

Atypical Work and Unemployment Protection in Europe*

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Abstract

This article evaluates the degree of income protection that the tax-benefit system provides to atypical workers in the event of unemployment. Our approach relies on simulating transitions from employment to unemployment for the entire workforce in EU member states to compare household financial circumstances before and after the transition. Our results show that coverage rates of unemployment insurance are low among atypical workers, who are also more exposed to the risk of poverty than standard employees, both while in work and in unemployment. Low work intensity employees are characterized by having high net replacement rates. However, this is due to the major role played by the market incomes of other household members. Finally, we show that in countries where self-employed workers are not eligible for unemployment insurance benefits, extending the eligibility to this group of workers would increase their replacement rates and make them less likely to fall into poverty in the event of unemployment.

Keywords: income protection; atypical work; microsimulation

Introduction

Non-standard forms of employment, in particular temporary jobs, part-time work and solo self-employment, have become increasingly widespread in advanced economies in the last two decades.¹ The proportion of people in permanent full-time employment in relation to total employment declined by 4 percentage points between 2002 and 2016, when it reached 59 per cent (European Commission, 2018a). In the same period, the proportion of permanent part-time workers increased by 2 percentage points. Temporary workers, both full-time and part-time, and solo self-employed also increased in prevalence by 1 percentage point each. The process has accelerated in the aftermath of the great recession.

The European pillar of social rights, signed in November 2017 by the European Parliament, the Council and the Commission, reaffirms the importance that these institutions attribute to supporting fair and well-functioning labour markets and welfare systems. In particular, under principle 12, the pillar proclaims that ‘regardless of the type and duration

*The results presented here are based on EUROMOD version H1.0+. EUROMOD is jointly maintained, developed and managed by the Institute for Social and Economic Research (ISER) at the University of Essex and the Joint Research Centre (DG JRC) at the European Commission, in collaboration with EUROSTAT and national teams from EU member states. We are indebted to the many people who have contributed to the development of EUROMOD. The process of extending and updating EUROMOD is financially supported by the EU programme for employment and social innovation (2014–2020). We use microdata from the EU statistics on incomes and living conditions made available by Eurostat (59/2013-EU-SILC-LFS). The work by H. X. Jara was supported by the Economic and Social Research Council through the Research Centre on Micro-Social Change at the University of Essex, grant number ES/L009153/1. The scientific output expressed does not imply a policy position of the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use that may be made of this publication. The authors wish to thank Ana Agundez-García, Salvador Barrios, Daniel Daco and two anonymous referees for their valuable comments and suggestions. The results of the article and their interpretation are the authors’ responsibility.

¹Non-standard or atypical work commonly refers to employment relationships that depart from the standard model of full-time, open-ended employment contracts (European Commission, 2016a).

of their employment relationship, workers, and, under comparable conditions, the self-employed, have the right to adequate social protection'. The European Commission has recently adopted a proposal for a Council recommendation aimed at encouraging a wider coverage of non-standard employees and the self-employed by social security schemes (European Commission, 2018b).

This study provides a twofold contribution to the ongoing debate. First, we analyse the degree of income protection that tax-benefit systems provide to atypical workers in EU member states and the UK in the event of unemployment.² We follow the European Commission (2016a) and adopt a definition of atypical workers consisting of employees with low work intensity and the self-employed. Second, we assess the effects of a counterfactual scenario in which unemployment insurance (UI) coverage is extended to self-employed workers in all countries under the same rules as employees. For this purpose, we simulate transitions into unemployment for all individuals currently in work and compare their disposable income before and after the transition using the tax-benefit model EUROMOD. We provide a detailed comparative static evaluation of the degree of social protection offered by the tax-benefit system to standard employees and atypical workers in the event of unemployment, taking into account all the interactions between the different tax-benefit instruments.

Our analysis confirms the existence of gaps in the social protection of atypical workers, with potential coverage rates of UI lower among atypical workers, particularly among the self-employed, compared to the rest of the workforce. Atypical workers are also more exposed to the risk of poverty than standard employees, both when they are in work and in the event of unemployment. Moreover, our counterfactual simulations show that extending eligibility to UI benefits to the self-employed in countries where they are not eligible would substantially increase their net replacement rate (NRR) and make them less likely to fall into poverty in the event of unemployment. Therefore, our analysis sheds light on the effect of enforcing the principles of the European pillar of social rights on the equal treatment of different types of workers regarding their access to social protection, in particular UI.

The article is organized as follows. Section 1 provides a brief literature review. Section 2 discusses the differences in the design of unemployment benefit schemes in EU countries and the UK. Section 3 describes the data and the methodology. Section 4 analyses the extent to which atypical workers are protected by tax-benefit policies. Section 5 presents the results of a hypothetical scenario in which compulsory UI coverage is extended to the self-employed in all countries. Conclusions follow.

I. Related Literature

The existing literature has highlighted two drivers of the increasing prevalence of non-standard forms of work. First, labour market and welfare reforms in the last decades have often sought to create jobs and reduce unemployment through increased flexibility in labour relations, deregulation and reduced workers' protection. Such reforms have been more frequent among EU countries as a consequence of the 2008 financial crisis (Hipp *et al.*, 2015). Second, advanced automation is eroding labour-intensive industries,

²The selection of countries reflects EU membership before 1 February 2020. The choice is justified by the UK being an EU member state in the base year of our analysis, namely, 2017.

especially in developed economies (International Labour Office, 2015). The concentration of atypical jobs among specific population subgroups has also contributed to the development of various dualisms in the society: temporary jobs are concentrated among young people, while permanent jobs are more common among older adults; part-time work is more common among women, the opposite being true for solo self-employment (Bardasi and Francesconi, 2004; Hipp *et al.*, 2015).

Recent studies have shown that non-standard workers face a higher poverty risk than standard employees. The gap in the poverty rates has been widening in recent years, with non-standard workers also reporting higher levels of subjective job and income insecurity. Low hourly earnings and discontinuous employment tend to increase poverty among non-standard workers, whereas incomes from other household members and social transfers, sometimes received in combination with earnings, reduce their in-work poverty risk in many countries. As a result, poverty rates among non-standard workers are more heterogeneous across countries than those faced by standard employees (Burgoon and Dekker, 2010; Horemans, 2017; Horemans and Marx, 2013, 2017).

Existing welfare institutions are undergoing a 'rethink and reform' process to cope with the changing labour markets (Spasova *et al.*, 2017). As currently designed, social protection systems usually meet the needs of standard, full-time employees. Non-standard employees are often excluded *de facto* because they are unlikely to meet the eligibility conditions, while the self-employed are sometimes completely excluded or able only to opt in voluntarily (European Commission, 2018c; Spasova *et al.*, 2017).

Gaps in coverage differ across countries. Schulze-Buschhoff and Protsch (2008) analyse the rules governing the provisions from the different branches of the social protection systems (namely, health insurance, UI and retirement provisions) in six European countries. The authors conclude that the degree of heterogeneity is high, with some countries offering more comprehensive social protection to atypical workers than others, which could hinder mobility and be potentially problematic for the free movement of people and services.

Nevertheless, the level of coverage offered by social protection systems is probably best appreciated when analysing the effects of transitions from one labour market status to another, for example, from work to unemployment. Matsaganis *et al.* (2016) make use of data from the EU Labour Force Survey and information on policy rules from the mutual information system on social protection (MISSOC) to compute the share of atypical workers potentially entitled to different social security provisions. The analysis highlights gaps of more than 30 percentage points between the share of permanent full-time employees and of temporary employees (both full-time and part-time) entitled to unemployment benefits in the event of unemployment. The gap rises to 55 percentage points when permanent full-time employees are compared with the self-employed, who are often not covered by UI schemes. Our work is in line with the approach suggested in their study but exploits the use of microsimulation techniques to assess the income protection provided to atypical workers in the event of unemployment. Additionally, we assess the effects of extending eligibility to UI benefits to self-employed workers in all countries where they are not compulsorily covered.³

³A recent report by the European Commission (2018c) evaluates the impact of extending UI benefits to the self-employed in six European countries under stylized simulated unemployment shocks. Their analysis focuses on the distributional and budgetary effects of the specific shocks. On the contrary, we assess the increased income protection provided by the hypothetical reform among all people in work and cover all EU countries and the UK in the analysis.

II. Access to Unemployment Protection Schemes in Europe

Social protection in the event of unemployment is characterized by two types of schemes: contributory UI and non-contributory unemployment assistance benefits. UI represents the main instrument for protecting individuals against labour market risks and is part of the system of social protection in all EU countries and the UK. Unemployment assistance benefits are non-contributory, generally means-tested, schemes targeting specifically individuals in unemployment. They are usually less generous than UI and offer complementary protection to those who have exhausted their rights to UI or to individuals not covered by UI. They are present in a minority of European countries (European Commission, 2016b).⁴

The design of UI schemes varies widely across countries, as shown in Table A1 in Data S1 online.⁵ The eligibility conditions for receiving UI benefits (namely, contribution requirements, type of contracts covered and age limits) are the key aspect determining coverage of atypical workers by such schemes.

For the self-employed, countries can be classified into four groups in terms of eligibility to UI, based on their 2017 policy rules.⁶ The first refers to countries where the self-employed are compulsorily covered by UI and comprises Czechia, Greece, Croatia, Luxembourg, Hungary, Poland, Slovenia, Finland and Sweden. In Greece, however, the eligibility criteria for the self-employed are more stringent than those for employees, and the scheme suffers from severe non-take-up. In Finland and Sweden, the self-employed are covered by the basic component of UI and can opt into the income-related component by joining an UI fund.

The second category comprises countries where only certain categories of self-employed are covered by UI and includes Ireland, Lithuania and Portugal. In Ireland, self-employed share-fishermen can pay additional social insurance contributions towards UI. In Lithuania, UI covers only the self-employed who own individual enterprises, members of small partnerships and full members of partnerships. In Portugal, self-employed managers who stop working or close their business on justifiable cause, and those working for a sole contracting entity whose contract is terminated against their will, are eligible for UI.

The third category regroups countries where the self-employed can join UI schemes voluntarily and comprises Denmark, Spain, Austria, Romania and Slovakia. Finally, the last category refers to countries where the self-employed are ineligible for UI and includes Belgium, Bulgaria, Germany, Estonia, France, Italy, Cyprus, Latvia, Malta, the Netherlands and the UK. In Belgium, however, a specific scheme (*droit passerelle*) exists for specific categories of self-employed workers in case of bankruptcy, forced discontinuation or economic difficulties of work.

⁴Additionally, income support schemes, also known as social assistance benefits, exist in all EU countries and in the UK. They are intended to provide a minimum standard of living for low income individuals and their families, and are not restricted to the event of unemployment.

⁵The information reported here and in Table A1 refers to the general UI schemes. Specific or special unemployment schemes for certain categories are not considered.

⁶Our classification is based on information from the July 2017 update of MISSOC (<https://www.missoc.org/missoc-database/> accessed March 2018), with additional information from EUROMOD country reports (<https://www.euromod.ac.uk/using-euromod/country-reports> accessed in March 2018).

Other forms of atypical work (such as temporary or part-time workers) are usually eligible to UI on the same basis as standard workers, although certain categories may be excluded or only partially covered in some member states. However, even if no legal barriers in access to UI exist, temporary and part-time workers may be de facto excluded as they are likely to have short contribution records and would therefore be unable to fulfil the eligibility criteria (Matsaganis *et al.*, 2016; Spasova *et al.*, 2017).

Finally, it is worth noting that in Germany, Estonia, Ireland, Greece, Spain, France, Hungary, Malta, Austria, Portugal, Finland and the UK, those ineligible for UI or those who have exhausted their rights to UI can access means-tested unemployment assistance.

III. Methods and Data

Our study uses EUROMOD, the European tax-benefit microsimulation model, to simulate transitions from work into unemployment and compare disposable income before and after the transition. This section provides the definition of atypical workers used in our analysis, describes EUROMOD and the data, discusses the methodology to model transitions into unemployment, and presents the indicators used to evaluate the income protection provided by the tax-benefit system.

Definition of Atypical Workers

In our study, atypical work is defined in terms of work intensity at the individual level and self-employment. We focus on three population subgroups: (1) employees with medium or high work intensity (standard employees); (2) employees with low work intensity and (3) the self-employed. We follow the European Commission (2016a) and define individual work intensity as the proportion of months worked during the year, multiplied by the number of hours normally worked during the week by the individual in their main job over the median hours worked during the week (at country level). Work intensity is defined as low if the index is below 0.33.⁷ Self-employed workers are defined as those who have self-employment income and no employment income.

For the UK, an alternative definition of work intensity is used because information about the number of months worked during the year is not available in the data used for the analysis. In this case, work intensity is defined as the number of hours worked during the week (by the individual) over the median hours worked during the week (at country level). Work intensity is defined as low if it is below 0.33.

EUROMOD and the Data

EUROMOD combines country-specific policy rules with representative household microdata to simulate cash benefit entitlements, including UI, and direct personal tax and social insurance contribution liabilities (Sutherland and Figari, 2013). The underlying microdata used for our simulations come from the 2015 European Union statistics on

⁷An employee with weekly working hours equal to the country median will belong to the low work intensity category if they work less than one-third of the year, that is, 4 months. Similarly, an employee working a full year will belong to the low work intensity category if they work less than one-third of the median weekly working hours. In our definition individuals on parental leave could be classified as low intensity workers, depending on their work intensity, if they also report labour income. Due to data limitations we are unable to identify recipients of parental benefits and the time spent on parental leave in most countries.

income and living condition (EU–SILC), except for Germany, for which we use the 2014 EU–SILC, and for the UK, for which we use the 2014/2015 family resources survey. Our simulations are based on 2017 tax-benefit rules. Market incomes and non-simulated tax-benefit instruments in the data are adjusted to 2017 levels using source-specific updating factors.⁸

Simulating Transitions into Unemployment

The strategy for assessing the income protection provided by the tax benefit system consists of moving people from work (employment or self-employment) into unemployment and comparing their disposable income before and after the transition (Fernandez Salgado *et al.*, 2013; Figari *et al.*, 2011). The effects of a transition into unemployment are simulated for all those currently in work in the data (namely, individuals with positive earnings), aged 18 to 65 years, excluding those in full-time education or retirement. Table A2 in Data S1 online presents the characteristics of our samples of analysis by country.

The effects of the transition into unemployment are simulated as follows. First, household disposable income is calculated before any transition into unemployment takes place. Then, for each worker in the household, individual earnings are set to zero and other relevant labour market variables adjusted to reflect the transition, for example, hours of work set to zero. All benefits for which they would become eligible are simulated with EUROMOD, as is their corresponding household disposable income in the event of unemployment.

This is done separately for each worker in the household assuming that the earnings of other household members are not affected by the individual's transition. To compare disposable income in and out of work over a similar period, unemployment duration is set equal to months in work during the year before the transition.⁹ Therefore, our results should be interpreted as the income protection provided over the first year of unemployment.

The number of months in work before the transition is used to proxy contributory history to assess eligibility to UI. In some cases, eligibility to UI benefit is assessed over a period longer than a year. For instance, in Germany individuals are required to contribute for 12 out of 24 months. In this case, our simulations consider a person in Germany eligible for UI if they had worked for 12 out of 12 months (as month-by-month employment information is available only for the previous year). In countries where the qualifying period goes beyond 12 months – for instance Lithuania, where individuals are required to contribute for 18 out of 36 months – we use information about working history since entering the labour market as an additional control. The unavailability of precise data on

⁸The data underlying EUROMOD are meant to capture income concepts in a comparable and consistent way across countries. However, differences in the source and the modalities of the microdata collection (such as survey versus register, net versus gross), differences in the procedures used to derive gross values when these are recorded as net (Ceriani *et al.*, 2018) or differences in income reporting behaviour across countries could affect the cross-country consistency of the underlying data (see Lohmann, 2011).

⁹For individuals reporting both unemployment benefits and earnings over the year, an intermediate stage is simulated, where unemployment benefits in the data are set to zero and disposable income is recalculated (assuming inactivity). This intermediate step allows us to consider unemployment benefits only for the period in which the person was in work and avoids having results that mix information from two different approaches: reported and simulated unemployment benefits. In practice, this step affects only a very limited number of observations.

contribution histories represents the main limitation of our approach to simulate UI entitlements.

Simulating transitions into unemployment for all individuals currently in work in the data is, however, particularly useful for this study because it allows us to focus on specific population subgroups. Atypical workers may represent a small fraction of the working population in some countries, in which case having a sufficiently large sample is crucial for the analysis.

Income Protection Indicators

This section briefly presents the indicators used to assess the social protection provided to atypical workers by tax-benefit systems across EU member states and the UK.

Potential Coverage Rates of UI

UI is the main instrument for protecting individuals against labour market risks. We therefore assess the potential coverage of UI, defined as the proportion of workers who would be covered by UI schemes in the event of unemployment.¹⁰ It is expected to range between 0 and 100 per cent, with higher values indicating a higher proportion of covered workers. The analysis refers to potential coverage as it is computed for the entire workforce, as opposed to actual coverage, which is based on unemployed people currently in receipt of unemployment benefits. Potential coverage rates are expected to be higher than actual (observed) coverage rates, as unemployment incidence is not randomly distributed and is concentrated more among people less likely to be covered by such schemes.¹¹ The potential coverage of atypical workers will be determined by the characteristics of the worker and the eligibility criteria of each national UI scheme.

NRRs

NRRs are an important indicator of the income protection provided by the tax-benefit system in the event of unemployment. NRRs measure the proportion of household disposable income that would be maintained if a member of the household experienced unemployment.¹² More formally, the NRR of individual i is defined as

$$NRR_i = \frac{Y^{U_i}}{Y^{W_i}}, \quad (1)$$

where Y^{U_i} represents the household disposable income when individual i is unemployed (U) and Y^{W_i} represents the household disposable income when individual i is in work (W). For households with several earners, NRRs are calculated for each earner separately, assuming the behaviour of other earners and household members does not change when a person becomes unemployed.

¹⁰Potential coverage of UI varies with the duration of spells of unemployment. Here, we focus on potential coverage over the first year of unemployment, when UI would provide the largest degree of protection (but to different extents across countries).

¹¹Individuals with intermittent work history are more likely to enter unemployment and more likely to be ineligible for UI benefits.

¹²Therefore, NRRs also capture the incentives that unemployed individuals would face to re-enter the labour market.

NRRs can be decomposed as the sum of market incomes (O) (incomes before any tax and transfer), benefits and pensions (B) minus taxes and social insurance contributions (T), as follows:

$$NRR_i = \frac{O^{U_i} + B^{U_i} + T^{U_i}}{Y^{W_i}}. \quad (2)$$

The household market income when individual i is unemployed includes the earnings of other household members, as well as other sources of personal income such as investments and property income, private inter-household transfers and alimony. In our analysis, we further break down benefits into three components: (1) unemployment benefits, including UI and unemployment assistance schemes; (2) social assistance benefits, including minimum income schemes and housing benefits and (3) family benefits (including child benefits and other means-tested benefits such as the working tax credit in the UK), disability benefits and pensions.

In general, NRRs range between 0 and 100 per cent; however, specific features of tax-benefit systems could result in their exceeding 100 per cent. For instance, minimum UI benefit payments could result in disposable income in unemployment being higher than disposable income in work for low earners. To reduce the risk of our calculations being biased by outliers, especially when we consider NRRs for specific subgroups, we exclude observations in the top percentile of the NRR distribution if their NRR is above 150 per cent, as well as observations in the lowest percentile if their NRR is negative.

Poverty Protection Statistics

Unemployment is an important determinant of monetary poverty. Therefore, we assess the extent to which the tax-benefit system would protect individuals from falling into poverty in the event of unemployment. For this purpose, we consider the poverty threshold to be 60 per cent of the median equivalized household disposable income at the baseline (before unemployment transitions occur) and evaluate the proportion of workers who would fall below the poverty line following their transition to unemployment. We do so for each of our subgroups of interest: low work intensity employees, standard employees and the self-employed.

Assumptions and Caveats

Some caveats must be raised before discussing the results of the analysis. First, our analysis is static, meaning that behavioural responses are not considered. In particular, transitions to unemployment for individuals currently in work in the data assume that there are no labour supply responses from other household members. In addition, we assume full compliance in the sense that adjustments for tax evasion and benefit non-take-up are not considered. Therefore, the results should be interpreted as the intended effect of the tax-benefit system on income protection. Second, data limitations force our definition of atypical employees to be based on work intensity. As a result, all atypical employees are, by definition, detached from the labour market and this is not necessarily true. It is possible for a temporary full-time worker to be mistakenly classified as standard

employee if they are in work most of the year, or for a standard employee who started to work after a period of inactivity or unemployment to be classified as an atypical worker. As a result, low work intensity is often associated with low annual earnings. Third, the analysis focuses on individuals in work, excluding long-term unemployed and individuals without spells of employment over the year. Because of their detachment from the labour market, the degree of social protection offered to these categories of workers may vary substantially, with instruments such as social assistance, unemployment assistance and other means-tested benefits likely to play a more important role than UI benefits. Fourth, considerations related to the sample size and consistency between the income reference period and the interview date made us favour analysing the self-employed as a single category. Further research could look closer at solo self-employed, whose prevalence may be heterogeneous across countries. Finally, due to data constraints, specific assumptions have been made to simulate eligibility for UI benefits. Only general ordinary UI schemes have been simulated in all countries. Specific or special unemployment schemes covering only certain categories are not considered. In our baseline results, UI schemes are simulated for the self-employed only in those countries where this category of workers is compulsorily covered by the general UI scheme. The only exceptions are Greece and Denmark. In Greece, the self-employed are compulsorily covered by UI. However, the stringent eligibility criteria prevent us from simulating entitlement to UI, as eligibility is subject to having no debts owed to social insurance funds and the income test is based on income with one and two year lags. In Denmark, we simulate UI for the self-employed who can join the scheme voluntarily because participation in the UI fund has been econometrically imputed in the data. In all the other countries where self-employed people can join UI schemes voluntarily, we are unable to simulate their eligibility. In Ireland, Lithuania and Portugal, UI covers certain categories of self-employed, while a specific scheme covers some categories of self-employed in Belgium. However, we are unable to simulate entitlement to these schemes, as we cannot identify the eligible groups in the data.¹³ The consequences of these assumptions in terms of cross-country comparability of the results are discussed in the following section.

IV. Assessing the Gaps in Social Protection in the Event of Unemployment

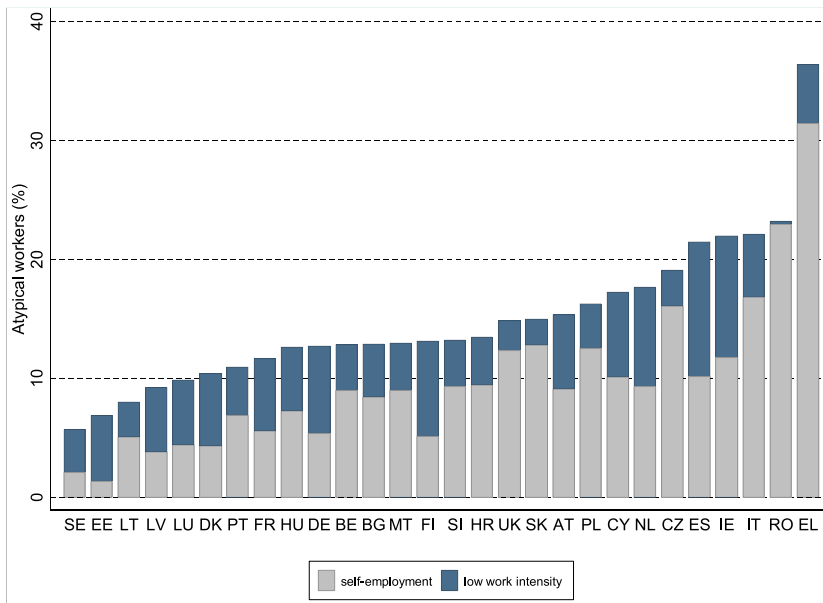
This section discusses the main empirical results of our analysis. First, we provide a description of atypical work in the EU and the UK. Then we assess the protection provided to atypical workers by the tax-benefit system in these countries, focusing on the potential coverage of UI, NRRs and protection against poverty. Throughout this section the tax-benefit simulations reflect the rules in place in June 2017. Confidence intervals for the results presented in this section are shown in Tables B1-B7 in Data S2 online, taking into account the sample design of our data (Goedemé, 2013a, 2013b).

Atypical Work in Europe

The prevalence of atypical workers varies greatly among EU member states and the UK (Figure 1). The lowest prevalence is observed in Sweden, with about 6 per cent of all

¹³Information about UI schemes has been gathered from EUROMOD country reports (<https://www.euromod.ac.uk/using-euromod/country-reports>) and from MISSOC (<https://www.missoc.org>).

FIGURE 1: Prevalence of Atypical Work in the EU and the UK (%)

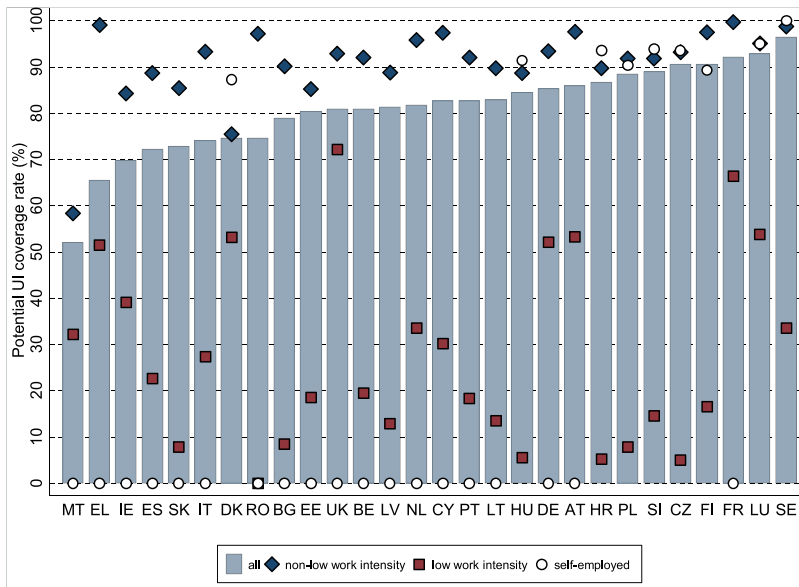


Source: Authors' elaboration based on EUROMOD H1.0+ data. [Colour figure can be viewed at wileyonlinelibrary.com]

workers classified as atypical. The highest prevalence is in Greece, at about 36 per cent. Figure 1 also shows the composition of atypical employment. In nine countries low work intensity employees outnumber the self-employed, while the opposite is true in the most of the countries analysed. The strong presence of self-employment drives the high prevalence of atypical workers in Greece, Italy and Romania. As self-employed workers are not compulsorily covered by UI in most countries, the composition of atypical employment is key when assessing the degree of social protection for atypical workers. The number of low work intensity employees is particularly low in Romania, where fewer than 1 per cent of the total workforce belongs in this category. A subgroup analysis of low work intensity workers in Romania should therefore be considered with caution, as sample size issues are likely to hinder representativeness with respect to this category.

Table A3 in Data S1 online provides information on the socio-demographic characteristics of standard employees, low work intensity employees and the self-employed. In all the countries analysed there is a higher prevalence of women among low work intensity employees and of men among the self-employed. Low work intensity employees are usually relatively young, whereas self-employed workers tend to belong to the largest age group (30 to 50 years old). High-skilled workers are under-represented among low work intensity employees compared with the rest of the labour force. Consistent with the skill composition, low work intensity employees are seldom the main household earners, belonging largely in the poorest quintile of the earning distribution, and they are often part-time employees. Self-employed workers tend to be less skilled than standard employees, although the differences are less pronounced than in the case of

FIGURE 2: Potential Coverage of UI Schemes in the EU and the UK (%)



Source: Authors’ elaboration based on EUROMOD H1.0+ data. [Colour figure can be viewed at wileyonlinelibrary.com]

low work intensity employees. Most of the self-employed are the main earners in their household, and their earnings profile is more evenly spread than that of low work intensity employees.

Potential Coverage of UI Schemes

Figure 2 shows potential coverage rates from existing UI schemes in each EU Member State and the UK. The chart shows figures for the entire working population as well as for the subgroups of standard employees, low work intensity employees and the self-employed.

The potential UI coverage for the entire working population varies from 52 per cent in Malta to 96 per cent in Sweden. The median across countries is represented by Cyprus and the Netherlands, at around 82 per cent. Potential coverage rates among standard employees are even higher, ranging from close to 58 per cent in Malta to almost 100 per cent in France.¹⁴ Differences in the eligibility criteria for accessing UI schemes, as well as in the characteristics of the local workforce, explain the cross-country variation. On the one hand, conditions for contributions in Malta are more stringent than those in France. On the other hand, the concept of low work intensity is country specific, as the number of hours worked are evaluated in comparison to the country median. It is therefore possible that in certain countries individuals with a relatively short contributory history,

¹⁴In Malta there is also a special unemployment benefit. This is provided to people who fulfil the contribution conditions for UI benefit and the income conditions for unemployment assistance. In such cases the special unemployment benefit replaces the UI benefit. The coverage rates reported in this study consider only coverage from the ordinary UI benefit.

and who are hence less likely to qualify for UI, could be identified as standard workers if they work more hours than the median.

Potential coverage among low work intensity employees is significantly lower than among standard employees. The indicator ranges from 5 per cent in Czechia, Croatia and Hungary to 72 per cent in the UK. The median is around 20 per cent (Belgium and Spain). The extremely small number of low intensity employees in Romania affects the representativeness of the results for this category of workers.

In most countries, the self-employed are not entitled to UI. In eight EU member states – Czechia, Croatia, Luxembourg, Hungary, Poland, Slovenia, Finland and Sweden – the self-employed are eligible for UI under similar conditions to employees.¹⁵ In those cases, relatively high coverage rates are observed as most self-employed people satisfy the contribution condition for UI eligibility.

In some countries, our coverage rates would represent a lower bound due to our inability to simulate entitlement to UI for some categories of workers. This is the case for countries where (1) the self-employed are also compulsorily covered by UI but we are unable to simulate the stringent eligibility criteria for this group (Greece); (2) only certain categories of self-employed are entitled to UI but we cannot identify them in the data (Ireland, Lithuania and Portugal); (3) the self-employed can join UI schemes voluntarily (Spain, Austria, Romania and Slovakia) but we cannot identify those voluntarily registered with the UI fund and (4) specific unemployment protection schemes exist for certain groups of self-employed workers (Belgium).

Despite drawbacks related to our simulation of UI, which may underestimate the degree of social protection of the self-employed in the affected countries, the findings support the existence of a gap in coverage of atypical workers when compared with standard employees. The gap is due to both a lack of coverage among the self-employed in most countries analysed and low coverage rates among low work intensity employees, whose discontinuous working history prevents them, in most cases, from meeting the eligibility criteria of their national UI scheme.

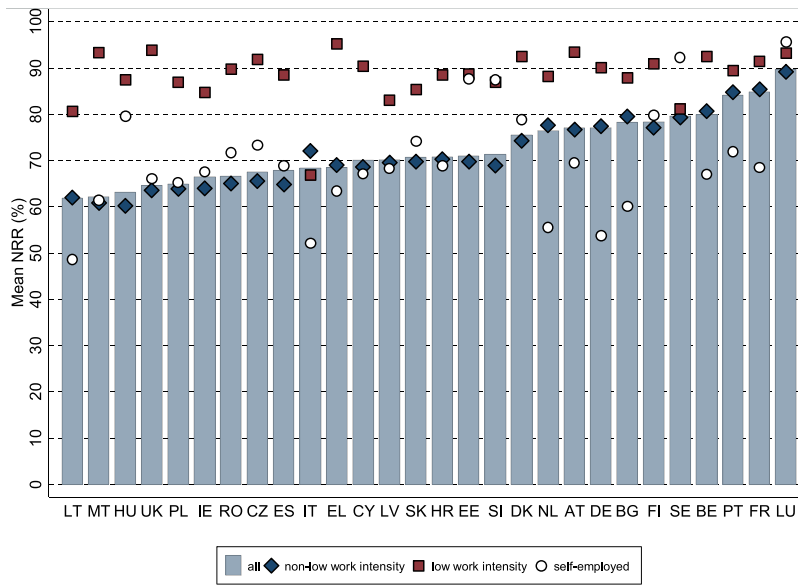
NRRs

Figure 3 shows mean NRRs in EU member states and the UK. The figure provides information for the entire workforce, as well as separately for low work intensity employees, standard employees and the self-employed. The averages are computed out of the entire sample of analysis (namely, all individuals in work) as the indicators consider all components of household disposable incomes before and after the unemployment transition. Therefore, even if workers are not eligible for UI benefits in the event of unemployment, their NRRs may still be positive due to the role of other tax-benefit instruments (for example, an increase in social assistance benefits or a decrease in tax and social insurance contribution (SIC) payments) or due to the presence of income sources from other household members (such as earnings, pensions or other social benefits).

NRRs for the entire workforce range from 62 per cent in Lithuania to 89 per cent in Luxembourg. The median is observed in Estonia, Croatia and Slovakia, with values in

¹⁵In our baseline simulations for Finland and Sweden, only the basic component of UI is considered for the self-employed, as we cannot identify those affiliated to an UI fund to simulate the income-related component.

FIGURE 3: Mean Net Replacement Rates in the EU and the UK (%)



Source: Authors' elaboration based on EUROMOD H1.0+ data. [Colour figure can be viewed at wileyonlinelibrary.com]

the range of 70 per cent. NRRs for standard employees follow closely those of the entire working population.

Low work intensity employees face higher and more homogeneous NRRs, ranging from 67 per cent in Italy to 95 per cent in Greece.¹⁶ These seemingly puzzling results are driven by the fact that earnings of low work intensity workers have relatively little importance for household finances (see Table A3 in Data S1 online). Thus, on average, household disposable income is affected to only a limited extent by the entry of these workers into unemployment. The finding is consistent with low work intensity employees self-selecting into households that could sustain them and counterbalance their risk of falling into poverty (Horemans, 2017).

The result is confirmed by Figure A1 in Data S1 online, which identifies the contributions of different tax benefit components to NRRs. Whereas for the whole in-work sample and for standard employees other market incomes in the household range from 40 to 60 per cent of the pre-unemployment household disposable income, these increase to between 55 and 80 per cent for low work intensity employees. Figure A1 also shows that unemployment benefits play a relatively important role in sustaining the incomes of standard employees, while this is much less the case for low work intensity employees. The result is in line with the relatively low coverage rate of unemployment benefits among this subgroup. On the contrary, the figure shows that social assistance and other benefits and pensions play a more important role in protecting the incomes of low work intensity employees.

¹⁶We disregard Romania because of its very small number of low work intensity employees.

For the self-employed, NRRs show a higher degree of heterogeneity than for the rest of the workforce. Values range from 49 per cent in Lithuania to 96 per cent in Luxembourg. The decomposition of mean NRRs is reported in Figure A1. Other market incomes play a role similar to that of other standard employees. Unemployment benefits play a significant role in all countries where the self-employed are eligible for UI, but also in some countries where this is not the case (Germany, Estonia, Ireland and Malta). The result is due to two factors: first, unemployment assistance schemes targeting individuals who are not entitled to UI, and second, and to a lesser extent, individuals receiving unemployment benefit already at the baseline and living with self-employed individuals entering unemployment. Social assistance and other benefits and pensions contribute substantially to the NRRs of self-employed individuals.

As it was the case for UI coverage, our NRR results may underestimate the degree of social protection in countries where data limitations prevent us from simulating UI benefits for certain categories of workers.

At Risk of Poverty

Table 1 summarizes the poverty protection indicators for the groups considered in our analysis, based on 2017 tax benefit rules. The results distinguish three separate categories: (1) the ‘in-work poor’ who are workers whose equivalized household disposable income was already below the poverty threshold before the transition into unemployment is simulated; (2) the ‘at risk’ workers who are not poor in work, but who would become poor in the event of unemployment; (3) the ‘protected’ workers who would not enter poverty even after a transition into unemployment.

Looking at the entire workforce, the proportion of workers who would be protected from poverty in the event of unemployment varies widely across countries, ranging from 57 per cent in Hungary to 86 per cent in Belgium. At the other extreme, the proportion of workers whose household equivalized disposable is below the poverty line even before a transition into unemployment varies from 3 per cent in Belgium to 16 per cent in Romania. France shows the lowest proportion of workers who would fall into poverty following unemployment, at 8 per cent, while Hungary shows the highest, at 31 per cent.

Poverty statistics for standard employees follow closely those for the entire population in all countries, although the proportion of workers protected is usually higher and the proportion of in-work poor is usually lower. The results indicate that standard employees would be less affected by poverty than atypical workers in the event of unemployment.

Low work intensity employees show a higher prevalence of in-work poverty than the entire workforce, ranging from 12 per cent in Slovakia to 53 per cent in Hungary. The finding reflects the lower levels of equivalized household disposable income before a simulated transition to unemployment for this category. As expected, the proportion of protected workers is in general lower among low work intensity employees than among the rest of the population. The presence of other household incomes, and to a lesser extent tax reductions and benefit payments, contribute to the stability of household disposable incomes among this category of workers, preventing the proportion of protected workers from being even lower. Because of the high prevalence of in-work poverty, the proportion of workers at risk of poverty in the event of unemployment varies considerably across countries, from 4 per cent in the UK to 18 per cent in Belgium and Denmark.

Table 1: At risk of poverty (%) Source: Authors' elaboration based on EUROMOD H1.0+ data.

		<i>BE</i>	<i>BG</i>	<i>CZ</i>	<i>DK</i>	<i>DE</i>	<i>EE</i>	<i>IE</i>	<i>EL</i>	<i>ES</i>	<i>FR</i>	<i>HR</i>	<i>IT</i>	<i>CY</i>	<i>LV</i>
All	Poor in work	3.1	9.2	5.3	4.3	6.1	10.3	3.9	9.7	14.8	3.9	6.7	12	10	10.5
	At risk	10.5	10.7	25.4	15.7	14.1	18	20.1	26.7	25.7	7.9	16.8	18.6	25.5	17.5
	Protected	86.5	80.1	69.2	80.1	79.8	71.8	76	63.6	59.5	88.3	76.5	69.5	64.5	72
Non-low	Poor in work	1.7	6.6	2.7	2.8	4.7	8.6	2.2	5.8	9	2.3	5.3	7.6	8.3	7.7
	At risk	7.6	8.8	26.8	16	12.7	18.4	20.3	24.8	27	5.9	16.6	15.8	25.3	17.2
	Protected	90.6	84.6	70.5	81.2	82.6	73	77.5	69.4	64	91.8	78.2	76.5	66.4	75.1
Low	Poor in work	15.2	41	19.8	18	19.7	31.1	16.8	28.6	42.7	15.4	28	30.8	25.1	40.2
	At risk	18	10.9	6.7	18.1	9.8	11.5	15.8	13.3	14.3	15	5.9	21.1	9.9	15.4
	Protected	66.8	48.1	73.4	63.9	70.5	57.4	67.3	58	43	69.6	66.1	48	65	44.4
S-E	Poor in work	10.6	19.4	15.9	15.1	11.3	42.8	4.5	14.7	28.1	16.3	10.6	26.2	13.6	34.7
	At risk	34.5	30.9	22.1	4.6	42	11.3	22.2	32.6	28.7	31	23.8	30.4	37.8	27.1
	Protected	55	49.7	62.1	80.3	46.7	46	73.3	52.7	43.3	52.7	65.6	43.5	48.7	38.2

Self-employed workers experience a higher prevalence of in-work poverty and a lower prevalence of protection in the event of unemployment than standard employees. The proportion of self-employed workers at risk of poverty in the event of unemployment is also relatively high, ranging from below 5 per cent in Denmark and Luxembourg, where UI covers the self-employed, to 39 per cent in Lithuania.

The results presented in this section indicate, therefore, that poverty affects significantly more atypical workers, in the form of both in-work poverty and poverty risk in the event of unemployment.

V. Extending Social Protection of the Self-Employed

The results of the previous sections show that, in general, the self-employed face lower NRRs (Figure 3) and higher at risk of poverty rates than other groups in the event of unemployment (Table 1). This may be driven partly by the legal barriers preventing the self-employed from accessing UI, the main instrument that protects individuals from labour market risks. In this section, we therefore analyse the effects of a counterfactual policy reform in which the self-employed would be eligible for UI under the same conditions as employees. The choice of this counterfactual is motivated by two reasons. First, the self-employed are already compulsorily covered by UI in some countries. We therefore inquire what would be the effect of having a similar approach in all countries. Second, the existing design of the UI for employees provides a useful benchmark for our simulations, avoiding the need to define and justify the values of parameters governing the simulated instrument. We, however, acknowledge the challenges of extending UI coverage to the self-employed, for whom becoming unemployed could be considered, to some extent, endogenous.¹⁷

Extending eligibility to UI to the self-employed (under the same conditions as for employees) would, as expected, substantially improve the coverage rates in countries where

¹⁷Alternatively, unemployment support for self-employed workers could take the form of an income stabilization fund with the function of smoothing earnings on actuarial basis. Such a scheme could deal with some specificities of self-employment, such as earnings self-reporting and potential volatility, as well as the endogeneity of the unemployment decision. The simulation of such a scheme is beyond the scope of our analysis.

Table 1: (Continued)

	<i>LT</i>	<i>LU</i>	<i>HU</i>	<i>MT</i>	<i>NL</i>	<i>AT</i>	<i>PL</i>	<i>PT</i>	<i>RO</i>	<i>SI</i>	<i>SK</i>	<i>FI</i>	<i>SE</i>	<i>UK</i>
All	9.9	8.2	12.5	5.3	6.2	7.6	8.4	9.2	16	8.4	4.8	3.9	6.1	3.8
	29.1	6.7	30.6	31.4	13.4	16.7	25.3	7.6	19.8	20.9	21.6	11.3	10.7	24.2
	61	85.1	56.9	63.3	80.4	75.8	66.3	83.2	64.2	70.8	73.7	84.9	83.1	72
Non-low	8.7	7.3	9.1	4	3.7	5.4	5.8	7.5	3.4	5.2	2.7	1.8	5	2.9
	29	6.1	32.7	31.8	10.9	14.9	25.5	6.5	19.9	22.3	21	10.4	10.4	24
	62.3	86.5	58.3	64.2	85.4	79.7	68.8	85.9	76.7	72.5	76.2	87.8	84.6	73.1
Low	38	14.2	52.6	20.6	22.7	26.5	28.6	34.2	17.2	33.4	11.9	18.9	19.7	12.9
	17.4	19.3	9.5	7.2	12.9	10.2	10.3	13	15.8	11.9	12	17.1	19.6	3.7
	44.6	66.5	37.9	72.2	64.4	63.3	61.1	52.8	66.9	54.6	76	64	60.7	83.4
S-E	15.5	17.2	24.2	11.8	13.2	14.1	20	16.2	58.2	27.5	17.1	15.5	34.4	8
	38.9	3.1	21.3	37.4	36.8	37.5	28.6	17.7	19.5	11.4	26.7	16.6	10.7	29.7
	45.6	79.7	54.5	50.9	50	48.4	51.4	66	22.2	61	56.2	68	54.8	62.2

Notes: The poverty threshold is 60 per cent of the median equivalized household disposable income at the baseline, before unemployment transitions are simulated. Abbreviations: BE, Belgium; BG, Bulgaria; CZ, Czechia; DK, Denmark; DE, Germany; EE, Estonia; IE, Ireland; EL, Greece; ES, Spain; FR, France; HR, Croatia; IT, Italy; CY, Cyprus; LV, Latvia; LT, Lithuania; LU, Luxembourg; HU, Hungary; MT, Malta; NL, Netherlands; AT, Austria; PL, Poland; PT, Portugal; RO, Romania; SI, Slovenia; S-E, self-employed; SK; Slovakia; FI, Finland; SE, Sweden; UK, United Kingdom.

the self-employed are not compulsory covered (Figure A2 in the supporting information online). Coverage rates among the self-employed would exceed 85 per cent in nearly all these countries, with the exception of Malta. The largest proportion of self-employed covered by an UI scheme would be observed in Greece, Italy and the Netherlands, with coverage rates exceeding 97 per cent. This is because most self-employed workers in these countries work a full year and would therefore fulfil the contribution conditions for entitlement.

In terms of income protection, our hypothetical reform would increase substantially mean NRRs for the self-employed population (Figure A3 in Data S1 online). Italian self-employed workers would benefit the most, with increases in NRR of around 40 percentage points. Malta and Ireland represent the other extreme. Despite an important increase in coverage rates in the reform scenario, the change in mean NRRs among the self-employed in these countries is not significant. This is due to the flat rate unemployment benefit payment with 6 months' maximum duration in Malta, and because the self-employed in Ireland would lose entitlement to a generous unemployment assistance benefit when they became eligible for UI. Mean NRRs for the entire working population would increase, particularly in Greece, Italy and Romania, because of the large prevalence of self-employment in these countries (Figure 1) and the large increases in coverage rates following the extension of eligibility (Figure A2).

Figure A4 in Data S1 online shows a breakdown of the mean NRRs in our baseline and reform scenarios across all countries. As expected, the figure shows that in the reform scenario the relative importance of unemployment benefits is higher than in the baseline scenario in all countries where the self-employed are not covered by UI. Figure A4 also allows us to understand how UI benefits interact with the rest of the tax-benefit system. Note, for example, that the largest increase in the unemployment benefit component of the NRR is observed in Belgium, with a 41 percentage point difference. This increase

is, however, counterbalanced by a 12 percentage point reduction in the social assistance component and by an increase in the taxes and social insurance contributions paid, which generate a further reduction in the NRR of 5 percentage points in the reform scenario compared with the baseline. The result is an increase in the mean NRR of only 24 percentage points in the reform scenario.

Extending eligibility to UI to the self-employed would also reduce the risk of poverty in the event of unemployment (Table A4 in supporting information online A). For the entire working population, the poverty risk upon entry into unemployment would be reduced by 4.2 percentage points in Italy, 3.5 points in Greece and 3 points in Austria. Belgium and Germany would experience the largest drop in poverty rates among the self-employed, with reductions of just below 30 percentage points. The table shows that at risk of poverty rates among the self-employed in the reform scenario would become notably closer to those of the entire working population in the baseline scenario. Moreover, the analysis of poverty gaps shows that the reform would reduce not only the risk of poverty in the event of unemployment but also its severity.

Finally, Figure A5 in supporting Data S1 information online presents two indicators of the budgetary cost of the reform. Panel A indicates the percentage increase in the average net transfer (benefits minus taxes) paid to workers (both employed and self-employed) in the event of unemployment, following the reform. Net transfers include not only changes in unemployment benefits received but also in other benefits and taxes paid. The increase in the average net transfer would be above 5 per cent only in four countries. Italy and Greece would experience the largest increases, with a 10 per cent and a 9 per cent increment, respectively. Estonia and Ireland show the smallest increase in the net transfer per unemployed person. Three main factors explain these variations across countries: the design of UI schemes and the characteristics and size of the self-employed population. For instance, the relatively high net transfer in Bulgaria is related to the absence of a ceiling on UI benefit payments, and an important number of high-earning self-employed workers who would be entitled to the payment. In Italy and Romania the high share of self-employed individuals, as well as their characteristics, contribute to the increase in the average net transfer per worker.

Panel B in Figure A5 reports the net transfer per self-employed worker entering unemployment as a share of the net transfer per employee entering unemployment, before and after the reform. The indicator allows us to appreciate how costly it is for the government to cover a self-employed person entering unemployment compared with an employee. In the baseline scenario the net cost sustained for the self-employed person is usually lower than that sustained for employees. As expected, the reform reduces the differences, with relevant increases in countries such as Bulgaria and Italy. The results of the reform suggest that in most cases covering self-employed people would not be, on average, more costly than covering employees. The net cost per self-employed person as a share of the net cost per employee is on average 1.04 (4 per cent higher) across countries where the self-employed are currently not compulsorily covered by UI benefits.¹⁸

¹⁸Focusing on the low-skilled, who are potentially more likely to become unemployed than other groups, the net cost per (low-skilled) self-employed as a share of the net cost per (low-skilled) employee would be higher on average compared to the estimate for the whole working population, amounting to 1.17. In most countries, however, the relative cost would remain below 1 (that is, it would be less costly to insure a self-employed person than an employee).

Conclusions

The changing nature of jobs has raised questions about the adequacy of existing tax-benefit systems in providing social protection to all types of workers. The findings presented in this article contribute to the debate in two main respects. First, we highlight the gaps in social protection of non-standard workers in terms of coverage against unemployment risks. These gaps are reflected in their higher exposure to the risk of poverty than standard workers, both while they are in work and in the event of their unemployment. Second, we provide insights into the effect of extending UI eligibility to the self-employed. In line with the provisions of the European pillar of social rights, we show that extending UI to the self-employed would improve income resilience and reduce the risk of poverty for this group of workers. Although our work focuses on social protection in the event of unemployment, the high prevalence of in-work poverty among low work intensity employees also suggests there is a need to redesign income support schemes, in particular if poverty among this group of workers is caused by a mix of involuntary underemployment and low hourly wages.

Both social and economic considerations advocate in favour of closing the gap in access to social protection. First, an effective social protection system constitutes a powerful automatic stabilizer, contributing to smoothing the effect of the business cycle on incomes and demand. Second, from an efficiency perspective, gaps in social protection are likely to reduce the attractiveness of flexible forms of work or of self-employment. Additionally, the exclusion from payment of social insurance contribution by some categories of workers may distort competition between actors who must pay social contributions and those who can avoid these payments. Related to this, a race to the bottom could take place as standard employment must compete with jobs that do not require the payment of contributions. Finally, given the high poverty rates among atypical workers and the overrepresentation of young people and women among them, extending social protection would improve fairness and social cohesion and enhance the well-being of this category of workers and their families (Spasova *et al.*, 2017).

While the need to reduce gaps in social protection emerges clearly from the analysis, the means needed to attain this objective are less evident. Our work provides some insights into the possibility of enhancing social protection through an extension of national UI schemes to all categories of workers. Alternatively, EU initiatives, such as the unemployment benefit reinsurance scheme, advocated by a number of academics and policymakers (Andor *et al.*, 2014; Von der Leyen, 2019), have been discussed as potential mechanisms to harmonize national UI schemes and to strengthen income stabilization within and across countries, if carefully designed (see also Beblavý and Lenaerts, 2017; Dolls *et al.*, 2018; Dullien, 2017). A related strand in the literature has come out in favour of closing the gaps in social protection by means of adequate minimum income schemes complemented by well-thought out employment and economic policies at the national and EU level (see Cantillon *et al.*, 2019; Vandenbroucke *et al.*, 2013;).

Further work is needed to tackle the limitations our study faces. First, imputing information on voluntary registration on UI schemes for the self-employed in the data could improve the underestimation of social protection in countries where opt-in UI schemes exist. Second, labour supply disincentives associated with extending UI coverage to the self-employed should be considered, although recent studies tend to attach less

importance to disincentives related to extending unemployment benefit, especially in times of recession (Howell and Azizoglu, 2011). Third, further attention should be paid to the effects of underreporting income by self-employed workers. Finally, further work should focus on the effects of extending social protection to atypical workers in other spheres of working life, such as access to paternity and maternity benefits and sickness insurance.

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Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Data S1.

Table A1. Characteristics of the General Unemployment Insurance Schemes in the EU and the UK, 2017

Table A2. Sample Characteristics of the Population in Work

Table A3. Characteristics of Atypical Workers in the EU and the UK (%)

Table A4. At Risk of Poverty: Baseline and Reform Scenarios (%)

Figure A1. Decomposition of Mean Net Replacement Rates across Groups (%)

Figure A2. Potential Coverage of Unemployment Insurance Schemes: Baseline and Reform Scenarios (%)

Figure A3. Mean Net Replacement Rates: Baseline and Reform Scenarios (%)

Figure A4. Decomposition of Mean Net Replacement Rates for the Self-employed: Baseline and Reform Scenarios (%)

Figure A5. Costing Indicators

Data S2.

Table B1. Prevalence of Atypical Work in the EU and the UK (%), with Confidence Intervals

Table B2. Potential Coverage of Unemployment Insurance Schemes in the EU and the UK (%), with Confidence Intervals

Table B3. Mean Net Replacement Rates in the EU and the UK (%), with Confidence Intervals

Table B4. At Risk of Poverty (%), with Confidence Intervals

Table B5. Potential Coverage of Unemployment Insurance Schemes: Baseline and Reform Scenarios (%), with Confidence Intervals

Table B6. Mean Net Replacement Rates: Baseline and Reform Scenarios (%), with Confidence Intervals

Table B7. At Risk of Poverty: Baseline and Reform Scenarios (%), with Confidence Intervals