Temporary Contracts, Labour Market Segmentation and Wage Inequality

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1 Introduction

One of the key features of labour market developments over the last twenty-five years has been the increase in the share of temporary employment in most advanced countries as well as in emerging countries. Temporary employment takes multiple forms across countries, the most common of which are fixed-term contracts – which have a definite duration – and temporary agency work[1]. The expansion of those temporary forms of employment has both social and economic implications: the extensive use of temporary contracts has been singled out as contributing to dysfunctions in labour market performance, notably in terms of labour market segmentation[2] (Doeringer and Piore, 1971; Reich, Gordon and Edwards, 1973). Segmented labour markets are characterized by inequalities in labour market outcomes across submarkets or segments, as well as low rates of transition of workers from one segment to another. Most of the time, having a temporary contract means having a job with lower quality, with reduced (if any) access to training and fringe benefits, such as paid sick leave, unemployment insurance and retirement pension, higher insecurity due to reduced protection

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[1] Throughout this paper," temporary workers" refers to workers in temporary employment relationships and "temporary contract" refers to the existence of a temporary contractual relationship between the worker and the ultimate user of labour (employer or client firm). Similarly, the term "permanent worker" is used to refer to workers on open-ended contracts.

[2] Labour market segmentation can occur across a number of dimensions. Typically here, the coexistence of two different types of contracts (namely fixed-term versus permanent ones) is identified as driving labour market differences between workers as well as prevents mobility from fixed-term towards permanent jobs

in case of termination of the employment relationship and often lower pay and fewer prospects of upward mobility. Beyond equity concerns, segmented labour markets may also induce suboptimal outcomes from an efficiency viewpoint. Indeed, highly segmented labour markets are also associated with large adjustments in employment levels during recessions, increasing the volatility of labour markets with possible negative effects on productivity (Dolado et al. 2011).

This paper addresses the relationship between the prevalence of temporary contracts and wage inequality. More specifically, it investigates how and to what extent the diffusion of temporary employment has contributed to wider individual wage dispersion. The existence of wage differentials between fixed-term and permanent jobs means that an increase in the share of temporary contracts will increase *intergroup* inequality – inequality between holders of one and the other type of contract. However, the impact on overall wage inequality will also depend on *intragroup* inequality – in particular the dispersion of temporary job earnings, –which differs across countries– and on the degree to which temporary contracts have facilitated entry in the labour market of hitherto excluded groups. Therefore, the overall effect of the expansion of temporary contracts on wage inequality among all workers is *a priori* ambiguous.

This paper concentrates on temporary contracts rather than examining the role of non-standard forms of employment at large (which also include part-time, self-employment, or other forms of employment such as casual work). The main reason for concentrating on temporary contracts is that it allows us to analyse the link between this particular set of forms of employment and inequality in the context of labour market segmentation and suggest fine-tuned policy recommendations. Moreover, among all flexible forms of employment, temporary contracts, and fixed-term contracts in particular, have been those which have grown most significantly in a number of countries among OECD members and beyond.

The objectives of this paper are to provide an overview of the prevalence of temporary contracts in both developed and emerging economies (OECD and Latin America), to highlight the range of inequalities generated by the fact of having such contracts; and finally, to assess to what extent the expansion of such contracts has been a significant driver of wage inequality. To address this issue, this paper relies largely on comparative empirical evidence and investigates whether countries with higher shares of temporary contracts exhibit more unequal wage distributions.

While largely comparable data on wage inequality is broadly available, the same is not true for data on the prevalence of temporary forms of employment or summary data on institutional determinants of both inequality and the prevalence of temporary work. This paper therefore concentrates on OECD countries and selected Latin American countries. In both groups of countries, the prevalence of temporary work is an important policy issue from the social and economic viewpoints. Data are available for OECD countries from secondary sources and estimates were prepared for this paper for Latin American countries based on available survey data.

The remainder of the paper is structured as follows. Section 2 provides an overview of the diffusion of temporary contracts in total employment in both OECD and Latin American countries over the past two decades. The main characteristics of temporary jobs are then introduced in terms of statutory specificities and labour market inequalities, such as wage gaps between workers on fixed-term contracts and open-ended contracts. Section 3 then examines the link between the incidence of temporary contracts and wage inequality. Beyond the existence of a wage penalty for fixed-term contracts (on average), the overall impact of an increase in temporary contracts on inequality is *a priori* unclear, as it depends on how the prevalence of temporary contracts will affect wage distributions' shape and symmetry. After a short summary of the main trends and drivers of wage inequality over the past twenty years, we provide indicative evidence based on multivariate cross-country analysis for a set of OECD and emerging countries. Once institutional determinants of wage inequality are controlled for, we find a positive correlation between a higher share of fixed-term contracts and more unequal wage distributions. Since the relationship is driven by a group of countries with very high shares of fixed-term contracts, we examine in section 4 the impact of temporary contracts on wage distributions and compare wage profiles across countries. The wage distribution of temporary jobs is found to differ across countries, when compared to that for permanent jobs. We find that in countries with high shares of fixed-term contracts, the shape of the wage distribution is affected by those contracts which add mass at the bottom, but that the bottom of the wage distribution is ultimately shaped by other wage-setting institutions such as minimum wages and collective bargaining. We interpret these different patterns across countries to correspond to the differences in the roles and uses of temporary contracts in the different labour markets. We thus review in section 5 the regulation governing the use of temporary contracts and corresponding effective demand for this type of contracts. Section 6 provides some concluding remarks.

2   Trends and main features of temporary employment

Temporary employment can take different forms, depending on the contractual forms available to employers and workers in the legislation of a given country. This paper concentrates on the most widespread forms of temporary employment: fixed-term contracts and temporary agency work. Fixed-term contracts are employment contracts for a given duration, which may be formally recorded as a definite end-date and/or as a definite task[3]. Work in a temporary work agency does not necessarily imply having a fixed-term contract as it is common practice in a number of countries (such as Austria, Germany or the Slovak Republic) for temporary work agencies to hire staff on permanent contracts, in which case they are paid also in between assignments. They are nevertheless treated jointly in this paper for two reasons. First, aggregate data on temporary employment usually compound both forms of temporary employment. Second, temporary agency workers face similar penalties and obstacles in the labour market as workers on fixed-term contracts.

While technological and organisational changes are key factors behind the diffusion of temporary employment, their expansion has also been driven in many OECD countries by labour market reforms during the 1990s (see below). In European countries, temporary employment is dominated by fixed-term contracts: in 2010, about 12% of employees were on fixed-term contracts while only 1.3 % were temporary agency workers[4]. In a small number of countries, however, temporary work agencies do employ sizeable shares of the temporary workforce (the highest shares are found in Slovenia, the Netherlands, France or Belgium [OECD, 2013a]).

2.1   The evolution of temporary employment since the mid-1980s

The use of flexible forms of employment such as fixed-term, temporary work agency or other atypical forms of employment with different employment status (e.g. independent contractors, dispatched workers, daily and on-call workers) has increased substantially over the past three decades throughout the world, but particularly in advanced and middle-income countries. This section documents the diffusion of temporary employment in both European and Latin American countries over the past decades. Figure 1 shows that the upward trend is

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[3] This paper uses the term fixed-term contracts for all contracts with an end date whether specified or implicit in the completion of a task.

[4] Own calculations based on Eurofound (2012).

not a new phenomenon and started back to the mid-eighties. According to EUROSTAT data, the share of temporary workers[5] increased on average in the European Union from around 9 per cent in 1987 to 15.2 per cent in 2006, before the crisis hit particularly those workers; this resulted in a fall in their share at about 13.7 per cent in 2012[6]. In Spain the growth in the mid-eighties was dramatic as the share grew rapidly from 15.6 per cent in 1987 before reaching a peak of 35 per cent in 1995. As said before, due to the magnitude of the crisis in Spain, the share has fallen since 2008 to 23.7 per cent in 2012, indicating that labour market adjustment disproportionately took place among those on temporary contracts. While the patterns are less spectacular in other European countries, the proportion of temporary employees has been also increasing in countries such as Germany (from 11.6 per cent in 1987 to 14.8 per cent in 2008 and 13.9 in 2012), France and Italy[7].

As mentioned before, this development has been partly driven in Europe by partial labour market reforms which sought to increase labour market flexibility by promoting the use of temporary employment. Typically, governments have focused on reforms at the margin, in terms of deregulating the use of fixed term contracts and agency work leaving employment protection for workers on permanent contracts essentially unaltered. As argued by many labour economists, these partial (or two-tier) labour market reforms led firms to increasingly use workers on fixed-term positions, to observe the productivity and the match of the workers to the job, before deciding whether to convert temporary contracts to more permanent positions. This resulted in an increased duality in most European labour markets over the last two decades   (Boeri, 2011; Bentolila et al. 2010; Eichhorst and Marx, 2011).

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[5] Defined as employees whose the main job will terminate either after a period fixed in advance, or after a period not known in advance, but nevertheless defined by objective criteria, such as the completion of an assignment or the period of absence of an employee temporarily replaced (ELFS). Persons with a seasonal job, engaged by an employment agency with limited duration or with specific training contracts are included.

[6] Figures respectively for EU 10, EU25 and EU 28.

[7] Careful comparative analysis based on data on temporary employment from European LFS should take into account some limitations, for example, the large share of fixed-term contracts in German data are apprenticeship contracts.

Figure 1: Share of temporary workers in total dependent employment (%), (1987-2011)
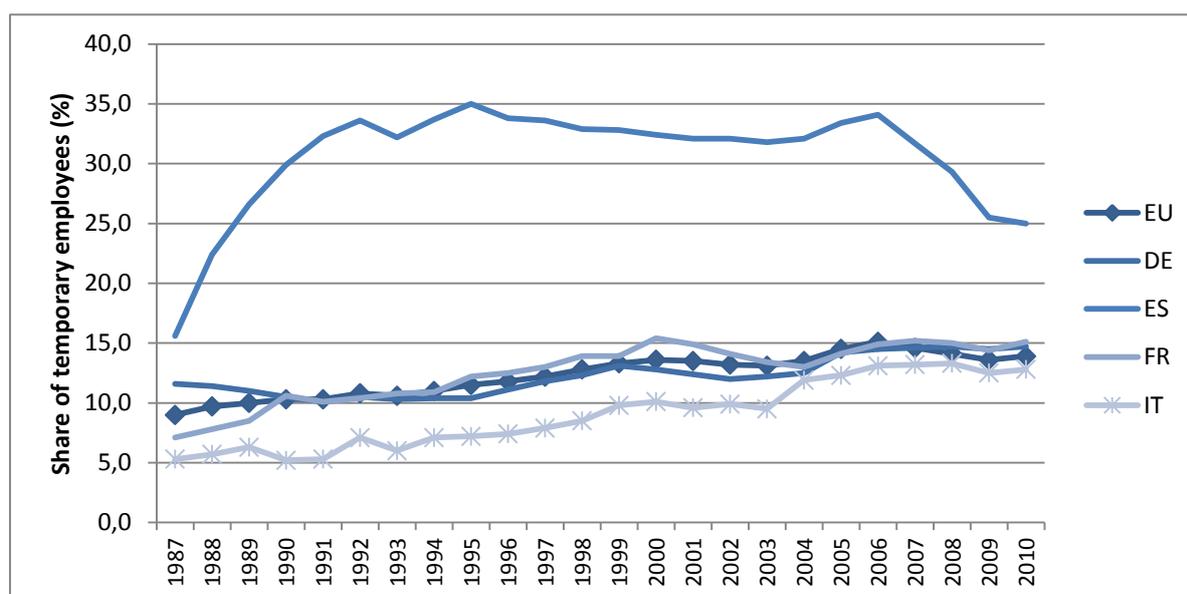
Note: workers aged 15-64; EU resp.(EU10, EU12, EU 15 ; EU25 and EU27)

Source: EUROSTAT LFS database.

Temporary contracts are also widely used outside Europe: temporary work accounts for example for 24 per cent of dependant employment and 17 per cent of total employment in Korea in 2011, making it the largest component of non-regular work[8]; this figure has been rather stable since 2005 when data became available. This is double the OECD-average incidence of temporary work (11.9 per cent). Overall, the share of temporary employment was particularly high vis-à-vis OECD countries at above 20 per cent in,Spain, Poland and Portugal in 2011. Data for other emerging countries, including Latin American countries, are neither systematically available nor comparable, but case studies suggest that temporary employment is widespread in Chile, Colombia and Peru, among others[9]. Moreover, according to IDB data, of all "new" jobs (e.g. jobs with less than one year of tenure), 32 per cent were fixed-term contracts in Chile, 21 per cent in Panama and 9 per cent in Colombia (Pagés-Serra, 2012).

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[8] In Korea, self-employment still provides employment for a significant proportion of the labour force. While self-employment has fallen markedly since the turn of the century, from 37% of employment in 2000 to 28% in 2011, much of the new entry into dependent employment has been in the form of fixed-term contracts.

[9] Temporary employment in Chile was 30% of salaried employment in 2011 according to OECD data, similarly Peña (2013) reports that during the 2000s, 30% of Colombian salaried workers reported having a fixed-term job. See Jaramillo (2013) for the Peruvian case.

The evolution of temporary employment in Latin America differs markedly across countries and is related to each country's path in labour market reforms over the past two decades. Indeed, a number of countries implemented reforms liberalising the labour market to different degrees during the 1990s, and in particular liberalising the use of temporary forms of employment (fixed-term contracts and temporary work agencies).

Figure 2 shows the evolution of temporary employment for selected Latin American countries and illustrates the different paths taken by different countries. Data is shown for countries where temporary employment shares can be estimated on the basis on available survey data[10]. While Brazil has maintained a low level of temporary employment throughout the period, Argentina liberalized the use of temporary employment contracts during the 1990s and re-regulated the labour market following the crisis of 2002. As a result temporary employment is on a declining trend. The Chilean labour market was liberalised in 1979 and the labour code remains based on the reforms undertaken during the Pinochet regime, despite some re-regulation (in particular the regulation of fixed-term contracts in 1990). Temporary employment in Chile is high relative to international standards and has remained high despite a dip associated with the international financial crisis at the end of the 2000s. The Peruvian experience mirrors that of a number of European economies, in that labour regulation is protective of workers in open-ended contracts but has been liberalised at the margins, resulting in a dramatic increase of temporary employment in recent years.

Figure 2 shows temporary employment as a share of salaried employment, which also includes informal salaried workers. The impact of including informal workers differs across countries, although the trends are not modified in the four cases presented. In Argentina and Brazil, formal employees are more likely to be in permanent relationships, and both countries have seen a reduction in informality during the period, but in both cases, the trend of temporary employment is also decreasing when limited to formal employees. In Chile, the share of temporary employment is lower among formal employees than among all employees. Indeed, a significant share of temporary employment is in the form of triangular employment relationships[11] (temporary work agencies and subcontracting relationships) some

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[10] Data are not strictly comparable: while data for Argentina and Brazil consider the open-ended nature of the job, data for Peru and Chile consider the open-ended nature of the contract.

[11] According to calculations based on CASEN data, in 2009 temporary employment in Chile amounted to 32% of salaried employment, of which fixed-term employment and task-based contracts contributed 13% each, with service contracts contribution 5%. Durán (*forthcoming*) reports a surge in agency work from 11% of employees in 2010 to 17% in 2012.

of which are themselves informal. Finally, in Peru, most informal workers have no contract at all, so that the share of formal workers with temporary contracts is even higher than shown (indeed, over 50% in 2010).

Figure 2: Share of temporary employment for selected Latin American countries

(2000-2012, in %)
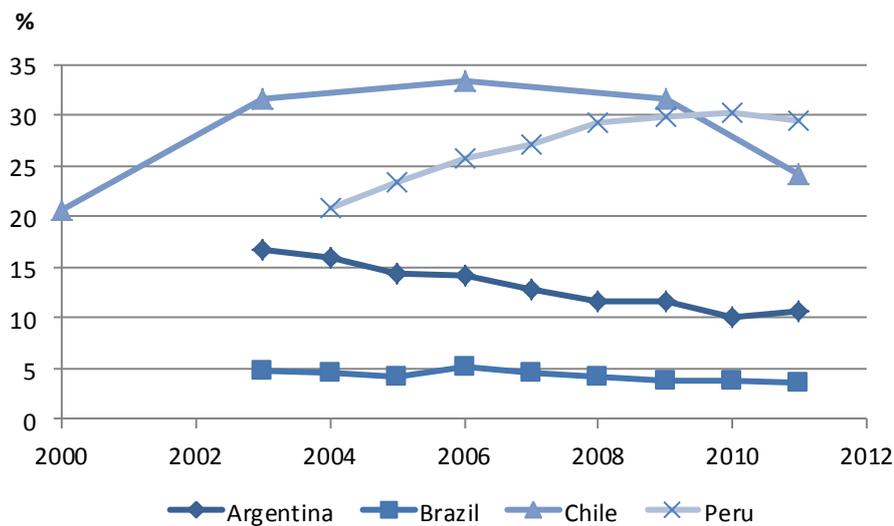
Sources: EPH (INEC) for Argentina (Q4 of each year), PME (IBGE) for Brazil (Q4), CASEN (MDS) for Chile, Jaramillo (2013) and ENAHO (INEI) for Peru

2.2 Characterisation of temporary jobs

Temporary jobs tend to exhibit less favourable conditions in general than jobs on open-ended contracts. Having two types of contract (temporary and permanent) can generate inequalities across workers on both types of contract, which may persist over time. According to segmentation models, those workers with permanent contracts, like those in the primary segment of the labour market typically enjoy better working conditions, get more promotional opportunities, receive relatively higher wages and are better protected in the case of dismissals; on the other hand, workers with temporary contracts like those in the secondary market tend to have "second best jobs" both in terms of employment conditions and job stability, and to be paid less. Other theoretical arguments suggest that temporary workers may actually receive higher pay than they would otherwise to compensate for any less

advantageous characteristics[12], which would be consistent with certain workers choosing such employment contracts. These compensating differentials do not seem empirically very important.

Those inequalities may arise from either statutory rules for entitlement to fringe benefits (e.g. temporary workers are *de jure* excluded) or from *de facto* conditions entitlements, for example when those eligibility conditions are formulated in terms of earnings thresholds, minimum duration of employment or minimum contribution periods[13]; as a result, those workers tend to have narrower (if not at all) access to social protection[14] and pensions schemes, working conditions. Temporary workers are for example excluded from paid vacations in Mexico[15]; branch or company collective agreements do not extend to temporary agency workers in Portugal, Germany or Switzerland[16]; workers in fixed-term contracts did not have access to unemployment assistance until 2009 and temporary workers in general have limited access to unemployment benefits.[17]

Another source of inequality relates to the legal gap in terms of job security since different employment protection legislation rules (EPL) govern the two different kinds of contracts as pointed out above. This EPL wedge triggers inequalities among workers regarding the dismissal probability, in particular in an economic downturn (Cahuc and Kramarz, 2004). Workers with a permanent contract, regardless their individual characteristics and productivity levels, are more likely to remain in their position, as employers will first adjust their workforce simply by not renewing temporary contracts when facing an adverse shock. Another form of inequality is unequal access to training. Firms will invest in human capital if they expect to benefit from productivity gains which will not fully

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[12] Wage formation theories based on the hypothesis of compensating differentials predicts thus that everything else controlled for and notably productivity, wage should be lower for permanent workers given greater employment stability.

[13] Therefore it would be relevant and important to conduct the analysis according to the different duration of contracts; and take into account the intensification of shorter duration of FT contracts.

[14] Entitlement to paid sick leave for instance is in most countries conditional on some minimum contribution period or on having earnings above a minimum threshold.

[15] The Mexican labour code (*Ley Federal del Trabajo*) grants paid vacation to workers with tenure of one year or more and to discontinuous and seasonal service providers (Art. 76 and 77), which excludes workers on fixed-term contracts for short periods.

[16] Temporary agency workers can be however covered by collective agreements if they apply to the agency or the temporary work sector. In Portugal, such agreements are rare, but equal pay provisions apply (Eurofound, 2009), in Germany, collective agreements cover the majority of staffing agencies, usually with less beneficial provisions than those of client companies (Spermann, 2011), in Switzerland, a cross-sectoral agreement was signed in 2011.

[17] While entitlement to unemployment insurance is a statutory right in most OECD countries, the ability to draw benefits is actually subject to either long contribution periods or to a minimum earnings threshold or an hours threshold

be compensated by wages increase. Hence the employment relationship between firm and worker should be long enough to compensate the costs of training (Wasmer, 2006). Evidence shows that temporary workers to receive considerably less employer-funded training: according to an OECD study covering twelve European countries, holding a temporary job would reduce access to training by 6 percentage points relative to an average access to training of 18 per cent (OECD, 2002), and 3.5 per cent in Chile, a significant magnitude as only 7 per cent of temporary workers receive employer-sponsored training in Chile (Carpio et al. 2011). Those inequalities seem to be even more pronounced when contracts are of short duration. Additional "non-wage" differences also include lower transitions from fixed-term to permanent jobs even if those mobility patterns vary considerably across countries: for EU countries, yearly transitions never exceed 55 per cent with very low levels in Portugal, Spain and France at around 12 per cent versus 40-55 per cent in the United Kingdom, Ireland, Austria, Denmark or the Netherlands (Boeri, 2011; OECD, 2006). Figures for Korea indicate that those yearly transitions are at about 15 per cent (Grubb, Lee and Tergeist, 2007) to 23 per cent (Lee, 2011).

As indicated before, the coexistence of different segments in the labour market involves wage differentials. While theoretical arguments are quite inconclusive regarding the impact of temporary employment on pay, empirical studies largely suggest that temporary workers are paid less than permanent ones on average, even when controlling for wage determinants such as education and tenure (Boeri, 2011). This is indeed the case in the majority of countries as workers on temporary contracts earn less than comparable workers on open-ended contracts. Table 1 below provides evidence on wage penalty for fixed-term contracts. Using micro-data from the European Community Household Panel and from the European Union Survey on Income and Living Condition, Boeri estimates the monthly wage premium provided by permanent contracts vis-a-vis temporary contracts for fifteen European countries. The wage regression is carried out over male dependent employment, controlling for education and tenure[18].

The table indicates that in all the selected European countries, workers on permanent contracts are paid, other things being equal, substantially more than workers on temporary contracts. The estimated wage premia are always statistically significant and range from 6.5

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[18] The following equation was estimated: $\log w_i = \alpha + \beta_1 EDU_i + \beta_2 EDU_i^2 + Y_1 TEN_i + Y_2 TEN_i^2 + \mu PERM_i + \varepsilon_i$ where w_i is monthly wage of individual i, EDU is years of schooling, TEN is years of tenure and PERM is the dummy taking the value one in case of permanent contracts and zero otherwise.

per cent in the United Kingdom to almost 45 per cent in Sweden. In the majority of the countries, the premium is around 20 -25 per cent.

Table 1: Wage premium for permanent contracts, selected European countries.

Country	Premium (%)	Country	Premium (%)
Austria	20.1 (***)	Italy	24.1 (***)
Belgium	13.9 (***)	Luxembourg	27.6 (***)
Denmark	17.7 (***)	Netherlands	35.4 (***)
Finland	19.0 (***)	Portugal	15.8 (***)
France	28.9 (***)	Spain	16.9 (***)
Germany	26.6 (***)	Sweden	44.7 (***)
Greece	20.2 (***)	United Kingdom	6.5 (*)
Ireland	17.8 (**)		

Note: (***) significant at 99%, (**) significant at 95%, (*) significant at 90%.

Source: Boeri (2011).

The empirical evidence points to a substantial wage premium for permanent contracts even if the estimates may significantly differ from one study to the other. Dekker (2002) finds evidence that of significant wage penalties for temporary workers in the Netherlands, Germany and the United Kingdom based on wage regressions estimated using national longitudinal data. Booth et al. (2002) find that temporary workers in Britain earn less then permanent workers with a wage premium of about 8.9 per cent for men and 6 per cent for women. Blanchard and Landier (2001) conclude that workers on fixed-term contracts earned on average about 20 % less than permanent ones in France. Hagen (2002) finds an even larger gap of about 23 percent in Germany, controlling for selection on unobservable characteristics while more recently Pfeifer (2012) finds a smaller premium of about 10 per cent still for Germany. Jahn and Pozzoli (2013) find wage penalties of 22% for men and 14% for women among temporary agency workers in Germany when controlling for self-selection into the sector. Finally, Houseman (1997) found that temporary workers (fixed-term contracts, on-call work, contracting out and seasonal workers) in the United States were paid significantly less than permanent ones.

3 Temporary contracts and wage inequality: a cross-country analysis

This section briefly describes trends in wage inequality during the past two decades, focusing on the diverging experiences of OECD and Latin American countries, and goes on to examine the link between inequality and the prevalence of temporary contracts empirically across countries with the use of aggregate data.

3.1 Trends in wage inequality

Income inequality has increased in OECD countries over the past twenty five years, reaching in some countries the levels seen just before the Great Depression of the 1930s. Income inequality also increased in many developing countries between the early 1990s and the late 2000s. In regional terms, income inequality fell in most of Latin America, but it remains the most unequal region in the world.

According to OECD data, the increase in inequality in most OECD countries responds to changes in the extremes of the household income distribution, with earnings among the 10% better paid workers growing more rapidly than earnings among the bottom 10% of workers, in some cases by a substantial margin[19]. This was however not the case in France and Spain, two countries of particular interest for this paper and where incomes at the bottom grew more quickly than those at the top. Part of the increase in inequality is concentrated at the very top, as documented by the increase in the income shares of the richest 1 per cent which in the United States grew from 9 per cent in 1976 to 20 per cent in 2011 (Alvaredo *et al.*, 2013). This pattern is also found in other English-speaking countries such as Canada and the United Kingdom but is much more muted in most of Continental Europe and absent in Japan (Atkinson, Piketty and Saez, 2011).

Inequality in household incomes depends on a number of factors on top of wage inequality. First, working time and wages determine the distribution of income from employment for employees. Second, employment and unemployment levels combine with the distribution of income from employment and that of incomes from self-employment to determine the dispersion of individual labour earnings. Third, household composition determines how individual earnings translate into household earnings. Fourth, income from

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[19] An example is that of the United Kingdom where real incomes of the top decile grew by 2.5% per annum between the mi 1980s and the late 2000s while those at the bottom grew at 0.9% per annum (OECD, 2011).

labour combines with income from other market sources (including capital income) to determine household market income. Finally taxes and transfers determine the distribution of household disposable income.

In practice, changes in the distribution of labour earnings account for the lion's share of the trend in household income inequality, because labour earnings make up most of household incomes[20]. Wage inequality is the most important determinant of inequality in labour earnings. The relative impact of working time and self-employment[21], differ across the main regions of interest, and are discussed below.

Figures 3 and 4 present the evolution of wage inequality for a selection of OECD and Latin American countries, as measured by the ratio of wages between the upper bound of the 9th decile of the distribution of earnings and that of the 1st decile of the earnings distribution (the D9/D1 ratio)[22].

OECD countries show a marked upward trend in wage inequality, with the exceptions of France, Spain and Germany in the years after reunification. This trend has been particularly strong in eastern European countries undergoing market reform during the early 1990s (OECD, 2011). In general, in 23 OECD countries, inequality in labour earnings has followed the trend of wage inequality. Indeed, self-employment contributes between 3% and 13% of gross labour income, and has modest effects on overall inequality. On the other hand, hours worked have fallen on average more at the bottom of the income distribution than at the top in most OECD countries, so that changes in working hours tend to exacerbate the impact of growing inequality in wages (OECD, 2011a).

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[20] In OECD countries, labour earnings make up over three quarters of household incomes (OECD, 2011a). In fact, the increase in the incomes at the very top in the United States is not driven by capital income but by earned income, although the returns on capital are exacerbating the trend (Alvaredo et al., 2013)

[21] Labour earnings include total salaried income (wages multiplied by working time) and income from self-employment.

[22] Wage inequalities are presented for full-time workers, to isolate movements in wages, which are the focus of this paper, from changes in working hours or in the status composition of employment.
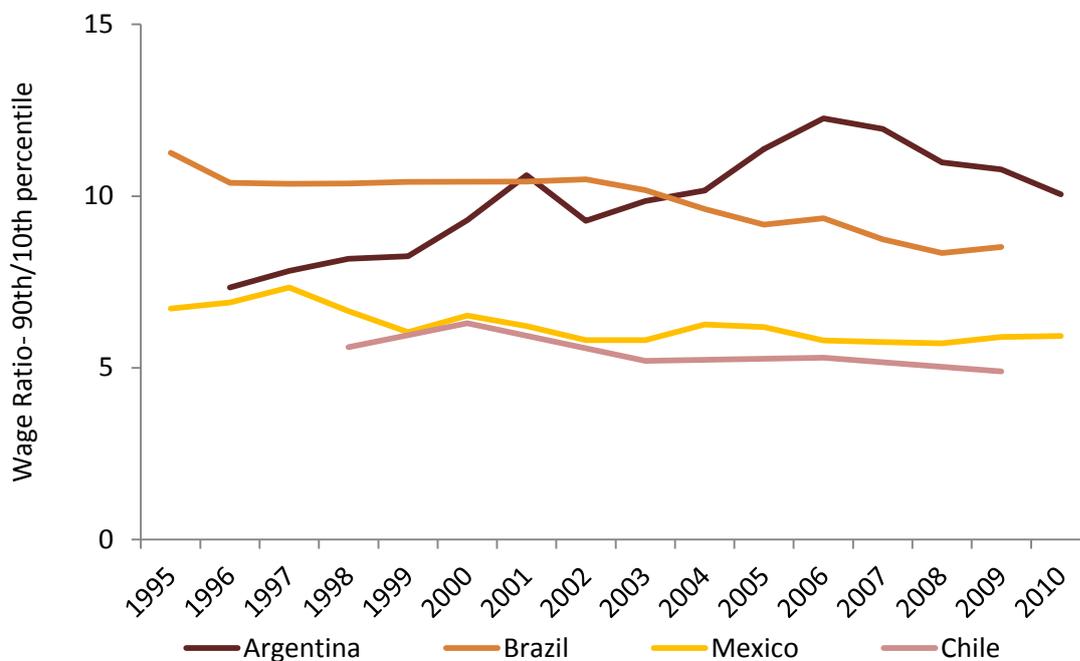
Figure 3 - Wage Inequality in selected OECD countries
1985 - 2010
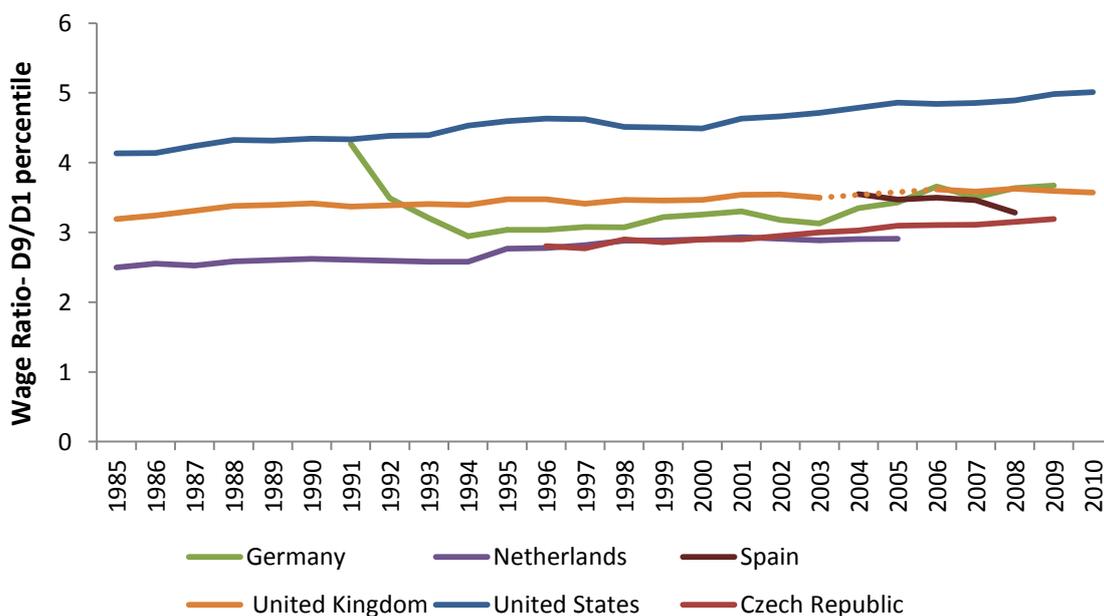
Source: OECD (2012), OECD.stat, (database)
Note: Broken line indicates use of different data series for the same country. For the United Kingdom series are splined.

Figure 4- Wage Inequality in Latin America

Source: ILO Global Wage Database

The declining trend of wage inequality in Latin America contrasts sharply with the experience of OECD countries. After increases in wage inequality during the 1990s in most of Latin America, wages in the majority of Latin American countries have become more equal during the 2000s, with the change concentrated in the latter part of the decade for some of the countries (Figure 4). The trend is the same if working hours are considered: the World Bank (2012) finds that inequality in labour earnings fell on average by 3.6 points for dependent employees for a set of 15 countries. Finally, in Latin American countries, self-employment is a more significant contributor to total income, contributing 21% of labour income in Argentina and over 30% in Brazil and Chile, for example. The fall in the share of self-employment has therefore contributed substantially to the fall in household income inequality (Keifman and Maurizio, 2012).

As discussed elsewhere[23], the fall in wage inequality in Latin America stems in part from the increased human capital in the workforce. The Latin American workforce became increasingly educated during the 2000s, with the share of the labour force with secondary education increasing by 7 percentage points. As a result, skills premia fell, driving wage inequality down (López-Calva and Lustig [2010], World Bank [2012]. But the fall in inequality was also driven by the creation of formal jobs and the strengthening of labour market institutions in several countries in the region -- in particular minimum wages and collective bargaining (Bertranou and Maurizio, 2011; Gasparini and Cruces, 2010).

3.2 Empirical evidence

The summary of the available evidence on the determinants of wage inequality suggests that it is driven by a number of factors, including those determining relative demand and supply of workers of different skill levels – which are influenced by macroeconomic performance, international trade and technological progress – as well as by institutional factors that mediate or remediate labour market inequality (OECD, 2011; Krugman, 2000; Kohl, 2003; Lopez-Calva and Lustig (2010)).

Labour market institutions play important roles in determining levels and trends in wage inequality. Koeninger *et al.* (2007) find that in OECD countries factors like union density, employment protection legislation, unemployment benefits and the size of minimum wages were important determinants of changes in wage inequality.

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[23] See *inter alia* López-Calva and Lustig (2010).

The experience of a number of Latin American countries is consistent with labour market institutions having a significant impact on wage inequality. A number of countries in the region carried out liberalising labour market reforms in the 1990s, particularly deep in Argentina and Peru, but also notable in Brazil, Colombia, Ecuador and Panamá (Vega, 2005), while policies to strengthen labour market institutions – by increasing the real value of minimum wages and supporting collective bargaining in particular -- were implemented in the 2000s[24].

Since workers on temporary contracts are on average paid less than workers on permanent contracts, institutional features allowing or even encouraging the use of temporary contracts will tend to generate wage distributions that exhibit more mass at the bottom and possibly a wider dispersion. The correlation between the share of temporary contracts and wage inequality supports a positive relationship between fixed-term contracts and inequality (Figure 5)[25].This simple exercise also shows that two groups of countries can be identified among OECD countries.

A first group includes countries with relatively low shares of temporary employment and the most unequal wage distributions among OECD countries. This suggests that a high share of temporary contracts is not necessary for high inequality nor are contractual conditions determining length of employment so relevant for wage dispersion in some institutional contexts. This is clearly the case of the United States, given employment at will, but also of the United Kingdom, where individual dismissals are lightly regulated especially for employees with less than two years' tenure, and where dismissals based on economic grounds are not considered unfair dismissals[26].

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[24] Argentina is a case in point: as a response to the 2001 crisis, a number of the liberal labour market reforms of the 1990s were repealed and labour market institutions strengthened, after which inequality fell considerably (see Gasparini and Cruces, 2010). The impact of the evolution of minimum wages in Brazil and other experiences in Latin America also concord with this view (Keifman and Maurizio, 2012; Bertranou and Maurizio, 2011)

[25] Data for Latin American countries in Figure 5 represent the share of fixed-term contracts out of all employees with contracts, as data on agency work is not available for most countries (see the data Appendix for details of sources). However, fixed-term contracts represent the great majority of temporary workers in those countries and the share of fixed-term contracts is therefore a reasonable proxy for the share of temporary employment in formal employment.

[26] The Employment Rights Act, as amended in 2012, provides for a "qualifying period of employment" of 2 years during which employees are excluded from protection against unfair dismissal. Moreover, the notice period (1 week) and severance pay (in the case of economic redundancy, 2 weeks) induce relatively small costs compared to other European countries (ILO, 2013a)

Figure 5 - Wage inequality and the prevalence of temporary employment
(2010 or closest available data for each country)
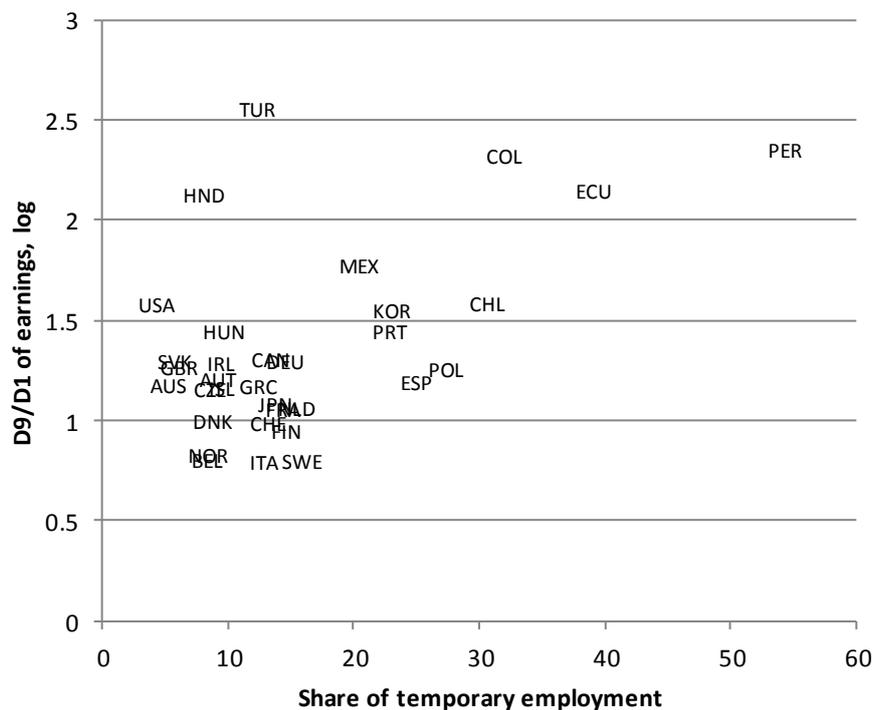
A second group of countries – which includes Korea, Portugal, Spain and Poland – exhibits high shares of temporary employment and above-average inequality[27]. In these terms, Mexico and Chile are close to this group, although it should be noted that both countries also have large informal labour markets which are likely to lead to high wage inequality on top of that driven by contractual differences in the formal sector. The same is true to an even greater extent of Colombia, Ecuador and Peru.

The positive correlation between the prevalence of temporary employment and wage inequality is therefore driven by a relatively small group of OECD countries, although the addition of Latin American countries strengthens the result. Given the number of factors, including other institutional factors that can drive wage inequality, a multivariate framework is more appropriate to explore the relationship between the prevalence of fixed-term contracts and wage inequality.

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[27] The average of the D9/D1 indicator for OECD countries in Figure 5 is 3.3, all four countries in this group have inequality above that level.

Wage inequality is considered to be jointly determined by the relative supply and demand for skills and by institutional factors (Koeninger *et al* (2007)). Institutional characteristics are correlated across countries; in particular, Bertola and Rogerson (1997) argue that countries with strict dismissal regulations also have wage-compressing institutions[28]. A first concern is that the correlation between the prevalence of temporary contracts and wage inequality is spurious and driven by other institutions, in which case conditioning on such institutions should weaken the relationship between temporary employment and wage inequality.

Table 2 presents the results from a regression of wage inequality on a number of determinants to examine the robustness of the relationship between the share of temporary employment and wage inequality. A number of institutional factors are included that have been found to be related to wage inequality (Koeninger *et al* (2007), OECD (2011)), as well as the skill endowment of the labour force. They include the existence and level of statutory minimum wages, the coverage of collective bargaining, the level of coordination of wage setting and the strictness of employment protection legislation. Detailed definitions and sources for correlates can be found in the appendix.

The key result for the purposes of this paper is the robustness of the relationship between wage inequality and the prevalence of temporary employment even when controlling for a series of other institutional determinants of wage inequality. The coefficient on the share of temporary contracts is quite stable and of the order of 1%, implying a quantitatively important relationship. As would be expected, a higher share of the workforce with post-secondary education lowers inequality. Among other institutional determinants, greater coverage by collective bargaining and greater wage coordination are also associated with less unequal wage distributions. Minimum wage indicators behave as expected when they enter on their own (column (2)) since countries with higher minimum wages have more equal distributions[29]. They have the reverse sign when all indicators are considered however, suggesting that some countries without minimum wages have other mechanisms to reduce inequality. Finally, the chosen indicator for Employment Protection Legislation (EPL)

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[28] The association suggested by Bertola and Rogerson (1997) would imply negative correlation between the share of temporary contracts and inequality if the use of temporary contracts is more likely when employment protection is high, however.

[29] Minimum wages enter the specification twice, once through their level and once through the existence of statutory minimum wages. This allows including countries that do not have minimum wages in the sample. To interpret the coefficients, consider the average of the minimum wage levels in the sample (0.35 of the mean)

reflects the protection of regular contracts only, to avoid endogeneity with the share of temporary workers. However, similar exercises (OECD, 2011a) have found the link between EPL and wage inequality to be driven mainly by the protection of temporary workers and its decrease during the 1980s and 1990s. The results are largely unchanged when time effects are included (column (8)) but are not robust to the inclusion of country effects (not shown). This is probably due to the small sample (only 19 countries are in the final sample for a given year) but also suggests that it is cross-country variation that drives the results.

An important limitation of the exercise presented in Table 2 is the potential endogeneity of the prevalence of temporary employment. Of particular concern would be the situation in which the wage distribution and the share of temporary contracts are jointly determined by relative demand and supply for skills but the share of temporary contracts has no bearing on wage inequality. This could be the case if workers with certain characteristics that determine their wages to be lower – for example lower skills – are more likely to receive temporary contracts regardless of the wages they actually receive.

The share of the workforce with postsecondary education accounts for the supply of skills, but no control for the demand for labour with different skills is included. If the share of temporary employment and wage inequality were jointly driven by relative demand for skills with no further interaction, an increase in the demand for low-skilled labour would increase the share of temporary workers and the return to those workers, which would tend to *compress* the wage distribution, lowering inequality, contrary to what is shown in Table 2.

The results in Table 2 are consistent however, with a situation in which low-wage workers receive temporary contracts and the share of temporary contracts and the wage distribution are jointly determined. In this case a causal interpretation of the coefficient on the share of temporary contracts is not warranted, but the association between the prevalence of temporary contracts and wage inequality is not spurious – even though this exercise cannot shed light on the direction of causality: whether workers receive lower wages because they are in temporary contracts or are more likely to be on temporary contracts because they receive lower wages.

Table 2 -Institutional determinants of wage inequality

Panel regression, OECD countries, 2000-2010

Dependent variable: Natural log of D9/D1 of earnings

	Pooled panel, OLS							Year fixed effects
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Share of temporary employment (%)	0.006	0.002	0.006	0.006	0.007	0.007	0.009	0.009
	[2.25]**	[1.08]	[2.30]**	[2.16]**	[2.85]***	[2.39]**	[3.18]***	[2.94]***
Minimum wage (share of mean)		-1.011					0.941	1.013
		[4.24]***					[2.54]**	[2.70]***
Country has minimum wage		0.64					-0.294	-0.321
		[6.93]***					[1.85]*	[1.99]**
Workforce with postsecondary education (%)			-0.002				-0.004	-0.005
			[1.42]				[2.38]**	[2.70]***
Coverage of Collective Bargaining				-0.005			-0.005	-0.005
				[8.84]***			[5.93]***	[5.60]***
Wage coordination					-0.082		-0.028	-0.028
					[6.76]***		[1.81]*	[1.79]*
EPL Regular						-0.037	0.008	0.000
						[1.45]	[0.33]	[0.00]
Observations	203	203	203	117	197	167	109	109
R-squared	0.02	0.42	0.03	0.41	0.21	0.04	0.57	0.61

Notes: Absolute value of t statistics in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%

Figure 5 suggests that the consideration of countries beyond advanced economies should strengthen the results. To this end, the sample is extended to include not only advanced OECD economies, but also Chile, Colombia, Ecuador, Honduras, Korea, Mexico, Peru and Turkey (Table 3). The extension of the sample is an innovation of this paper relative to similar exercises in the literature (Koeninger *et al* (2007), OECD (2011a)).

The extension of the sample imposes significant constraints on the indicators used. The strictness of Employment Protection Legislation is measured by the cost of severance pay only, following OECD methodology[30] (Venn, 2009). The coverage of collective bargaining emerges from multiple sources. Finally, the indicator for the degree of wage coordination is drawn from Visser (2011) and covers mostly OECD countries, which explains the fall in the sample size in column (6). Moreover, the paucity of comparable data on the prevalence of temporary employment for Latin American countries means that the analysis is only cross-sectional.

Table 3 -Institutional determinants of wage inequality

OLS regression, latest available year for each country

	Dependent variable: Natural log of D9/D1 of earnings					
	(1)	(2)	(3)	(4)	(5)	(6)
Share of temporary employment	0.02	0.02	0.02	0.02	0.01	0.00
	[3.50]***	[4.23]***	[3.41]***	[2.19]**	[1.29]	[0.30]
Workforce with postsecondary education (%)		-0.01	-0.01	0.00	-0.01	0.00
		[1.57]	[1.55]	[0.68]	[1.29]	[1.25]
Minimum wage (% mean)			0.09	-0.29	0.52	-0.02
			[0.16]	[0.32]	[0.61]	[0.05]
Country has minimum wage			0.29	0.42	-0.19	0.11
			[1.05]	[0.95]	[0.43]	[0.40]
EPL (cost of severance pay)				0.07	0.04	-0.02
				[0.81]	[0.51]	[0.43]
Collective Bargaining coverage					-0.01	-0.01
					[3.05]***	[3.13]***
Wage coordination						0.00
						[0.11]
Observations	33	32	32	30	29	25
R-squared	0.28	0.41	0.51	0.49	0.61	0.66

Notes: Absolute value of t statistics in brackets, * significant at 5%; ** significant at 1%

Despite the limitations, the multivariate analysis confirms the observations made with respect to figure 5. The relationship is stronger when non-OECD countries are included; the coefficient on the share of temporary employment is larger and stable, with the exception of the last specification, in which the addition of the wage coordination measure significantly reduces the sample size.

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[30] The indicator used in the regression in Table 2 corresponds to the Level 3 indicator "Notice and severance pay for no-fault dismissals" for regular contracts. The data are drawn from Aleksynska and Schindler (2011).

The empirical evidence therefore points to the existence of a relationship between the prevalence of temporary employment and wage inequality across countries. However, it also suggests that, while the relationship is positive when a wide set of countries is considered, it is negative among certain groups of countries (in particular those with relatively fewer short-term contracts). Moreover, while the relationship is empirically stable to the inclusion of a number of institutional determinants, it breaks down when certain elements of wage determination are included. Differences across countries in the role of temporary contracts and the wage penalty they command may be a possible explanation for these results, one which the data available across countries and the methods used in this section cannot resolve.

4   Temporary contracts and wage distributions

The analysis in section 3 suggests substantial heterogeneity across countries in the implications of the prevalence of temporary contracts for wage inequality. There is of course heterogeneity in the size of wage premia associated with permanent jobs (Table 1). However, the observed differences in average wage premia are positively correlated with the share of temporary work despite a few clear outliers (Figure 6)[31]. This would tend to confirm a positive relationship between temporary contracts and inequality even at low levels of prevalence. Furthermore, differences also arise across countries in the way fixed-term contracts expansion may change wage distributions. This section analyses the shape of wage profiles within countries with the use of survey data from the European Working Conditions Survey wave 5 (Eurofound, 2012). Wages among temporary workers are found to be both lower, on average, than those of permanent workers (consistent with the evidence summarised in section 2.2). They are also found to have lower dispersion in the majority of the countries studied. Scalar measures of inequality may therefore be limited in accounting for the impact of fixed term contracts on wage distributions, the shapes of which are then studied for selected countries.

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[31] The correlation is 0.24 with the countries shown in the figure, but becomes 0.71 if Portugal and Spain are excluded.

Figure 6- Prevalence of temporary work and wage premium of permanent contracts

OCED countries, circa 2010
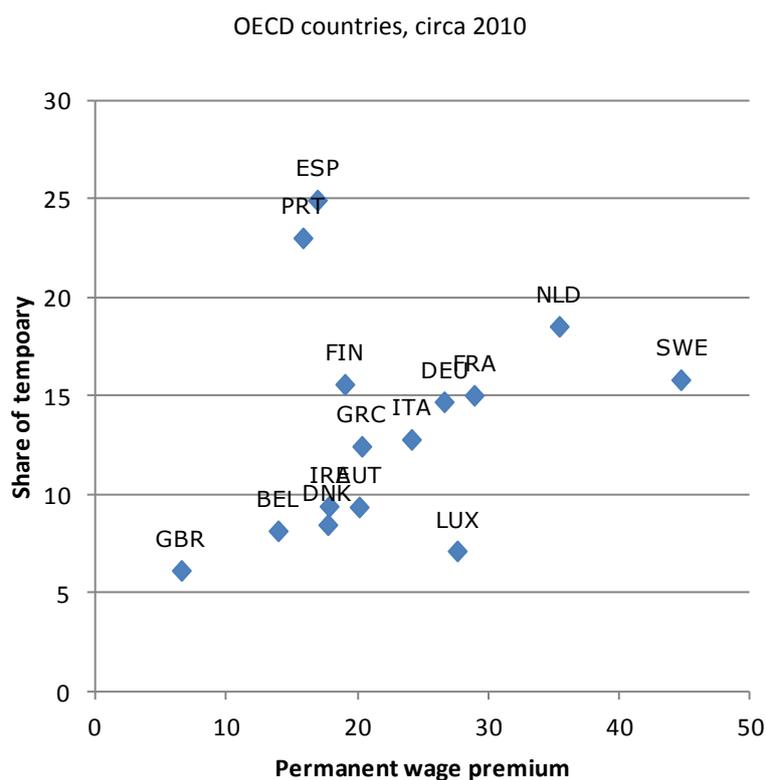
Source: Boeri (2010) for wage premia and OECD for Share of temporary workers

4.1 Channels of transmission and inequality decomposition

As stated earlier the implications of the prevalence of temporary employment for wage inequality depend on several factors: first, the existence of a wage gap between temporary and permanent contracts; second, whether wage gaps are constant across the wage distribution; third, whether a selection process exists by which the most productive or least productive workers receive temporary contracts which would determine whether most wage gaps are indeed large; fourth, whether the increase in temporary employment results from a substitution of temporary jobs for permanent jobs for workers with similar characteristics or from entry of hitherto excluded workers into employment – most likely towards the bottom of the distribution.

Regarding the first factor, section 2 has presented evidence of the existence of wage gaps in a large set of countries. This implies that wage distributions will differ for temporary workers. When most temporary contracts are substituting for open-ended contracts in the same jobs, the distribution of wages for temporary workers would be expected to resemble that of permanent workers shifted to the left to account for the wage penalty. However,

evidence on wage gaps, including on the regressivity of wage gaps (see Fournier and Koske, 2012), suggests that there is a selection mechanism at work in most countries by which lower-earnings workers are more likely to suffer a wage penalty – and possibly more likely to be in temporary contracts as well. This selection mechanism will lead to wage distributions for temporary contracts which have greater dispersion than those for permanent contracts. This finding also provides support to the existence of segmentation in labour markets: In the absence of labour market segmentation, the lower protection of fixed-term contracts would translate into *positive* wage gaps in favour of holders of fixed-term contracts, conditional on their skills and experience.

Finally, the integration of otherwise excluded workers in labour markets would tend to increase the mass at the bottom of the earnings distribution – since it would be expected that workers were excluded due to their relatively low productivity and hence low earnings potential.

The decomposition of wage inequality by contractual status (Table 4) provides interesting information on the relative weight of the different effects on wage inequality, as measured by the Mean Log Deviation (MLD) of monthly wages. The table presents the decomposition of the inequality into *between* and *within* components[32] for thirteen selected countries out of the thirty-four available in the European Working Conditions Survey 2010. The MLD is chosen as the measure of inequality because it has the advantage of being additively separable into these two components, unlike other usual indices of inequality such as the Gini coefficient, which is presented for ease of reference[33]. The MLD is chosen over other indices with the same property because it is more sensitive to changes at the bottom of the distribution, where most of the differences are expected to take place.

Table 4 - Decomposition of inequality by contractual status
Selected countries, 2010, male full-time workers

	Inequality as measured by	Mean Log Deviation decomposition	Wages of temporary	Share of temporary

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[32] The *between* component reflects the inequality that originates in differences between averages for permanent and temporary workers, while the *within* component reflects differences among (respectively) permanent and temporary workers.

[33] The correlation between the two inequality indicators over all 34 countries is 0.97, so that the two scalar indicators summarise the same information.

Country	Gini	Mean Log Deviation (MLD)	Between component	Within component	Within Temporary	workers relative to employees	workers (%)
Belgium	0.18	0.06	0.001	0.06	0.07	0.88	9.3
Czech Republic	0.18	0.05	0.001	0.05	0.07	0.90	10.3
Denmark	0.26	0.12	0.010	0.11	0.06	0.67	9.1
Finland	0.18	0.05	0.001	0.05	0.04	0.86	7.6
France	0.22	0.08	0.004	0.07	0.08	0.81	11.1
Germany	0.22	0.09	0.019	0.07	0.10	0.70	9.1
Italy	0.15	0.04	0.004	0.04	0.01	0.80	9.0
Netherlands	0.19	0.06	0.002	0.06	0.09	0.89	8.3
Norway	0.16	0.04	0.003	0.04	0.04	0.95	7.9
Poland	0.22	0.09	0.006	0.08	0.08	0.86	20.0
Portugal	0.22	0.07	0.004	0.07	0.07	0.84	16.2
Spain	0.23	0.08	0.007	0.07	0.06	0.82	19.9
United Kingdom	0.27	0.13	0.000	0.13	0.11	1.07	7.1

Source: Authors' estimates based on European Working Conditions Survey data.
Note: The share of temporary workers reported is that estimated on the basis of the EWCS 2010 data, relatively small samples imply rather large confidence intervals, which account for the difference between the estimates presented in Table 4 and values for the share of temporary workers presented in sections 2 and 3.

The decomposition exercise confirms that the wage gap between temporary and permanent contracts plays a limited role in determining individual wage inequality. The wage gap is responsible for the between component, which is an order of magnitude smaller than the within component. A second result is that the relative dispersion of wages of fixed-term and permanent contracts differs across countries. The column displaying the MLD for fixed-term contracts highlights this, when compared to the within component for the whole distribution[34] (given the relatively low shares of fixed-term contracts and the very low contribution of the between component, the within component is dominated by inequality among permanent workers).

The results show that wage distributions for fixed-term contracts are particularly concentrated in Finland, Spain and especially Italy, while they are significantly wider than those of permanent contracts in Belgium, the Netherlands and Germany. In the remainder of countries, the differences are smaller. It should be noted that if two distributions have identical values for within-group MLD, the one with the lower mean will appear to be more concentrated in an absolute scale (such as a linear monetary scale), since the MLD is multiplicatively invariant. This means that the above analysis may in fact understate the high concentration of fixed-term wages in cases like Italy.

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[34] Note that the "within component" is the weighted sum of the MLD for the two groups where the weights are the proportions of each type of contract among dependent workers.

Finally, Table 4 presents gross wage gaps expressed in terms of the ratio between average wages among fixed-term workers and the whole sample. These data paint a picture that is consistent with the variation in wage gaps discussed in section 2. Interestingly wage gaps are very low in a number of countries where the dispersion of wages between the two groups are also similar as in the case of Norway. In those cases contractual status seems *not* to matter for inequality. In other cases, like in Spain or Italy, significant wage gaps and a narrower distribution for fixed-term contracts suggest that they are concentrated at the bottom of the wage distribution. In a third set of countries, exemplified by Germany, wage gaps are small and the dispersion of wages among fixed-term contracts is high. As a result, the prevalence of fixed term contracts is an important driver of inequality in the latter two groups of countries.

4.2 Beyond wage gaps: distribution of temporary wages

The previous analysis confirms that the impact of temporary contracts on the shape of wage distributions differs across countries. Using monthly wage data from the European Working Conditions Survey, a visual analysis of distributions confirms the conclusions drawn from the inequality decomposition.

Figure 7 illustrates four cases found among the thirty-four countries covered in the EWCS data. Most other countries reviewed in table 4 correspond to one of these cases, as do the majority of countries in the data. In a few cases the prevalence of fixed-term contracts is low and sample sizes are therefore insufficient for analysis of this kind (Austria, Sweden), while in a number of other cases, other non-standard forms of employment (apprenticeships, informal work) are more prevalent, so that the role of temporary contracts is less important (Greece, Ireland, Turkey). The figure shows kernel density estimates of (the logarithm) of monthly wages. The sample is restricted to male full-time workers so as to isolate the role of temporary contracts form that of other non-standard forms of employment (in particular part-time employment). Density plots are weighted by the share of the labour force they represent so as to provide a visual cue of their weight in the wage distribution.

Figure 7-Kernel density estimates of wage distributions

Selected countries, 2010, male full-time workers
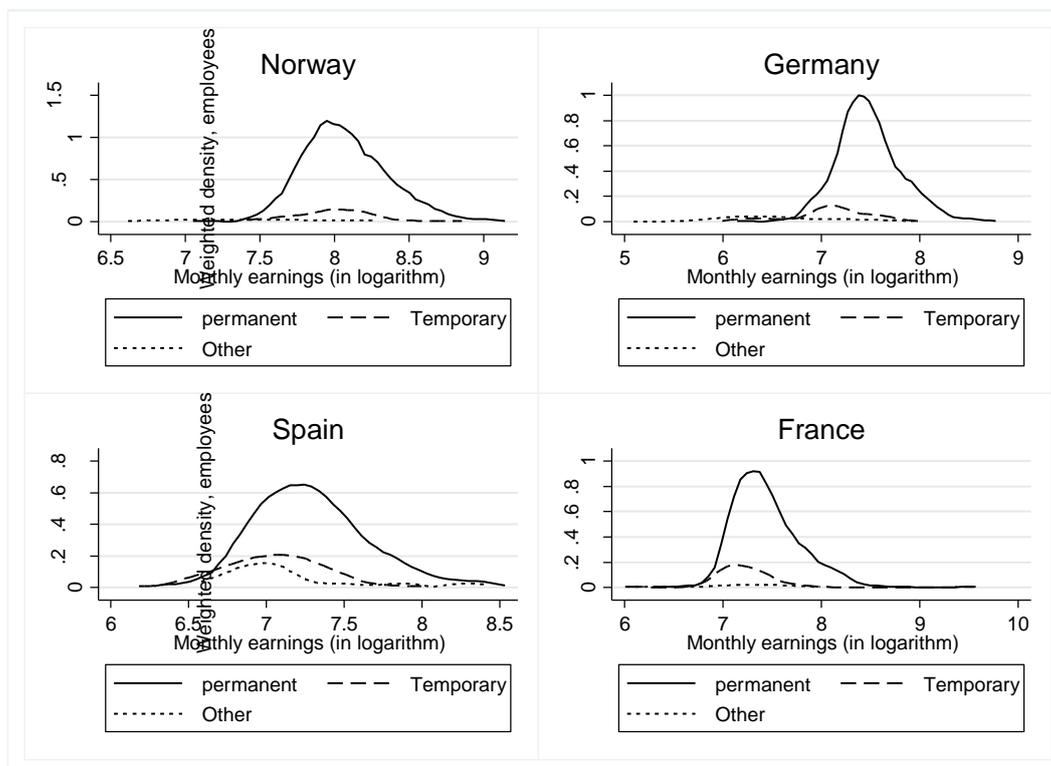
Source: Authors' estimates based on European Working Conditions Survey data.

In the first case, which is illustrated by Norway, wage gaps are very low (there is no gross wage gap in the data for Norway in this case) and the distribution of wages among temporary contracts mimics that of the distribution of wages among permanent workers. The distribution in the United Kingdom (not shown in figure 7) follows a similar pattern.

The second case is exemplified by Germany and includes Denmark. In this case, there is also a small average wage gap but a wider distribution of earnings among temporary workers. The absence of statutory minimum wages in both countries explains the wide variation in wages at the bottom.

The third case corresponds to Spain, Portugal and Poland, three countries with significant shares of temporary contracts. Temporary workers are concentrated towards the bottom of the distribution. This is due in part to the absence of temporary workers at the top. A detailed analysis shows that the bottom of the distribution is largely made of temporary workers in all three countries, so that the distribution of temporary wages is heavily skewed to the left, that is, concentrated at the bottom of the range. This behaviour is potentially

driven by minimum wages being binding in particular for this category of workers, so that a substantial proportion of temporary workers earn wages at or close to the minimum wage, while they are not so important for permanent workers.

The fourth and final case is illustrated by France and also includes Italy. In these two countries, the wage distribution for permanent workers is also skewed to the left, compressed clearly in the case of France by relatively high minimum wages relative to the average wage.

Overall the analysis of the shape of wage distributions shows that only in a few countries (e.g. those in the first group) fixed-term contracts *are not* systematically associated with low-paid work. In fact, the similarity between unconditional wage distributions suggests that fixed-term contracts do not play a screening role in those countries either as otherwise, workers with less experience and tenure and therefore lower wages would tend to drag the distribution down. In other countries, temporary work is *largely* associated with low-paid work and the influence of fixed-term work in the wage distribution depends on the existence of other institutions that limit downwards wages adjustment. In their absence, such as in the German[35] or Danish cases, wage distributions are very wide for temporary workers.

5 Using temporary contracts: legal framework and needs for temporary jobs

5.1 Regulation on temporary employment

The regulation of the working conditions of temporary workers is one possible policy instrument to rationalize the use of temporary contracts and prevent them driving wage inequality upwards. A glance at the intensity of regulation across different dimensions of the legislation governing fixed-term contracts, such as the valid reasons for using those contracts, the maximum number of their successive use, etc. as summarised for example by the OECD EPL index does not help mapping out countries along the lines described above: Norway, France or Spain which illustrated different cases, all have for instance very high (protective) legislation governing temporary contracts. In a scale from 0 (least protective) to 6 (most protective) Norway scores 3.42, France 3.75 and Spain 3.17 (respectively), all of which are high against the OECD average of 2.08 (OECD, 2013a).

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[35] A statutory minimum wage is foreseen to be enforced the first January 2015 in Germany.

There are two reasons why such measures of the intensity of regulation are insufficient: First, because they do not take into account that different types of regulation seek to achieve different outcomes (for example limiting the use of temporary contracts or protecting workers on temporary contracts). Second, because they cannot account for the impact of other labour market institutions, in particular wage-setting institutions.

Three policy orientations are particularly salient: regulation governing termination of employment, regulation concerning the uses of temporary contracts and the principle of equal pay for work of equal value. In what follows, key international instruments relative to these policy orientations are presented[36].

The relevant international labour standard regarding termination of employment is the Termination of Employment Convention, 1982 (No. 158). Its scope is however limited by two factors; this Convention has only been ratified by 36 countries and it provides for countries to exclude fixed-term and task-based contracts from the application of the provisions implementing the convention, a provision implemented by almost all countries[37]. Although national legislation typically provides employment against unfair dismissal and other forms of employment protection to fixed-term workers, the absence of international law on the subject permits national legislation to lower this protection substantially for workers on fixed-term contracts.

Regulation limiting the condition and purpose of use of temporary contracts is by far the most common. Convention, 1982 (No. 158) and the Termination of Employment Recommendation, 1982 (No. 166) do address the issue of fixed-term work in calling for safeguards to prevent that fixed-term work is used to go around the provisions of Convention 158.

The range of legally acceptable uses of fixed-term contracts varies substantially from country to country. In most countries fixed-term contracts can be used for temporarily replacing a worker on leave and for seasonal or time-bound tasks. In a number of countries, including Turkey, Brazil, France or Mexico, the use of a fixed-term contract is only possible when justified by such "material" or "objective" criteria, although the scope of the criteria and their application also vary. In contrast, other countries (including Germany, the United

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[36] The analysis of the implementation of such policies in individual countries is beyond the scope of this paper.
[37] The two exceptions are Bosnia and Herzegovina and Cameroon.

Kingdom or the Netherlands) allow hiring on fixed-term contracts with no restrictions of purpose. Likewise, the use of temporary agency workers is typically restricted to performing tasks outside the "core" business of the user firm (OECD, 2013a). Other restrictions on use include limits on the number of renewals or the total length of employment under these contractual forms.

Comparatively, regulation on equal pay tends to be less clearly binding across contract types. Although they establish the principle of equal pay for work of equal value, international labour standards regarding equal pay do not explicitly require equal treatment or equal pay for equal work regardless of the contractual arrangement. The Equal Remuneration Convention, 1951 (No. 100) calls for rates of remuneration established without discrimination based on sex (Art 1), while the Discrimination (Employment and Occupation) Recommendation, 158 (No. 111) lists a number of dimensions of discrimination (race, colour, sex, religion, political opinion, national extraction, and social origin).

There exist examples of more direct approaches. EU Council Directives 1999/70/EC and 2008/104/EC, which govern fixed-term contracts and temporary work agencies (respectively), set out equality principles. Both directives introduce the principle of equal treatment, in one case of fixed-term workers with comparable permanent workers, in the other case of workers from temporary work agencies with the treatment they would receive had they been contracted directly by the user firm. However, in particular in the case of temporary agency work, there are a number of derogations, including when temporary workers have open-ended contracts with the temporary work agency[38] (a common practice in Austria and Germany, see [OECD, 2013a]), when collective bargaining sets out conditions of work for temporary agency workers, and when a national agreement with the social partners sets conditions for temporary workers (Petrylaite and Kuoras, 2012). Such derogations help explain the wide range of wages for temporary workers in Norway and Germany where they are extensively used. However, they apply to temporary work agencies only, and these still represent a small share of temporary workers.

Equal pay legislation appears however insufficient to tackle the inequality-increasing effect of temporary work. In the case of temporary agency work, the derogations have been extensively used in European countries. In the case of fixed-term work, the reasons are less clear. It should be noted that certain sectors and occupations (notably elementary occupations

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[38] This exception applies to pay only, not to other working conditions.

in agriculture, construction and certain services) have very high proportion of fixed-term workers, which is likely to make it difficult in practice to implement equality principles.

5.2 The different roles of temporary jobs across labour markets

The different patterns of inequalities identified across countries in the previous sections are likely to reflect the differences in the functions and uses of forms of temporary employment in labour markets. Overall, the uses of temporary contracts will depend on the legal circumstances for which such contracts are allowed as discussed above, as well as the functions they actually fulfil which are driven by either sector composition or screening process. There are multiple *de facto* business reasons for the use of both fixed-term and temporary agency work, and they are similar between the two types of temporary work. The analysis of Spermann (2011) for the reasons to use agency work (in Germany) and that of Portugal and Varejão (2009) for the use of fixed-term contracts in Portugal, largely overlap. On top of the response to short-term needs, they include lowering both non-wage and wage costs (the latter especially for temporary work agencies), avoiding dismissal protection and as screening devices for prospective permanent employees.

These motivations coexist in practice. Portugal and Varejão (2009) find evidence of screening behaviour but also that uncertainty and labour costs associated to permanent positions play an important role. Beckmann and Kuhn (2012) examine strategies directly for German firms using temporary work agencies and find that 19% of firms using temporary work agencies did so in response to fluctuations in demand and that 14% promoted at least one agency worker to a permanent position, showing the screening role of temporary work. The motivations for 74% of firms are not explored, but the categorisation above points to cost-saving measures.

The relative importance of reasons for using temporary work is a critical determinant of the link between temporary work and wage inequality. If used as a screening device, temporary workers will tend to have lower wages (because they tend to be younger and have less experience) but the gap need not grow over time. If used as a cost-reduction strategy, the use of temporary work is likely to result in labour market segmentation and to lead to inefficiently high turnover, with the ensuing shortfall in human capital and firm-specific knowledge accumulation.

What seems to matter to understand the relationship between temporary contracts and inequality is the existence of contractual segmentation between temporary and permanent contract labour markets. The presence of fixed-term workers relatively high in the wage distribution in the third group (Spain, Portugal and Poland) is at odds with fixed-term contracts playing a screening role, as is the persistence of wage gaps when experience and skills are controlled for (Boeri, 2011). Labour market segmentation is likely to increase the unequalising effect of fixed-term contracts, especially if returns to experience are lower among fixed-term workers. Further research would be necessary (in particular a dynamic analysis of individual transitions on the labour market) to investigate the role of contractual segmentation on inequality.

6   Concluding remarks

This paper has shown how the holders of jobs that are governed under temporary contracts rather than standard open-ended contracts are disfavoured in terms of labour market outcomes in a number of ways, including sizeable wage penalties. Moreover, the prevalence of such contracts has increased in the past 25 years, not only in Southern Europe, where it has been the focus of much political and economic debate, but also in other OECD countries, and in a number of Latin American countries.

The cross-country evidence presented shows that countries with a greater share of temporary employment are also more likely to exhibit greater wage inequality, even when other institutional factors are considered. This is all the more true, when data for a number of Latin American countries is included, a significant contribution of this paper to existing analyses.

The increased use of fixed-term contracts over the last decades is not likely to be the main cause of rising wage inequality in OECD countries. Indeed, wage inequality within jobs with either fixed term or open-ended contracts remains an order of magnitude larger than the inequality implied by the wage differentials observed between fixed-term and permanent contracts.

An examination of wage densities shows that the contribution of fixed-term contract prevalence to inequality takes different forms in different countries. With few exceptions, the distribution of wages for fixed-term contracts is more concentrated at the bottom. However,

its shape and therefore its contribution to overall inequality depends critically on the role played by other labour market institutions, in particular wage setting institutions such as collective bargaining and minimum wages. It also depends on whether the introduction of fixed-term contracts allowed the creation of more jobs for certain categories of workers.

Nevertheless, the differences in labour market outcomes for workers in fixed-term contracts relative to workers on regular contracts raise important fairness concerns. Even more so if there is labour market segmentation between these two groups. Such segmentation would imply a growing divide, as those in dead-end fixed term jobs are unable to reap the full benefits of on-the-job training, or receive the same returns to experience. Whether segmentation happens also along occupation or sectoral lines is particularly important to determine the applicability of equal pay for equal work principles and legislation, which will me more difficult to enforce if fixed-term jobs are concentrated in sectors or occupations where comparable tasks are not carried out by regular employees.

An analysis of the dynamic impact of labour market segmentation and in particular contractual segmentation on inequality is beyond the scope of this paper, but would throw light on the degree of labour market segmentation. The results in this paper have highlighted the heterogeneity in the role played by fixed-term contracts in determining wage distributions, a dynamic analysis would also help understand whether those patterns are stable and whether they are sustainable economically or socially.

Appendix 1
Data sources

Wage inequality data used in section 3, including in the econometric exercises presented in Tables 2 and 3 are drawn from multiple sources. D9/D1 ratios for OECD countries are drawn from the OECD Income Distribution Database (OECD, 2013b) when available as are data for China, India and South Africa . Data for non-OECD countries, Chile, Mexico and Turkey are drawn from the ILO Global Wage Database 2012 (ILO, 2012).

Wage inequality decompositions and kernel density estimates presented in section 4 are calculated by the authors on the basis of microdata of the European Working Conditions Survey 2010 (Eurofound, 2012), made available through the UK Data Service. Access to the UK Data Service through the UK Data Archive is gratefully acknowledged. The corresponding question relates to net earnings, but only data on employees is used for the calculations shown in section 4.

Temporary employment prevalence data comes from multiple sources. Data for OECD countries comes from the OECD Labour Force Statistics. Definitions are homogeneous for most EU countries and the data sourced from the European Labour Force Survey. When data is presented only for EU countries, the original source (Eurostat) is cited, rather than the OECD Labour Force Statistics. Definitions for other countries vary as indicated by the dataset. Details are available in OECD (2013c).

Temporary employment prevalence data for countries not covered by the OECD Labour Force Statistics come from multiple sources. Data for Guatemala are drawn from the published results of the *Encuesta Nacional del Empleo e Ingresos – ENEI – 2012* (INE, 2012). For the remaining Latin American countries, data used in section 3 are calculated by the authors on the basis of the following survey data: *Gran Encuesta Integrada de Hogares 2012* (DANE, 2012) for Colombia; the *Encuesta de Condiciones de Vida 2006* (INEC, 2006) for Ecuador; *Encuesta Permanente de Hogares de Propósitos Múltiples 2007* (INE, 2007) for Honduras; the *Encuesta Nacional de Hogares sobre Condiciones de Vida y Pobreza – ENAHO 2011* (INEI, 2011) for Peru. In all cases, the data represent workers in fixed-term contracts as a share of workers who have contracts and therefore do not include informal employment.

Trends shown in Figure 2 for Latin American countries are based on data calculated on the basis of multiple waves of household surveys: *Encuesta Permanente de Hogares (EPH)*, for Argentina; *Pesquisa Mensal de Emprego (PME)* for Brazil, *Encuesta de Caracterización Socioeconómica (CASEN)* for Chile and *Encuesta Nacional de Hogares sobre Condiciones de Vida y Pobreza – ENAHO 2011* (INEI, 2011) for Peru.

Other variables used in the multivariate regressions presented in Tables 2 and 3

Minimum wage data (both the existence of a statutory minimum wage and its level relative to mean wages) are drawn from the ILO Global Wage Database (ILO, 2012)

Skills in the workforce are measured by the share of the workforce with postsecondary education as source from OECD for OECD countries and from the World Development Indicators (World Bank, 2013) for non-OECD countries (in Table 3)

Coverage of collective bargaining is drawn primarily from the ILO (ILO, 2013b) and completed by adjusted coverage (variable AdjCov) as found in the Database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts (ICTWSS) version 3.0 (Visser, 2011)

Wage coordination is variable WCOORD from the ICTWSS (Visser, 2011) and measures coordination in a 5-point scale with higher figures representing higher levels of coordination in wage-setting.

Employment Protection Legislation is measured according to the OECD EPL database. The regression in Table 2 uses EPL for regular workers (version 1). This is a summary indicator ranging from 0 (least) to 6 (most) regulated. The indicator combines data on layoff procedures, notices and severance pay and the difficulty of dismissals (see Venn (2009) for details). Table 3 uses the sub-indicator for "Notice and severance pay for no-fault dismissals" available for OECD countries in the OECD EPL database and extended by the authors for the remaining countries on the basis of data provided by Aleksynska and Schindler (2011).

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