The Cost of Flexibility at the Margin. Comparing the Wage Penalty for Fixed-Term Contracts in Germany and Spain using Quantile Regression.

Antje Mertens
(Max Planck Institute for Human Development, Berlin)
Vanessa Gash
(Max Planck Institute for Human Development, Berlin)
Frances McGinnity
(Economic and Social Research Institute, Dublin)

April 2005

Abstract

Individual country analyses in both Germany and Spain have highlighted the negative consequences of fixed-term employment for individuals (Mertens and McGinnity, 2004; Jimeno and Toharia, 1993; De la Rica and Felgueroso, 1999). This paper seeks to establish whether fixed-term jobs carry the same penalty in two economies typically regarded as rigid: Germany and Spain. Recent discussion of fixed-term contracts also tends to ignore the considerable variation in the quality of these jobs and the wages associated with them. In this paper we use quantile regression to compare the wage effects of these contracts in both countries using GSOEP for Germany and ECHP data for Spain. We find that in Germany high-earning fixed-term workers experience a lower wage penalty than low-earning fixed-term workers. Moreover lower earning fixed-term workers in Germany also experience higher wage growth. In Spain, however, the wage penalty is larger and shows little variation across the distribution of wages. So while in Germany there is considerable variation in the consequences of fixed-term contracts, Spanish fixed-term workers experience a more punitive labour market. In conclusion we caution against generalising findings from Spain to other "rigid" European labour markets.

Correspondence: Antje Mertens, Max Planck Institute for Human Development, Lentzeallee 94, D-14195 Berlin. email: mertens@mpib-berlin.mpg.de or Vanessa Gash, Max Planck Institute for Human Development, Lentzealle 94, D-14195 Berlin. Email: gash@mpib-berlin.mpg.de or Frances McGinnity, Economic and Social Research Institute, Dublin 4. email: fran.mcginnity@esri.ie

1. Introduction

Fixed-term contracts were introduced in the mid-1980s in Spain and Germany – like in France and Italy - in an attempt to make the labour markets more flexible in the face of high unemployment. This was very much 'flexibility at the margin', in that it did not fundamentally challenge existing high levels of employment protection for permanent workers. While Spain and Germany share the character of a 'policy experiment' with regard to fixed-term contracts, Spain has experienced an explosive increase in fixed-term contracts (30% of dependent employment since 1990[1]), whereas by comparison, the increase in West Germany has been rather modest (around 7% of dependent employment in 2000).[2]

A key question in the debate on fixed-term contracts is: are the costs of this flexibility at the margin disproportionately borne by individuals on fixed-term contracts, leaving those in permanent contracts protected and unaffected? Recent research from Germany and Spain as well as a number of other European countries has examined the wages and conditions attached to fixed-term employment. In general researchers have found fixed-term workers to earn somewhat less than comparable permanent employees, though note that this wage differential falls when unobserved heterogeneity is accounted for (e.g. Booth et al., 2002; McGinnity and Mertens, 2004; Gash 2004). In this paper we re-investigate the outcomes of fixed-term contracts with respect to wages, comparing Spain and Germany using similar datasets and identical methodology.

Note that previous papers have tended to compare all fixed-term contracts with permanent contracts across the entire wage distribution, while this paper argues that it is important to consider the considerable heterogeneity of fixed-term contracts. We begin by comparing wage

---

[1] Fixed-term contracts account for between 30 and 32 % of total employment in Spain between 1990 and 2000 (Eurostat, 2001).
[2] Excluding apprentices and those on employment programmes for the unemployed (Rudolph, 2000).

levels within different quartiles of the wage distribution. Using quantile regression techniques, which have been applied to a wide range of economic issues we analyse whether the wage differentials between permanent and fixed-term workers previously found are a common phenomenon for all workers on this type of contract, or limited to workers in different parts of the wage distribution. A key question about the nature of fixed-term jobs is whether existing wage differentials can be compensated by rapid wage growth (Booth et al., 2002). For this paper an important question is whether those with high-wage fixed-term contracts experience more rapid wage growth or those with low-wage fixed-term contracts "catch up". In addition to this, we offer a tentative explanation of why fixed-term contracts are used to a greater degree in Spain than in Germany.

The following section 2 of this paper compares the institutional regulation of fixed-term and permanent employment contracts in Spain and Germany, while Section 3 reviews competing theories about fixed-term contracts and previous evidence on their effects. Section 4 presents the estimation methods and section 5 introduces the data sets used: for Germany we use the German Socio-economic Panel (GSOEP) and for Spain the European Community Household Panel (ECHP). Our central section 6 then presents the empirical analysis, beginning with some descriptive statistics before going on to model quantile regressions for wages. This section also looks at wage growth within different quartiles of the wage distribution. Section 7 summarizes our results. Our contribution to the literature is twofold. Firstly, we provide a comparable analysis of the wage penalty for fixed-term contracts in Spain and Germany using similar datasets and the same methodology. Secondly, we investigate wage differences between fixed-term and permanent workers at different points in the wage distribution.

2. Employment protection and fixed-term contracts

Dismissal regulations in Europe and high firing costs of permanent workers are generally believed to be the primary reason for the use of fixed-term contracts (e.g. OECD 1993). In Germany and Spain employment protection is generally believed to be high for the period under observation. In a survey of 26 countries for the late 1990s the OECD puts Germany at rank 18 (or 20) and Spain unequivocally at 22. While some studies place both countries in a different rank order they are, nonetheless, always amongst those classified as having very high employment protection (see OECD 1999, Tables 2.5 and 2.6 for an overview). According to the OECD, employment protection for regular permanent contracts tends to be slightly lower in Spain than in Germany but higher for fixed-term contracts. Given this it seems surprising that Spain has considerably higher fixed-term employment rates than Germany. We therefore reassess the OECD classification of Germany and Spain by looking at their employment protection legislation in more detail and present some additional institutional explanations of why Spain and Germany differ in their experience of fixed-term contracts.

2.1. German Employment Protection Legislation

In Germany legal regulations and labour court decisions can make it both time-consuming and in some cases, expensive, to lay off permanent employees. For individual dismissals, dismissal protection regulations stipulate notice periods based on measures like tenure, age and type of job; the employer needs a specific reason (i.e. misconduct or economic reasons) and the works council (*Betriebsrat*) needs to be present. While severance pay is not legally required, it is not uncommon for it to be part of social compensation plans in cases of collective dismissal. In the case of an individual dismissal the individual is entitled to bring the employer to court claiming unfair dismissal. In these cases the employer can be eligible

for severance pay, compensation for earnings lost and may be required to reinstate the unfairly dismissed employee.[3] While there are no official figures on the incidence and size of severance payments in Germany, recent evidence from micro data suggests that between 1990 and 2002 roughly 30% of all West German employees who were dismissed actually got severance pay (Goerke and Pannenberg, in press).[4] Average severance payments in (West) Germany vary substantially between groups of workers and lie roughly between €10,000 and €34,000 – with higher payments for mutually agreed job terminations. Assuming average monthly earnings of €2000 in West Germany (the average in our data), this amounts to severance payments between 5 and 17 months pay.

The "Employment Promotion Act" of 1985 was introduced in response to perceived rigidities in German employment protection legislation. Since then employers can hire employees on a fixed-term contract, thus avoiding potential redundancy payments and employment legislation restrictions. As in Spain, the introduction of fixed-term contracts was intended to reduce unemployment.[5] Originally the legislation was intended to be for a limited period but was extended several times during the 1990s and in 2001 and some minor changes were introduced. In 1996 the maximum duration was increased from 18 to 24 months in all firms, and three contract renewals were permitted in this period. Previously only small new firms were allowed to hire fixed-term contract workers for a two-year period. The 1996 legislation also allowed employers to renew the contract three times within the maximum period. Older workers above 52 may currently be hired on a fixed-term contract for an unlimited period of time (originally the age limit was 60). Following this legislation the percentage of workers in

---

[3] Since January 2004 there is a new severance pay option incorporated in German employment protection legislation (KSchG § 1a). Employers may offer dismissed workers to choose between taking the case to court and receiving severance payments. This possibility only applies to redundancies due to economic reasons. Severance payments have to be at least half a months earnings for each year worked.

[4] The percentage is slightly higher amongst employees dismissed as a result of a firm closure, due to collective dismissal legislation.

[5] However, Blanchard and Landier (2002) argued that the introduction of fixed-term contracts may have perverse effects: The main effect could simply be high turnover in fixed-term jobs, leading to higher and not lower unemployment.

fixed-term contracts has only slightly increased from around 5% in 1985 to 7% in 2000 in West Germany (excluding apprentices and workers in employment programs).

2.2. Spanish Employment Protection Legislation

In contrast to Germany severance payments are mandatory and regulated by law. Since 1997 workers on a permanent contract receive 20 days' wages per year worked if the dismissal was fair and 33 days if the dismissal was unfair (Güell and Petrongolo 2003). The fair (unfair) indemnity can be paid for a maximum of 12 months (24 months). Like in Germany any permanent worker dismissed can sue their former employer. If the court decides that the dismissal was unfair then not only does severance pay increase but also foregone wages have to be paid. Around 72% of all cases that go to court are declared unfair (Galdon-Sanchez and Güell 2000). At the same time severance payments for temporary fixed-term workers are a lot lower and it is not possible to sue the employer. While severance payments were initially 12 days wages per year worked (between 1984 and 1997), then zero (1997-2001), they have been at 8 days wages per year worked since 2001 (Güell and Petrongolo 2003).

As severance payments are relatively high in Spain, it does not come as a surprise that the introduction of fixed term contracts without cause in 1984 (general fixed-term contracts) soon resulted in high numbers of fixed-term workers. The proportion of all fixed-term workers amounts to just under 30% since the early 1990s (Dolado et al. 2002). In Spain there have been several changes of employment protection over the 1990s (see e.g. Rogowski and Schömann 1996, Güell and Petrongolo 2003, Dolado et al. 2002). The series of labour market reforms was intended to countervail the sharp rise in fixed-term employment since the mid 1980s by providing less stringent employment protection for permanent contracts and considerable restrictions on the use of fixed-term contracts. The 1994 reform relaxed the conditions for "fair" dismissals of workers under permanent contracts and restricted

conditions for the use of fixed-term contracts aiming them primarily at unemployed workers. In 1997 employers associations and trade unions reached an agreement to reform the system of employment contracts. Firing costs for new permanent contracts were reduced. However, these new permanent contracts were only eligible for long-term unemployed workers and all short-term unemployed aged 18-29 and above 44. At the same time the government set fiscal incentives to hire these workers under new permanent contracts by rebates on social security contributions. The reform, however, had no remit over those already employed on permanent contracts, and for this reason the reform was widely regarded as ineffectual (Toharia and Malo 2000).

2.3. Additional explanations of the differing experience in Spain and Germany

Apart from employment protection legislation we briefly review some additional explanations of why Germany's and Spain's experience differ. First of all, Spain produces its goods and services with higher amounts of unskilled workers, i.e. those with less than upper secondary education (10% in Germany versus over 50% in Spain). This in itself lends support to the hypothesis that there is more room for fixed-term contracts within secondary segments of the Spanish labor market.

Second, we believe that an important part of the role that fixed-term contracts play in Spain has always been fulfilled by apprenticeship contracts in Germany. They offer cheap labour (at least in the second or third year of the apprenticeship – depending on the type of training) and are temporary by nature. They pay well below entry-level wages for unskilled workers and can be viewed as a preferable alternative to regular fixed-term contracts for employers (compare OECD 1999, p. 71 and Rogowski and Schömann 1996). However, this functional equivalence should not be overstated: apprenticeships are part of the German training system

and confer durable, recognized skills: the same could not be said of most fixed-term contracts, in either Germany or Spain.

Third, the character of the collective bargaining system is also likely to contribute to the differences in the use of fixed-term contracts as well as the wage effects associated with them. While in both countries industry-level agreements predominate, Spain and Germany differ in the co-ordination of their wage bargaining. While Germany is described as highly co-ordinated, ranking 1st according to a classification of OECD countries, Spain only ranks 9th (OECD, 1997, table 3.3). The German system of collective bargaining leads to relatively high levels of wage equalization within industries and across industries. Complementing these negotiations at the industry and regional level, works councils at the company level influence layoffs and work conditions.

In Spain, the uncoordinated nature of its bargaining result in trade unions pursuing a narrow agenda of increased wages for labour market insiders (Polavieja, 2004). Jimeno and Toharia (1993) argue that permanent contract workers are less concerned with employment levels as they are very unlikely to be dismissed with fixed-term contract workers easier and cheaper to dismiss. Fixed-term contract workers have been described as "buffers" protecting permanent workers from the risk of unemployment (Polavieja 2003). There is evidence that indeed wage growth for permanent workers rises when wage setting is in the hands of permanent insider workers (Bentolila and Dolado 1994; Polavieja 2003).[6] While both German and Spanish collective bargaining are negotiated at industry level, German collective bargaining differs as a result of its highly co-ordinated and inclusive trade union agenda, that includes concern for

---

[6] However, during the mid to late 1990s the ratio of permanent workers to all labour force participants (permanent and temporary workers plus unemployed) fell below 50% for some years, with the result that the median voter was no longer a permanent worker (Dolado et al. 2002). Therefore trade unions in Spain are becoming less likely to focus on wages of insiders, i.e. permanent workers, only.

the employment stability of those on fixed-term contracts.[7] Spanish trade unionism, however, has failed to encorporate employment stability for both contract types into its agenda[8].

3. What does the literature tell us about the wages of fixed-term contract workers?

Apart from the obviously higher job insecurity, fixed-term contracts may also be associated with different wage conditions. Different approaches to the use of fixed-term contracts generate rather different predictions about the wages associated with them. These predictions may be related to why employers use fixed-term contracts, why employees accept fixed-term contracts and how fixed-term contracts fit into the individual's employment history. In the following section we discuss a number of these competing hypotheses and their relevance in Spain and Germany. Furthermore, we will discuss what the literature to date tells us about the empirical evidence on the wage penalty for fixed-term contracts.

3.1 Fixed-term contracts and wages in theory

One view implicit in neo-classical labour market theory is that fixed-term workers should receive higher wages to compensate for the job insecurity associated with fixed-term employment, otherwise an employee would simply not accept a fixed-term contract (Schömann et al., 1998). The employee accepts a wage, which guarantees their income while without work, and this compensates for the loss of redundancy pay. If we assume *compensating wage differentials*, wages for fixed-term contracts will be higher than for similar permanent jobs. However, this theory assumes that the employee is choosing between

---

[7] Though note that unification posed a serious challenge for collective bargaining in Germany. High wages were negotiated for East Germans, despite low productivity. ‚Opening clauses' have since permitted firm and industry specific variations on agreements, including suspension of wage increases, higher proportion of fixed-term contracts and lower wages for apprentices. This trend initially emerged in the former East Germany, with employees in West Germany following suit (Fuchs and Schettkat, 2000).

[8] Consistent with this hypothesis is the observation that in Spain unions were not opposed to the introduction of fixed-term contracts, at least initially (Bentolila and Dolado, 1994) while in Germany they were fiercely opposed (Bielenski, 1997).

two jobs, not a fixed-term job or unemployment, which may be the case in both Spain and Germany.

A number of approaches predict that fixed-term employment will have substantially worse conditions of employment and poorer career prospects than permanent employment. Probably the most important of them is *labour market segmentation theory* (initially Doeringer and Piore, 1971, many later variations). Broadly speaking models in this tradition seek to challenge the neo-classical notion of a homogeneous labour market, arguing that the labour market is divided or segmented into a primary segment, with secure, skilled jobs in large firms, and a secondary segment of low-skilled jobs in small firms.[9] These models lead us to expect that fixed-term contracts will be found in the secondary labour market segment, which relies on unskilled labour. It will be difficult for fixed-term workers to move to the primary segment of secure jobs and they will become trapped in a cycle of fixed-term jobs and unemployment. These low-skilled fixed-term jobs will therefore be associated with low wages and low wage growth. While intuitively appealing to many commentators, empirical evidence for both countries suggests this perspective on fixed-term contracts is not entirely supported. In Germany, fixed term contracts are certainly not confined to the low-skilled sector (Giesecke and Gross, 2003; McGinnity and Mertens, 2004). And in Spain, Polavieja (2001) found that the segmenting consequences of fixed-term contracts occurred in both high-skilled and low-skilled occupations.

Moreover, employers may use fixed-term contracts to *regulate short-term fluctuations in demand*, particularly in low-skilled jobs. That labour demand changes do indeed influence the use of fixed-term and other types of atypical employment has been shown by Boockmann and Hagen (2001) for Germany. In fact, the relative costs of hiring and firing as well as

---

[9] Models in this tradition are diverse and sometimes conflicting (Fine, 1998): the aim of this brief account is to sketch out the main tenets of the approach and its relevance for fixed-term contracts.

expectations about long-run sales opportunities will influence employers' decisions about hiring fixed-term versus permanent workers (Hamermesh and Pfann 1996). If fixed-term contracts are used to regulate short-term fluctuations in demand, one would expect them to be associated with lower wages, recurring unemployment and lower wage growth.

In Spain, where 30% of all employment is fixed-term, several authors have suggested that the wages of *permanent* workers will be influenced by the proportion of workers in fixed-term contracts. As already mentioned above in Section 2.2. Jimeno and Toharia (1993) argue that workers on permanent contracts negotiate for high wages from a secure position, as they are very unlikely to be dismissed with high numbers of fixed-term workers having to go first. At the same time high rates of unemployment force workers to accept fixed-term contracts and possibly lower wages. Although wage discrimination by contract type is legally forbidden in Spain, fixed-term employees might feel obliged to accept lower wages, possibly due to fewer legal provisions protecting workers under fixed-term contracts. Bentolila and Dolado (1994) estimate that a one percentage point increase in the proportion of fixed-term workers in total employment raises the growth rate of permanent workers' wages by one-third of a percentage point. Using individual level data Polavieja (2003) establishes a relationship between permanent workers higher wages and the proportion of temporary workers within the firm. Both of these findings suggest that Spanish permanent workers benefit from this 'buffer effect' of temporary contract employment.

A rather different reason sometimes proposed for the use of fixed-term contracts is the screening hypothesis. According to the screening approach, employers may use fixed-term contracts in order to extend the legally limited probation period. If the individual employee is good, they are retained in the firm and given a permanent contract. If not, the employer is spared expensive dismissal costs. Wang and Weiss (1998) propose that firms might offer low

initial wages to fixed-term employees, but give high wage increases to those workers they want to retain. From the screening perspective we would therefore also expect lower wages for fixed-term employees, albeit for different reasons than those suggested by segmentation theory. We suspect the screening function to be more prevalent in Germany, where about 40% of those on a fixed-term contract are in a permanent contract one year later, 70% of these in the same firm (McGinnity and Mertens, 2004, using pooled data for 1995-2000). In Spain 11.6% of those on a fixed-term contract in 1995 have a permanent contract one year later (Amuedo-Dorantes, 2000).[10]

Overall this suggests that there may be a larger wage penalty for having a fixed-term contract in Spain and that there may be less 'good' fixed-term contracts there too. The distinction between 'good' (well-paying) and 'bad' (low-paid) fixed-term contracts may be more salient in Germany. What has the empirical literature found?

3.2. Previous evidence on wages of fixed-term workers

For Spain several authors have looked into wage differentials between fixed-term contract and permanent workers. Jimeno and Toharia (1993) estimate a 9-11% wage gap between both contract types in standard OLS wage regression using two different data sources. De la Rica & Felgueroso (1999) have used the Oaxaca-Blinder decomposition to estimate wage differentials. Limiting their sample to fixed-term workers and permanent workers with up to three years tenure (the maximum duration in Spain), they also found that fixed-term workers earn less in manufacturing and services, although differentials are smaller for women (7% versus 15% for men) and greater for the highly educated. Decomposing average wage differentials for each qualification level they show that most of the differential can be

---

[10] For Spain there is no data on whether this job is in the same firm. More convincing evidence of screening is the rate of conversion from fixed-term to permanent contracts but this is difficult as individuals often misreport when and if their contract was made permanent (see McGinnity and Mertens, 2004 for a discussion).

explained by the different observed characteristics, especially tenure and occupation. Using a similar decomposition Davia and Hernanz (2001) find that in Spain much of the wage gap can be explained by differences in the characteristics of workers rather than differences in the returns. Does that indicate that there is no discrimination? No, as Dolado et al. (2002) point out this is not necessarily so. In fact the wage gap seems to be associated with employers disproportionally classifying fixed-term workers in the lowest occupational categories. Therefore fixed-term and permanent workers may do the same job but receive different earnings due to their different occupational positions, "explaining" the wage gap.

The evidence for West Germany shows similar wage differentials. Several studies using OLS wage regression show significant wage differences in favour of permanent workers. The highest estimates are reported by Schömann and Hilbert (1998) and Hagen (2002) with a wage gap of 25-28% for men and women. Other estimates are more comparable to the figures reported for Spain with around 14% for men and 7-10% for women (Mertens and McGinnity 2004; Stancanelli 2002). Mertens and McGinnity (2004), however, show that these wage differentials are significantly reduced once they control for individual heterogeneity by introducing individual fixed effects in a panel data set. In that case the wage gap is only 6% for men and 4% for women. In East Germany wage differentials are just about half the size of the West German effects, possibly due to overall lower wages and a more compressed wage structure (Mertens and McGinnity 2004). Gash (2004) also finds a decrease in the fixed-term worker wage penalty in a model controlling for time constant heterogeneity, in Denmark, France and the United-Kingdom. In each country, however, the wage penalty for fixed-term employment remains. These papers tend to ignore the considerable variation *within* fixed-term contracts. Preliminary work by Mertens and McGinnity (2005) show that there are differences in the wage penalty between highly skilled and low skilled German fixed-term workers. In the following this dynamic will be investigated with considerable detail for both countries.

4. Estimation methods

In the standard OLS (or mean) approach regression coefficients are assumed to be constant across the whole conditional wage distribution. However, fixed-term workers at different ends of the wage distribution may not face the same risk of receiving lower wages than their permanent counterparts. Therefore we estimate quantile regression models, as introduced by Koenker and Basset (1978), which fit quantiles to a linear function of covariates. Supplementing the usual estimation of conditional mean functions with conditional median and other conditional quantile functions allows us to look at the complete conditional wage (growth) distribution (see Buchinsky 1998; Fitzenberger et al 2001; Koenker and Hallock 2001). In fact, "potentially different solutions to distinct quantiles may be interpreted as differences in the response of the dependent variable to changes in the regressors at various points in the conditional distribution of the dependent variable" (cf. Buchinsky 1998, p.89). In addition, one can test to what extent OLS estimates are driven by outliers as median regression, the most commonly known form of quantile regression, is much less affected by outliers than standard OLS regression.

The quantile regression model according to Koenker and Basset (1978) is defined as follows (cf. Buchinsky 1998):

$$(1) \qquad y_i = x_i' \beta_\theta + u_{\theta_i} \text{ and } \text{Quant}_\theta(y_i \mid x_i) = x_i' \beta_\theta$$

where (y_i, x_i) , $i = 1, \ldots, n$ is a sample from some population where x_i is a K × 1 vector of regressors, $\text{Quant}_\theta(y_i \mid x_i)$ denotes the conditional quantile of y_i, conditional on x_i. Equation (1) implies that $u_{\theta,i}$ satisfies the quantile restriction $\text{Quant}_\theta(u_{\theta_i} \mid x_i) = 0$. In our empirical analysis we follow the literature in estimating the 90th, 75th, 50th, 25th and 10th percentage

quantiles.[11] These will give us a good overview of how the influence of contract type on wages evolves over the conditional distribution of *y*.

Two similar datasets are used for the analysis reported in this paper. For Germany, we use waves 1995 to 2000 of the German Socio-economic Panel (SOEP Group, 2001). The German Socio-economic Panel is a nationally representative panel survey, which has collected data since 1984. While in the early years the information on contract type is only selectively available, we have full information since 1995.[12] For Spain, we use waves 1995 to 2000 of the European Community Household Panel (ECHP). The European Community Household Panel is also a nationally representative panel survey and has data for Spain covering the period: 1994 to 2001. The ECHP provides full information on contract type from 1995 onwards[13]. The panel component of both these datasets allows us to not only study wage levels but also wage growth by comparing wages in two consecutive years.

The analysis for both countries focuses on a sample of men allowing us to engage closely with a two-way comparison rather than the four-way comparison a cross-national analysis of male and female wages would require. For Germany the analysis is done for West Germany only, as wage determination in East and West still differs (Burda and Schmidt 1997, Franz and Steiner 2002). Other work has already investigated how the wages associated with

---

[11] We use STATA 8 for our estimations.

[12] We cannot identify agency workers at any point in this survey. Agency workers may or may not classify themselves as on a fixed-term contract. While agency work has risen steadily in Germany in the last decade, it was still only 1.2% of dependent employment in June 2000. Hence, we do not expect it to bias our results (Bundesanstalt für Arbeit, 2001).

[13] The ECHP also fails to ask respondents whether they are agency workers. The questionnaire simply asks: `What types of employment contract do you have in your main job?', with the options available being: (1) permanent contract (2) fixed-term or short-term contract (3) casual work with no contract (4) some other working arrangement. Nonetheless, while agency work in Spain has seen a dramatic increase since it was legalized in 1994, by 1999 it accounts for approximately 0.8% of total employment (Storrie 2002). We are therefore not overly concerned with temporary work agency workers biasing our results for Spanish fixed term workers.

fixed-term contracts differ between men and women and between East and West Germans (McGinnity and Mertens, 2004).

For both countries similar selections were made. The self-employed and young workers in apprenticeship training schemes were excluded. Although apprenticeships are fixed-term by definition, remuneration is very low and not comparable with regular work.[14] The sample was limited to those of working age, between 18 and 60 years of age. In accordance with common practice, extreme hourly wage observations are excluded. These are below 5 DM and above 100 DM in Germany, and below 180 ESP and above 8,500 ESP in Spain.[15] Finally, for the models, we exclude observations with missing values on important variables: education, wages, type of contract, skill level, industry, firm size and region. A detailed list of independent variables used in the models, including their means and frequencies, is provided in appendix Tables B1a and B1b with a breakdown by contract type. With these selections applied to this data we find around 5% of male employees aged 18-60 in fixed-term contracts in Germany and considerably larger proportion of Spanish male employees aged 18-60 in fixed-term contracts, 31.7%.[16] The samples also differ in their characteristics, for example, Spanish fixed-term workers are also much more likely to work in small firms and be in the construction sector than German fixed-term workers (see tables B1. and B1.b for further details).

5. Empirical Analysis

---

[14] Civil servants are also excluded in Germany, as their career patterns tend to be distinct from other workers and their wages are uniformly set without the possibility of individual wage renegotiation.

[15] The analysis of wages for the Spanish data did not use a cut-off which was equivalent in monetary terms to the cut-off used for the German data. To have done so would have excluded too many observations at the left hand side of the distribution; 5 DM is equivalent to approximately 425 ESP while 100 DM is equivalent to approximately 8,500 ESP.

[16] 7.9% of German women are found in fixed-term contracts. Women are not substantially over-represented in fixed-term contracts. In Spain our data reveals 33.9% of female employment to be fixed-term. Spanish women are over-represented in fixed-term contracts, as is the case in the majority of countries in the European Union (EUROSTAT, 2001).

5.1. Comparing the wages of fixed-term and permanent workers

It has generally been found that fixed-term workers earn less, on average, than permanent workers. As revealed in section 3.2 this has been established in individual country analyses for both Germany and Spain. What has yet to he established, however, is whether between country differences in the wages and wage growth of fixed-term workers exist if we run the same series of analyses for two different countries. In our datasets we find that West German males' hourly wage difference is considerable with fixed-term workers earning 32% and Spanish male fixed-term workers earning, on average, 49% less than permanent workers.

In order to examine wage differentials between fixed-term and permanent employees in more detail, we split the samples into four different quartiles.

< Figure 1 about here >

Figure 1 shows that fixed-term workers in both countries are more likely to be found in the lower quartiles of the wage distribution. In Germany, this is true of slightly more than 50% of fixed-term contract workers while in Spain it is true of slightly less than 50% of the fixed-term worker sample. Nonetheless, there are also some high earners amongst German fixed-term workers, with 10% of workers in the highest quartile on fixed-term contracts. This tendency sets Germany apart from Spain, where only 4% of the fixed-term sample is found in the highest quartile.[17]

Further disaggregating our observations by three levels of education in Table 1 we find additional evidence of fixed-term worker heterogeneity, as well as further evidence of

---

[17] This is based on the pooled sample of 7,593 West German male workers between 1995 and 2000, and the pooled sample of 12,267 male Spanish workers between 1995 and 2000. Selections were described above in the data Section 4.

16

considerable differences in this respect between the two countries.[18] In Germany, we find fixed-term workers are not only overrepresented in the lowest educational group, those with less than secondary education, but also in the group of tertiary degree holders. By contrast workers with upper secondary education, clearly the largest group of workers in Germany, are less likely to be found in fixed-term contracts. This confirms previous findings for Germany (Schömann and Kruppe, 1994; Giesecke and Groß, 2003).

While Spanish fixed-term workers are similar to German fixed-term workers in that they also have high concentrations of those with less than upper secondary education, the proportions with low levels of education are considerably higher. In Germany this is true of 16% of the sample, while in Spain it is true of 64% of the sample. We also find Spanish fixed-term workers to be less likely to hold Tertiary degrees while the opposite was the case for Germany. The distribution of educational level by contract within quartiles is more equal however and it is only in the highest wage quartile where we find very large differences between Spanish permanent workers and fixed-term workers, here we find fixed-term workers to be more likely to hold Tertiary degrees.[19]

< Table 1 about here >

These descriptive findings indicate that not all fixed-term jobs can be rated equally good or bad. Particularly workers with low qualifications who are already in the lowest quartile of the wage distribution suffer further disadvantage when contracted on a fixed-term basis, due to the high probability of experiencing some unemployment. On the other hand in Germany we

---

[18] We adjusted the educational coding from the German GSOEP data to match the ECHP educational variable for Germany where "Meister", similar to a diploma from a technical college or institute of higher education, are rated as a tertiary degree.

[19] We also look at the distribution of educational level by contract within quartiles. In Germany we find those with tertiary education in all quartiles while those with less than upper secondary education are primarily found in the lowest quartile. In Spain the educational distribution is more equal. Results can be obtained from the authors upon request.

find over 25% of all fixed-term jobs to be in the upper half of the wage distribution and find this to be true for 20% of fixed-term workers in Spain.

Do wage differentials behave equally over the wage whole distribution? Table 2 compares the mean log wages for fixed-term and permanent workers for the German and Spanish samples as a whole and disaggregated for the different quartiles of the wage distribution. The wage data has been converted to equivalent units using the purchasing power standard converter, provided with the ECHP, and can therefore be compared between countries. We find German workers to earn higher wages than Spanish workers and find this to be true for permanent and fixed-term contract workers, as well as for each quartile of the earnings distribution. We also find fixed-term workers to earn less than permanent contract workers in each country and for each quartile of the earnings distribution with one exception: German fixed-term workers in the highest quartile. In the highest quartile German fixed-term workers tend to earn even more on average – at least before controlling for any individual or job characteristics.

< Table 2 about here >

5.2. A multivariate analysis of wage levels using quantile regression

As a prelude to the quantile regression we estimate an OLS regression of wages. Controlling for individual and job characteristics, the estimated difference between the hourly wages of fixed-term and permanent workers falls to 15% for West German men and to 19% for Spanish men. The covariates included in this model are age, education, part-time worker status, spouse present, skill level, firm size, industry, region and the year of observation.[20] In general, the German findings are similar to earlier OLS estimates (Schömann and Kruppe, 1993, 1994;

---

[20] Full results can be obtained from the authors on request.

Schömann and Hilbert, 1998) and more recent estimates by McGinnity and Mertens (2004) and Hagen (2002). The findings for Spain, however, establish a larger wage penalty for fixed-term workers than established by previous research on the Spanish labour market. Jimeno and Toharia (1993) using OLS wage regressions show that fixed-term workers earned 11% less than permanent workers[21], controlling for observable individual and job characteristics. Polavieja (2001) finds that Spanish fixed-term contract workers earn 16-11% less than permanent workers, controlling for observables[22], he also establishes these results using two different datasets suggesting a robust finding for the period concerned: 1990-1991

Turning now to the quantile regressions, we are able to find out whether the wage pattern observed in the purely descriptive analysis holds in the multivariate context of Mincer type wage regressions. We estimate the following model:

$$(2) \qquad \ln w_{i,t} = \alpha + \gamma_\theta \, fixed_{i,t} + \beta_\theta x_{i,t} + u_{\theta_{i,t}}$$

where the estimate of the θth conditional quantile of ln$w$ given $fixed$ and x is given by $\text{Quant}_\theta(\ln w_{i,t} \mid fixed_{i,t}; x_{i,t}) = x_{i,t}' \hat{\beta}_\theta$. The control variables used in x can be found together with means and frequencies in Appendix Table B1a and Table B1b. Besides relatively standard controls for personal and job characteristics we additionally include unemployment experience during the past 5 years. For Germany, this was generated from the so-called employment calendar of the GSOEP, which includes information on labour force status on a monthly basis. For Spain, unemployment experience during the past 5 years was directly asked of respondents. As previous research has shown, this variable controls for at least part of the individual heterogeneity and tends to reduce the estimates

---

[21] Jimeno and Toharia's estimation is based on an experimental survey conducted by the Spanish Statistical Office in 1991. The sample consists of 1209 wage earners, 358 of whom were fixed-term contract workers.
[22] These findings are established for two different Spanish datasets the LFPSE (1990) and the CSCCCB(1991), the sample sizes of which vary from 1,169 to 1,358.

on the fixed-term dummy variable *fixed* (McGinnity and Mertens, 2004).[23]

< Figure 2 about here >

In Figure 2 we compare the quantile estimates to these standard OLS (or mean) differentials. In contrast to the descriptive analysis of different quartiles, in the quantile estimates we always observe negative differentials.[24] For Germany, however, these differentials clearly decrease with higher quantiles. Those in the upper quantiles (90th and 75th) earn only slightly less than permanent counterparts, whereas those in the lowest (10th) quantile earn considerably less. For Spain, there is no tendency for the wage differential to decrease by quantile, with similar differentials established in both the highest and lowest quantile. We find no evidence of "compensating wage differentials" in any of these quantiles, but our findings provide some support for the idea that how much less fixed-term employees earn in Germany depends on their position on the wage distribution.[25] For Spain, the picture is less positive, with all fixed-term workers earning similarly low wages regardless of their position on the earnings distribution.

Who are the German fixed-term workers in this top wage quantile? In a detailed study of third-level graduates in Germany, Minks and Schaeper (2002) examine graduates' jobs five years after graduation. They find that graduates working in the public sector with fixed-term

---

[23] Unfortunately quantile regression does not lend itself to the inclusion of individual fixed effects like conventional panel models. Within an OLS framework, individual fixed effects significantly reduce the estimated differentials by contract type. We assume, however, that the pattern of results across quantiles will not be influenced by individual heterogeneity.

[24] Most of these differentials are significant as can be seen in specification I in Appendix Table B2.

[25] As can be seen, the mean and median differ, with the mean reflecting something between the 25th and 50th-percentage quantile for men.

contracts tend to earn more than their permanent counterparts, while those working in the private sector tend to earn less. They suggest that certain significant occupational groups like doctors and academics who have high earnings and often a series of fixed-term contracts account for these findings. In these high-skilled occupations fixed-term contracts are a part of career progression at the beginning of working life.[26]

< Figure 3 about here >

These estimated differentials for contract type do not control for tenure. As most fixed-term contracts generally do not last longer than two years, due to the legal restrictions discussed in section 2, such a control is important. It could be that fixed-term workers earn less than workers with long tenure, but not necessarily less than permanent contract workers with tenure of up to two years. In a second specification we compare those workers with fixed-term contracts and tenure less than two years with permanent workers with tenure less than two years. Results can be found in Figure 3 (and again in Appendix table B2). The pattern remains fairly constant, although the established differences are less extreme.

5.3. Moving on? Wage growth

By definition, having a fixed-term contract is a temporary state. Current wages thus tell only part of the story. We now investigate whether wage growth also differs for fixed-term and permanent workers. From the literature we have derived a number of different hypotheses concerning wage growth (see Section 2.2). In contrast to the initial hypothesis of lower wage growth from the segmentation and labour adjustment perspectives, Wang and Weiss (1998) propose that workers hired under fixed-term contracts for screening purposes will experience

large wage growth once offered a permanent contract with the same employer. Do fixed-term workers 'catch up' or do their wages fall further behind those of comparable permanent workers? In this section we explore wage growth in more depth.

We begin our analysis of wage growth by looking at the proportion of workers in different wage growth quartiles by contract type.[27] Looking first at Figure 4, for Germany, we find that the largest proportion of fixed-term workers are found in the highest quartile (4) and the lowest quartile (1) of the wage growth distribution. For Spain, however, the distribution of temporary workers by wage growth quartiles shows less variation, though there are somewhat more fixed-term workers in the highest quartile (4).

< Figure 4 about here >

But is it individuals with high wages initially who experience high wage growth? In Table 3 we present the joint wage growth and wage level distributions for Germany and Spain. Looking at the last column, we find high percentages of workers with relatively low wages who at time t+1 experience above average wage growth, 51.8% in Germany and 44.1% in Spain.

However, it is also interesting to note the between country difference in wage growth by contract type. So, while a considerable proportion of low earning German fixed-term workers experience high wage growth, relative to low earning permanent contract workers, 51.8% relative to 36.8%, in Spain there is little evidence of fixed-term workers catching up relative to their permanent worker counterparts. In Spain, equal proportions of low earning fixed-term workers and permanent workers experience high wage growth despite fixed-term workers

---

[27] While the previous section analysed difference between contract workers by *quantiles,* this section investiagates differences by *quartiles*. This was done to maintain cell sizes numbers which are smaller for our analysis of wage growth.

lower earnings, 44.1% relative to 43.8%. Only the German data suggests that it is possible for low earning workers to catch up.

In addition to this we note the tendency in Spain for high earning permanent workers to experience greater wage growth than high earning temporary contract workers, 17.07% relative to 8.85%. This suggests an ever-increasing gap between the wages of fixed-term workers and permanent workers in Spain.

< Table 3 about here >

As with previous bivariate analyses the findings in table 3 could be a function of fixed-term contract workers' lower levels of education or of their labour market experience. Figure 5 therefore presents OLS regressions of wage growth controlling for individual and job characteristics. The modelling strategy in this section differs somewhat from the previous section where we were interested in establishing whether the fixed-term worker wage penalty differed in different quartiles of the wage distribution. Here, we seek to establish whether there are differences in *wage growth* according to ones position on the *wage* distribution using OLS regression.

The results depicted in Figure 5 account for tenure and show considerable variation by wage quartile. For the sample as a whole, we find fixed-term workers in both Spain and Germany enjoy slightly higher wage growth than permanent workers. Once we disaggregate this result by wage quartiles we find considerable heterogeneity. Fixed-term workers in both Germany and Spain experience higher wage growth if they had previously been in the lower wage quartile, though this result is only significant for Germany. This suggests that, for Germany at least, lower-earning fixed-term workers do enjoy very rapid wage growth, consistent with our

expectations from screening or on-the-job training. However, our findings for fixed-term contract workers in the highest wage quartile reveal a wage growth penalty, which is statistically significant for both Germany and Spain. While it could be argued that those already in the highest wage quartile may experience a ceiling effect, their high wages hitting a "ceiling" and not growing rapidly, this does not explain why high earning fixed-term workers experience negative wage growth relative to permanent workers with similar characteristics.[28]

< Figure 5 about here >

Finally, there is a risk that our analysis of wage growth is biased as a result of the unique character of fixed-term contract workers who remain in employment at time t+1, given the high transition rates from fixed-term contract employment to unemployment. Moreover, given that job insecurity is one of the principle inequalities between those on fixed-term contracts and permanent contracts it is important to incorporate this feature of fixed-term employment into our analysis of wages and wage growth. Combining both these concerns we estimate wage growth differences at time t and t+1 with wages missing due to a period of unemployment, coded as 0 at time t+1. The results of this analysis are presented in Figure 6 which also selects on tenure of less than two years. Bringing exposure to unemployment into the analysis changes our results dramatically. We find negative wage growth amongst fixed-term contract workers in both Germany and Spain, rather than positive wage growth as established in Figure 5 and find this to be the case at the mean and within wage quartiles. While the fixed-term / permanent worker difference is not significant in Germany for those in the lowest wage quartiles, quartile 1 and 2, all other results are significant revealing the

---

[28] The wage growth regressions were run on the difference in earnings at time t and t+1 year. To ensure that our window for wage growth is not too short we also ran an analysis of wage growth between time t and t+ 2 years. The results of this analysis are presented in Table B3b in the appendix. The pattern of results is similar.

importance of unemployment experience on fixed-term workers earnings as well as fixed-term workers disproportionate exposure to unemployment.

6. Conclusions

This paper set itself the task of identifying whether fixed-term contract workers earned lower wages than permanent workers across the distribution of wages and also sought to establish whether fixed-term workers also experience lower levels of wage growth. The wages and wage growth of fixed-term contract workers were analysed for male workers in West Germany and Spain, two countries frequently regarded to be suffering from similar levels of rigid employment protection legislation. Our findings reveal strong differences between these two countries, with Spanish fixed-term contract workers experiencing a more punitive labour market.

We found that fixed-term contract workers earn lower wages across the distribution of wages. While we found variation among German fixed-term workers, with high-paying fixed-term workers experiencing a lower wage penalty than low-paying fixed-term workers, in Spain the wage penalty was larger overall and showed little variation across the distribution of wages (Figure 2). This finding lends support to the idea that a group of privileged fixed-term workers experience lower wage penalties, while the disadvantaged low earners experience greater penalties. In Spain, however, there is little evidence to suggest that fixed-term employment is not universally bad, in terms of remuneration, for all types of earner.

We propose that part of the explanation of why a much greater proportion of the Spanish labour market is employed on a fixed-term contract than in Germany is that fixed-term contracts are cheaper relative to permanent contracts there. The savings to the employer in terms of dismissal costs of hiring an employee on a fixed-term contract are greater in Spain (see section 2.3) – as are the savings in terms of wages (section 6).

While we found evidence of higher wage growth for German fixed-term workers, this is driven primarily by the lower earnings of fixed-term workers. This above average wage growth should, nonetheless, be placed within the context of their above average wage penalty (Figure 2). In Spain, we do not find any significant wage growth effect within quartiles. However, once we take into account those workers who are unemployed or inactive following their fixed-term contract we found a strong negative effect associated with fixed-term contracts.

In conclusion, our findings do indicate that the cost of 'flexibility at the margin' is borne by the individuals concerned – individuals on a fixed-term contract earn less than equivalent workers with a permanent contract in both countries. But this paper is a caution against generalising findings from Spain to other "rigid" European labour markets. In Spain the wage penalty is larger and here it just matters whether you have a fixed-term contract or not: in Germany it matters what kind of fixed-term contract you have.

Literature

Amuedo-Dorantes, Catalina (2000), 'Work Transitions into and out of Involuntary Temporary Employment in a Segmented Market: Evidence from Spain', *Industrial and Labor Relations Review* 53, 309-325.

Bentolila, S. and Dolado, J. J. (1994). 'Spanish labour markets'. *Economic Policy, 9* (18), 53-99.

Bielenski, H. (1997). Deregulierung des Rechts befristeter Arbeitsverträge. Enttäuschte Hoffnungen, unbegründete Befürchtungen. *WSI Mitteilungen, 8, 532–537.*

Blanchard, O. and Landier, A. (2002). 'The perverse effects of partial labor market reform: Fixed-term contracts in France', *The Economic Journal*, Vol. 112 (480), pp. F214–F244.

Boockmann, B. and Hagen, T. (2001). 'The Use of Flexible Working Contracts in West Germany: Evidence from an Establishment Panel', Zentrum für Europäische Wirtschaftsforschung (ZEW), Discussion Paper No. 01-33, Mannheim.

Booth, A. L., Francesconi, M. and Frank, J. (2002). 'Temporary jobs: Stepping stones or dead ends?', *The Economic Journal*, Vol. 112 (480), pp. F189–F213.

Buchinsky, M. (1998). 'Recent Advances in Quantile Regression Models – A Practical Guideline for Empirical Research', *The Journal of Human Resources*, Vol. 33 (1), pp. 88-126.

Bundesanstalt für Arbeit (2001). 'Arbeitsmarkt 2000', *Amtliche Nachrichten der Bundesanstalt für Arbeit (ANBA)*, Vol. 49 (Sondernummer).

Burda, M. and Schmidt, C. (1997). 'Getting behind the East-West Wage Differential:Theory and Evidence', in R. Pohl (ed.), *Wandeln oder Weichen - Herausforderungen der wirtschaftlichen Integration für Deutschland.* Sonderheft, Wirtschaft im Wandel 3/97.

Davia, M.A. and V. Hernanz (2002). 'Temporary Employment and Segmentation in the Spanish Labour Market: An Empirical Analysis through the Study of Wage Differentials', Documento de Trabajo 2002-26, FEDEA.

De la Rica, S., and Felgueroso, F. (1999). 'Wage differentials between permanent and temporal workers: Further evidence'. Mimeo, Universidad del Pais Vasco and Universidad de Oviedo.

Doeringer, P. and Piore, M. (1971). 'International labor markets and manpower analysis', Lexington, MA: Heath Lexington Books.

Dolado, J. J., García-Serrano, C., and Jimeno, J. F. (2002). 'Drawing lessons from the boom of temporary jobs in Spain'. *The Economic Journal, 112* (721), F270–F295.

EUROSTAT (2001). *Employment in Europe*. Luxembourg, Office for Official Publications of the European Communities.

Fine, B. (1998) *Labour Market Theory: A Constructive Reassessment.* London: Routledge.

Fitzenberger, B., Koenker, R. and Machado, J. A. F. (2001). 'Introduction', *Empirical Economics*, Vol. 26 (1), pp. 1-5.

Franz, W. and Steiner, V. (2000). 'Wages in the East German Transition Process: Facts and Explanations', *German Economic Review*, Vol. 1 (3), pp. 241-69.

Fuchs, S. and Schettkat, R. (2000) Germany: a regulated flexibility, in Esping-Andersen, G. and Regini, M. *Why deregulate labour markets?* Oxford: Oxford University Press, pp.211-244.

Gash, V. (2004). *Labour Market Flexibilisation: Qualities of Employment , Equalities of Outcome: A Comparison of Temporary and Part-time Employment in Denmark, France and the United Kingdom*. Oxford: Unpublished Thesis, Dept. of Sociology, University of Oxford.

Giesecke, J. and Groß, M. (2003). 'Temporary Employment: Chance or Risk?', *European Sociological Review*, Vol. 19, pp. 161-177.

Goerke, L. and M. Pannenberg (in press). 'Berufliche Weiterbildung "on-the-job" und Auflösung von Beschäftigungsverhältnissen', L. Bellmann and D. Sadowski (eds.). Beiträge zur Arbeitsmarkt- und Berufsforschung.

Güell, M. and B. Petrongolo (2003). 'How Binding are Legal Limits? Transitions from Temporary to Permanent Work in Spain', CEP: mimeo.

Galdón-Sanchéz, J. and Güell, M. (2000). 'Let's go to court! Firing costs and dismissal conflicts' *Industrial Relations Section, Princeton University, Working Paper no. 444* (2000).

Hagen, T. (2002). 'Do temporary workers receive risk-premiums? Assessing the wage effects of fixed-term contracts in West-Germany by matching estimators compared with parametric approaches'. *Labour*, Vol. 16 (4), pp. 667–705.

Hamermesh, D. S. and Pfann, G. A. (1996). 'Adjustment Costs in Factor Demand', *Journal of Economic Literature*, Vol. XXXI (September), pp. 1264-1292.

Jimeno, J. F. and Toharia, L. (1993). 'The effects of fixed-term employment on wages: Theory and evidence from Spain', *Investigaciones Economicas*, Vol. XVII (3), pp. 475–494.

Koenker, R. and Bassett, G. (1978). 'Regression Quantiles', *Econometrica*, Vol. 46, pp. 33-50.

Koenker, R. and Hallock, K. F. (2001). 'Quantile Regression', *Journal of Economic Perspectives*, Vol. 15 (4), pp. 143-156.

McGinnity, F. and Mertens, A. (2004) „Befristete Vertraege und Berufseinstieg" in Hillmert, S. and Mayer, K.U. (eds.) *Geboren 1964 und 1971. Neuere Untersuchungen zu Ausbildungs- und Berufschancen in Westdeutschland.* VS Verlag fuer Sozialwissenschaften. ["Fixed-term contracts and the transition from school to work" in *Born in 1964 and 1971. Recent research on educational and employment opportunities in West Germany*.]

Mertens, A. and McGinnity (2004). 'Wages and Wage Growth of Fixed-term Workers in East and West Germany', Applied Economics Quarterly, Vol. 50 (2), pp. 139-163.

Mertens, A. and McGinnity, F. (2005). '"A Two-Tier Labour Market for Fixed-Term Jobs? Evaluating evidence from West Germany using Quantile Regression', *Schmollers Jahrbuch*.

Minks, K. H. and Schaeper, H. (2002). 'Modernisierung der Industrie- und Dienstleistungsge-sellschaft und Beschäftigung von Hochschulabsolventen. Ergebnisse aus Längsschnitt-untersuchungen zur beruflichen Integration von Hochschulabsolventinnen und –ab-solventen', Hochschul-Informations-System Hochschulplanung Band 159, Hannover.

OECD (1993). 'Employment Outlook', Paris: OECD.

OECD (1997) *Employment Outlook*, Paris: OECD.

OECD (1999). 'Employment Outlook', Paris: OECD.

Polavieja, J. G. (2001). *Insiders and Outsiders: Structure and Consciousness Effects of Labour Market Deregulation in Spain (1984-1997).* Madrid, Ediciones Peninsular.

Polavieja, Javier G. (2003), "Temporary Contracts and Labour Market Segmentation in Spain: An Employment-Rent Approach", European Sociological Review 19 (5), p. 501-517.

Polavieja, Javier G. (2004), "Demand Demand-Side, Supply-Side and Institutional Determinants of Temporary Employment: Spain in a comparative context". Estudio/Working Paper 2004/212. Madrid: Juan March Institute of Study and Research.

Rogowski, R. and K. Schömann (1996). 'Legal Regulations and Flexibility of Employment Contracts', in G. Schmid J. O'Reilly and K. Schömann (eds.). International Handbook of Labour Market Policy and Evaluation, pp. 623-651. Cheltenham: Edward Elgar.

Rudolph, H. (2000). 'Arbeitsmarktpolitik. Befristete Arbeitsverträge sind bald neu zu regeln', Institut für Arbeitsmarkt- und Berufsforschung (IAB Kurzbericht 12), Nürnberg.

Schömann, K. and Hilbert, C. (1998). 'The youth labour market in Germany: A new target group for German labour market policies?', *DIW Vierteljahrshefte zur Wirtschafts-forschung*, Vol. 67, pp. 272–285.

Schömann, K. and Kruppe, T. (1993). 'Fixed-term employment and labour market flexibility—Theory and longitudinal evidence for East and West Germany', Discussion paper prepared for the SOEP User Conference at the Berlin-Brandenburgische Academy of Sciences, Berlin.

Schömann, K. and Kruppe, T. (1994). 'Who enters fixed-term contracts: Evidence from East and West Germany', *DIW Vierteljahrsheft zur Wirtschaftsforschung*, Vol. 64, pp. 69–74.

Schömann, K., Rogowski, R. and Kruppe, T (1998). 'Labour Market Efficiency in the European Union: Employment protection and fixed-term contracts', London: Routledge.

SOEP Group. (2001). 'The German Socio-Economic Panel (GSOEP) after more than 15 years—Overview', in E. Holst, D. R. Lillard and T. A. DiPrete (Eds.), Proceedings of the 2000 Fourth International Conference of German Socio-Economic Panel Study

Users (GSOEP 2000), *DIW Vierteljahrshefte zur Wirtschaftsforschung*, Vol. 70 (1), pp. 7–14.

Stancanelli, E.G.F. (2002): Do Temporary Jobs Pay? Wages and Career Perspectives of Temporary Workers. Tilburg

Storrie, D. (2002). 'Temporary Agency Work in the European Union'. European Foundation for the Improvement of Working Life and Living Conditions, Dublin.

Toharia L. and Malo M. A. (2000) 'The Spanish Experiment: Pros and Cons of Flexibility at the Margin', in G. Esping-Andersen and M. Regini (Eds.) Why Deregulate Labour Markets?, Oxford: OUP, pp.307-335.

Wang, R. and Weiss, A. (1998). 'Probation, Layoffs, and Wage-Tenure Profiles: A Sorting Explanation', *Labour Economics*, Vol. 5 (3), pp. 359-383.

Tables

Table 1.
Educational distribution of male employees by wage level quartiles (%)

	GERMANY			SPAIN		
	Less than Upper Secondary education	Upper Secondary education	Tertiary degree	Less than Upper Secondary education	Upper Secondary education	Tertiary degree
Overall						
Permanent contract	*9.80*	*60.96*	*29.24*	*48.07*	*20.77*	*31.16*
Fixed-term contract	*16.36*	*47.90*	*35.75*	*64.52*	*18.93*	*16.55*
Quartile 1 (Lowest)						
Permanent contract	20.35	69.30	10.36	71.34	18.12	10.54
Fixed-term contract	25.33	50.22	24.45	70.83	18.73	10.44
Quartile 2						
Permanent contract	9.82	74.93	15.25	65.56	18.81	15.63
Fixed-term contract	8.75	56.25	35.00	66.12	19.28	14.59
Quartile 3						
Permanent contract	6.22	63.44	30.35	51.8	23.84	24.37
Fixed-term contract	4.23	43.60	52.11	54.62	20.68	24.71
Quartile 4 (Highest)						
Permanent contract	2.79	36.20	61.01	23.86	20.55	55.59
Fixed-term contract	4.17	29.17	66.67	21.26	12.08	66.67

Note: Quartile 1 is the lowest and quartile 4 is the highest quartile in the wage distribution.
Source: German Data: Calculations based on pooled waves 1995-2000 of the German Socio-Economic Panel sample A. *Spanish Data:* Calculations based on pooled waves 1995-2000 of the European Community Household Panel

Table 2 - Mean log wages of male employees by quartiles

	GERMANY	SPAIN
	Mean log wages	Mean log wages
Overall		
Permanent	2.586	2.25
Fixed-term	2.303	1.78
Quartile 1 (Lowest)		
Permanent	2.133	1.53
Fixed-term	1.985	1.48
Quartile 2		
Permanent	2.448	1.91
Fixed-term	2.440	1.89
Quartile 3		
Permanent	2.671	2.22
Fixed-term	2.651	2.19
Quartile 4 (Highest)		
Permanent	3.045	2.79
Fixed-term	3.075	2.63

Note: Quartile 1 is the lowest and quartile 4 is the highest quartile in the wage distribution. Both sets of data have been adjusted to European currency units using the converter provided in the European community Household Panel. *German Data:* Calculations based on pooled waves 1995-2000 of the German Socio-Economic Panel sample A. *Spanish Data:* Calculations based on pooled waves 1995-2000 of the European Community Household Panel

Table 3 - Wage levels and wage growth for permanent and fixed-term male employees

	GERMANY			
	Wage growth			
Wage levels	**Quartile 1**	**Quartile 2**	**Quartile 3**	**Quartile 4**
Permanent				
Quartile 1	19.09%	19.34%	24.76%	36.81%
No. of obs.	*236*	*239*	*306*	*455*
Quartile 2	22.59%	25.70%	26.09%	25.62%
No. of obs.	*291*	*331*	*336*	*330*
Quartile 3	28.60%	26.71%	24.96%	19.73%
No. of obs.	*377*	*352*	*329*	*260*
Quartile 4	28.57%	29.63%	26.00%	15.80%
No. of obs.	*378*	*392*	*344*	*209*
Fixed-term				
Quartile 1	20.14%	17.99%	10.07%	51.80%
No. of obs.	*28*	*25*	*14*	*72*
Quartile 2	50.00%	1.92%	21.15%	26.92%
No. of obs.	*26*	*1*	*11*	*14*
Quartile 3	28.57%	23.81%	19.05%	28.57%
No. of obs.	*12*	*10*	*8*	*12*
Quartile 4	46.88%	15.63%	21.88%	15.63%
No. of obs.	*15*	*5*	*7*	*5*
	SPAIN			
Permanent				
Quartile 1	13.33%	16.11%	26.75%	43.82%
No. of obs.	*139*	*168*	*279*	*457*
Quartile 2	21.82%	25.93%	29.43%	22.83%
No. of obs.	*324*	*385*	*437*	*339*
Quartile 3	24.45%	29.19%	26.7%	19.66%
No. of obs.	*500*	*597*	*546*	*402*
Quartile 4	33.2%	27.79%	21.94%	17.07%
No. of obs.	*846*	*708*	*559*	*435*
Fixed-term				
Quartile 1	14.4%	17.12%	24.39%	44.09%
No. of obs.	*196*	*233*	*332*	*600*
Quartile 2	28.96%	26.1%	25.44%	19.49%
No. of obs.	*263*	*237*	*231*	*177*
Quartile 3	38.14%	28.84%	18.37%	14.65%
No. of obs.	*164*	*124*	*79*	*63*
Quartile 4	46.02%	27.43%	17.7%	8.85%
No. of obs.	*52*	*31*	*20*	*10*

Note: The table reads as follows: e.g. in Germany 20.14% of all fixed-term observations in the lowest level quartile have wage growth in the lowest wage growth quartile. *German Data:* Calculations based on pooled waves 1995-2000 of the German Socio-Economic Panel sample A. *Spanish Data:* Calculations based on pooled waves 1995-2000 of the European Community Household Panel.

Appendix B

Table B1.a – Means and Frequencies in the Wage Level Analysis, with a distinction by contract types, using the selection for the wage analyses.

	ALL		Fixed-term		Permanent	
West German Men	N	mean/freq	N	mean/freq	N	mean/freq
ln(hourly wage/PPP)	7281	2.58	367	2.32	6914	2.59
Fixed Term Contract	367	5.04	367	100	0	0
Ever long term unemployed past 5 years	182	2.50	35	9.54	147	2.13
Working less than 36 hours	227	3.12	73	19.89	154	2.23
Age < 30	1287	17.68	139	37.87	1148	16.61
Age 30-44	3772	51.81	175	47.68	3597	52.02
Age ge 45	2222	30.52	53	14.44	2169	31.37
Spouse	5568	76.47	192	52.32	5367	77.76
Lower Secondary Education	689	9.46	154	14.71	635	9.18
Upper Secondary Education	4445	61.05	173	47.14	4272	61.79
University Education	2147	29.49	140	38.15	2007	29.03
Unskilled blue collar	917	12.59	87	23.70	857	12.40
Skilled blue collar	2257	31.00	67	18.26	2190	31.67
Unskilled white collar	127	1.74	20	5.45	107	1.55
Skilled white collar	2016	27.69	75	20.44	1941	28.07
Highly skilled white collar	1937	26.60	118	32.15	1819	26.31
Small firm (< 20)	1324	18.18	65	17.71	1259	18.21
Medium (20-199)	1993	27.37	101	27.52	1892	27.36
Large firm (>=200)	3964	54.44	201	54.77	3763	54.43
Agriculture	68	0,93	2	0,54	66	0,95
Energy, water and mining Ind.	234	3.21	3	0.82	231	3.34
Manufacturing	3326	45.68	116	31.61	3210	46.43
Construction	731	10.04	19	5.18	712	10.30
Trade	744	10.22	46	12.53	698	10.10
Communications	442	6.07	22	5.99	420	6.07
Banking	410	5.63	10	2.72	400	5.79
Services	785	10.78	107	29.16	678	9.81
State	414	5.69	28	7.63	386	5.58
Not for profit	127	1.74	14	3.81	113	1.63

Source: Calculations based on pooled waves 1995-2000 of the German Socio-Economic Panel sample A.
German Data: Calculations based on pooled waves 1995-2000 of the German Socio-Economic Panel sample A.
Selection: Employees aged 18-60, excluding civil servants,those on employment schemes (ABM) and apprentices. Hourly wage observations below 5 DM and above 100 DM were dropped.

Table B1.b: Means and Frequencies in the Wage Level Analysis, with a distinction by contract types, using the selection for the wage analyses.

Spanish Men	ALL		Fixed-term		Permanent	
	N	mean/freq	N	mean/freq	N	mean/freq
ln(hourly wage/PPP)	12267	2.08	3863	1.75	8404	2.244
Fixed Term Contract	3,863	31.49	3,863	100	8404	100
Ever long term unemployed past 5 years	1,813	14.78	1,181	30.57	632	7.52
Working less than 36 hours	1,126	9.18	329	8.52	797	9.48
Age < 30	3,177	25.9	1,857	48.07	1,320	15.71
Age 30-44	5,565	45.37	1,411	36.53	4,154	49
Age ge 45	3,525	28.74	595	15.4	2,930	34.86
Spouse	8,718	71.08	1,992	51.57	6,726	80.05
Lower Secondary Education	6,555	53.44	2,534	65.6	4,021	47.85
Upper Secondary Education	2,503	20.4	735	19.03	1,768	21.04
University Education	3,209	26.16	594	15.38	2,615	31.12
Service Class	1,615	13.17	200	5.18	1,415	16.84
Intermediate Class	2,303	18.77	343	8.88	1,960	23.32
Working Class	8,349	68.06	3,320	85.94	5,029	59.84
Small firm (2-19)	4,897	39.92	2,068	53.53	2,829	33.66
Medium firm (20-99)	3,558	29	1,189	30.78	2,369	28.19
Large firm (100+)	3,812	31.08	606	15.69	3,206	38.15
Agriculture	449	3.66	223	5.77	226	2.69
Energy, water and mining Ind.	316	2.58	67	1.73	249	2.96
Manufacturing	3,295	26.86	868	22.47	2,427	28.88
Construction	1,835	14.96	1,245	32.23	590	7.02
Trade	1,420	11.58	428	11.08	992	11.8
Communications	965	7.87	220	5.7	745	8.86
Banking	1,012	8.25	185	4.79	827	9.84
Services	1,445	11.78	381	9.86	1,064	12.66
State	1,063	8.67	123	3.18	940	11.19
Not for profit	467	3.81	123	3.18	344	4.09

*Source: C*alculations based on pooled waves 1995-2000 of the European Community Household Survey.
Spanish Data: Calculations based on pooled waves 1995-2000 of the European Community Household Panel.
Selection: Employees ages 18-60 excluding those in training under special schemes related to employment and apprentices. Hourly wage observations below 180 Pesetas and above 8,500 Pesetas were dropped.

Appendix Table B2 - Quantile wage level regressions

	Mean (OLS)	Quantiles				
		10[th](low)	25th	50th	75th	90[th](high)
Germany						
Specification I						
Fixed-term dummy	-0.149***	-0.220***	-0.186***	-0.126***	-0.093***	-0.097***
	(0.014)	(0.022)	(0.019)	(0.017)	(0.013)	(0.022)
Specification II						
Fixed < 2	-0.104***	-0.188***	-0.127***	-0.060***	-0.043**	-0.061**
	(0.019)	(0.029)	(0.025)	(0.018)	(0.019)	(0.029)
Fixed ≥ 2	-0.077***	-0.085**	-0.105***	-0.046**	-0.060**	-0.043
	(0.024)	(0.035)	(0.031)	(0.022)	(0.025)	(0.036)
2 ≤ Perm < 5	0.041***	0.049***	0.039***	0.045***	0.026**	0.047***
	(0.011)	(0.017)	(0.015)	(0.010)	(0.011)	(0.017)
5 ≤ Perm < 10	0.074***	0.090***	0.089***	0.081***	0.051***	0.053***
	(0.010)	(0.017)	(0.014)	(0.010)	(0.011)	(0.017)
Perm ≥ 10	0.108***	0.143***	0.143***	0.121***	0.083***	0.045***
	(0.010	(0.016)	(0.014)	(0.010)	(0.011)	(0.017)
Spain						
Specification I						
Fixed-term dummy	-0.193***	-0.215***	-0.186***	-0.172***	-0.178***	-0.202***
	(0.007)	(0.014)	(0.011)	(0.009)	(0.008)	(0.011)
Specification II						
Fixed < 2	-0.092***	-0.091***	-0.088***	-0.062***	-0.102***	-0.121***
	(0.012)	(0.023)	(0.016)	(0.015)	(0.013)	(0.022)
Fixed ≥ 2	-0.037**	-.01769	-0.0257	-0.025	-0.045***	-0.070***
	(0.015)	(0.029)	(0.019)	(0.018)	(0.016)	(0.026)
2 ≤ Perm < 5	0.057***	0.060***	0.056***	0.074***	0.036**	0.0425
	(0.015)	(0.028)	(0.019)	(0.017)	(0.016)	(0.026)
5 ≤ Perm < 10	0.107***	0.165***	0.104***	0.105***	0.076***	0.084***
	(0.014)	(0.026)	(0.017)	(0.016)	(0.015)	(0.024)
Perm ≥ 10	0.222***	0.253***	0.229***	0.218***	0.192***	0.182***
	(0.013)	(0.024)	(0.016)	(0.015)	(0.014)	(0.022)

Note: Significance levels: *** = 1%. ** = 5%. * = 10%.
German Data: Calculations based on pooled waves 1995-2000 of the German Socio-Economic Panel sample A. Selection: Employees aged 18-60, excluding civil servants,those on employment schemes (ABM) and apprentices. Hourly wage observations below 5 DM and above 100 DM were dropped. Further controls: age group, education level, part-time worker status, spouse present, skill level, firm size, industrial sector,. region, the year of observation and the proportion of time unemployed during the past five years.
Spanish Data: Calculations based on pooled waves 1995-2000 of the European Community Household Panel. Selection: Employees ages 18-60 excluding those in training under special schemes related to employment and apprentices. Hourly wage observations below 180 Pesetas and above 8,500 Pesetas were dropped. Further controls: age group, Educational level, part-time worker status, Cohabiting, skill level, firm size, industrial sector,. region, the year of observation and previously long-term unemployed during the past five years.

Appendix Table B3 - OLS wage growth regressions by wage quartile

	Mean (OLS)	Quartile			
GERMANY					
		Q1 (low)	Q2	Q3	Q4 (high)
Specification I					
Fixed-term dummy	0.037***	0.053**	-0.050**	0.013	-0.106**
	(0.014)	(0.025)	(0.023)	(0.029)	(0.043)
Specification II					
Fixed < 2	0.037*	0.058*	-0.038	0.019	-0.136**
	(0.019)	(0.033)	(0.031)	(0.038)	(0.064)
Fixed ≥ 2	0.033	0.034	-0.067*	0.035	0.013
	(0.023)	(0.040)	(0.038)	(0.047)	(0.059)
2 ≤ Perm < 5	-0.001	-0.018	-0.020	0.023	0.078***
	(0.010)	(0.020)	(0.016)	(0.019)	(0.026)
5 ≤ Perm < 10	-0.004	0.006	-0.008	0.013	0.053**
	(0.010)	(0.020)	(0.015)	(0.017)	(0.024)
Perm ≥ 10	-0.003	0.002	0.016	0.011	0.064***
	(0.010)	(0.022)	(0.015)	(0.017)	(0.023)
SPAIN[29]					
Specification I					
Fixed-term dummy	0.031***	-0.001	-0.032***	-0.041***	-0.071***
	(0.007)	(0.013)	(0.011)	(0.013)	(0.025)
Specification II					
Fixed < 2	0.028**	0.010	-0.021	-0.009	-0.086**
	(0.011)	(0.022)	(0.018)	(0.022)	(0.040)
Fixed ≥ 2	-0.001	-0.019	-0.012	-0.010	-0.084*
	(0.014)	(0.027)	(0.022)	(0.026)	(0.046)
2 ≤ Perm < 5	-0.009	0.012	-0.015	0.032	-0.005
	(0.013)	(0.029)	(0.022)	(0.023)	(0.032)
5 ≤ Perm < 10	-0.017	0.001	0.013	0.020	-0.020
	(0.013)	(0.028)	(0.020)	(0.022)	(0.029)
Perm ≥ 10	-0.020*	0.008	0.030	0.046**	-0.011
	(0.012)	(0.027)	(0.020)	(0.020)	(0.027)

Note: Significance levels: *** = 1%. ** = 5%. * = 10%.
German Data: Calculations based on pooled waves 1995-2000 of the German Socio-Economic Panel sample A. Selection: Employees aged 18-60, excluding civil servants, those on employment schemes (ABM) and apprentices. Hourly wage observations below 5 DM and above 100 DM were dropped. Further controls: age group, education level, part-time worker status, spouse present, skill level, firm size, industrial sector,. region, the year of observation and the proportion of time unemployed during the past five years.
Spanish Data: Calculations based on pooled waves 1995-2000 of the European Community Household Panel. Selection: Employees ages 18-60 excluding those in training under special schemes related to employment and apprentices. Hourly wage observations below 180 Pesetas and above 8,500 Pesetas were dropped. Further controls: age group, educational level, part-time worker status, cohabiting, skill level, firm size, industrial sector,. region, the year of observation and previously long-term unemployed during the past five years.

---

[29] A series of analyses were run in an attempt to identify who these high earning Spanish temporary workers are who are rendering the OLS regression coefficient positive and significant. It was found that the positive wage growth was being driven by the bottom 5% of temporary worker earners. If these workers were to be excluded the significance of the difference at the mean would be lost and the wage growth penalties, within quantiles, would be negative and significant for each quantile.

Appendix Table B3b- OLS wage growth regressions by wage quartile, for wages at time t+2

	Mean (OLS)	Quartile			
		Q1 (low)	Q2	Q3	Q4 (high)
GERMANY					
Specification I					
Fixed-term dummy	0.044**	0.081***	-0.096***	0.056	-0.035
	(0.018)	(0.031)	(0.035)	(0.034)	(0.053)
Specification II					
Fixed < 2	0.017	0.019	-0.040	-0.055	0.034
	(0.025)	(0.040)	(0.046)	(0.046)	(0.085)
SPAIN					
Specification I					
Fixed-term dummy	0.033***	-0.014	-0.041***	-0.060***	-0.026
	(0.009)	(0.016)	(0.014)	(0.017)	(0.033)
Specification II					
Fixed < 2	-0.002	-0.039	-0.021	-0.125**	-0.107
	(0.019)	(0.030)	(0.029)	(0.038)	(0.090)

Appendix Table B3.1 - OLS wage growth regressions by wage quartile with wages missing coded as 0 for those with no wages due to unemployment

	Mean (OLS)	Quartile			
GERMANY					
		Q1 (low)	Q2	Q3	Q4 (high)
Specification I					
Fixed-term dummy	-0.081**	-0.070	-0.131*	0.209**	-0.186**
	(0.032)	(0.056)	(0.077)	(0.068)	(0.080)
Specification II					
Fixed < 2	-0.088**	0.076	-0.160	-0.161*	-0.294**
	(0.043)	(0.071)	(0.101)	(0.091)	(0.115)
SPAIN					
Specification I					
Fixed-term dummy	-0.149***	-0.152***	-0.216***	-0.237***	-0.298***
	(0.012)	(0.025)	(0.024)	(0.025)	(0.038)
Specification II					
Fixed < 2	-0.117***	-0.081*	-0.215***	-0.182**	-0.424**
	(0.030)	(0.048)	(0.054)	(0.064)	(0.128)

Appendix Table B3.2 - OLS wage growth regressions by wage quartile with wages missing coded as 0 for those with no wages due to being in the following statuses: education or training, unemployment, doing housework, other economically inactive.

	Mean (OLS)	Quartile			
GERMANY					
		Q1 (low)	Q2	Q3	Q4 (high)
Specification I					
Fixed-term dummy	0.032	-0.006	-0.137**	0.113**	-0.191***
	(0.028)	(0.050)	(0.066)	(0.056)	(0.070)
Specification II					
Fixed < 2	-0.058	-0.024	-0.120	-0.159**	-0.312***
	(0.037)	(0.064)	(0.088)	(0.072)	(0.102)
SPAIN					
Specification I					
Fixed-term dummy	-0.158***	-0.165***	-0.225***	-0.237***	-0.329***
	(0.013)	(0.026)	(0.025)	(0.028)	(0.046)
Specification II					
Fixed < 2	-0.137***	-0.110*	-0.217***	-0.217***	-0.479***
	(0.031)	(0.051)	(0.055)	(0.066)	(0.138)

Graphs

Figure 1 - Percentages of fixed-term workers found in the different quartiles of the *wage level* distribution
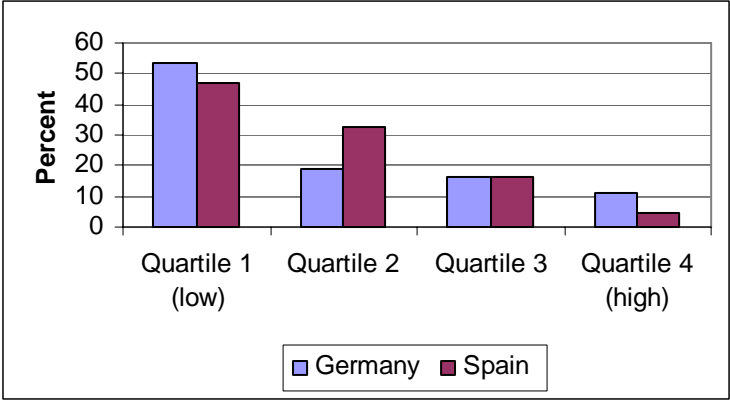

Note: Quartile 1 refers to the lowest quartile and quartile 4 to the highest quartile of the wage level distribution. Dotted line at 25% represents the proportion of fixed-term workers we would expect in each quartile. were they equally distributed in each.
German Data: Calculations based on pooled waves 1995-2000 of the German Socio-Economic Panel sample A.
Spanish Data: Calculations based on pooled waves 1995-2000 of the European Community Household Panel.

Figure 2 Wage differences between fixed-term and permanent workers: comparing OLS results (mean) and quantiles
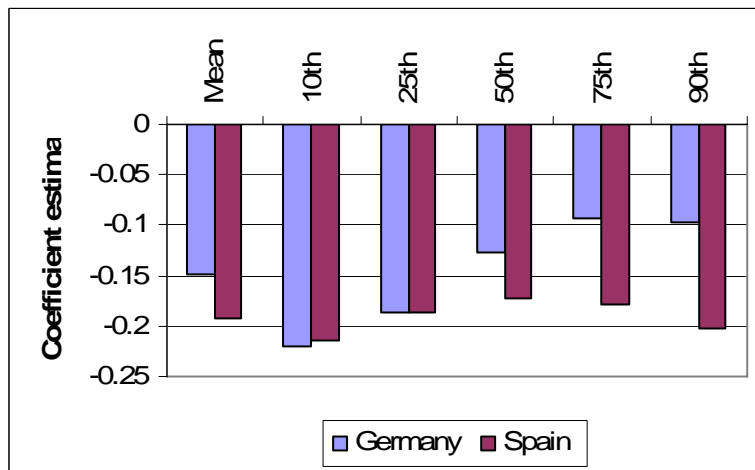
Note: Coefficients on the fixed-term contract dummy in OLS (mean) and quantile wage regressions. Compensated results are calculated by first regressing log wages on conventional human capital variables (age. educational dummies) and then running the quantile regressions with the residuals from that regression as a dependent variable.
German Data: Calculations based on pooled waves 1995-2000 of the German Socio-Economic Panel sample A.
Spanish Data: Calculations based on pooled waves 1995-2000 of the European Community Household Panel.

Figure 3 Wage differences between fixed-term and permanent workers with tenure of less than two years: comparing OLS results (mean) and quantiles
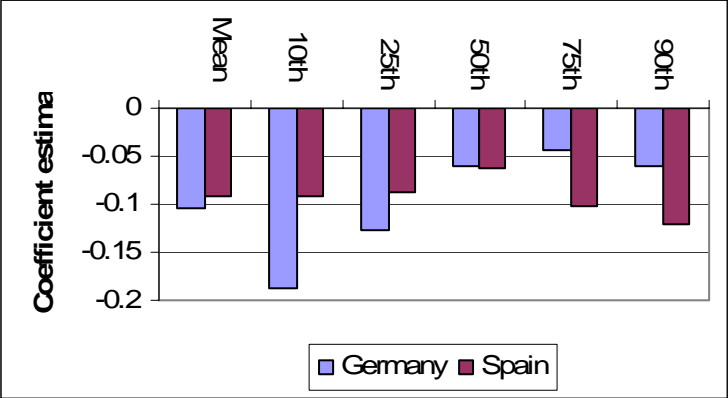
Note: Coefficients on the dummy for fixed-term contract workers with tenure of less than 2 years in OLS (mean) and quantile wage regressions. Control group: workers with permanent contract and tenure of less than 2 years. Compensated results are calculated by first regressing log wages on conventional human capital variables (age. educational dummies) and then running the quantile regressions with the residuals from that regression as a dependent variable.
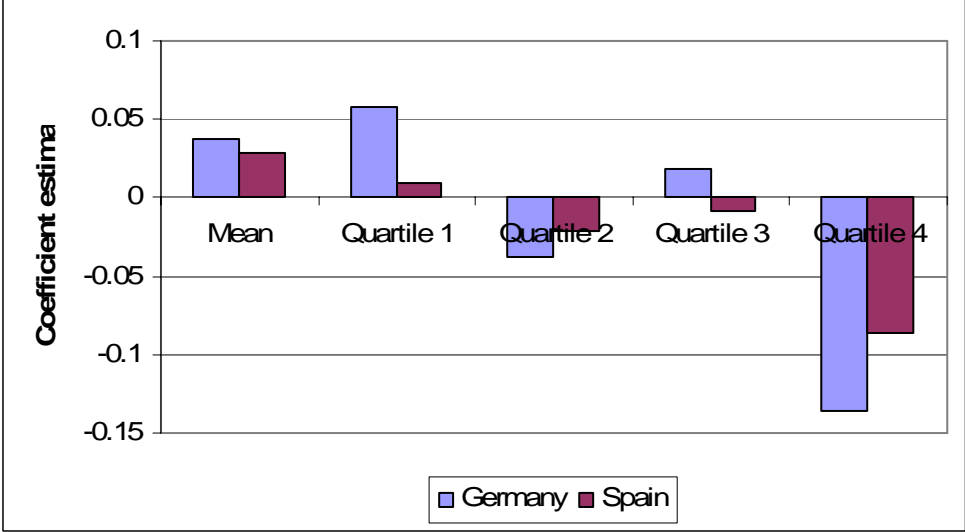*German Data:* Calculations based on pooled waves 1995-2000 of the German Socio-Economic Panel sample A.
Spanish Data: Calculations based on pooled waves 1995-2000 of the European Community Household Panel.

Figure 4 - Percentages of fixed-term workers found in the different quartiles of the *wage growth* distribution
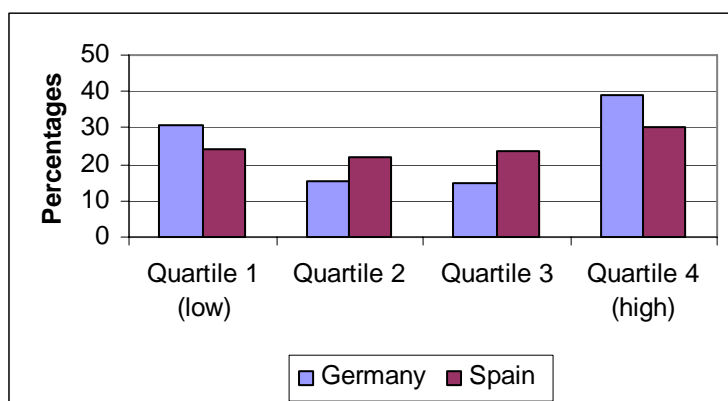
Note: Quartile 1 refers to the lowest quartile and quartile 4 to the highest quartile of the wage growth distribution. Quartiles were estimated separately for males and females. Dotted line at 25% represents the proportion of fixed-term workers we would expect in each quartile. were they equally distributed in each.
German Data: Calculations based on pooled waves 1995-2000 of the German Socio-Economic Panel sample A.
Spanish Data: Calculations based on pooled waves 1995-2000 of the European Community Household Panel.

Figure 5 – Wage *growth* differences between fixed-term and permanent workers with tenure of less than two years: comparing mean results and wage growth by wage level quartiles

Note: Coefficients on the dummy for fixed-term contract workers with tenure of less than 2 years in OLS (mean) and quantile wage growth regressions. Control group: workers with permanent contract and tenure of less than 2 years. Compensated results are calculated by first regressing log wages on conventional human capital variables (age. educational dummies) and then running the quantile regressions with the residuals from that regression as a dependent variable.
German Data: Calculations based on pooled waves 1995-2000 of the German Socio-Economic Panel sample A.
Spanish Data: Calculations based on pooled waves 1995-2000 of the European Community Household Panel.

Figure 6 – Wage *growth* differences between fixed-term and permanent workers with tenure of less than two years: wages missing coded as 0 for those with no wages due to unemployment: comparing mean results and wage growth by wage level quartiles
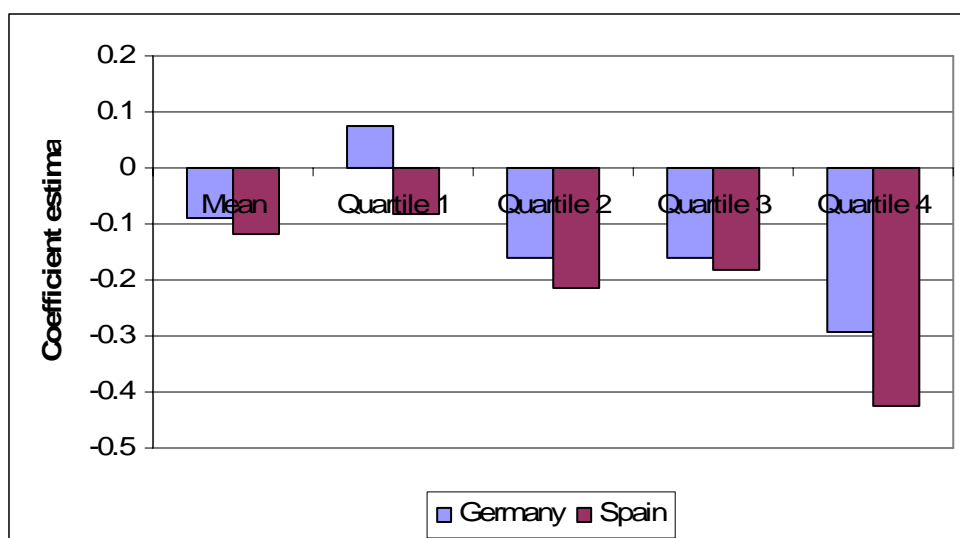
Note: Control group: workers with permanent contract. Compensated results are calculated by first regressing log wages on conventional human capital variables (age. educational dummies) and then running the quantile regressions with the residuals from that regression as a dependent variable.
German Data: Calculations based on pooled waves 1995-2000 of the German Socio-Economic Panel sample A.
Spanish Data: Calculations based on pooled waves 1995-2000 of the European Community Household Panel.