



OECD Economics Department Working Papers No. 1512

To what extent do policies
contribute to self-
employment?

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<https://dx.doi.org/10.1787/74c044b1-en>

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JT03439538

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ABSTRACT/RESUMÉ**To what extent do policies contribute to self-employment?**

Using cross-country time series panel regressions for the last two decades, this paper seeks to identify the main policy and institutional factors that explain the share of self-employment across European countries. It looks at the aggregate share of self-employed as well as its breakdown by age, skill and gender. The generosity of unemployment benefits, and to a lesser extent, spending on active labour market policies appear to be robust determinants of the long-term share of self-employed in European countries. No significant relation is found between the stringency of employment protection and aggregate self-employment. However, there are significant, and oppositely signed, impacts on high- and low-skilled self-employed separately. Both the tax wedge and the minimum wage appear to be positively related to the share of self-employed in the long term, but the relation holds for some categories of workers only.

JEL Classification: J40, C23

Keywords: self-employment, labour market, OECD

Dans quelle mesure les politiques économiques contribuent-elles au travail indépendant ?

En utilisant des régressions des données de panels temps-pays au cours des deux dernières décennies, ce document cherche à identifier les principaux facteurs politiques et institutionnels qui expliquent la part du travail indépendant dans les pays européens. Il examine la part des travailleurs indépendants ainsi que sa répartition par âge, compétence et sexe. La générosité des prestations de chômage et, dans une moindre mesure, les dépenses consacrées aux politiques actives du marché du travail pour les chômeurs se révèlent être de solides déterminants de la part à long terme des travailleurs indépendants dans les pays européens. Aucune relation significative n'a été établie entre la rigueur de la protection de l'emploi pour les travailleurs permanents. Cependant, il existe des impacts significatifs, et de signes opposés, sur les travailleurs indépendants hautement et faiblement qualifiés. Le coin fiscal et le salaire minimum semblent être liés positivement à la part des travailleurs indépendants à long terme, mais la relation s'applique uniquement à certaines catégories de travailleurs.

Classification JEL: J40, C23

Mots clefs: travail indépendant, marché du travail, OCDE

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TO WHAT EXTENT DO POLICIES CONTRIBUTE TO SELF-EMPLOYMENT?

By Mark Baker, Balázs Égert, Gabor Fulop and Annabelle Mourougane¹

1. Introduction

Self-employed individuals represent a sizeable share of the labour market in many countries, at nearly 15% of total employment on average in OECD countries and above 20% in some countries. At the same time, the self-employed are a highly heterogeneous category. Many of them provide business services on contract and have high-skilled and high-income jobs while others have much poorer working conditions, lower wages and little job security. As such, the high share of self-employed in some countries has raised concerns of increased labour-market duality between employees and self-employed and has called for a better understanding of the driver of self-employment growth.

To the extent that self-employment reflects the entrepreneurial activity of individuals, by facilitating the adoption and creation of new technologies and innovations, a high share of self-employment would be positive for economic growth. Furthermore, self-employment can also be an avenue for individuals to enjoy a more flexible working environment, can act as a transition to more formal employment position or can allow for work on a more marginally attached basis. For instance, self-employment can act as a transitional step towards a more secure permanent position for new entrants to the labour market, including new migrants and younger workers.

Self-employment can also act as an avenue for workers and employers to avoid labour-market regulations and institutions. For instance, by reclassifying an individual as a self-employed contractor, business could potentially: avoid paying applicable social security, payroll tax or pension contributions; circumvent statutory minimum wage regulations; and avoid employment protections and regulations that govern the hiring and employment of a worker.

The rising importance of self-employment in some countries has important implications for labour-market policies and fiscal policy. With regards to the former, labour-market rigidities could play an important role in pushing individuals to self-employment. Regarding fiscal policy, the combination of high levels of self-employment and tax incentives, in terms of lower social security contributions or lower rates of taxation, can have critical implications for government revenues. Furthermore, a gap in social security payments between different worker types could imply a lack of social security coverage for a larger share of the workforce, which could result in a large contingent liability to the public sector.

Against this background, this paper seeks to identify the main policy and institutional factors that could influence the decision of individuals to work as self-employed contractors, focusing on the share of self-employment across European countries. It looks at the aggregate share of self-employed as well as its breakdown by age, gender and skill. Panel regressions are estimated for the period 1995-2013 using a wide range of policy

¹ The authors are members of the Economics Department of the OECD. They would like to thank Pierre Beynet, Mathilde Pak and Rory O'Farrell for their comments and suggestions, as well as Claude-Annie Manga-Collard and Sisse Nielsen for excellent editorial assistance.

indicators that are considered *a priori* to play a role in the decision to become self-employed. These indicators include: employment protection indicators (for permanent contracts); the differential between tax and social security treatment of self-employed vis-à-vis employees; the size of the overall tax wedge; the relative minimum wage rate; unemployment benefit replacement rates; and the level of spending on activation policies on unemployed (ALMP).

The main insights from the empirical analysis are as follows:

- The generosity of the unemployment benefits – measured by the replacement ratio – appears to be a robust determinant of the long-term share of self-employed in European countries (Table 1). It also affects short-term developments of the share of self-employed, but not in all the specifications tested. One interpretation of this result would be that unemployed workers might be more willing to take on the risks of starting their own business if income support supplied to unemployed is low.
- The negative impact of the unemployment benefits replacement ratio on the share of self-employed is found to be robust to the use of different measures of self-employment, and holds for own-account workers – those individuals who work for themselves without taking on staff – as well as for different categories of workers broken down by age, gender and skills.
- Spending on active labour market policies is also found to negatively impact the long-term share of self-employed for most categories of worker, own-account workers and youth being an exception. Enhanced job matching through training and job-seeking measures, which represent the bulk of active labour market measures, increases the chances of finding a new job and reduces the necessity to opt for self-employment.
- The stringency of employment protection legislation (EPL) is found to have a negative impact on self-employment amongst high-skilled workers and is positively associated with self-employment amongst low-skilled workers. The contrasting impact on self-employment across skill types results in no impact of EPL stringency on aggregate self-employment. High-skilled workers are likely to benefit more from strict employment protections and therefore opt for regular employment. Self-employment can act as an avenue for low-skilled workers, and for businesses hiring these workers, to circumvent the higher costs associated with strict regulation, perhaps explaining the positive impact.
- Both the tax wedge and the minimum wage appear to be positively related to the share of self-employed in the long term, but the relation holds for some categories of workers only.

Table 1. Effect of institutions on the share of self-employment

	Long term	Short term
Employment protection legislation	0	0
Unemployment benefits	-	-/0
ALMP	-	-/0
Tax wedge	+/0	0
Minimum wage	+/0	0

Note: Employment protection legislation is for regular workers. Unemployment benefit stands for the unemployment benefit replacement ratio. ALMP stands for active labour market policies. Tax wedge is for the single earner, couple with two children. Minimum wage is the ratio to median.

- Those results need to be interpreted with care, in particular when the age, gender or skilled categories are examined as the number of workers in those categories is sometimes limited. Moreover, only linear relations have been tested in the paper, while some institutions could have an effect on the share of self-employed only after they reach a certain threshold. In the same vein, interactions between institutions have also not been investigated.

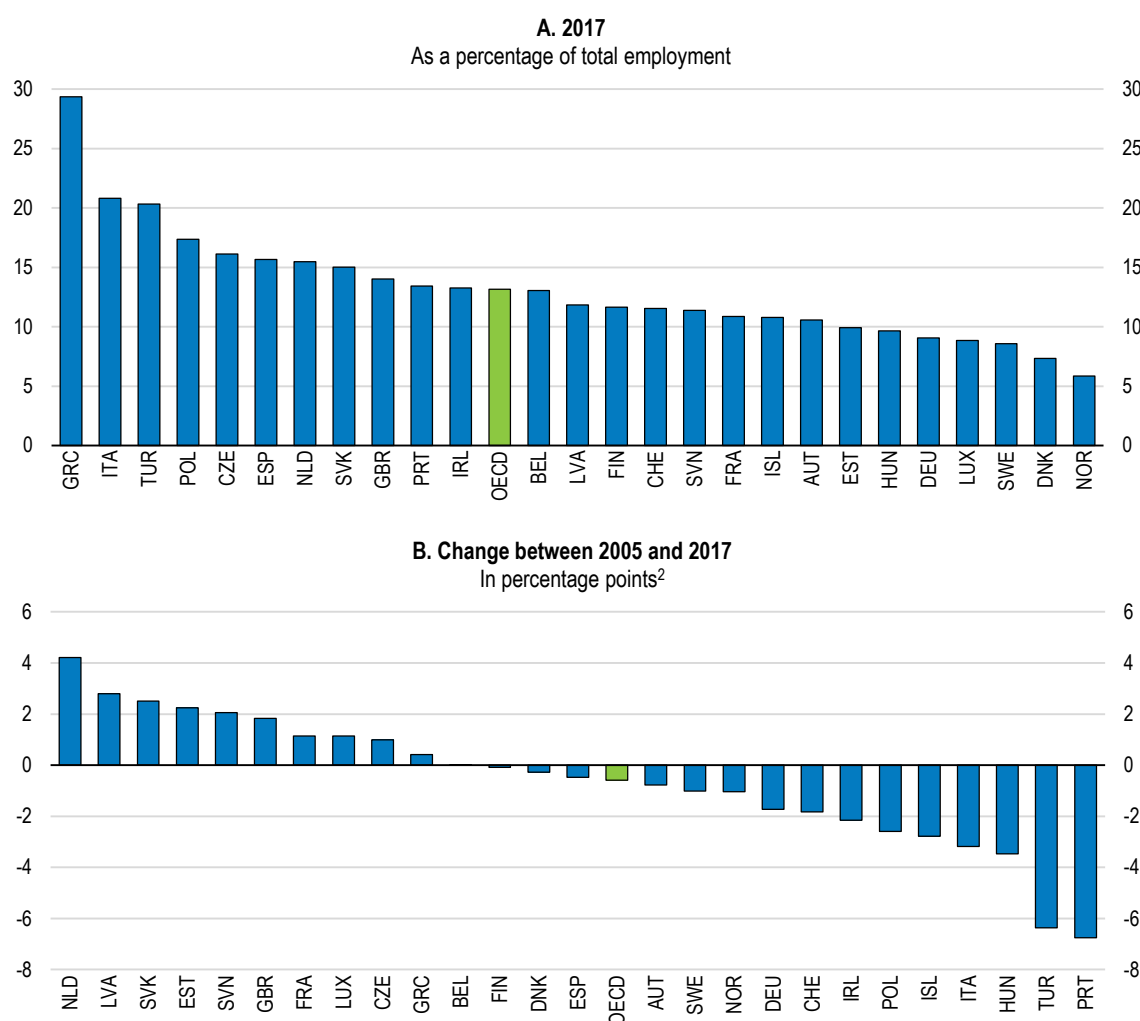
2. Recent developments in self-employment

The self-employed represent a sizeable share of total employment in a number of OECD countries, amounting to slightly less than 15% on average (Figure 1). Self-employment is particularly prevalent in Greece, Turkey and Italy where it exceeds 20%. By contrast, the share was lower or close to 10% in some Nordic countries.

Although these shares tend to be quite stable year to year in most countries, longer term trends have varied widely across countries. Since 2005, most countries experienced a decline in the share of self-employed, with Portugal and Turkey witnessing the largest decline in the share over the past decade. Not all countries experienced a decline however, and countries like the Netherlands and United Kingdom witnessed a considerable increase in the share.

The heterogeneity of the self-employed both within and across countries makes it difficult to pinpoint the true motivations behind the decisions to become self-employed. As mentioned above, there are benefits of flexibility from both the worker and client perspective, and self-employment is likely to be a more positive outcome than being otherwise unemployed. Furthermore, the importance of digital platforms in matching usually short-term and routine service providers with clients also facilitates self-employment in a number of countries. The increased flexibility associated with self-employment can also have negative consequences, however. Self-employed workers do not enjoy the same level of protections and might not receive the same social security coverage as regular employees. Additionally, the limited attachment and increased flexibility can also be a disadvantage to individuals who would prefer a more stable working relationship.

Own-account workers have made up an increasing share of the self-employed in many countries, with the rise relatively larger in those countries that have experienced an increase in the share of total self-employment over the past decade (Figure 2). To the extent that this trend continues, and if own-account workers do not scale up their businesses by hiring employees, then the potential positive impact to aggregate productivity associated with increased entrepreneurial activity would diminish. Indeed, in the Netherlands where own-account workers have seen a very large rise in the share of self-employed, only around 2-3% of individuals annually scale up their operations by taking on new employees (ter Weel et al., 2017^[1]).

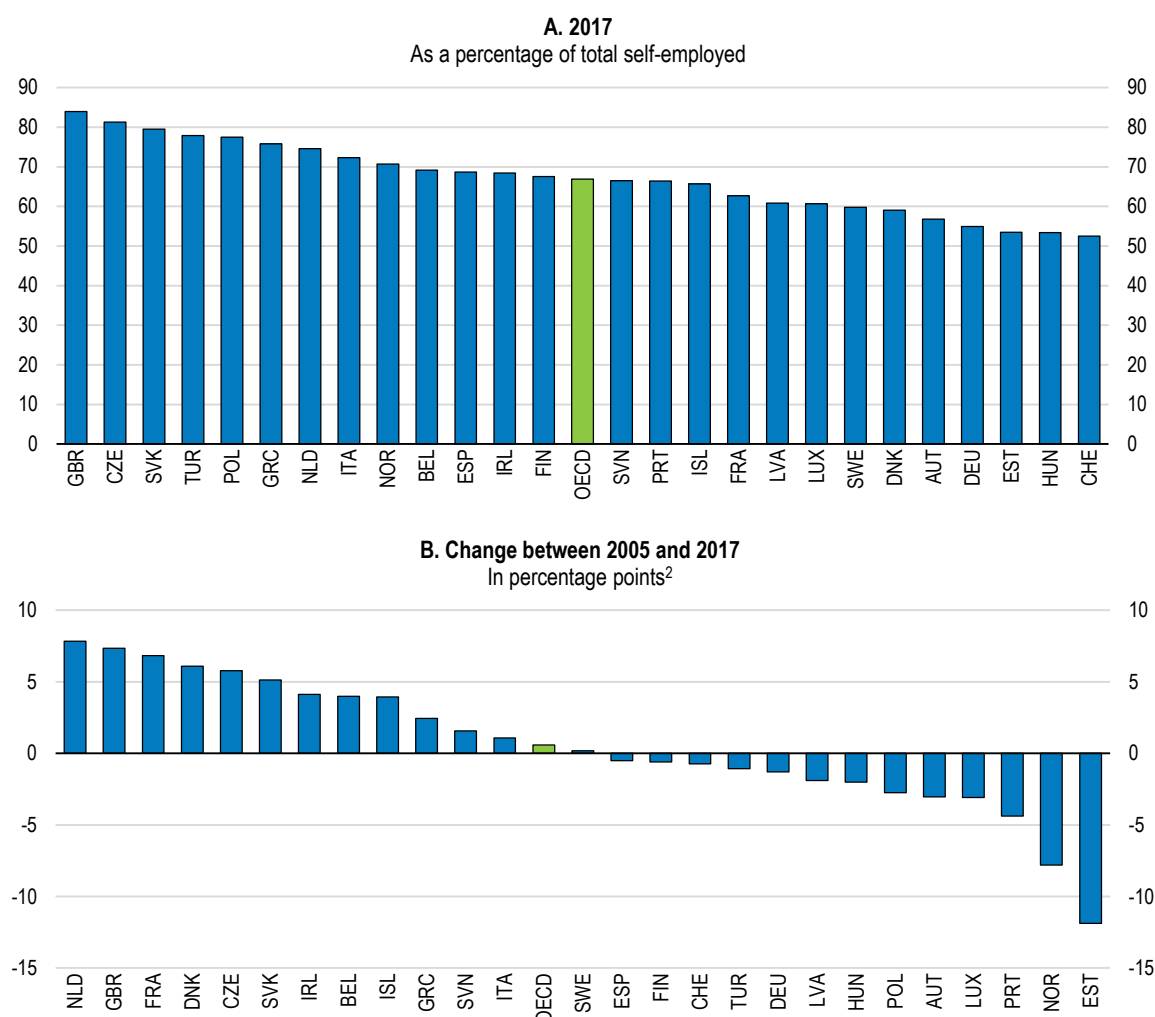
Figure 1. Share of self-employed: overall (aged 15-64)¹

1. The OECD aggregate is calculated as an unweighted average of the data shown.

2. Change between 2006 and 2017 for Turkey.

Source: Eurostat (2018), "Employment and unemployment (Labour force survey)", *Eurostat Database*, May.

Figure 2. Share of self-employed persons without employees (own-account workers): overall (aged 15-64)¹



1. The OECD aggregate is calculated as an unweighted average of the data shown.

2. Change between 2006 and 2017 for Turkey.

Source: Eurostat (2018), "Employment and unemployment (Labour force survey)", *Eurostat Database*, May.

3. Literature review on the link between self-employment and policies

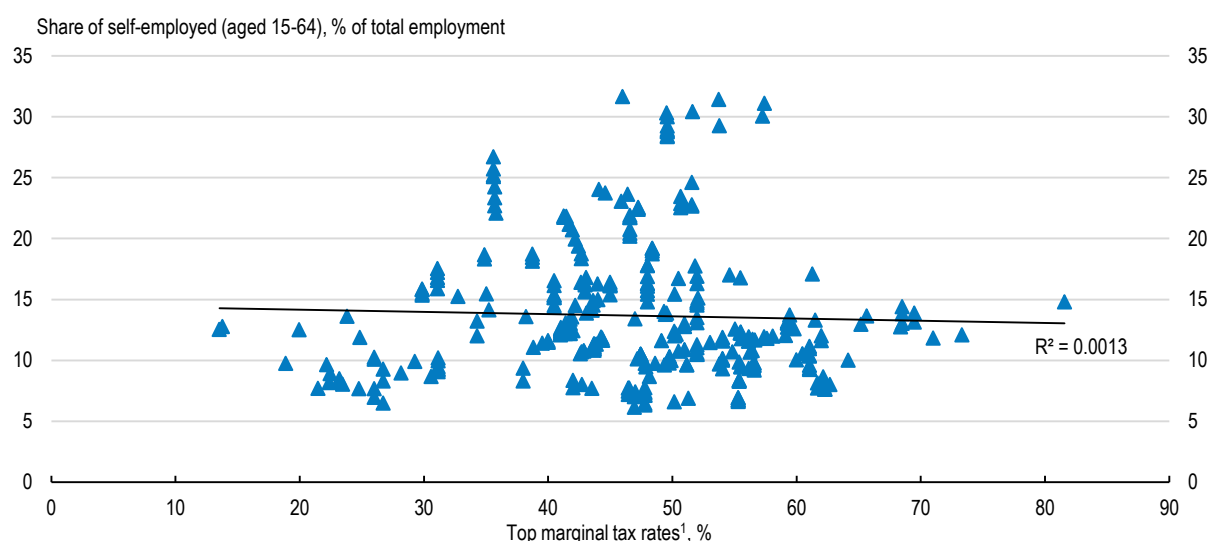
Despite extensive literature on the factors underlying the growth of self-employment in specific countries only a few studies have sought to compare and explain self-employment rates across countries. A major exception is Acs et al. (1994^[2]), who conclude that a major explanation for the diversity of self-employment rates across industrialised countries is the stage of economic development. According to them, the resurgence of self-employment in some countries in the 1990s was the consequence of a structural shift resulting in the decline in the manufacturing sector, which was dominated by large firms. Other mega-trends such

as the rising share of the ICT sector may also affect self-employment developments. This increases the profitability of small firms and lowered the returns to wage work, spurring self-employment. Cyclical conditions may also encourage workers to switch to self-employment. For instance, high unemployment and poor hiring prospects can provide an incentive to seek out business opportunities (Alba-Ramirez, 1994^[3]).

Self-employment offers greater opportunities for a reduction in the burden of taxation. The impact that tax policies can have on self-employment has been thoroughly analysed, although the focus has particularly been on the extent to which self-employed individuals mis-report their income to minimise their tax burden (Guyton et al. (2018^[4]), Åstebro and Chen (2014^[5]), Kleven et al. (2011^[6]) and Bárány (2017^[7])). The role that complexities in the labour taxation system can have on self-employment has been explored in great detail in Aghion et al. (2017^[8]).

Cross-country evidence does not point to a strong correlation between the *top marginal income tax rate* and the share of self-employed (Figure 3). Countries such as Denmark where the top income rate is high experience a low share of self-employed. There is also no strong evidence that cut in the top marginal tax rate have been associated with the fall in the number of self-employed.

Figure 3. Top marginal tax rates vs. share of self-employed



1. Refer to personal income tax and employee social security contributions.

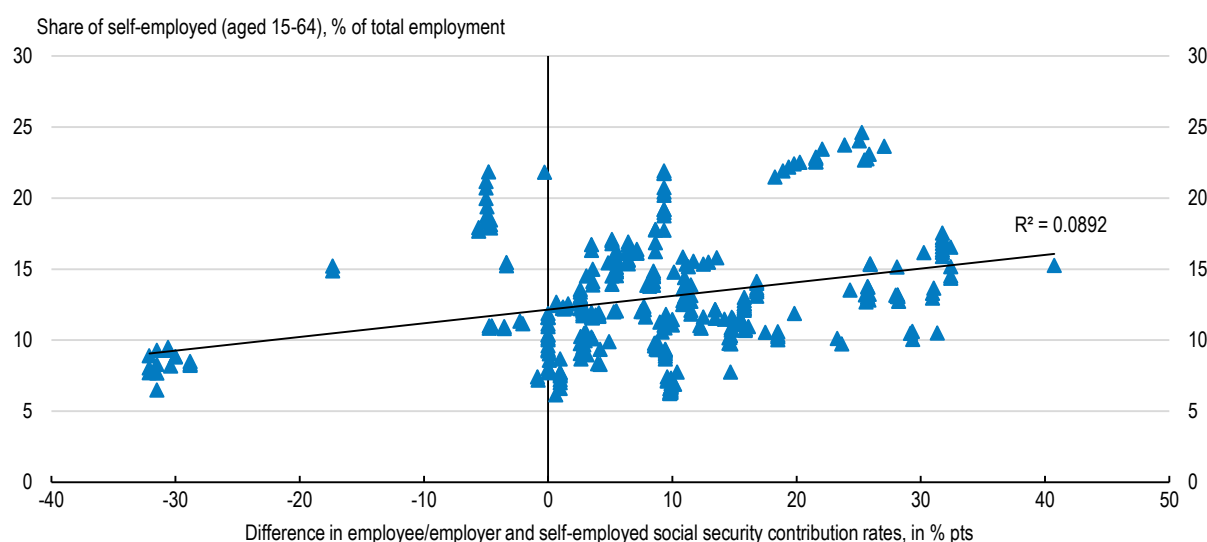
Source: OECD (2018), OECD Tax Database; and Eurostat (2018), "Employment and unemployment (Labour force survey)", Eurostat Database, May.

OECD countries where the incidence of self-employment is particularly high, are often those where the *tax wedge* between self-employed and employees are larger. In most countries it is possible to deduct some form of business expenses or investment from self-employed income subject to personal income tax. It is also often possible to allow losses in one year to be offset against income from another or to benefit from the timing of tax payment. In the Netherlands for instance, a large gap between the fiscal treatment of

employees and self-employed have had a strong influence on the rising incidence of self-employment (IBO (2015^[9]) and ter Weel et al. (2017^[11])).

In this paper, the difference between social security contributions between the self-employed and employees is used as a proxy to compare potential differences in the tax wedge across countries. Intuitively, a higher relative social security contribution for employees is likely to encourage firms to increase subcontracting and their demand for self-employed services to reduce their costs. Statistical evidence points to a weak positive relation between the difference in employee and employer social contributions and self-employed social security contribution rates across countries (Figure 4).

Figure 4. Social security contributions vs. share of self-employed



Source: OECD (2018), OECD Tax Database; and Eurostat (2018), "Employment and unemployment (Labour force survey)", *Eurostat Database*, May.

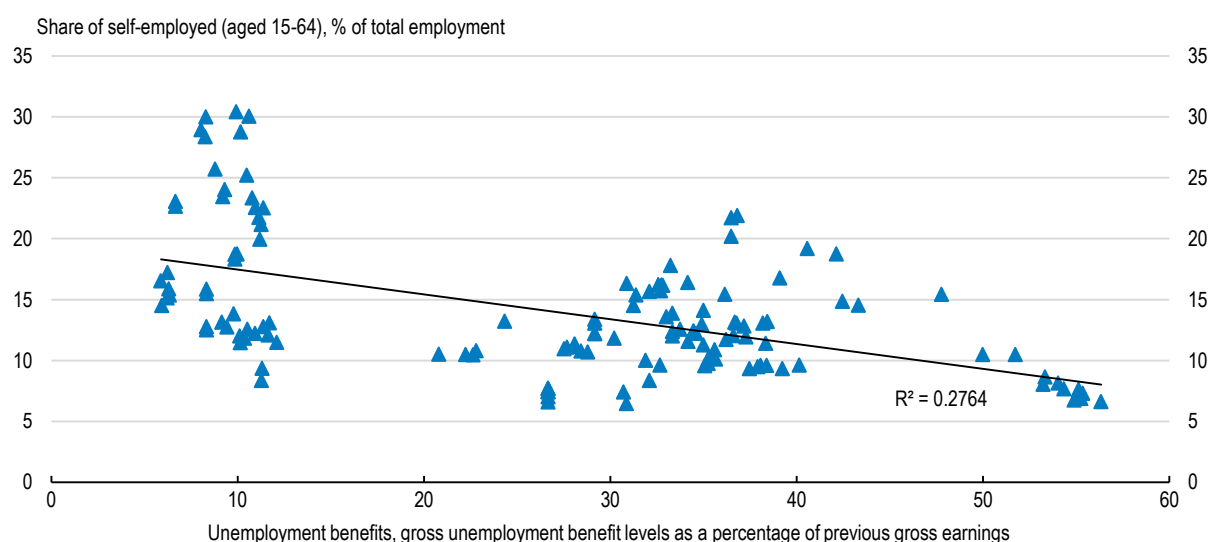
The *generosity of unemployment benefits* has *a priori* an ambiguous effect on the share of self-employment. The extent to which employers fund benefits through social security contributions can act as a deterrent to hiring workers, potentially leading to higher levels of self-employment. Alternatively, generous unemployment benefits could act as suitable income support for workers who have separated from earlier employment and encourage them to stay unemployed rather than to start-up their own business venture. Empirically, it seems that the second effect prevails given that generous unemployment benefits appear to be inversely related to the share of self-employment (Figure 5).

Similarly, *spending on active labour market measures*, which reflect primarily spending on Public Employment Services (PES) and on training, could help workers build up their human capital and find a more suitable job at the end, reducing the necessity to opt for self-employment.

Government programmes designed to encourage the growth of self-employed can also have significant impacts in some countries (Baumgartner and Caliendo, 2008^[10]; Wolff, Nivorozhkin and Bernhard, 2016^[11]). Since the financial crisis, a growing number of

countries have introduced schemes to help unemployed create their own firm combining financial aids with counselling. Those schemes have usually limited objectives such as encouraging entrepreneurship. They are rarely fully evaluated making it difficult to assess the extent to which they have contributed to self-employment growth. Those programmes represent only a very small part of spending on active labour market for unemployed.

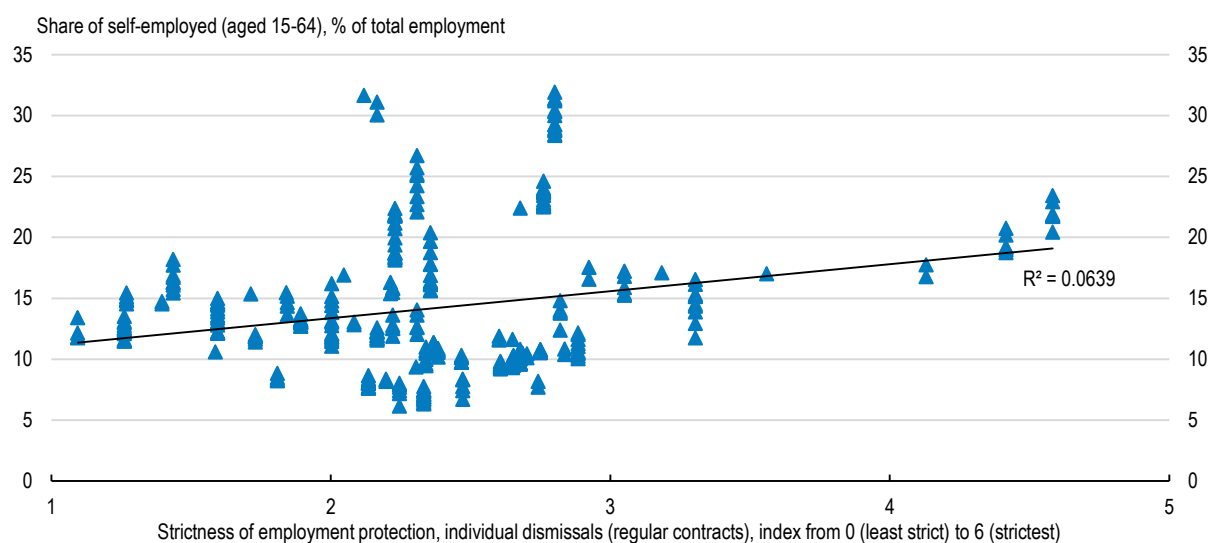
Figure 5. Unemployment benefits replacement ratio vs. share of self-employed



Source: OECD (2018), OECD Tax-Benefit Models; and Eurostat (2018), "Employment and unemployment (Labour force survey)", Eurostat Database, May.

The role that *employment protection legislation* could play in incentivising the choice to work self-employed has also been explored in detail, although the findings have yielded mixed results. A number of studies have shown that EPL restrictiveness has little impact on aggregate self-employment (Robson, 2003^[12]; Torrini, 2005^[13]; Kanninen and Vesala, 2005^[14]). However, highlighting the heterogeneity of self-employed as a group, studies that focus on specific categories of self-employment – including a negative impact from the interaction between protections and educational attainment (Baumann and Brändle, 2012^[15]) – find a significant impact of EPL. Román, Congregado and Millán (2011^[16]) show the positive role that strict employment protections can have on levels of ‘dependent’ self-employment – a term used to characterise individuals who are classified as self-employed contractors yet remain, for work purposes, employees. High job protections can discourage hiring by employers and encourages subcontracting of work instead if there is a discrepancy between the degree of protections on temporary and permanent contracts.

Statistical evidence seems to suggest that there is a positive but weak relationship between the share of self-employed in total employment and the stringency of employment protection legislation, as measured by the OECD indicator of employment protection legislation for permanent workers (Figure 6).

Figure 6. Employment protection legislation vs. share of self-employed

Source: OECD (2018), OECD Employment and Labour Market Statistics Database; and Eurostat (2018), "Employment and unemployment (Labour force survey)", *Eurostat Database*, May.

The causality between features of *collective bargaining* and the share of self-employed is ambiguous. In many countries, the fall in union density has coincided with increase in the share of self-employed. A high union density and strong trade unions may discourage the development of self-employed, if the latter are associated with lower wages and poor job protection. Alternatively, increases in self-employed can reduce union membership, as the self-employed are less likely to be union members than employees.

Finally, policies that target different demographic groups could have an influence on the growth in self-employment. Self-employment as an alternative to unemployment plays an important role for immigrant populations, although the incidence of self-employment differs across different host and origin countries, ethnicities and skill levels (Volery (2007^[17]); Baycan-Levent and Nijkamp (2009^[18]) and Kanas, Tubergen and Lippe (2009^[19])).

4. Empirical approach

4.1. Methodology

The factors influencing the share of self-employed are estimated using the dynamic OLS (DOLS) estimator on a panel of 21 European countries over the period 1995-2013. This technique controls for endogeneity and serial correlation (Stock and Watson, 1993^[20]). The panel is unbalanced: regional coverage and time sample vary depending on data availability. Leads and lags of 1 year are used in the specification.

The share of self-employed in total employment is modelled as a function of labour market regulations and policies. The relation is estimated at the aggregate levels and looking at the gender, age and skill breakdown. More specifically, the equation is estimated in two steps.

In the long term, the share of self-employed is expressed as a function of policy variables and controls

$$Share_self_empl_{i,t} = \sum_k \beta^k X_{i,t}^k + \sum_m \delta^m control_{i,t}^m + D_i + D_t + \epsilon_{i,t} \quad [1a]$$

Where *share_self_empl* represents a number of self-employed groups including: the aggregate share of self-employed in total employment; , young or elderly self-employed; or the share of low, medium or high-skilled self-employed. *X* is a set of labour market regulation and policies such as employment protection legislation, the tax wedge, the unemployment benefit replacement ratio, the minimum wage and spending on active labour market policies. *Control* is a set of controls such as a measure of the business cycle or the share of ICT value-added in the total. Other controls such as the share of manufacturing or services have also been tested. *D_i* and *D_t* are country and time fixed effects.

In the short term, the model is expressed as a standard error-correction model:

$$\Delta share_self_empl_{i,t} = \delta * \epsilon_{it-1} + \sum_k \alpha^k \Delta X_{i,t}^k + \sum_m \theta^m \Delta control_{i,t}^m + D_i + D_t + \vartheta_{it} \quad [1b]$$

4.2. Data

Data for self-employed are taken from Eurostat. Both aggregate self-employed and the breakdown by age, and skills are used. The self-employed data from Eurostat allows us to look at own-account self-employed as well as aggregate self-employed. Data are reported in Annex 1. Data from OECD, whose definitions differ slightly from those of Eurostat – reflecting the treatment of unpaid family members – and do not separately include own-account workers, are used to investigate the robustness of the analysis.

Data for institutions are coming from the SPIDER databank (Égert, Gal and Wanner, 2017^[21]). Only institutional variables that are important determinants of the share of self-employed in the economic literature are included in the analysis (See section 3; Table 2). Union density and excess coverage appear to be well correlated with the share of self-employed, but as the direction of causality between these two variables is ambiguous it was judged preferable not to include them in the analysis.

Finally a set of controls, including the share of ICT manufacturing or services value added and indicator of the business cycles (output gap, unemployment gap, unemployment rate), have been used to correct for structural changes in the economy and the cyclical position which may also affect the share of self-employed. These data are taken from the latest Economic Outlook, Eurostat and the STAN databases.

Table 1. Regulation and institutional design affecting the share of self-employed in total employment

Variable	Expected relationship with self-employed
Employment protection legislation (EPL) regular contracts	+
Difference in social security contribution rate (total-self-employed)	+
Minimum wage to median	?
Unemployment benefit replacement rate	-
ALMP	-
Tax wedge, single earner, couple with two children.	+
Top marginal tax rate	+

5. Results

5.1. The generosity of unemployment benefit and spending on active labour market policies, are found to explain the share of self-employed.

A summary of estimation results from equations [1a] and [1b] is reported in Table 3. A complete set of estimations is provided in Annex 2. The unemployment benefit replacement rate and spending on active labour market policies are estimated to have a significant negative impact on the share of self-employed in the long term, and to a lesser extent in the short term. More generous unemployment benefits significantly reduce the share of own-account workers over the long-term. The effect of active labour market spending is also negative but not significant. By contrast, the stringency of employment protection legislation on permanent contract does not seem to play a major role in explaining the decision to move to self-employment in the short or the long term. The result is consistent with Torrini (2005^[13]) and Robson (2003^[12]). The lack of significance of results is likely to reflect to a large extent the limitation of the measure of employment protections, which is a de jure indicator and captures only imperfectly the stringency of labour-market regulations faced by firms.

These results appear to be robust to a change in the definition of self-employed, using the OECD measure, rather than the Eurostat measure of self-employed. They also hold when the sample period is expanded or hold when alternative business cycle indicators (unemployment rate, unemployment gap) are used to control for the position in the economic cycle.

A number of other labour-market institutions are estimated to influence the share of self-employed, but their impact is less robust. The tax wedge is estimated to have a positive and significant impact on the share of self-employed, suggesting that workers are encouraged to become self-employed when there is relative tax advantages compared to regular employment. The ratio of the minimum wage to the median is found to be positively related to the share of the self-employed. However, both indicators lose significance when the OECD definition of self-employed is used. The minimum wage also does not appear to be associated with the share of self-employed over a longer time sample.

Other labour-market institutions were not found to play a significant role in determining the share of self-employed. This includes the top marginal tax rate and the difference in

social contributions for employees and the self-employed, the number of maternity weeks, or the amount of in-kind transfers.

Table 2. Share of self-employed, different measures

	Share of self employed, Eurostat	Share of self employed, Eurostat	Share of self employed, Eurostat	Share of self employed, Eurostat longer sample	Share of self employed, own account	Share of self employed OECD data
Long term						
Constant	10.555**	9.388**	9.616**	14.88**	11.019**	72.948**
Employment protection	0.145	0.032	-0.394	-0.143	-	-6.391
Tax wedge	0.098**	0.104**	0.131**	0.109**	0.087*	0.245
Unemployment benefit	-0.078**	-0.064**	-0.052**	-0.093**	-0.08**	-0.198**
Minimum wage	0.025*	0.029**	0.038**	0.025*	0.019	0.146*
ALMP	-0.03*	-0.031**	-0.039**	-0.037**	-0.028*	-0.067
Output gap	-0.038			-0.056	-0.029	-0.365*
Unemployment gap		0.006				
Unemployment rate			-0.078			
Share of ICT	0.543*	0.685**	0.713**		0.594**	0.94
Share of manufacturing				-0.046		
Error correction term	-0.132**	-0.138**	-0.151**	-0.13**	-0.126**	-0.35**
Adjusted R-squared	0.979	0.979	0.98	0.979	0.98	0.898
Country fixed effects	yes	yes	yes	yes	yes	yes
Time fixed effects	yes	yes	yes	yes	yes	yes
No. of observations	244	244	244	246	251	244
No. of countries	21	21	21	21	21	21

Note: Employment protection is for regular workers. Tax wedge is for the single earner, couple with two children. Minimum wage is the ratio to median. ALMP stands for active labour market policies. * means significant at 10%, ** at 5% and *** at 1%.

Source: Authors' calculations.

5.2. The generosity of unemployment benefits is estimated to explain developments in all categories of self-employed.

Looking separately at different demographic groups, the results do not differ markedly from those observed at the aggregate level. The unemployment benefit replacement ratio and active labour market spending are found to be negatively related to the share of self-employed of all the categories of workers (except for youth in the case of active labour market policies). Employment protection legislation on permanent contract is never found to play a role (Table 4).

By contrast, the impact of tax wedge appears to be stronger for male than female self-employed and nil for youth. In the same vein, the minimum wage is not found to play a role for any worker categories. Nevertheless, the results on demographic groups should be interpreted with care as the number of workers in some categories is quite small.

Table 3. Share of self employed by age and gender

	Share of self-employed, Eurostat	Young	Elderly	Female	Male
Long term					
Constant	10.555**	1.05	14.442**	5.741*	12.733**
Employment protection	0.145	0.54	-0.549	0.923	0.844
Tax wedge	0.098**	0.044	0.136*	0.077*	0.153**
Unemployment benefit	-0.078**	-0.035**	-0.102**	-0.07**	-0.11**
Minimum wage	0.025*	0.01	0.039	0.019	0.025
ALMP	-0.03*	0.008	-0.051**	-0.028**	-0.048**
Output gap	-0.038	0.019	0.007	0.055	-0.09
Share of ICT	0.543*	0.121	1.524**	0.22	0.312
Error correction term	-0.132**	-0.245**	-0.106**	-0.207**	-0.168**
Adjusted R-squared	0.979	0.908	0.983	0.963	0.962
Country fixed effects	yes	yes	yes	yes	yes
Time fixed effects	yes	yes	yes	yes	yes
No. of observations	244	228	244	244	244
No. of countries	21	20	21	21	21

Note: Employment protection is for regular workers. Tax wedge is for the single earner, couple with two children. Minimum wage is the ratio to median, ALMP stands for active labour market policies. * means significant at 10%, ** at 5% and *** at 1%.

Source: Authors' calculations.

5.3. The share of high-skilled self-employed appears to be influenced by additional determinants than those of mid or lower skilled

The generosity of unemployment benefit and active labour market spending, as well as the tax wedge and the relative minimum wage, continue to explain the share of self-employed for most skills. There are two exceptions: active labour market spending does not explain self-employment of high-skilled workers and the minimum wage does not appear to play a role in the share of self-employed of medium-skilled workers (Table 5). Contrary to what is observed at the aggregate level, strict employment protection is associated with lower levels of high-skilled self-employment and higher levels of low-skilled self-employment. It is probable that high-skilled workers are more likely to be on permanent contracts than low and mid-skilled workers. Therefore, when protection is high high-skilled workers opt for regular employment to benefit from such a protection. By contrast the stringency of employment protection may encourage low-skilled workers or employees to circumvent the resulting high labour costs by moving to self-employment..

Table 4. Self-employed by skills

	Share of self employed, Eurostat	High skill	Medium skill	Low skill
Long term				
Constant	10.555**	20.621**	14.255**	1.769
Employment protection	0.145	-3.764**	-0.682	2.075**
Tax wedge	0.098**	0.118**	0.079*	0.171**
Unemployment benefit	-0.078**	-0.07**	-0.049**	-0.074**
Minimum wage	0.025*	0.038**	0.021	0.044**
ALMP	-0.03*	-0.03	-0.043**	-0.055**
Output gap	-0.038	-0.145**	0.213**	-0.136*
Share of ICT	0.543*	0.021	-0.051	1.023**
Error correction term	-0.132**	-0.352**	-0.177**	-0.257**
Adjusted R-squared	0.979	0.963	0.966	0.99
Country fixed effects	yes	yes	yes	yes
Time fixed effects	yes	yes	yes	yes
No. of observations	244	238	238	238
No. of countries	21	21	21	21

Note: Employment protection is for regular workers. Tax wedge is for the single earner, couple with two children. Minimum wage is the ratio to median, ALMP stands for active labour market policies. * means significant at 10%, ** at 5% and *** at 1%.

Source: Authors' calculations.

6. Concluding remarks

Different policies and institutions are found to have an impact on self-employment, although the results may differ when looking at different subsets of self-employed individuals. The generosity of unemployment benefits has a significant negative impact on total as well as all subsets of self-employment. The strictness of employment protection has a limited impact on aggregate self-employment, but this masks significant heterogeneity with a significant negative impact on high-skilled self-employment and a contrasting significant positive impact on low-skilled self-employment.

One important area for further research would be a more nuanced investigation of the role that labour taxation across different types of working types plays in influencing self-employment. Our work uses the difference in social security contributions but does not account for potential differences in pension contributions, or potentially tax breaks put in place to stimulate self-employment that are used across countries. For instance, in the Netherlands there is no obligation for the self-employed to make second pillar pension contributions, which account for a large share of gross income of salaried employees, and there exist a number of tax deductions available to stimulate entrepreneurship, which contribute to a very large difference in the net incomes of employees and self-employed individuals.

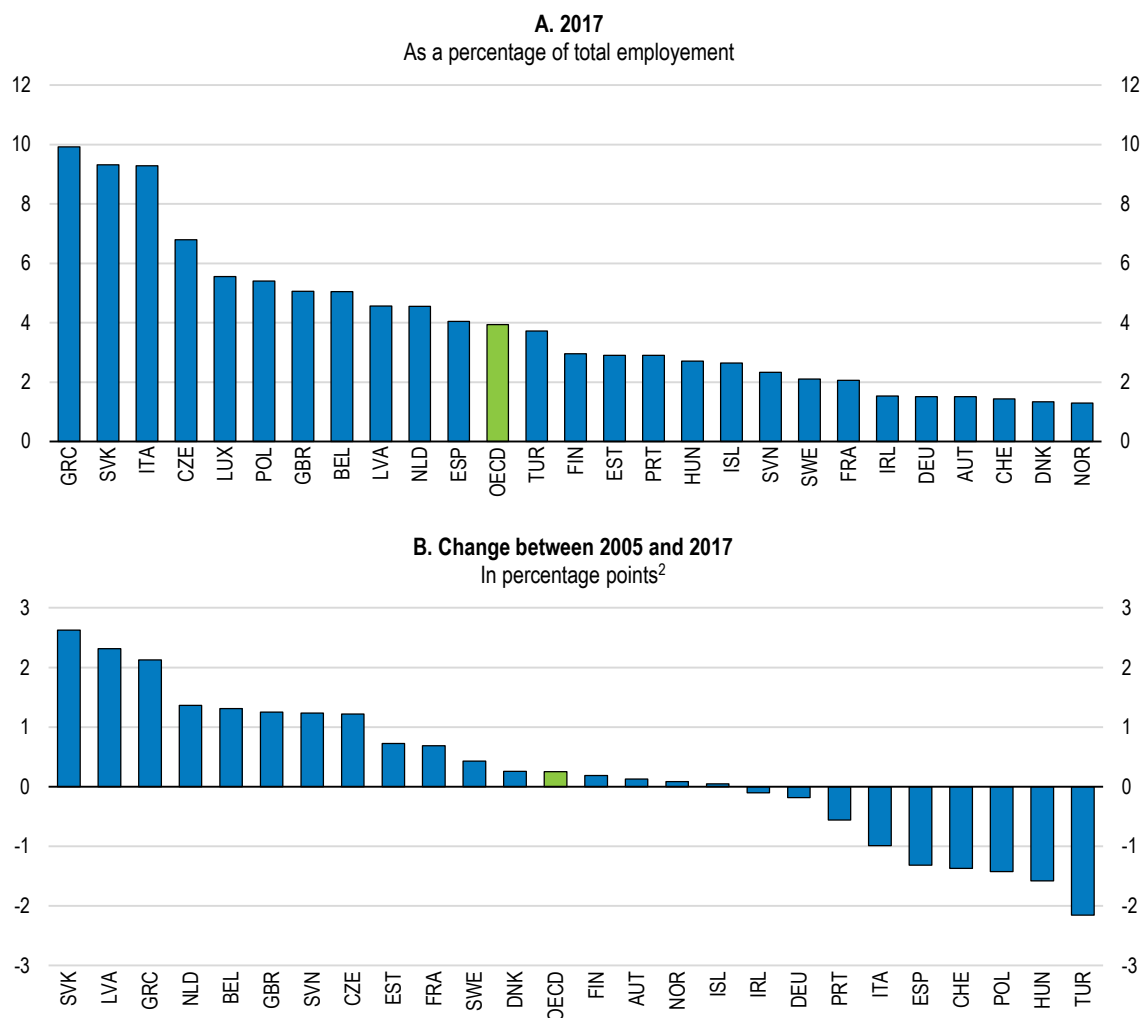
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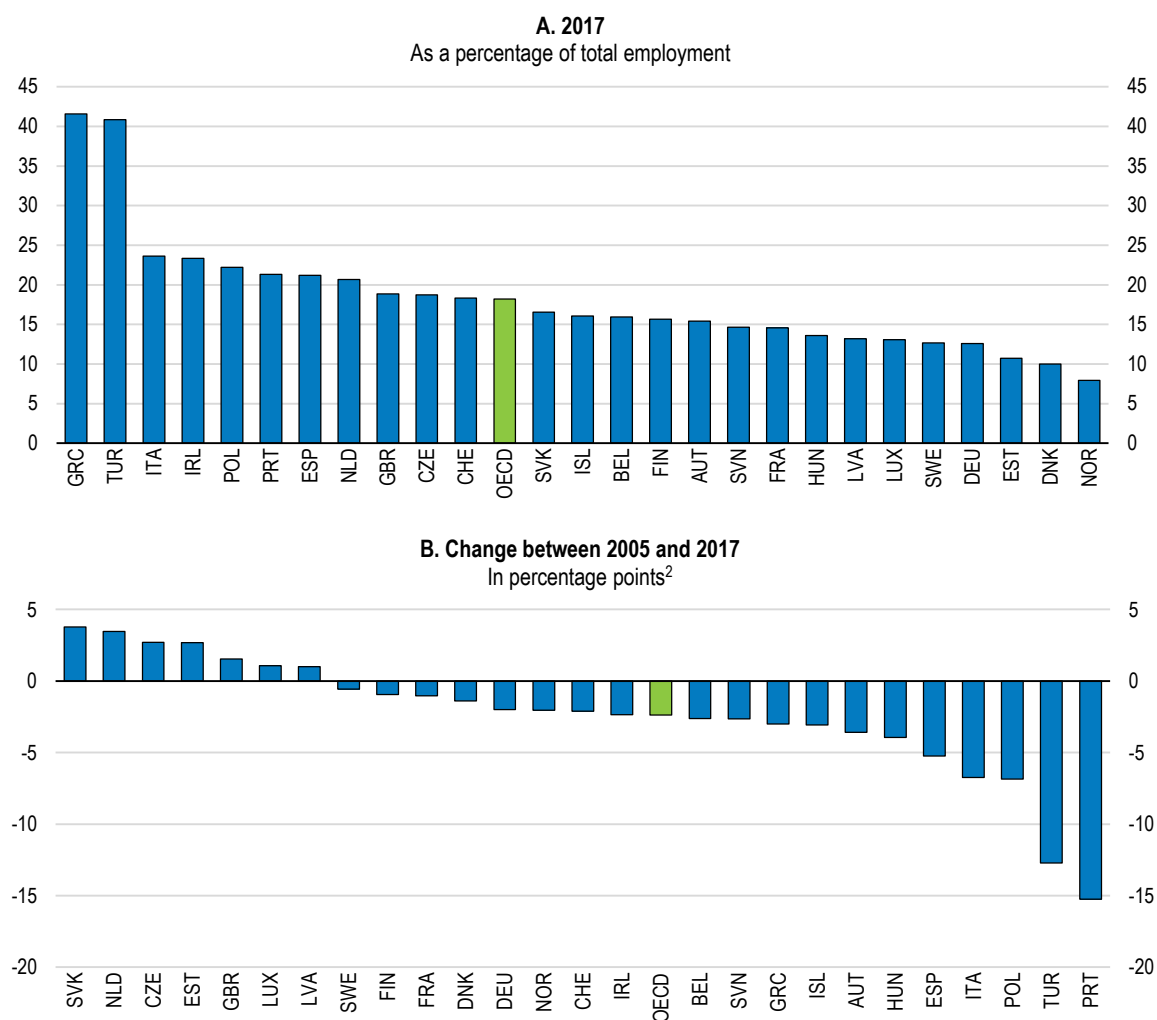
Annex A. Self-employed by gender, age and skills

Figure A.1. Share of self-employed: youth (aged 15-24)¹



1. The OECD aggregate is calculated as an unweighted average of the data shown.
2. Change between 2006 and 2017 for Iceland and Turkey. Change between 2008 and 2017 for Estonia.

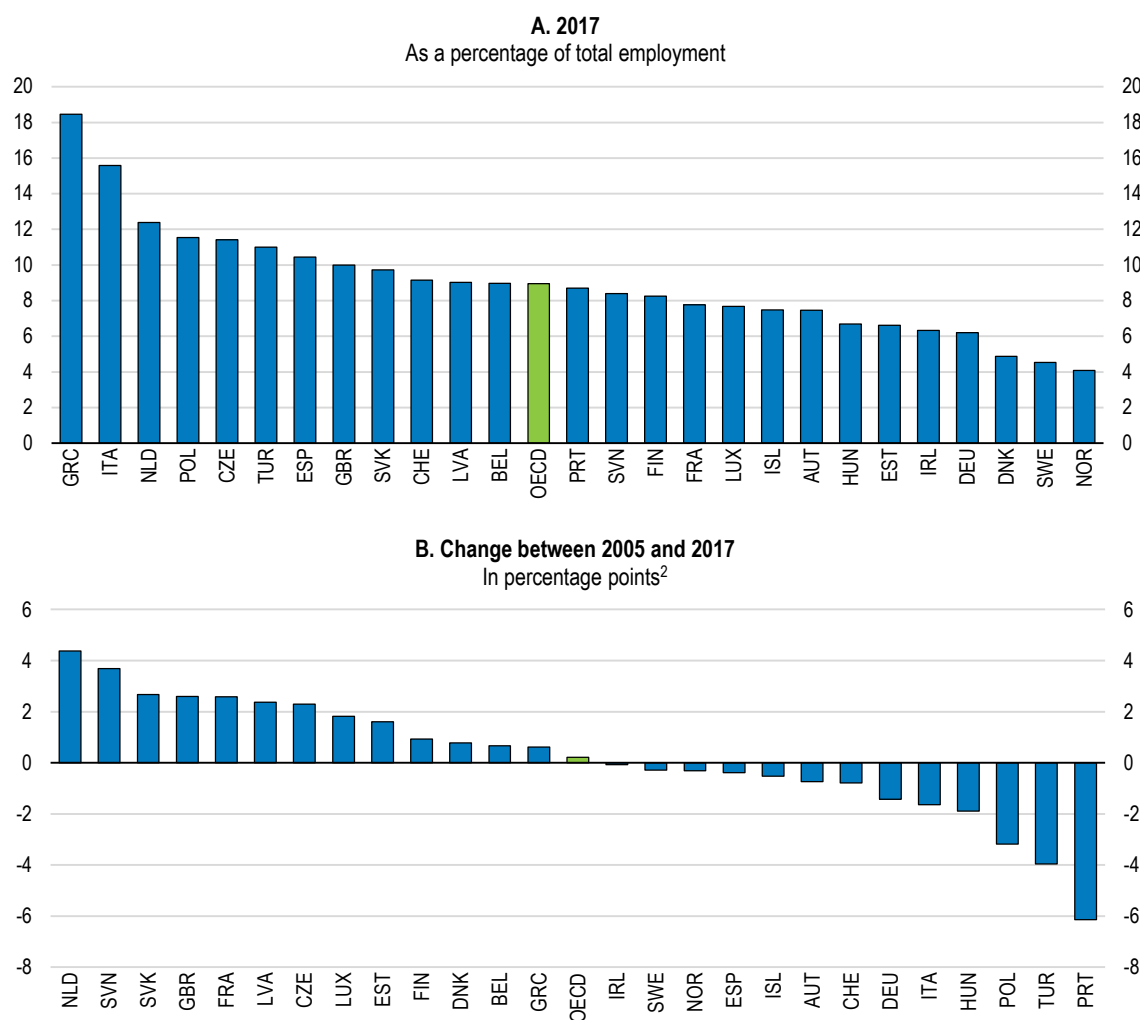
Source: Eurostat (2018), "Employment and unemployment (Labour force survey)", Eurostat Database, May.

Figure A.2. Share of self-employed: elderly (aged 50-64)¹

1. The OECD aggregate is calculated as an unweighted average of the data shown.

2. Change between 2006 and 2017 for Turkey.

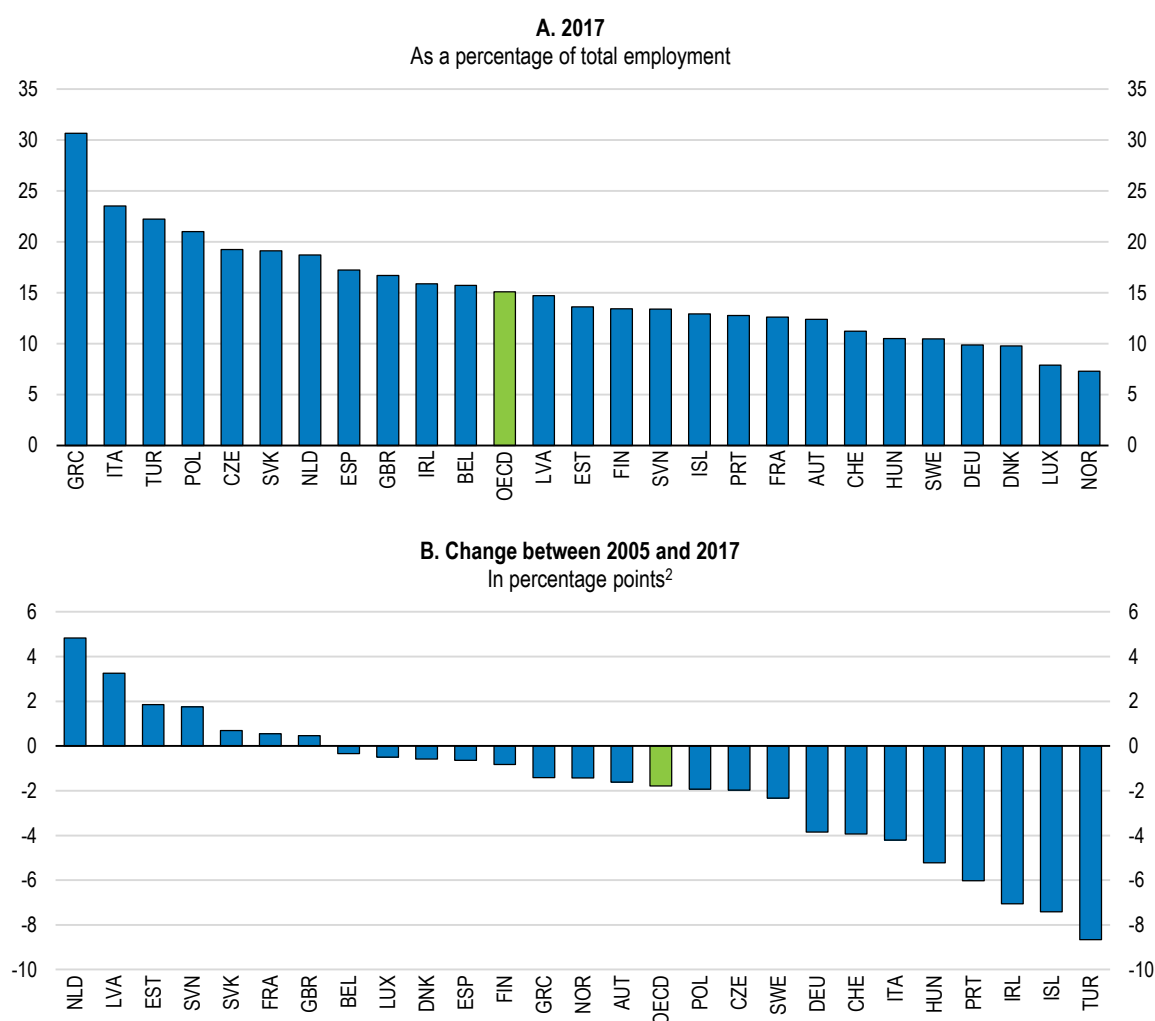
Source: Eurostat (2018), "Employment and unemployment (Labour force survey)", Eurostat Database, May.

Figure A.3. Share of self-employed: women (aged 25-49)¹

1. The OECD aggregate is calculated as an unweighted average of the data shown.

2. Change between 2006 and 2017 for Turkey.

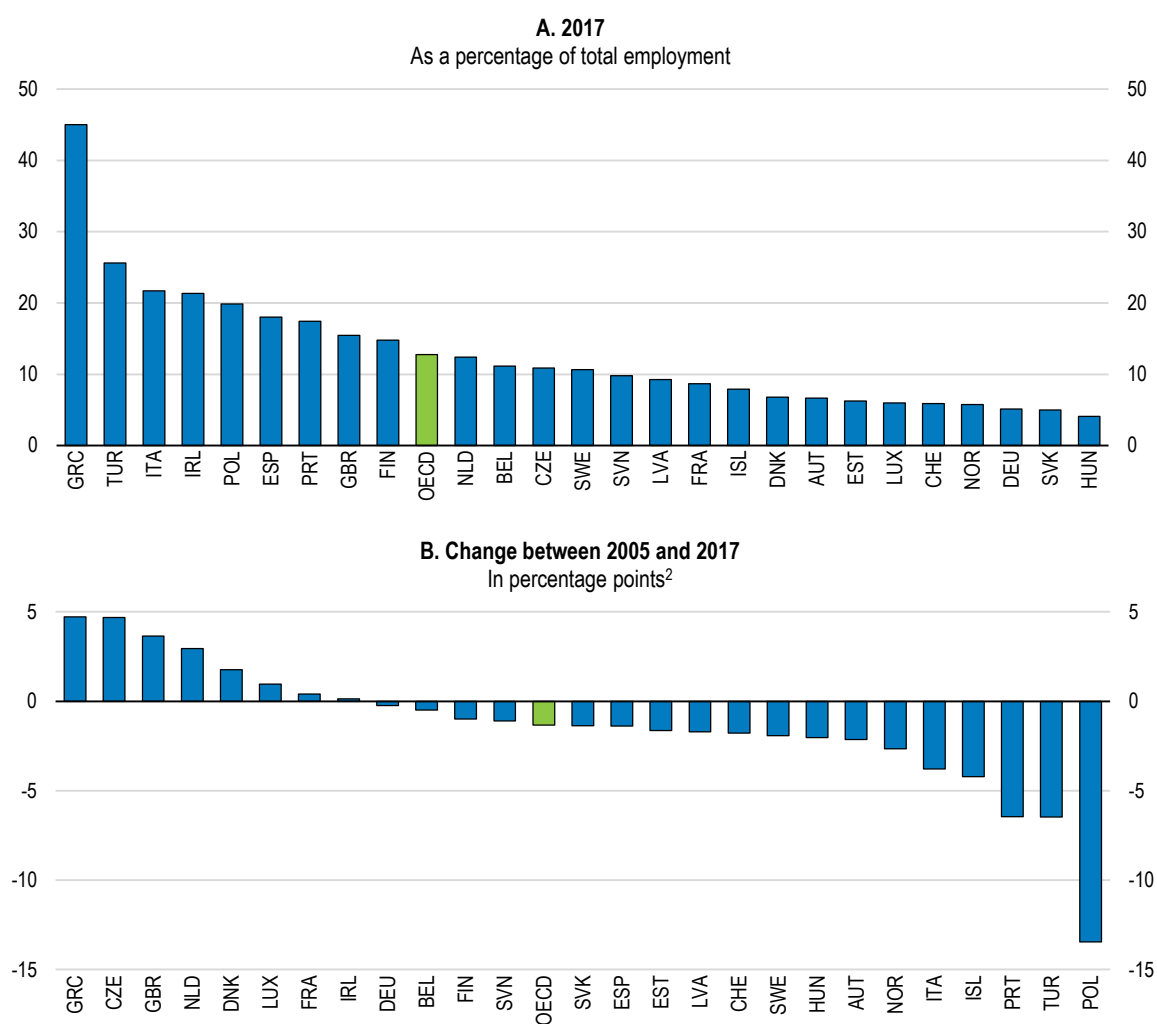
Source: Eurostat (2018), "Employment and unemployment (Labour force survey)", Eurostat Database, May.

Figure A.4. Share of self-employed: men (aged 25-49)¹

1. The OECD aggregate is calculated as an unweighted average of the data shown.

2. Change between 2006 and 2017 for Turkey.

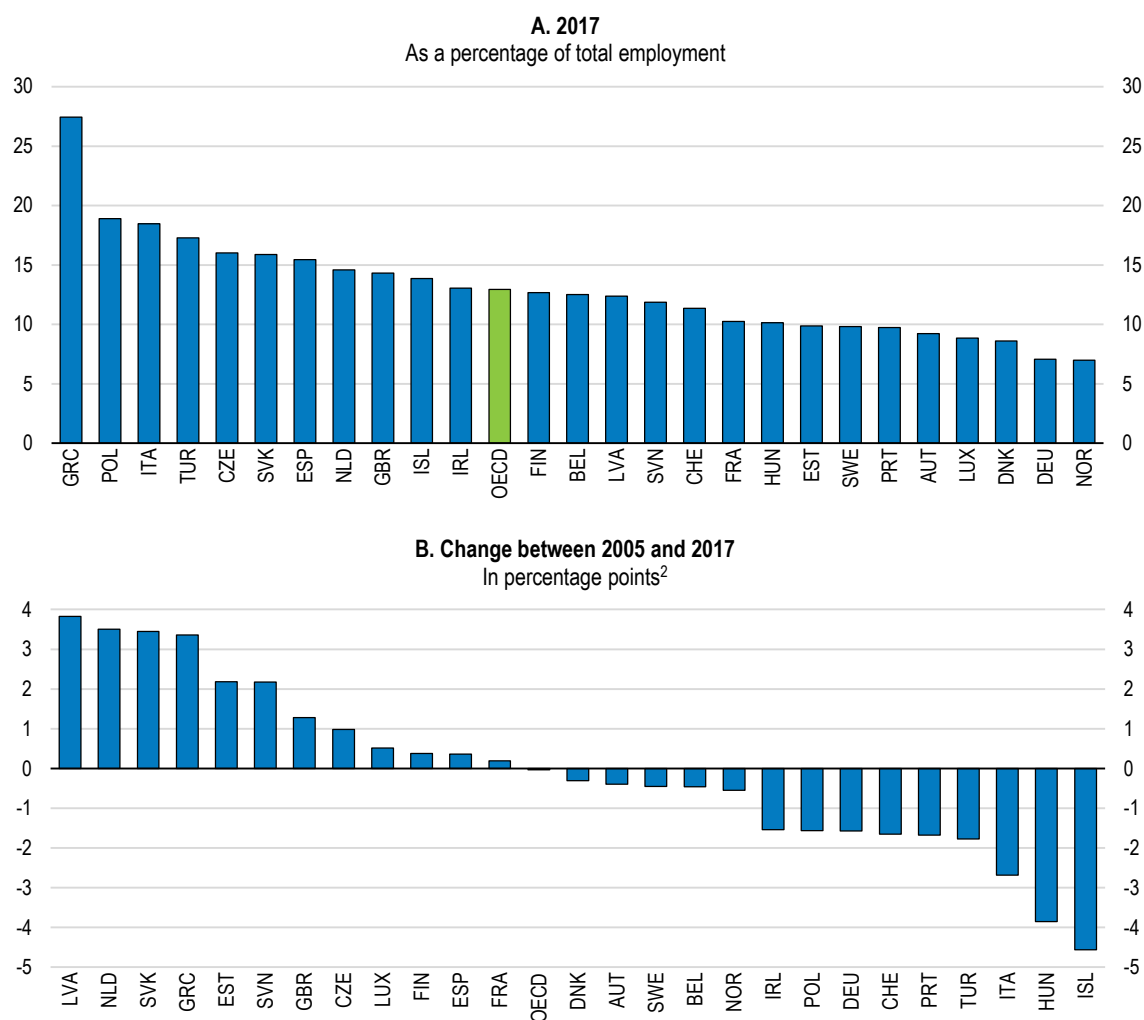
Source: Eurostat (2018), "Employment and unemployment (Labour force survey)", *Eurostat Database*, May.

Figure A.5. Share of self-employed: low-skilled (aged 15-64)¹

1. The OECD aggregate is calculated as an unweighted average of the data shown.

2. Change between 2006 and 2017 for Turkey.

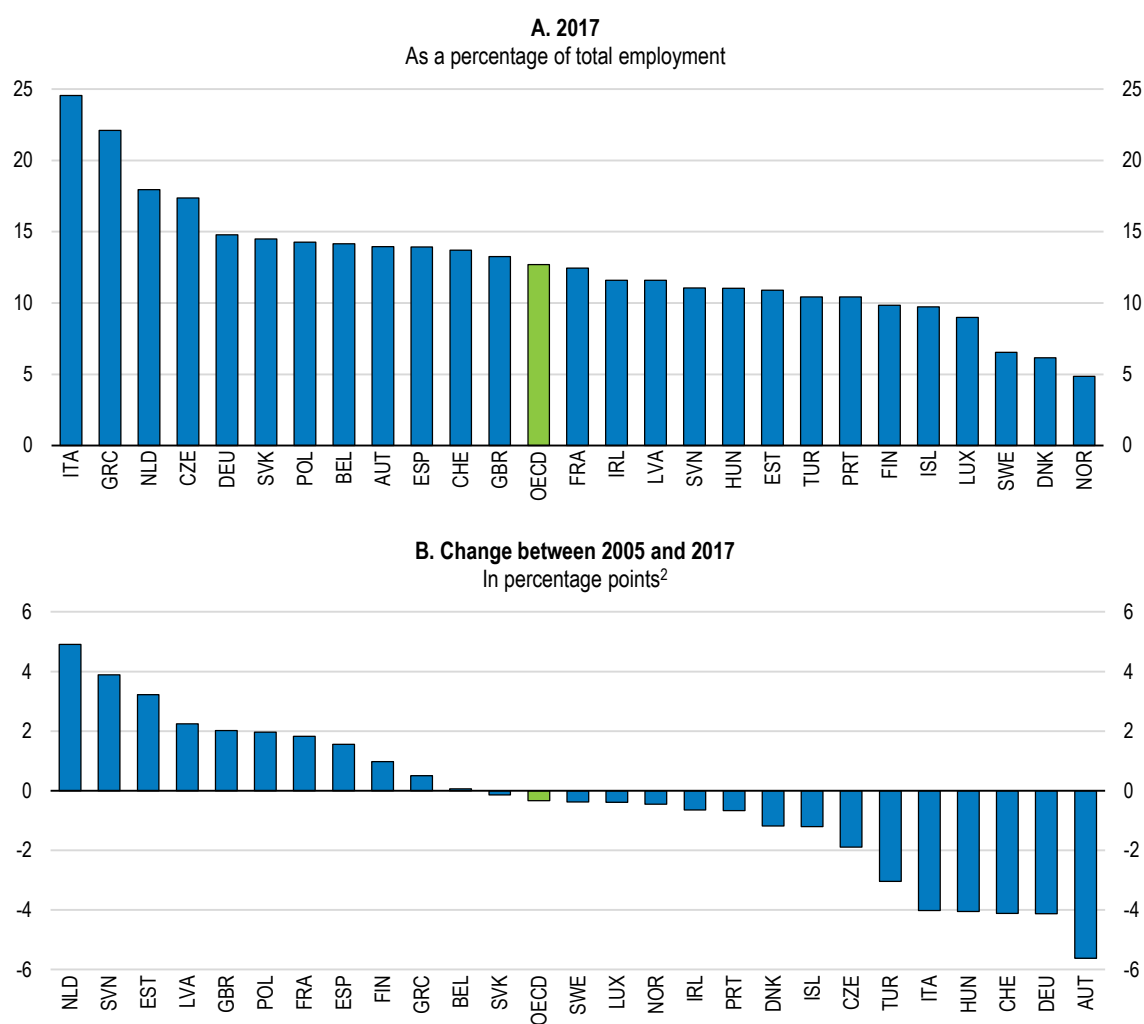
Source: Eurostat (2018), "Employment and unemployment (Labour force survey)", *Eurostat Database*, May.

Figure A.6. Share of self-employed: medium-skilled (aged 15-64)¹

1. The OECD aggregate is calculated as an unweighted average of the data shown.

2. Change between 2006 and 2017 for Turkey.

Source: Eurostat (2018), "Employment and unemployment (Labour force survey)", Eurostat Database, May.

Figure A.7. Share of self-employed: high-skilled (aged 15-64)¹

1. The OECD aggregate is calculated as an unweighted average of the data shown.

2. Change between 2006 and 2017 for Turkey.

Source: Eurostat (2018), "Employment and unemployment (Labour force survey)", *Eurostat Database*, May.

Annex B. Full estimation results

Table A2.1 Share of self-employed, different measures

	Share of self employed, Eurostat	Share of self employed, Eurostat	Share of self employed, Eurostat	Share of self employed, Eurostat	Share of self employed, Eurostat longer sample	Share of self employed, own account	Share of self employed OECD data
LONG TERM							
Constant	10.555**	9.388**	9.616**	14.88**	11.019**	72.948**	15.476**
Employment protection	0.145	0.032	-0.394	-0.143	-	-6.391	0.984
Tax wedge	0.098**	0.104**	0.131**	0.109**	0.087*	0.245	-0.023
Unemployment benefit	-0.078**	-0.064**	-0.052**	-0.093**	-0.08**	-0.198**	-0.076**
Minimum wage	0.025*	0.029**	0.038**	0.025*	0.019	0.146*	0.009
ALMP	-0.03*	-0.031**	-0.039**	-0.037**	-0.028*	-0.067	-0.06**
Output gap	-0.038			-0.056	-0.029	-0.365*	-0.333**
Unemployment gap		0.006					
Unemployment rate			-0.078				
Share of ICT	0.543*	0.685**	0.713**		0.594**	0.94	0.717
Share of manufacturing				-0.046			
Kao cointegration test	0.4813	0.3588	0.4984	0.467	0.3954	0.1189	0.0813
Adjusted R-squared	0.979	0.979	0.98	0.979	0.98	0.898	0.983
SHORT TERM							
error correction term	-0.132**	-0.138**	-0.151**	-0.13**	-0.126**	-0.35**	-0.071**
Δ(Employment protection)	0.764	0.696	0.652	0.699	-	-0.591	1.083**
Δ(Tax wedge)	0.005	-0.018	-0.015	0.002	0.012	0.191**	0.01
Δ(Unemployment benefit)	-0.018*	-0.014	-0.014	-0.017*	-0.02*	0.054	-0.005
Δ(Minimum wage)	0.004	0.003	0.004	0.005*	0.004	0.035**	0.005
Δ(ALMP)	-0.033**	-0.023*	-0.021*	-0.033**	-0.031**	-0.118	-0.042**
Δ(Output gap)	-0.05**			-0.046**	-0.051**	-0.115**	-0.057**
Δ(Unemployment gap)		-0.118**					
Δ(Unemployment rate)			0.103**				
Δ(Share of ICT)	-0.18	-0.077	-0.065		-0.137	-0.311	-0.156
Δ(Share of manufacturing)				0.007			
Adjusted R-squared	0.288	0.297	0.317	0.277	0.274	0.308	0.236
Country fixed effects	yes	yes	yes	yes	yes	yes	yes
Time fixed effects	yes	yes	yes	yes	yes	yes	yes
No. of observations	244	244	244	246	251	244	212
No. of countries	21	21	21	21	21	21	19

Note: Employment protection is for regular workers. Tax wedge is for the single earner, couple with two children. Minimum wage is the ratio to median. ALMP stands for active labour market policies. * means significant at 10%, ** at 5% and *** at 1%.

Source: Authors' calculations.

Table A2.2 Share of self employed by age and gender

	Share of self-employed, Eurostat	Young	Elderly	Female	Male
LONG TERM					
Constant	10.555**	1.05	14.442**	5.741*	12.733**
Employment protection	0.145	0.54	-0.549	0.923	0.844
Tax wedge	0.098**	0.044	0.136*	0.077*	0.153**
Unemployment benefit	-0.078**	-0.035**	-0.102**	-0.07**	-0.11**
Minimum wage	0.025*	0.01	0.039	0.019	0.025
ALMP	-0.03*	0.008	-0.051**	-0.028**	-0.048**
Output gap	-0.038	0.019	0.007	0.055	-0.09
Share of ICT	0.543*	0.121	1.524**	0.22	0.312
Kao cointegration test	0.4813	0.2016	0.0328	0.0796	0.2542
Adjusted R-squared	0.979	0.908	0.983	0.963	0.962
SHORT TERM					
Error correction term	-0.132**	-0.245**	-0.106**	-0.207**	-0.168**
Δ(Employment protection)	0.764	-1.208**	1.572**	1.44*	0.567
Δ(Tax wedge)	0.005	0.002	0.022	0.011	-0.004
Δ(Unemployment benefit)	-0.018*	-0.003	-0.01	-0.017	-0.022
Δ(Minimum wage)	0.004	0.001	0.002	0.015**	-0.012**
Δ(ALMP)	-0.033**	-0.032**	-0.018	-0.046**	-0.044*
Δ(Output gap)	-0.05**	-0.037	-0.027	-0.041**	-0.037*
Δ(Share of ICT)	-0.18	-0.337*	-0.065	-0.353*	0.201
Adjusted R-squared	0.288	0.109	0.156	0.18	0.231
Country fixed effects	yes	yes	yes	yes	yes
Time fixed effects	yes	yes	yes	yes	yes
No. of observations	244	228	244	244	244
No. of countries	21	20	21	21	21

Note: Employment protection is for regular workers. Tax wedge is for the single earner, couple with two children. Minimum wage is the ratio to median, ALMP stands for active labour market policies. * means significant at 10%, ** at 5% and *** at 1%.

Source: Authors' calculations.

Table A2.3 Self-employed by skills

	Share of self employed, Eurostat	High skill	Medium skill	Low skill
LONG TERM				
Constant	10.555**	20.621**	14.255**	1.769
Employment protection	0.145	-3.764**	-0.682	2.075**
Tax wedge	0.098**	0.118**	0.079*	0.171**
Unemployment benefit	-0.078**	-0.07**	-0.049**	-0.074**
Minimum wage	0.025*	0.038**	0.021	0.044**
ALMP	-0.03*	-0.03	-0.043**	-0.055**
Output gap	-0.038	-0.145**	0.213**	-0.136*
Share of ICT	0.543*	0.021	-0.051	1.023**
Kao cointegration test	0.4813	0.3069	0.1268	0.3355
Adjusted R-squared	0.979	0.963	0.966	0.99
SHORT TERM				
Error correction term	-0.132**	-0.352**	-0.177**	-0.257**
Δ(Employment protection)	0.764	-1.11	0.617	0.482
Δ(Tax wedge)	0.005	0.023	0.042	0.038
Δ(Unemployment benefit)	-0.018*	-0.031	-0.032**	0.017
Δ(Minimum wage)	0.004	0.005	0.017**	-0.003
Δ(ALMP)	-0.033**	-0.016	-0.051**	-0.053**
Δ(Output gap)	-0.05**	-0.026	-0.032	-0.079**
Δ(Share of ICT)	-0.18	-0.127	-0.171	0.128
Adjusted R-squared	0.288	0.191	0.166	0.207
Country fixed effects	yes	yes	yes	yes
Time fixed effects	yes	yes	yes	yes
No. of observations	244	238	238	238
No. of countries	21	21	21	21

Note: Employment protection is for regular workers. Tax wedge is for the single earner, couple with two children. Minimum wage is the ratio to median, ALMP stands for active labour market policies. * means significant at 10%, ** at 5% and *** at 1%.

Source: Authors' calculations.