International Journal of Manpower

115

Received 29 November 2023
Revised 16 July 2024
Accepted 16 September 2024

# Is employment protection legislation a driver or an inhibitor of entrepreneurship? The interaction between stringency and enforcement

Emilio Congregado
*Department of Economics, University of Huelva, Huelva, Spain and Centro Científico Tecnológico Huelva, Huelva, Spain*
Ana Rodriguez-Santiago
*Department of Economics, University of Huelva, Huelva, Spain; Centro Científico Tecnológico Huelva, Huelva, Spain and Applied Economics Department, University of Málaga, Málaga, Spain, and*
Concepción Román
*Department of Economics, University of Huelva, Huelva, Spain and Centro Científico Tecnológico Huelva, Huelva, Spain*

## Abstract

**Purpose** – This study aims to revisit the relationship between the stringency of employment protection legislation and entrepreneurship at the macro-level using time series data from 28 OECD countries.
**Design/methodology/approach** – To address model uncertainty, a Bayesian model averaging methodology is employed, overcoming issues related to predictor selection. Additionally, the study delves into the interaction between employment protection legislation and the rule of law, considering potential unintended consequences and overlapping effects. Heterogeneity within self-employment is explored, making a distinction between solo self-employment and employer entrepreneurship.
**Findings** – The findings reveal that the impact of employment protection legislation, both for regular and temporary employment, on aggregate solo self-employment rates is contingent upon the level of practical regulatory compliance. The legislation can either stimulate or hinder entrepreneurship, highlighting the nuanced nature of its influence on macro-level entrepreneurial activities.
**Practical implications** – The results of this study provide valuable insights for policymakers and regulators by emphasizing the complexity of the relationships under consideration. Understanding the potential interactions between employment protection legislation, rule of law and practical regulatory compliance is crucial for designing an effective and conducive regulatory environment for entrepreneurship.
**Originality/value** – This research offers a unique contribution to the literature in three distinct ways: by addressing model uncertainty through Bayesian model averaging, examining the interaction between employment protection legislation and the rule of law and differentiating between solo self-employment and employer

**JEL Classification —** C11, C23, J23, J24, J38, J40, K31, L26, M13



*Funding:* Funding for open access publishing was provided by Universidad de Huelva/CBUA. The authors acknowledge funding from the Spanish Ministry of Science, Innovation and Universities through project PID2020-115183RB-C22; from Junta de Andalucía through grant P20-00733 and Research Group SEJ-487 (Spanish Entrepreneurship Research Group – SERG) and from Research and Transfer Policy Strategy of the University of Huelva 2021.

International Journal of Manpower
Vol. 45 No. 10, 2024
pp. 115-143
Emerald Publishing Limited
0143-7720
DOI 10.1108/IJM-11-2023-0705

entrepreneurship. These distinctive elements enhance the originality and value of the study, providing a more nuanced understanding of the intricate relationship between legal frameworks and macro-level entrepreneurship.

**Keywords** Entrepreneurship, Self-employment, Institutions, Employment protection legislation, Stringency, Compliance, Enforcement, Bayesian model averaging

**Paper type** Research paper



## 1. Introduction

Self-employment dynamics in OECD countries between the 2008 and 2020 crises have sparked renewed interest among scholars and analysts. It has been widely argued that there is an association between self-employment growth and the deterioration of labor market conditions (Henley, 2023). During this period between the Great Recession and the Great Pandemic, while some countries with high self-employment rates experienced a significant decline in self-employment rates (e.g. Greece, Portugal, or Turkey), others such as the Netherlands and the United Kingdom reached their highest levels of self-employment on record, surpassing 5 million in the UK and nearly 1.4 million in the Netherlands (Eurostat, Labor Force Survey, 2019). During the Great Recession, numerous countries introduced policies aimed at promoting entrepreneurship among the unemployed, with the goal of transforming unemployment into self-employment. As a result, many of the newly self-employed individuals were marginal or non-genuine entrepreneurs [1]. However, what sets this period apart is the limited opportunities for transitioning from self-employment to traditional employment after the recession. Thus, the most surprising and striking fact is that there has been no real change in the proportion of individuals choosing self-employment, but rather a significant decrease in the proportion of individuals leaving self-employment (Valletta *et al.*, 2020). This suggests a disruption in the counter-cyclicality of self-employment, potentially driven by the limited availability of full-time job opportunities in the wage sector (Borowczyk-Martins and Lalé, 2020).

Given the arguments presented above, it may appear that the inter-crisis period was characterized by a significant increase in self-employment, particularly among marginal entrepreneurs and vulnerable workers. However, it is important to note that not all instances of self-employment during this period were associated with precarious jobs. There was also a notable rise in self-employment within professional, scientific, and technical fields, driven by individuals seeking a better work-life balance and flexible working hours (Molina, 2020).

The resurgence of self-employment in recent decades has been closely linked to various trends in the labor market. These include the fragmentation of large firms and the inclination towards contracting out (Taylor, 2004), changes in industry composition (Blanchflower and Shadforth, 2007), and the rise of necessity-driven entrepreneurs resulting from limited options in the labor market (Fairlie and Fossen, 2020). Furthermore, the prominence of dependent forms of self-employment in heavily regulated labor markets (Muehlberger, 2007; Román *et al.*, 2011), alongside the rapid growth of digitally-enabled forms of work (Congregado *et al.*, 2022), has reshaped the self-employment landscape.

Thus, the proliferation of digital labor platforms has become a significant catalyst for the increase in self-employment, particularly in advanced economies. For firms, these platforms have facilitated the outsourcing of tasks, accelerating contracting out processes and transforming regular employment into roles performed by professional freelancers and contractors (Boeri *et al.*, 2020). For workers, digital platforms offer additional income opportunities, especially for those in involuntary part-time employment, while also serving as an alternative employment option for marginalized groups (Valletta *et al.*, 2020). Furthermore, these digital platforms provide new opportunities and customers for professionals, contractors, and freelancers, creating an enabling framework for flexible working arrangements.

To this scenario, we must add the potential impact of employment protection legislation (EPL) increasing self-employment as a way to circumvent regulations and protection (Román

*et al.*, 2011, 2013). This has given rise to dependent forms of self-employment, where the worker is formally self-employed, but the conditions of work are similar to those of employees (Muehlberger, 2007). The paradox lies in the fact that highly protective employment legislation, without adequate compliance guarantees and in the presence of incentive schemes to foster self-employment, can become ineffective. This fact leads to a shift from employer-employee labor relations to relations based on demand-driven work, resulting in the complete loss of workers' rights and hindering the intended effects of protective labor market legislation.

In this context, revisiting the interplay between the EPL, the degree of compliance with the regulatory framework, and the opportunity cost of self-employment is particularly intriguing. Therefore, this study aims to provide new insights into how these country-specific institutional characteristics act as drivers or inhibitors of entrepreneurship.

From this perspective, this paper contributes to the extensive empirical literature dedicated to analyzing the factors that influence national self-employment rates. Evidence provided by these studies is often mixed. The reasons for this can be attributed to various factors, such as the limited suitability of available data for international analysis [2]. Additionally, the choice of longitudinal/cross-sectional dimensions in the databases used can influence the econometric strategies adopted and the statistical significance of the results. Furthermore, even the operationalization used to measure entrepreneurship/self-employment at the macro-level can play a role [3].

In our view, disregarding the potential influence of sample characteristics and proxy selection to measure entrepreneurship and the focus variable, we propose that previous mixed results could be attributed to the following three factors. First, some of the mixed results may stem from issues related to the econometric approach, specifically due to *specification problems* (Arin *et al.*, 2015). Second, previous studies may have neglected to consider the *interactions* between the focus variable and control variables, as suggested by Centeno (2000). The degree of rigidity introduced by EPL may be contingent upon the level of compliance or the difficulty of evading its application (Torrini, 2005). Third, previous research appears to have overlooked the *heterogeneity within self-employment*. It is plausible that labor regulations could have different impacts on entrepreneurs who hire external labor compared to those who work independently.

To address these three concerns within a unified framework, we propose a reexamination of the influence of EPL stringency on the overall rate of self-employment across 28 OECD countries. Our empirical approach encompasses three key pillars. Firstly, we address model uncertainty by carefully selecting predictors used as controls using the Bayesian model averaging methodology (BMA), thus minimizing potential biases. Secondly, we extend the BMA methodology to a panel data framework incorporating interactions. This approach allows us to estimate the impact of EPL stringency while considering its interaction with the rule of law. Thirdly, we provide separate estimates for employers and solo self-employed workers, recognizing the possibility of differential impacts of EPL stringency among distinct self-employed groups.

Our findings point to a positive impact of EPL –both for regular and temporary employment– on aggregate self-employment rates, that becomes smaller the greater the rule of law is. Thus, the stringency of EPL can either boost or contract the aggregate self-employment rate depending on the degree of practical regulatory compliance. When distinguishing between self-employment rates with and without employees, we observe that the general pattern is primarily driven by the rates of solo self-employed workers.

The remainder of this paper is structured as follows. Section 2 provides a focused review of the relevant literature and presents the main hypotheses. In Section 3, we outline the dataset employed to examine the factors influencing the self-employment rate among OECD countries. Section 4 presents the methodology employed in this study, while Section 5 discusses the results obtained. Lastly, Section 6 concludes the paper.

## 2. Literature review and hypotheses

### *2.1 A selective review of related literature*

Our research is grounded in the existing literature on the determinants of self-employment/entrepreneurship, paying particular attention to its evolution over time. Methodologically, this type of literature typically follows a common scheme: it employs structural or ad hoc specifications in which a specific predictor variable is designated as the *focus* variable [4]. The aim is to estimate the influence of this variable, along with other control variables, on national or regional entrepreneurship [5].

Regarding our research question, it is important to highlight the body of literature that examines the influence of institutional design and quality. This literature encompasses studies that investigate the quality of institutions (Valdez and Richardson, 2013), the role of fiscal systems (Torrini, 2005), and the impact of specific labor market institutions (Grubb and Wells, 1993; Kanniainen and Vesala, 2005).

The existing literature on the determinants of entrepreneurship at the macro level has primarily relied on cross-sectional analysis and short panel data due to data availability constraints. Over time, researchers have incorporated various methodological advancements to address limitations such as the inclusion of controls (Robson, 2003), country fixed effects (Pietrobelli *et al.*, 2004), interactions (Centeno, 2000), and techniques to mitigate endogeneity bias (Kanniainen and Vesala, 2005). However, it is important to note that many empirical findings in this literature suffer from potential model uncertainty issues, particularly concerning the selection of predictors.

An attempt to circumvent this problem is due to Giménez-Nadal *et al.* (2016) who adopted an algorithmic approach based on resampling and bootstrap techniques to identify the subset of explanatory variables that yield the highest prediction accuracy for national total entrepreneurship activity. The works of Arin *et al.* (2015) and Rodríguez-Santiago (2022) are also noteworthy in addressing model uncertainty within the context of the determinants of entrepreneurship/self-employment literature. Like the present paper, they employ a BMA approach, building upon the influential work of Raftery (1995), which combines Bayesian information criteria model weights and maximum likelihood estimates for model selection.

Focusing on the impact of the EPL stringency on self-employment, the empirical evidence seems to yield ambiguous results. Grubb and Wells (1993) or OECD (1999) found support for a positive impact. However, subsequent studies showed that evidence on the (positive) relationship between self-employment and the strictness of EPL was weak and non-robust. Robson (2003) argued that when control variables and country-fixed effects are considered, the previously observed positive relationship disappears. Centeno (2000) identified another limitation in previous research on self-employment and labor market rigidities. In his influential paper, he proposed an alternative explanation for the lack of robust evidence by incorporating controls and interactions with the focal variable. Notably, he found that the inclusion of controls capturing the costs of self-employment, weakened the impact of EPL on self-employment. That work emphasizes the importance of considering interactions with controls that may hinder the explanatory power of the focal variable in understanding variations in self-employment. Kanniainen and Vesala (2005) and Torrini (2005) also contribute to the literature on the impact of labor market institutions on entrepreneurship. Torrini's study stands out for its analysis of the determinants of cross-country variation in self-employment, considering both economic and institutional factors. While Torrini does not find evidence supporting the idea that stricter EPL promotes self-employment, his work highlights the role of taxation and tax evasion opportunities in predicting self-employment, emphasizing the importance of institutional quality [6].

Recent studies have further explored the relationship by examining heterogeneity among different groups of self-employed workers. Poschke (2019) finds a positive effect of labor market rigidities on solo self-employment, while Baker *et al.* (2018) differentiate between low- and high-skilled workers and observe contrasting impacts on self-employment, with no

overall effect on aggregate self-employment. These findings underscore the significance of considering heterogeneity in understanding self-employment dynamics.

Table 1 summarizes the previous literature review, focusing primarily on the works that most closely align with this research. This study aims to bring together all previously highlighted elements to provide new insights on the relationship between EPL and self-employment rates. Therefore, its econometric strategy addresses potential uncertainty in predictor selection, explores the potential interaction of our main variable with the rule of law, and considers the existing heterogeneity within self-employment by distinguishing between employers and solo self-employed workers.

### *2.2 Hypotheses*

From a theoretical standpoint, the relationship between EPL and self-employment rates can be explained by two competing arguments: the *crowding-out* and *crowding-in* arguments. On one hand, it can be argued that stronger protection for salaried employment directly affects the opportunity cost of self-employment, leading individuals to prefer paid employment (Baker *et al.*, 2018). This supports a negative relationship between EPL and self-employment. On the other hand, it is also true that greater EPL introduces rigidity and higher costs for employers, prompting them to find ways to circumvent the burdensome aspects of the legislation. Grubb and Wells (1993) proposed that regulations could lead to a reduction in regular paid employment as employers seek to bypass the effects of these regulations by contracting work to self-employed individuals, giving rise to dependent forms of self-employment (OECD, 1999; Muehlberger, 2007; Román *et al.*, 2011). Additionally, an overly rigid EPL may induce the unemployed individuals who fare worst in the labor market to become self-employed as a last resort due to a lack of opportunities in the paid employment sector (Román *et al.*, 2013). Consequently, the emergence of non-genuine forms of self-employment helps explain the evidence of a positive association between national labor market regulations and self-employment rates.

These different ways for the EPL to affect self-employment, in addition to methodological issues, may be behind the heterogeneity of previous results. We stress the importance of considering the enforcement of labor laws as well as the heterogeneity within self-employment to better understand this relationship. To this end, we propose the following hypotheses [7].

*The dependent self-employment hypothesis*. In contexts of low enforcement of labor laws, increasing the stringency of the EPL -either for regular or temporary contracts-is associated with an increase in solo self-employment. In stricter labor markets, with weak enforcement of labor laws, employers may attempt to circumvent the effects of regulations on their ability to hire and fire employees by contracting out own-account workers.

*The labor costs hypothesis*. In contexts of high enforcement of labor laws, increasing the stringency of the EPL -either for regular or temporary contracts-increases the non-wage costs, negatively affecting the creation of new small firms. This leads to a decrease not only in the number of solo self-employed but also in the number of employers.

## 3. Data and sample

To analyze the interplay between the stringency of EPL, the regulatory compliance and entrepreneurship at the macro level, we use a balanced panel dataset formed by 28 OECD countries, with annual data spanning from 1996 to 2019 [8].

Entrepreneurship is a multifaceted concept which encompasses a range of roles including innovation (Schumpeter, 1939), reduction of inefficiencies (Leibenstein, 1968), discovery of profit opportunities (Kirzner, 1979), and strategic decision making in an uncertain environment (Knight, 1921). Any single measure of entrepreneurship is unlikely to do

**Table 1.**
A selective review of cross-country studies about determinants of self-employment/ entrepreneurship at the macro-level

| Authors | Dependent variable | Proxy dependent variable(s) | Data sources | Sample | Focus variable/ Macro-level predictors | Control variables – other covariates | Method | Research gap/Focus | Results |
|---|---|---|---|---|---|---|---|---|---|
| Grubb and Wells (1993) | SE [1] | Self-employment including employers and unpaid family workers | EU- Labor Force Survey | 11 European Countries (1989) | Overall regulation of dependent work | NA | Cross country correlations | Effect of regulation | Regulation reduces regular employment and increases non-standard works |
| OECD (1999) | SE [1] | Share of self-employment | OECD | 23 OECD countries (1985–1997) | Strictness of EPL indicators Overall, regular employment, temporary employment, collective dismissals | NA | Random Effects GLS estimates | Self-employment and strictness of employment protection legislation distinguishing different types of protection | Stricter EPL (overall and for regular employment) is strongly associated with higher rates of SE when other factors are controlled |
| Centeno (2000) | SE [1] | Share of non-agricultural self-employment | OECD Labor Force Statistics | 18 OECD countries (1984–1997) | Flexibility Self-employed workers Social Security Contributions | Log GDP pc U [2] Social Security contribution per self-employed worker | Panel, fixed effects | Relationship between Labor Market rigidities and self-employment in previous literature provided mixed | Self-employment channel of employment flexibility inhibiting EPL stringency |
| Robson (2003) | SE [1] | Share of non-agricultural self-employment | OECD Labor Force Statistics | Panel Data 13 OECD (1965–1995) Cross section 15 OECD (1999) | Strictness of EPL indicators Overall, regular employment, temporary employment, collective dismissals | Log GDP pc U [2] LFPT [3] Income tax rate Payroll tax rate Benefit replacement ratio | OLS in both Panel data and cross section specifications | Check the robustness of previous results by introducing controls, country fixed effects and non-agricultural SE | Findings of a positive relationship between EPL and self-employment reported in previous studies are non-robust |

(*continued*)

| Authors | Dependent variable | Proxy dependent variable(s) | Data sources | Sample | Focus variable/ Macro-level predictors | Control variables – other covariates | Method | Research gap/Focus | Results |
|---|---|---|---|---|---|---|---|---|---|
| Torrini (2005) | SE [1] | Log self-employment rate | OECD Economic Outlook Database International Transparence | Panel 19–25 OECD countries (1979–2000) | Tax Wedge Replacement rate | GDP per worker U [2] EPL PML [4] Corruption index Public sector size | Pooled and fixed effects estimates from panel data | Role of institutions and compliance | No relationship between self-employment and EPL. Effect of Taxation depends on the country attitude towards tax evasion |
| Kannianen and Vesala (2005) | E [5] | Ratio of non-agricultural employers and people working on their own account | OECD Statistics | 5 years interval cross section data 19 OECD economies (1978–98) | Labor Market Institutions: replacement ratio; EPL; labor union power; trade union density; bargaining coverage rate; wage bargaining; coordination across trade unions; unemployment rate | | OLS pooled estimates of a Panel | Structural model incorporating a three years lag for avoiding simultaneity and reversed causality bias | Predictors: economic risks, unemployment compensation, union power, and labor protection variables |
| Aparicio *et al.* (2016) | E [5] | Opportunity entrepreneurship | GEM data [6] World Bank | Unbalanced panel 43 countries (2004–2012) | Control of corruption | NA | Three stage least-square | Formal and informal institutions | Informal institutions have a higher impact on opportunity entrepreneurship than formal institutions (Control of corruption, confidence and private coverage) |

(*continued*)

**Table 1.**

Table 1.

| Authors | Dependent variable | Proxy dependent variable(s) | Data sources | Sample | Focus variable/ Macro-level predictors | Control variables – other covariates | Method | Research gap/Focus | Results |
|---|---|---|---|---|---|---|---|---|---|
| Giménez-Nadal *et al.* (2016) | E [5] | Overall total entrepreneurship activity (TEA rate) | GEM data [6] | Cross Section 69 countries (2014) | Innovation; Sociocultural environment; Entrepreneurial education; R&D transfers; Government subsidies | | Algorithmic approach based on resampling and bootstrap techniques | Step by step approach for finding the subset of explanatory variables leading the best possible prediction accuracy Selection of the more relevant regressor(s) | Strength of Innovation and Research, and of Entrepreneurial Education Selection of the more relevant regressor(s) |
| Baker *et al.* (2018) | SE [1] | Aggregate self-employment (high- and low-skilled self-employed) | EUROSTAT data | 21 countries (1995–2013) | EPL regular and temporary | Tax wedge, unemployment benefit, minimum wage, ALMP, output gap, share of ICT | Dynamic panel data | Evaluation of the impact of different labor market institutions and imposition on aggregate self-employment and self-employed groups (unemployment benefits, active labor market policies, EPL, minimum wage and tax wedge) | No impact of EPL stringency on aggregate self-employment Positive impact among low-skilled workers Negative impact among high-skilled workers |
| Poschke (2019) | SE [1] | Aggregate self-employment (own account and employers) | IPUMS [7] | 58 countries (developed and least developed countries) | Ratio U/ U + W [8] | Log GDP per capita Employment share industry Minimum wage Severance payment Tertiary education enrollment | Panel Data | Role of frictions in the entry into self-employment and entrepreneurship | Positive effects of Labor market frictions on low productivity own-account work (not employers) |

(*continued*)

| Authors | Dependent variable | Proxy dependent variable(s) | Data sources | Sample | Focus variable/ Macro-level predictors | Control variables – other covariates | Method | Research gap/Focus | Results |
|---|---|---|---|---|---|---|---|---|---|
| Arin *et al.* (2015) | E [5] | Overall total entrepreneurship activity (TEA rate) | GEM data [6] | 43 countries (1995–1997) | 32/21 predictors Human capital: population, education, unemployment | | BMA [9] | Correct model uncertainty | Predictors: GDPpc, Unemployment, tax rate, volatility of inflation |
| Rodríguez-Santiago (2022) | SE [1] | Self-employment rate | ILO data | 117 countries (2005–2019) | Level of development: GDP per capita, Financial Development, Technological Progress Institutions: Administrative Complexity, Globalization, Taxes, Inflation | | BMA [9] | Correct model uncertainty + interactions | Predictors: unemployment rate, frictions in the labor market and stage of economic development |

**Note(s):** [1] Self-employment; [2] Unemployment rate; [3] Female Participation rate; [4] Product market regulation; [5] Entrepreneurship; [6] Global Entrepreneurship Monitoring; [7] International Integrated Public Use Microdata Surveys; [8] Wage-earners; [9] Bayesian Model Averaging
**Source(s):** Table created by authors

**Table 1.**

justice to all these facets. In cross-country analyses at the macro level, self-employment rate is the most common measure used in practice, reflecting the widespread availability of aggregate data for a broad range of countries (Dvouletý, 2018). To some extent, and although self-employment is not a perfect measure of entrepreneurship, its definition has the merit of inclusiveness and convenience (Congregado, 2008), specially for cross-country studies [9].

Thus, our dependent variable is the self-employment rate. It is drawn from the International Labor Organization Statistics (ILO-Statistics) and is defined as the percentage of total workers that are employers, members of producers' cooperatives, contributing family workers or own account workers. To consider the heterogeneity within self-employment, our analysis distinguishes between self-employment with and without employees (employership and own account work, respectively).

Based on previous literature devoted to the identification of key factors determining the cross-national differences on self-employment rates, our database includes as potential covariates a set of 17 variables representing different aspects related to the level of development, the technological progress, the development of the financial sector, the human capital endowment and the role of different institutions, among others [10]. The list and description of these potential covariates is as follows:

*GDP per capita (and squared GDP per capita)* on purchasing power parity (PPP): Gross domestic product per worker, converted to international dollars using purchasing power parity rates. Data are in constant 2017 international dollars.

*Agriculture, Industry and Services* correspond to the ISIC divisions 1–5, 10–45 and 50–99, respectively, as a percentage of GDP.

*Trade* openness: Exports plus imports of goods and services, that represent the value of trade as a percentage of GDP.

*Rural population*: It refers to people living in rural areas as defined by national statistical offices. It is calculated as the difference between total population and urban population.

*Patent applications* by million population: Worldwide patent applications filed through the Patent Cooperation Treaty procedure or with a national patent office for exclusive rights for an invention.

*Internet users*: This indicator captures the proportion of individuals using the Internet based on results from national household surveys.

*Human capital index*: Index provided by the Penn World Tables based on the average years of schooling and an assumed rate of return to education, based on Mincer equation estimates around the world.

*Female Labor force participation rate*: Proportion of females aged 15 and older who are economically active.

*Unemployment (Youth unemployment)*: Share of the labor force that is without work but available for and seeking employment (in the age interval 15–24, for the younger age group).

*Inflation*: Proxied by the annual growth rate of the GDP implicit deflator.

*Government expenditure*: All government current expenditures for purchases of goods and services, including compensation of employees and most expenditures on national defense and security, as a percentage of GDP.

*Rule of Law*: This index includes several indicators which measure the extent to which agents have confidence in and abide by the rules of society, including perceptions of the incidence of crime, the effectiveness and predictability of the judiciary, and the enforceability of contracts.

*EPL for regular contracts*. Synthetic indicator of the strictness of both individual and collective dismissals of workers on regular contracts.

*EPL for temporary contracts*. Synthetic indicator of the strictness of regulation on the use of temporary contracts [11].

## 4. Methodology: a BMA approach

Contrary to most existing empirical approaches, we employ a data-driven methodology that enables us to conduct inference using the complete range of potential model specifications derived from a given set of covariates. This approach allows us to address the inherent uncertainty associated with selecting a specific model specification when examining the empirical factors influencing self-employment rates.

When assessing the impact of a specific variable ($x_i$) on self-employment rates ($y_i$), inference is typically performed within a (linear) regression model where other covariates are controlled for. The estimated effect, therefore, relies on the choice of control variables. Incorporating this source of uncertainty into our inference becomes essential for identifying the empirical drivers of self-employment rate trends and quantifying their influence in a robust manner.

Bayesian Model Averaging (BMA) offers a rigorous statistical framework for estimating the effects of self-employment rate drivers, while explicitly considering the uncertainty arising from the existence of multiple competing regression models used to derive these estimates. BMA allows us to assess the influence of various factors on self-employment rates and provides a more reliable analysis of their effects (Raftery, 1995). Methodologically, this paper runs in parallel to Arin *et al.* (2015) that provides a cross-section analysis of determinants of entrepreneurship, and Rodríguez-Santiago (2022) that considers the economic development level as the focus variable to find determinants of self-employment in a panel sample.

The general model we consider is expressed as follows:

$$y_{it} = \alpha_i + X_{k,it}\beta_k + \varepsilon_{it}, \tag{1}$$

Here, $y_{it}$ represents the self-employment rate for country $i$ during the time period $t$. The variable $X_{k,it}$ represents the set of regressors, and $\beta_k$ denotes the corresponding coefficients for each regressor. The term $\alpha_i$ captures country-specific effects, while $\varepsilon_{it}$ accounts for the error term following a normal distribution $\varepsilon \sim N(0, \sigma^2 I)$.

Given the considerable number of potential variables and interactions, the model space's cardinality is substantial, presenting computational challenges. As previously mentioned, we adopt a BMA approach, as introduced by Raftery (1995), to assess the implicit uncertainty across models. With BMA, we assign prior probabilities to sets of models and update them based on the observed data. Subsequently, the posterior model probabilities (PMP) of the top models are averaged to calculate the posterior inclusion probabilities (PIP) for the potential determinants.

The posterior model probability for each model $M_i$ is approximated by the product of the marginal likelihood and the prior probability of the model, without conditioning on the data:

$$p(M_i|y) \propto p(y|M_i)\, p(M_i) \tag{2}$$

The researcher is responsible for specifying the prior beliefs regarding the model prior. In the case of non-informative priors, we assume an equal probability for all possible models $p(M_i) = 1/2^K$. Under this prior, the posterior model probability is proportional to the marginal likelihood, which represents the likelihood function integrated over all model parameters $(\alpha, \beta_k, \sigma)$:

$$p(y|M_i) = \iiint p(y|M_i, \alpha, \beta_k, \sigma)\, p(\alpha, \beta_k, \sigma)\, d\alpha\, d\beta_k\, d\sigma \tag{3}$$

For the model-specific parameters, we set uninformative priors to allow the data to inform the estimation. We specify non-informative priors for the intercept ($p(\alpha) \propto 1$) and the deviation ($p(\sigma) \propto 1/\sigma$). However, in order to obtain an analytical solution for the marginal likelihood, we require a slightly informative prior for the coefficients $\beta$. We assume an informative prior for $\beta$ given $\sigma$, following the $g$-prior proposed by Zellner (1986):

$$p(\beta_k|\sigma) \sim \mathcal{N}\left(0, \sigma^2(gX'X)^{-1}\right) \tag{4}$$

This prior only requires the elicitation of the parameter $g$. The variance-covariance matrix of $\beta$ shares the same structure as the OLS estimator's variance-covariance matrix, scaled by $g$. This scaling determines the shrinkage in the regression parameters, resulting in the following expression for the expected value of $\beta$ given the data and model $M_i$:

$$E(\beta|y, M_i) = \frac{1}{1+g}(X'X)^{-1}X'y = \frac{1}{1+g}\widehat{\beta}_{OLS} \tag{5}$$

The marginal likelihood for model $M_i$, where $M_X$ represents the residual matrix $(I - X(X'X)^{-1}X')$, is given by:

$$p(y|M_i) \propto \left(\frac{g}{1+g}\right)^{\frac{k_i}{2}}\left[\frac{1}{1+g}y'M_X y + \frac{g}{1+g}\left(y-\bar{y}_n\right)'\left(y-\bar{y}_n\right)\right]^{-\frac{n-1}{2}} \tag{6}$$

The choice of the parameter $g$ has been discussed in the literature, and different options have been proposed. We employ the Benchmark prior (BRIC) as suggested by Fernández *et al.* (2001a), where $g$ is set to $\max(n, K^2)$ depending on the number of potential regressors ($K$) and the sample size ($n$).

In order to know the different determinants of self-employment, employership or own-account work rates depending on the role of institutions and compliance, we include in our model the interaction between rule of law and EPL (on regular or temporary contracts). Since we want to analyze the determinants of the self-employment comparing different situations regarding compliance of the labor market regulation, we need to control by the effect of individual variables to compare the effect of the interaction. Following Crespo-Cuaresma (2011), we include the specification of strong heredity principle based on Chipman (1996), which is a special case of George's (1999) dilution priors. This way, we define prior probabilities across models where interactions are not present or are present with parent variables and assign zero prior probability to models with interactions where some parent variable is not present.

Regarding the priors over the model space, we follow the approach proposed by Ley and Steel (2009). We specify a fully random prior for the model and introduce a binomial-beta hyperprior over the prior inclusion probability with an expected model size of $\widetilde{k} = K/2$. This hyperprior ensures a flat prior inclusion probability.

To sample from the model space, we adopt the Markov Chain Monte Carlo Model Composition (MC3) method described by Fernández *et al.* (2001b). For every model, we estimate 6 million draws, discard the first million as the burn-in sample, and compute the results based on the top 100 models visited by the Markov chain.

## 5. Results

This section presents the main results of the empirical analysis developed to shed new light on the role of EPL as a driver of entrepreneurship. Using the extension of the BMA methodology (Fernández *et al.*, 2001b) to a panel data framework, by Moral-Benito (2012), estimations of a baseline panel and a panel including the interaction term between rule of law and EPL for regular and temporary contracts are carried out. To take into consideration the existing heterogeneity within self-employment as a group, we also present results for employership and own-account work rates separately.

Therefore, our empirical analysis comprises twelve different BMA exercises: six for the baseline panel and six for the panel that includes an interaction between EPL and the Rule of Law [12]. Table 2 summarizes the main results, highlighting the findings related to our focal variables [13].

For each of the twelve different analyses carried out, we present posterior inclusion probabilities (PIP), computed as the sum of the posterior probability of the models including that variable [14]; the mean of the posterior distribution for each parameter (M); and the corresponding posterior standard deviation (SD). The PIP can be interpreted as the probability that a given variable belongs to the true model. Under this criterion the set of regressors with a PIP-value in italic are predictors of the variation of the self-employment (employership or own account work) rates across countries.

As stated previously, the main research question of this paper is about the role of the EPL as a driver of entrepreneurship and, in particular whether this effect is modulated depending on the compliance of labor market laws, which is influenced by the rule of law. However, such interpretations must be approached with caution, as we should not overlook that the rule of

| | Baseline | | | | Interaction | | |
|---|---|---|---|---|---|---|---|
| | PIP | M | SD | | PIP | M | SD |
| | | | *Self-employment rates – EPL regular contracts* | | | | |
| ROL | *0.96* | −2.599*** | 0.99 | ROL | *1.00* | 4.395*** | 1.66 |
| EPLR | *1.00* | 2.104*** | 0.28 | EPLR | *1.00* | 8.040*** | 1.23 |
| | | | | EPLR#ROL | *1.00* | −2.789*** | 0.56 |
| | | | *Self-employment rates – EPL temporary contracts* | | | | |
| ROL | *1.00* | −3.080*** | 0.79 | ROL | *1.00* | 1.046 | 0.89 |
| EPLT | *0.93* | 0.735** | 0.32 | EPLT | *1.00* | 4.216*** | 0.58 |
| | | | | EPLT#ROL | *1.00* | −1.773*** | 0.28 |
| | | | *Employership rates – EPL regular contracts* | | | | |
| ROL | 0.13 | −0.010 | 0.07 | ROL | 0.46 | 0.369 | 0.53 |
| EPLR | *1.00* | 0.263*** | 0.07 | EPLR | *1.00* | 0.619 | 0.49 |
| | | | | EPLR#ROL | 0.39 | −0.165 | 0.23 |
| | | | *Employership rates – EPL temporary contracts* | | | | |
| ROL | 0.24 | −0.059 | 0.14 | ROL | 0.21 | −0.051 | 0.13 |
| EPLT | 0.14 | −0.004 | 0.03 | EPLT | 0.12 | −0.004 | 0.03 |
| | | | | EPLT#ROL | 0.01 | 0.000 | 0.01 |
| | | | *Own-account work rates – EPL regular contracts* | | | | |
| ROL | *0.88* | −1.186* | 0.61 | ROL | *1.00* | 1.791 | 1.20 |
| EPLR | *1.00* | 1.570*** | 0.20 | EPLR | *1.00* | 4.318*** | 1.01 |
| | | | | EPLR#ROL | *0.96* | −1.303*** | 0.47 |
| | | | *Own-account work rates – EPL temporary contracts* | | | | |
| ROL | *1.00* | −1.948*** | 0.47 | ROL | *1.00* | 0.087 | 0.73 |
| EPLT | 0.09 | 0.010 | 0.06 | EPLT | *0.99* | 1.832*** | 0.46 |
| | | | | EPLT#ROL | *0.99* | −0.888*** | 0.22 |

**Note(s):** PIP, Posterior inclusion probability; M, mean of the posterior distribution parameter; SD, posterior standard deviation of the parameter. Italic entries refer to variables with PIP>0.5. *, $p < 0.10$; **, $p < 0.05$; ***, $p < 0.01$. Every specification includes, apart from the shown variables, these control variables: GDP per capita, agriculture as % of GDP, industry as % of GDP, services as % of GDP, trade openness as % of GDP, rural population, patent applications, individuals using the internet, HCI, female labor force participation, unemployment, youth unemployment, inflation, and government expenditure

**Source(s):** Table created by authors

**Table 2.** Summary of BMA results

law merely serves as a proxy for the enforcement of EPL, since the rule of law indicator is not strictly an indicator of the enforcement of labor laws. Our results point to a positive impact of EPL –either for regular and temporary employment– on aggregate self-employment rates, that becomes smaller the greater the rule of law is.

When distinguishing between self-employment rates with and without employees, we observe that the previously explained general pattern is primarily driven by the rates of own-account workers [15]. In contrast, in the models that consider the rate of employers as the dependent variable, neither the inclusion of EPL for temporary employment as a regressor nor a non-linear impact of EPL for regular employment is observed. Instead, we only observe a minor positive impact of EPL for regular employment, regardless of the figure for the rule of law.

We would like to draw attention to the non-linear nature of our findings for own-account work rates. Specifically, when examining the impact of EPL for temporary contracts on own-account work rates, we observe an interesting pattern. An increase in EPL strictness leads to higher own-account work rates when the rule of law is below 2.06. However, this effect becomes negative when the rule of law exceeds this threshold. Therefore, countries characterized by strong adherence to laws, such as Finland, Denmark, Sweden, Norway, or New Zealand, are likely to experience a decrease in own-account work rates as a result of stricter EPL for temporary employment. Conversely, countries with lower levels of rule of law, such as Mexico, Slovak Republic, Italy, Greece, or Poland, are likely to observe a positive association between the strictness of EPL for temporary employment and own-account work rates [16].

To provide an idea of the magnitude of effects, let us illustrate our results with a concrete example. Consider the case of Belgium and the labor market reforms implemented in 2014. These reforms notably increased the strictness of dismissal rules, primarily by introducing obligations such as providing a reason for dismissal during the notification procedure and eliminating the trial period for workers, among other measures (OECD, 2020). Specifically, the strictness of regulation for individual and collective dismissals of regular workers increased resulting in a change in the indicator from 1.734 in 2014 to 2.067 in 2015, which implies an increase of 0.333 points.

Based on the estimation of self-employment rates using EPL for regular contracts, a 1-point increase in the EPL indicator corresponds to a 2.104 increase in the self-employment rate [17]. Therefore, the increase of 0.333 points in EPL index from 2014 to 2015 associated with the labor reform in Belgium corresponds with an increase in self-employment rate of 0.7% points.

The number of people in Belgium who were self-employed in 2014 was 667 thousand, and the total number of people in employment was 4,563 thousand, resulting in a self-employment rate of 14.61%. Based on previous calculations, the regulatory changes in Belgium would lead to a self-employment rate of 15.31% in 2015. This would mean that, considering the number of people in employment during 2014, approximately 32 thousand individuals would shift from paid-employment to self-employment due to the changes in labor market regulations during this period. Real data shows an absolute value of 695.5 thousand self-employed in 2015, resulting in a self-employment rate of 15.18%.

The results for the remaining control variables generally exhibit the expected sign. These findings provide further evidence for the distinct nature of own-account work and employership (Román *et al.*, 2013). Thus, we can observe that the determinants of own-account work and employership rates may differ (see, for instance, the results related to the sectoral composition, openness, number of patents, inflation, or unemployment).

In summary, our findings contribute to and build upon previous research on the relationship between EPL and self-employment. On one hand, our results emphasizes the

significance of considering the interaction between policy and institutional factors, as suggested by Centeno (2000). On the other hand, our findings align with the research of Poschke (2019) and Baker *et al.* (2018), underscoring the importance of acknowledging the existing heterogeneity within self-employment in order to comprehend the potential influence of regulations as drivers of self-employment.

Specifically, our results suggest that in contexts with a low rule of law, stringent EPL can incentivize firms and workers to seek ways to circumvent the higher costs associated with strict regulations. As a result, individuals are more likely to engage in solo self-employment as an alternative, supporting the *dependent self-employment hypothesis*. Conversely, when the rule of law if high, our results indicate a decrease in own account and self-employment rates, partially supporting the *labor costs hypothesis*.

Results concerning employers are somewhat surprising, showing just a minor positive linear impact of EPL for regular employment. However, this result also can be further understood if we consider that stronger levels of labor regulation might have no real effects as they can induce employers to make workers prepay the severance cost (Lazear, 1990). Lastly, an overly rigid EPL may push the most disadvantaged unemployed individuals in the labor market to turn to self-employment as a last resort due to the lack of opportunities in the paid employment sector, potentially masking the negative impact of EPL on self-employment rates.

## 6. Conclusions

The relationship between labor market rigidities and entrepreneurship has been a topic of debate, with no clear consensus reached. While it is generally accepted that the stringency of EPL can hinder entrepreneurship, there is also a possibility that stringent employment legislation may have unexpected effects on national self-employment rates. This could potentially result in a situation where unemployment and traditional employment are transformed into forms of self-employment or entrepreneurship that are driven by necessity rather than genuine entrepreneurial opportunities.

In this paper, we have undertaken a macro-level examination of this issue using a methodology that deal with model uncertainty, specifically focusing on the interaction between EPL stringency and compliance of rules and differentiating between two forms of self-employment: solo self-employment and employer entrepreneurship.

Our findings indicate a positive association between both aggregate self-employment and solo self-employment rates and EPL for both regular and temporary employment. This positive relationship diminishes as the rule of law strengthens, and it may even turn negative once compliance with the law surpasses a certain threshold.

These results provide valuable insights that enhance our understanding of the mixed and occasionally contentious findings regarding the role of EPL as either an inhibiting or driving force of entrepreneurship. They underscore the importance of considering compliance and the unintended consequences that EPL can have on occupational choices, resulting in distortions in the composition of employment. These findings align with previous studies that have established a connection between regulation and the expansion of the informal sector (Vallanti and Gianfreda, 2021). Moreover, they highlight the significance of comprehending the unintentional consequences of laws by considering their interactions and overlapping effects.

Despite the interest in our results, we acknowledge that they only reflect associations between the degree of effective labor market protection and self-employment rates, without being able to be interpreted in terms of causal relationships. Future research could devise some form of synthetic control across countries to explore causality issues in specific case studies.

Finally, it is important to acknowledge the potential impact of data limitations on our results. Therefore, an intriguing avenue for future research would be to explore whether

different effects emerge when considering other dimensions of heterogeneity within entrepreneurship, such as distinguishing between necessity and opportunity entrepreneurs, formal and informal sectors, or productive and unproductive enterprises, among others. We believe that this line of investigation holds significant promise. Nonetheless, our findings serve as a strong foundation for further investigation into the effects of labor market rigidities, taking into account the enforcement of laws.

## Notes

1. Giupponi and Xu (2020) document that in the post-recession period, the UK has reached record numbers of self-employed workers who are earning lower wages and working longer than other workers.
2. Within this body of literature, numerous studies rely on cross-sectional data and short panel datasets, employing a limited set of controls as predictors of cross-national variations in aggregate self-employment. Consequently, several scholars have expressed significant concerns regarding previous empirical findings that appear contradictory (see, for example, Congregado, 2008).
3. For a recent and detailed discussion on measurement issues and potential consequences in this type of studies, refer to Dvouletý (2018).
4. Doing a selective review of the literature according to the *focus* variable, we find papers focusing on the role of the level of economic development (Pietrobelli *et al.*, 2004; Rodríguez-Santiago, 2022), unemployment (Poschke, 2019), education (Van der Sluis *et al.*, 2005), the degree of openness and foreign trade (Sobel, 2008), the economic freedom (Bjørnskov and Foss, 2008), the role of innovation and technology (Giménez-Nadal *et al.*, 2016), the financial development (Hurst and Lusardi, 2004), the digital adoption (Shapiro and Mandelman, 2021), the role of the macroeconomic environment/stability (Arin *et al.*, 2015) and, the labor market rigidity (Grubb and Wells, 1993; OECD, 1999; Centeno, 2000; Robson, 2003; Torrini, 2005; Baker *et al.*, 2018).
5. GDP per worker, human capital endowments, the relative weight of de different sectors in the economic activity, and some macroeconomic indicators, labor market aggregates, and institutional variables are some of the most common controls.
6. To some extent, this idea is somewhat aligned with the research conducted by Sobel (2008) and Bjørnskov and Foss (2008), among others, on the influence of institutional quality and the rules of the game as factors determining both productive and unproductive entrepreneurship (in the sense defined by Baumol), overall entrepreneurial activity, business ownership rates, and formal and informal entrepreneurship.
7. We thank an anonymous referee for suggesting the inclusion of these hypotheses.
8. Table A1 in the appendix shows a list of the countries on the sample.
9. We are aware, however, that self-employment may represent the response to institutional structures rather than the entrepreneurial dynamism. Previous essays to provide internationally comparable data at the macro-level include the COMPENDIA database (Van Stel, 2005) and the attempt by the Global Entrepreneurship Monitoring Consortium (GEM).
10. Table A2 in the appendix provides the sources and descriptive statistics for the variables included in our analysis. With a focus on the main independent variables, Table A3 presents the mean values for EPL and Rule of Law by country. Figure A1 illustrates the temporal evolution of self-employment rates, employers, and own-account workers by country over the period under review (1996–2019). Finally, Figures A2 to A4 show scatter plots for the years 1996, 2008, and 2019, respectively, offering a descriptive view of the relationship of interest in this study. Each of these figures comprises six panels: on the x-axis, three panels display the EPL variable for regular employment and three for temporary employment; on the y-axis, the panels show self-employment, employers, and own-account rates. The Rule of Law variable is represented by the color scale of the points. This preliminary graphical analysis provides an overview of our data and underscores the relevance of the subsequent inferential analysis.

11. For every country, EPL index elaborated by the OECD is described along with 21 items. Protection of regular workers against individual dismissal includes 9 units. The regulation of temporary forms of employment is described by 8 units. Furthermore, there are 4 additional units to measure protection against collective dismissals. For more information regarding the calculation of summary indicators of EPL strictness, see OECD (1999), The Employment Outlook, Chapter 2, annex 2.B.
12. We use the benchmark BRIC prior and establishes a binomial-beta prior on a prior expected model size of $K/2$. Using the strong heredity priors, we only evaluate models which contain the parent variables when the interaction term is included.
13. Full tables including results of focal and control variables for the different BMA exercises carried out can be consulted in the appendix (Tables A4 to A9). Table A4 presents the results of the BMA exercises for the baseline panel and for the panel that includes the interaction using self-employment rate as dependent variable and EPL for regular employment as focal variable. Then, Table A5 replicates this analysis using EPL for temporary employment. Additionally, Tables A6 and A7 present results for employership rates, while Tables A8 and A9 focus on own-account work rates. For simplicity and focus, Table 2 condenses the results from Tables A4 to A9, showing only the results concerning our focal variables (EPL, rule of law and their interaction).
14. PIP is considered robust when higher than the prior inclusion probability ($\pi$), which is expected model size by the number of variables. For the flat prior over the model space $\widetilde{k} = K/2, \pi = \widetilde{k}/K = 0.5$.
15. This should not come as a surprise, given that the majority of aggregate self-employment consists of solo self-employment. Therefore, it is highly probable that the impact observed in the aggregate self-employment rate is similar to that found in own-account work rates.
16. Results regarding the impact of EPL for regular employment on own account rate also indicate a potential non-linear relationship. However, the turning point in this case is observed at 3.31, suggesting that in our sample, where the maximum rule of law figure is 2.83, the effect is positive.
17. Taking into account the rule of law values for Belgium in 2014, the results based on the specification that includes regular employment EPL and its interaction with the Rule of Law indicate that a 1-point increase in the EPL indicator corresponds to a 1.764 percentage point increase in the self-employment rate.

## References

Aparicio, S., Urbano, D. and Audretsch, D. (2016), "Institutional factors, opportunity entrepreneurship and economic growth: panel data evidence", *Technological Forecasting and Social Change*, Vol. 102, pp. 45-61.

Arin, K.P., Huang, V.Z., Minniti, M., Nandialath, A.M. and Reich, O.F. (2015), "Revisiting the determinants of entrepreneurship: a Bayesian approach", *Journal of Management*, Vol. 41 No. 2, pp. 607-631, doi: 10.1177/0149206314558488.

Baker, M., Égert, B., Fulop, G. and Mourougane, A. (2018), "To what extent do policies contribute to self-employment?", OECD Economic Department Working Papers, (1512), pp. 1-31.

Bjørnskov, C. and Foss, N.J. (2008), "Economic freedom and entrepreneurial activity: some cross-country evidence", *Public Choice*, Vol. 134 No. 3, pp. 307-328, doi: 10.1007/s11127-007-9229-y.

Blanchflower, D.G. and Shadforth, C. (2007), "Entrepreneurship in the UK", *Foundations and Trends in Entrepreneurship*, Vol. 3 No. 4, pp. 257-364, doi: 10.1561/0300000017.

Boeri, T., Giupponi, G., Krueger, A.B. and Machin, S. (2020), "Solo self-employment and alternative work arrangements: a cross-country perspective on the changing composition of jobs", *The Journal of Economic Perspectives*, Vol. 34 No. 1, pp. 170-195, doi: 10.1257/jep.34.1.170.

Borowczyk-Martins, D. and Lalé, E. (2020), "The ins and outs of involuntary part-time employment", *Labour Economics*, Vol. 67, 101940, doi: 10.1016/j.labeco.2020.101940.

Centeno, M. (2000), "Is self-employment a response to labour market rigidity?", *Economic Bulletin*, pp. 37-44, December.

Chipman, H. (1996), "Bayesian variable selection with related predictors", *Canadian Journal of Statistics*, Vol. 24 No. 1, pp. 17-36, doi: 10.2307/3315687.

Congregado, E. (2008), *Measuring Entrepreneurship: Building a Statistical System*, 16th ed., Springer Science & Business Media, New York, NY.

Congregado, E., de Andrés, M.I., Nolan, E. and Román, C. (2022), "Heterogeneity among self-employed digital platform workers. Evidence from Europe", *International Review of Entrepreneurship*, Vol. 20 No. 1, pp. 45-68.

Crespo-Cuaresma, J. (2011), "How different is Africa? A comment on Masanjala and Papageorgiou", *Journal of Applied Econometrics*, Vol. 26 No. 6, pp. 1041-1047, doi: 10.1002/jae.1180.

Dvouletý, O. (2018), "How to analyse determinants of entrepreneurship and self-employment at the country level? A methodological contribution", *Journal of Business Venturing Insights*, Vol. 9, pp. 92-99, doi: 10.1016/j.jbvi.2018.03.002.

Fairlie, R.W. and Fossen, F.M. (2020), "Defining opportunity versus necessity entrepreneurship: two components of business creation", in Polachek, S.W. and Tatsiramos, K. (Eds), *Change at Home, in the Labor Market, and on the Job*, Emerald Publishing, Bingley, pp. 253-289.

Fernández, C., Ley, E. and Steel, M.F. (2001a), "Benchmark priors for Bayesian model averaging", *Journal of Econometrics*, Vol. 100 No. 2, pp. 381-427, doi: 10.1016/s0304-4076(00)00076-2.

Fernández, C., Ley, E. and Steel, M.F. (2001b), "Model uncertainty in cross-country growth regressions", *Journal of Applied Econometrics*, Vol. 16 No. 5, pp. 563-576, doi: 10.1002/jae.623.

George, E.I. (1999), "Discussion of Bayesian model averaging and model search strategies by M. A. Clyde", *Bayesian Statistics*, Vol. 6, pp. 175-177.

Giménez-Nadal, J.I., Lafuente, M., Molina, J.A. and Velilla, J. (2016), "Resampling and bootstrap to assess the relevance of variables: a new algorithmic approach with applications to entrepreneurship data", (No. 9938). IZA Discussion Papers.

Giupponi, G. and Xu, X. (2020), *What Does the Rise of Self-Employment Tell Us about the UK Labour Market?*, Institute of Fiscal Studies, London.

Grubb, D. and Wells, W. (1993), "Employment regulation and patterns of work in EC countries", in *OECD Economic Studies*, p. 7.

Henley, A. (2023), "Is rising self-employment associated with material deprivation in the UK?", *Work, Employment and Society*, Vol. 37 No. 5, pp. 1395-1418.

Hurst, E. and Lusardi, A. (2004), "Liquidity constraints, household wealth, and entrepreneurship", *Journal of Political Economy*, Vol. 112 No. 2, pp. 319-347, doi: 10.1086/381478.

Kanniainen, K. and Vesala, T. (2005), "Entrepreneurship and labor market institutions", *Economic Modelling*, Vol. 22 No. 5, pp. 828-847, doi: 10.1016/j.econmod.2005.05.002.

Kirzner, I. (1979), "Producer, entrepreneur, and the right to property", in *Perception, Opportunity, and Profit*, University of Chicago Press, Chicago, pp. 185-199.

Knight, F.K. (1921), *Risk, Uncertainty, and Profit*, Houghton Mifflin, Boston.

Lazear, E.P. (1990), "Job security provisions and employment", *Quarterly Journal of Economics*, Vol. 105 No. 3, pp. 699-726, doi: 10.2307/2937895.

Leibenstein, H. (1968), "Entrepreneurship and development", *The American Economic Review*, Vol. 58 No. 2, pp. 72-83.

Ley, E. and Steel, M.F. (2009), "On the effect of prior assumptions in Bayesian model averaging with applications to growth regression", *Journal of Applied Econometrics*, Vol. 24 No. 4, pp. 651-674, doi: 10.1002/jae.1057.

Molina, J.A. (2020), "Family and entrepreneurship: new empirical and theoretical results", *Journal of Family and Economic Issues*, Vol. 41 No. 1, pp. 1-3, doi: 10.1007/s10834-020-09667-y.

Moral-Benito, E. (2012), "Determinants of economic growth: a Bayesian panel data approach", *The Review of Economics and Statistics*, Vol. 94 No. 2, pp. 566-579, doi: 10.1162/rest_a_00154.

Muehlberger, U. (2007), "Dependent self-employment", in *Workers on the Border between Employment and Self-Employment*, Palgrave-McMillan.

OECD (1999), "The employment outlook", OECD, Paris.

OECD (2020), "Recent trends in employment protection legislation", in *OECD Employment Outlook 2020: Worker Security and the COVID-19 Crisis*, OECD Publishing, Paris.

Pietrobelli, C., Rabellotti, R. and Aquilina, M. (2004), "An empirical study of the determinants of self-employment in developing countries", *Journal of International Development*, Vol. 16 No. 6, pp. 803-820, doi: 10.1002/jid.1117.

Poschke, M. (2019), "Wage employment, unemployment and self-employment across countries", IZA Working Paper DP No. 12367.

Raftery, A.E. (1995), "Bayesian model selection in social research", *Sociological Methodology*, Vol. 25, pp. 111-163, doi: 10.2307/271063.

Robson, M.T. (2003), "Does stricter employment protection legislation promote self-employment?", *Small Business Economics*, Vol. 21 No. 3, pp. 309-319, doi: 10.1023/a:1025742423308.

Rodríguez-Santiago, A. (2022), "Re-evaluating the relationship between economic development and self-employment, at the macro-level: a Bayesian model averaging approach", *International Journal of Interactive Multimedia and Artificial Intelligence*, Vol. 7 No. 3, p. 20, doi: 10.9781/ijimai.2022.01.007.

Román, C., Congregado, E. and Millán, J.M. (2011), "Dependent self-employment as a way to evade employment protection legislation", *Small Business Economics*, Vol. 37 No. 3, pp. 363-392, doi: 10.1007/s11187-009-9241-3.

Román, C., Congregado, E. and Millán, J.M. (2013), "Start-up incentives: entrepreneurship policy or active labour market programme?", *Journal of Business Venturing*, Vol. 28 No. 1, pp. 151-175, doi: 10.1016/j.jbusvent.2012.01.004.

Schumpeter, J.A. (1939), *Business Cycles*, McGraw-Hill, New York.

Shapiro, A.F. and Mandelman, F.S. (2021), "Digital adoption, automation, and labor markets in developing countries", *Journal of Development Economics*, Vol. 151, 102656, doi: 10.1016/j.jdeveco.2021.102656.

Sobel, R.S. (2008), "Testing Baumol: institutional quality and the productivity of entrepreneurship", *Journal of Business Venturing*, Vol. 23 No. 6, pp. 641-655, doi: 10.1016/j.jbusvent.2008.01.004.

Taylor, M.P. (2004), "Self-employment in Britain: when, who and why?", *Swedish Economic Policy Review*, Vol. 11, pp. 139-173.

Torrini, R. (2005), "Cross-country differences in self-employment rates: the role of institutions", *Labour Economics*, Vol. 12 No. 5, pp. 661-683, doi: 10.1016/j.labeco.2004.02.010.

Valdez, M.E. and Richardson, J. (2013), "Institutional determinants of macro-level entrepreneurship", *Entrepreneurship Theory and Practice*, Vol. 37 No. 5, pp. 1149-1175, doi: 10.1111/etap.12000.

Vallanti, G. and Gianfreda, G. (2021), "Informality, regulation and productivity: do small firms escape EPL through shadow employment?", *Small Business Economics*, Vol. 57 No. 3, pp. 1383-1412, doi: 10.1007/s11187-020-00353-9.

Valletta, R.G., Bengali, L. and Van der List, C. (2020), "Cyclical and market determinants of involuntary part-time employment", *Journal of Labor Economics*, Vol. 38 No. 1, pp. 67-93, doi: 10.1086/704496.

Van der Sluis, J., Van Praag, M. and Vijverberg, W. (2005), "Entrepreneurship selection and performance: a meta-analysis of the impact of education in developing economies", *The World Bank Economic Review*, Vol. 19 No. 2, pp. 225-261, doi: 10.1093/wber/lhi013.

Van Stel, A. (2005), "COMPENDIA: harmonizing business ownership data across countries and over time", *The International Entrepreneurship and Management Journal*, Vol. 1 No. 1, pp. 105-123, doi: 10.1007/s11365-005-6678-y.

Zellner, A. (1986), "Bayesian estimation and prediction using asymmetric loss functions", *Journal of the American Statistical Association*, Vol. 81 No. 394, pp. 446-451, doi: 10.2307/2289234.



## Appendix

**Table A1.**
OECD countries on the sample

| Country | Code | Country | Code | Country | Code | Country | Code |
|---|---|---|---|---|---|---|---|
| Australia | AUS | France | FRA | Korea, Rep. | KOR | Slovak Republic | SVK |
| Austria | AUT | Germany | DEU | Mexico | MEX | Spain | ESP |
| Belgium | BEL | Greece | GRC | Netherlands | NLD | Sweden | SWE |
| Canada | CAN | Hungary | HUN | New Zealand | NZL | Switzerland | CHE |
| Czech Republic | CZE | Ireland | IRL | Norway | NOR | Turkey | TUR |
| Denmark | DNK | Italy | ITA | Poland | POL | United Kingdom | GBR |
| Finland | FIN | Japan | JPN | Portugal | PRT | United States | USA |

**Source(s):** Table created by authors

| | Code | Source | Mean | Min | Max |
|---|---|---|---|---|---|
| Dependent variables | | | | | |
| Self-employed workers (% of total employment) | SE | ILOSTAT | 18.03 | 6.22 | 49.95 |
| Employers (% of total employment) | EMP | ILOSTAT | 4.65 | 1.37 | 8.34 |
| Own-account workers (% of total employment) | OWN | ILOSTAT | 11.20 | 3.84 | 26.79 |
| Independent variables | | | | | |
| *GDP and components* | | | | | |
| Log GDP per capita, PPP (constant 2017 $) | GDP | World Bank | 10.54 | 9.49 | 11.37 |
| Agriculture, forestry, and fishing (% of GDP) | AGR | World Bank | 2.46 | 0.55 | 16.85 |
| Industry, including construction (% of GDP) | IND | World Bank | 25.78 | 13.68 | 40.29 |
| Services (% of GDP) | SER | World Bank | 62.29 | 48.16 | 77.66 |
| Trade openness: Exports + Imports (% of GDP) | OPN | World Bank | 81.97 | 18.35 | 239.22 |
| *Population* | | | | | |
| Rural population (% of total population) | RUR | World Bank | 24.05 | 1.96 | 48.23 |
| *Technological progress* | | | | | |
| Patents applications, per million people | PAT | WIPO | 671.20 | 3.52 | 4212.02 |
| Individuals using the internet (% of population) | INT | World Bank | 56.95 | 0.19 | 98.05 |
| *Human capital* | | | | | |
| Human Capital Index | HUC | Penn World Tables | 3.21 | 1.88 | 3.85 |
| *Labor market* | | | | | |
| Labor force participation rate, female | LFF | World Bank | 51.47 | 23.05 | 64.83 |
| Unemployment (% of total labor force) | UNE | World Bank | 7.54 | 1.93 | 27.47 |
| Unemployment, youth (% of labor force 15-24yo) | UNY | World Bank | 16.70 | 3.58 | 58.00 |
| *Institutions* | | | | | |
| Inflation, GDP deflator | INF | World Bank | 3.24 | −5.21 | 143.64 |
| Government final consumption expenditure (% of GDP) | GOV | World Bank | 18.95 | 8.12 | 27.94 |
| Rule of Law | ROL | World Governance Indicators | 2.02 | 0.00 | 2.83 |
| EPL for regular employment | EPLR | OECD | 2.17 | 0.09 | 4.58 |
| EPL for temporary employment | EPLT | OECD | 1.71 | 0.13 | 4.88 |

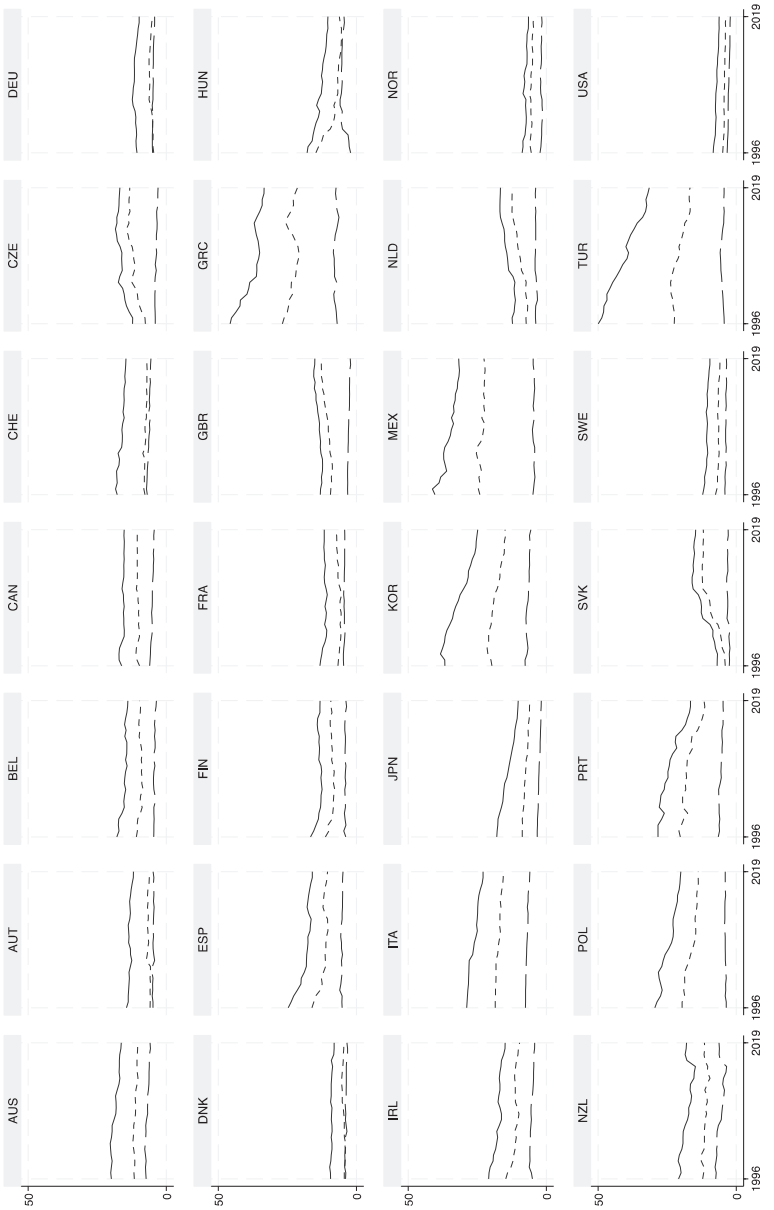
**Source(s):** Table created by authors

**Table A2.** Variables description, sources and descriptive statistics

**Table A3.**
EPL for regular employment, EPL for temporary employment and rule of law -mean values by country – 1996–2019

| Country | EPLR | EPLT | ROL | Country | EPLR | EPLT | ROL |
|---|---|---|---|---|---|---|---|
| AUS | 1.479 | 0.875 | 2.498 | IRL | 1.215 | 0.500 | 2.352 |
| AUT | 2.396 | 1.313 | 2.585 | ITA | 2.918 | 2.469 | 1.277 |
| BEL | 1.773 | 2.391 | 2.089 | JPN | 1.522 | 1.018 | 2.094 |
| CAN | 0.587 | 0.250 | 2.485 | KOR | 2.472 | 2.250 | 1.692 |
| CHE | 1.428 | 1.250 | 2.622 | MEX | 2.272 | 3.435 | 0.226 |
| CZE | 3.458 | 1.010 | 1.667 | NLD | 3.307 | 1.034 | 2.531 |
| DEU | 2.595 | 1.438 | 2.399 | NOR | 2.333 | 2.901 | 2.676 |
| DNK | 1.492 | 1.438 | 2.645 | NZL | 1.687 | 0.870 | 2.611 |
| ESP | 2.234 | 2.932 | 1.896 | POL | 2.325 | 1.271 | 1.373 |
| FIN | 2.114 | 1.536 | 2.707 | PRT | 4.050 | 2.341 | 1.886 |
| FRA | 2.565 | 3.104 | 2.159 | SVK | 2.832 | 1.500 | 1.180 |
| GBR | 1.435 | 0.339 | 2.432 | SWE | 2.468 | 1.139 | 2.629 |
| GRC | 2.882 | 3.240 | 1.357 | TUR | 3.004 | 4.789 | 0.702 |
| HUN | 1.882 | 1.000 | 1.494 | USA | 0.093 | 0.250 | 2.305 |

**Source(s):** Table created by authors




**Note(s):** SE, self-employment rate; EMP, employer rate; OWN, own account rate.
**Source(s):** Figure created by authors

**Figure A1.**
Self-employment, employer and own-account work rates – 1996–2019

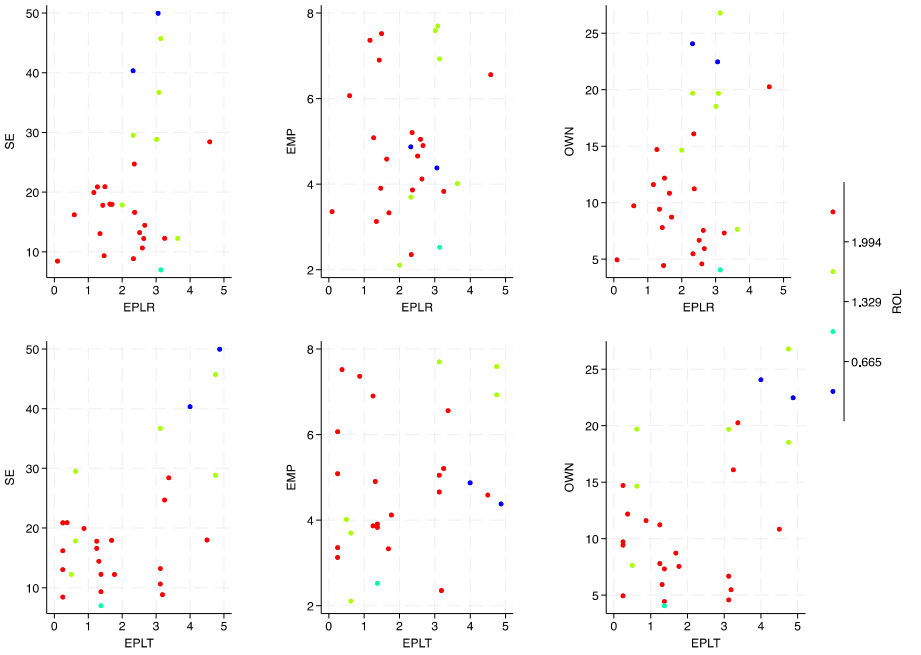
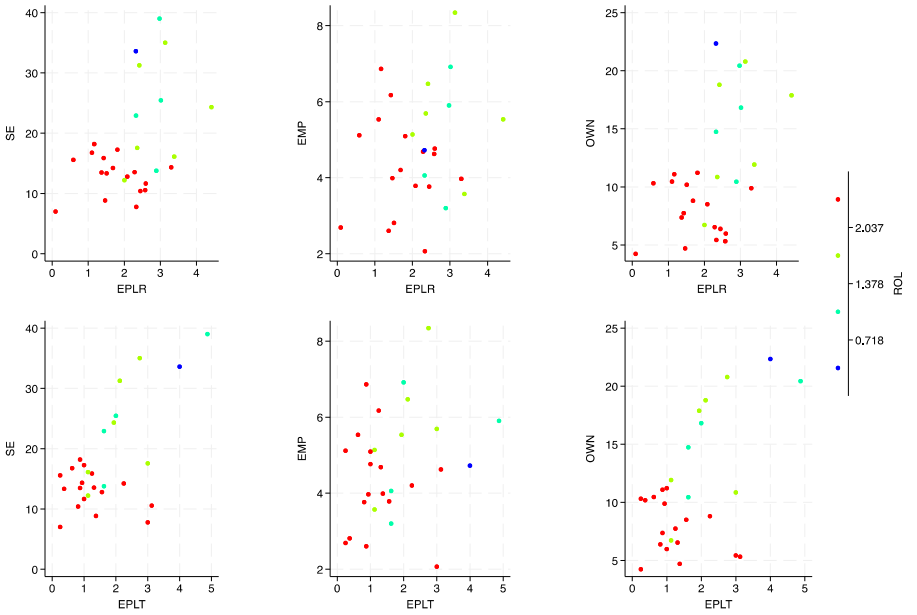



**Figure A2.**
Scatter plots on the relationship between ELP, self-employment and rule of law – 1996

**Note(s):** SE, self-employment rate; EMP, employer rate; OWN, own account rate; EPLR, EPL for regular employment; EPLT, EPL for temporary employment
**Source(s):** Figure created by authors




**Note(s):** SE, self-employment rate; EMP, employer rate; OWN, own account rate; EPLR, EPL for regular employment; EPLT, EPL for temporary employment
**Source(s):** Figure created by authors

**Figure A3.**
Scatter plots on the relationship between ELP, self-employment and rule of law – 2008

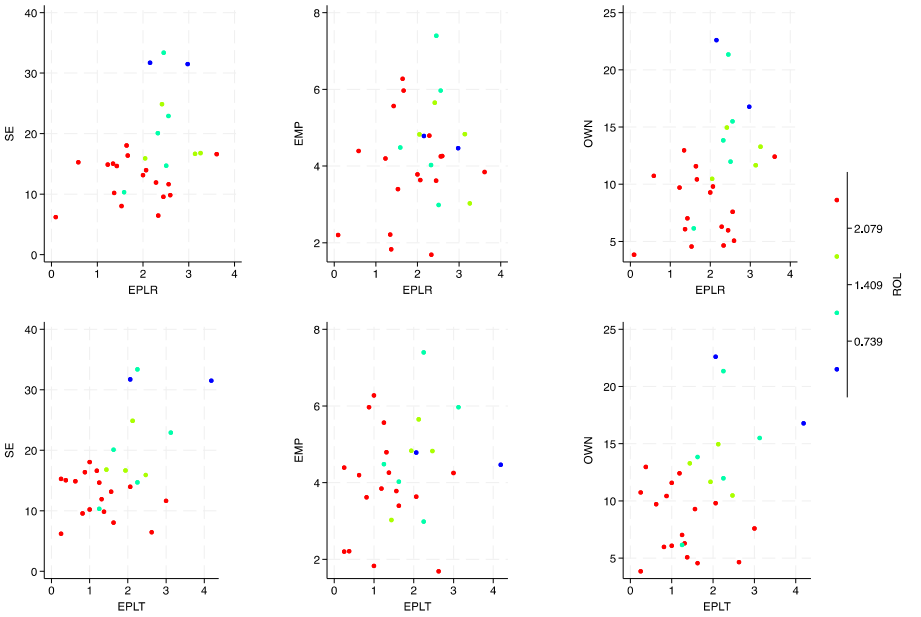



**Figure A4.**
Scatter plots on the relationship between ELP, self-employment and rule of law – 2019

**Note(s):** SE, self-employment rate; EMP, employer rate; OWN, own account rate; EPLR, EPL for regular employment; EPLT, EPL for temporary employment
**Source(s):** Figure created by authors

| | Baseline | | | | Interaction | | |
|---|---|---|---|---|---|---|---|
| | PIP | M | SD | | PIP | M | SD |
| GDP | 0.31 | 0.893 | 8.60 | GDP | 0.48 | 1.660 | 11.59 |
| GDP2 | 0.33 | –0.099 | 0.42 | GDP2 | *0.52* | –0.192 | 0.56 |
| AGR | *1.00* | 0.949*** | 0.19 | AGR | *0.99* | 0.685*** | 0.20 |
| IND | *1.00* | –0.412*** | 0.11 | IND | *1.00* | –0.437*** | 0.10 |
| SER | *0.92* | –0.233** | 0.10 | SER | *0.99* | –0.271*** | 0.08 |
| RUR | *1.00* | –0.136*** | 0.02 | RUR | *1.00* | –0.155*** | 0.02 |
| OPN | 0.34 | –0.003 | 0.00 | OPN | 0.17 | 0.000 | 0.00 |
| PAT | *0.98* | 0.001*** | 0.00 | PAT | *1.00* | 0.001*** | 0.00 |
| INT | 0.17 | 0.001 | 0.01 | INT | 0.26 | 0.003 | 0.01 |
| HUC | *1.00* | –4.150*** | 0.72 | HUC | *1.00* | –4.507*** | 0.70 |
| INF | 0.13 | –0.002 | 0.01 | INF | 0.25 | –0.008 | 0.02 |
| GOV | *1.00* | –1.124*** | 0.08 | GOV | *1.00* | –1.110*** | 0.08 |
| LFF | *0.71* | –0.075 | 0.06 | LFF | *0.89* | –0.103* | 0.05 |
| UNE | *0.94* | –0.372** | 0.15 | UNE | *0.99* | –0.433*** | 0.13 |
| UNY | *1.00* | 0.244*** | 0.07 | UNY | *1.00* | 0.260*** | 0.06 |
| ROL | *0.96* | –2.599*** | 0.99 | ROL | *1.00* | 4.395*** | 1.66 |
| EPLR | *1.00* | 2.104*** | 0.28 | EPLR | *1.00* | 8.040*** | 1.23 |
| | | | | EPLR#ROL | *1.00* | –2.789*** | 0.56 |

**Table A4.**
BMA results. Self-Employment rates - EPL regular contracts

**Note(s):** PIP, Posterior inclusion probability; M, mean of the posterior distribution parameter; SD, posterior standard deviation of the parameter. Italic entries refer to variables with PIP>0.5. *, $p < 0.10$; **, $p < 0.05$; ***, $p < 0.01$
**Source(s):** Table created by authors

| | Baseline | | | | Interaction | | |
|---|---|---|---|---|---|---|---|
| | PIP | M | SD | | PIP | M | SD |
| GDP | *0.63* | 25.214 | 33.90 | GDP | *0.92* | 66.036* | 35.05 |
| GDP2 | *0.69* | –1.325 | 1.63 | GDP2 | *0.95* | –3.338** | 1.68 |
| AGR | *1.00* | 0.886*** | 0.20 | AGR | *0.96* | 0.568*** | 0.22 |
| IND | *1.00* | –0.454*** | 0.10 | IND | *1.00* | –0.447*** | 0.10 |
| SER | *0.97* | –0.282*** | 0.10 | SER | *1.00* | –0.319*** | 0.08 |
| RUR | *0.93* | –0.065** | 0.03 | RUR | 0.36 | –0.013 | 0.02 |
| OPN | 0.18 | –0.001 | 0.00 | OPN | 0.13 | 0.000 | 0.00 |
| PAT | *1.00* | 0.002*** | 0.00 | PAT | *1.00* | 0.002*** | 0.00 |
| INT | 0.14 | 0.000 | 0.00 | INT | 0.19 | –0.002 | 0.01 |
| HUC | *1.00* | –5.105*** | 0.80 | HUC | *1.00* | –4.137*** | 0.73 |
| INF | 0.17 | –0.004 | 0.02 | INF | 0.25 | –0.009 | 0.02 |
| GOV | *1.00* | –0.914*** | 0.08 | GOV | *1.00* | –0.811*** | 0.08 |
| LFF | 0.28 | –0.018 | 0.04 | LFF | 0.20 | –0.008 | 0.03 |
| UNE | *1.00* | –0.499*** | 0.13 | UNE | *1.00* | –0.653*** | 0.12 |
| UNY | *1.00* | 0.273*** | 0.06 | UNY | *1.00* | 0.374*** | 0.06 |
| ROL | *1.00* | –3.080*** | 0.79 | ROL | *1.00* | 1.046 | 0.89 |
| EPLT | *0.93* | 0.735** | 0.32 | EPLT | *1.00* | 4.216*** | 0.58 |
| | | | | EPLT#ROL | *1.00* | –1.773*** | 0.28 |

**Note(s):** PIP, Posterior inclusion probability; M, mean of the posterior distribution parameter; SD, posterior standard deviation of the parameter. Italic entries refer to variables with PIP>0.5. *, $p < 0.10$; **, $p < 0.05$; ***, $p < 0.01$

**Source(s):** Table created by authors

**Table A5.** BMA results. Self-employment rates – EPL temporary contracts

| | Baseline | | | | Interaction | | |
|---|---|---|---|---|---|---|---|
| | PIP | M | SD | | PIP | M | SD |
| GDP | *1.00* | 50.309*** | 6.97 | GDP | *1.00* | 50.379*** | 6.95 |
| GDP2 | *1.00* | –2.350*** | 0.33 | GDP2 | *1.00* | –2.355*** | 0.33 |
| AGR | *0.99* | 0.193*** | 0.05 | AGR | *0.99* | 0.184*** | 0.06 |
| IND | *1.00* | –0.162*** | 0.03 | IND | *1.00* | –0.164*** | 0.03 |
| SER | *1.00* | –0.086*** | 0.02 | SER | *1.00* | –0.088*** | 0.02 |
| RUR | 0.37 | –0.004 | 0.01 | RUR | 0.48 | –0.006 | 0.01 |
| OPN | *0.87* | 0.003* | 0.00 | OPN | *0.89* | 0.004** | 0.00 |
| PAT | *0.91* | 0.000** | 0.00 | PAT | *0.92* | 0.000** | 0.00 |
| INT | *1.00* | –0.012*** | 0.00 | INT | *1.00* | –0.012*** | 0.00 |
| HUC | 0.15 | –0.019 | 0.08 | HUC | 0.21 | –0.041 | 0.12 |
| INF | *0.99* | –0.029*** | 0.01 | INF | *0.99* | –0.030*** | 0.01 |
| GOV | *1.00* | –0.239*** | 0.02 | GOV | *1.00* | –0.238*** | 0.02 |
| LFF | 0.16 | 0.001 | 0.01 | LFF | 0.20 | 0.002 | 0.01 |
| UNE | 0.22 | –0.001 | 0.02 | UNE | 0.25 | –0.002 | 0.02 |
| UNY | *0.91* | 0.021** | 0.01 | UNY | *0.91* | 0.021* | 0.01 |
| ROL | 0.13 | –0.010 | 0.07 | ROL | 0.46 | 0.369 | 0.53 |
| EPLR | *1.00* | 0.263*** | 0.07 | EPLR | *1.00* | 0.619 | 0.49 |
| | | | | EPLR#ROL | 0.39 | –0.165 | 0.23 |

**Note(s):** PIP, Posterior inclusion probability; M, mean of the posterior distribution parameter; SD, posterior standard deviation of the parameter. Italic entries refer to variables with PIP>0.5. *, $p < 0.10$; **, $p < 0.05$; ***, $p < 0.01$

**Source(s):** Table created by authors

**Table A6.** BMA results. Employership rates – EPL regular contracts

| | Baseline | | | | Interaction | | |
|---|---|---|---|---|---|---|---|
| | PIP | M | SD | | PIP | M | SD |
| GDP | *1.00* | 53.179*** | 7.06 | GDP | *1.00* | 53.153*** | 7.09 |
| GDP2 | *1.00* | –2.492*** | 0.34 | GDP2 | *1.00* | –2.491*** | 0.34 |
| AGR | *0.98* | 0.180*** | 0.06 | AGR | *0.97* | 0.178*** | 0.06 |
| IND | *1.00* | –0.172*** | 0.03 | IND | *1.00* | –0.173*** | 0.03 |
| SER | *1.00* | –0.102*** | 0.02 | SER | *1.00* | –0.103*** | 0.02 |
| RUR | 0.12 | 0.000 | 0.00 | RUR | 0.10 | 0.000 | 0.00 |
| OPN | *0.88* | 0.003* | 0.00 | OPN | *0.85* | 0.003* | 0.00 |
| PAT | *0.98* | 0.000*** | 0.00 | PAT | *0.98* | 0.000*** | 0.00 |
| INT | *1.00* | –0.012*** | 0.00 | INT | *1.00* | –0.012*** | 0.00 |
| HUC | *0.62* | –0.249 | 0.24 | HUC | *0.57* | –0.228 | 0.24 |
| INF | *0.99* | –0.029*** | 0.01 | INF | *0.98* | –0.029*** | 0.01 |
| GOV | *1.00* | –0.220*** | 0.02 | GOV | *1.00* | –0.221*** | 0.02 |
| LFF | 0.17 | 0.002 | 0.01 | LFF | 0.13 | 0.001 | 0.01 |
| UNE | 0.26 | –0.007 | 0.02 | UNE | 0.22 | –0.006 | 0.02 |
| UNY | *0.94* | 0.023* | 0.01 | UNY | *0.93* | 0.022* | 0.01 |
| ROL | 0.24 | –0.059 | 0.14 | ROL | 0.21 | –0.051 | 0.13 |
| EPLT | 0.14 | –0.004 | 0.03 | EPLT | 0.12 | –0.004 | 0.03 |
| | | | | EPLT#ROL | 0.01 | 0.000 | 0.01 |

**Table A7.**
BMA results. Employership rates – EPL temporary contracts

**Note(s):** PIP, Posterior inclusion probability; M, mean of the posterior distribution parameter; SD, posterior standard deviation of the parameter. Italic entries refer to variables with PIP>0.5. *, $p < 0.10$; **, $p < 0.05$; ***, $p < 0.01$

**Source(s):** Table created by authors

| | Baseline | | | | Interaction | | |
|---|---|---|---|---|---|---|---|
| | PIP | M | SD | | PIP | M | SD |
| GDP | *0.66* | 17.336 | 24.27 | GDP | *0.64* | 15.553 | 23.74 |
| GDP2 | *0.79* | –1.014 | 1.17 | GDP2 | *0.77* | –0.935 | 1.14 |
| AGR | 0.34 | 0.084 | 0.15 | AGR | 0.26 | 0.048 | 0.11 |
| IND | *0.95* | –0.165* | 0.09 | IND | *0.93* | –0.168* | 0.09 |
| SER | *0.60* | –0.072 | 0.07 | SER | *0.71* | –0.087 | 0.07 |
| RUR | *1.00* | –0.096*** | 0.02 | RUR | *1.00* | –0.102*** | 0.02 |
| OPN | 0.11 | 0.000 | 0.00 | OPN | 0.13 | 0.000 | 0.00 |
| PAT | *0.54* | 0.000 | 0.00 | PAT | 0.41 | 0.000 | 0.00 |
| INT | *0.65* | 0.010 | 0.01 | INT | *0.78* | 0.012 | 0.01 |
| HUC | *1.00* | –2.694*** | 0.55 | HUC | *1.00* | –2.991*** | 0.55 |
| INF | 0.41 | –0.016 | 0.02 | INF | *0.71* | –0.034 | 0.03 |
| GOV | *1.00* | –0.724*** | 0.06 | GOV | *1.00* | –0.697*** | 0.06 |
| LFF | 0.18 | –0.001 | 0.02 | LFF | 0.14 | 0.000 | 0.01 |
| UNE | *1.00* | –0.487*** | 0.09 | UNE | *1.00* | –0.491*** | 0.08 |
| UNY | *1.00* | 0.281*** | 0.04 | UNY | *1.00* | 0.277*** | 0.04 |
| ROL | *0.88* | –1.186* | 0.61 | ROL | *1.00* | 1.791 | 1.20 |
| EPLR | *1.00* | 1.570*** | 0.20 | EPLR | *1.00* | 4.318*** | 1.01 |
| | | | | EPLR#ROL | *0.96* | –1.303*** | 0.47 |

**Table A8.**
BMA results. Own-account work rates – EPL regular contracts

**Note(s):** PIP, Posterior inclusion probability; M, mean of the posterior distribution parameter; SD, posterior standard deviation of the parameter. Italic entries refer to variables with PIP>0.5. *, $p < 0.10$; **, $p < 0.05$; ***, $p < 0.01$

**Source(s):** Table created by authors

| | Baseline | | | | Interaction | | |
|---|---|---|---|---|---|---|---|
| | PIP | M | SD | | PIP | M | SD |
| GDP | *0.93* | 55.042** | 26.86 | GDP | *0.96* | 61.637** | 25.82 |
| GDP2 | *0.96* | –2.808** | 1.29 | GDP2 | *0.98* | –3.140** | 1.24 |
| AGR | 0.31 | 0.092 | 0.17 | AGR | 0.26 | 0.054 | 0.13 |
| IND | *0.80* | –0.166 | 0.11 | IND | *0.61* | –0.107 | 0.10 |
| SER | *0.75* | –0.123 | 0.08 | SER | *0.58* | –0.088 | 0.09 |
| RUR | *0.97* | –0.055*** | 0.02 | RUR | *0.58* | –0.023 | 0.02 |
| OPN | 0.09 | 0.000 | 0.00 | OPN | 0.11 | 0.000 | 0.00 |
| PAT | 0.10 | 0.000 | 0.00 | PAT | 0.13 | 0.000 | 0.00 |
| INT | *0.71* | 0.011 | 0.01 | INT | *0.51* | 0.007 | 0.01 |
| HUC | *1.00* | –4.115*** | 0.56 | HUC | *1.00* | –3.420*** | 0.59 |
| INF | 0.36 | –0.016 | 0.03 | INF | *0.68* | –0.036 | 0.03 |
| GOV | *1.00* | –0.561*** | 0.07 | GOV | *1.00* | –0.472*** | 0.07 |
| LFF | 0.16 | 0.006 | 0.02 | LFF | 0.26 | 0.012 | 0.03 |
| UNE | *1.00* | –0.547*** | 0.09 | UNE | *1.00* | –0.641*** | 0.09 |
| UNY | *1.00* | 0.290*** | 0.04 | UNY | *1.00* | 0.347*** | 0.04 |
| ROL | *1.00* | –1.948*** | 0.47 | ROL | *1.00* | 0.087 | 0.73 |
| EPLT | 0.09 | 0.010 | 0.06 | EPLT | *0.99* | 1.832*** | 0.46 |
| | | | | EPLT#ROL | *0.99* | –0.888*** | 0.22 |

**Note(s):** PIP, Posterior inclusion probability; M, mean of the posterior distribution parameter; SD, posterior standard deviation of the parameter. Italic entries refer to variables with PIP>0.5. *, $p < 0.10$; **, $p < 0.05$; ***, $p < 0.01$

**Source(s):** Table created by authors

**Table A9.** BMA results. Own-account work rates – EPL temporary contracts

**Corresponding author**
Concepción Román can be contacted at: concepcion.roman@dege.uhu.es