

Annual Report on European SMEs 2016/2017

Focus on self-employment

SME Performance Review 2016/2017

Contract number: EASME/COSME/2016/010

Working Paper

November 2017

This Working Paper accompanying the 2016/2017 Annual Report on European SMEs was prepared in 2017 for the European Commission, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs; Directorate H: COSME Programme; Unit H1: COSME Programme, SME Envoys and Relations with EASME by the consortium composed of:

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1. Introduction

The present Working Paper is a companion document to the 2016/17 SME Annual Report and provides :

1. An overview of the academic literature on the drivers and impacts of self-employment (Chapter 2);
2. The findings from a number of case studies on the challenges and benefits of self-employment as viewed by self-employed themselves (Chapter 3);
3. The results of an econometric analysis aiming to identify factors which explain differences in self-employment rates among EU-28 Member States (Chapter 4);
4. The results of an econometric analysis which focuses on the impact of self-employment on economic activity (Chapter 5).

2. Literature Review

2.1 Self-Employment and entrepreneurship

This literature review focuses on self-employment, entrepreneurship and job creation.

We discuss first how the concept of self-employment overlaps with that of entrepreneurship, including in terms of the impact on growth and employment, and then focus on the main drivers of self-employment. We conclude the review with a section presenting a number of entrepreneurship policy considerations.¹

In relatively recent economic and policy literature, the assumption that self-employment means entrepreneurship *tout court* has resulted in some misleading conclusions. Entrepreneurship generation has been much investigated over the last two decades, mostly after the financial crisis in 2008. In the last twenty years, evidence shows that EU Member States promoted policies to increase the entrepreneurial capital, not only in order to achieve a socially desirable outcome (stability via employment generation), but also because entrepreneurship was seen as a crucial determinant of economic growth due to its impacts on innovation and competitive advantage (Audretsch et al., 2002).

While a number of recent empirical studies found that entrepreneurship is a driver of growth and prosperity (Lazears, 2004, p.1; van Praag, 2007; Parker, 2009; Carree & Thurik, 2010; Terjesen & Wang, 2013; Prieger et al. 2016), emerging evidence started to suggest that self-employment and entrepreneurship are distinct concepts which, according to the conditions and characteristics of those entering self-employment, can generate different economic outcomes.

The distinction between entrepreneurship and self-employment has been for a long time an under-investigated topic. In particular, the two terms have been used synonymously within a narrative where the entrepreneurs/self-employed create new businesses which would lead to the creation of new jobs, boost competitiveness and eventually productivity. However, more recent studies examined how high levels of entrepreneurship may in fact mean something entirely different when one takes into consideration the stylised facts about self-employment (Acs 2006). For example, a high level of entrepreneurship/self-employment may be caused by administrative or institutional barriers to the creation of new jobs and a lack of capacity of established businesses to pursue further employment growth. Thus, in some cases, high levels of self-employment and entrepreneurship may be associated with weak economic prospects.

Taking account of different economy economic contexts, Acs (2006) distinguishes between 'necessity entrepreneurship' and 'opportunity entrepreneurship':

- in the first case, self-employment is taken up out of necessity due to a lack or decline in employment options; while,
- in the case of opportunity entrepreneurship, the status of self-employed is a key feature of the creation of a new venture for the exploitation of business opportunities.

Thus, it is the ratio of opportunity entrepreneurship to necessity entrepreneurship that should be considered as the key variable for understanding the direction of economic change associated with changes in entrepreneurship/self-employment.

In particular, countries with a higher ratio of opportunity/necessity entrepreneurship are found to have higher GDP per capita, higher export, and R&D expenditure. Building on these studies, Thurik et al (2008) study the effect of self-employment on unemployment. The idea is that high unemployment rates may foster self-employment and generate necessity entrepreneurship. However, higher levels of entrepreneurship may foster job growth in the longer term. The authors found that, altogether, self-employment is conducive to some job

¹ The present document is built on a bibliographic search from Scopus and Web of Science. The search included articles, books, book chapters, conference papers and reports between the years 2000 and 2017 (N=712). Keywords used in the search include 'self-employment' in combination with other relevant terms such as 'entrepreneurship', 'unemployment' etc. The selection of the material used in the present review was based on relevance of the paper for the keyword 'self-employment' and on the robustness of the investigations reported.

growth in longer term, although this occurs only when the opportunity effect is greater than the necessity effect.

These findings can be related to those of Scholman et al. (2015)² who find that, in relatively open economies, the differential between a country's business cycle and the world business cycle may affect short- and long-term rates of entrepreneurship in terms of opportunities. In particular, in the short term, entrepreneurship rates are higher in those economies which lag behind the world's business cycle whilst, in the long term, economies leading the cycle may experience stronger growth in entrepreneurship opportunities.

Henley (2015) looks at UK panel data (2009-2013) to analyse potential structural changes in the nature of employment and attitudes towards business creation in the post-crisis period. The author found a strong correlation between local economic conditions and labour markets on one hand and the likelihood to choose self-employment on the other hand. In particular, falling local unemployment and increasing earnings are positively associated with the decision of the unemployed to go into self-employment or transitioning from employment into self-employment. But, even in the darkest period of the recent economic crisis, a pull effect seems to exist: people in poorly paid jobs or in unemployment do transition to self-employment even if this transition is negatively correlated with the length of the period of unemployment or occurs during a worsening of the local economic conditions.

McMullen et al. (2008) and Levie and Autio (2011) studied the same issue of opportunity and necessity entrepreneurship from different perspectives. In the first study, the authors found that both opportunity and necessity entrepreneurship (self-employment) are negatively associated with labour freedom. That is, entrepreneurship and self-employment are negatively affected when the choice of being either employed or engaged in entrepreneurial activities is not 'free' but made because other potentially available options are compromised and/or restricted. However, opportunity self-employment is positively associated with property rights whilst necessity self-employment is positively associated with fiscal and monetary freedom. Levie and Autio (2011) found that self-employment choices are linked to institutional conditions. In particular, a lighter bureaucracy is associated with high rates of self-employment (and even higher rates of opportunity entrepreneurship). Stringent regulations, however, tend to dampen this effect. These findings are in line with those of Torrini (2005) according to whom opportunities for tax evasion have a strong positive effect on the rate of self-employment.

Bianchi (2012) investigates differences in the utility enjoyed by employed and self-employed, and how the difference varies with increased financial development (measured in terms of level of domestic credit to the private sector as a percentage of the GDP). In other words, the study reviews how financial dependence affects entrepreneurial creation considering non-financial benefits enjoyed at different life stages. The idea is to investigate the propensity to becoming self-employed even though the 'perks' of entrepreneurship may not be favourable; entrepreneurship is in fact, on average, unprofitable though it seems to offer a higher utility in terms of non-monetary rewards such as job independence (i.e. being your own boss) and other factors such as high job satisfaction or more freedom in taking decisions on the job. The results show that financial development improves the matching between occupation and individual preferences and, hence, increases the entrepreneurial propensity and the collective utility. The findings suggests that, in countries characterised by low financial development, self-employment, may be the result of necessity entrepreneurship. On the other hand, in countries characterised by high financial development, self-employment may represent a viable way to gain job satisfaction.

While studies show that there exists a link between self-employment and entrepreneurship on one hand and economic growth and employment on the other hand, the strength of this link may be affected by other factors such as institutional settings, the local/regional structure of economic activities and/or financial stability. In the next section we look at the 'local dimension' of self-employment and economic growth, introducing the institutional perspective.

² Scholman et al. (2015) look at the relationship between waves of entrepreneurship and the business cycle in 19 OECD Countries pre-crisis (1998-2007).

2.2 Self-employment and local economic growth

A host of studies were produced in the 1990s regarding the link between self-employment, entrepreneurship and economic growth/employment. Their results point towards a negative correlation between the churn rate of businesses and economic growth/employment. That is, increased rates of entry new firms and exit of existing firms (i.e. a higher churn rate) would not, as previously thought, increase economic growth rates (Audretsch and Fritsch, 1996; Fritsch, 1997; Hart and Harvey 1995). Blanchflower (2000) found that, for most countries, there is a negative relationship between self-employment and unemployment rates; evidence of a positive relationship was found only for Italy and Ireland. Moreover, Blanchflower found no evidence that self-employment is associated with economic growth. In fact the evidence seems to point in the opposite direction.

A recent study by Rupasingha and Goetz (2011) looks at the relationship between self-employment and local economic performance in some metropolitan and non-metropolitan counties in the US. The authors point out that self-employment may in fact provide a way out of poverty in rural areas together with growth in employment and income. On the other hand, in metropolitan areas, the poverty-reducing effect of self-employment is not noticeable whilst, to some extent, self-employment contributes to general employment and income generation. Along the same lines, Acs and Mueller (2008) found that only firms with more than 20 and fewer than 500 employees make a statistically significant contribution to employment growth in large diversified metropolitan areas. Conversely, the contribution to employment of micro enterprises is mixed (Deller and McCannon, 2009; Neumark, 2011).

In line with the findings of Hart and Harvey (1995), studies have found that one factor which affects the link between self-employment and a positive effect on total employment is the survival of the businesses created by self-employed. In a recent pan-European study, Millan et al. (2012) look at the performance of self-employment ventures. They find that education and previous experience have a positive impact on survival whilst entering self-employment from unemployment reduced sensibly the likelihood of survival. But, subsidies to start-ups tend to reduce the risk of exit of budding entrepreneurs who were previously unemployed. Moreover, employment creation incentives have a positive effect on firm growth/survival even if the effect is lower for those entering self-employment from unemployment.

In a similar vein, Caliendo and Kunn (2011), using German data, look at the long-term effects of start-up programmes targeting unemployed. The authors compare the performance of those individuals entering a start-ups programme to others entering a program which provide subsidies to unemployed persons. Their results suggest that the two programmes attract different type of individuals. In particular, *“individuals participating in the bridging allowance are more educated and have higher earnings in the past; whereas participants in the start-up subsidy are on average less educated and have a relatively poor previous labor market performance”* (pp 323). Their results show that, after five years, 80 per cent of participants have successfully transitioned to full-time employment. The results are particularly relevant because: (a) they look at the effect of start-ups subsidies on unemployment which have been so far rarely observable (due to a lack of data); and (b) the specific design of the study as well as the richness of the information provide evidence that labour market barriers can be overcome and disadvantaged groups (e.g., those with lower educational attainment) can be successfully integrated into the labour market.

Carree et al. (2015) look at the impact of self-employment in metropolitan areas using panel data from the U.S. (1969 to 2009). Their findings quantify the potential multiplier effect (Moretti 2013) of entrepreneurship in urban areas, linking higher entrepreneurship with positive growth rates of other employment, and long-lasting effects of about forty years in metropolitan areas. In particular, Carree et al (2015) show that, in many urban American metropolitan areas characterised by high levels of self-employment, the job generation effect of self-employment depends on certain factors, namely the sectoral composition of economic activity (i.e. services vs. manufacturing), the wage level (i.e., lower wage levels may favour self-employment), educational attainment (high levels of attainments are linked to opportunity entrepreneurship), the presence of research universities (i.e., activities in high-tech sectors may promote tech-intensive start-ups) and size of the metropolitan area (i.e., larger cities may provide more business opportunities).

Garcia (2014) focuses on the determinants of business creation in 184 European cities located in twenty countries between 1999 and 2010 using data on entrepreneurship, institutions and culture. The author finds that city size, prevailing rates of self-employment, and tertiary education have a significant and positive impact on the number of new businesses being registered. Moreover, these results support that view that there exists a positive and increasing relationship between the size of urban areas and business creation.

The local effects of entrepreneurship are also investigated by Delfmann and Koster (2016) who focus on new businesses creation in declining regions. They examine whether the employment-creation impact of start-ups is the same in declining regions as in non-declining regions in the Netherlands between 1996 and 2010. First, they find that start-ups have a positive impact on employment in those municipalities facing a trend decline in their population and second that the existing firms' response to the employment creation by new start-ups is limited in regions facing a decline in population.

From a regional perspective, the literature is rather developed. Two issues of *Small Business Economics* (2008 and 2011) highlight how the start-ups effects on employment and regional growth tend to occur only in the longer term (10 or more years) whilst in the medium term start-ups may produce displacements and a decline in employment. In the 2008 issue, authors highlighted the fact that a variety of contrasting empirical results may be due to differences in regional economic conditions. In the more recent issue of 2011, the contributors found that the marginal effect of increasing firms formation on employment and economic growth is decreasing over time and may well be negative. However, increased churn may stimulate growth in total factor productivity under certain conditions (Dejardin and Fritsch, 2011; Bosma et al, 2011). Moreover, differences in structural factors of the regional economy tend to affect the empirical findings about the relationship between business creation and employment growth: in regions with high levels of urban agglomeration and high labour productivity, the formation of knowledge-intensive start-ups seems to have a positive impact on employment (Baptista and Preto, 2011).

Fritsch and Wyrwich (2014) look at the persistence of self-employment and new business creation in Germany between 1925 and 2005. They exploit the variety of regional framework conditions in the country and found that regional differences in self-employment and new business formation tend to be persistent for long periods of up to eighty years regardless of changes in the political-economic environment. This highlights persistency of differences in regional entrepreneurship culture. In a related study, Fritsch et al. (2015) investigate the institutional factors which may result in changes in self-employment in Germany over the the period 1991 - 2009. Their findings highlight the role of tertiarisation of the economy and education, particularly tertiary education, as driving positively entrepreneurship rates in the regions.

Similar findings on the role of education in driving entrepreneurship creation are obtained by Masakure (2015) who focuses on the causal effect of education on entrepreneurial choice in Canada between 2000 and 2009 for two very different education levels, namely university education versus little or no education. His findings point to a positive impact of tertiary education on entrepreneurship in contrast to having some or no education. The latter instead reduces self-employment propensity.

2.3 Behavioural drivers to self-employment and entrepreneurship

Psychology studies have pointed out for some time the links between characteristic personal traits and occupational choices (Holland, 1997). Borghans et al, (2008) have in fact identified certain personality traits of individuals as factors explaining the individuals' employment status. Caliendo et al. (2014) look at the relationship between these traits and the propensity to enter/exit self-employment using the German Socio-Economic Panel (SOEP) household data from 2000 to 2009. The authors test the hypothesis that a person decides to enter into self-employment or, once in self-employment, to exit, according to personal strategic goals which are directly influenced by the individual's personality traits and by other factors such as experience, knowledge, and professional competencies.

Their results show that openness to experience, extraversion, and risk tolerance directly affect an individual's decision to enter self-employment. In particular, a high risk tolerance, being in control and trust do have a positive effect on the decision to enter self-employment. On the other hand, agreeableness - the personality trait usually associated with people who are warm, friendly and tactful - and different values associated with risk tolerance affect exit from self-employment. These variables explain about 30% of the variability in the entry/exit dynamics.

Age and culture are also factors affecting the propensity of becoming self-employed. Minola et al. (2016), using the results of a Eurobarometer survey of some 14,000 respondents in 21 countries, found that young adults (as opposed to older adults) have a higher propensity to be self-employed. In particular, the individual traits described by Caliendo et al (2014) reflect the observation of Minola et al (2016) according to whom, these characteristics follow a dynamics in the lifespan of individuals so that their propensity towards self-employment grows during young adulthood, peaks towards middle adulthood and then tapers off. However, whilst these results may describe the general trend amongst the respondents, the authors identified factors

such as institutional collectivism, uncertainty avoidance and performance orientation (cultural aspects) as having a significant moderating effect. These results show that individual factors motivating self-employment are embedded in both age and culture, and that entrepreneurship programmes should take such diverse motivations into account according to the age segment they target and the cultural context within which they are deployed.

Raffiee and Feng (2014) analyse hybrid forms of entrepreneurship, i.e., being self-employed whilst also being in paid employment, as a form of staged entry into self-employment. According to the authors, hybrid entrepreneurship may be an appropriate path to entrepreneurship for those individuals who are risk adverse or prefer building up some confidence before committing to a new venture. The authors found that the risk appetite of individuals entering self-employment while retaining their day job is similar to that of individuals who stay in paid employment. Similarly, the self-confidence of hybrid entrepreneurs is similar to that of entrepreneurs. These two findings combined mean that, in terms of entrepreneurship, attitudes towards risk and self-confidence affect the probability of becoming self-employed rather than the overall likelihood of becoming an entrepreneur. In other words, hybrid entrepreneurs chose to retain some security and learn the ropes before becoming fully self-employed. This strategy yields some major societal benefits as hybrid entrepreneurs who transition into self-employment exhibit higher survival rates.

As already mentioned, entrepreneurship levels are rather persistent within a local economy and this persistence may be attributable to many factors including the local entrepreneurship culture. Wyrwich (2015) focuses on the impact of parental preferences on entrepreneurship in Germany. The study looks at the role of values and their effects over twenty years and finds that self-employment values are transmitted between generations. Likewise, Hoffmann et al. (2015) focus on the link between the likelihood of becoming self-employed in relation to parents' preferences. Children of self-employed parents are more likely to become self-employed themselves and the effect of a self-employed father (mother) is much higher for males (females), a finding which points to a strong effect of parental role models in shaping entrepreneurial attitude even after controlling for parental wealth and experience from working in the parent's business.

Another research stream in this field focuses on nascent entrepreneurship, i.e. the entrepreneurial ventures of individuals engaged in starting up a business of their own. In particular, Parker and Belghitar (2006) focus on the characteristics which make it more likely that nascent entrepreneurs will remain in business. Drawing on U.S. data from the Panel study of Entrepreneurial Dynamic, the authors find that nascent entrepreneurs who have solid credit line with suppliers and those who already earned income from the nascent business venturing have a greater probability of transitioning to entrepreneurship tout court. Successful nascent entrepreneurs are also those who take longer to start up and use more self-financing. However, budding entrepreneurs who have not invested directly own capital in the venture, have not hired employees and have relatively low educational attainments are much more likely to give up and stop running their business. The authors do not find any significant differences in the impact of the gender of the nascent entrepreneur. This latter result runs contrary to the findings of Obschonka et al. (2014) who, looking at personality characteristics and gender, found that gender affects entrepreneurship rates across a number of cultures (gender and self-employment will be discussed below).

Human capital and access to finance are paramount for both the start-up phase and subsequent growth phase of the business. Montgomery et al. (2005) examine which of human and financial capital is more important for both starting up a business and its survival. They use experimental data from a demonstration experiment carried out by the US Department of Labour to test self-employment as an alternative to re-employment (Washington Self-Employed and Enterprise Development). They found that, across the whole panel, the overall survival probability is higher when the self-employed person has a higher level of educational attainment and previous work experience (proxy for human capital). However, when human capital and availability of finances are both considered in the analysis, the authors found that human capital only increases the probability of creating a new business, and not its survival rate. This means that persons with a higher level of human capital may recognise more quickly if a venture is failing or may cease an activity because their earnings are not as attractive as those that may be obtained from salaried employment. Financial capital, on the other hand, seems to be a key factor as access to such capital increases the probability of launching a new venture and its survival probability.

Some of the results of Montgomery et al (2005) have been confirmed by Millán et al. (2010) with some variations. The latter focus on individual and regional factors which may affect the survival rates between 1994 and 2001. In particular, the authors found that high educational attainments and previous work experience impact positively on the survival of self-employment. However, those individuals moving from unemployment into self-employment are less likely to survive within the self-employed group. Interestingly, in the case of self-employed person who transition from paid employment into self-employment, start-up

subsidies have a positive impact on the survival of the business, again highlighting the role of financial capital.

2.4 Self-employment and Finance

This section looks more closely at the relationship between financial availability and the propensity to become self-employed, examining the extent to which this factor is an ex-ante condition to the start-up process, and how financial security could affect the likelihood to leave paid employment for self-employment.

Grilo and Irigoyen, (2006) study entrepreneurial capacity by looking at latent and actual entrepreneurship where latent entrepreneurship are the expressed preferences of an individual for self-employment rather than paid employment. The authors surveyed 8,000 entrepreneurs in fifteen EU countries and the USA. Their findings show that financial constraints do not affect overall entrepreneurial latency although a lack of financial support is a barrier to actually starting a new self-employment venture. In particular, the authors found that lack of financial support is a lesser obstacle compared to other barriers such as red tape which is a very significant predictor of entrepreneurial latency.

Frid et al. (2016a, 2016b) focus on differences in wealth and access to finances among entrepreneurs. The idea behind these studies is that nascent entrepreneurs are generally resource-constrained and personal (or household) wealth may affect the probability of launching a new business. The studies are based on a representative sample of the US-based Panel Study of Entrepreneurial Dynamics (PSEDII) which tracks business founders between 2005 and 2012. In their first study, the authors find that the nascent entrepreneurs belonging to the low-wealth quintiles of the wealth distribution face liquidity constraints during the preparation and start-up phases, and, therefore, are more likely to abstain from creating a new business. However, the performance of businesses, founded by self-employed with low or moderate wealth and which eventually start operating, is similar to the performance of businesses founded by wealthy start-uppers. But, prospective self-employed with smaller personal wealth are less likely to access external financing in the form of bank loans, lines of credit and investments from family and friends.

2.5 Self-employment and immigration

In a study published in 2005, Tubergen studied self-employment amongst immigrants according to their country of origin and destination, and whether or not there is a community effect (that is, if the immigrants settle within a community with shared origins). The author finds that the rate of self-employment of immigrants tends overall to converge towards the self-employment rate of the host nation in the longer term. Immigrants who are not well integrated into the labour market such as, for example, individuals with low skills or facing discrimination tend to rely on self-employment as an alternative form of employment. In contrast, Vinogradov and Kolvereid (2007), in a study of self-employed immigrants in Norway, find that, while the national culture of immigrants has indeed some effect on the rate of self-employment, the education levels of the immigrants are a good predictor of the extent of their self-employment. Particularly well-educated immigrant are more likely to be self-employed than the less educated ones and unskilled immigrants are more likely to go into precarious jobs (Smith, 2012).

A new research strand on the topic of immigration and self-employment examines whether the self-employment of immigrants is necessity self-employment or opportunity entrepreneurship. For example, Abada et al. (2013) focus on the differences in the types of self-employment taken up by first- and second-generation immigrants in Canada. The authors found that expected earnings are a strong driver of the choice of self-employment by first-generation immigrants compared to second-generation immigrants. However, differential earnings have an even stronger effect in the case of the second generation immigrants. Difficulties in the labour market, whilst a strong determinant of first generation self-employment, do not play such a role for the second generation immigrants. Both first and second generation immigrants are more likely to be self-employed if they live in communities of similar ethnic background.

Blume-Kohout (2016) looks at the entrepreneurship rates of foreign-born people in the USA using data from the 2010 Scientists and Engineers Statistical Data System matched with GEM Adult Population Survey. In total, their sample includes circa 89,000 US residents classified according to their work-permit status and bachelor's/higher degrees. The author found that foreign-born residing in the USA are significantly more likely

to start a business than US-born college-educated individuals, indicating that the decision to emigrate may have been spurred by a plan to become an entrepreneur.³ Moreover, immigrants who arrived in the USA as adults to pursue higher education are significantly more likely to become self-employed/business owner (especially in STEM fields) than those immigrants who have obtained their degrees in their home country. The likelihood of foreign-born individuals to start a new venture in USA seems also to be driven by a lack of entrepreneurial culture and support in their country of origin.

2.6 Women in self-employment

Many studies have examined gender issues in entrepreneurship. Women may find that self-employment is an increasingly important employment opportunity, yet the share of female entrepreneurs and self-employed is significantly lower than for men. Langowitz and Minniti (2007) for example, highlight how perceptual variables may affect the choice of women to go into self-employment. The authors argue that women tend to see themselves and the entrepreneurial environment in a less favourable light than men across all 17 countries covered by the study. Differences in attitudes explain most of the observed gender gap in self-employment.

Patrick et al (2016) highlight that there might be a gender bias towards entrepreneurship in the studies concentrating on comparisons between male and female self-employment. In fact, according to the authors, the two genders differ greatly with regards to the decision to take up self-employment. By focusing on necessity self-employment (push factors) and opportunity entrepreneurship (pull factors) of married and unmarried women, the two authors found some recurring features. The choice faced by women is typically presented as being between paid work and self-employment. However, when considering married and unmarried women as a homogenous group, a gender bias is much evident as women in US metropolitan areas are less likely to choose self-employment. This finding suggests that opportunity entrepreneurship may be an important factor in making employment decisions. However, after having disaggregated the sample, the authors find that having young children or health issues results in employment choices based on necessity. Therefore women in these situations may prefer self-employment (or unemployment). Moreover, married women are more likely to be self-employed than non-married women. In particular, necessity factors increase the probability of married women being self-employed. Higher levels of education attainments, on the other hand, increases the probability that married women exit the job market. Non-married women, may prefer self-employment especially if they have higher skills and self-confidence (opportunity entrepreneurship). However, non-married women with children may prefer either to exit the labour market or employment rather than face the risk associated with self-employment.

This last finding is similar to those of Noseleit (2014) who focuses on the causal relationship between maternity and entrepreneurship in a number of European countries. The author examines whether the decision by females to become self-employed depends on the number of children. Her results show that, for younger women, self-employment has a significant negative impact on fertility. However, for older women, being self-employed is associated with a higher birth rate. Moreover, the probability of choosing self-employment is higher in situations where the demand for flexible jobs is higher. On the other hand, however, Sena et al. (2012), using data from the UK Household survey (2003) present evidence suggesting that the gender bias in self-employment arises from the fact that women are less likely than men to seek external finance. This situation ultimately creates an adverse selection effect in that fewer women than men transition to self-employment.

2.7 Self-employment and entrepreneurship policies

The interest of policy scholars and policymakers in self-employment and entrepreneurship is not new as self-employment may improve the economy through two main channels, namely by: 1) reducing unemployment and 2) strengthening economic activity.

However, as the brief review of the literature above has shown, these positive impacts occur only in specific cases and conditions.

³ The majority of these studies post 2000 are mostly focusing on the North American experience with some exceptions (i.e. on Australia – looking at the impact of the point-based immigration policy). The debate in Europe focuses on three main streams: 1) migration and low-skills entrepreneurship and 2) brain drain/gain and circulation and 3) migrants and immigration policy. Evidence on high-skilled migrants and self-employed are based on a few longitudinal case-studies especially in strong immigrant hotspots (i.e. London, the Netherlands).

According to Bjørnskov and Foss (2016) the analysis of the relationship between entrepreneurship and growth suffers from a lack of clarity on the theoretical links between, on one hand, the microeconomic factors such as, for example, the attitudes towards entrepreneurial action and the extent of actual entrepreneurial activity, and, on the other hand, framework and macroeconomic conditions such as, for example, the existence of effective institutions and economic policy.

These ‘missing links’ characterise the existing economic and policy literature, and have ultimately hampered the design of policies promoting effective entrepreneurship. The authors argue in particular that focusing on specific performance indicators such as entrepreneurship, productivity and economic activity to explain cross-country differences rather than linking these factors to growth and institutional indicators may prove misleading. This is because current performance is linked to past policies which are not often considered in the analysis. Hence, the omission of potentially important policy and institutional variables limits our understanding of the factors of and conditions for successful entrepreneurship.

Moreover, most studies focus on the ‘supply-side’ of institutions for entrepreneurship but dedicate little attention to the possibility that entrepreneurship itself may have an impact on them. This omission is further evidence that studies in this area tend to omit institutional characteristics (i.e. specific/contextualised country institutions) and their potential impact on entrepreneurial outcomes.

This point is amply reflected in the following literature on self-employment/entrepreneurship policies. These studies highlight specific factors in support of active self-employment interventions, even though they are specific to particular socio-economic and institutional settings. Román et al. (2013), for example, study the effectiveness of start-ups policies in EU countries. Their findings support the idea that employment and self-employment policies may have different economic and labour market effects when they are part of broader entrepreneurship policy packages. Their overall contribution should be assessed by considering the wider circumstances including: 1) the characteristics of the self-employment (i.e. whether the self-employed have employees; 2) the business environment, including social capital, networks and institutions; and 3) the extent, scope and size of start-up incentives. Using data from the European Community Household panel covering over 60,000 European households (130,000 individuals of 16 years of age or older) in the EU-15, Roman et al (2013) conclude that assessing the impact of entrepreneurship policies is far from straightforward due to the high heterogeneity in the broader circumstances. For example, only a minority of the self-employed contribute significantly to employment creation, economic growth and innovation. It follows that more self-employment is not necessarily always a good thing. Moreover, latent entrepreneurship should be seen within the specific context within which entrepreneurship and employment policies operate. In other words, such policies, if not properly tailored to take account of the heterogeneity of self-employment, may backfire and produce unexpectedly negative results.

But, the authors also highlight how factors such as social capital and networks may provide important stimuli for truly entrepreneurial self-employed people. In fact, they suggest that indirect measures favouring the business environment and development of business networks may be more relevant for entrepreneurship development than blanket start-up policies.

Finally, Roman et al (2013) suggest that the general economic situation, the scope and magnitude of start-up policies and employment protection need to be considered when assessing entrepreneurship policies. For example, a prolonged recession has the effect of degrading strong entrepreneurship while employment, output and productivity growth are weak or even negative. In such circumstances, Therefore, adopting during long recessions start-up measures to foster self-employment may yield sub-par results in comparison to other Active Labour Market Policies.

In a similar vein, Grimm and Paffhausen (2015) conduct a systematic review of evidence on several types of entrepreneurship policies such as facilitating access to finance, subsidies and entrepreneurship training aiming at increasing employment in SMEs. The focus of their review is on low and middle income countries. The authors found that, overall, these instruments have been successful in fostering self-employment but failed to generate new employment. In particular, financial instruments alone are less effective than training and business development in fostering meaningful self-employment, i.e. ventures which start with self-employment and then grow, and contribute to overall employment growth. In other words, the policies considered by the review tend to make it easier to pursue necessity self-employment which has a poor track

record in creating additional employment. However, the long-term effects and the cost efficiency of such policies are still a topic for further research. That said, Parker et al. (2012)⁴ found that public policies such as loan guarantee schemes, subsidies to start-ups and changes in entry regulations have a significant positive effect on entrepreneurship. However, this effect is not permanent and eventually wears off⁵.

Country-specific studies may provide a better understanding of the issues at play as the institutional setting for such studies is more homogeneous. Fossen and Steiner (2009) focus on taxation and its effects on the probability of starting a business. The authors used German microdata to study the effect of two tax-reduction policies implemented by the German government in the 1990s. The results of their study support the idea that self-employment increases following a reduction in the top marginal tax rates for self-employed high earners. In particular, the authors calculated that the tax reductions increased self-employment by about 0.8% boosting the probability of being self-employed by over 25%. According to the authors, the effect may be due to “a decrease in the exit rates out of self-employment” (p.507).

More complex policy impacts were analysed by Caliendo and Kritikos (2010). The two authors focus on businesses founded by unemployed people benefitting from the following two German schemes: 1) a bridging allowance and 2) a start-up subsidy. The study provides some interesting insights on the financial benefits of interacting policy instruments targeting self-employment as the joint impact of these policy measures is higher than when they are delivered separately. The authors found that the two schemes attracted different ‘types’ of entrepreneurs in terms of skill sets and gender (more female entrepreneurs) and, therefore, resulted in the creation of a wider set of business ventures. Of note is the fact that after 2½ years, the survival rates were particularly high and similar for the two schemes. In particular, the bridging allowance, which consisted of an allowance under which the nascent entrepreneur could claim unemployment benefits for 6 months plus a lump sum of about 70% of that amount, attracted particularly qualified start-uppers with relatively more extensive previous experience in the sector, invested in capital formation and hired further employees. The start-up subsidies, including a decreasing subsidy of €600 per month in the first year, €360 a month in the second year and €240 in the third year and also a short training programme, attracted a relatively higher share of female self-employed and young male start-uppers as well as people with lower formal qualifications. The self-employed using start-up subsidies did not create many new jobs.

Hombert et al (2014) carried a similar study using French data from 1993 to 2008. The policy measures examined comprise support measures, including higher benefits and an insurance system according to which the beneficiaries would be eligible for unemployment benefits if the business venture failed within 3 years. These measures were targeted at individuals attempting to transition from unemployment to self-employment. In the immediate period following the launch of these measures, the number of self-employed increased sharply and the survival rates were similar to those of other businesses. Moreover, about 30% of the self-employed benefitting from the scheme had 1 or more employees after 2 years. The authors estimate that the scheme resulted in the direct creation of 9,000 to 24,000 jobs annually. However, the authors also noted a strong crowding out effect of existing businesses which broadly contributed to the destruction of a similar number of jobs. As a result, the impact of the scheme was neutral in terms of job creation. However, newly created businesses were relatively more productive than the crowded-out incumbents, highlighting a re-allocation effect towards more productive and higher-paying jobs.

2.8 Summary

Entrepreneurship and self-employment, though overlapping to a great degree, are not one and the same.

Entrepreneurship is directed at exploring/exploiting market opportunities through the creation and management of a business venture. *Self-employment* is a labour market status which can reflect two distinct phenomena. Firstly, it can be one of the ways through which entrepreneurial activities are carried out and hence represents a category of opportunity-seeking entrepreneurs. On the other hand, self-employment may be borne out of necessity and may include those previously employed but now carrying out the same activity as free-lancers or attempting a trade. These two concepts of entrepreneurship and self-employed, though sometimes used synonymously, are driven by very different factors and impact the economy differently.

⁴ Parker et al. (2012) analyse the macrostructure of entrepreneurship in 23 OECD countries between 1972 and 2006. The aim of the study was to investigate the effects of shocks - such as policies and programmes - on entrepreneurship.

⁵ This supports the idea proposed by Fritsch and colleagues (see above), according to whom regional entrepreneurship rates are persistent in the long term.

Factors such as survival and growth of the ventures of self-employed are key in assessing the impact of self-employment on job generation in the long run. In particular, many studies have shown that only those self-employed individuals pursuing market opportunities have a positive effect on economic growth and employment. However, in an environment characterised by a high churn rate of businesses (i.e. high rates of entry and exit) the contribution of self-employment to local economic growth is negative. Similarly, in areas of high unemployment, the level of self-employment may be relatively lower and evidence that self-employment contributes to economic growth in such circumstances is scarce. Those businesses founded by self-employed that manage to survive over a long period and eventually grow, on the other hand, do contribute to local economic growth and to a reduction in unemployment. Educational attainments and previous experience in the same line of business are good predictors of the survival and economic success of businesses started by self-employed.

There exists a series of other factors which affect the performance of the businesses created and run by self-employed individuals. These factors include the general economic conditions and characteristics of the business's region such as the presence of agglomeration economies, the presence of research universities, the presence of technology-intensive sectors and the tertiarisation of the local economy. Whenever these factors are present in the local economy, self-employment is more likely to be opportunity entrepreneurship and, therefore, has the potential to make a solid contribution to job creation and local economic growth.

Personality traits have been found to significantly impact the probability of being self-employed. Individual traits such as openness to experience, extraversion and risk tolerance favour individual choices to transition to self-employment. Other factors such as age and culture have also been found to significantly impact the choice of transitioning to self-employment. Young adults, for example, are more likely to go into self-employment than older adults. In communities where taking risks is not penalised or where individualism is predominant, the rate of self-employment is relatively higher than in communities where collectivism is institutionalised or there is a generalised aversion to risk and uncertainty. These general factors, together with the individual characteristics of the self-employed – individual knowledge, experience and professional competencies – tend to increase the success rate of opportunity self-employment.

Access to finance, though having a significant effect on the rate of self-employment, is not a primary factor in encouraging people to plan the move to self-employment. Other factors such as human capital, individual preferences, and bureaucracy may have a greater effect on the choice to self-employment. Nonetheless, access to finance is important since would-be self-employed belonging to low-wealth classes face liquidity constraints at the start-up phase and are also less likely to receive private financing in comparison to self-employed coming from wealthy households.

Regarding immigration, the rates of immigrant self-employment tend to converge towards the local rates of self-employment in the long term. However, immigrants who are excluded from the labour market either because of discrimination or because they live in ethnic enclaves, tend to lean towards self-employment and precarious forms of work. In contrast, highly skilled (educated) migrants are more likely to be self-employed than low-skilled migrant and establish successful entrepreneurial ventures.

It is sometimes argued that women may see themselves and the business environment in a less favourable light than men. However, many studies highlight the fact that the gender gap in entrepreneurship and self-employment is caused by a variety of factors. In particular, the range of factors affecting female entrepreneurship includes not only opportunity/necessity considerations or educational attainments, but also personal factors such as marital status and child care responsibility, the number and age of children in the family, etc.

Due to the difficulty in disentangling the effects of entrepreneurship and self-employment, policies are often used interchangeably with less than optimal results. Many authors argue that is necessary to gain a clear understanding of the self-employment phenomenon in all its facets in order to be able to design appropriate policies. Obviously, self-employment is the result of personal strategic choices taken on the basis of individual situations (necessity or opportunities). However, these choices are not made in a vacuum. In fact, the economic and institutional environment has a strong bearing on entrepreneurial outcomes. Successful policies may be designed on the basis of specific circumstances, such as, for example, entrepreneurship policies developed within a framework of industrial, innovation and business environment policies and self-employment policies as part of the Active Labour Market policies (including, for example, entrepreneurship training). Although there are significant overlaps between the two policy frameworks, specific factors, characteristics and policy goals may address this issue through appropriate policy mixes.

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3. Case studies

This chapter provides several case studies of self-employed individuals which were undertaken to gain first-hand insights into the advantages and disadvantages of being self-employed, as viewed by self-employed persons.

Self-employment case studies for following countries included in this section:

- Cyprus
- Finland
- France
- Luxembourg
- Slovakia
- Sweden

3.1 Self-employment and the Arts in Cyprus

3.1.1 'Self-employment' in Cyprus

In 2016, self-employment accounted for 12.6 % of total employmentⁱ compared to the EU average of 14.0 %. This slightly below-average performance contrasts with the large preference of Cypriots (66 %) for self-employment over the employee status as highlighted by a 2009 Eurobarometer survey. In addition, the dominance of the entrepreneurial culture in Cyprus is also reflected by the large proportion of the population (72 %) considering entrepreneurship as a desirable career choice (compared to 57 % on EU average). Despite this high entrepreneurial mindset, would-be self-employed workers in Cyprus find that no specific support measures to encourage self-employment are in place. Even though self-employed workers contribute to social security, they are not entitled to unemployment benefits nor to workplace accident benefits. They do not have access to free legal assistance, nor can they benefit from any type of coaching or mentoring support to self-employed workers. The only type of support provided by the government consists in grants specifically targeting self-employed workers.

Andrea's story described below illustrates how, despite the many challenges self-employed workers face, the self-employment status is still viewed as more rewarding than the employee status, especially for those active in the cultural sector.

3.1.2 Andrea's Profile: the desire for creative freedom

Andrea Katsavra has been self-employed for three years. She initially worked for an architectural practice for seven years until she was made redundant during the recent financial crisis. While the practice offered her the job back six months later, Andrea decided to use this opportunity to become self-employed.

In the architectural industry it is quite common to start as an employee to gain the skills necessary for starting one's own business. Andrea thus always considered her job as a short-term solution until she had the necessary experience and connections to open her own studio and become self-employed.

From employee to self-employed worker: the journey towards independence

While self-employment might be quite common in the cultural sectorⁱⁱ, some entrepreneurs might find that in order to apply for certain funds or aids they need to be registered as a company rather than as self-employed. This was the case for Andrea and her friend when they wanted to open an architecture and fabrication business with the help of the Grant Scheme for the Enhancement of Youth Entrepreneurshipⁱⁱⁱ, which is being operated under the umbrella of the Ministry of Commerce, Industry and Tourism. Only registered businesses were allowed to apply to the programme. However, the regulatory framework put in place by the Cyprus Scientific and Technical Chamber (ETEK)^{iv} does not allow for architectural businesses to also work in fabrication, so the two were unable to register a company together. This conflicted with the regulations of the Youth Entrepreneurship programme, and resulted in the withdrawal of their application.

Even though Andrea was unable to benefit from the financial assistance she had hoped for, she underlined the usefulness of the application process to her entrepreneurial skills as it gave her the opportunity to learn about the regulations in place as well as the procedures necessary to open one's own business. Simultaneously, this experience encouraged her to remain self-employed in order to enjoy a greater freedom in the projects she accepts and the co-operations she engages in.

Less regulation, but not fewer challenges

While self-employed workers might benefit from greater freedom regarding their work, this does not mean that they face fewer challenges than other businesses. Andrea is finding it difficult to market her activities efficiently and to establish a competitive online presence. She also had to hire an accountant to help her with her taxes and the regulations in place. While she was able to fund her journey into self-employment with her own means, Andrea would appreciate some financial assistance with regard to the increased marketing of her activities, especially her fabrication projects on which she cooperates with the aforementioned friend.

To continue growing her business and activities, Andrea is considering employing someone to assist her. The Department of Labour in Cyprus offers schemes that provide incentives to employ unemployed people, which she would like to join if possible. In the past, the European Social Fund and the Republic of Cyprus have provided similar incentives within the framework of the Operational Programme 'Employment, Human Capital and Social Cohesion' 2007-2013⁹. Participants received financial aid to cover 60 % of the yearly wage cost of the new employee with a maximum amount of EUR 7,200 per person and per semester for the first six months of employment.

3.1.3 Andrea's recommendations to policy makers to foster self-employment in Cyprus:

Andrea suggested the following areas of improvement to facilitate self-employment:

- The government could introduce a guide for self-employed workers explaining all the regulations and procedures which need to be complied with to start their activities. This would facilitate the transition from employee to self-employment and stimulate an entrepreneurial spirit.
- The government could offer financial and legal advice to self-employed workers to help them grow their business and, thus, improve the sustainability of their activities.
- Information on the tax and social security system in place should be easier to access.
- The amount of social security contributions one pays should be dependent on the type of activity or business one has and not one's profession. Architects, for example, are expected to pay a relatively high amount of social security contribution. However if they are self-employed, they might find those contributions extremely high if they are not making as much money as they may do so as an employee. To promote entrepreneurship, social insurance contributions should be realigned.

3.1.4 Andrea's recommendations to those wishing to become self-employed:

Leveraging on the lessons learnt from her entrepreneurial venture, Andrea put forward the following recommendations to facilitate the self-employment path of those wishing to become self-employed:

- Make sure you are really committed to becoming self-employment and fighting for the success of your business.
- Be consistent. Invest your all into growing and expanding your business.
- Before becoming self-employed, plan your transition. Make sure you are aware of all the legal regulations in place and you have the funds necessary to start working on your own.

3.2 Growing support for self-employed workers in Finland

3.2.1 'Self-employment' in Finland

In general, Finland is seen as providing an entrepreneurship-friendly environment as can be observed in the high level of opportunity-driven entrepreneurial activity, the high status accorded to successful entrepreneurs as well as the integration of entrepreneurial education into the school curricula.^{vi}

However, despite this overall positive performance regarding the promotion of entrepreneurship, there is still room for improvement, especially regarding the social security system in place for self-employed workers. The government, being aware of the need for reform in this area, demonstrated its commitment to improving the conditions for self-employed workers and micro-enterprises in the Action plan for the implementation of the key projects and reforms defined in the Strategic Government Programme published in 2016.^{vii} In 2016, the Ministry of Employment and the Economy announced in this context a new policy measure aimed at increasing unemployment security for the self-employed. The new system would be better equipped to take into account new forms of employment between traditional full-time employment and self-employment. The government also announced a new policy measure, which would allow for the Pay Subsidy instrument to be used to lower the threshold for micro-enterprises to hire their first employee, thus supporting the growth of these businesses. Hence, Finland can be considered as actively supporting the rise of self-employment.

Marika's story described below demonstrates how unemployment can push those considering entrepreneurship to become self-employed. While the support she received from the government during the business creation process greatly facilitated her journey towards self-employment, Marika still struggles with increasing the sustainability of her business. The journey towards self-employment remains anything but straightforward and requires perseverance and a strong entrepreneurial spirit.

3.2.2 Marika's Profile: self-employment as a fresh start

After working in the IT field for ten years, Marika Ritala-Mäkinen was suddenly made redundant during her pregnancy in 2013. She thus decided to use her maternity and nursery leave to realise her dream of becoming an interior designer. During her nursery leave, Marika studied interior design for two years at a private school in Helsinki and realised that her IT background gave her an advantage with respect to interior design with 3d models. To gain some experience in the field, she started working for an invoicing company as a freelance interior designer for two years. In August 2016, Marika then founded her own interior design office Luovio of which she currently remains the sole employee.

Light entrepreneurship – a first step towards self-employment

While Marika did not expect to be suddenly let go from the small IT company she had been working for, she quickly seized the opportunity provided by this change to realise her dream of working in interior design. Although Marika did not consider self-employment right away, she soon realised that employment opportunities in interior design are very limited in the region she lives in. She thus had to start her own business if she wanted to work in this field.

However, before opening her own company, Marika opted for the light entrepreneurship experience to gain experience as an interior designer and get a feeling for the life of a self-employed worker. The Finnish Enterprise Agencies define light entrepreneurship as:

"...a form of employment where a person acquires his/her own work and defines a price thereon. Invoicing and salary calculation have been outsourced to an external billing service, which charges its own service fee from the total amount. The service is easy to use for the customer as (s) he needs to pay only one bill. The billing service takes care of the 'light entrepreneur's' tax withholding, insurances (accident insurance, liability insurance) and other statutory employer contributions (social security contribution pension insurance premium and unemployment insurance contribution as well as group life assurance premium)^{viii}."

The light entrepreneurship status is becoming increasingly popular among those wishing to become self-employed as it allows them to experience self-employment without having to take charge of all the administrative procedures and responsibilities associated with being completely independent just yet. This status greatly facilitates the transition from employee to independent self-employed worker.

The business creation process in Finland

The creation of one's own business requires preparation. TE-palvelut, Finland's public employment and business services, greatly assisted Marika in her entrepreneurial venture. TE offers start-up grants, which provide those starting their own business with a secure income during the initial business creation phase. The startup grant consists of a basic grant, which amounts to EUR 32.40 a day and can be received for a period of up to 12 months. The TE Office further offers training courses for those planning to start their own business, teaching aspiring entrepreneurs how to set up a business, how to run it, as well as providing them with information on accounting, taxation, marketing etc. Marika also underlined the usefulness of being able to talk to an advisor at the TE Office when needing help with setting up her business plan or the steps to take to apply for the startup grant. With all the support Marika received, she encountered no significant challenges when setting up her own company.

Late payments and their effects on young businesses

When initially starting one's own business, funds might be limited and the self-employed worker might struggle to cover his expenses. Marika has been struggling with how and when to invoice her clients as she relies upon their payments to actually work on and complete the project. The late payment of invoices can be especially challenging for small young businesses, as they do not yet have the working capital to handle these delays. Marika has now started invoicing her clients after every ten working hours so both the client and Marika can better follow the progress being made in the project.

Overall Marika hopes that with the growth of her business, she will struggle less with invoicing her clients. To grow her business Marika wants to start working with private companies and is currently considering a partnership with a realtor and building trade companies.

3.2.3 Recommendations to policy makers:

Marika has suggested that a revision of the tax system in place would further encourage self-employment. The following recommendations were made in this regard:

- Self-employed workers should not be taxed so heavily for the start-up grant they receive from the TE Office as this reduces the actual support the grant is meant to provide.
- The main provider of a family in which one member is starting their own business should be allowed some tax relief during the first year of activity of the business to reduce the burden imposed on that person as the family's sole provider.
- Light entrepreneurship should be seen as an asset while applying for the start-up grant.

It has to be pointed out that the Finnish government adopted in 2017 a new policy measure, which introduced a tax deduction of 5 % of entrepreneurs' income. The government is thus aware of the burden that the current tax system poses on entrepreneurs and is actively trying to encourage business activity through tax encouragements.

3.3 Entrepreneurial spirit undermined by administrative burden in France

3.3.1 'Self-employment' in France

France has been actively promoting self-employment through the introduction of various policy measures aimed at facilitating the take-up of self-employment. In January 2009, the government introduced the 'micro-entrepreneur status' to encourage new business creation and facilitate the transfer of businesses. In 2010, the government launched the 'private entrepreneur with limited responsibility status', which was further simplified in 2016, to allow entrepreneurs to distinguish between their personal assets and their business assets.

As a result, micro-entrepreneurs can now benefit from simplified tax procedures and only have to pay taxes and social contributions based on their self-declared earning. Self-employed workers also have access to legal assistance from the Chambers of Commerce and Industry (CCI), the French unemployment agency ('Pôle Emploi') as well as through regional support agencies. Furthermore, the government created a special social security system for self-employed workers: the Social Regime of the Independents ('Régime social des Indépendants' - RSI). While the creation of a specific social security system for self-employed workers initially intended to facilitate the self-employment path, the following two case studies show how a high administrative burden still dampens the desired positive effects.

Gideon's and Roseline's stories described below highlight the importance of a good support system to help potential self-employed workers. Despite all the support measures in place, the journey to self-employment and the creation of one's own business remains complex in France.

3.3.2 Gideon's Profile: the importance of a strong entrepreneurial spirit.

In 2007 Gideon Ben Ami, a British citizen, moved from the UK to France where he opened a small language school called *LetThemTalk*. Prior to his move, Gideon had been running a small IT company in the UK between 2001 and 2007. Gideon was thus well aware of the challenges posed by self-employment before opening his new business in France. As the micro-entrepreneur status was only introduced in 2009, Gideon had to register his business under the SARL status. During the first two or three years of activity, Gideon remained the sole employee of his business to grow the company. Nowadays, he works with four micro-entrepreneurs, whom he hires depending on the number of clients and courses scheduled. Gideon did have an employee on a short-term contract some time ago, but felt the paperwork associated with the status was too burdensome for his small business and the costs associated too high. Micro-entrepreneurs are seen as more flexible and easier to hire.

A complicated and burdensome business creation process

Overall the French business creation process can be considered as rather complex. In 2015, it took an average of 4 days to start one's business and the completion of 5 start-up procedures was required. In both cases, France performs below the EU average^{ix}. Entrepreneurs usually find it particularly complicated to start their business in France as information on available support is often limited. Gideon found it very difficult to find all the documents necessary to open his business and had to resort to hiring an accountant to help him with the business creation process. While he did enjoy some support from the CCI, which informed him of the general documents to fill in and gave him the option to talk to an English speaking accountant to advise him on the business environment in France, Gideon finds the administrative burden on small business to be very high and thinks it discourages self-employment and entrepreneurship.

A 'Social Regime of the Independents' (RSI) unresponsive to the needs of self-employed workers

Like many other self-employed workers, Gideon believes that the RSI system is not responsive enough to their needs. Particularly in his first year of activity in France, Gideon found it very difficult to pay the amount of social contributions he was charged as turnover remained very low at first. In fact, Gideon had to rely on his personal savings to pay his social contributions, which not every self-employed worker or entrepreneur can do. The RSI system should thus be reviewed and take better account of circumstances in his opinion.

Factors important for the sustainability and success of *LetThemTalk*:

Gideon underlined the following factors as crucial to the success of his company:

- Gideon found a niche in the market, offering private English language courses in Paris.
- Gideon links the growth of his business to a good marketing strategy, promoting his business through social media and word-of-mouth marketing.

3.3.3 Roseline's Profile: self-employment before retirement

Roseline Lambert has been self-employed for a little over a year. She had been active in the ready-to-wear business for over 30 years, having worked in the field for 32 years as an employee. During her employee career, she increasingly felt the need to change and to open her own business. Two years ago, she actively started thinking about becoming self-employed as she felt that, if she did not take the chance now, she would never try self-employment. While her business is still very young and she does not yet have a clear view of its sustainability, Roseline does not regret becoming self-employed and hopes she will soon be able to generate enough profit to be able to pay herself a salary.

Support from the Chambers of Commerce and Industry (CCI) – crucial for a successful business creation process

The administrative steps entrepreneurs are required to take to open their own business can be very complicated when one is not aware of the additional support measures in place that offer assistance. Roseline was luckily aware of the support the CCI office in her region offered to those wishing to become self-employed and participated in various workshops on the micro-entrepreneur status as well as the business creation process. CCI France is subdivided into five regional offices whose aim it is to represent the national interests of businesses located in France and to support them in their endeavours. The business creation training offered by CCI Champagne Ardenne costs EUR 60 and involves workshops that

explain the micro-entrepreneur status, its advantages and disadvantages, as well as the regulations to respect and the taxes to pay. Roseline was also assigned a personal advisor, Ms. Lambert, who further supported her in the business creation process and was especially helpful regarding the development of her business plan.

Thanks to the support Roseline received by the CCI, she experienced the business creation process in France as quite straightforward. She is confident that the continued support she will receive from her advisor will help her navigate any challenges she might face in the future. Concerning her access to finance, Roseline was able to get a personal loan from the bank to finance her entrepreneurial venture. She did not receive any governmental grants or loans.

3.3.4 Recommendations to policy makers concerning the RSI:

Gideon and Roseline had two completely different experiences regarding the business creation process in France. While Gideon struggled with the administrative procedures in place, Roseline faced no difficulties thanks to the support she received through the CCI and her advisor. Nevertheless, both Gideon and Roseline underlined the following recommendations concerning the RSI:

- Need for more information and transparency concerning the RSI.
- The RSI should be reorganised and simplified. The system is currently too complex, which makes it difficult for self-employed workers to receive the support they need.

3.4 Self-employment, an unattractive career choice in Luxembourg despite recent promotional efforts

3.4.1 'Self-employment' in Luxembourg

Being a self-employed worker in Luxembourg is not easy. While the business-creation process might be relatively straightforward, keeping the business sustainable can be quite difficult. Public support can enable potential entrepreneurs to gain the skills necessary to set up their own business and to manage it.

The process to set-up a business is neither difficult nor lengthy. In 2016, it took approximately 17 days^x to complete the procedures to legally operate a business in Luxembourg. While Luxembourg's government has demonstrated an increased commitment to the interests and needs of (potential) entrepreneurs, the creation of an entrepreneurial culture in Luxembourg remains challenging due to the high public-private sector wage gap combined with the high wage in the financial sectors of the economy.

Luxembourg's promotion of an entrepreneurial culture and active support for the development of self-employment is reflected by the implementation of several initiatives. For instance, the Fit4Start initiative (implemented in January 2016) aims at improving the starting conditions for young innovative companies in the ICT sector, the BEE CREATIVE programme (launched in November 2015) allows young people to develop their own digital projects and the House of Entrepreneurship was opened in June 2016. However, there is still room for improvement especially with regard to the reduction of the stigma of failure.

Izabela's story described below illustrates how the recent public measures to support entrepreneurship implemented in Luxembourg can serve as a catalyst for self-employment. Izabela's story is also one of perseverance, which exemplifies how the right support system can turn a challenge such as unemployment into an opportunity.

3.4.2 Izabela's Profile: Bouncing back from unemployed to self-employed

Izabela Wojcicka, a Polish self-employed worker in Luxembourg, opened her own small tearoom and grocery store *l'Epicerie d'Autrefois* in 2016. She initially managed the store and tearoom by herself and is now slowly trying to employ additional staff as her business starts to grow.

Prior to opening her own business, Izabela had been working for an insurance company for 3 years until she was suddenly made redundant. The support she received from her previous employer as well as the public support mechanisms in place were crucial to her decision to start an entrepreneurial venture.

Izabela's unexpected self-employment experience

The journey to self-employment

Starting an entrepreneurial venture is no easy task. Izabela had been considering self-employment for a while, but never felt confident enough to open her own business until she became unemployed. Izabela's journey to self-employment started taking shape following the suggestion of her advisor at ADEM (Luxembourg's Unemployment Agency) to join the Fit4Entrepreneurship programme.

Izabela found the process to join the Fit4Entrepreneurship initiative easy and straightforward. She presented her business idea to a committee consisting of representatives from the Chamber of Commerce, the Chamber of Trades and the Unemployment Agency. This committee then decided whether her project was in line with the initiative's eligibility criteria. Izabela's project was deemed a good fit and she thus received three months of intense training on various business related subjects. Thanks to the job preservation plan adopted by her former employer, Izabela also benefitted from training in project management, which proved highly beneficial when she started managing her own company. Overall, around 5 months passed between Izabela's decision to open her own business and the actual opening of her grocery store and tearoom. While Izabela does not benefit from on-going coaching or mentoring, she feels that she can always rely on her contacts at the Fit4Entrepreneurship initiative should she require additional information or support in the future.

'I would never have attempted self-employment without the extensive support I received from the government and especially the Fit4Entrepreneurship initiative.'

- Izabela

A need to raise awareness of public financial support available for self-employment

The creation of a grocery store and tearoom requires low up-front investment; Izabela therefore managed to create the business with her own funds although she received unemployment benefits as well as some additional support grants during the business creation process. Entrepreneurs and potential self-employed entrepreneurs in Luxembourg still lack awareness regarding public financial support for entrepreneurship available in the country. Despite her involvement in the Fit4Entrepreneurship programme, Izabela was still not aware of possible funding opportunities she could have benefited from to create her business. This suggests that more efforts need to be made to raise awareness of existing funding opportunities for entrepreneurs/self-employed.

The future of l'Epicerie d'Autrefois

The sustainability of businesses can vary significantly and many do not remain active for more than five years. Izabela's case demonstrates the struggles those self-employed might face while initially starting their own business. While Izabela has some ideas on future improvements for her business and now employs a chef full-time, she will decide after the summer whether her business is going to be worth pursuing as profits have remained low and she is unsure of the business' sustainability. Many self-employed realise quickly that despite the many hours and efforts they invest into building their own business, their journey into self-employment might remain rather short-lived if demand is not high enough.

3.4.3 Recommendations to foster self-employment in Luxembourg

Izabela pointed out that most of the self-employed workers she knows, or that she met through the Fit4Entrepreneurship initiative, were in their mid-forties when they attempted self-employment.

Izabela's recommendations to potential self-employed workers:

- Do not under-estimate the amount of personal efforts associated with the start of an entrepreneurial venture
- Be prepared to work long hours and/or to adapt to the extreme flexibility of the working time
- Be aware that self-employment might imply low initial salaries (if any)
- Make sure you can count on a strong and supportive close environment
- Ensure you have a high level of motivation for the success of the business

3.4.4 Focus on a policy measure supporting self-employment in Luxembourg: Fit4Entrepreneurship

The Fit4Entrepreneurship initiative is a joined programme by the Luxembourgish Unemployment Agency, the Chamber of Commerce and the Chamber of Trades, with funding from the European Social Fund as well as the Ministry of Work, Employment and a Social and Solidary Economy. The initiative promotes

entrepreneurship and supports its candidates in the business creation process. The programme focuses specifically on the reorientation of those currently unemployed. Participants receive an intensive three-month training on various business creation and management subjects. Each class/training has about 10-12 participants and with around 10 coaches to talk about the different subjects. Participants also receive the tailored support of a coach, who will assist them with the elaboration of their business plan, discuss their entrepreneurial ideas with them, and help them set up a concrete action plan to work through the business creation process. The Fit4Entrepreneurship programme thus does not only offer general guidance on administrative procedures and business management, but it also provides participants with the opportunity to enjoy the individual support of an experienced coach.

3.5 High entrepreneurial spirit despite a lack of state support in Slovakia

3.5.1 'Self-employment' in Slovakia

Being a self-employed worker in Slovakia is not an easy task. Even though the business creation process can be considered as relatively straightforward (with only about 12 days required to start a business in 2016^{xi}), very little support is available to encourage the sustainability of the activities of the self-employed. Nevertheless, Slovakia performs above EU average regarding the percentage of opportunity-driven entrepreneurial activity in 2015^{xii}.

While the Slovakian government has demonstrated an increased interest in supporting entrepreneurship in recent years, this commitment can only be described as inconsistent. However, some progress has been made to facilitate the business-creation process. In February 2009, the Slovakian government adopted a *special employment recovery package* which included measures specifically aimed at supporting self-employment. The aim of these measures was to encourage self-employment in a time of economic crisis. In 2016, the Slovakian government further introduced the concept of one-Euro Company, which is expected to increase the number of self-employed workers as it facilitates the business creation process and lowers the initial investments necessary. While these measures foster self-employment and aim to facilitate the business creation process, the administrative burden put on self-employed workers remains high.

Tibor's story described below illustrates how, despite the limited support available for self-employment, the independence offered by the self-employed status outweighs for some the security and stability offered by traditional employment. In Slovakia, the majority of self-employed workers are active in the crafts sector, representing almost 95 % of the total number of entrepreneurs^{xiii}.

3.5.2 Tibor's Profile: The dream of an independent life

Tibor Pasztor has been self-employed since 1995. Prior to his self-employment venture, Tibor worked in a plastic-producing state factory until a Swedish company offered him the position of the brand's technical representative in Slovakia. As this position was well paid and allowed Tibor more freedom, he accepted the offer and thus started his journey towards greater independence. In 2008, Tibor opened his own flooring and installation business of which he remains the sole owner and employee to this day.

Tibor's desire for independence

Tibor had always wanted to become self-employed and enjoys the liberties associated with being one's own boss. While self-employed workers can face many challenges linked to the uncertainty, the freedom and independence self-employment provides can for some outweigh the substantial increase in responsibilities and the longer working hours associated with this status. While Tibor's income is now lower than it was as an employee at the state factory or as a technical representative, Tibor strongly underlined that he prefers the freedom his business gives him to the limitations and restrictions linked to the employee status.

While very few public measures were in place in 2008 to support potential entrepreneurs and self-employed workers to create their own business, the Slovakian government now offers them some aid to cover the initial installation costs associated with this transition (around EUR 4000).

3.5.3 Challenges related to self-employment in Slovakia

The seasonal nature of the construction sector

Like many entrepreneurs and self-employed workers active in the construction business, Tibor's business is highly affected by the seasonal nature of this industry, which makes it difficult to permanently hire employees and more likely to outsource the manual labour to independent self-employed workers.

Low general income and slow economic growth

Moreover, while Tibor has been steadily increasing his number of clients over the years, the low general income level and the slow growth of the Slovakian economy have hampered the growth of his income. Many self-employed workers are unable to grow their business, as they do not have the funds necessary to hire additional employees or to modernise their business. While the Slovakian government has been supporting the business creation process, the growth of these businesses needs to be further encouraged and their access to international markets improved. Self-employed workers and small businesses need to be able to grow in order to improve their sustainability.

Limited social protection available to self-employed workers

Further improvements are also necessary with regard to the social protection of those self-employed. While self-employed workers have access to public healthcare and to the national pension scheme, many find it difficult to pay their contributions for social security in time because of late payments by their clients. The late payment of their contributions for social security results in them being penalised and the loss of their right to social security. However, it has to be underlined that Tibor was not exactly sure about all the regulations in place, which suggests a need to raise awareness of the social aid and support available to self-employed workers.

3.5.4 The future of the Crafts sector

As a member of the Slovak Craft Industry Federation, Tibor is very much involved in trying to secure the future of the crafts sector in his country and to support the growth of small businesses of the sector. One of the main areas of improvement identified in this regard concerns the mandatory possession of a licence in order to improve the quality of the crafts sector.

Many of the self-employed workers active in the crafts sector have not received the proper training and education necessary to guarantee the good quality of the work. Therefore, Tibor calls for the stricter regulation of the sector.

Tibor's recommendation to foster the sustainability of self-employment in the craft sector

Tibor thinks that the introduction of a register including the names of all those with proper licences would restrict national projects to only those businesses that have a licence and respect the regulations in place. This would support the growth of these businesses and increase their sustainability. Those that are currently active in the field without a licence would have the chance to receive one after completing some additional training. Vocational trainings should be introduced to guarantee the professional training of those active in the crafts sector.

The Slovak Craft Industry Federation has been in contact with representatives from Germany, Austria, Hungary and the Czech Republic to analyse what system would best fit the Slovakian environment. Tibor suggested in this context that the harmonisation of the vocational training system at a regional level could be useful to support the development and growth of the crafts sector in Slovakia.

3.6 Self-employment – an increasingly sustainable career choice for immigrants in Sweden

3.6.1 'Self-employment' in Sweden

Moving to a new country and adapting to a different culture is not easy. In Sweden, the number of self-employed workers with a migrant background surpasses the number of self-employed workers with Swedish citizenship^{xiv}. This suggests, on one hand, that, for many immigrants, self-employment represents a good and possibly the only career choice in Sweden. On the other hand, the support entrepreneurs with migrant backgrounds receive seems to have a positive effect on their entrepreneurial ventures as one can observe in the following case study.

In general, Sweden is considered as friendly to entrepreneurs and small businesses^{xv}. To further reduce the administrative burden put on entrepreneurs and self-employed workers, the government introduced various measures to facilitate the business creation process and the growth of existing companies. Hence, in 2015 the time necessary to create one's own business was reduced from 10 days in 2014 to 5 days.

Ghazi's story described below illustrates the importance of the right entrepreneurial support for immigrants and shows that self-employment can represent a sustainable career choice for immigrants in

Sweden. His story is also one of perseverance and daring, which exemplifies how the right entrepreneurial spirit can turn a challenge such as unemployment and discrimination in recruitment into an opportunity.

3.6.2 Ghazi's entrepreneurial profile:

Ghazi Fourati, a Tunisian and Swedish dual citizenship holder and self-employed worker in Sweden, opened his own e-commerce *Mr-Parts Sweden AB* in 2009. The business model of the company revolves around the sale of car parts to individuals and automobile repair workshops. To open his online store, Ghazi first worked as a self-employed worker to save the funds necessary to finance his online store. Ghazi initially continued managing his business by himself when he first opened his limited company *Mr-Parts Sweden AB* but now employs a refugee on a short-term contract. He is currently considering employing additional staff (possibly on unlimited contracts) as his business continues to grow.

After moving from France to Sweden right at the time of the economic crisis, Ghazi was having difficulties finding employment as a foreigner. He thus decided to start his journey towards self-employment. While Ghazi knew he wanted to leverage the digital trend in his entrepreneurial venture, he was unsure at first about what kind of online business to open. His connections with the automobile industry in France as well as his technological baccalaureate finally encouraged him to invest in the automotive industry. And last but not least important, the support of his close environment and his perseverance were crucial to Ghazi's decision to start his own business and become an entrepreneur.

Turning an idea into a self-employment activity and growing it into a successful business

Starting an entrepreneurial venture is no easy task. Ghazi had been considering self-employment for a while, but was not sure about the kind of online business to create nor about the financial aspects of his business venture. The support he received from the Almi Företagspartner AB, a government institution that promotes the development of SMEs and entrepreneurship with the aim of creating growth and innovation in Swedish business life, was extremely helpful with regard to the business creation process. The Almi Företagspartner AB offers loans, venture capital and advisory services to businesses and entrepreneurs/self-employed workers at different levels of their activity and for different development goals. Ghazi met once a week with an advisor from IFS Advisory Services, which specialise on supporting entrepreneurs with foreign backgrounds, to discuss and develop his business plan. The Almi Företagspartner AB also offers a funding programme where entrepreneurs can receive up to EUR 25 000 to finance the creation of their business. However, Ghazi's application to the programme was rejected and he thus had to self-finance his journey into self-employment.

How the digital economy facilitates self-employment

The creation of an online store often requires low up-front investments. Various e-commerce software providers offer services related to the creation, design and management of online boutiques for a commission and the opening of an online store thus requires little effort. While most of Ghazi's client base is situated in the Nordic countries, his online store is accessible worldwide and, thus, offers a wide business platform. However, while opening an online business might be quite straightforward, getting clients and developing a strong and trusted online identity requires some time and efforts. Additional public programmes aimed at developing the online identity of self-employed businesses and, thus support their continued digitalisation, might be useful in this regard.

In order to afford his online boutique, Ghazi first had to sell some car parts to be able to gather the money required. As mentioned above, Ghazi was unable to gain access to any business creation funds or aids and hence self-financed his business.

What about the future of *Mr-Parts Sweden AB*?

Ghazi's self-employment experience can be considered a success story. Starting out as self-employed, he soon managed to create a limited company and has since doubled his sales yearly. To continue growing his business and increase its sustainability, Ghazi is considering hiring a web developer as well as investing in the expansion of his business. Concerning the funding of these additional costs, Ghazi has not yet decided whether to continue auto-financing his business or whether to seek a loan.

3.6.3 Recommendations to potential self-employed workers

Ghazi's experience with self-employment yielded many lessons, which could serve as advice for those wishing to start their own journey towards self-employment:

- Ensure the feasibility, sustainability and growth potential of your business idea.
- Be prepared to work long hours and/or to adapt to the extreme flexibility of the working time.

- Perform a market study to make sure you chose the right sector for your idea.
- Familiarise yourself with the laws and regulations in place.
- Do not under-estimate the importance of entrepreneurship education.

3.6.4 Recommendation for policy makers

Ghazi thinks that the creation of an 'entrepreneur certificate' might help to increase the success rate of small businesses. To gain this certificate, candidates would have to take a number of courses on business management, the laws and regulations to respect, the taxes to pay, as well as on any other useful business topics. Ghazi himself greatly benefited from the economic management training he completed while in Sweden.

3.6.5 Focus on a private sector initiative fostering self-employment in Sweden: the New Entrepreneur of the Year Awards

Each year the International Entrepreneur Association in Sweden presents the New Entrepreneur of the Year awards to entrepreneurs with a migrant background. The award was first introduced in 1999 and has been presented by His Majesty Carl XVI Gustav, the award's patron, since 2000. The purpose of these awards is to encourage and increase entrepreneurship (including self-employment) among migrant groups. The association aims to highlight that, despite the challenges these entrepreneurs have faced, they were able to start their own business and thus contribute to the growth of Sweden. The International Entrepreneur Association further wants to raise the level of competences among individual migrant entrepreneurs and works to improve the climate with regard to migrant entrepreneurship.

Ghazi Fourati received this award in the category 'start-up' in 2012 and has underlined its importance to his continued success. Not only did the award increase the visibility and credibility of his business, but it also strengthened his entrepreneurial spirit by recognising the efforts he has realised so far.

Notes for case studies

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- i Persons employed and self-employed persons refer to persons aged 15-64. Source of the data is Eurostat.
- ii Eurostat, Culture Statistics – Cultural Employment, available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/Culture_statistics_-_cultural_employment#Further_Eurostat_information.
- iii OECD - Cyprus: The Grant Scheme for the Enhancement of Youth Entrepreneurship, available at: <http://www.oecd-ilibrary.org/docserver/download/8414081ec018.pdf?expires=1492591504&id=id&accname=guest&checksum=B370F2F9AF48956FEA82A83AC839A3C7>.
- iv According to the ETEK Law, the professions regulated by the Chamber include the following: Architecture including Landscape Architecture, Civil Engineering including Landscape Engineering, Mechanical Engineering, Electrical Engineering, Electronic Engineering including Information Technology Engineering, Chemical Engineering, Mine and Applied Geology Engineering, Agronomic-Topographic Engineering, Land Survey and Valuation, Town and Spatial Planning.” <http://www.etek.org.cy/site-menu-97-en.php>.
- v Department of Labour, Republic of Cyprus – Schemes for subsidies, available at: http://www.mlsi.gov.cy/mlsi/dl/dl.nsf/dmlschemes_en/dmlschemes_en?OpenDocument.
- vi EU Commission, Finland SBA Fact Sheet 2016, available at: <http://ec.europa.eu/DocsRoom/documents/22382>.
- vii Prime Minister’s Office Finland, the Action plan for the implementation of the key projects and reforms defined in the Strategic Government Programme, available at: <http://valtioneuvosto.fi/documents/10616/1986338/Action+plan+for+the+implementation+Strategic+Government+Programme+en.pdf/12f723ba-6f6b-4e6c-a636-4ad4175d7c4e>.
- viii Finnish Enterprise Agencies, Guide – Becoming an Entrepreneur in Finland, available at: https://www.uusyrityskeskus.fi/wp-content/uploads/2017/02/perustamisopas_suk_2016_en_web.pdf.
- ix EU Commission, France SBA Fact Sheet 2016, available at: <http://ec.europa.eu/DocsRoom/documents/22382>.
- x World Bank, Doing Business 2017, available at: <http://data.worldbank.org/indicator/IC.REG.DURS>.
- xi World Bank, Doing Business 2017, available at: <http://data.worldbank.org/indicator/IC.REG.DURS?locations=SK>.
- xii EU SME Performance Review 2015-2016, Slovak Republic SBA Fact Sheet 2016, available at: <http://ec.europa.eu/DocsRoom/documents/22382>.
- xiii European Commission, European Employment Observatory Review: Self-Employment in Europe 2010, available at: <http://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=576>.
- xiv Eurofound, EurWORK, Self-employed workers in Sweden, available at: <https://www.eurofound.europa.eu/observatories/eurwork/comparative-information/national-contributions/sweden/sweden-self-employed-workers>.
- xv EU Commission, Sweden SBA Fact Sheet 2016, available at: <http://ec.europa.eu/DocsRoom/documents/22382>.

4. Why does the self-employment rate vary across EU-28 Member States – an econometric analysis

4.1 Introduction to the econometric analysis

This chapter provides the results of different econometric analyses aiming to identify the factors which explain the differences in self-employment rates across the 28-EU Member States. As the 2016/17 SME Annual Report shows, the levels and trends of self-employment vary markedly across Member States.

Therefore the empirical analysis focuses not just on differences in self-employment rates in 2016 but also in previous years and covers the period from 2000 to 2016.

A number of econometric models were estimated to check the robustness of the estimation results.

1. First a panel data model was estimated, for the period of 2004 to 2016, covering all EU-28 Member States.
2. Second, the panel data model was re-estimated for different clusters of Member States. For this approach, Member States were regrouped by level of GDP per capita (in Purchasing Power Standards (PPS)) and four different groups of Member States are used in the analysis:
 - Group 1 (very high income per capita): Luxembourg, Ireland;
 - Group 2: (high income per capita): Austria, Belgium, Denmark, Finland, France, Germany, Netherlands, Sweden, United Kingdom;
 - Group 3: (intermediate income per capita): Cyprus, Czech Republic, Estonia, Italy, Lithuania, Malta, Poland, Portugal, Slovakia, Slovenia, Spain;
 - Group 4 (low income per capita): Bulgaria, Croatia, Greece, Hungary, Latvia, Romania

The analysis in these two sections uses only those variables which were available for all EU-28 Member States and for the whole period of 2004 to 2016⁶. Two further modelling procedures were employed using all available variables, namely:

3. A general-to-specific modelling procedure was employed to select, among all available variables, those variables that yield the 'best' model. Due to missing data in the extended set of variables, which was especially prevalent at the end of the sample period, this analysis uses only data for the period 2004 – 2013.

⁶ The variables included in these two sections are: avgWorkHours, gdp, gvaShareAccomFood, gvaShareAgricult, gvaShareArtsEnterRecr, gvaShareTransport, unempRate, ltermunemp, percLTPPrimaryEd, percTertEd, percPop15_24, percPop20_39, womenPer100Men, d2008, gvaShareAccomFoodd2008, gvaShareArtsEnterRecrd2008, gvaShareTransportd2008. See Table 1 for more information.

4. Finally, separate time-series regressions were run for each of the 28 EU Member States. These regressions use all available variables as the starting point excluding, for each country, variables with missing observations for that country. Because of the nature of time series regressions a slightly longer sample period, 2000 – 2016, was used.

In addition to these models, a cross-sectional analysis, for 2016⁷, of the relationship between the self-employment rate and specific policies aimed at encouraging and supporting self-employment was also undertaken.

This chapter is structured as follows :

- Section 4.2 provides an overview of the variables used in this analysis.
- Section 4.3 discusses the expected relationships between the explanatory variables and the self-employment rate.
- Section 4.4 provides the results of the econometric analysis for all EU-28 Member States and each of the four groups outlined above using only those variables with no missing observations.
- Section 4.5 presents the results of the general-to-specific modelling procedure.
- Section 4.6 provides the results of the country-specific analysis.
- Section 4.7 provides the results of an econometric analysis of the relationship between the self-employment rate and specific policies aimed at encouraging self-employment.
- Section 4.8 provides a brief overview of the results of the estimation of the various models and some concluding remarks.

Two annexes provide further details on the specification tests which were run to assess the validity of the results and scatter-plots of the data. These are structured as follows:

- Annex 1 (Section 4.9) provides the results of the specification tests and outlines the implications for the results of the econometric analysis.
- Annex 2 (Section 4.10) provides scatter plots for each of the explanatory variables with the self-employment rate.

4.2 Self-employment and potential drivers of self-employment

The independent variable in each model is the self-employment rate, that is the proportion of the working age population in self-employment relative to the total employment.

To explain differences in the self-employment rate among the EU-28 Member States, a number of explanatory variables were considered. These are listed in the table below.

In broad terms, the set of explanatory variables include:

- macro-economic variables such as GDP, unemployment rates, and interest rates;
- variables capturing the level of social protection and working conditions;
- socio-demographic variables such as age, education, sex, immigration and inequality;
- variables measuring barriers to starting up and operating a business.

Countries where the gig economy is prevalent are also expected to show higher levels of self-employment. However, there exist no data on the size of the gig economy at the present time. Because of this, the analysis focuses on the extent of the platform economy in Member States. In the absence of good data on the platform economy, the latter's presence is proxied by the variables capturing the size of sectors in which such platforms are expected to be prevalent. These are the 'transportation and storage' sector, the 'accommodation and food service activities' sector, and the 'arts, entertainment and recreation' sector.

⁷ The information on these policy variables was specially collected during the first half of 2017 as part of the annual gathering of information of the implementation of the SBA and was therefore only available for this year.

The size of the 'agricultural' sector was also included as self-employment is more prevalent in this sector.

Table 1: Explanatory variables

Variable	Source	Description
Macro		
gdp	AMECO	GDP per capita current prices (1000 PPS)
unempRate	Eurostat	Unemployment rate
ltermunemp	Eurostat	Long-term unemployment percentage of active population
rSTInterestRate	AMECO	Real short-term interest rates, deflator GDP
rLTInterestRate	AMECO	Real long-term interest rates, deflator GDP
Social protection⁸		
socProtBenefits	Eurostat	Social Protection Benefits Expenditure Constant 2010 EUR
unempSpendingPGDP	OECD	Total social expenditure on unemployment in % of GDP
lmpExpenditure8	Eurostat	LMP Expenditure: Out-of-work income maintenance and support
lmpExpenditure7	Eurostat	LMP Expenditure: Start-up incentives
Working conditions		
avgWorkHours	Eurostat	Average weekly working hours of full-time employees
compensation	AMECO	Employee compensation per head of working age population
allinTaxRateSingleNoChild	OECD	All-in average personal tax rates (income tax + employee social security contributions + employer social security contributions; single Person – no child)
diffPersCorplIncomeTax	European Commission	Difference between implicit income and corporate tax rates
Age		
percPop15_24	Eurostat	Percent of population aged 15 to 24
percPop20_39	Eurostat	Percent of population aged 20 to 39
Education		
percLTPrimaryEd	Eurostat	Percent of working age population with low education (less than primary / secondary)
percTertEd	Eurostat	Percent of working age population with high (tertiary) education
Immigration		

⁸ These variables refer to the overall expenditure on social protection benefits and the overall expenditure on unemployment (i.e. they are not specific to either the self-employed or the employed). The hypothesis is that higher social protection benefits reduce the level of necessity self-employment. LMP variables refer to public expenditure on labour market policy interventions aimed at groups of persons with difficulties in the labour market.

propImmigration	Eurostat	Total immigration as a share of population
Inequality		
ineqIncDist	Eurostat	Inequality of income distribution (Eurostat Income quintile share ratio 65 years and under)
Sex		
womenPer100Men	Eurostat	Number of women per 100 men
Sectors		
gvaShareAgricult	Eurostat	GVA share of the agriculture, forestry and fishing sector
gvaShareTransport	Eurostat	GVA share of the transport services sector
gvaShareAccomFood	Eurostat	GVA share of the accommodation and food service activities sector
gvaShareArtsEnterRecr	Eurostat	GVA share of the arts, entertainment and recreation
Ease of doing business⁹		
startingBusinessCost	World Bank	Cost of starting a small- to medium-sized limited liability company (% of income per capita)
startingBusinessDays	World Bank	Time required to start a small- to medium-sized limited liability company (days)
startingabusinesspaidinmincap	World Bank	Paid-in min. capital required to start a small- to medium-sized limited liability company (% of income per capita)
Barriers to entrepreneurship		
complexityRegProced	OECD	Complexity of regulatory procedures includes the complexity of the licenses and permits system and the communication and simplification of rules and procedures
administrBurdenStartups	OECD	Administrative burdens to start corporations and sole proprietor firms
regProtIncumb	OECD	Regulatory protection of incumbents
Other PMR indicators		
stateControl	OECD	Public ownership and state involvement in business operations
barriersTradeInv	OECD	Barriers to trade and investment

Source: London Economics

4.3 Hypotheses

GDP per capita is an important indication of the performance of a country. A higher GDP level may be associated with higher demand, leading possibly to a positive relationship with self-employment rates. However, higher GDP may also be indicative of higher average firm sizes, leading to a lower self-employment rate. Hence, the effect of GDP per capita on self-employment rates cannot be determined a priori. (Parker, S. C., and Robson, M. T., 2004).

⁹ In each case, the variable was available for both men and women. For the purpose of this analysis, the average across both sexes was taken.

The literature review at the beginning of this working paper outlined that high **unemployment** rates may lead unemployed workers to become self-employed out of necessity. This may be particularly true for people who have been unable to find a job for an extended period of time. Therefore, a positive relationship between unemployment, and in particular long-term unemployment, and the self-employment rate is expected.

High **unemployment benefits**, however, may dampen this effect as workers are not hit as hard by becoming unemployed, thus reducing the necessity of unemployed people to find additional income. Hence, it is expected that a high social protection, in particular high unemployment benefits, leads to a lower self-employment rate. Moreover, if social protection benefits employees disproportionately more than the self-employed, higher social protection may disincentivise self-starters.

Similarly, higher expenditure on **labour market policy interventions** for out-of-work income maintenance and support are expected to lead to lower self-employment rates. On the other hand, higher expenditure on start-up incentives are expected to encourage self-employment, hence, a positive relationship is expected.

Similarly, it is expected that high **compensation** packages, or a low **tax rate**, for employees would lead to workers being less likely to take the risk of self-employment. Higher implicit income tax rates relative to implicit corporate tax rates are also expected to be associated with higher self-employment rates. On the other hand, long **working hours** may lead to employees being more likely to accept the risk of self-employment.

Low **interest rates** may incentivise self-starters to take the leap to self-employment, while high interest rates may deter self-starters. Thus, a negative relationship between interest rates and the self-employment rate could be expected. On the other hand, when interest rates are low starters may find it harder to obtain a loan, leading to a negative relationship between interest rates and the self-employment rate.

The literature review also suggests that countries with a **relatively younger population** would have higher self-employment rates (as younger people have a higher propensity to be self-employed). Similarly, the literature review suggested that men are more likely to be self-employed than **women**. As such, a positive relationship is expected between younger populations and the self-employment rate, and a negative relationship is expected for countries with a relatively higher number of women. It should be noted, however, that there are also a number of studies which found the self-employment rate to be increasing with age (see for example Blanchflower, D. G., 2000).

In terms of **education**, the literature review suggests that people with a relatively low education level may be more likely to become self-employed out of necessity, while high education levels should be correlated with higher levels of opportunity self-employment.

Self-employment is also relatively more prevalent in the **agricultural sector** compared to other sectors. As such it is expected that countries with a larger agricultural sector also show higher self-employment rates.

While the rate of self-employment of **immigrants** is expected to converge to that of the host nation in the longer term (see section 2.5), the short term impact could be positive or negative depending on the demographics of immigrants. For example, countries with a higher proportion of immigrants of young, well-educated men would be expected to show higher self-employment rates.

Higher self-employment rates are also sometimes associated with higher **income-inequality**. For example, the Joseph Rowntree Foundation (1994) found that an expansion in the number of self-employed people in the UK had increased overall income inequality in the UK. A measure for income-inequality was thus included to control for these effects.

Variables capturing **barriers to starting and operating a business** are expected to show a negative relationship with the self-employment rate. For example, high costs or long and complex regulatory processes may discourage potential self-starters from making the leap into self-employment.

Similarly, **high regulatory protection of incumbents, high barriers to trade and investment**, or a high level of **state control**, for example via price controls, are also expected to discourage people from starting a business.

Finally, countries where the platform **economy** is prevalent are expected to show higher levels of self-employment. Therefore, a positive relationship is expected between the size of the sectors where platforms are likely to be prevalent and the self-employment rate.

4.4 Results of the econometric estimation

This section presents the results of the econometric analysis for all EU-28 Member States and for groups of Member States clustered by GDP. In the analysis in this section, only those variables which were available for all EU-28 Member States and for the whole sample period of 2004-2016 were used. The results of the analysis using all variables is presented in the next section.

4.4.1 Panel of all Member States

As can be seen in Table 2, among the EU-28 Member States, a negative relationship is found between GDP and self-employment rates. That is, an increase in GDP is associated with a decrease in the self-employment rate. However, a scatterplot of GDP and the self-employment rate (provided in Annex 2), suggests that this may be a result of a small number of high GDP countries that have a low self-employment rate, such as Luxembourg, rather than a general phenomenon.

Higher unemployment is associated with a slight decrease in the self-employment rate, while higher long-term unemployment is associated with higher self-employment rates. However, neither of these effects was statistically significant.

A relatively less educated population, as measured by the proportion of working age population with primary education or less, is associated with higher rates of self-employment. Similarly, a relatively higher educated population is also associated with a higher self-employment rate, although this was not statistically significant.

A younger population and higher proportion of women in the population is associated with lower self-employment rates.

Both the size of the agricultural sectors and the average number of working hours are associated with higher self-employment rates, although neither of these is statistically significant.

Lastly, none of the three platform sectors were associated with higher self-employment rates. One reason for this may be that the platform economy only took off around 2008. However, while the dummy variable for the years of 2008 onwards was associated with higher self-employment rates (not statistically significant), only one of the three platform economy sectors (the 'arts, entertainment and recreation' sector) was associated with higher self-employment rates following 2008. Moreover, this was not statistically significant. This suggests that the size of the sectors alone is not a sufficiently good estimate of the platform economy.

Table 2: Results of the econometric analysis with panel of all EU-28 Member States – 2004 to 2016

Variables	Coefficients	Standard errors	P> t
avgWorkHours	0.00454	0.00341	0.194
gdp	-0.00113***	0.000381	0.006
gvaShareAccomFood	-0.243	0.513	0.640

gvaShareAgricult	0.0264	0.123	0.832
gvaShareArtsEnterRecr	-0.161	0.325	0.625
gvaShareTransport	-0.396**	0.189	0.046
unempRate	-0.000374	0.000750	0.622
ltermunemp	0.00154	0.00124	0.226
percLTPrimaryEd	0.00171**	0.000702	0.021
percTertEd	0.000878	0.000599	0.155
percPop15_24	-0.00293*	0.00154	0.069
percPop20_39	-0.00303**	0.00135	0.033
womenPer100Men	-0.00715***	0.00146	0.000
d2008	0.00620	0.00890	0.492
gvaShareAccomFoodd2008	-0.364***	0.118	0.005
gvaShareArtsEnterRecrd2008	0.338	0.259	0.203
gvaShareTransportd2008	-0.0479	0.137	0.729
Constant	0.815***	0.255	0.004
Observations	336		
R-squared (within)	0.432		
R-squared (between)	0.076		
Number of countries	28		

Note: Standard errors used are cluster-robust standard errors.
Source: *London Economics*

4.4.2 Panels of groups of countries clustered by level of GDP per capita

Table 3 compares the results of the econometric analysis for groups of countries with low, intermediate, high and very high GDP per capita. As this table shows, the relationship of GDP with the self-employment rate varies across groups. Low and high GDP countries show a negative relationship between GDP and the self-employment rate, while intermediate and very high GDP countries show a positive relationship (the relationship is only statistically significant for low and high GDP countries).

In contrast, the average number of working hours is associated with higher levels of self-employment across all groups of countries. However, this relationship is only statistically significant for the high GDP countries.

The unemployment rate does not show a consistent pattern across the four groups. For both the very high and the intermediate GDP groups, a higher unemployment rate is associated with a higher self-employment rate. For the high GDP and the low GDP groups, higher unemployment is associated with a lower self-employment rate. None of these effects was statistically significant. Long-term unemployment, however, is associated with higher self-employment across all four groups and this relationship is statistically significant for the intermediate and the high GDP groups.

The proportion of the population with a relatively lower education seems to play a more important role in countries with a lower GDP per capita as this relationship is statistically significant only for the low and the intermediate GDP groups. The relationship between the proportion of the population with a relatively higher education and the self-employment rate is not statistically significant for any of the four groups.

With the exception of the two countries with a very high GDP per capita, a higher proportion of people aged 15-24 was associated with a lower self-employment rate (only statistically significant for the low GDP countries). The proportion of people aged 20 to 39 was associated with a higher self-employment rate for both the low GDP (statistically significant) and the very high GDP countries (not statistically significant) and a lower self-employment rate for the intermediate GDP (not statistically significant) and the high GDP countries (statistically significant).

The relationship between the proportion of women in the population also varies across the four groups. A higher proportion of women was only associated with a lower self-employment rate for the intermediate and high GDP countries (the relationship was only statistically significant for the intermediate GDP countries).

The platform economy variables showed no consistent positive relationship between the size of the platform sectors (measured by the share of gross value added), and the self-employment rate.

Table 3: Results of the econometric analysis of groups of EU-28 Member States clustered by GDP per capita – 2004 to 2016

	All EU-28 Member States	Very high GDP	High GDP	Intermediate GDP	Low GDP
avgWorkHours	0.00454 (0.00341)	0.0167 (0.0100)	0.00596* (0.00299)	0.00634 (0.00380)	0.00794 (0.00429)
gdp	-0.00113*** (0.000381)	0.00166 (0.00162)	-0.000935** (0.000355)	0.000854 (0.000810)	-0.00478* (0.00225)
gvaShareAccomFood	-0.243 (0.513)	-4.062 (6.239)	-0.597 (0.906)	-0.889** (0.378)	-0.862 (0.643)
gvaShareAgricult	0.0264 (0.123)	0.708 (0.391)	-0.251 (0.144)	0.345 (0.222)	-0.306 (0.168)
gvaShareArtsEnterRecr	-0.161 (0.325)	-0.482 (0.674)	2.862 (1.918)	-0.00954 (0.0796)	-0.330 (0.936)
gvaShareTransport	-0.396** (0.189)	1.273 (1.406)	-0.0724 (0.158)	0.0606 (0.119)	-0.357 (0.231)
unempRate	-0.000374 (0.000750)	0.00234 (0.00183)	-0.000327 (0.000583)	0.000153 (0.000695)	-0.00232 (0.00194)
ltermunemp	0.00154 (0.00124)	0.00162 (0.00646)	0.00613*** (0.00129)	0.00195* (0.00108)	0.00402 (0.00274)
percLTPrimaryEd	0.00171** (0.000702)	-0.00167 (0.00162)	0.000475 (0.000550)	0.00240*** (0.000530)	0.00304** (0.000933)
percTertEd	0.000878 (0.000599)	-0.000588 (0.000330)	0.000409 (0.000276)	0.000925 (0.000528)	0.00225 (0.00162)
percPop15_24	-0.00293* (0.00154)	0.0102 (0.00622)	-0.00191 (0.00305)	-0.00177 (0.00183)	-0.0102** (0.00276)
percPop20_39	-0.00303** (0.00135)	0.0108 (0.0182)	-0.00762*** (0.00209)	-0.000552 (0.000968)	0.00590* (0.00284)
womenPer100Men	-0.00715*** (0.00146)	0.0106 (0.0192)	-0.00131 (0.00297)	-0.00798*** (0.00217)	0.000859 (0.00282)
d2008	0.00620	-0.0582	0.00157	0.0461**	-0.0216

	(0.00890)	(0.0991)	(0.0143)	(0.0202)	(0.0120)
gvaShareAccomFoodd2008	-0.364*** (0.118)	8.256 (10.20)	-0.256** (0.109)	-0.575** (0.232)	-0.0601 (0.172)
gvaShareArtsEnterRecrd2008	0.338 (0.259)	-5.924 (8.475)	-0.0508 (0.603)	0.289*** (0.0779)	-0.199 (0.799)
gvaShareTransportd2008	-0.0479 (0.137)	-1.187 (0.506)	0.0424 (0.148)	-0.584** (0.206)	0.397** (0.136)
Constant	0.815*** (0.255)	-2.088 (2.933)	0.202 (0.338)	0.671** (0.274)	-0.279 (0.355)
Observations	336	24	108	133	71
R-squared (within)	0.432	0.950	0.747	0.782	0.770
R-squared (between)	0.076	1.000	0.013	0.206	0.100
Number of countries	28	2	9	11	6

Note: Standard errors used are cluster-robust standard errors.

Source: *London Economics*

4.5 Estimation result of a more general model using all the variables and a general-to-specific model selection procedure

The previous section provided an econometric analysis of the differences in self-employment rates across the EU-28 Member States using only a subset of the explanatory variables described in Section 4.2. Specifically, the last section used only those variables which did not have any missing data. This section expands on the last section by using all explanatory variables described in Section 4.2.

The results in this section were obtained by using the general-to-specific modelling procedure described by Clarke (2014). This modelling procedure selects, among all available variables, those variables that yield the 'best' model based upon the relevance of the explanatory variables and their explanatory power.

The general-to-specific modelling procedure was run for all EU-28 Member States and for each of the four country groupings described at the beginning of this chapter. However, due to missing data in the enlarged set of variables, some EU countries had to be excluded for one or more parts of this analysis. As a result, this procedure could only be used for the following two groups:

- All EU-28 Member States except Bulgaria, Croatia, Cyprus, Lithuania, Malta, Romania, and Slovakia
- High GDP countries

Results were also obtained for the group of intermediate GDP countries using a smaller subset of variables¹⁰. Slovakia had to be excluded from this analysis due to missing data issues.

In addition, a model using alternative data sources for the variables relating to taxes and unemployment spending was also employed to all EU-28 Member States. However, due to missing data only 17 of the EU-28 Member States could be included in this analysis.

Missing data was especially prevalent at the end of the sample (2014-2016). Therefore, the empirical analysis described in this section only uses data for the years 2004-2013.

The results for these estimation procedures are presented in the next sections.

4.5.1 Results of the general-to-specific model selection procedure, all EU-28 Member States except Bulgaria, Croatia, Cyprus, Lithuania, Malta, Romania, and Slovakia

This section presents the results of the general-to-specific modelling procedure applied to all 28-EU Member States. However, due to missing data Bulgaria, Croatia, Cyprus, Lithuania, Malta, Romania, and Slovakia had to be excluded from this analysis. The results for the other 21 EU Member States are presented in Table 4.

Comparing the results of Table 4 with the earlier results for all EU Member States (Table 2), shows that seven variables, which were included in the earlier model, were also selected by the general-to-specific modelling procedure. These are:

- average weekly working hours;
- GDP;
- the share of Gross-Value-Added of the 'agriculture, forestry and fishing' sector;
- the share of Gross-Value-Added of the 'arts, entertainment and recreation' sector;
- the share of Gross-Value-Added of the 'transportation and storage' sector; and,
- the share (in %) of working age population with low education.
- The number of women per 100 men

All seven variables also have the same sign as in the earlier model. That is, the estimated direction of the relationship between the self-employment rate and each of these seven variables is the same. For example, both the previous and the current model suggested that a higher proportion of women in the population is associated with a lower self-employment rate.

¹⁰ Excluding OECD barriers to entrepreneurship variables, allinTaxRateSingleNoChild, and unempSpendingPGD.

Table 4: Results of the general-to-specific model selection procedure, all EU Member States except Bulgaria, Croatia, Cyprus, Lithuania, Malta, Romania, and Slovakia – 2004-2013

Variables	Coefficients	Standard errors	P> t
avgWorkHours	0.0036323*	0.0019078	0.071
gdp	-0.0011907	0.0007171	0.112
gvaShareAgricult	0.7483337***	0.2032011	0.001
gvaShareArtsEnterRecr	-1.96502***	0.5407517	0.002
gvaShareTransport	-0.8005126***	0.1990815	0.001
percLTPriamryEd	0.0006191	0.0003758	0.115
womenPer100Men	-0.0048316***	0.0013409	0.002
socProtBenefits	0.000011***	2.61E-06	0.000
compensation	-0.0008971*	0.0004559	0.063
rSTInterestRate	0.0008278**	0.0002945	0.011
propImmigration	-0.039166**	0.0177007	0.039
startingBusinessCost	-0.0008035***	0.0001986	0.001
startingabusinesspaidinmin~p	0.000053**	0.0000202	0.016
barriersTradelnv	0.0152681**	0.0062426	0.024
unempSpendingPGDP	-0.0043071*	0.0021929	0.064
complexityRegProced	0.003571	0.0022379	0.126
administrBurdenStartups	-0.0208678***	0.0060385	0.002
d2008	-0.0132758**	0.0051603	0.018
gvaShareAccomFoodd2008	-0.1034031	0.0638322	0.121
gvaShareTransportd2008	0.2487088***	0.0823355	0.007
Constant	0.5431118***	0.1653035	0.004
Observations	182		
R-squared (within)	0.655		
R-squared (between)	0.022		
Number of countries	21		

Note: Standard errors used are cluster-robust standard errors.

Source: London Economics

For five of these seven variables the relationship is statistically significant (avgWorkHours, gvaShareAgricult, gvaShareArtsEnterRecr, gvaShareTransport, womenPer100Men). While both GDP and the percent of working age population with low education showed a statistically significant relationship in the previous model, neither of these two variables is statistically significant in this model.

The reason for this could be that the additional variables included in this model but not in the previous model, are the real drivers of differences in the self-employment rate. Therefore, once we control for these variables, the relationship of GDP and a relatively lower educated population with the self-employment rate loses significance. Another possible explanation for the loss of significance is that these variables are more important in the seven EU Member States excluded in this regression.

The additional variables selected by the procedure as having some explanatory power are expenditure on social protection benefits, employee compensation, short-term interest rates, the proportion of immigration, unemployment spending (as % of GDP) and a number of variables relating to barriers of starting a business. Moreover, all additional variables selected, except for the variable relating to the complexity of regulatory procedures for starting up a business, are statistically significant.

As expected, the model suggests that higher employee compensation, a higher cost or a higher administrative burden associated with starting a business, and more expenditure on unemployment benefits are all associated with lower self-employment rates. A higher immigration share is also associated with lower self-employment rates.

However, while higher spending on unemployment benefits is associated with lower self-employment rates, the model suggests that a higher spending on social protection benefits is associated with higher self-employment rates. As mentioned in Section 4.3, one possible explanation for this is that employees benefit more from higher social protection benefits, such as pensions, than the self-employed.

Higher short-term interest rates were also associated with higher self-employment rates. This suggests that difficulties in accessing financing for self-starters may outweigh any benefits which a lower interest rate may yield for self-employed.

Lastly, the model suggests that higher capital requirements for starting up a company, more complex regulatory procedures, and higher barriers to trade and investment are also all associated with higher self-employment rates. It should be noted, however, that the capital requirements variable only captures capital requirements for a small-to medium-size limited liability company. The higher self-employment rate in countries with higher capital requirements may thus stem from a higher start-up rate of other types of businesses such as sole proprietorships.

4.5.2 Results of the general-to-specific model selection procedure, including alternative variables for tax rates and social protection

This section compares the results of the general-to-specific modelling procedure when alternative data sources are used for the variables relating to taxes and unemployment spending (Table 5); in particular:

- The difference between implicit income and corporate tax rates (diffPersCorpIncomeTax) is used instead of the average personal tax rates (allinTaxRateSingleNoChild).
- The public expenditure on labour market policy interventions regarding out-of-work income maintenance and support (ImpExpenditure8) is used instead of the total social expenditure on unemployment (unempSpendingPGDP) and the expenditure on social protection benefits (socProtBenefits).
- The public expenditure on labour market policy interventions regarding start-up incentives (ImpExpenditure7) is also used as an additional variable in this analysis.

Importantly, the general-to-specific modelling procedure, using the new variables, excluded Germany, Greece, Latvia, and Luxembourg, in addition to the Member States excluded in the previous model, from the analysis due to missing data. Therefore, some differences in the results of the modelling procedure may be expected due to the differences in the sample composition.

Nevertheless, comparing Table 5 to Table 4, it can be seen that nine variables have again been selected by the general-to-specific modelling procedure. These are:

- the size of the 'agricultural' sector;
- the proportion of the population with a relatively low education;
- the number of women per 100 men;
- short term interest rates;
- total immigration as a share of population;
- the cost of starting a limited liability company;

- barriers to trade and investment;
- the minimum capital required to start a limited liability company; and,
- the complexity of regulatory procedures.

All nine variables have the same sign as in the previous model. Moreover, the number of women per 100 men, immigration, the cost of starting a business, and barriers to trade and investment are statistically significant in both models. In addition, the complexity of regulatory procedures is statistically significant in the new model, while the share of the ‘agricultural’ sector and the minimum capital required to start a limited liability company are no longer statistically significant.

In addition to these nine variables, the modelling procedure selected the size of the ‘accommodation and food’ sector (negative relationship, not statistically significant); the long-term unemployment rate (negative relationship, not statistically significant); the proportion of the population with a relatively high education (positive relationship, statistically significant); the proportion of population aged 15 to 24 (positive relationship, not statistically significant); the proportion of population aged 20 to 39 (negative relationship, statistically significant); regulatory protection of incumbents (positive relationship, statistically significant); the involvement of the state in business operations (negative relationship, not statistically significant); and the time required to start a limited liability company (negative relationship, not statistically significant).

Regarding the new variables, neither of the variables relating to LMP policy interventions were selected. Differences between implicit personal and corporate tax rates were selected by the general-to-specific model selection procedure, and show a positive relationship with the self-employment rate. However, this relationship is not statistically significant.

Table 5: Results of the general-to-specific model selection procedure, including alternative variables for tax rates and social protection all EU Member States – 2004-2013

Variables	Coefficients	Standard errors	P> t
diffPersCorplIncomeTax	0.000222	0.000144	0.143
gvaShareAccomFood	-0.218921	0.479335	0.654
gvaShareAgricuilt	0.183128	0.247114	0.469
ltermunemp	-0.000736	0.000703	0.311
percLTPrimaryEd	0.001180	0.000702	0.112
percTertEd	0.002267**	0.001016	0.040
percPop15_24	0.001881	0.002313	0.428
percPop20_39	-0.003050*	0.001590	0.073
womenPer100Men	-0.009432***	0.001379	0.000
proplImmigration	-0.080724***	0.013039	0.000
startingBusinessCost	-0.000605**	0.000241	0.023
barriersTradeInv	0.024296***	0.004722	0.000
complexityRegProced	0.008016**	0.003737	0.048
regProtIncumb	0.050979***	0.014963	0.004
stateControl	-0.010421	0.007324	0.174
rSTInterestRate	0.000232	0.000324	0.485
startingBusinessDays	-0.000008	0.000052	0.887

startingabusinesspaidinmin~p	0.000025	0.000034	0.471
d2008	0.016966***	0.004062	0.001
gvaShareAccomFoodd2008	-0.349898***	0.084973	0.001
gvaShareArtsEnterRecrd2008	-0.447890	0.342566	0.210
Constant	1.042180***	0.207389	0.000
Observations	139		
R-squared (within)	0.7200		
R-squared (between)	0.1061		
Number of countries	17		

Note: Standard errors used are cluster-robust standard errors.
Source: *London Economics*

4.5.3 Results of the general-to-specific model selection procedure for groups of countries clustered by GDP per capita

This section presents the results of the general-to-specific modelling procedure applied to the groups of high GDP (Table 6) and intermediate GDP (excluding Slovakia) countries (Table 7). For the reasons outlined previously, the set of variables used in the general-to-specific modelling procedure for the intermediate GDP countries excluded the OECD barriers to entrepreneurship variables, as well as the variables related to personal tax rates and spending on unemployment benefits.

Comparing the results reported in tables 6 and 7, it can be seen that three variables were selected for both the intermediate and the high GDP group. These are i) the cost associated with starting a business, ii) short-term interest rates, and iii) the proportion of the population with a relatively low education. All three variables were also selected for the model covering 21 of the 28 EU Member States, discussed in the previous section.

In addition to these three variables, average weekly working hours, GDP, the size of the 'arts, entertainment and recreation' sector, the long-term unemployment rate, the proportion of the population aged 20 to 39, spending on social protection benefits, and income inequality were all selected as explanatory variables for the group of high GDP countries.

For the group of intermediate per-capita GDP countries the general-to-specific modelling procedure selected the size of the 'agriculture, forestry and fishing' sector, the proportion of women in the population, the proportion of immigration, and the minimum capital for starting a small- to medium-sized limited liability company as relevant explanatory variables in addition to the three variables outlined above.

The special dummy variable for 2008 onwards was also relevant in both models, as well as the previous model covering 21 EU Member States. This suggests a change in the relationship between the self-employment rates and the explanatory variables in the more recent years.

Table 6: Results of the general-to-specific model selection procedure for group of high per-capita GDP countries 2004-2013

Variables	Coefficients	Standard errors	P> t
avgWorkHours	0.0040224**	0.0012428	0.012
gdp	-0.0007127***	0.0002048	0.008
gvaShareArtsEnterRecr	2.766964***	0.7123387	0.005
ltermunemp	0.003722***	0.000984	0.005
percLTPrimaryEd	0.0005325***	0.0001559	0.009
percPop20_39	-0.0052431***	0.0014677	0.007
socProtBenefits	3.82E-06**	1.47E-06	0.032
rSTInterestRate	0.0005003*	0.0002285	0.060
ineqIncDist	-0.003723***	0.001027	0.007
startingBusinessCost	-0.000703*	0.0003103	0.053
d2008	0.0142226***	0.0018317	0.000
gvaShareAccomFoodd2008	-0.1971862***	0.0526097	0.006
gvaShareTransportd2008	-0.2408119***	0.038418	0.000
Constant	0.0264377	0.0631824	0.687
Observations	87		
R-squared (within)	0.835		
R-squared (between)	0.732		
Number of countries	9		

Note: Standard errors used are cluster-robust standard errors.

Source: London Economics

Table 7: Results of the general-to-specific model selection procedure for intermediate per-capita GDP countries except Slovakia – 2004-2013

Variables	Coefficients	Standard errors	P> t
gvaShareAgricult	1.212672***	0.2623303	0.001
perLTPrimaryEd	0.0008259**	0.0003187	0.029
womenPer100Men	-0.009619***	0.0008219	0.000
rSTInterestRate	0.0008462**	0.0002922	0.018
propImmigration	-0.0755795**	0.0328833	0.047
startingBusinessCost	-0.0008179*	0.0003678	0.053
startingabusinesspaidinmin~p	0.0000364***	7.70E-06	0.001
d2008	0.0123824**	0.0044801	0.022
gvaShareAccomFoodd2008	-0.1143458	0.0624047	0.100
gvaShareTransportd2008	-0.2165393***	0.0229838	0.000
Constant	1.140798***	0.0899837	0.000
Observations	87		
R-squared (within)	0.860		
R-squared (between)	0.163		
Number of countries	10		

Notes: Standard errors used are cluster-robust standard errors. Source: London Economics

4.6 Results of the country-specific time-series econometric analysis

Because of the variation in variables chosen by the general-to-specific modelling procedure for different groups discussed in the previous section, separate time-series regressions were run for each of the 28 EU Member States. These regressions take all variables presented in Section 4.2 as the starting point excluding, for each country, variables with missing observations for that country. Because of the nature of time series regressions a slightly longer sample period, 2000 – 2016, was used.

The results of this analysis are presented in Table 8 to Table 13.

As these tables show, higher average working hours of employees are associated with higher self-employment rates for 20 of the 28 EU Member States. This relationship was statistically significant for 8 of these 20 countries. For six countries a negative relationship was found, although the relationship was not significant in any of the six countries. Average working hours were excluded from the regression for two countries because of missing data.

The findings regarding the level of GDP per capita varies markedly across the 28 Member States with higher GDP being linked to higher self-employment rates in 15 of the EU-28 Member States (this relationship is statistically significant in two cases). The other 13 EU-28 Member States show a negative relationship between GDP and the self-employment rate (this relationship is statistically significant for two countries).

A higher proportion of population aged 15 to 24 (20 to 39) is associated with higher self-employment rates for 10 (9) of the EU-28 Member States. Two (one) of these were statistically significant. For the

other 18 (19) EU-28 Member States, a higher proportion of people aged 15 to 24 (20 to 39) is associated with lower self-employment rates. Three (five) of these relationships were statistically significant.

Higher unemployment rates are associated with higher (lower) self-employment rates in 19 (9) of the EU-28 Member States (five (two) of these are statistically significant). Higher long-term unemployment rates are associated with higher (lower) self-employment rates in 7 (10) of the EU-28 Member States (two (one) of these are statistically significant). The long-term unemployment is not included in the model for 11 EU Member States due to missing data.

A higher proportion of women in the population is associated with a higher (lower) self-employment rate in 12 (16) of the 28 EU Member States. Four (four) of these relationship are statistically significant.

Higher employee compensation is linked to lower self-employment rates in the vast majority (18 of 28) EU Member States (this is statistically significant for two countries). For eight countries, higher average employee compensation is linked to higher self-employment rates (statistically significant for one country). Employee compensation is excluded in the model for two countries due to missing data.

Higher average personal tax rates for a single employee with one child are associated with higher self-employment rates in 15 countries (one of these is statistically significant), and with lower self-employment rate in 5 countries (one of these is statistically significant). Average personal tax rates were excluded from the model in the case of 8 countries due to missing data.

The variable capturing the size of the ‘agriculture, forestry and fishing’ sector and the variables capturing the sizes of the platform economy sectors, as well as the corresponding dummy and interaction variables, were only included in the regression for Malta. For all other countries one or more observations were missing. In the case of Malta, a larger size of all sectors, except the ‘accommodation and food service activities’ sector, were associated with higher self-employment rates. None of these relationships is statistically significant.

Table 8: Results of the econometric analysis by country – Austria to Cyprus, 2000 - 2016

Variables	Austria	Belgium	Bulgaria	Croatia	Cyprus
avgWorkHours	0.00159** (0.000525)	-0.00237 (0.00132)		0.00239 (0.0157)	0.00959 (0.00573)
gdp	-0.00130 (0.000780)	0.000407 (0.00240)	-0.00898* (0.00394)	-0.0104 (0.0101)	0.000340 (0.00140)
gvaShareAccomFood					
gvaShareAgricult					
gvaShareArtsEnterRecr					
gvaShareTransport					
percPop1524	-0.00526 (0.00534)	-0.0328 (0.0237)	-0.0108 (0.00981)	-0.0125 (0.0309)	0.0241*** (0.00312)
percPop2039	-0.00323 (0.00187)	-0.000149 (0.0111)	0.00190 (0.00460)	0.0805** (0.0279)	-0.0150** (0.00564)
unempRate	0.000787 (0.000588)	0.00587** (0.00233)	0.000732 (0.00190)	0.00526 (0.00375)	0.00379** (0.00159)
womenPer100Men	-0.00298* (0.00130)	-0.00344 (0.00982)	0.0126 (0.0160)	0.0567 (0.0516)	-0.00887 (0.00787)
d2008	-0.00115 (0.00144)	-0.00584 (0.00506)	0.00565 (0.00644)	-0.00614 (0.0137)	-0.00504 (0.00487)
gvaShareAccomFoodd2008					
gvaShareArtsEnterRecrd2008					
gvaShareTransportd2008					
allinTaxRateSingleNoChild	0.000841 (0.000444)	0.00377 (0.00323)			

compensation	-0.000911 (0.00138)	-0.000754 (0.00578)	-0.00478 (0.0223)	0.0398 (0.0318)	-0.00200 (0.00285)
ltermunemp		-0.00807 (0.00560)	-0.00237 (0.00246)		
Constant	0.539**	0.821	-1.021	-8.202	0.768
Observations	17	17	17	15	17
R-squared	0.908	0.765	0.942	0.955	0.981

Note: Standard errors used are robust standard errors.

Source: *London Economics*

Table 9: Results of the econometric analysis, by country – Czech Republic to France, 2000 - 2016

Variables	Czech Republic	Denmark	Estonia	Finland	France
avgWorkHours	0.00249 (0.00512)	0.00235** (0.000741)	0.00537 (0.0133)	0.00743 (0.0116)	0.00417** (0.00132)
gdp	-0.00607 (0.00565)	0.000133 (0.00144)	0.00105 (0.00413)	-0.00188 (0.00132)	-0.000291 (0.00143)
gvaShareAccomFood					
gvaShareAgricult					
gvaShareArtsEnterRecr					
gvaShareTransport					
percPop1524	-0.0178 (0.0170)	0.00329 (0.00181)	-0.00407 (0.00607)	0.0151* (0.00719)	-0.0130 (0.0119)
percPop2039	0.00858 (0.00705)	-0.00259 (0.00188)	-0.00672 (0.0266)	-0.0110 (0.00583)	-0.0135 (0.0111)
unempRate	-0.00195 (0.00924)	0.00445** (0.00165)	0.00253 (0.00193)	0.00170 (0.00170)	-6.76e-05 (0.00160)
womenPer100Men	-0.0202	0.0127*	0.0186	-0.0101	-0.0124

	(0.0343)	(0.00586)	(0.0258)	(0.0159)	(0.0134)
d2008	-0.0132 (0.0209)	-0.000609 (0.00117)	-0.0205* (0.00858)	-0.000273 (0.00366)	-0.00531 (0.00332)
gvaShareAccomFoodd2008					
gvaShareArtsEnterRecrd2008					
gvaShareTransportd2008					
allinTaxRateSingleNoChild	0.00368 (0.00726)	0.00277** (0.000961)	0.00279 (0.00244)	0.00386* (0.00192)	-0.00585* (0.00279)
compensation	-0.00357 (0.00858)	0.000920 (0.00129)	0.00605 (0.00593)	0.00178 (0.00317)	-0.00608 (0.00567)
ltermunemp	0.00160 (0.0119)	-0.00873* (0.00390)	-0.00154 (0.00346)	0.00113 (0.00366)	
Constant	2.212	-1.430*	-2.149	0.838	2.093
Observations	17	17	17	17	17
R-squared	0.783	0.949	0.792	0.871	0.920

Notes: Standard errors used are robust standard errors.

Source: *London Economics*

Table 10: Results of the econometric analysis, by country – Germany to Italy, 2000 - 2016

Variables	Germany	Greece	Hungary	Ireland	Italy
avgWorkHours	0.00332 (0.00177)	-0.0112 (0.00861)	0.0201** (0.00795)	0.0107 (0.00991)	0.0262*** (0.00568)
gdp	0.000209 (0.000640)	-0.00312 (0.00354)	-0.0156*** (0.00378)	-0.00103 (0.000554)	-0.00197 (0.00214)
gvaShareAccomFood					
gvaShareAgricult					

gvaShareArtsEnterRecr					
gvaShareTransport					
percPop1524	-0.00437 (0.00452)	0.0107 (0.0129)	-0.0403*** (0.0109)	0.0173 (0.0151)	0.00604 (0.0127)
percPop2039	-0.00287** (0.000978)	-0.000350 (0.00394)	-0.0151** (0.00616)	-0.00684 (0.00624)	0.00250 (0.00497)
unempRate	0.00234*** (0.000478)	0.00107 (0.00298)	-0.0138** (0.00466)	0.00458 (0.00294)	-0.000236 (0.00371)
womenPer100Men	0.00131 (0.000909)	-0.00209 (0.00405)	0.0543** (0.0155)	0.00926 (0.0101)	0.0171* (0.00866)
d2008	-0.000708 (0.00153)	0.00843** (0.00301)	0.0112*** (0.00222)	-0.00675 (0.00918)	-0.00511 (0.00389)
gvaShareAccomFoodd2008					
gvaShareArtsEnterRecrd2008					
gvaShareTransportd2008					
allinTaxRateSingleNoChild	-0.000571 (0.000464)	-0.000280 (0.000625)	0.00121 (0.000787)	-0.000999 (0.00159)	0.00323 (0.00352)
compensation	-0.000990 (0.00109)	0.00321 (0.00619)	-0.00492 (0.00303)	0.00772 (0.00644)	0.00552 (0.00972)
ltermunemp		0.00163 (0.00312)	0.0273** (0.0100)	-0.000151 (0.00288)	0.00249 (0.00599)
Constant	-0.0265	0.899	-5.505**	-1.407	-2.928**
Observations	17	17	17	17	17
R-squared	0.968	0.964	0.983	0.911	0.963

Notes: Standard errors used are robust standard errors.

Source: *London Economics*

Table 11: Results of the econometric analysis, by country – Latvia to Netherlands, 2000 - 2016

Variables	Latvia	Lithuania	Luxembourg	Malta	Netherlands
avgWorkHours	-0.000861 (0.00404)	-0.0186 (0.0187)	0.0255** (0.00954)	0.0394 (0.0189)	0.0210*** (0.00582)
gdp	0.00294 (0.00503)	-0.000229 (0.00378)	0.00171 (0.00101)	0.00610 (0.00728)	0.00161* (0.000774)
gvaShareAccomFood				-2.595 (3.804)	
gvaShareAgricult				9.372 (4.357)	
gvaShareArtsEnterRecr				0.968 (0.779)	
gvaShareTransport				1.191 (1.772)	
percPop1524	-0.00432** (0.00158)	-0.0109 (0.0174)	-0.00697 (0.0133)	-0.00318 (0.0197)	-0.0106 (0.0134)
percPop2039	-1.51e-05 (0.00541)	-0.00458 (0.0213)	0.00412 (0.00450)	-0.0244 (0.0147)	-0.00249 (0.00158)
unempRate	0.000999 (0.000795)	-0.00119 (0.00334)	-0.00366* (0.00185)	0.0112 (0.0109)	0.00339*** (0.000597)
womenPer100Men	-0.00915 (0.00904)	-0.0202 (0.0325)	0.00516 (0.00835)	0.0459 (0.0316)	-0.0371*** (0.00856)
d2008	-0.00530 (0.00524)	-0.00816 (0.0119)	-0.00384 (0.00351)	-0.306 (0.244)	0.00667** (0.00256)
gvaShareAccomFoodd2008				5.391 (5.685)	
gvaShareArtsEnterRecrd2008				0.753 (1.248)	
gvaShareTransportd2008				0.543 (1.386)	
allinTaxRateSingleNoChild			0.000607 (0.00155)		0.000270 (0.000752)
compensation	-0.00325	-0.00280			-0.000385

ltermunemp	(0.00590)	(0.0119)			(0.00127)
Constant	1.244	3.522	-1.625	-5.824	3.180**
Observations	17	17	17	17	17
R-squared	0.926	0.978	0.844	0.904	0.995

Notes: Standard errors used are robust standard errors.

Source: *London Economics*

Table 12: Results of the econometric analysis, by country – Poland to Slovenia, 2000 - 2016

Variables	Poland	Portugal	Romania	Slovakia	Slovenia
avgWorkHours		-0.00529 (0.00794)	0.0175 (0.0109)	-0.00104 (0.00753)	0.00629 (0.0214)
gdp	0.000175 (0.00167)	-0.00292 (0.00308)	0.00286 (0.00602)	-0.0116 (0.00815)	0.00131 (0.00561)
gvaShareAccomFood					
gvaShareAgricult					
gvaShareArtsEnterRecr					
gvaShareTransport					
percPop1524	0.00394 (0.00244)	-0.0122 (0.0125)	-0.0112 (0.0134)	0.00160 (0.0112)	-0.0174 (0.0267)
percPop2039	-0.00586*** (0.00153)	-0.0240 (0.0194)	0.0163 (0.0120)	0.0120 (0.00843)	0.0138 (0.0144)
unempRate	0.00123 (0.00122)	-0.000286 (0.00300)	-0.000777 (0.00652)	0.00249 (0.00402)	-0.00913 (0.00478)
womenPer100Men	-0.00973 (0.00528)	-0.0554* (0.0279)	-0.00774 (0.00785)	0.0467* (0.0199)	-0.0173 (0.0117)

d2008	-0.00567 (0.00476)	-0.000117 (0.00789)	-0.00783 (0.0117)	-0.0219 (0.0136)	-0.00147 (0.0134)
gvaShareAccomFoodd2008					
gvaShareArtsEnterRecrd2008					
gvaShareTransportd2008					
allinTaxRateSingleNoChild	-0.00261 (0.00182)	0.00121 (0.00202)			0.000618 (0.00508)
compensation	-0.000348 (0.00143)	-0.0139 (0.0131)	-0.0166* (0.00796)	0.0505** (0.0211)	-0.00899 (0.0142)
ltermunemp	-0.000808 (0.00162)	-0.000318 (0.00435)	-0.0151 (0.0119)	0.00122 (0.00577)	0.0114** (0.00462)
Constant	1.409**	7.428*	0.0349	-5.287**	1.532
Observations	17	17	17	17	17
R-squared	0.995	0.984	0.809	0.979	0.887

Notes: Standard errors used are robust standard errors.

Source: *London Economics*

Table 13: Results of the econometric analysis, by country – Spain to United Kingdom, 2000 - 2016

Variables	Spain	Sweden	United Kingdom
avgWorkHours	0.00655 (0.00682)	0.00865** (0.00341)	0.0128 (0.0103)
gdp	0.00714** (0.00280)	0.000102 (0.000745)	0.00186 (0.00136)
gvaShareAccomFood			
gvaShareAgricuilt			

gvaShareArtsEnterRecr			
gvaShareTransport			
percPop1524	0.00437 (0.00418)	0.00328 (0.00365)	-0.00757** (0.00295)
percPop2039	-0.00116 (0.00326)	0.00168 (0.00403)	-0.00753* (0.00361)
unempRate	0.000171 (0.00178)	0.000701 (0.00103)	0.00231 (0.00272)
womenPer100Men	-0.00227 (0.0123)	0.00189 (0.00492)	-0.0142* (0.00646)
d2008	0.0168** (0.00667)	-0.000642 (0.00261)	-0.000242 (0.00215)
gvaShareAccomFoodd2008			
gvaShareArtsEnterRecrd2008			
gvaShareTransportd2008			
allinTaxRateSingleNoChild	0.000388 (0.00207)	0.000162 (0.000563)	0.00343 (0.00181)
compensation	-0.0115** (0.00395)	-0.000187 (0.000585)	-0.000918 (0.000525)
ltermunemp	-0.000634 (0.00219)		-0.00109 (0.00333)
Constant	0.100	-0.543	1.221***
Observations	17	17	17
R-squared	0.920	0.915	0.991

Notes: Standard errors used are robust standard errors.
Source: *London Economics*

4.7 Impact of policies to encourage self-employment

This section provides the results of the econometric analysis of the relationship between the self-employment rate and specific policies aimed at encouraging and supporting self-employment. The information on these policy variables was specially collected during the first half of 2017 as part of the annual gathering of information on the implementation of the SBA.

The following eight questions were asked as part of the information gathering exercise:

- Q1.** Are there specific support measures to encourage self-employment?
- Q2.** Are there simplified tax procedures for the self-employed?
- Q3.** Are there grants for self-employed?
- Q4.** Are there regulatory exemptions/derogations for self-employed?
- Q5.** Are there specific measures to protect the social security, healthcare, pensions of self-employed?
- Q6.** Is there free legal assistance for the self-employed?
- Q7.** Are there assistance programmes for unemployed/laid-off workers to become self-employed?
- Q8.** Is there public support for strategic coaching & mentoring for the self-employed?

In the econometric analysis, answers to each question were converted into a dummy variable, which was set to 1 for all countries where the answer was 'yes' to the respective question and to 0 if the answer was no.

The hypothesis, in each case, is that the measure encourages self-employment. Therefore, a positive relationship between each policy measure and the self-employment rate is expected.

An overall measure, capturing the presence (or absence) of programmes in a higher (lower) number of policy areas, was also constructed by summing up the dummy variables for questions one to eight for each country.

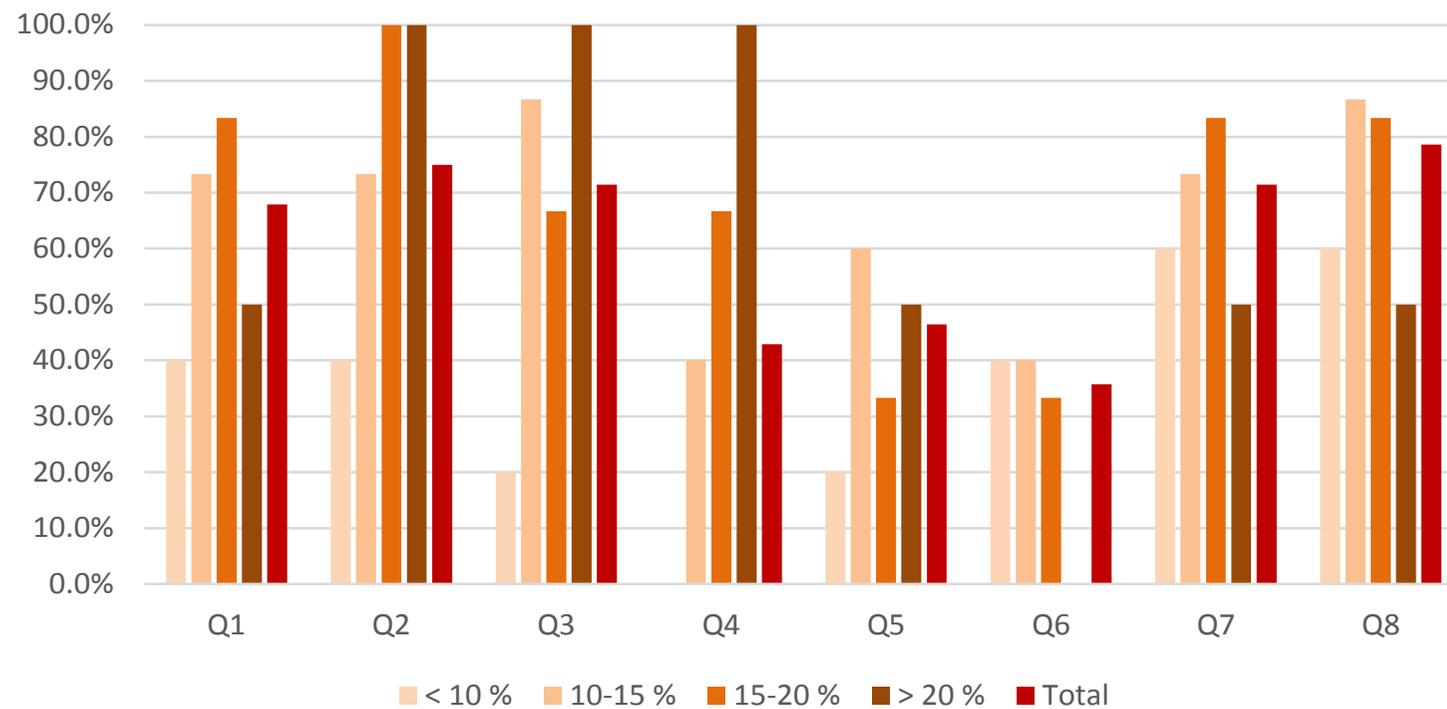
The hypotheses in this case is that the presence of programmes in a higher number of policy areas is associated with higher self-employment rates.

4.7.1 Overview of data

An overview of the data is given in Figure 1 and Figure 2. Specifically, Figure 1 presents, for each question, the proportion of countries with a self-employment rate < 10 %, 10-15 %, 15-20 % and > 20 %, for which the answer is 'yes' to a particular question.

Similarly, Figure 2 presents, for each question, the proportion of countries with low, intermediate, high and very high GDP per capita for which the answer to a particular question is 'yes'. The table below each figure shows, for each question, the number of countries where the answer is 'yes', and 'no', grouped by the self-employment rate and by GDP.

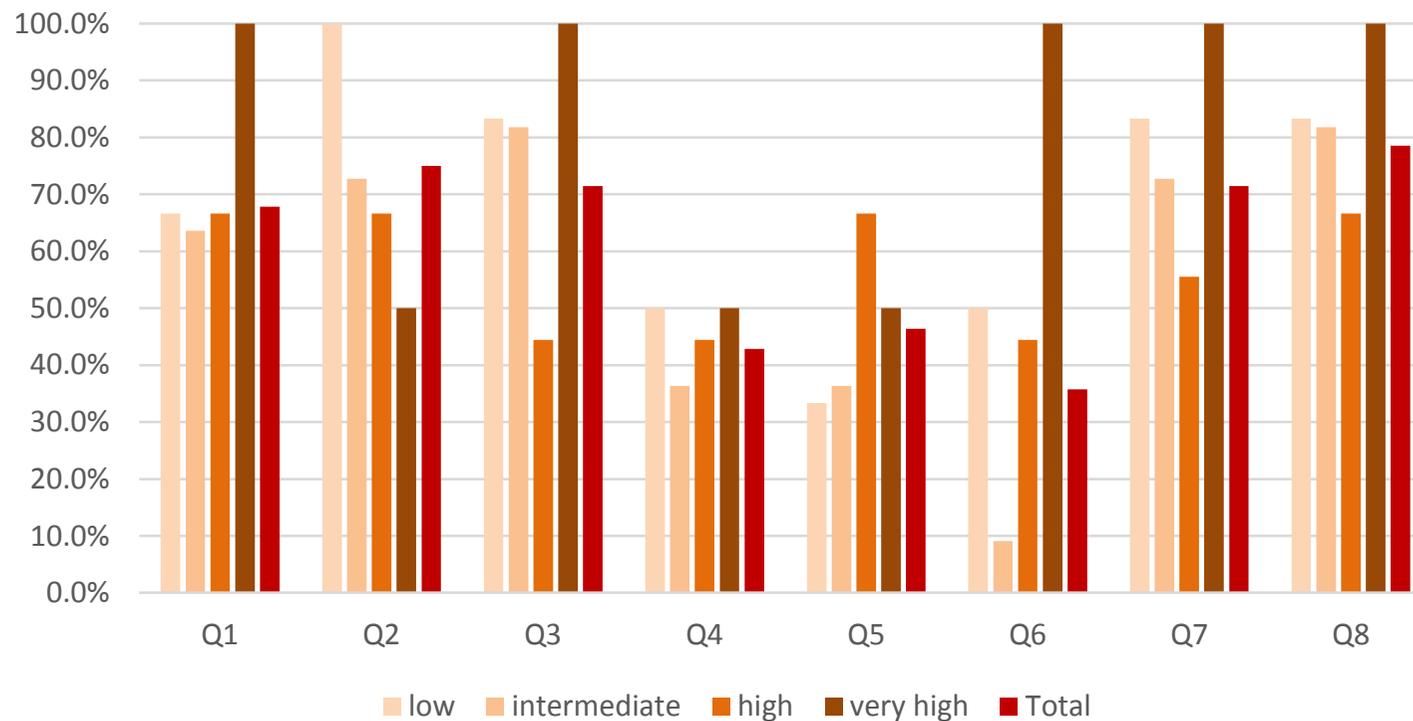
Figure 1 shows a large variation in the implementation of the eight policy measures across groups of EU-28 Member States, when Member States are grouped by the self-employment rate. Specifically, the figure shows that it is not necessarily the case that Member States with a higher self-employment rate also have higher proportion of support measures. For example, two (66.6 %) of the three Member States with a self-employment rate of less than 10 % and six (66.6 %) of the nine Member States with a self-employment rate between 10 % and 15 % offer free legal assistance to the self-employed. However, only two (50 %) of the four Member States with a self-employment rate between 15 % and 20 %, and none of the Member States with a self-employment rate over 20 % do the same.

Figure 1: Policies to encourage self-employment, by self-employment rate

SE-rate	Countries in group	Q1		Q2		Q3		Q4		Q5		Q6		Q7		Q8	
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
< 10 %	5	2	3	2	3	1	4	0	5	1	4	2	3	3	2	3	2
10-15 %	15	11	4	11	4	13	2	6	9	9	6	6	9	11	4	13	2
15-20 %	6	5	1	6	0	4	2	4	2	2	4	2	4	5	1	5	1
> 20 %	2	1	1	2	0	2	0	2	0	1	1	0	2	1	1	1	1
Total	28	19	9	21	7	20	8	12	16	13	15	10	18	20	8	22	6

Source: 2017 Annual SME Performance Review

Figure 2: Policies to encourage self-employment, by GDP



GDP	Countries in group	Q1		Q2		Q3		Q4		Q5		Q6		Q7		Q8	
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
low	6	4	2	6	0	5	1	3	3	2	4	3	3	5	1	5	1
intermediate	11	7	4	8	3	9	2	4	7	4	7	1	10	8	3	9	2
high	9	6	3	6	3	4	5	4	5	6	3	4	5	5	4	6	3
very high	2	2	0	1	1	2	0	1	1	1	1	2	0	2	0	2	0
Total	28	19	9	21	7	20	8	12	16	13	15	10	18	20	8	22	6

Source:

2017

Annual

SME

Performance

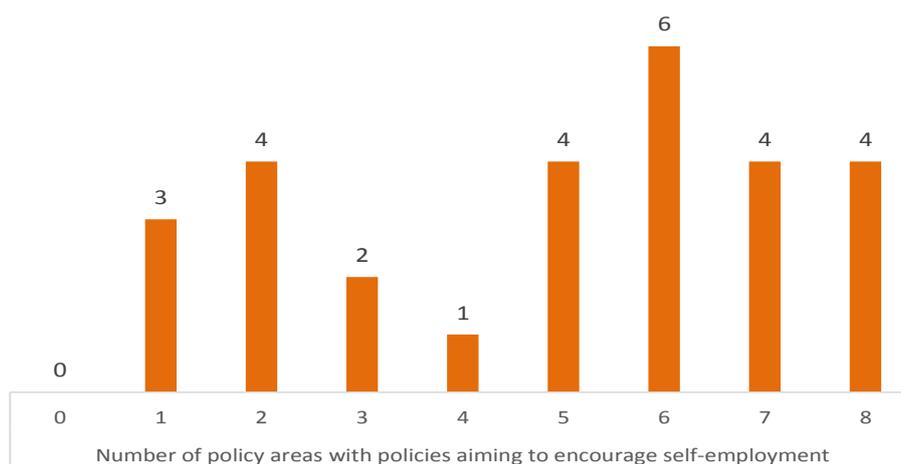
Review

The only policy measure that shows a strictly positive relationship with the self-employment rate is the presence of regulatory exemptions/derogations for self-employed (Q4). None of the Member States with a self-employment rate less than 10 % provide regulatory exemptions, while two-fifths (40 %) of Member States with a self-employment rate between 10 % and 15 %, two-thirds (66.7 %) of Member States with a self-employment rate between 15 % and 20 % and both Member States with a self-employment rate of over 20 % do so.

Figure 2 also shows no clear pattern in the implementation of the eight policy measures across groups of EU-28 Member States, when Member States are grouped by GDP per capita. Moreover, while Member States with a very high GDP indeed implement a large number of these policies, the size of this group is very small, with only two Member States falling into this category.

Figure 3 shows the data for the overall measure. Specifically, Figure 3 shows the number of countries who have implemented one, two, three, four, five, six, seven, or all eight of the policy measures. As this figure shows, 50 % (14 of the 28 Member States) have implemented policy measures in six or more areas, 25 % (7 Member States) have implemented policy measures in three to five policy areas, and 25 % (7 Member States) have implemented policy measures in one or two policy areas. There exists no country which has not implemented policy measures in any of the eight policy areas.

Figure 3: Policies to encourage self-employment, number of countries by number of policy areas in which measures are implemented



Source: London Economics

4.7.2 Econometric analysis

To examine the relationship between policies aiming to encourage self-employment and the self-employment rate, a number of models were run :

- A univariate regression, for each policy measure, as well as the overall measure, of the self-employment rate on the dummy variable of the corresponding policy measure, both with and without controls for GDP, education level, age, unemployment, and the number of women per 100 men.
- A multivariate regression of the self-employment rate on the dummy variables for all eight policy measures¹¹, both with and without controls.
- A general-to-specific modelling procedure including dummy variables for all eight policy measures, and controls.

¹¹ The overall measure cannot be included in the multivariate regressions as this would result in perfect multicollinearity between the overall measure and the individual policy measures.

Table 14 presents the results of eight separate univariate regressions of the self-employment rate on the dummy variable for each question, as well as the results of the univariate regression of the self-employment rate on the overall measure. Table 15 provides the results of the same univariate regression, but with added control variables for GDP, the average number of working hours, unemployment and long-term unemployment, the proportion of population aged 15-24 and the proportion of population aged 20-39, the proportion of population with relatively low education and the proportion of population with relatively high education, and the proportion of women in the population..

As can be seen in Table 14, only the dummy variables for questions 2, 3, 4 and 5 showed a positive relationship with the self-employment rate; that is countries for which the answer is 'yes' to these questions show a higher self-employment rate than those countries for which the answer is 'no'. The other dummy variables show a negative relationship with the self-employment rate. The overall measure also shows a positive relationship with the self-employment rate.

In terms of statistical significance, only the dummy variables for questions 2 and 4 shows a statistically significant relationship with the self-employment rate. The relationship between the overall measure and the self-employment rate is also not statistically significant. Moreover, once control variables are added (Table 15), only the dummy variable for question 4 shows a statistically significant relationship with the self-employment rate. In other words, once differences in GDP per capita, education level, age, unemployment, and the proportion of women in the population are controlled for, the dummy variable for question 4 is the only dummy variable that has some additional explanatory power in explaining differences in the self-employment rate across Member States.

Table 14: Results of univariate cross-section regression of the self-employment rate on dummy variables for policy survey questions - 2016

Variables	Coefficients	Adjusted R-squared
dQ1	-.0033558 (.0182428)	-0.0371
dQ2	.0344067* (.0184961)	0.0835
dQ3	.0281477 (.0180463)	0.0835
dQ4	.0482024*** (.0144021)	0.2742
dQ5	.0111096 (.016955)	-0.0216
dQ6	-.0196192 (.0173714)	0.0101
dQ7	-.0068218 (.0188242)	-0.0332
dQ8	-.0153712 (.0205572)	-0.0166
Overall	.0032607 (.003619)	-0.0070

Notes: Each row represents a separate regression. All EU-28 countries were included in each regression; that is, the number of observations was 28 in each case.

Source: London Economics

Table 15: Results of univariate cross section regressions of the self-employment rate on dummy variables for policy survey questions – including controls for GDP, average working hours, (long-term) unemployment, education, population age, and proportion of women

Variables	Coefficients	Adjusted R-squared
dQ1	-.0023121 (.0139447)	0.4695
dQ2	.0128878 (.0191759)	0.4824
dQ3	-.0099178 (.0167605)	0.4793

dQ4	.0283301* (.0137077)	0.5753
dQ5	.0027999 (.0231937)	0.4691
dQ6	-.0039244 (.0152211)	0.4707
dQ7	.0101628 (.01638)	0.4804
dQ8	.0081 (.0186485)	0.4744
Overall	.0014116 (.002983)	0.4755
Controls only	-	0.4981

Notes: Each row represents a separate regression. All EU-28 countries were included in each regression; that is, the number of observations was 28 in each case. The number of regressors, excluding the constant, was 10 in each case.

Source: London Economics

Table 16 presents the results of the multivariate regression of the self-employment rate on all eight dummy variables for the policy survey questions. As for the univariate regressions, Table 17 provides the results of the multivariate regression but with added control variables.

Similarly as for the univariate case, the dummy variables for questions 2, 3 and 4 show a positive relationship with the self-employment rate. However, in addition to the dummy variables for questions 1, 6, 7 and 8, the dummy variable for question 5 also shows a negative relationship in this case.

However, only the coefficient estimates for the dummy variables for questions 1, 2 and 4 were statistically significant. Once control variables are added (Table 17), only the dummy variable for question 4 is, once again, statistically significant. That is, as was the case in the univariate case, once we control for other effects, the dummy variable for question 4 is the only dummy variable that can explain further differences in the self-employment rate.

Table 16: Results of the cross-section multivariate regression of the self-employment rate on all dummy variables for policy survey questions - 2016

Variables	Coefficients	Standard errors
dQ1	-.0400556*	.0215756
dQ2	.0316542*	.0182057
dQ3	.029905	.0177806
dQ4	.0574909***	.0164234
dQ5	-.005843	.0148615
dQ6	-.0223096	.0142725
dQ7	-.0251469	.0175455
dQ8	-.0021192	.0198088
Constant	.121659***	.0179962
Observations	28	
Adjusted R-squared	0.4880	

Source: London Economics

Table 17: Results of the multivariate cross-section regression of the self-employment rate on all dummy variables for policy survey questions – including controls for GDP, average working hours, long-term unemployment, education, population age, and proportion of women – 2016

Variables	Coefficients	Standard errors
dQ1	-.0244272	.0353048
dQ2	.0067693	.0273707
dQ3	.0018637	.0306869
dQ4	.0475432*	.0236739
dQ5	.0098063	.0327695
dQ6	-.0177951	.0196271
dQ7	-.0110629	.0238788
dQ8	.0048321	.0329447
avgWorkHours	.0048034	.0116426
gdp	.0008733	.0012389
unempRate	.0034311	.0095099
ltermunemp	.0016944	.0142429
percLTPrimaryEd	-.0007067	.0011173
percTertEd	-.0025438	.0031452
womenPer100Men	-.0002136	.0022023
Constant	-.0461218	.5834576
Observations	28	
Adjusted R-squared	0.4281	

Source: London Economics

Table 18 presents the results of the general-to-specific modelling procedure applied to all dummy variables for the policy survey questions and the control variables. The dummy variable for question 4 is the only dummy variable selected by the general-to-specific modelling procedure. This suggests, once again, that the dummy variable for question 4 is the only dummy variable that contributes to explaining differences in the self-employment rate.

In terms of control variables, the general-to-specific modelling procedure selected the average number of working hours per week, the proportion of population with tertiary education and the unemployment rate.

Table 18: Results of the cross-section general-to-specific modelling procedure on all dummy variables for policy survey questions and controls for GDP, average working hours, long-term unemployment, education, population age, and proportion of women

Variables	Coefficients	Standard errors
dQ4	.0314668**	.0103901
avgWorkHours	.0116599**	.0049777
percTertEd	-.0015198***	.0007115
unempRate	.0044298***	.0011949
Constant	-.3560147*	.2023465
Observations	28	
Adjusted R-squared	0.6640	

Notes: Source: London Economics

4.8 Overview of results

Overall, the analysis showed a large variation in factors ‘explaining’ differences in the self-employment rate across the EU-28 Member States. No single specific factor shows a consistent relationship with the self-employment rate in all EU-28 Member States or in Member State groupings, and no single relationship was found to be statistically significant across all model specifications.

Some factors, however, showed similar patterns across a majority of Member States.¹² For example:

- Higher average working hours were associated with higher self-employment rates in the EU-28, in all four Member State groupings, and 20 of 28 individual Member States, as well as in the two (out of four) general-to-specific models which selected average working hours as an explanatory variable.
- A higher proportion of population with relatively low education (less than primary / secondary) as well as a higher proportion of population with relatively high education (tertiary) were associated with higher self-employment rates in the EU-28 and in three out of four Member State groupings (these variables were excluded from the country-specific analysis due to missing data). The variable capturing the proportion of population with a relatively low education was also selected by all general-to-specific models, while the variable capturing the proportion of population with a relatively high education was selected in one general the specific model. Importantly, the relationship for both variables was positive in all general-to-specific models for which they were selected as an explanatory variable.
- A younger population – measured by the proportion of the population aged 15-24 and the proportion of population aged 20-39 – was associated with lower self-employment rates for the EU-28, in three out of four and two out of four Member State groupings respectively, and 18 and 19 of the 28 individual Member States respectively¹³. The proportion of population aged 20-39 was also selected in two general-to-specific models, and the relationship was estimated to be

¹² This discussion compares, across all estimated models, the direction of the estimated relationships only. No factor showed a consistent and statistically significant relationship across all model specifications. The relationships discussed in this section should therefore be seen as indicative only. For detailed discussions of the results, including their statistical significance, see Sections 4.4-4.7.

¹³ One possible explanations for this could be the presence of liquidity constraints, affecting young workers particularly as they had less time to accumulate assets (see, for example, Evans and Jovanovic, 1989, or Blanchflower and Oswald, 1998). Another possible explanation could be a higher ratio of necessity self-employment to opportunity self-employment in countries with a larger share of older self-starters; as more older people tend to turn to self-employment out of necessity (see, for example, Botrić and Tomić (2016).

negative in both cases. The proportion of population aged 15-24 was also chosen in one model, however, the relationship was estimated to be positive.

- A higher proportion of women in the population is associated with lower self-employment rates in the case of the EU-28 overall, in 2 out of 4 Member State groupings, and 16 out of 28 EU Member States. The number of women per 100 men was chosen in three general-to-specific models, and the relationship was negative in all three cases.

In addition, the country-specific analysis also showed that:

- Higher average employee compensation was linked with lower self-employment rates in 18 of the 26 EU Member States for which complete data was available, as well as the one general-to-specific model in which compensation was selected as an explanatory variable.
- Higher average personal tax rates were linked with higher self-employment in 15 of the 20 EU Member States for which complete data was available. Differences between implicit personal and corporate tax rates were also selected by the general-to-specific modelling procedure and showed a positive relationship with the self-employment rate.

No consistent pattern was found between GDP, unemployment, the long-term unemployment rate and the size of the agricultural sector.¹⁴

The platform economy variables did also not show consistent signs that a larger platform economy was associated with higher self-employment rates. However, this result does not necessarily mean that the platform economy does not lead to higher self-employment rates. Rather, it may well reflect the difficulties in measuring the platform economy, as well as the fact that some parts of the platform economy may not show up in official self-employment statistics (e.g. undeclared work).

Additional variables selected by the general-to-specific modelling procedures were:

- Social protection benefits were selected in two of the three general-to-specific models in which they were used and showed a positive relationship in both cases. Unemployment spending was also selected in the general-to-specific model applied to all Member States included in the analysis, but showed a negative relationship with the self-employment rate. Neither of the two labour-market policy variables was selected.
- Short-term interest rates were selected in all four general-to-specific models, and were associated with lower self-employment rates in all four models. A higher proportion of immigration was selected in three of four models, and was associated with lower self-employment rates in all three models. Higher income inequality was only selected for the high GDP countries. The relationship in this case was negative.
- Of the World Bank 'Ease of doing business' variables, only the cost of starting a business showed a consistent relationship across general-to-specific models. It was selected in 3 out of 4 models and, in all three cases, a higher cost of starting a business was associated with lower self-employment rates.
- The OECD Barriers to entrepreneurship variables also showed no consistent negative pattern across general-to-specific models. In particular, only administrative burden for startups and higher state controls were associated with a lower self-employment rate. Both variables were only selected in one out of four general-to-specific models.

¹⁴ While higher unemployment rates were associated with higher self-employment rates in 19 of the 28 EU Member States, higher unemployment rates were associated with lower unemployment rates at the EU-28 level and for half the GDP groupings. Moreover, the unemployment rate was not selected in any of the general-to-specific models, suggesting that, once other factors are controlled for, the unemployment rate is not a driving factor. The long-term unemployment rate showed a positive relationship for the EU-28 and across all GDP groupings. However, in the country analysis, the relationship was negative in more than half (10 of 17) the Member States for which no data was missing. Moreover, the long-term unemployment rate was selected in two general-to-specific models, in one model the relationship was positive, while in the other it was negative. GDP showed a positive relationship in 15 Member States and 2 country groupings and a negative relationship in 13 Member States, the EU-28 level overall, 2 country groupings and in 2 general-to-specific models.

Regarding the relationship between specific policies¹⁵ aimed at encouraging self-employment (discussed in Section 4.7), a consistently positive and statistically significant relationship with the self-employment rate was found only for regulatory exemptions/derogations for self-employed.

4.9 Annex 1: Specification tests

This section provides an overview of the specification tests used and briefly comments on the implication of these tests for the results discussed in the previous sections.

For each model, four specification tests were run:

- The **Shapiro-Wilk normality test** (see Shapiro and Wilk, 1965, and Royston, 1992) was used to test for non-normality of the residuals. The null hypotheses is that the residuals are normally distributed.
- The **Pesaran test for cross-sectional dependence** (see Pesaran, 2004) was used to test for dependence in the residuals across cross-sections. The null hypotheses is that there is no cross-sectional dependence.
- The **Modified Wald statistic for groupwise heteroscedasticity** (see Greene, 2000) was used to test for groupwise heteroscedasticity in the residuals. The null hypotheses is homoskedasticity.
- The **Wooldridge test for serial correlation** (see Wooldridge, 2002) was used to test for serial correlation in the residuals. The null hypotheses is that there is no serial correlation.

Table 19 provides the result of the specification test for the model including all EU-28 countries. This model fails three out of four specification tests (only the test for no cross-sectional dependence is passed).

Groupwise heteroscedasticity and serial correlation were mitigated by using cluster robust standard errors.

Residual non-normality does not affect the coefficient estimates in the model. However, it suggests that care should be taken before drawing inferences from this model, as inference tests assume a normal distribution.

Table 19: Specification tests – All EU-28 Member States

Model	Normality	Cross-sectional dependence	Groupwise heteroscedasticity	Serial correlation
Table 2: All EU-28 Member States	Rejected (0.00205)	Not rejected (0.1683)	Rejected (0.0000)	Rejected (0.0000)

Source: London Economics

Table 20 provides the results of the specification tests for the models grouped by GDP. Similarly to the model for all EU-28 Member States, no model shows significant cross-sectional dependence.

As all models, except the model for very high GDP countries, show signs of groupwise heteroscedasticity and serial correlation, cluster robust standard errors were again used.

As opposed to the model for all EU-28 Member States, all models grouped by GDP pass the normality test. This suggests that GDP is an implicit factor in the model and, hence, that focusing on groups of countries by GDP may be more informative than looking only at the analysis for all EU-28 Member States.

¹⁵ The correlation between the presence (or absence) of programmes in a higher (lower) number of policy areas, and the importance of self-employment in the Member States' labour market was also examined with similar results.

Table 20: Specification tests – by GDP

Model	Normality	Cross-sectional dependence	Group-wise heteroscedasticity	Serial correlation
Table 3: Very high GDP	Not rejected (0.96727)	Not rejected (0.2341)	Not rejected (0.7961)	Not rejected (0.4469)
Table 3: High GDP	Not rejected (0.59468)	Not rejected (0.4871)	Rejected (0.0000)	Rejected (0.0096)
Table 3: Intermediate GDP	Not rejected (0.99969)	Not rejected (0.2939)	Rejected (0.0000)	Rejected (0.0002)
Table 3: Low GDP	Not rejected (0.73096)	Not rejected (0.7026)	Rejected (0.0662)	Rejected (0.0387)

Source: London Economics

Table 21 and Table 23 provide the results of the specification tests for the general-to-specific modelling procedure. For each model, Table 21 shows the results for the initial, general, model, while Table 23 shows the results for the resulting, specific, model.

As was the case in the previous models, most models suffer from groupwise heteroscedasticity and serial correlation. Therefore, cluster robust standard errors were again used.

The general model including all EU-28 Member States except Bulgaria, Croatia, Cyprus, Lithuania, Malta, Romania, and Slovakia, also shows signs of non-normality in the residuals. As non-normality affects statistical inference, this may affect the variables chosen by the modelling procedures. However, the chosen, specific, model does not suffer from non-normality.

Table 21: Specification tests – general-to-specific modelling procedure (general models)

Model	Normality	Cross-sectional dependence	Group-wise heteroscedasticity	Serial correlation
Table 22: Genspec all	Rejected (0.02426)	Not run (not enough common observations)	Rejected (0.0000)	Rejected (0.0000)
Table 5: Genspec all, alternative variables	Not rejected (0.79559)	Not run (not enough common observations)	Rejected (0.0073)	Rejected (0.0004)
Table 6: Genspec high GDP	Not rejected (0.11450)	Not rejected (0.1577)	Rejected (0.0000)	Rejected (0.0212)
Table 7: Genspec intermediate GDP	Not rejected (0.52082)	Not run (not enough common observations)	Rejected (0.0001)	Rejected (0.0008)

ns)

Source: London Economics

Table 23: Specification tests – general-to-specific modelling procedure (specific models)

Model	Normality	Cross-sectional dependence	Group-wise heteroscedasticity	Serial correlation
Table 24: Genspec all	Not rejected (0.08696)	Not run (not enough common observations)	Rejected (0.0000)	Rejected (0.0000)
Table 5: Genspec all, alternative variables	Not rejected (0.83916)	Not rejected (0.1138)	Rejected (0.0000)	Rejected (0.0000)
Table 6: Genspec high GDP	Not rejected (0.46764)	Not rejected (0.2867)	Rejected (0.0000)	Rejected (0.0005)
Table 7: Genspec intermediate GDP	Not rejected (0.76989)	Not run (not enough common observations)	Rejected (0.0064)	Rejected (0.0016)

Source: London Economics

4.9.1 Specification tests for policy models

This section presents the results of the specification tests for the analysis of the relationship between the self-employment rate and specific policies aimed at encouraging self-employment.

For each model, three specification tests were run:

- The **Shapiro-Wilk normality test** (see Shapiro and Wilk, 1965, and Royston, 1992) was used to test for non-normality of the residuals. The null hypothesis is that the residuals are normally distributed.
- The **Ramsey RESET test for model misspecification** (see Ramsey, 1969) was used to test for model misspecification. The null hypothesis is that of no misspecification.
- The **Breusch-Pagan (1979)** test for heteroscedasticity. The null hypothesis is homoscedasticity.

Table 25 provides the results of the specification tests for the univariate models, while Table 26 provides the results for the univariate models including control variables. As these tables show, all the univariate models suffer from non-normality in the errors as well as heteroscedasticity. However, once control variables are added both problems are resolved.

Table 25: Specification tests – univariate policy models

Model	Normality	Heteroscedasticity
dQ1	Rejected (0.00093)	Rejected (0.0187)
dQ2	Rejected (0.00127)	Rejected (0.0716)
dQ3	Rejected (0.00049)	Not rejected (0.2474)
dQ4	Rejected (0.00099)	Not rejected (0.0113)
dQ5	Rejected (0.00093)	Not rejected (0.2443)
dQ6	Rejected (0.00146)	Not rejected (0.1041)
dQ7	Rejected (0.00161)	Rejected (0.0067)
dQ8	Rejected (0.00504)	Rejected (0.0007)

Notes: The Ramsey RESET test is not applicable when the only regressor is a dummy variable.

Source: London Economics

Table 26: Specification tests – univariate policy models with controls

Model	Normality	Misspecification	Heteroscedasticity
dQ1	Not rejected (0.41642)	Not rejected (0.1292)	Not rejected (0.7469)
dQ2	Not rejected (0.51926)	Not rejected (0.5590)	Not rejected (0.5476)
dQ3	Not rejected (0.25470)	Not rejected (0.6404)	Not rejected (0.8549)
dQ4	Not rejected (0.75078)	Not rejected (0.2351)	Not rejected (0.1857)
dQ5	Not rejected (0.46057)	Not rejected (0.1751)	Not rejected (0.6208)
dQ6	Not rejected (0.30168)	Not rejected (0.2986)	Not rejected (0.7223)
dQ7	Not rejected (0.54853)	Not rejected (0.6898)	Not rejected (0.5275)
dQ8	Not rejected (0.54564)	Not rejected (0.1442)	Not rejected (0.4917)

Source: London Economics

Table 27 provides the results of the specification tests for the multivariate model, both with and without controls, and the final, specific, model of the general-to-specific modelling procedure.

As was the case for the univariate models, the multivariate model without controls fails two of the three specification tests (heteroscedasticity and model misspecification). However, once controls are added, these problems are once again resolved.

Table 27: Specification tests – multivariate and general-to-specific policy models

Model	Normality	Misspecification	Heteroscedasticity
Multivariate	Not rejected (0.86073)	Rejected (0.0348)	Rejected (0.0051)
Multivariate with controls	Not rejected (0.37084)	Not rejected (0.1402)	Not rejected (0.2819)
General-to-specific (Final model)	Not rejected (0.85055)	Not rejected (0.1702)	Rejected (0.0406)

Source: London Economics

The final model of the general-to-specific modelling procedure passed the non-normality and misspecification tests, but shows signs of heteroscedasticity. Because of this, Table 28 provides a comparison of the standard errors used with robust standard errors. As this analysis shows, while the standard errors are slightly different, all included variables remain statistically significant.

Table 28: Comparison of the final model of the general-to-specific modelling procedure applied on all dummy variables for policy survey questions and controls when using robust standard errors

Variables	Coefficients	Standard errors	
		Standard	Robust
dQ4	.0314668	.0103901**	.0108829***
avgWorkHours	.0116599	.0049777**	.0049612**
percTertEd	-.0015198	.0007115***	.0006921**
unempRate	.0044298	.0011949***	.0012174***
Constant	-.3560147	.2023465*	.199863*
Observations		28	
Adjusted R-squared		0.6640	

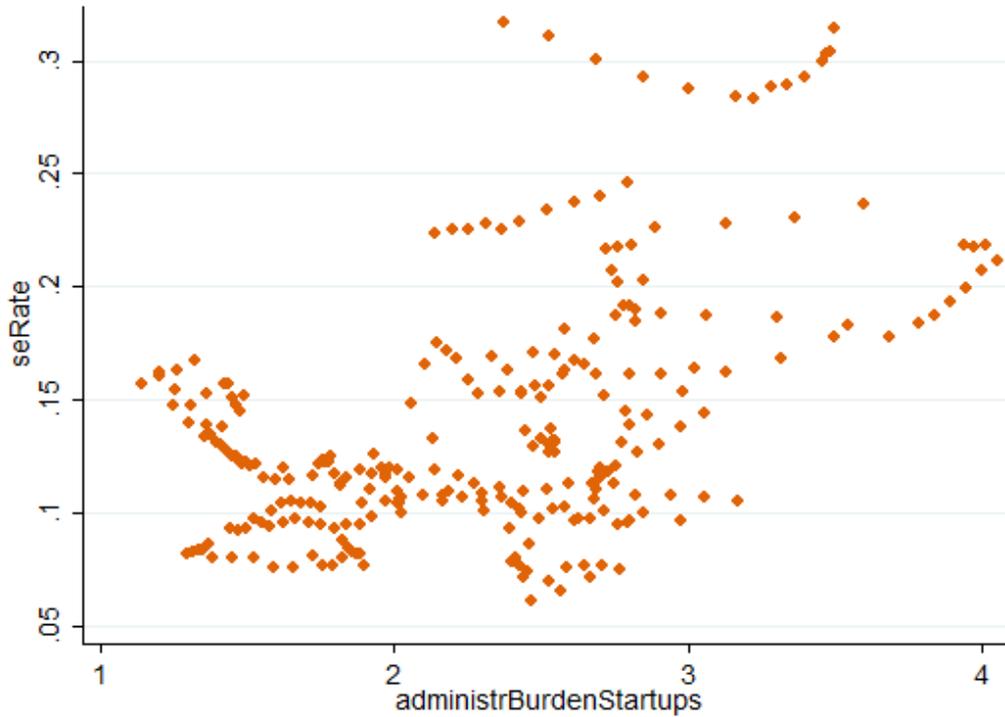
Note: Significance levels refer to the significance of coefficients using the respective standard errors.

Source: London Economics

4.10 Annex 2: Scatter plots

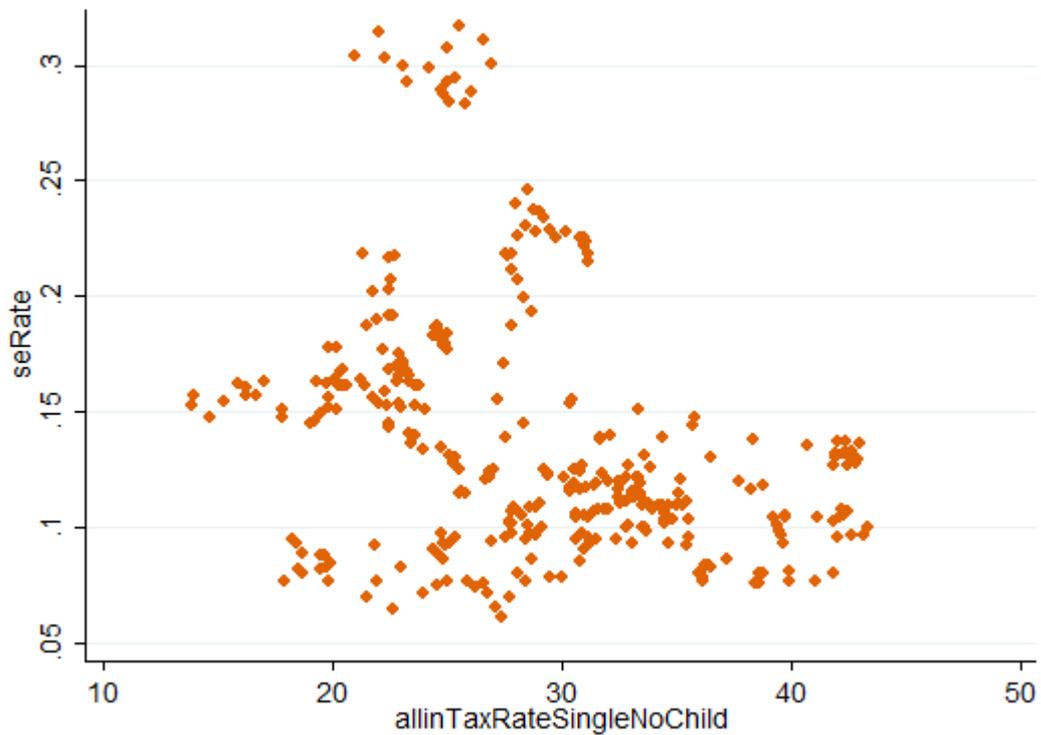
The following figures show scatter plots of the self-employment rate and each of the dependent variables used in this analysis over the period 2004-2016 for the Member States for which the data are available.

Figure 4: Relationship between the self-employment rate and administrative burden on start-ups



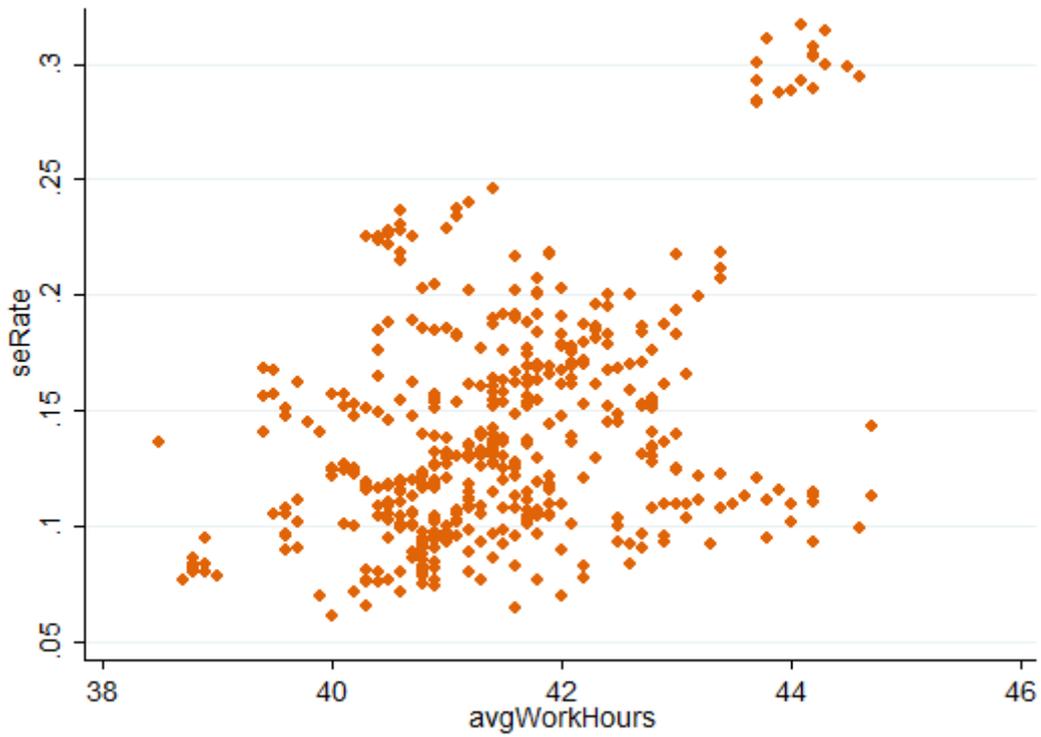
Source: London Economics

Figure 5: Relationship between the self-employment rate and the all-in average personal tax rate of a single person with no child



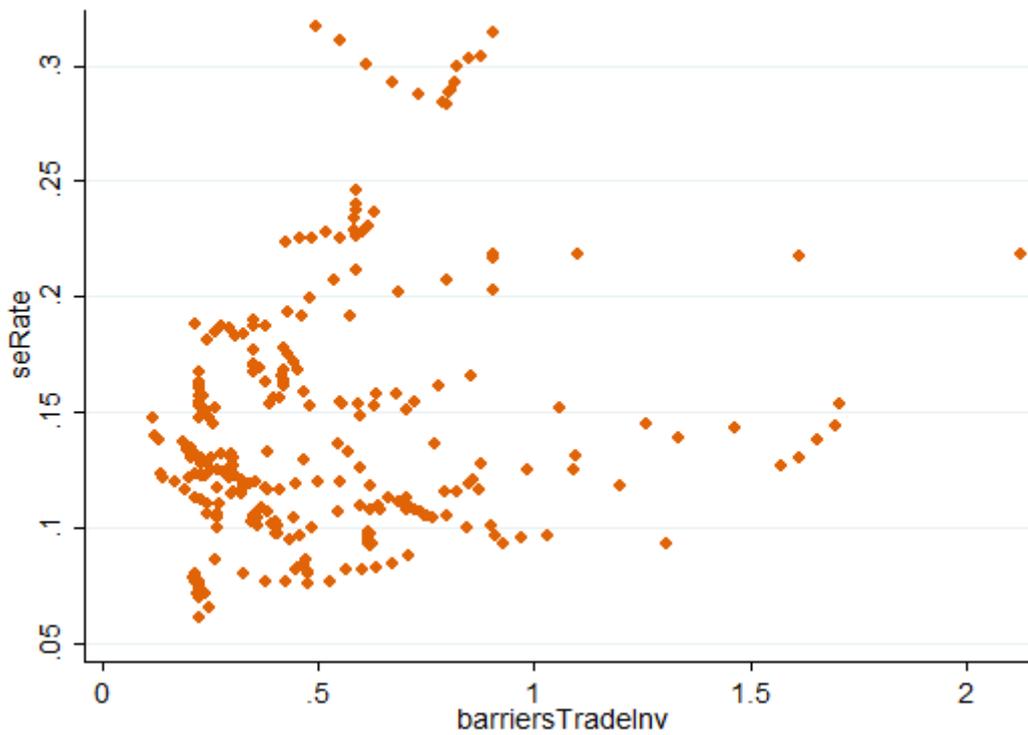
Source: London Economics

Figure 6: Relationship between the self-employment rate and the average working hours of employees



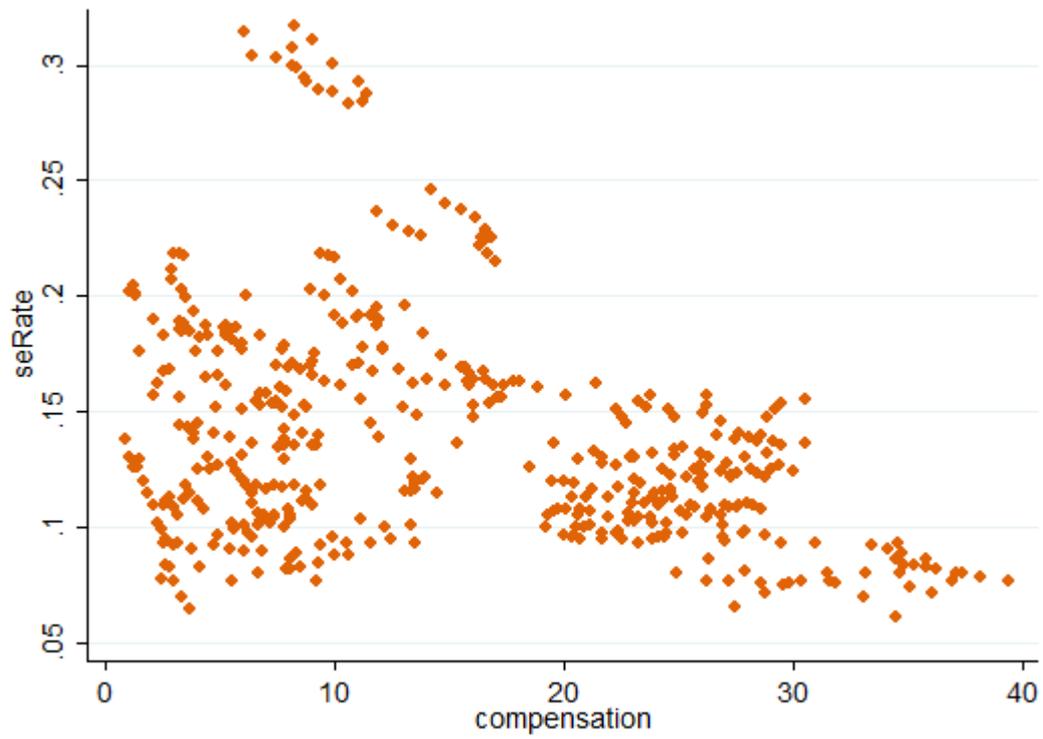
Source: London Economics

Figure 7: Relationship between the self-employment rate and barriers to trade and investment



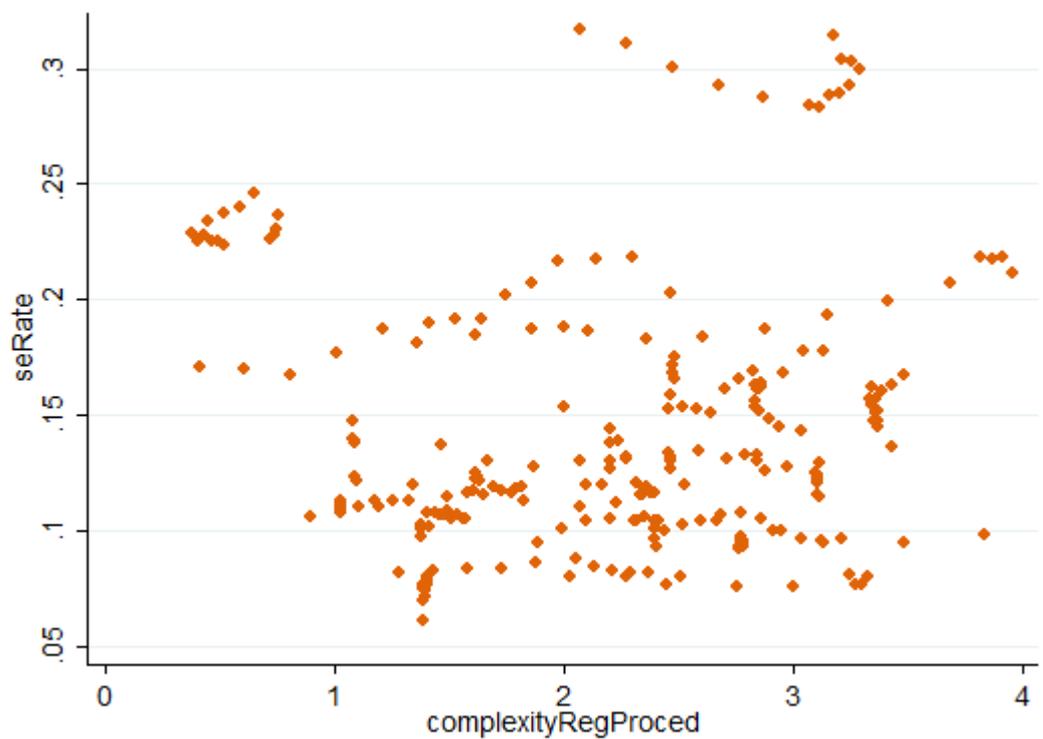
Source: London Economics

Figure 8: Relationship between the self-employment rate and employee compensation



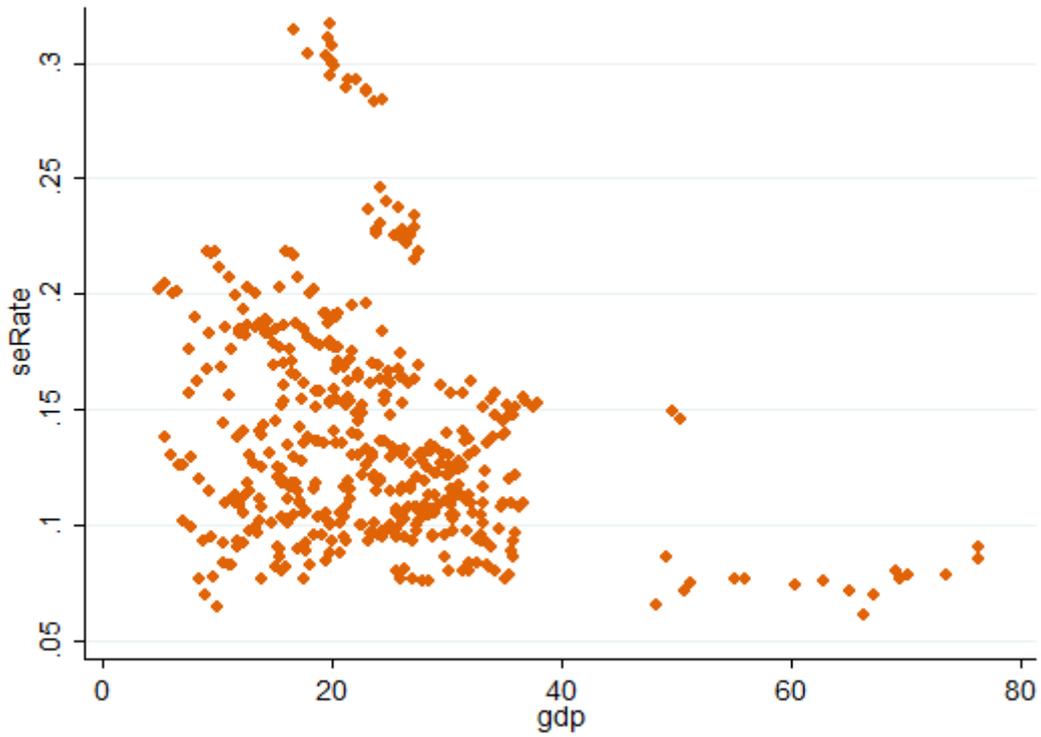
Source: London Economics

Figure 9: Relationship between the self-employment rate and the complexity of regulatory procedures on start-ups



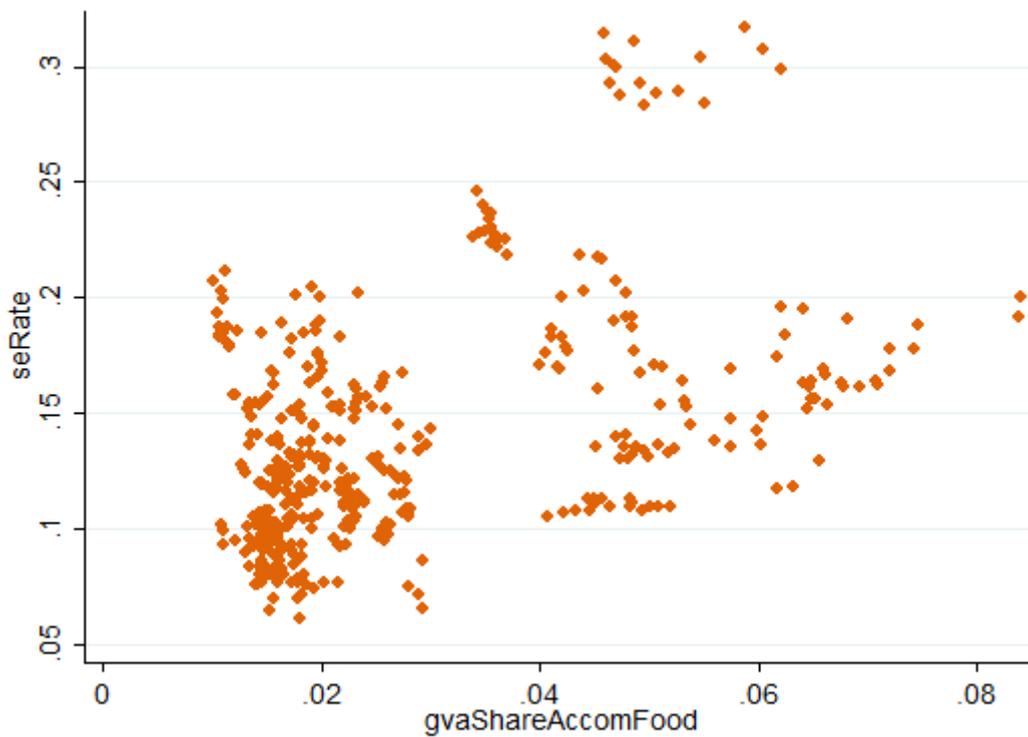
Source: London Economics

Figure 10: Relationship between the self-employment rate and GDP



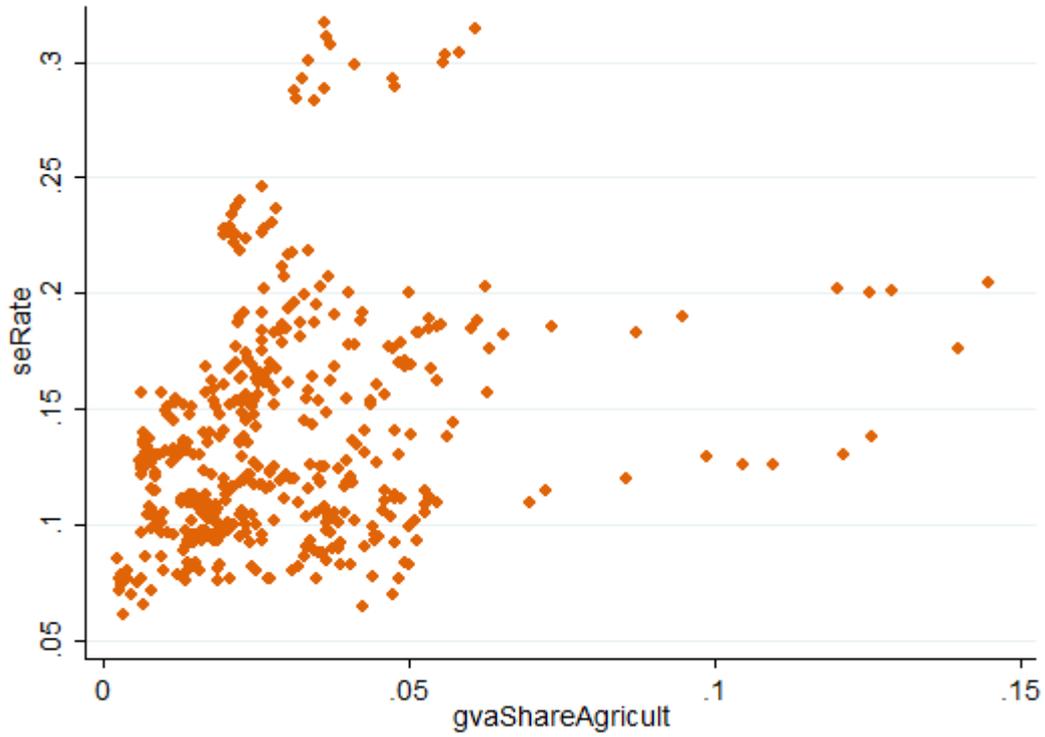
Source: London Economics

Figure 11: Relationship between the self-employment rate and the size of the 'accommodation and food service activities' sector, measured by the share of Gross-Value-Added



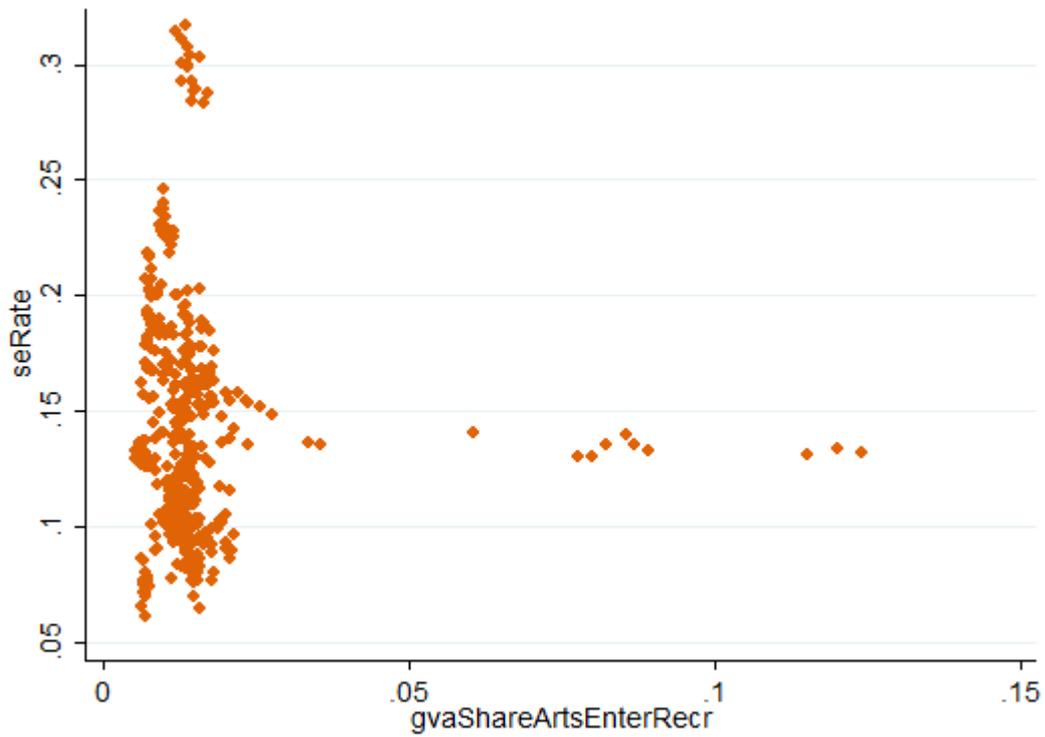
Source: London Economics

Figure 12: Relationship between the self-employment rate and the size of the 'agriculture, forestry and fishing' sector, measured by the share of Gross-Value-Added



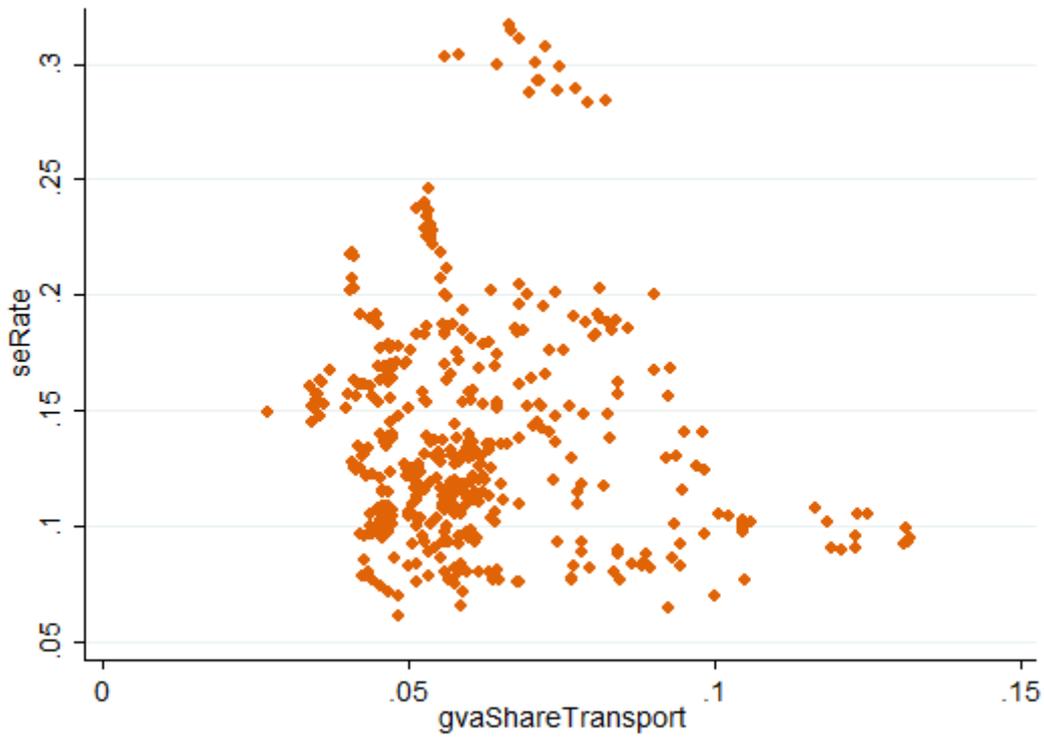
Source: London Economics

Figure 13: Relationship between the self-employment rate and the size of the 'arts, entertainment and recreation' sector, measured by the share of Gross-Value-Added



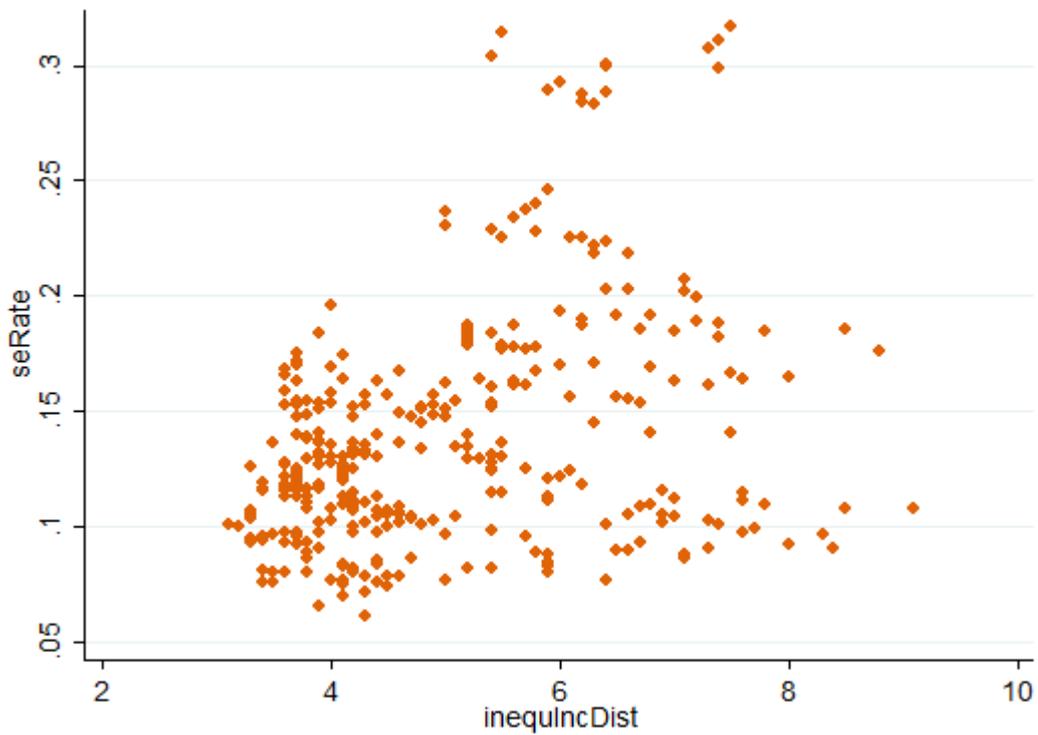
Source: London Economics

Figure 14: Relationship between the self-employment rate and the size of the ‘transportation and storage’ sector, measured by the share of Gross-Value-Added



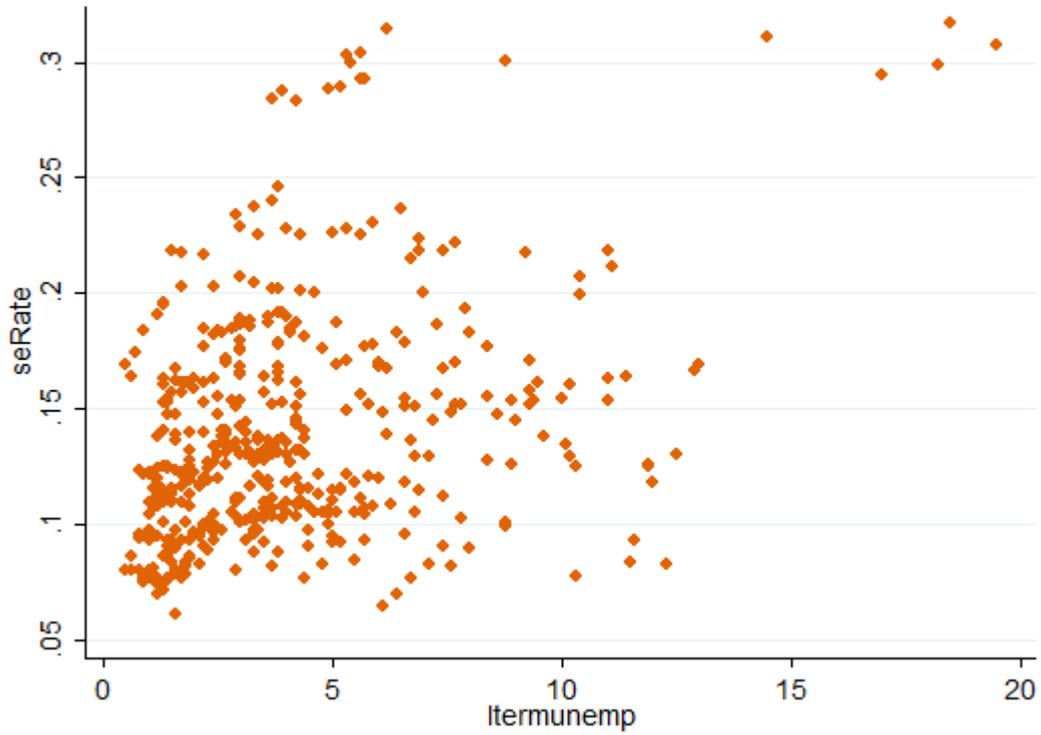
Source: London Economics

Figure 15: Relationship between the self-employment rate and inequality in the income distribution



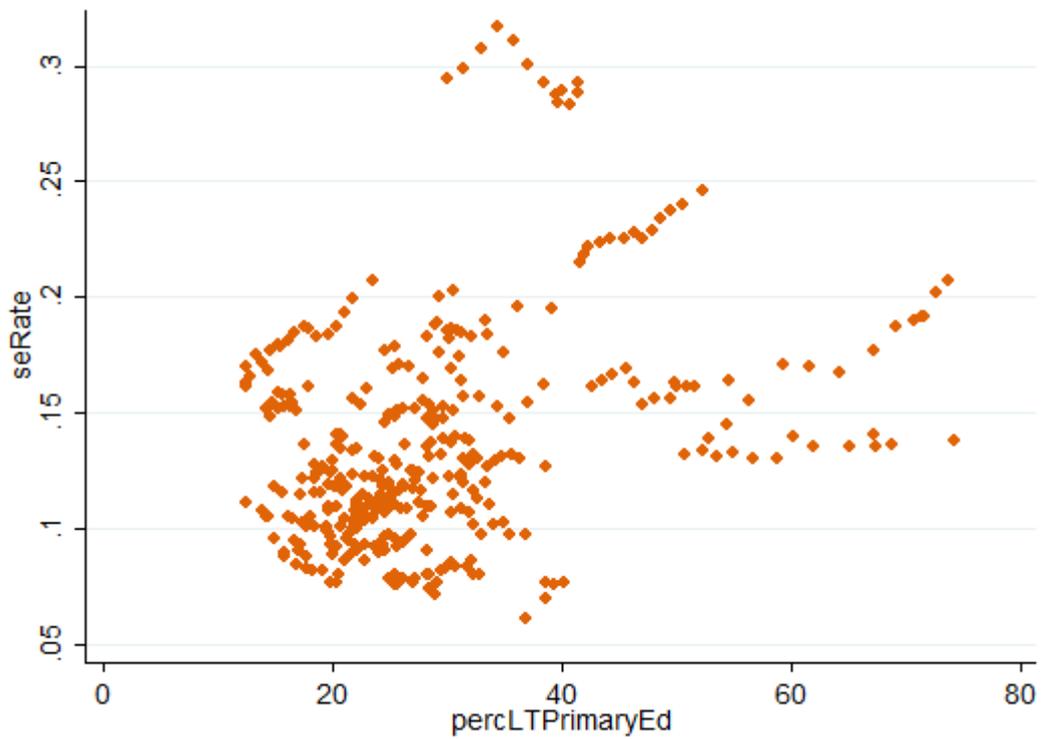
Source: London Economics

Figure 16: Relationship between the self-employment rate and the long-term unemployment rate



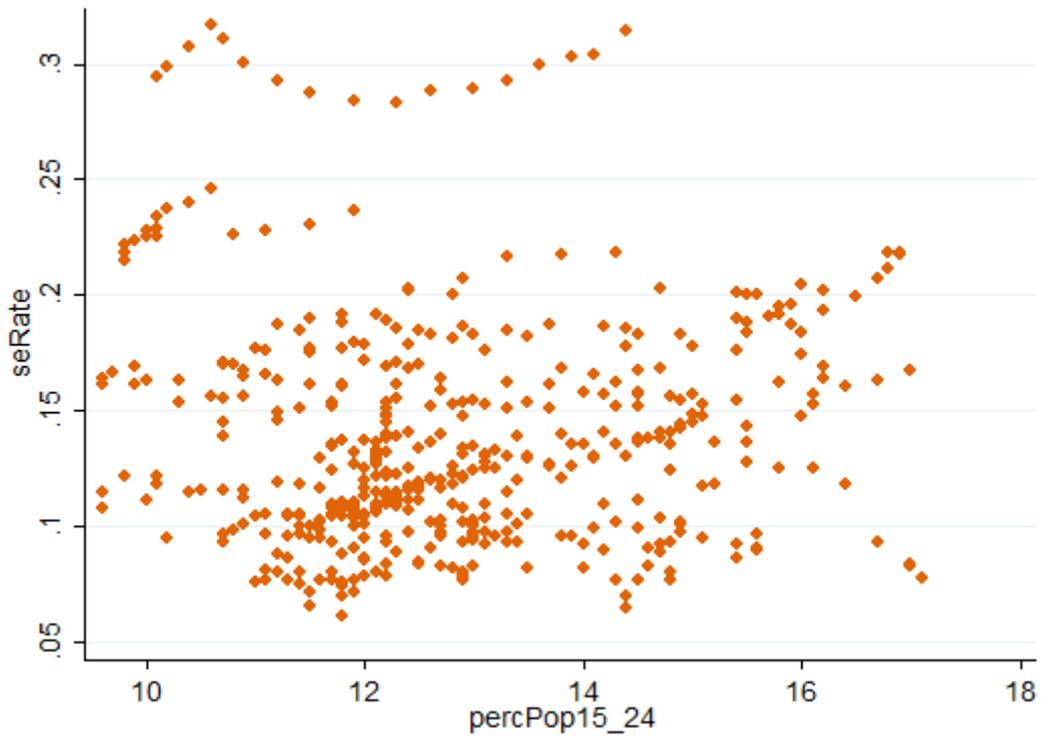
Source: London Economics

Figure 17: Relationship between the self-employment rate and the proportion of the working age population with low education levels



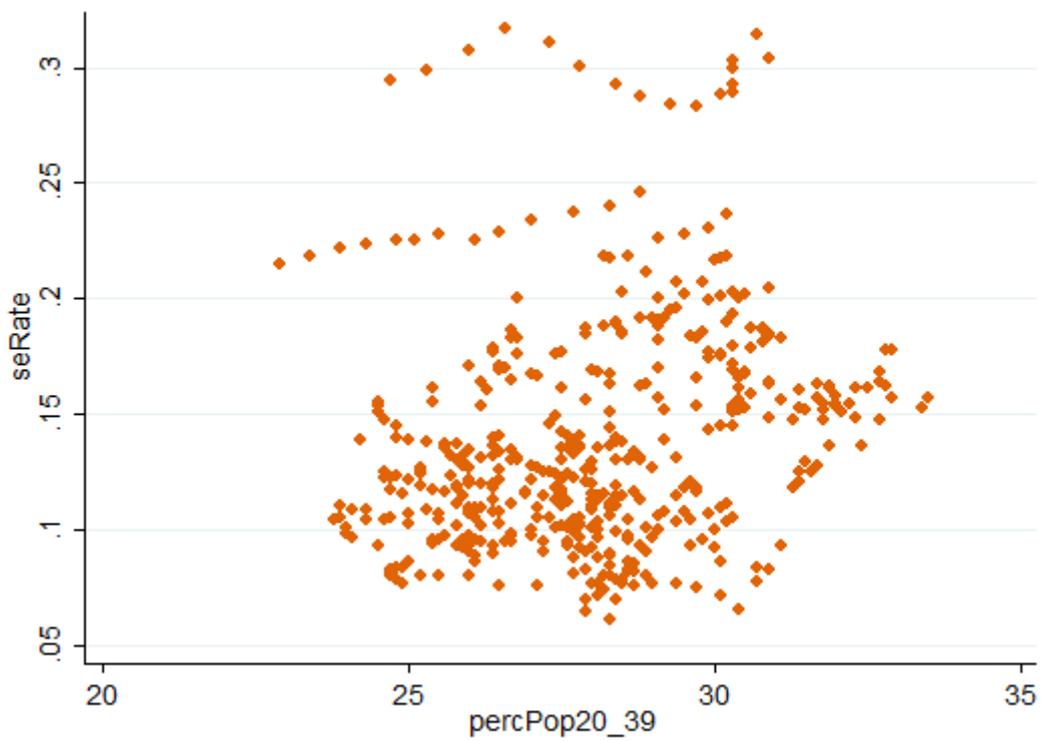
Source: London Economics

Figure 18: Relationship between the self-employment rate and the proportion of the population aged 15 to 24



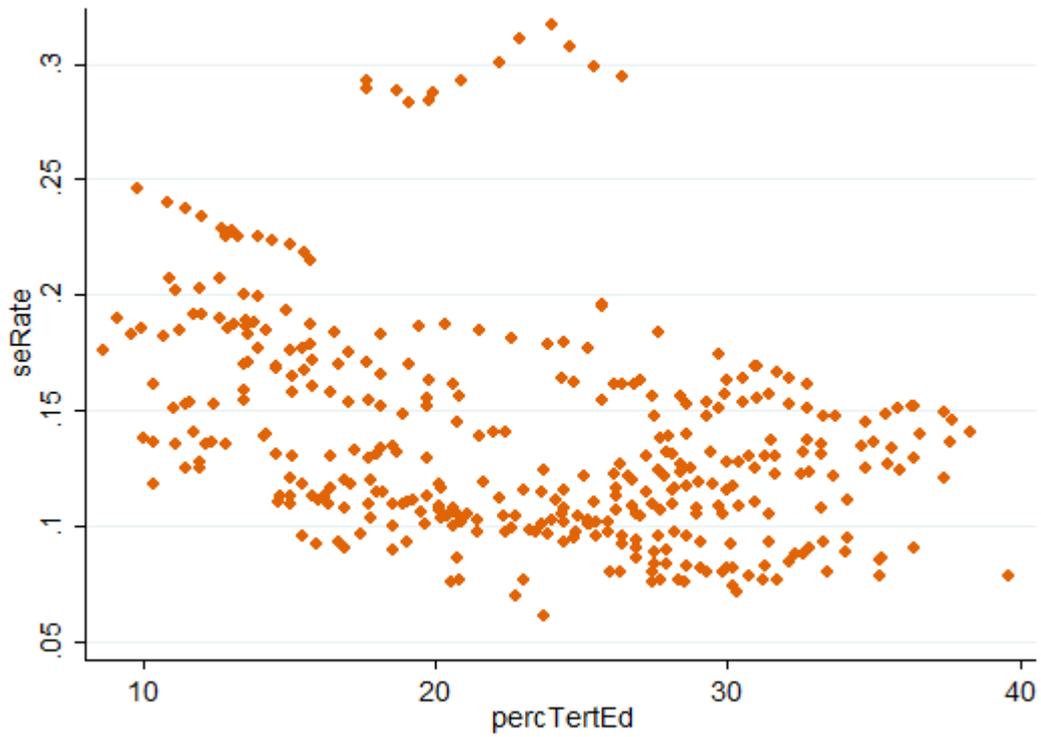
Source: London Economics

Figure 19: Relationship between the self-employment rate and the proportion of the population aged 20 to 39



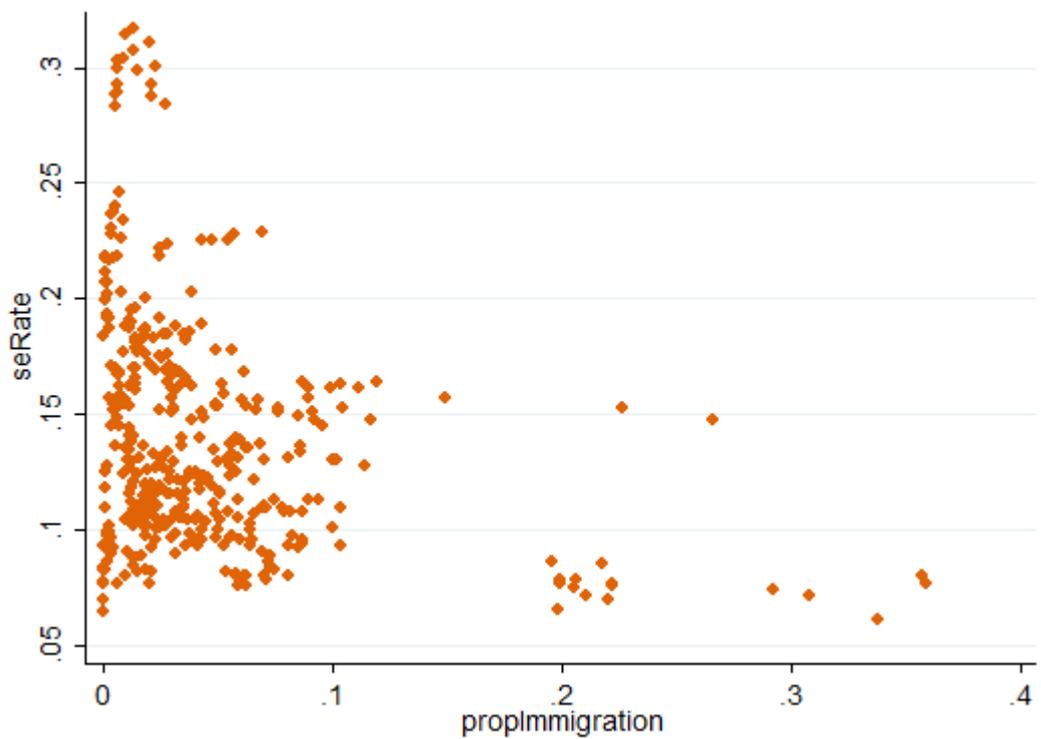
Source: London Economics

Figure 20: Relationship between the self-employment rate and the proportion of the working age population with high education levels



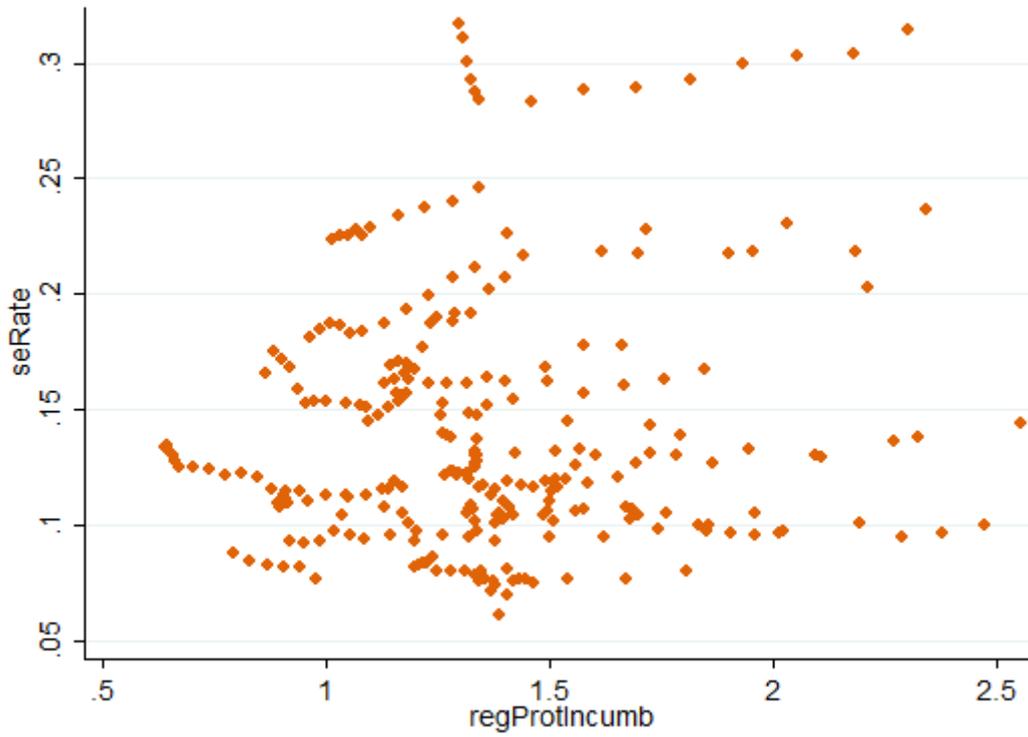
Source: London Economics

Figure 21: Relationship between the self-employment rate and total immigration as a share of population



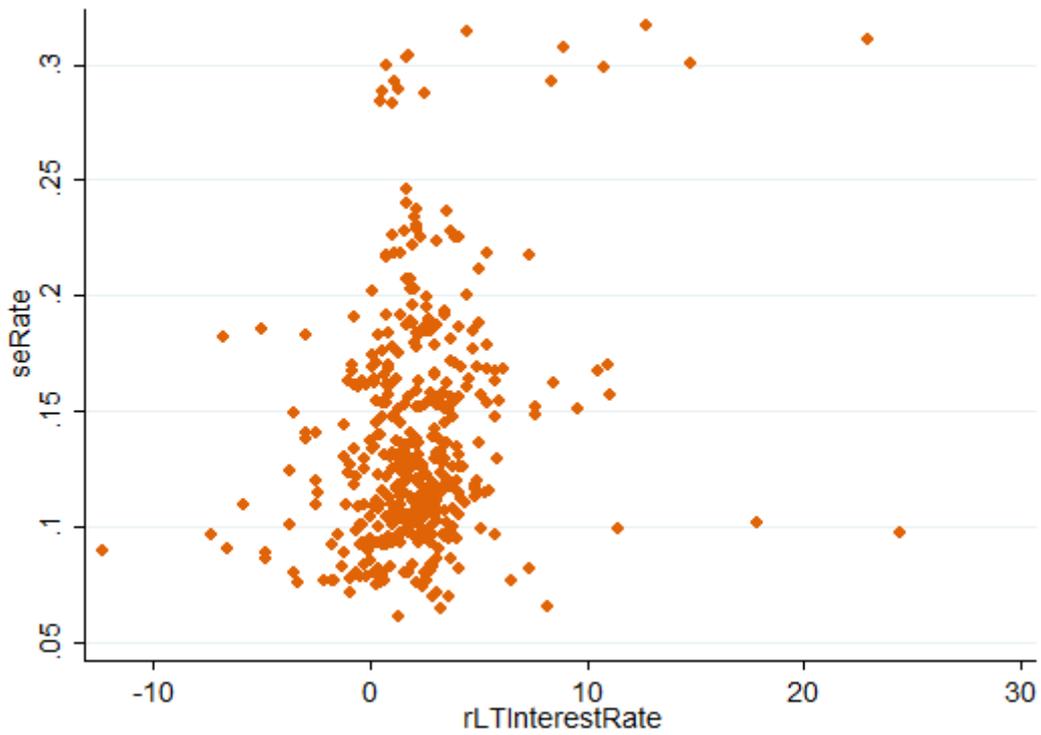
Source: London Economics

Figure 22: Relationship between the self-employment rate and the regulatory protection of incumbents



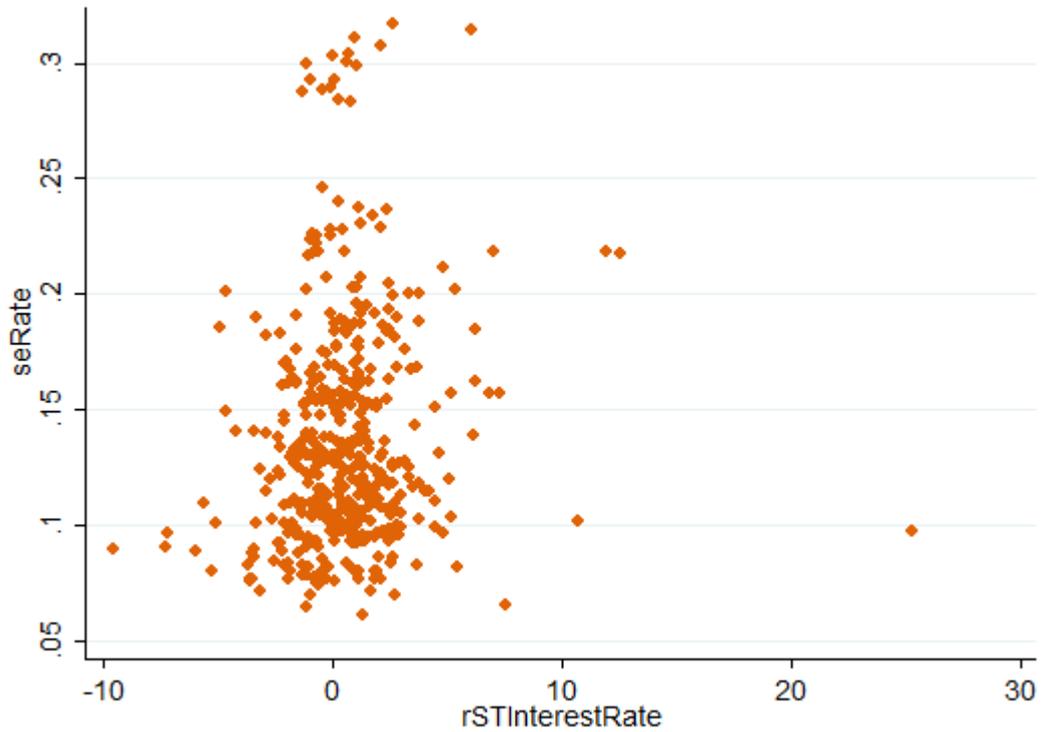
Source: London Economics

Figure 23: Relationship between the self-employment rate and the long-term interest rate



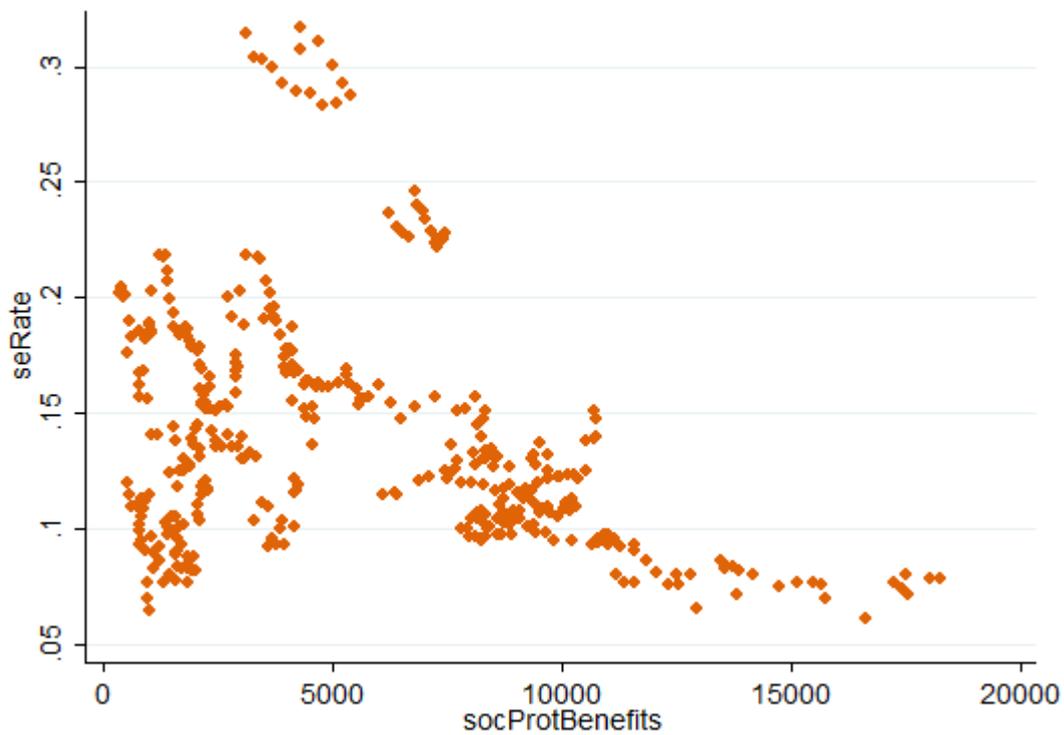
Source: London Economics

Figure 24: Relationship between the self-employment rate and the short-term interest rate



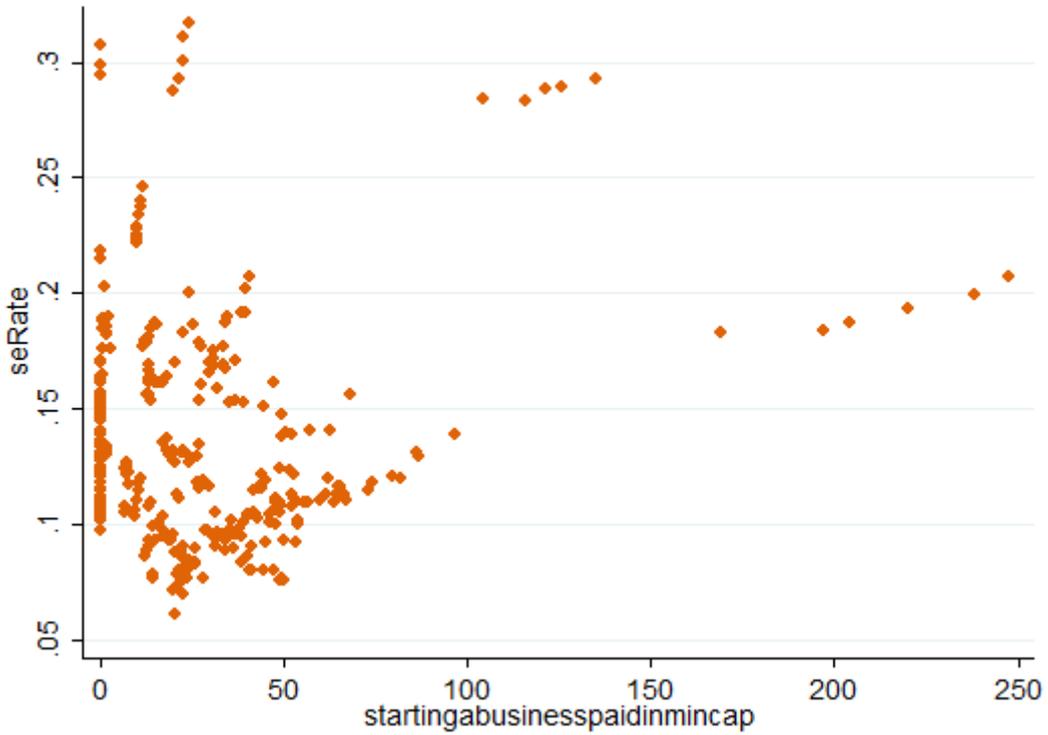
Source: London Economics

Figure 25: Relationship between the self-employment rate and the expenditure on social protection benefits



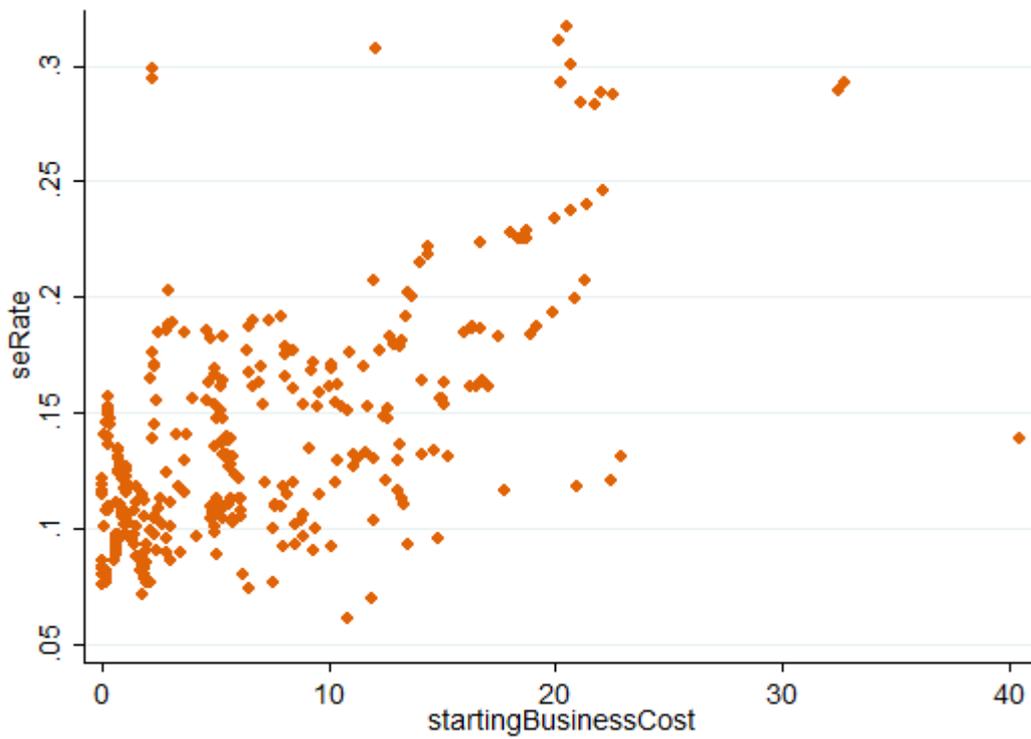
Source: London Economics

Figure 26: Relationship between the self-employment rate and the paid-in minimum capital required (% of income per capita) to start a business



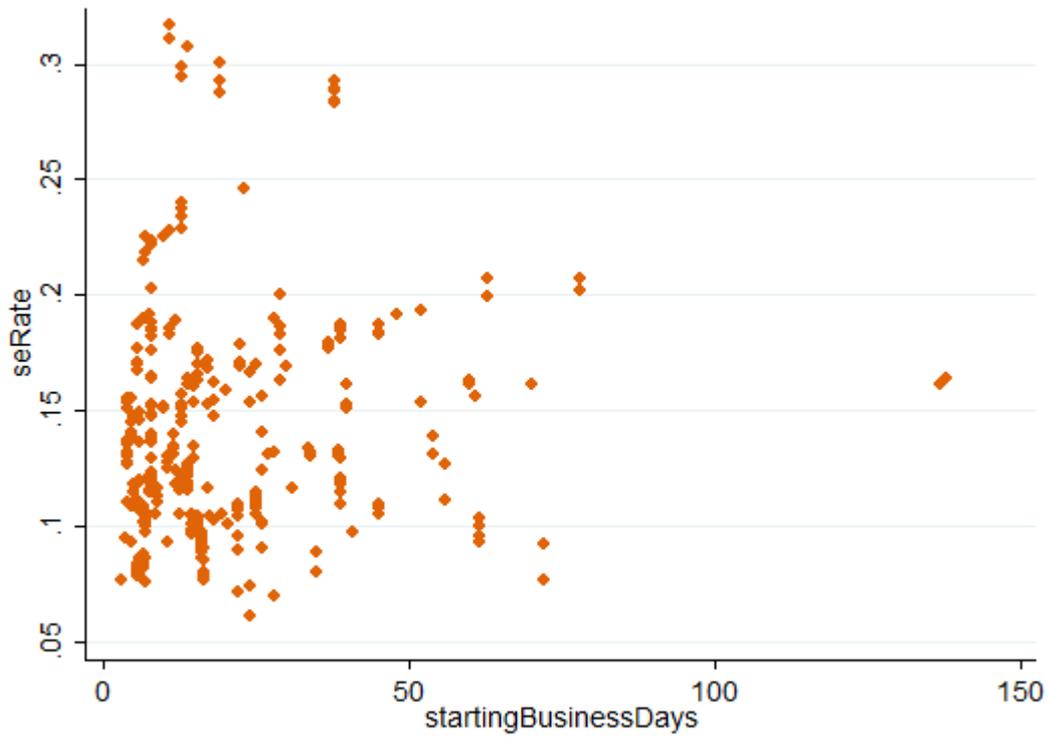
Source: London Economics

Figure 27: Relationship between the self-employment rate and the cost of starting a business (% of income per capita)



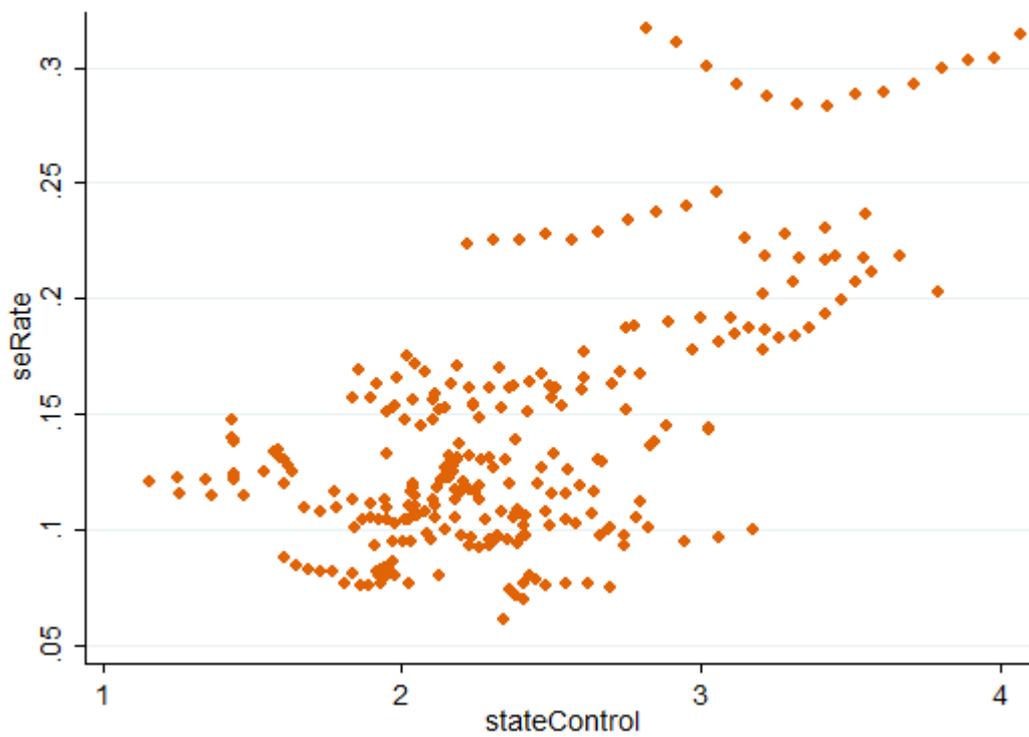
Source: London Economics

Figure 28: Relationship between the self-employment rate and the time required to start a business (number of days)



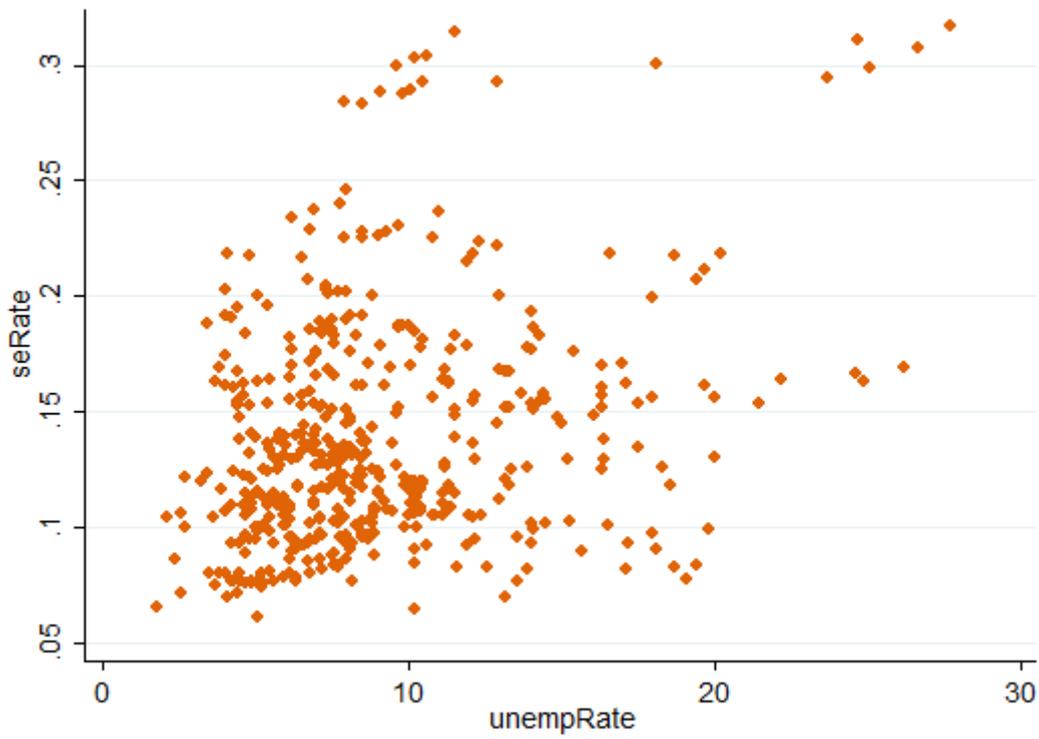
Source: London Economics

Figure 29: Relationship between the self-employment rate and the level of state control (measured by public ownership and involvement in business operations)



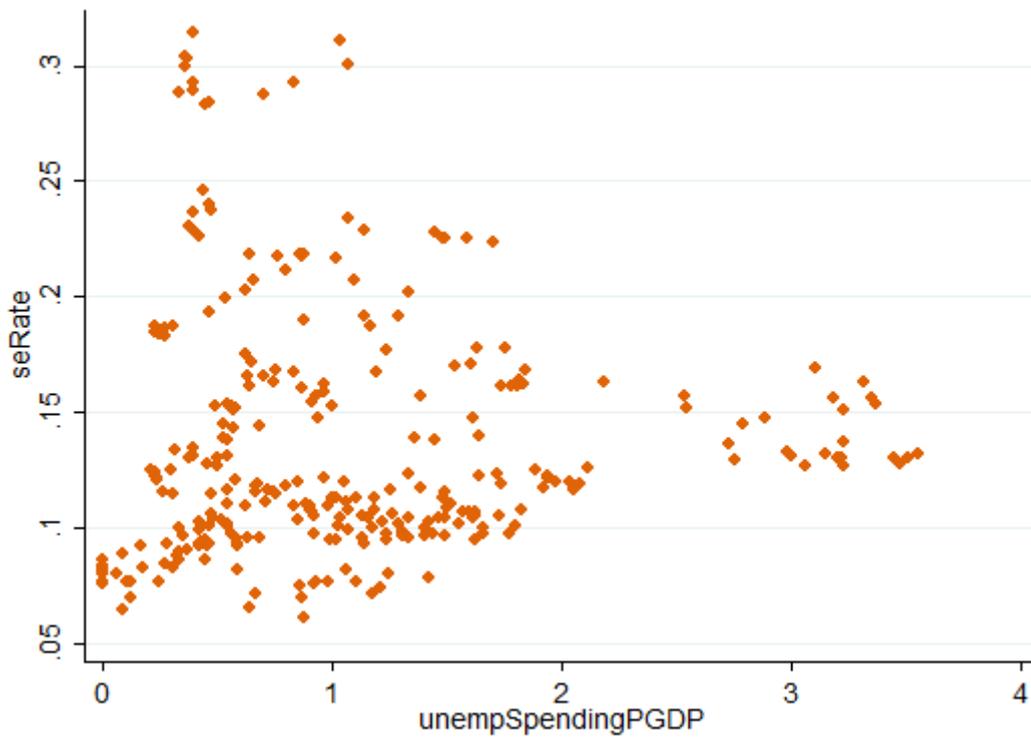
Source: London Economics

Figure 30: Relationship between the self-employment rate and the unemployment rate



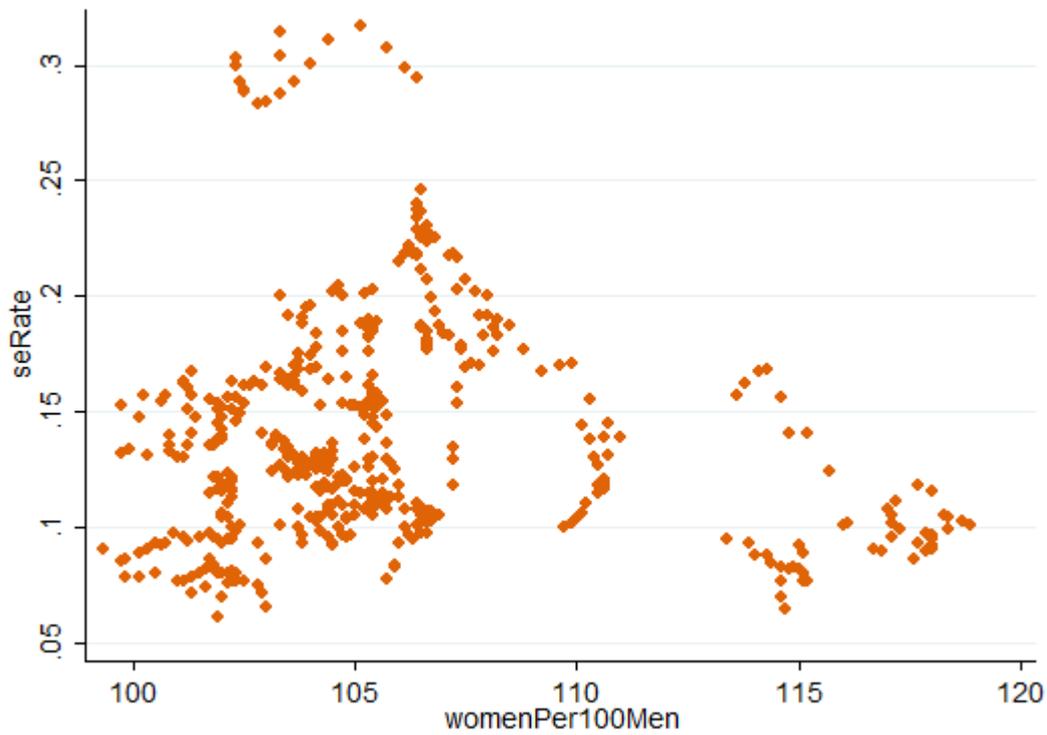
Source: London Economics

Figure 31: Relationship between the self-employment rate and the total expenditure on unemployment (% of GDP)



Source: London Economics

Figure 32: Relationship between the self-employment rate and the number of women per 100 men



Source: London Economics

4.10.1 Scatter plots for policy models

The following figures show scatter plots of the self-employment rate and each of the policy variables used in Section 4.7. As the policy variables are discrete variables, i.e. they only take the values ‘yes’ and ‘no’, the plots have been jittered to avoid overlapping of two or more countries. The policy variables refer to the situation in the first half of 2017.

Figure 33: Relationship between the self-employment rate and Q1

Q1: Are there specific support measures to encourage self-employment?



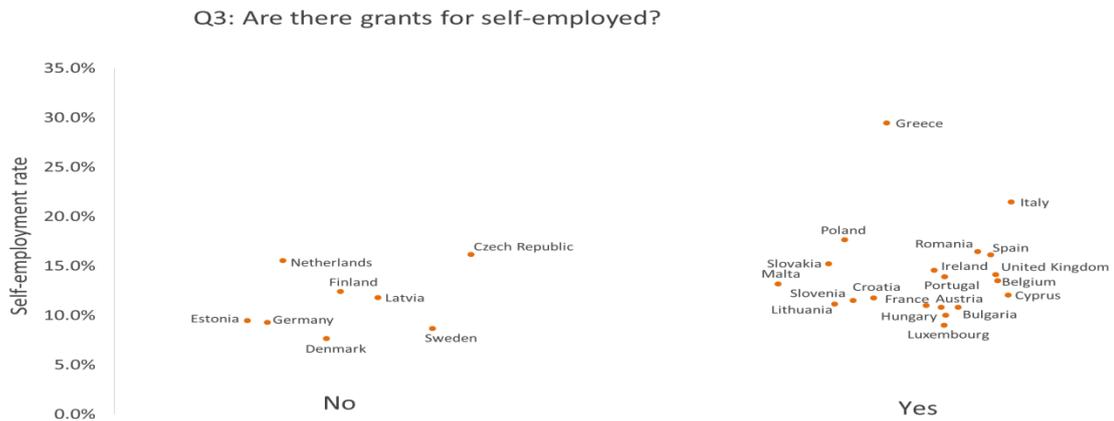
Source: London Economics

Figure 34: Relationship between the self-employment rate and Q2



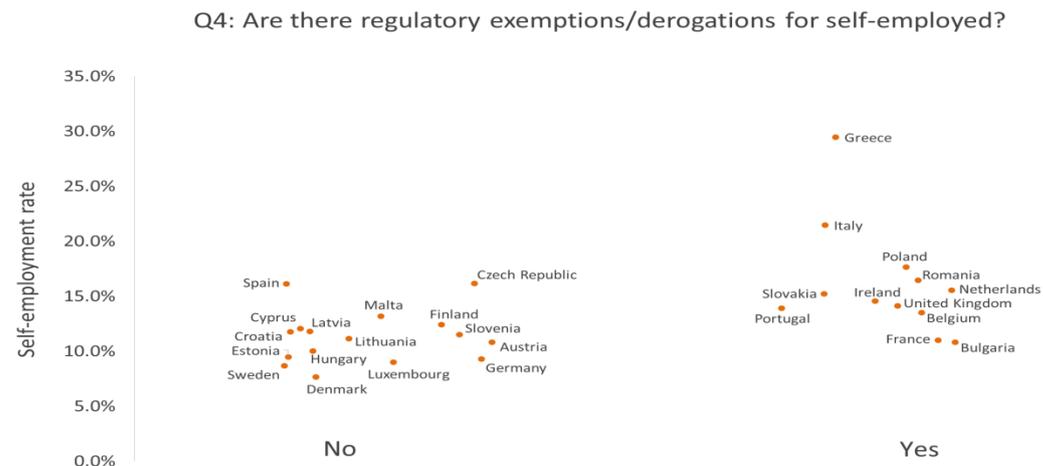
Source: London Economics

Figure 35: Relationship between the self-employment rate and Q3



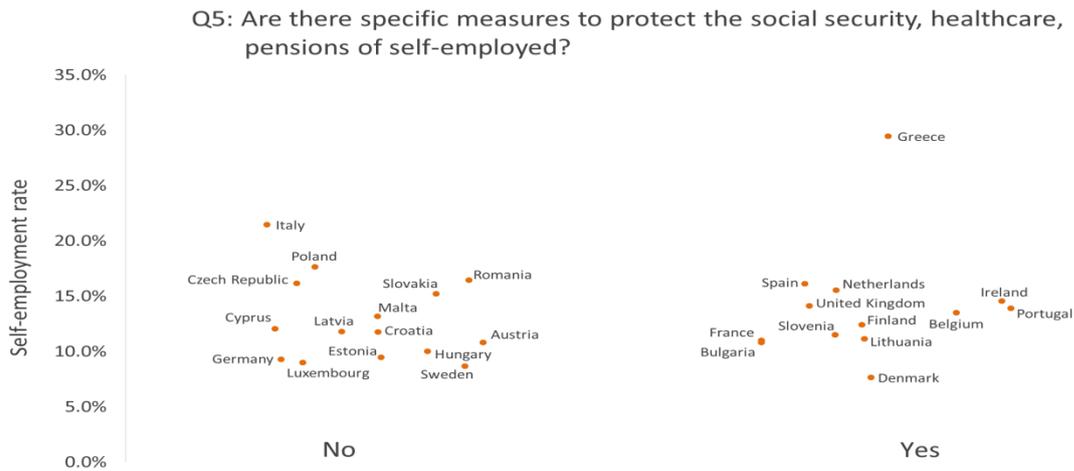
Source: London Economics

Figure 36: Relationship between the self-employment rate and Q4



Source: London Economics

Figure 37: Relationship between the self-employment rate and Q5



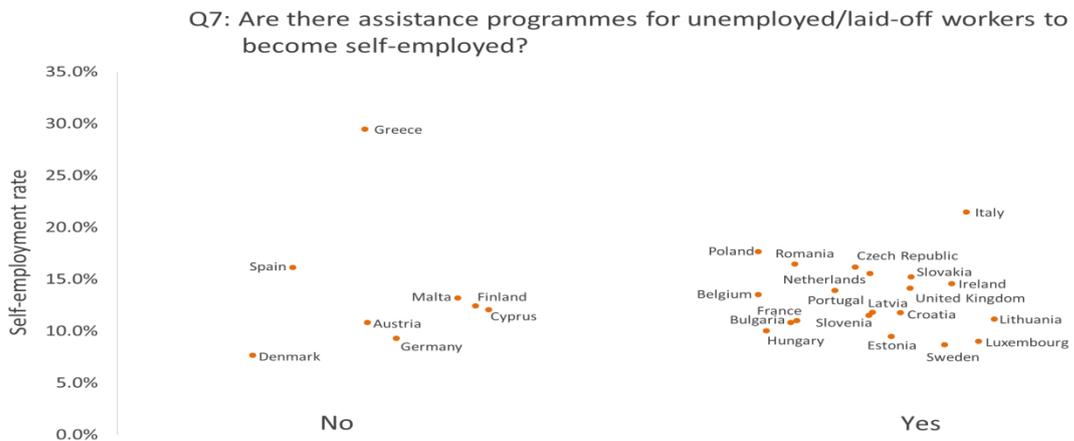
Source: London Economics

Figure 38: Relationship between the self-employment rate and Q6



Source: London Economics

Figure 39: Relationship between the self-employment rate and Q7



Source: London Economics

Figure 40: Relationship between the self-employment rate and Q8



Source: London Economics

5. Self-employment and economic activity

This chapter aims to assess the dynamic relationship between employment, self-employment and GDP. In particular, it investigates whether self-employment is a predictor of positive outcomes in employment and GDP.

After setting out the research question, the chapter provides an overview of the proposed econometric methodology, the data used, the model and estimation method selection and finally, the results and their interpretation.

5.1 Background and objectives of this section

As discussed earlier in section 2.1, entrepreneurship and self-employment, though overlapping to a great degree, are not one and the same. Self-employment can be one of the ways through which entrepreneurial activities are carried out and hence represent a category of opportunity-seeking entrepreneurs. On the other hand, self-employment may be borne out of necessity and may include those previously employed but now carrying out their same activity as free-lance or attempting a trade.

These two categories cannot be directly distinguished in the self-employment data, yet they originate from different drivers and are likely to have different impacts on the economy.

Self-employment data from Eurostat provides a break down between “self-employed with no employees” and “self-employed with employees”. The entrepreneurial self-employed may be best represented by the category of self-employed with employees, while the “fallen on hard-times” self-employed would more naturally fall under self-employed with no employees.

As such, high entrepreneurship levels, proxied by a high penetration of self-employed with employees, would be expected to lead to better GDP performance. The expected effect of a high penetration of self-employment without employees on GDP would be more nuanced. Indeed certain precarious forms of self-employment could be associated with negative effects on GDP.

In order to test these hypotheses it is necessary to model a relationship between these two different forms of self-employment and the other main macroeconomic variables of interest. This econometric analysis uses a VAR model formulation. This approach is largely atheoretic and therefore well suited to examine retrospectively the joint time-series behaviour of these variables of interest.

5.2 VAR and panel VAR

VAR models side-step most of the explicit micro structure that is required in other general equilibrium settings and attempt to capture the dynamic interdependencies present in the data using a minimal set of restrictions.¹⁶

In VAR models, all variables can be treated as endogenous and interdependent, both in a dynamic and in a static sense. In addition, exogenous variables can be included, where variables are likely to add to the explanatory power of the model but are unlikely to be determined by lags of the endogenous variables.

¹⁶ VAR models are liable to criticism (see e.g. Cooley and Le Roy, 1983, Canova and Pina, 2005, Chari et al., 2008) and thus need to be considered with care. For our purposes the most important criticism of VAR models and their interpretation is the structure of shocks in the context of an impulse-response function analysis.

In its general form, a VAR model for the set of endogenous variable Y , can be written as:

$$Y_t = c(t) + A(\theta)Y_{t-1} + e_t \quad e_t \sim \text{iid}(0; \Sigma_e) \quad (1)$$

where $A(\theta)$ is a polynomial in the lag operator and iid means identically and independently distributed. Restrictions are typically imposed on the coefficient matrices A_j to make the variance of Y_t bounded and to make sure that $A(\theta)^{-1}$ exists.

$c(t)$ corresponds to the constant term (which may be omitted) and includes all the deterministic components of the data.

The order of the VAR corresponds to the number of lags that are included. This is often an empirical question, so the data can guide the choice of lags which yield a better overall performance of the model.

Example – a VAR(1) in two variables would look like the following:

$$\begin{bmatrix} y_{1,t} \\ y_{2,t} \end{bmatrix} = \begin{bmatrix} c_1 \\ c_2 \end{bmatrix} + \begin{bmatrix} A_{1,1} & A_{1,2} \\ A_{2,1} & A_{2,2} \end{bmatrix} \begin{bmatrix} y_{1,t-1} \\ y_{2,t-1} \end{bmatrix} + \begin{bmatrix} e_{1,t} \\ e_{2,t} \end{bmatrix}$$

Panel VAR models are a subset of this category of models. They consist of equally flexible specifications of interrelationships that allow to:

- i. capture both static and dynamic interdependencies;
- ii. treat the links across units in an unrestricted fashion;
- iii. account for cross-sectional dynamic heterogeneities.

Panel VARs are built with the same logic of standard VARs but, by adding a cross-sectional dimension, they provide an additional tool to address interesting policy questions.

Panel VARs have the same structure as VAR models, but here Y_t represents a stacked version of y_{it} , the vector of endogenous variables for each country i .

A panel VAR can therefore be written as:

$$Y_{it} = A_{0i}(t) + A_i(\theta)Y_{i,t-1} + e_{it} \quad i=1,\dots,N \quad t=1,\dots,T \quad e_t \sim \text{iid}(0; \Sigma_u) \quad (2)$$

where e_{it} is a $G \times 1$ vector of random disturbances and, as the notation makes clear, $A_{0i}(t)$ and A_i may depend on the country.

A panel VAR has three characteristic features. First, lags of all endogenous variables of all units enter the model for unit i : we call this feature “dynamic interdependencies”. Second, u_{it} are generally correlated across i : we call this feature “static interdependencies”. In addition, since the same variables are present in each unit, there are restrictions on the covariance matrix of the shocks. Third, the intercept, the slope and the variance of the shocks e_{1it} may be unit specific: we call this feature “cross sectional heterogeneity”. These features distinguish a panel VAR typically used for macroeconomic and financial analyses from the panel VAR used in micro studies.

5.3 Estimation challenge

The VAR modelling tool allows one to investigate the dynamic impact of shocks across the variables of interest. For example, one could investigate the extent to which an upward shift in the level of self-employment affects future levels of employment and GDP. One could also investigate in what way a GDP shock would be expected to affect self-employment.

These questions raise a concern: a shock in self-employment or a shock in GDP do not occur in a vacuum and, in particular, are unlikely to occur while simultaneously no contemporaneous shocks are allowed on macroeconomic variables that are clearly interconnected.

For example, an increase in self-employment may have occurred at the same time as a decrease in employment and a decrease in government expenditure. Similarly, an increase in GDP may have been concurrent with positive shocks in both employment and consumption.

These interdependencies can be taken into account by imposing restrictions on the structure of the shocks that are allowed to be imposed on the system.

5.3.1 Data

The labour market data used comes from the Eurostat's Labour Force Survey (LFS), and covers the 68 quarters from 2000Q1 to 2016Q4. GDP and the data for the main macroeconomic aggregates are also from Eurostat and cover the same period.

The final set of data series relied on for the econometric analysis includes the following:

- macro aggregates: Gross Domestic Product, current consumption of households, current consumption of general government, capital formation, wages, consumption of fixed capital, and general government net lending (all at market prices, in euro);
- employment: employed persons from 15 to 64 years old;
- employment of foreign workers: employed non-nationals from 15 to 64 years old;
- self-employment: self-employed persons 15 years or over;
- self-employed persons with employees (employers), 15 years or over;
- self-employed persons without employees (own-account workers), 15 years or over;
- population; and,
- population with tertiary education

These data series were used to construct a range of variables into variants of the main model specification, as described below.

5.3.2 Model

The model is constructed with the aim of investigating the time-dependent relationships between self-employment and GDP. As discussed above, as a proxy for entrepreneurship, self-employment can be subdivided into self-employment with and without employees, where the former would be expected to more closely relate to entrepreneurship than the latter.

In the general spirit of VAR models, a range of other macroeconomic and labour market variables, are included, as jointly dependent variables. In addition, the model allows for the inclusion of exogenous variables such as the level of education, or those proxying for shocks from abroad.

$$\text{dependent variables} \quad Y = \begin{bmatrix} GDPgrowth_t \\ GDPpercapita_t \\ EmploymentRate_t \\ SelfEmployed - no - employees_t \\ SelfEmployed - with - employees_t \\ NetGovLending \text{ per capita}_t \end{bmatrix}$$

$$\text{independent variables} \quad Y (\text{lags 1 to 4}) \quad X = \begin{bmatrix} Tertiary \text{ education penetration}_t \\ ConsumptionFixedCapital \text{ per capita}_t \end{bmatrix}$$

All macroeconomic variables are de-seasonalised and put into per capita terms. GDP per capita is in logarithms. GDP growth is constructed relative to the corresponding quarter of the previous year. Employment rate and tertiary education penetration are calculated as a fraction of the population aged 15-64. The self-employment variables are specified alternatively as a percentage of the active population or as a percentage of employment.

5.4 Estimation and model selection

We estimated a panel vector autoregression model by fitting a multivariate panel regression of each dependent variable on lags of itself, lags of all other dependent variables and exogenous variables. The selected estimation method was GMM and as instruments the model uses 4 lags of each of the endogenous

variables plus the exogenous variables. This is a set of 26 instruments for each of the 6 equations in the final model, each with a total of 26 coefficients: 6x4 lagged endogenous variables and 2 exogenous variables.

The final model was tested for stability and the extent to which the variables of interest are related by Granger-causality links. The model was most stable when 4 lags of the endogenous variables were included.¹⁷

The Table below shows the Granger causality test results for the combinations of variables where non-causality could be rejected at the 90 % confidence level.

Table 29: Granger causality tests

Reject H ₀ : RHS variable does not Granger-cause LHS variable		Prob > ch i2
GDP growth	GDP per capita	0.000
	Employment rate	0.003
GDP per capita	GDP growth	0.000
	Employment rate	0.000
	Self-employed with emp	0.090
Employment rate	GDP growth	0.000
	GDP per capita	0.003
	Self-employed no emp	0.006
	Self-employed with emp	0.025
Self-employed with no employees	GDP growth	0.031
	GDP per capita	0.003
Self-employed with employees	GDP growth	0.059
	GDP per capita	0.000
	Self-employed no emp	0.007

The figures in the table indicate that the model has some explanatory power given that the lagged values for several of the jointly dependent variables are helpful in explaining the overall behaviour of the system.

It can also be noted that the self-employment variables of interest have an apparently indirect effect on GDP and GDP growth. In this specification the initial effects are found in the association of these variables with the employment rate. This is explored further below.

5.5 Estimation results and interpretation

The panel vector autoregression model was estimated by fitting a multivariate panel regression of each dependent variable on lags of itself, lags of all other dependent variables and exogenous variables. The estimation was by generalized method of moments (GMM).

The overall fit of the model was good but individual coefficients were estimated with a low level of precision. We do not report individual coefficients since the aim in this section is to consider the effects of lagged values of the self-employment variables on GDP outcomes, not individually, but taking the combined effect of feedbacks across all explanatory variables into account.

¹⁷ To check the stability condition of panel VAR estimates the modulus of each eigenvalue of the estimated model was estimated. Lutkepohl (2005) and Hamilton (1994) both show that a VAR model is stable if all moduli of the companion matrix are strictly less than one. Stability implies that the panel VAR is invertible and has an infinite-order vector moving-average representation, providing known interpretation to estimated impulse-response functions and forecast error variance decompositions.

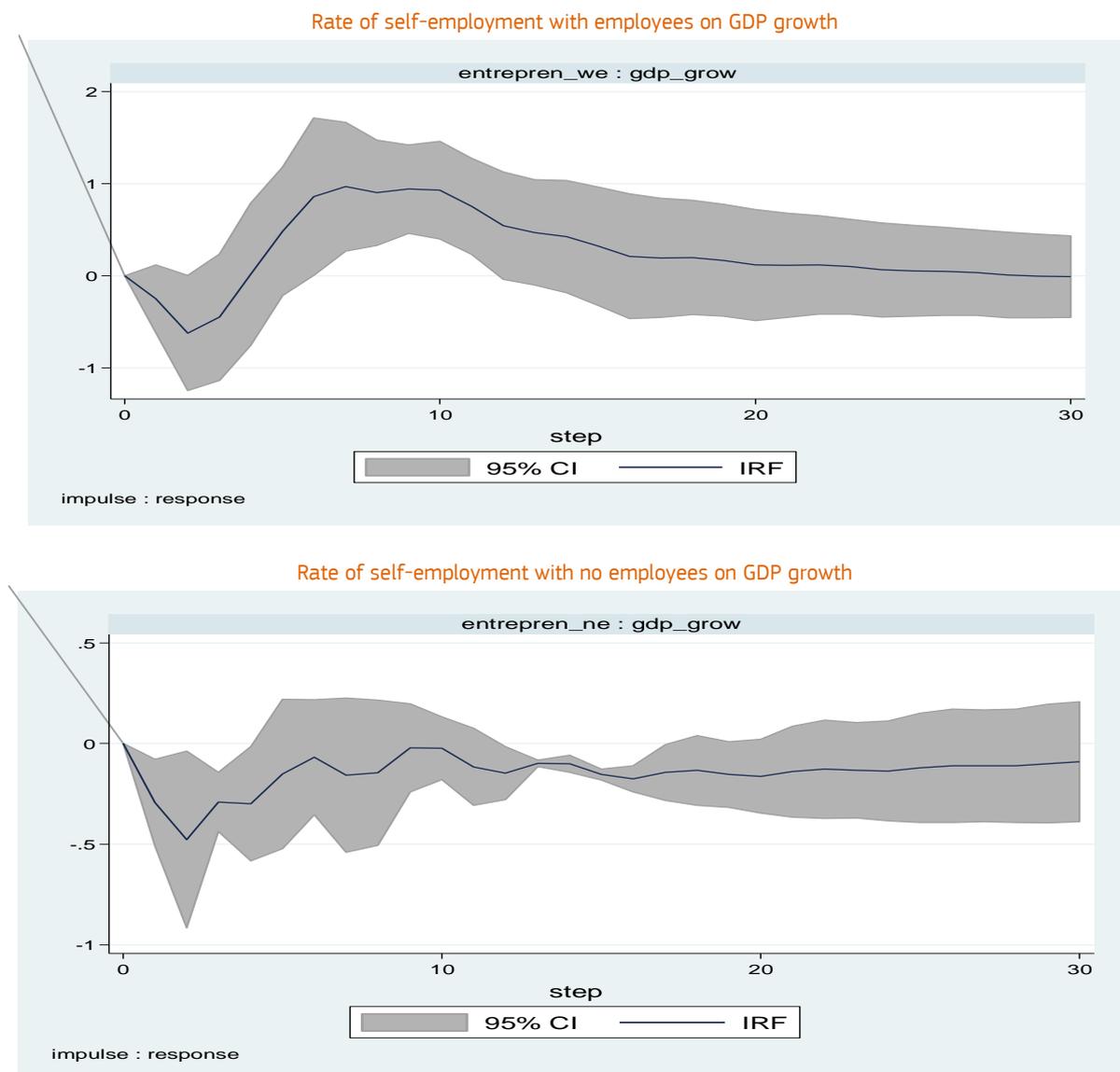
It is interesting to note that the self-employment variables do not have a direct statistically significant impact on either GDP or GDP growth. However, their overall influence cannot be seen solely on these terms. The nature of the VAR model is that shocks in one variable can influence outcomes in other variables indirectly, through changes in intermediate variables.

5.6 Impulse-Response Functions

Impulse-response functions, or IRFs, measure the effects of a shock to an endogenous variable on itself and on the other endogenous variables, over time. In this sub-section we use IRFs to investigate the response of GDP, GDP growth and employment to “shocks” in the self-employment variables.

The panel VAR analysis tool that was used calculates impulse-response functions (IRF), whose respective confidence bands are estimated using Gaussian approximation based on Monte Carlo draws from the estimated panel VAR model.

Figure 41: IRFs of self-employment shocks on GDP growth



Note: Econometric estimations using quarterly data 2000-2016

Source: LE IRF analysis based on Eurostat's macroeconomic series and LFS dataset, quarterly data 2000-2016.

Although the margins included within the confidence bands are relatively large, the two figures above paint a relatively clear picture of the different effects of self-employment with and without employees on GDP growth.

In particular, self-employment with no employees has a mostly negative lagged association with GDP growth in proximate quarters, while lags of self-employment with employees have an initially small negative association with GDP growth, followed by a relatively large positive effect. This last result is intuitively appealing since entrepreneurship is likely to benefit GDP with some lag. Conversely, high levels of self-employment with no employees may be more likely to occur in periods of generally low employment and low GDP levels.

It is important in the interpretation of these results to not put too much weight on “causality” inferences. The VAR model is atheoretical and as such searches merely for dynamic relations between the variables of interest.

In order to further investigate the drivers of these overall impacts, we also performed a VAR analysis at individual country level.

5.7 Country-by-country VAR analysis

The table below contains a selection of estimated coefficients, significant at the 90 % confidence level, for the country-by-country estimation of the same model. Cells highlighted in green represent outcomes that support the hypothesis that self-employment with employees has a greater association with positive macroeconomic outcomes than self-employment without employees. Non-highlighted cells with numbers reflect instances of positive outcomes arising from self-employment with no employees.

Table 30: VAR estimates for the main model, per country regressions¹⁸

impulse	response	lags	BU	RO	PO	LV	LT	HU	SK	EE	CZ	MT	SI	PT	GR	ES	
Employment rate	GDP growth	L1	3.8			-1.7		-2.3	1.9				2.8		2.3	5.1	
		L2	-2.5						-1.7			-1.8	-2.2				-1.8
		L3	2.8			-2.2						2.7	2.1				
		L4	-2.5					2.7	1.8	2.2	-1.7						1.7
Self-employment without employees	GDP growth	L1	-3.7				-2.1		-1.8		-1.7					-4.0	-2.1
		L2	1.7				1.7										
		L3	-3.1	-1.8	-1.7	1.8		-2.2						1.8		1.8	
		L4	2.8						3.8				1.9				
Self-employment with employees	GDP growth	L1	-1.7		2.2					-1.7	1.8		-1.9			-4.3	
		L2	3.3	1.7	-1.7			1.7			-1.7						
		L3		1.7	1.9	2.8					-2.7						
		L4		1.8				1.7	-2.6								
Employment rate	GDP per capita	L1	3.7		-1.7			-2.1	2.0				2.7		2.3	5.1	
		L2	-2.5						-1.8			-1.8	-2.3				-1.8
		L3	2.7			-2.4						2.7	2.1				
		L4	-2.5					2.3	1.9	2.1	-1.8						
Self-employment without employees	GDP per capita	L1	-3.6				-2.1		-1.9		-1.8					-4.0	-2.0
		L2	1.7				1.7										
		L3	-3.0					-2.1						1.8		1.7	
		L4	2.8			2.1			3.8			1.9					
Self-employment with employees	GDP per capita	L1	-1.7		1.9						1.9		-1.8			-4.2	
		L2	3.3					1.8									
		L3			1.9	2.8					-2.8						
		L4		1.9		-1.7		1.7	-2.5		1.7						
Self-	Employment	L1	-2.1				3.7								-2.0	-3.3	

¹⁸ Note that the magnitude of the coefficients in the VAR model has no significant interpretation. The focus is therefore on the sign of these coefficients which gives us the indication of Granger-causality of one endogenous variable to another (Greene, 2003).

employment without employees		L2			-1.7			-1.8						-2.0			2.4	
		L3				-3.2										2.6		
		L4					3.9			2.6	2.9							
		L1				-1.7			2.0		-2.5						-1.8	-1.8
Self-employment with employees	Employment	L2			-2.4		2.6	-2.0									1.9	
		L3			1.7	-1.8		-2.3		1.8		2.0	1.8					2.2
		L4	2.2				-3.7									-1.9		
		L1																

Table 31: VAR estimates for the main model, per country regression (continued)

impulse	response	lags	IT	DE	FR	BE	UK	AT	FI	NL	SE	IE	DK	NO	LU	
Employment rate	GDP growth	L1				2.4	3.4		2.2	1.8	4.3	2.6		1.7		
		L2							1.8						1.7	
		L3			3.6	2.4										
		L4		2.4	2.1	1.9	1.9			2.2	3.7	2.8		1.9		
Self-employment without employees	GDP growth	L1							2.8			4.4		3.2	2.4	
		L2	1.7	1.9			1.8	2.7		1.7						
		L3	1.7													
		L4					2.8	1.8	2.1		1.7	2.3				2.7
Self-employment with employees	GDP growth	L1				2.0				2.3						
		L2				1.8	2.7				1.7					
		L3				2.5										
		L4			1.9		2.1		2.6			3.2	1.7			
Employment rate	GDP per capita	L1			2.2	2.3	3.4		2.2	1.7	4.4	3.0				
		L2							1.8						1.7	
		L3			1.9	2.4										
		L4				1.8	1.7			2.1	3.7	3.0		2.2		
Self-employment without employees	GDP per capita	L1							2.7			4.6		3.1	2.6	
		L2	1.7				1.7	2.6		1.7						
		L3	1.7													
		L4					1.8	1.8	2.1		1.7	2.3			3.0	
Self-employment with employees	GDP per capita	L1				2.0				2.2						
		L2				1.8	2.9				1.8					
		L3				2.5										
		L4		2.0			2.4		2.7			3.3	1.7			
Self-employment without employees	Employment	L1								4.7		3.2	3.1		2.0	
		L2				2.1		1.9		1.7		2.3			1.9	
		L3			1.7	4.6									3.3	
		L4					1.7			4.7		1.7	3.9	2.2		
Self-employment with employees	Employment	L1		3.4		3.5		2.8	2.5		2.1				2.5	
		L2				1.8		2.8							3.0	
		L3			4.8					2.8		1.8			1.8	
		L4		2.0					1.8			2.8			2.9	

The countries are ordered by average per capita GDP over the entire period, with the lowest income countries appearing first.

The table offers some support for the stronger positive lagged impacts of self-employment with employees, although by no means overwhelming. It also shows that some of relationships of interest take time to have their full effect, as the many significant coefficients at third and fourth lag illustrate.

The table also suggests quite large disparities in the intensity and direction of these effects across countries. In particular, the greater importance of self-employment with employees is most apparent for Bulgaria, Hungary, Belgium, Finland and the Netherlands. The more prominent contrary examples are Latvia, Slovenia and Ireland. These observed disparities seem unrelated to income levels.

5.8 Concluding remarks

The dynamic relationship between the self-employment variables and macroeconomic outcome variables of interest is a complex one and one that varies significantly across countries.

In this chapter we investigated whether the dynamic macroeconomic effects of self-employment with employees were significantly different from those of self-employment without employees. This is interpreted as a test of whether the former type of self-employment is more entrepreneurial than the latter.

In terms of their statistical properties, the fitted VAR models had a good overall explanatory power but individual coefficients could only be estimated imprecisely. This, in our view, is due to very different dynamic behaviours in the overall model and small number of observations in the per-country models.

Nonetheless, the balance of evidence points to a greater macroeconomic benefit arising from self-employment with employees than from self-employment without employees. This was more the case in a subset of countries but the overall dynamic effects summarised in the impulse-response functions of Figure 41 do indeed support this hypothesis.

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