *j*; and where Pji =Σhϵ(ji) Phi indicates the one-digit shares. Higher values of these indices indicate higher levels of unrelated variety or higher levels of related variety. |
|  |  |
| Unrelated Variety | Unrelated variety is a measurement used to indicate variety of industrial structure. In this case employment share data at the NACE 2-digit level is used to calculate this. Unrelated variety is a measure of diversity which indicates larger levels of variety than that of related variety. We calculate unrelated variety in a manner which is consistent with Crowley et al. (2021).  |
|  |  |  |
| Unemployment Rate | Percentage of inactive persons in the labour force in a region. | A picture containing text  Description automatically generated |
|  |  |  |
| Log of Population | The natural log of the population of a region. Population is measured in 1000s in a region on the 1st of January of the year in question.  | Log of Population. |
|  |  |  |
| Log of GDP per Inhabitant | The natural log of Gross domestic product (GDP) at current market prices by NUTS 2 regions measured by Euro per inhabitant. | Log of GDP per inhabitant. |
|  |  |  |
| Education  | Percentage of the active population (i.e., those in employment) which have a 3rd level International Standard Classification of Education (ISCE) qualification. | A close-up of some text  Description automatically generated with low confidence |

Appendix 3 Tabulation of Economic Tier Regions by Country

|  |  |  |
| --- | --- | --- |
|  | Econ Tier Value |  |
| Country: | 1: | 2: | 3: | Total: |
| AT | 0 | 9 | 81 | 90 |
| BG | 60 | 0 | 0 | 60 |
| CZ | 45 | 25 | 10 | 80 |
| DK | 0 | 1 | 49 | 50 |
| ES | 0 | 156 | 24 | 180 |
| FI | 0 | 2 | 48 | 50 |
| FR | 0 | 41 | 25 | 66 |
| HR | 20 | 0 | 0 | 20 |
| HU | 69 | 11 | 0 | 80 |
| IT | 0 | 112 | 98 | 210 |
| NL | 0 | 18 | 102 | 120 |
| PL | 160 | 10 | 0 | 170 |
| PT | 2 | 48 | 0 | 50 |
| RO | 70 | 10 | 0 | 80 |
| SK | 28 | 2 | 10 | 40 |
| Total | 454 | 445 | 447 | 1,346 |

Appendix 4 Year Fixed Effects from Models I, II, III, and IV

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | (1) | (2) | (3) | (4) |
| VARIABLES | All Regions | Top Regions | Mid Regions | Low Regions |
|  |  |  |  |  |
| 2010 | 0.5501 | -0.2474 | -0.5213 |  |
|  | (0.4692) | (0.2146) | (0.9150) |  |
| 2011 | 1.0348\*\* | -0.3846 | 0.3019 | 9.4259\*\* |
|  | (0.4809) | (0.2743) | (1.0545) | (3.6714) |
| 2012 | 0.8592\* | -0.7514\*\* | 0.4967 | 8.8258\*\* |
|  | (0.5006) | (0.3460) | (1.0482) | (3.8358) |
| 2013 | 2.1487\*\*\* | -1.0057\*\* | 1.4416 | 12.2725\*\*\* |
|  | (0.7748) | (0.4596) | (1.2349) | (4.3950) |
| 2014 | 2.1826\*\*\* | -0.5066 | 1.9238 | 10.8728\*\*\* |
|  | (0.5929) | (0.5036) | (1.2073) | (3.8533) |
| 2015 | 2.0445\*\*\* | -0.9660\* | 1.9289 | 9.8430\*\* |
|  | (0.6298) | (0.5564) | (1.1738) | (3.9303) |
| 2016 | 2.3724\*\*\* | -0.6700 | 1.8711 | 10.7828\*\* |
|  | (0.6960) | (0.7554) | (1.3027) | (4.4005) |
| 2017 | 2.7633\*\*\* | -0.5662 | 1.6756 | 11.3305\*\* |
|  | (0.7560) | (0.7420) | (1.4184) | (4.3340) |
|  |  |  |  |  |
| Observations | 817 | 306 | 293 | 218 |
| Number of Regions | 148 | 56 | 63 | 48 |

Robust standard errors in parentheses\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 Mean VIF score for model = 1.51. Hausman Test P-value = 0.000.