Labour shares and employment protection in European economies

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Abstract

Liberalisation of temporary contracts has become an important component of recent labour reforms but up to now available research has not paid attention to the impacts of these institutional changes on functional income distribution. The present paper intends to fill this gap by focussing on the effects of the reduction in strictness of employment protection of temporary jobs on factor shares. By considering country-sector evidence for 14 EU economies and the period 1995-2007, we obtain that these legislative changes caused a decrease in income share accruing to workers.

Keywords: factor income distribution, labour regulation
JEL Classifications: E25; J50.

1. Introduction

The slowdown of the labour share recorded in industrial countries from the early 1980s up to the present has spurred a resurgence of interest in the functional distribution of income and has led many economists to reconsider the role of several factors such as globalization, the *ICT* revolution, product and labour market institutions. However, theoretical models and empirical analyses have been less careful to explain the role of important deregulations represented by the transition from regular toward unstable and precarious jobs in many European economies.

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Indeed, substantial liberalisations of labour markets have been recorded since the mid 1990s, following the key recommendations of the 1994 OECD Jobs Strategy, in particular in terms of new regulatory frameworks to liberalise the utilisation of temporary contracts. As a result, extensive use of temporary contracts has been one distinctive characteristic of European labour markets, and "today nearly 14% of of EU employees work on contracts of limited duration." (Salvatori, 2012, p.1). What is still unexplored, however, is how these reforms, leading to enduring skill deficits and job instability, have influenced the functional distribution of income, thus failing to contrast the declined trends in labour share recorded in previous decades. The major motivation of the present paper is filling this gap.

Notice also that the empirical work on the functional distribution of income "is rather meagre" (Azmat, Mannning and Van Reenen (2012, p. 1) and the few available studies are based on aggregate data. The limitation of these works is that the effects of labour policies, defined at the aggregate level, may be obscured by confounding factors that influence cross-country variations. The present paper intends to circumvent these additional limitations by understanding changes at *country-sectoral* level. Indeed, by applying a shift and share analysis we ascertain whether the declining trends of labour shares (*LS*) are due to genuine wage moderation tendencies *within* sectors or simply to the relative decline in high wage share sectors, and the parallel growing importance of low wage sectors, i.e. to a 'compositional bias'. (De Serres et al. 2001)

Our observation period starts from the mid nineties when significant intra-Europe cross-country diversities arise, as shown by a number of studies (among others van Ark, et. al. 2008) and we take a closer look at the EU economies regarding *distributive* matters. We also use a difference-in-difference approach and estimate the influence of country institutional variables by controlling for industry effects. This estimation strategy allows us to verify whether changes in labour legislation of temporary contracts have caused significant effects on *LS,* especially in those sectors where the propensity to use temporary contracts is higher. In addition, we analyse the channels through which

LS changes occur with separate estimates of employment and wage movements, the two components of *LS*.

The results of our research show the significant negative role of liberalisation for temporary workers that have played an autonomous influence, additional to compositional bias.

The paper is organised as follows. Section 2 briefly reviews the related literature and discusses the conceptual framework behind our empirical strategy. Section 3 presents data and sources and offers some descriptive statistics and estimates. Section 4 concludes.

2. Literature review and conceptual framework of the empirical analysis

In the past decades, the labour share has fallen in nearly all OECD countries. Indeed, since the end of the seventies, a marked decline characterised the average share of labour in European OECD countries and Japan, and, after rising and peaked in 1976, it declined almost continuously up to present (Atkinson, 2009; Glyn, 2009). The interest in the causes of this decline has motivated several theoretical contributions but up to now the majority of empirical literature on changes in inequalities addresses personal distribution of income (Salverda, Nolan and Smeeding (2009)[1]. However, redistribution from property to labour has a significant role in raising personal income inequalities, as widely documented for an ample sample of developed and developing countries by Daudey and García-Peñalosa (2007)[2] and these kinds of 'junctures' (between personal and functional distribution), may be 'promising avenues of research' (Atkinson, 2009, p. 15).

Nevertheless, recent empirical papers have renewed interest in factor shares (Bentolila and Saint Paul, 2003; Gollin, 2002; De Serres et al. 2001) and such international organizations as IMF (Guscina, 2006, IMF, 2007, chapter 5, Jaumotte and Tytell, 2007), the European Commission (2008, ch. 5; Arpaia et al. 2009) and the Bank of International Settlements (Ellis and Smith, 2007) have tried to identify the main factors behind movements in the labour share. Two main driving forces have been signalled as being globalisation and technological factors.

Indeed, openness to trade has led capital- rich countries to specialise in the production of capital intensive goods, thus causing a decline in labour shares, as shown by Guscina (2006) for a sample of

18 countries. Additional channels of globalization of labour, represented by off shoring and immigration, have exerted downward pressures on European labour shares (IMF, 2007) whereas, larger FDI flows and the degree of capital account openness have contributed to the erosion of these shares, as documented by Harrison (2002). Thus, the progressive elimination of cross-border restrictions to trade have made it possible to contain wage demands (see e.g. OECD, 2007) and these shifts have been amplified by capital mobility which has decreased the bargaining power of labour, the less mobile factor, and thereby its share of national output (Jayadev, 2007).

The second driver is represented by technical factors[3]. Indeed, only the basic model based on the Cobb Douglas production function and competitive conditions (i.e. a unitary elasticity of substitution between capital and labour) is capable to deliver the constancy of factor shares, regardless changes in capital-labour ratio and technological progress (see among others Barro and Sala-i-Martin (1995). For a CES production function with an elasticity of substitution different from one, an increase in capital intensity, due to a rise in ratio of capital services to value added, is associated to an increase of the capital-to-labour ratio and causes an increase in marginal productivity of labour and higher wages; however, under capital and labour gross substitutability, the decline of labour, relative to value added, exceeds the increase in real wages and the labour share will decline. Furthermore, capital-augmenting technical change will generate a declining fall of the wage share.

Indeed, since the early 1980s, technological change has become capital - augmenting and with capital deepening has been a driving force behind the decline of *LS*, as found by Bentolila and Saint Paul (2003) and recently confirmed by Bassanini and Manfredi (2012). In particular, *ICT* technologies have replaced workers involved in routine tasks and these substitution effects, that have accompanied skill biased technical changes, have penalised position of low-educated workers (Arpaia et al. 2009 and the European Commission, 2008). In addition, technological progress, embodied in intangible capital (high performance human resources practices, entrepreneurship and output from R&D) has been strongly biased towards high-skilled labour, but substitute low-skilled types (Bassanini and Manfredi, 2012).

It is remarkable to note that all but these changes cannot be evaluated independently from labour institutions. Striking technological changes, that have affected ICT-related goods, have also improved the quality of monitoring worker effort (Bental and Demougin, 2010) and reduced the (endogenous) bargaining power of (unskilled) labour. Furthermore, a capital-embodied technological acceleration may have reduced firms' incentives to create new (unskilled) jobs, increased unemployment and reduced the labour share, thus leading to a 'technology-policy interaction' (Hornstein, Krusell and Violante, 2007). In addition, domestic and international competition and the threat of location of production processes abroad have contributed to reduce trade union power and *LS* (Dumont et al. 2005). In sum, a common factor behind the changing economic conditions is represented by deterioration of labour power. It has been reflected in a progressive decline in trade union membership and an induced change of unions' objective function, more oriented to wage moderation to preserve job positions and sustain employment growth.

In particular, the relaxation of Employment Protection Legislation has facilitated the adoption of fixed-term contracts and may have contributed to the erosion of *LS*. It appears a relevant factor, but as noticed in OECD (2012, p. 146), "there is little research on this issue. The main exception is Checchi and Garcia-Peñalosa (2008), who estimate a standard aggregate cross-country/time-series model for OECD countries, and find no impact of employment protection on the labour share controlling for other institutions."

This study takes another look, focussing rather than on an aggregate measure of employment Protection Legislation (EPL), on liberalisation of temporary contracts (EPLT) and tests its influence, without omitting to control for regulation of permanent contract, the other indicator that compounds the OECD *EPL* aggregate index.

We also control for other technological and institutional drivers and insert these variables in a by now standard price/ wage-setting (see Layard *et al.,* 1991).

Notice that also in the basic framework of Bentolila and Saint Paul (2003), movements in the labor share can be fruitfully decomposed into movements along a technology-determined curve,

namely the share capital (SK) curve" (p.25), but only under competitive conditions (and a production function with constant returns to scale). By contrast, in environments featuring product and labour market imperfections, equilibrium values of the labour share lie outside the *SK* schedule. Thus, not only regulation of markets that influence changes in mark-ups, but also union bargaining power and labour institutions play a central role on functional distribution of income.

In our analysis we consider three main factors that may influence labour shares: i) deregulation of employment protection of temporary contracts that may be associated to the diffusion of precarious working conditions and a decline in workers bargaining power; ii) unionisation and collective labour relations that directly affect wage setting in the labour market; iii) changes in mark-ups and in product market regulation that influence rents in the goods market.

Employment protection of labour

The evolution of labour shares may be conditioned by employment protection of labour (*EPL*), i.e. to norms for permanent contracts (*EPLR*) and for temporary contracts (*EPLT*). Let us start by considering the expected results associated with changes in protection of temporary workers (*EPLT*), which is the main focus of our analysis.

It is predictable that Human Resource (HR) inferior strategies, narrowly oriented only to cost minimisation in the short-term and to a higher degree of functional flexibility, through opening of precarious positions, are conducive to low rewards and, through these channels, low *LS*[4]. Indeed, strong negative effects caused by lower *EPLT* are conceivable because employment protection of temporary workers affects human capital accumulation, productivity and the bargained wage. Especially in environments where training cannot be contracted between firms and workers because of the unverifiable and unenforceable nature of firm-specific human capital investments, low *EPLT* does not incentive employees to invest in firm-specific human capital because it decreases the probability of the survival of the matching of employees and employers (Arulampalam, Booth and Bryan, 2004). Thus, it is likely that low protection of temporary positions causes wage moderation.

The effect of *EPLT* on employment outcomes, are expected to be ambiguous. On one hand, it may be advocated the implicit trade-off caused by liberalisation of temporary contracts between efficiency (negative) growth and employment (positive) growth; indeed, fixed term contracts may have caused the European process of shifting toward higher employment levels, even if accompanied by lower average productivity increases (Dew-Becker and Gordon, 2008). On the other hand, it can be argued, following Blanchard and Landier (2002), that deregulation of temporary contracts may merely increase the turnover in the labour market, rather than being "stepping stones" to permanent jobs, since this last type of job remains costly to dissolve due to the presence of high restrictions on dismissals. The main effect of labour reforms at 'the margin' is higher, not lower, unemployment.

To summarise, in terms of final outcomes, in case of lower *EPLT* we expect stronger negative effects on wages (that are conducive to a reduction in labour share) and uncertain effects on employment.

Our estimates also control for norms that protect regular workers. It has been formalised that *EPLR* protects jobs at times of declining demand but because employers refrain from firing in downturns they also refrain from hiring in upturns, and hence the overall effect on employment is ambiguous, as theoretically shown by Bertola (2009).

Furthermore, it is noteworthy that also expected effects on wages are uncertain. As shown by the 'insider-outsider' literature, *EPLR* afforded to currently employed workers enhances their bargaining power and entails more favourable wage negotiations (Bertola, 1999). However, an alternative interpretation, consistent with the 'implicit contract theory', such as the model proposed by Gomme and Greenwood (1995), is that *EPLR* provides job security and a sort of insurance contract between workers and firms, where the insurance premium, against the risk of dismissals, is paid in terms of lower pays.

Union bargaining power

The wage-profit split is crucially caused by country wage setting systems and the bargaining practices of European countries are usually those formalised by the 'right to manage' scheme (Layard

et al. 2001), where firms and unions bargain over wages and then firms set employment unilaterally, taking wages as given.

The explicit solution for the wage rate, in a generalised Nash bargaining, gives that an increase in the union bargaining power shifts the 'wage rule' (the combinations of wage rates and employment achieved in the labour market) upwards, with unequivocal negative effects on employment. In addition, the wage solution is dependent on union preferences. For instance, for a union utility function (*V)* with the Stone-Geary functional form (Oswald, 1985), one has:

$$V = (w-r)^{\delta} (L-z)^{\lambda}$$

Where *r* and *z* are minimum or references values of wages (*w*) and employment (*L*), while δ and λ give their relative importance to the union. This functional form has the advantage of nesting as special cases specific assumptions on union preferences[5] and allows us to verify that increases in δ and λ (the respective weights of remunerations and employment in union preferences) cause opposite effects on bargained pays: when λ is higher, union wage claims are more moderate, under the constraint of labour demand (Manning, 1990).

It our sample period, i.e. in a context of increasing competitive constraints, due to globalisation and international competition, numerous 'pacts for employment and competitiveness' (*PECS*) have been negotiated, as documented by Freyssinet and Seifert (2001), and these innovative agreements, designed to boost competitiveness, have explicitly covered the safeguard of employment and wage moderation. Analogous recent findings show the diffusion of industrial relations oriented to reduce employment insecurity, through concessionary bargaining aimed at cutting wages (Haipeter, Lehndorff). As pre- conditions of these new pacts, trade unions have reformulated their objective function and increasingly internalised employment effects of their wage strategies.

In our empirical analysis, the existence of a robust association between union density and wage restraint might be interpreted as a likely effect of more concern for employment stability, as we will test with our estimates.

Product market regulation

In recent years, various reforms have been introduced to reduce rents in the goods markets in European economies and thus a natural experiment is to verify their prevailing effects in terms of changes in *LS*.

As known, greater competition may cause erosion of monopolistic positions and a squeeze on profits, with a consequent increase in the labour share. Notice that empirical studies use the OECD aggregate indicator for product market regulation (*PMR*) that covers various areas. For provisions that measure privatization programmes, captured by the OECD indicator as a shift toward pro-competitive policies, the likely effect is job shedding, and through this channel, a contraction of labour share. Indeed, economic theory predicts that, managers of state-owned enterprises maintain high (inefficient) level of employment and refrain from firing, also because firm size increases their influence (Bertrand and Mullainathan, 2003). By contrast, the average reduction of state ownership may cause firm downsizing, staff reduction and a fall of *LS,* such as the case of the network industries (Azmat, Manning and Van Reenen, 2012).

For other provisions that measure the intensity of competitive pressures, positive effects on *LS* are likely. Indeed, the monopoly power of firms in product markets creates a wedge between the real wage and the marginal productivity of labour, whereas the output level is lower than that obtained in perfect competition (Nicoletti and Scarpetta, 2003) but profits are higher. If workers have no bargaining power they will not benefit from rent sharing and an increase in competition will result in an increase of *LS*. By contrast, if unions manage to appropriate part of the firm's rents, product market power that creates rents also opens the space for their distribution between capital and workers and, thus, may have a positive impact on wages (Nickell et al. 1994). Thus, increased liberalisations of product markets may dampen labour share, at least for insider workers.

However, if price- mark ups is higher than the wage mark-up (the gap between the bargained pay and the reservation wage), greater competition will reduce prices more than nominal wages; thus the real wage, and likely the labour income share, will increase as shown by Blanchard and Giavazzi (2013). The authors also demonstrate that lifting entry barriers is the most important pro-competitive

policy. For instance consider a reduction in the bargaining power of the workers that leads to a decline in the real wage and, assuming an elasticity of substitution smaller than one, to a decline in *LS*. In the long run, after this fall, a higher capital profitability will be restored, but a reduction in barriers to entry will lead the entrance the market of new firms, with benefits in terms of increases of output, labour demand and a rebound in *LS*.

In sum, all the considerations above lead to expect that the final effect of *PMR* on labour shares remains ambiguous.

3. Evidence

(i) Data

Our empirical investigation relies on several databases: EU KLEMS accounts for the labour share, and the capital-output ratio, the OECD indexes for employment protection and product market regulation, Visser database for measures of collective relations, i.e. union density and bargaining coverage, and EUROSTAT for employment series (see Appendix, Table A1).

Our dependent variable is the labour share that measures the fraction of national income accruing to labour. Unfortunately, information concerning wages and salaries is not available in the EU KLEMS database, thus this variable is proxied by the ratio of total compensation of employees (wages and salaries before taxes, as well as employers' social contributions) over gross domestic product. This measure underestimates labour share because it excludes incomes generated from self-employment, which are mixed income (from property and labour), and whose attribution to either labour or capital is questionable. We prefer performing our estimates by using unadjusted labour shares (i.e. without self-employment), also to prevent confounding effects, since employment protection legislation covers only employees. In any case, we offer below a comparison of descriptive statistics for adjusted and non adjusted labour shares to evaluate the different importance of self-employment in different countries[6]. As we shall see, in some countries self-employment is not negligible; for this reason we shall also consider this category of labour as control variable in our econometric analysis.

The first step of our research involves matching the several database we use and carrying out disaggregated analyses at sector and country levels. First, availability of data and the need for a large and consistent sector-country profile led us to select only 14 countries out of the 27 European Union members and to re-arrange the NACE rev.1 sections into 9 industries (Appendix, A2).

The EUROSTAT database was used to gather the share of workers with temporary contracts on total employees at sector-country level. Indeed, as seen below, we used a difference-in-difference model, and introduced the sectoral average level of the share of temporary workers in the UK as a benchmark, i.e. as the underlying propensity to use temporary workers in the absence of *EPLT*.

Lastly, UK industry-level layoff rates, defined as the percentage ratio of annual lay-offs to total employment, were introduced as a proxy for lay-off propensity in the absence of *EPLR*, and were obtained from the waves of the UK Quarterly Labour Force Survey, issued by the Office of National Statistics.

(ii) Descriptive evidence

Before testing the role of the different driving forces behind the country-sector labour income shares, we have a closer inspection of data. To summarise, from descriptive statistics emerge some relevant points:

- in most countries factor shares present a sluggish or declining trend, with total average values in the two sub-periods, 1995-2001 and 2001-2007, close to 49% and 48%, respectively;
- an increasing degree of variation between the different economies is recorded over time, but labour share remains more heterogeneous across sectors, rather than across countries;
- the change of the weights of various sectors has had only limited influence in explaining labour share movements, whereas changes of labour share *within* sectors play a dominant role.

More details are offered below. Table 1 reports information by countries and shows, for the period 1995- 2007, an average value of *LS* of about 49%, but also large differences across European economies. The lowest figures are recorded in Italy (38%), the highest in Denmark, Sweden (approximately 55%) and UK (56%). A plausible explanation of the UK position relies on the

sectoral specialisation of this country, mainly oriented to high labour intensive sectors, such as services.

INSERT TABLE 1

INSERT TABLE

As we shall see below, our econometric analysis, addressing causal link between *EPLT* and labour share by country-sector estimates, allows us to take into account these sectoral composition effects. Italy, after Ireland, also records the lowest minimum value, whereas we find again Denmark (57%) Sweden and UK (58%) as the countries at the top for maximum values. From our data an increase in country differentials also emerges, since the standard deviation passes from 4.99 in 2001 to 5.81 in 2007 (see Table 3, Panel A)

INSERT TABLE 3

Country differentials may be related to differences in the structural composition of employment, as shown by the comparison between non adjusted and adjusted labour shares (that include self employment) (Figure 1). Indeed, Italy is characterised by the highest incidence of self employment, a fact that contributes to explain its lowest position in terms of non adjusted labour share. Thus, the inclusion of self employment makes a significant difference, and Italy is no more in the lowest position but, in any case, it remains in the bottom range.

INSERT FIGURE 1

Additional information regarding time variations are obtained by splitting the sampled period in two intervals: 1995-2001 and 2002-2007. A visualisation is given in Figure 2, which shows the declining or stable tendencies recorded for 10 EU economies (out of fourteen) in the sub-period 2002-2007. Also, notice that two of the four countries that in this sub-period have recorded a slight increase (Italy and Ireland) are, in any case, those in the lowest position and that registered a remarkable negative trend in the first sub-period (1995-2001). Conversely, Germany, Belgium and Netherlands, whose values of *LS* are above the average levels in each sub-period, record the highest reductions in the second sub-period (-4.3, -2.7 and -2.6 percentage points, respectively).

INSERT FIGURE 2

Table 2 reveals ample divergences between sectors, higher than those observed by countries, and confirmed by the comparison of adjusted and not adjusted LS by the sectors offered in Figure 3.

INSERT FIGURE 3

The ample differentials by sectors led us to verify if the steady or declining changes recorded in almost all countries since the mid-1990s could also reflect the growing importance of sectors with stable or declining *LS*, whose weight on aggregate income is boosted with respect to those characterised by increasing *LS*.

Indeed, as seen in Arpaia et al. (2009), three different effects may operate. The first is the change in the *weights* of each sector; the second is the change in labour shares *within* sectors, the third is the changing structure of total employment represented by variations in the share of self-employed. We thus have the following expression:

$$\Delta ALS_t^{sd} = \sum_{i=1}^{k} \underbrace{\frac{CE_{i,t} * TE_{i,t}}{va_{i,t} * E_{i,t}} * \Delta\omega_{i,t}}_{\text{Sectoral composition effect}} + \underbrace{\omega_{i,0} * \frac{TE_{i,0}}{E_{i,0}} * \Delta\frac{CE_{i,t}}{va_{i,t}}}_{\text{Employees' remuneration effect}} - \underbrace{\frac{CE_{i,t}}{va_{i,t}} * \frac{1}{q_{i,t}} * \omega_{i,t} * \frac{\Delta q_{i,t}}{q_{i,0}}}_{\text{Employment structure effect}} \quad (1)$$

where ΔALS is the change in aggregate adjusted labour share, *CE* are compensation of employees, *va* is the national value added, *TE* and *E,* total employment and employment, respectively, ω the weight of each *i* sector on national value added, *q* the ratio *E/TE*, *i*=1, ...9 sectors, *t*=1995,...2007.

The first term of (1) can thus measure the *compositional bias*, i.e. the role played by changes in the sectoral composition recorded in the 14 European economies of our sample, whereas the second and third terms describe, respectively, the employees' remuneration effect and the employment structure effect (i.e. the contribution of self-employed) mentioned above. A comparison of these effects is shown in Figure 4.

INSERT FIGURE 4

Figure 4 makes it clear that the sluggish or declining movement of the aggregate labour share recorded in most countries is mainly due to moderation of labour compensations *within* countries (the remuneration effect), whereas it only partially reflects a shift from high labour intensive industries to the low labour intensive sector. Sectoral composition effect is, in any case, not negligible and almost always contributes negatively to labour share changes. On the contrary, employment structure effect contributes positively and for most countries partially offsets the negative contribution of the other two factors. This analysis thus shows that compositional biases are insufficient to explain the observed trend of labour shares and motivates us to explore the role of institutional reforms.

One of the main developments in labour market policies is the substantial decline in employment protection legislation. Job protection is usually measured by using two time-varying cross-country data: the OECD Employment Protection Legislation index for regular contracts (*EPLR*) and, for temporary contracts (*EPLT*)[7]. As shown in Figure 5, the greatest relaxation in strictness of rules is recorded for temporary contracts and has been more important than changes in rules for regular contracts, since low and high *EPLR* countries have kept statutory protection of regular jobs almost unchanged.

INSERT FIGURE 5

The role of employment protection restrictive stances across Europe is a matter of further explorations with our estimates.

(iii) Estimates

Estimation strategy

In this section we estimate our key equation for labour share (*LS*), and two supplementary equations concerning employment and average compensation (that is the ratio of total labour compensation on employees). Such a strategy allows us to verify how each explanatory variable influences the labour share and its components.

We estimate the impact of the degree of stringency of *EPLT* on cross-industry differences, by following the literature based on the difference-in-difference method inaugurated by Rajan and

Zingales (1998) in the financial economics literature and applied to labour analysis by Bassanini, Nunziata and Venn (2009). Thus, we estimate the role of *EPLT* considering whether its impact is greater on industries in which, in the absence of regulations, the propensity to employ temporary workers would be higher. Analogously, we control for the role of *EPLR* assuming that the effect of liberalisations of regular jobs is more important in industries where the layoff propensity is higher.

The UK temporary contract rates (TWS_Bench_i) *or lay-off rates* (LO_Bench_i) for each industry *i* are used to proxy for the natural propensity of industries to make high recourse to numerical flexibility in labour arrangements. Indeed, we assume that in the UK the lowest stringency in labour protection (both for temporary and regular workers) makes differences in employment decisions among sectors only motivated by technological and other sector-specific factors, irrespective of influences caused by protection legislation. Each equation thus includes the interaction terms TWS_Bench_i*$EPLT(j,t-1)$ and LO$_Bench_i$*$EPLR(j,t-1)$, where $Bench_i$ is the UK value.

In some specifications, we also include other institutional controls available only at country level such as Union density (*UD*) and bargaining coverage (*COV*). Following the same strategy, we have estimated their role by including the interaction terms LO_Bench_i *$UD(j,t-1)$ and LO$_Bench_i$*$COV(j,t-1)$, the hypothesis being that the protective role of worker representatives and of coverage of collective negotiations is higher in those sectors that are more exposed to threats of dismissals, i.e. with higher layoff rates. Each specification includes the main effect, that is the control for the labour institutional variable at country level, and the interaction terms discussed above. The last institutional control variable we insert is Product Market Regulation (*PMR*), available at the sector-country level, and thus does not need an interaction term.

In addition, our linear regression model includes another key control variable, discussed in section 3: the capital/output ratio (*K/Y*). As robustness check, we also take into account, in additional estimates, the ratio of employees/total employment (*q*), that allows us to control for the country-sectoral differentials in employment structure (employees and self-employed).

Finally, we include country by year dummies, D_{it}, to control for country specific changes (including business cycles) that may condition movements of *LS* and sector dummies D_j to control for highly sector-specific factors which probably influenced our dependent variables and which cannot be captured by means of the labour policy variables included in our analysis. For instance, a larger array of labour institutions should be included as determinants of *LS*, but are omitted due to the lack of availability of time-varying data, among others unemployment protection (measured by replacement ratios and duration of unemployment benefits) as well as active labour market policies. Other country-sector specific factors, such as the role of technological progress and openness to trade, discussed in Section 2, are captured by the set of dummy variables included in our specifications.

The same specifications adopted for *LS* are replicated for its components, i.e. *Comp* and *Empl*.

$$LS_{i,j,t} = \beta_0\, EPLT_{j,t-1} + \beta_1 \text{TWS\_Bench}_i * EPLT_{j,t-1} + \beta_3 EPLR_{j,t-1} + \beta_4 \text{LO\_Bench}_i * EPLR_{j,t-1} + \beta_5 \text{LO\_Bench}_i * UD_{j,t-1} + \beta_6 \text{LO\_Bench}_i * COV_{j,t-1} + \beta_7 PMR_{i,j,t-1} + \beta_8 KO_{i,j,t} + q_{i,j,t} + D_{j,t} + D_i + \varepsilon_{i,j,t} \quad (2)$$

$$Ln(Empl)_{i,j,t} = \beta_0\, EPLT_{j,t-1} + \beta_1 \text{TWS\_Bench}_i * EPLT_{j,t-1} + \beta_3 EPLR_{j,t-1} + \beta_4 \text{LO\_Bench}_i * EPLR_{j,t-1} + \beta_5 \text{LO\_Bench}_i * UD_{j,t-1} + \beta_6 \text{LO\_Bench}_i * COV_{j,t-1} + \beta_7 PMR_{i,j,t-1} + \beta_8 KO_{i,j,t} + q_{i,j,t} + D_{j,t} + D_i + \varepsilon_{i,j,t} \quad (3)$$

$$Ln(Comp)_{i,j,t} = \beta_0\, EPLT_{j,t-1} + \beta_1 \text{TWS\_Bench}_i * EPLT_{j,t-1} + \beta_3 EPLR_{j,t-1} + \beta_4 \text{LO\_Bench}_i * EPLR_{j,t-1} + \beta_5 \text{LO\_Bench}_i * UD_{j,t-1} + \beta_6 \text{LO\_Bench}_i * COV_{j,t-1} + \beta_7 PMR_{i,j,t-1} + \beta_8 KO_{i,j,t} + q_{i,j,t} + D_{j,t} + D_i + \varepsilon_{i,j,t} \quad (4)$$

where $Ls_{i,j}$, $Empl_{i,j}$, $Comp_{,i,j}$ are the labour share, employment, average compensation in *i=1,...9* sectors, *j=1,...14* countries, *t= 1995, ...2007* year.

In order to address the normality assumption requested in OLS regressions, and following Azmat, Manning and Van Reenen (2012), we take our dependent variables Empl and Comp in log, and apply the Newey-West technique to correct for heteroschedasticity and first-order serial correlation.

(iv) Results

Main results

Table 4 lists the estimates for *LS*. The first column reports the results of a baseline specification in which only the capital-output ratio and *EPLT* are included and shows that protection for temporary workers exerts a positive influence on *LS*.

In a second specification, (column 2), we rule out potential confounding factors and insert *EPLT,* interacted with the share of temporary contracts at the sector level in the UK, i.e. *TWS_Bench*EPLT*. As mentioned above, we have treated estimated coefficients of *EPLT,* interacted with indicators of temporary contracts, as evidence of a causal impact of regulations on cross-industry *LS* differences. Thus, the variable of main interest in our analysis is *TWS_Bench*EPLT(j,t-1).*The results we obtain confirm that the stringency of protection level for temporary workers positively affects the labour share.

More precisely, in this case the *diff in diff* estimates suggest that *LS* tends to be lower in industries with greater propensity to use temporary contracts, the less stringent the level of *EPLT*. This main finding is confirmed in all specifications (columns 3-8), that allow controlling for other variables, i.e. *EPLR*, union density *UD*, coverage bargaining (*COV*), and their interaction (*UD*COV*), product market regulation (*PMR*) and the employment structure (*q*).

In order to better evaluate the meaning of our key result (i.e. the coefficient of *TWS_Bench*EPLT)*, let us consider, for example, two sectors, Construction and Manufacturing with different natural propensities to employ temporary workers, since in the UK (the benchmark case) the share of temporary workers in Construction is 5.18%, whereas it is only 3.90% in Manufacturing. We can now quantify the difference of *LS* changes between these two sectors recorded in different countries, and explained by their respective *EPLT* stances. We compare Italy, the case with the

greatest reduction in *EPLT* (-3.5), with Belgium and the Netherlands, two countries that have recorded slighter reductions in *EPLT* (-2 and -1.19, respectively).

In Table 5 columns 1, 2 and 3 report, respectively, the values of *LS* changes in Construction and Manufacturing, and their difference in each economy. Column 4 shows the estimated coefficient β for *TWS_Bench*EPLT* in baseline specifications (columns 2 and 3 of Table 4), columns 5 of Table 5 reports the different natural propensities to use temporary contracts, $\Delta\Lambda$ (obtained from the values of the UK) and column 6 the reduction of *EPLT* of the three economies, $\Delta EPLT$. Finally, column 7 and 8 show the values (absolute and in percentage, respectively) of the reduction of *LS* explained by a lower level of labour protection. The result we obtain, taking our estimates at face value, is that for Italy more than 90% of the difference of *LS* changes between Construction and Manufacturing are explained by a weakening of *EPLT*. This means that the Italian functional distribution of income appears to be significantly influenced by its far reaching liberalisations of the labour market that contributed to instability of working conditions and other significant figures can easily be obtained for other country-sectoral comparisons.

Furthermore, we expect that the higher degree of *EPLT* has a positive effect on wages and null or negative influence on employment. These results are confirmed in our equations for compensations (Table 6*)* and employment (Table 7), while the overall impact on labour shares is positive (Table 4). This means that reforms to liberalise the use of temporary workers and reduce *EPLT* may be perverse: when firms are allowed to hire workers on fixed-term contracts they pay lower wages, offer less training and give few opportunities for career advancement. Furthermore, the use of fixed term contracts and the consequential segmentation of internal labour market within firms enhance the opportunity costs of labour and may raise the wedge between wages and marginal labour productivity.

Other results

It is important to also discuss the main results concerning control variables.

For unionisation (*UD*) one can expect that this variable, as a proxy for worker bargaining power, may have counterbalanced the negative effects of liberalisation of labour market for temporary workers. We have estimated the role of *UD* on *LS* interacted with layoff propensity in order to test the more significant impact of unions on those sectors where their representatives are more exposed to risk of being fired. Our results show that unionisation has played a negative role on *LS*, as seen from the values of coefficients associated with $LO\_Bench*UD_{(j,t-1)}$ in *LS* estimates (columns 4, 6,7, 8 of Table 4)[8]. This result is also obtained when we control for coverage of collective bargaining.

Notice, however, that labour share dynamics are conditioned by the intensities of wage push and employment changes that also reflect the respective weights of these variables in union preferences. From additional estimates for *LS* components, it emerges that unionisation, which is a proxy for worker bargaining power, has exerted a positive role only on employment levels (Table 7, columns 4, 7, 8) and a negative impact on compensations (Table 6, columns 4,6,7,8). This suggests that worker representatives have attached greater weight to employment stability and accepted compensative policies based on wage moderation. These results confirm recent shifts in bargaining practices aimed at enhancing job protection in exchange for undercutting of wages and deregulation of norms on temporary contracts (Haipeter and Lehndorff, 2009).

Paradoxically, it configures a sort of 'reversal' of the standard right to manage model, i.e. a situation where unions have bargained over employment and reduced wage claims, accepting pay conditions imposed by labour demand.

It is interesting to note that these results are coherent with estimated coefficients of *EPLR*, interacted with the indicator of layoff propensity, significant and negative in *LS* and compensation estimates (Table 4 and 6) and positive in employment specifications (Table 7): compensations tend to be lower in industries (with a greater propensity to layoffs), when the level of *EPLR* is more stringent, whereas opposite effects emerge for employment. This implies, as predicted from the implicit contract theory, that jobholders have signed a tacit agreement based on acceptance of lower

pays as an 'insurance premium' for job security, thus protecting themselves from employment fluctuations, confirming a change in union preferences from wage claims to employment stability.

We also obtain that high degrees of product market regulation have positive effects on *LS*. Notice, as stated above, that the OECD indicator *PMR* also covers privatization programmes, measured as a shift toward pro-competitive policies, whose likely effects are restructuring processes and staff reduction, as found for the network industries by Azmat, Manning and Van Reenen (2011). From our estimates, in any case, no significant influence on compensation and employment components have been obtained. This may be the result of different deregulation programmes, which include both privatisation process as well as increases of the degree of product market competition in private sectors, with likely differential effects on labour market outcomes. Further research in this area may shed light on the various impacts of these different policy reforms for the whole set of industries analysed in our sample.

Finally, it is worth noting that our key non-institutional control variable (i.e. capital-output ratio) is related to the different technologies, which vary across industries, and that we take into account with capital intensity. The negative coefficients associated to *K/Y* obtained in our estimates for *LS* indicate a significant substitutability between labour and capital, meaning that an increase in the capital-output ratio is associated with a smaller labour share. The negative effects for compensations are consistent with the hypothesis of Hicks' s labour saving technical progress, i.e. with an increase in the ratio of the marginal product of capital to that of labour (Hicks, 1932, p. 121). Our result could also be justified by a scarcity of high-skilled workers (Acemoglu, 2009), caused by the diffusion of temporary workers, that negatively influences rewards also in capital intensive industries, a result that needs additional exploration in future research.

An alternative consideration is that *K/Y* is likely to be endogenous to *LS* and we cannot interpret the estimated coefficients of the capital output ratio in terms of evidence of a causal impact, an issue addressed below.

Endogeneity

Capital output ratio as well as *EPLT* reforms may be conditioned by changes in factor distribution and thus these potential feedbacks (from our dependent variables and these regressors) may induce a cautionary interpretation of previous results[9]. A robustness check is carried out by instrumental variables estimates. This method requires finding instruments that can predict the level of *EPLT* and of *K/Y*, without affecting directly the dependent variable. Using lagged values as instruments, we have obtained the results shown in Table 8.

From the endogeneity tests, the hypothesis of endogeneity of *K/Y* on wage equations cannot be rejected (see also Table A.2) whereas we can reject endogeneity of *EPLT* (with the interaction term) for *LS* and its components. What is relevant, in any case, is that Instrumental Variable (IV) estimates confirm our main findings.

5. Conclusions

Our focus on changes in the stringency of employment protection of temporary jobs has allowed us to show that these reforms, that have contributed to instability of working conditions have negatively influenced labour share, thus failing to contrast the declined trends recorded in previous decades. Indeed, these legislative innovations have penalised the rewards of all employees, insiders as well as entrant marginal workers, and have not been offset by the access of additional workers (likely young and women) to the labour market.

We have also found that, in a scenario of precarious working conditions, employees and their representatives have exerted their bargaining power to moderate their wage demands, thus paying an implicit insurance premium against the risk of employment fluctuations.

Liberalisation of temporary jobs and their negative impacts on functional distribution of income have been particularly relevant for a 'wage-led demand regime', typically represented by the Euro area, as noticeably shown by the post Kaleckian model of Stockhammer et al. (2009). For this area, functional income distribution adverse to labour has substantial negative effects on aggregate demand. Thus policy reforms, that contrast precariousness of working conditions, are called for to sustain demand and growth simultaneously.

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NOTES

[1] The authors are the editors of The Oxford Handbook of Income Inequality, published in 2009.

[2] Daudey and García-Peñalosa (2007) examine 39 countries and prove on the basis of cross-country and panel evidence that smaller labour share are associated to greater inequality thus obtaining that the factor distribution of income is an essential determinant of the personal distribution of income.

[3] For a long time, the main hypothesis of the growth economic theory was that real wage and productivity increase at the same rate, while the sum of employment and productivity growth determines the growth of output. Under these conditions, the stability of the labour share was easily obtained and depicted as one of the main regularities of growth (Kaldor, 1961).

[4] The reasons behind the adoption of these inferior practices may be explained by new studies on behavioural economics that focus on myopic choices and short-termism (Laverty, 1996).

[5] For instance, the wage bill utility function is obtained for $r=z=0$ and δ and $\lambda = 1/2$, while the rent utility function (i.e. the case where union wants to maximise the excess of the wage bill paid to its members) is obtained for $z=0$ and $\delta=\lambda=1/2$. Finally, $\lambda=0$, gives the seniority model, i.e. the case where unions only care about utility of their members.

[6] According to Arpaia et al., (2009), we attributed the same wage of dependent workers to self-employment.

[7] A revised OECD indicator covers a third area, i.e., restrictions on collective dismissals (*EPLC*). *EPLC* has only been available since 1998 and this does not allow comparisons over our observation period (1995-2007).

[8] This surprising result is also obtained by Azmat , Manning, van Reenen (2012).

[9] Actually, the difference-in-differences strategy is also set up to solve this problem (Bassanini, Nunziata and Venn, 2009). Nevertheless, in order to guarantee more robustness to our result we decided to perform endogeneity tests by means of the instrumental variable method.

TABLES AND FIGURES

Table 1: Labour share in 14 European economies, 1995-2007

Country	Mean	Coeff. Var.	Min	Max	Variation 2001-1995 (% points)	Variation 2007-2002 (% points)
AUT	0.494	0.044	0.464	0.532	-0.042	-0.023
BEL	0.494	0.021	0.478	0.510	0.015	-0.027
CZE	0.435	0.016	0.427	0.450	-0.008	0.000
DNK	0.545	0.023	0.525	0.571	0.020	0.020
ESP	0.471	0.021	0.456	0.485	0.021	-0.020
FIN	0.472	0.017	0.461	0.487	-0.017	-0.001
FRA	0.522	0.006	0.516	0.526	-0.002	-0.008
GER	0.534	0.035	0.498	0.556	-0.008	-0.043
HUN	0.469	0.032	0.435	0.486	0.012	0.005
IRL	0.382	0.053	0.352	0.419	-0.047	0.024
ITA	0.380	0.020	0.370	0.390	-0.018	0.016
NLD	0.515	0.020	0.498	0.528	0.011	-0.026
SWE	0.547	0.036	0.509	0.581	0.072	-0.021
UK	0.560	0.028	0.532	0.586	0.039	-0.019

Table 2: Labour share by sectors, average values in 14 European economies, 1995-2007

	Mean	Coeff. Var.	Min	Max
Agriculture	0.273	0.380	0.126	0.464
Constructions	0.606	0.187	0.418	0.816
Electricity&Gas	0.331	0.290	0.201	0.489
Finance&RealEstate	0.370	0.174	0.249	0.484
Hotels&Restaurants	0.604	0.191	0.439	0.806
Manufacturing	0.591	0.183	0.290	0.717
Mining	0.429	0.539	0.055	0.820
Transports&Communications	0.534	0.173	0.361	0.680
Wholesale&RetailTrade	0.565	0.187	0.315	0.709

Table 3: Mean and standard deviations of labour shares in 14 European economies

	Panel A			**Panel B**		
	All countries			**All sectors**		
	1995	**2001**	**2007**	**1995**	**2001**	**2007**
Mean	48.93	49.27	48.16	48.93	49.27	48.16
Standard Dev.	4.99	6.75	5.81	14.68	13.34	15.88

Table 4: Employment protection of temporary contracts and labour shares: Diff in diff estimates

Dependent variable: Labour Share								
Explanatory variables	1	2	3	4	5	6	7	8
EPLT * TWS_Bench		0.452**	0.455**	0.462**	0.462**	0.474**	0.521**	0.640***
		(0.216)	(0.216)	(0.216)	(0.216)	(0.218)	(0.210)	(0.201)
EPLT	19.576***	15.667***	2.292	-3.966	377.118	22.842	0.8.22	-13.959
	(1.656)	(2.613)	(7.389)	(7.933)	(334.135)	(377.608)	(7.608)	(9.393)
Capital/output ratio	-1.076***	-0.907**	-0.881**	-0.827**	-0.868**	-0.849**	-1.267***	-0.579
	(0.378)	(0.388)	(0.390)	(0.397)	(0.389)	(0.407)	(0.392)	(0.356)
EPLR * LayOff_Bench			-0.935**	-1.115***	-0.977**	-1.584***	-1.500***	-1.731***
			(0.422)	(0.426)	(0.429)	(0.467)	(0.444)	(0.431)
EPLR			10.954***	3.648	7.304	5.217	4.076	9.442
			(4.131)	(5.289)	(5.094)	(5.576)	(5.160)	(6.262)
UD * Lay Off_Bench				-0.022*		-0.027*	-0.024**	-0.025**
				(0.011)		(0.153)	(0.011)	(0.010)
UD				0.966**		0.937**	0.777**	0.279
				(0.379)		(0.423)	(0.347)	(0.386)
COV* Lay Off_Bench					-5.658	-0.230		
					(4.992)	(5.623)		
COV					0.017	-0.046		
					(0.018)	(0.055)		
COV*UD*Lay Off_Bench						(0.000)		
						(0.002)		
PMR							0.359***	0.324***
							(0.062)	(0.055)
Employees/Tot.empl.								57.532***
								(3.651)
Country*Time dummies	yes	yes	yes	yes	yes	yes	yes	yes
Sector dummies	yes	yes	yes	yes	yes	yes	yes	yes
Prob>F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Obs	1284	1284	1284	1284	1284	1284	1284	1284

Table 5: Differences of LS between Construction and Manufacturing explained by EPLT changes over the period 1995-2007 in three economies

	Labour Share Changes in Construction	Labour Share Changes in Manufacturing	Difference Construction-Manufacturing Changes (1)-(2)	β_1	$\Delta\Lambda_i$	ΔEPLT	$\beta_1 * \Delta\Lambda_i * \Delta$EPLT	Proportion (7)/(3)
	1	2	3	4	5	6	7	8
Italy	-0.0034	0.0180	-0.0214	0.0045	1.28	-3.50	-0.0202	0.9400
Belgium	-0.0668	-0.0328	-0.0340	0.0045	1.28	-2.00	-0.0115	0.3383
Netherlands	-0.1078	-0.0402	-0.0676	0.0045	1.28	-1.19	-0.0069	0.1015

Table 6: Employment protection of temporary contracts and compensations-diff in diff estimates

	Dependent variable: Ln(Compensation)							
Explanatory variables	1	2	3	4	5	6	7	8
EPLT * TWS_Bench		0.648**	0.665**	0.683**	0.637**	0.641**	0.657**	0.687**
		(0.324)	(0.315)	(0.314)	(0.314)	(0.315)	(0.312)	(0.314)
EPLT	681.07***	675.47***	692.05***	703.65***	-177.17	536.36	701.58***	697.84***
	(3.756)	(4.580)	(14.893)	(15.569)	(756.759)	(824.882)	(15.512)	(15.815)
Capital/output ratio	-6.057***	-5.815***	-5.620***	-5.510***	-5.679***	-5.850***	-5.320***	-5.146***
	(0.759)	(0.752)	(0.754)	(0.759)	(0.753)	(0.763)	(0.794)	(0.799)
EPLR * LayOff_Bench			-4.325***	-4.746***	-4.158***	-5.624***	-4.580***	-4.638***
			(0.837)	(0.810)	(0.764)	(0.821)	(0.802)	(0.819)
EPLR			7.533	24.921**	15.738	28.801**	24.735**	26.091**
			(8.557)	(11.385)	(11.187)	(12.215)	(11.312)	(11.566)
UD * Lay Off_Bench				-1.538**		-1.664**	-1.456*	-1.582**
				(0.778)		(0.837)	(0.783)	(0.795)
UD				-0.051**		-0.910***	-0.050**	-0.050**
				(0.021)		(0.303)	(0.020)	(0.020)
COV* Lay Off_Bench					-0.068**	-0.327***		
					(0.029)	(0.105)		
COV					13.233	3.742		
					(11.295)	(12.299)		
COV*UD*Lay Off_Bench						0.010***		
						(0.003)		
PMR							-0.155	-0.164
							(0.119)	(0.120)
Employees/Tot.empl.								14.538*
								(8.317)
Country*Time dummies	yes	yes	yes	yes	yes	yes	yes	yes
Sector dummies	yes	yes	yes	yes	yes	yes	yes	yes
Prob>F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Obs.	1284	1284	1284	1284	1284	1284	1284	1284

Table 7: Employment protection of temporary contracts and employment- diff in diff estimates

Dependent variable: Ln(Employment)								
Explanatory variables	1	2	3	4	5	6	7	8
EPLT * TWS_Bench		-1.503**	-1.517**	-1.565**	-1.502**	-1.601**	-1.553**	-1.199**
		(0.642)	(0.642)	(0.642)	(0.646)	(0.652)	(0.645)	(0.594)
EPLT	74.931***	87.926***	88.235***	93.275***	419.935	826.187	94.196***	49.804***
	(5.106)	(7.731)	(24.287)	(25.729)	1085.858)	1158.555)	(25.815)	(20.259)
Capital/output ratio	-1.805	-2.368**	-2.520**	-2.853**	-2.487**	-3.164**	-2.938**	-0.87
	(1.162)	(1.202)	(1.205)	(1.224)	(1.209)	(1.266)	(1.222)	(1.085)
EPLR * LayOff_Bench			3.718**	4.894***	3.631**	4.064*	4.820***	4.128***
			(1.624)	(1.550)	(1.719)	(2.181)	(1.579)	(1.314)
EPLR			-14.484	-13.862	-1.5496	-3.481	-3.779	2.337
			(14.194)	(16.511)	(17.236)	(18.334)	(16.460)	(13.469)
UD * Lay Off_Bench				0.141***		-0.649	0.141***	0.139***
				(0.027)		(0.681)	(0.027)	(0.024)
UD				-1.121		-1.636	-1.157	-2.653**
				(1.123)		(1.201)	(1.126)	(1.036)
COV* Lay Off_Bench					-2.105	-6.779		
					(0.035)	(0.295)		
COV					0.035	-0.295		
					(0.001)	(0.213)		
COV*UD*Lay Off_Bench						0.009		
						(0.700)		
PMR							0.069	-0.038
							(0.241)	(0.201)
Employees/Tot.employment								72.787***
								(12.437)
Country*Time dummies	yes	yes	yes	yes	yes	yes	yes	yes
Sector dummies	yes	yes	yes	yes	yes	yes	yes	yes
Prob>F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Obs.	1284	1284	1284	1284	1284	1284	1284	1284

Table 8: Endogeneity tests, IV estimates with Two steps GMM estimator

Dependent variables	Labour Share		Ln(Employment)		Ln(Wages)	
Explanatory variables						
EPLT *TWSBench	0.475***	0.532***	-1.602***	-1.767***	0.746***	0.879***
	(0.164)	(0.188)	(0.486)	(0.571)	(0.249)	(0.292)
Capital/output ratio	-0.900***	-0.914***	-2.335***	-1.911**	-5.610***	-5.810***
	(0.273)	(0.282)	(0.862)	(0.880)	(0.529)	(0.544)
EPLT	-8.064**		-159.89***		-3.001	
	(3.443)		(12.142)		(9.015)	
Country*Time dummies	yes	yes	yes	yes	yes	Yes
Sector dummies	yes	yes	yes	yes	yes	Yes
Underidentification Test _ p value (Kleibergen-Paaprk LM Statistic)	0.000	0.000	0.000	0.000	0.000	0.000
Weak Identification Test _ Wald F Stat. (Kleibergen-Paaprk Wald F Satistic)	5781.42	712.47	5781.42	712.47	5781.42	387.019
Overidentification Test _ p value (Hansen J Statistic)	0.656	0,984	0.478	0.323	0.098	0.048
Endogeneity test of EPLTxTWSBench_ (p-value)		0,942		0.496		0.258
Endogeneity test of Capital/output ratio (p_value)	0.831		0.331		0.019	
Obs.	1177	1070	1177	1070	1177	1070

APPENDIX

TABLE A1: DESCRIPTION OF VARIABLES

LS	Labour share (sectoral-country data) Source: EU KLEMS database
Comp	Compensation of employees (including wages and salaries and all other costs of employing labour which are borne by the employer) Source: EU KLEMS database
Empl	Number of dependent employees Source: EU KLEMS database
TE	Number of dependent employees and self employed employees Source: EU KLEMS database
EPLT	Employment protection of temporary workers (fixed-term and temporary employment). The index includes information on the valid cases for which these types of contracts are legal, restrictions on the number of renewals, and their maximum cumulated duration Source: OECD
EPLR	Employment protection of regular workers against individual dismissal: The index refers to eight items which weigh three groups of restrictions: i) procedural inconvenience (such as notification procedures), ii) severance pay, and iii) difficulty of individual dismissals (definition of unfair dismissal and related items). Source: OECD
UD	Union density rates (the share of union members in the employed dependent labour force Source: Visser (2011)
COV	Share of employees covered by wage bargaining agreements Source: Visser (2011)
TWS_BENCH	Share of Temporary Contracts (fixed-term and temporary employment): sectoral-country data. Source: EUROSTAT
LO_BENCH	Lay-off rates, measured as the percentage ratio of annual lay-offs to total employment, UK Source: Quarterly Labour Force surveys, UK
PMR	Product Market Regulation Source: OECD
CAPITAL TO OUTPUT RAIO *K/Y*	Capital –to output ratio (sectoral-country data) Source: EU KLEMS

Table A2 Countries and sectors considered in empirical analysis

Countries
The selection, due to data availability, includes two sets of countries: i) 12 Old Member States; ii) 2 New Member States. The sample includes Austria, Belgium, the Czech Republic, Denmark, Spain, Finland, France, Germany, Hungary, Ireland, Italy, the Netherlands, Sweden, and the United Kingdom.
Sectors
The selected sectors consist of: 1) Agriculture; 2) Mining and Quarrying, 3) Manufacturing; 4) Energy sectors), 5) Construction, 6) Wholesale and Retail Trade, 7) Hotels and Restaurants, 8) Transport, Storage and Communications, 9) Financial Intermediation, Real Estate and Business Services.