

ON THE POST-UNIFICATION DEVELOPMENT OF PUBLIC AND PRIVATE PAY IN GERMANY*

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German post-unification in the 1990s is a period marked by substantial economic and political change, a crucial part of which was a largely politically motivated attempt to build East German wages towards the much higher West German wages. We study the development of the public–private sector pay gap in Germany in the 1990s. We show that throughout the 1990s the overall pay gap between the public and private sectors remained stable in the West and increased considerably in the East. Wage decompositions show a small and stable negative public sector premium in the West, and a large and increasing positive public sector pay premium in the East. Decompositions also show a considerable deterioration in the skill base of the private sector in the East which the paper attributes in part to the improved attractiveness of the public sector. The paper argues that the development in the size and composition of the public–private sector pay gap in the East is an indication of the public sector crowding out the private sector and raises concerns about the future competitiveness of the East.

1 INTRODUCTION

The 1990s has been an exceptional decade for the German economy, because of two major streams of events. First and foremost has been the process of German re-unification which started in 1990. From the very start of the 1990s Germany experienced a stream of economic and social changes due to the re-unification between the former German Democratic Republic (henceforth the East) and the Federal Republic of Germany (henceforth the West). Second, a strong wave of privatization in both the (former) East and West took place in Germany around the middle of the 1990s. Both streams of events have had profound implications regarding the organization, standing and long-term competitiveness of the German economy. This paper concentrates on the investigation of the development of the pay gap between the public and private sectors in Germany in the 1990s within the context of re-unification and privatization.

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Traditionally, governments have transferred resources to less competitive regions in order to address the resulting problems of unemployment and deprivation generated by such lack of competitiveness. Often such transfers did not address the underlying causes for low competitiveness (Henley and Thomas, 2001; Blanchflower *et al.*, 2002). The scope of such transfers has been curtailed by the European Union in the last decade in a drive for increased fiscal discipline. As a result, the focus of current policy for governments throughout the European Union is on addressing the underlying causes of low competitiveness in regions with higher deprivation and unemployment and reinforcing policies that will improve the performance of these regions.

Transfers may be effected through increases in the economic activity of the public sector and/or through paying a sector premium to public sector employees by not adjusting downwards public sector pay in less competitive areas in a way which would reflect the overall pay levels in that area and the public–private sector wage relativities (Alesina *et al.*, 2001). Although such transfers into the public sector in less competitive regions may boost overall demand and encourage economic activity (to the degree that local goods and services are consumed), they may also increase the price of inputs for the private sector in the less competitive regions. The problem that may arise in such circumstances is that the (supported) development of the public sector crowds out the development of the (unsupported) private sector with detrimental effects on overall competitiveness. In the case of employment, increased public sector activity may (i) reduce the pool of high-quality employees available to the private sector by attracting them to the public sector and/or (ii) result in the public sector using high-quality employees in a less productive way than they would have been used in the private sector, thus influencing both recruitment and retention in the private sector. Clearly, a public sector pay premium would then be detrimental to the development of the private sector employment in a less competitive region in a self-perpetuating manner.

From the very outset, it is clear that the main empirically relevant regional divide in post-1990 Germany is the divide between the former East and West sectors. The paper concentrates on this divide, as it dwarfs empirically all other regional differences.¹ It is well documented that before unification West Germany enjoyed a particularly efficient public sector wage-setting process which did not result in a high public sector premium (Dustmann and van Soest, 1997). It is this unique political and economic environment that sets Germany apart from other European countries and

¹A conventional division would be that of the German Länder. Given the massive differences that were introduced by re-unification, it would be too early to undertake a study based on the conventional Länder division. The East–West divide empirically dwarfs all other regional differences, with the West being three to four times the size of the East in terms of manpower and by far the dominant partner in terms of economic power.

largely determines the way public–private sector pay differences have been analysed in this paper.

This paper traces the level of regional variation in public–private sector pay differences and the decomposition of pay differences into observable employee characteristics differences and unobservable public sector pay premium differences. The decomposition between characteristics and sector premium is pertinent in the understanding of the impact of a public–private pay gap on regional competitiveness. The paper estimates conventional hourly wage equations splitting the data into eight subsamples: public and private sectors, East and West Germany, pre- and post-1991–96 and 1997–2001. It uses the German Socio-economic Panel (GSOEP), a large longitudinal survey of individuals. Given the massive changes that happened to the German labour market in 1990, the observation period of the paper starts only in 1991 and goes to 2001. Some data problems in the first years of observation are acknowledged, especially around the definition of the sector of workplaces and the level of pay in the public sector in the East. We use Oaxaca–Ransom weighted pay differential decompositions in order to attribute the observed differences between public and private pay either (i) to a sector pay premium (the unexplained part) or (ii) to observed differences in the characteristics of the labour force by sector (the explained part). Four sets of estimations (East-public; East-private; West-public; West-private) are carried out for the 1991–96 subsamples and another four for the 1997–2001 subsamples. Estimation results are put together to examine four public–private sector pay differentials (East-1991–96; East-1997–2001; West-1991–96; West-1997–2001) and in order to carry out four sets of public–private pay decompositions.

It is worth giving a brief intuitive explanation as to how the results of decomposition analysis can be linked with competitiveness arguments. Decomposition of the public–private pay gap helps assess the relationship between wage setting and crowding out as follows. Decomposing the public–private pay gap provides us with a measure of the proportion of the gap that is due to (i) *characteristics*, i.e. differences by sector in the quality of the observed characteristics of the labour force, and (ii) *pay premium*, i.e. differences by sector in the remuneration for each one of these characteristics. Differences in the wage setting by sector will influence the *pay premium* of a sector directly, but will not influence the *characteristics* of its employees directly. In a labour market where the two sectors are completely independent and there are no employee flows between them, that would be the end of the story. However, that is clearly not the case in reality, as the two sectors share the same labour force and in many occasions compete for the same employees. Then, wage setting in one sector will influence the premium directly and the premium itself will then, over a period of time, influence the characteristics indirectly by making the sector that enjoys a positive premium more attractive to employees. To use a simple example, take the case where

public wages are increased for reasons that are not wholly justified by the economic performance of the public sector. In such a case a positive public sector premium will arise. This premium will cause a flow of employees from the private to the public sector. As the public sector now pays better, it will attract the better employees, making hiring and retention harder and dearer for the private sector, helping the public sector crowd out the private sector, with detrimental effects on overall productivity. In this light, the two constituents of the decomposed pay gap can be seen to reflect the two very different parts in the crowding out argument: the pay premium constituent can be thought of as an underlying cause of crowding out, while the characteristics constituent can be thought of as a manifestation of crowding out.

The main findings of the paper are as follows: (i) there was no public sector premium in the West before privatization (pre-1997) and there was none after, in that part of the economy that remained within the public sector, (ii) there was a public sector premium in the East pre-1997 and this premium almost doubled in the post-1996 period, (iii) the qualifications composition of both sectors post-1996 was very similar between the East and the West, with the public sector in both cases employing a much higher proportion of the highly skilled and highly qualified employees than the private sector, (iv) the remuneration estimates suggest that post-1996 the East paid better-qualified employees more than the West, and that in both East and West the public sector paid less per unit of qualifications than the private sector. These findings support the suggestion that the pre-unification fiscal discipline surrounding the negotiations of public sector pay has been retained in the West, but has not been developed in the East. Further, given that the West is by far the dominant part of the German economy, nationally based wage setting for the public sector will continue to provide an indirect subsidy to the overall demand level of the East and will continue to be a limiting factor for private investment in the East.

2 INSTITUTIONAL BACKGROUND AND HISTORY

2.1 *Public and Private Wages*

Re-unification presented the West German economy with a new partner of much lower productivity and wages. At the outset of re-unification, wages in the East were around 10 per cent of wages in the West (Sinn, 1995a).² In 1991, East German wages were re-negotiated in order to establish some form of comparability of costs and productivity as well as fairness within the whole of a united Germany. The idea was that conflicting equity and competitiveness

²A very low, but not all that accurate, percentage is confirmed by different sources of data. It should be noted that in the very early 1990s data on firm ownership, wages and jobs contained some measurement error that cannot be quantified. These data problems cannot be avoided when dealing with the first years of German re-unification.

objectives should be somehow reconciled. Great emphasis was seemingly placed on the objective of equity, where it was considered desirable that the same wage should be paid for the same job in East and West. It was immediately obvious in 1991 that, in order to achieve East–West equality of pay, a large increase in wages in the East would have been necessary. As a consequence, through legislative measures, the East German wage level reached 80 per cent of the West German level within only five years after re-unification. It is not clear whether it was obvious at the time of policy design that such a policy could have serious repercussions regarding the competitiveness of former East Germany.³ At the time of re-unification it was clear that while the *human capital* of East Germany was competitive and of a considerably high standard, the *physical capital* stock of the former East German economy was exceedingly aged and unable to compete within the western economic sphere (Franz and Steiner, 1999). Yet, post-unification physical capital was subsidized to such an extent that it became a *de facto* ‘good’ rather than an input (Sinn, 1995b).

Although there are different interpretations in the literature as to why things happened as they did (Sinn, 1995a; Burda and Schmidt 1997; Dustmann and van Soest, 1997 and 1998; Steiner, 2001), a brief summary of what happened after the pay convergence decision runs as follows. Whereas West Germany had a long-standing history of wage settlement negotiations (and the trade union infrastructure to support them), East Germany upon re-unification in 1990 was far less well equipped to perform such a vital economic function. Although West German public and private employees’ wages were settled separately, and to a degree by different organizations (just under one half of German state employees, the *Beamten*, have no right to negotiate their wages, as their wages are directly determined by the state), the development of public and private wages were closely linked with one another (Dustmann and van Soest, 1997). In contrast, East German employees in 1990 emerged from a political situation where most employees and most economic activity were meant to have been part of a large, loosely defined and inefficient public sector. Upon re-unification in 1990, there were two main candidates to choose from for negotiating wage settlements in East Germany: the East German trade unions and the West German trade unions. The East German trade unions suffered a credibility deficit, principally due to their strong past links with the former East German government (Franz and Steiner, 1999). Hence, almost by default, negotiations on behalf of the

³Opinions at that time differed widely. The head of the Bundesbank, Mr Pohl, resigned because he thought the process was being mismanaged. The head of Treuhand (the company that was in charge of moving East German public sector companies into the private sector, who was later assassinated), in complete contrast, thought there were serious business opportunities through the re-allocation of high-quality labour to more productive tasks. The Chancellor, Mr Kohl, took a political view and consciously subordinated economics to politics and promoted pay convergence.

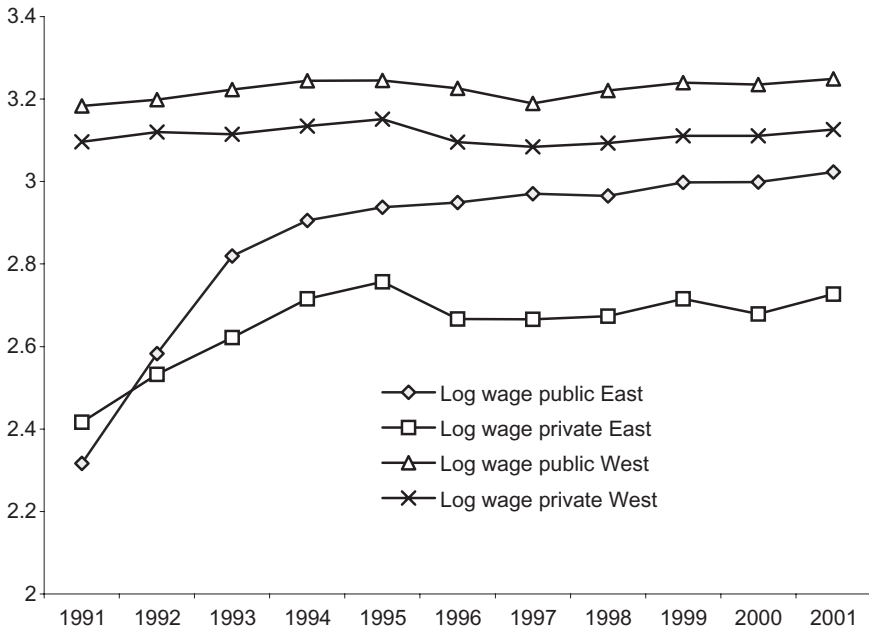


FIG. 1 Wages by Sector and Region

Note: Log hourly wages based on the GSOEP 1991–2001 (see text for definition).

employees of the East German private industry were carried out by the West German trade unions. The stated objective was to achieve a fair wage and a fair competitive playing field between the two parts of Germany.

Figure 1 shows the outcomes from these negotiations in terms of the log of hourly wages in the two sectors by region by year from 1991 to 2001. Vertical axis log-point differences amount roughly to percentage-point differences. The top two lines represent the West, showing very little movement in the real wages since re-unification. The striking part of Fig. 1 is the steep increases in real wages in the public sector in the East between the years 1991 and 1995. In contrast, the private sector in the East appears to have made some headway up to 1995 and none afterwards. Given the sluggish performance of the German economy in the 1990s and the associated capital stock limitations, such large relative pay rises are clearly a cause for concern regarding their impact on the competitiveness of the former East Germany economy.

2.2 East–West Convergence of Wages by Sector

Wage convergence can be viewed as the joint outcome of market influences and institutional wage settlements. Figure 2 plots the development of East–

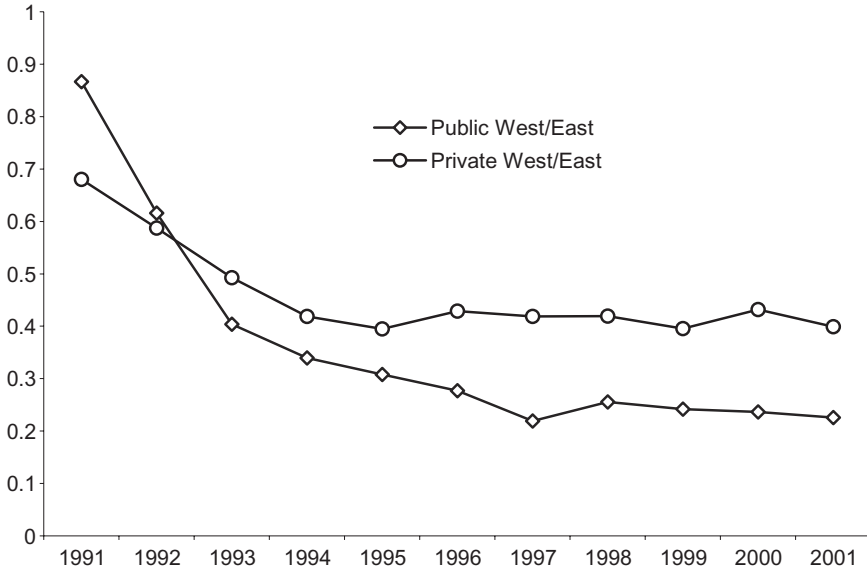


FIG. 2 Wage Gap Convergence by Sector

Note: Log hourly wages based on the GSOEP 1991–2001 (see text for definition).

West wage convergence by sector over time. Full convergence will have been achieved when the difference reaches zero (i.e. wages in the East and West are the same). Upon re-unification, East wages in both sectors were much lower than West wages. Two main messages arise from Fig. 2. First, most convergence happened in the first five years after re-unification. Second, the public sector appears to have converged considerably more than the private sector.

The institutional background during this period of time is of interest. The dominant role was played by institutional factors and these factors clearly favoured East–West convergence as a result of the political considerations discussed above. Hence, convergence reached very high levels by default, and given that the cost of living was cheaper in East Germany, one could argue that this convergence was highly successful in terms of its political remit. In contrast, private sector convergence was anything but plain sailing. The competitiveness of the East private sector was clearly problematic. Market forces were exposing the problems in ways that created serious downward wage pressures in the East, which were working against the stated political objective of East–West convergence. The extent to which market forces were working against convergence objectives became obvious in 1995, when a large number of private sector firms in the East opted out of the national pay negotiations and started accepting lower wages, presumably in

order to avoid further unemployment and/or bankruptcy (Hunt, 1999). It is indicative that in 1996 there was no difference between East and West in the coverage of employees by wage bargaining (around 90 per cent for both regions). In contrast, only 50 per cent of private employees were covered in the East compared with 65 per cent in the West (Franz and Steiner, 1999). It is clear that market forces influenced a small number of employees in the public sector, a higher proportion of employees in the private sector in the West and an even higher proportion of employees in the private sector in the East. It is noteworthy that at about that time the public sector East–West convergence of wages also slowed down almost to a stop for the rest of the decade.

3 THE DATA

The GSOEP from 1991 to 2001 is used for estimations. For a detailed description of the data see Haisken-DeNew and Frick (2005). The GSOEP began in 1984 with a sample of 12,541 respondents. Sampling is household based. All those 16 years and over in the sampled households are interviewed annually. Originally, only face-to-face interviews were conducted, but now interviews are also conducted by telephone and Internet. The GSOEP began in West Germany only and extended to East Germany in 1990 after the Wall came down but before formal unification occurred. This paper uses the sample from 1991 when all the formalities of re-unification had been concluded and the new policies regarding wage settlements started arising.⁴ The representativeness of the survey is maintained mainly by interviewing ‘split-offs’, i.e. people who leave their original households and set up their own household, e.g. children who leave home and couples who separate. The main information covered by the GSOEP and used in this paper is on income, labour force information and personal and household characteristics.

The sample has been narrowed by excluding categories of persons that are not relevant to the present analysis. These are persons who are self-employed, unemployed, labour market non-participants, individuals working for the armed forces or in agriculture and fishery, and as such they have been excluded from the sample. However, this is not to say that transitions from employment into self-employment are not relevant in this context, but given the notoriously poor income data for these groups we excluded them.

The data were split in two subsets, 1991–96 and 1997–2001, in order to reflect the structural break in the economy relating to privatization in the mid-1990s and in order to capture the different changes in wage setting

⁴Strictly speaking a very short comparison between former East and former West is possible as the GSOEP was extended to the East after the fall of the Berlin Wall and before formal unification. But this is not the focus of this paper.

between public and private sectors between the early and late 1990s. Experimentation with a cut-off point one year earlier and one year later showed no significant changes in the results. The log of gross hourly wage is calculated using the monthly wage divided by the actual hours worked per week scaled up to actual hours worked per month. Actual hours per week also include overtime. The resulting gross nominal hourly wage is deflated by the consumer price index from the *Statistisches Bundesamt* to 2000 prices.⁵ Where values are missing from any of the variables used in the estimations, the observation is dropped. Regional dummies were used at the Länder level and year dummies were included within each of the two time periods investigated.

Table 1 reports the sample mean characteristics for the periods 1991–96 and 1997–2001, by public/private sector and by East/West region. Unsurprisingly, women are more likely to be employed in the public sector than men. However, this is driven by the East German public sector; in the West men are more likely to be found in both public and private sectors. As expected, the proportion of skills and qualifications vary by sector and by region. While there are very few employees with only primary schooling in the East, a sizeable proportion of employees in the West labour market have only achieved primary schooling level.⁶ Regardless of the sector and region, the majority of employees have at least a middle vocational education level. The percentage of employees with either higher vocational or higher education is much greater in the public sector raising concerns about skills crowding out by the public sector (Dustmann and van Soest, 1997).⁷

Hourly log wages are significantly higher in the public than in the private sector. This is particularly pronounced for East Germany with an overall gap of almost 30 log points in the second half of the 1990s (two and a half times that of the West). Figure 1 shows how the gap varies quite substantially when dividing the sample in the two periods of 1991–96 and 1997–2001. Finally, the percentage of public employees is higher in the East compared with the West, although this difference was somewhat reduced by 2001. In 1991 in the East (West) 37 per cent (27 per cent) of employees were in the public sector. This percentage had been reduced to 30 per cent for the East and 24 per cent for the West by the year 2001.

⁵Unfortunately, separate consumer price index data for the East were not available from the statistical office. It would be desirable to deflate wages using regional information. It should be noted, however, that this is less of an issue when comparing the public–private sector wage gap within the East and West separately as any distortion from a common consumer price index applies to both sectors.

⁶Note that comparison between the 1991–96 and 1997–2001 subsamples shows that this percentage drops considerably with time, and these individuals also drop out or retire at a faster rate.

⁷For a formal discussion on public sector crowding out see Henley and Thomas (2001).

TABLE 1
MEAN CHARACTERISTICS (1991–2001)

	<i>East</i>				<i>West</i>			
	<i>1991–96</i>		<i>1997–2001</i>		<i>1991–96</i>		<i>1997–2001</i>	
	<i>Public</i>	<i>Private</i>	<i>Public</i>	<i>Private</i>	<i>Public</i>	<i>Private</i>	<i>Public</i>	<i>Private</i>
log wage	2.73	2.61	2.99	2.69	3.22	3.12	3.23	3.10
(st. dev.)	(0.42)	(0.43)	(0.46)	(0.56)	(0.38)	(0.43)	(0.43)	(0.52)
Public	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
East	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Married	0.78	0.75	0.70	0.64	0.68	0.68	0.65	0.62
Male	0.38	0.62	0.36	0.60	0.52	0.63	0.49	0.62
Large firm	0.57	0.34	0.56	0.26	0.71	0.50	0.66	0.46
Basic occupation	0.28	0.24	0.22	0.23	0.26	0.40	0.21	0.33
Part time	0.03	0.07	0.16	0.09	0.03	0.02	0.22	0.14
Owner	0.31	0.35	0.44	0.44	0.46	0.36	0.51	0.41
Nationality	0.99	1.00	1.00	1.00	0.89	0.69	0.92	0.76
Child0–4	0.17	0.18	0.16	0.20	0.25	0.30	0.26	0.33
Child5–11	0.37	0.35	0.24	0.27	0.28	0.32	0.32	0.37
Child12–16	0.31	0.30	0.29	0.31	0.23	0.27	0.24	0.27
Single parent	0.05	0.04	0.06	0.05	0.05	0.04	0.06	0.05
Low education	0.02	0.04	0.05	0.11	0.14	0.27	0.11	0.23
Middle education	0.51	0.71	0.45	0.62	0.42	0.54	0.41	0.53
Vocational education	0.28	0.17	0.26	0.15	0.23	0.11	0.23	0.13
Higher education	0.19	0.08	0.25	0.12	0.21	0.08	0.24	0.11
Age34	0.28	0.28	0.21	0.24	0.28	0.32	0.27	0.32
Age44	0.33	0.32	0.31	0.31	0.28	0.25	0.30	0.27
Age54	0.25	0.24	0.26	0.21	0.25	0.22	0.25	0.20
Age65	0.08	0.07	0.13	0.09	0.11	0.10	0.11	0.09
Tenure <3 months	0.19	0.29	0.16	0.32	0.13	0.20	0.15	0.25
Tenure 3–6 months	0.27	0.27	0.22	0.35	0.23	0.27	0.21	0.25
Tenure 7–14 months	0.15	0.09	0.37	0.22	0.25	0.25	0.27	0.26
Tenure 15 months+	0.39	0.35	0.25	0.11	0.39	0.28	0.37	0.24
Year 1	19.56	19.36	22.11	20.86	16.93	17.58	22.24	21.52
Year 2	18.99	17.26	21.29	20.03	16.67	16.92	21.03	20.16
Year 3	16.64	15.66	20.63	19.36	16.62	17.26	19.25	19.42
Year 4	15.41	15.15	18.96	20.82	16.39	16.01	19.39	20.40
Year 5	14.71	16.12	17.01	18.93	16.70	16.03	18.09	18.51
Year 6	14.69	16.45	—	—	16.69	16.2	—	—
Sample size	3,997	6,942	2,569	5,321	6,143	18,095	4,488	13,608

4 THE MODEL

4.1 Wage Estimations and Decompositions of the Public–Private Wage Gap

The paper estimates the following earnings models:

$$\ln W_i = X_i' \beta + \varepsilon_i \quad (1)$$

where $\ln W$ is the log hourly wage, X contains all observable employee characteristics, β contains the coefficients to be estimated and ε is an independent identically distributed error term. Subscript i denotes the individual. The objective of these estimations is to derive conditional public–private wage differentials for the two regions and compare them. Two modelling routes are followed.

First, equation (2) is estimated by pooling the data across regions and sectors and including in the right-hand side interaction terms. Fixed-effects estimation is used to control for individual unobserved heterogeneity as follows:

$$\ln W_{it} = X_{it}' \beta + Z_{it}' \gamma + \alpha_i + \varepsilon_{it} \quad (2)$$

In equation (2), Z contains sector \times region interaction terms, subscript t denotes the year and α_i is the individual fixed effect. The advantage of this method is that it controls for unobserved heterogeneity and provides a simple form of decomposition, by way of comparing raw and conditional differentials. The disadvantage of fixed-effects estimation in the present context is that it does not allow for the development of the customary Oaxaca-type decompositions of differentials.⁸ Three samples were used to estimate equation (2): a pooled sample over all four sector and region combinations with three sector \times region interaction variables, and two subsamples (one for the East and one for the West) pooling the two sectors together with only one sector \times region interaction variable each.

Second, equation (3) is estimated by separating the data by region and sector and pooling it over time. Ordinary least squares (OLS) estimation is used here.

$$\ln W_{SRt} = X'_{SRt} \beta_{SR} + T'_{SRt} \delta + \varepsilon_{SRt} \quad (3)$$

Subscripts R and S denote the region (East or West) and the sector (public, private, pooled) respectively and T denotes the year of observation. Eight subsamples are used in order to study four public–private pay gaps: i.e. in the East, West, pre-1997 and post-1996. The results of these estimations are then used in the way suggested by Oaxaca and Ransom (1994) in order to decom-

⁸There are certain unresolved issues in the literature regarding the consistency of decompositions based on fixed-effects estimates which include time-invariant explanatory variables. For an exposition see Heitmueller (2005).

pose the sector pay gap into its constituents: (i) the explained part of the pay gap and (ii) the unexplained part of the pay gap. Omitting the subscripts for region and individual, the wage gap between the public and private sectors can be decomposed as follows:

$$\begin{aligned} \text{WageGap} = \ln W_{\text{PUB}} - \ln W_{\text{PRIV}} = & \bar{X}'_{\text{PUB}}(\hat{\beta}_{\text{PUB}} - \hat{\beta}_{\text{POOL}}) + \bar{X}'_{\text{PRIV}}(\hat{\beta}_{\text{POOL}} - \hat{\beta}_{\text{PRIV}}) \\ & + (\bar{X}'_{\text{PUB}} - \bar{X}'_{\text{PRIV}})' \hat{\beta}_{\text{POOL}} \end{aligned} \quad (4)$$

where circumflexes denote estimated coefficients and bars denote means of characteristics. The convention behind decomposing a wage gap between its explained and unexplained parts runs as follows. The explained part of the gap $(\bar{X}'_{\text{PUB}} - \bar{X}'_{\text{PRIV}})' \hat{\beta}_{\text{POOL}}$ refers to the part of the pay gap that can be accounted for by (observed) differences in employee characteristics between the two sectors (the difference in mean characteristics in parentheses weighted by the relevant estimated coefficient). The unexplained part of the gap, often referred to as the public sector pay premium, $\bar{X}'_{\text{PUB}}(\hat{\beta}_{\text{PUB}} - \hat{\beta}_{\text{POOL}}) + \bar{X}'_{\text{PRIV}}(\hat{\beta}_{\text{POOL}} - \hat{\beta}_{\text{PRIV}})$ refers to the part of the pay gap that cannot be accounted for by any observed characteristics (the two sets of differences in estimated coefficients in parentheses, weighted by the relevant observed characteristics).

There are several ways in which wage gaps can be decomposed into their explained and unexplained constituents. A crucial difference between them is the assumption that has to be made regarding the overall level of wages and the way in which wages would have been determined in the absence of the unexplained part of the decomposition (in this paper, if there were no unobserved differences between the two sectors of employment). As the literature initially concentrated on male–female wage gaps and gender discrimination, it became apparent that the assumed ‘non-discriminatory’ wage structure influenced decomposition results strongly. Assuming that all would be paid wages at the male level in the absence of discrimination/unexplained effects gave very different results from assuming that all would be paid wages at the female level.⁹ Several methods of weighted decompositions were developed to tackle this problem, one of them being the Oaxaca and Ransom (1994) pooled decomposition, where the explicit assumption is that the non-discriminatory wage structure is that implied by the estimation of the pooled sample *as if all individuals belonged to the same group* and differed only in the rest of their observable characteristics. Using the coefficients of the pooled regression one can then estimate the advantage of the better-paid group

⁹Furthermore, it was shown by Neumark (1988) and Oaxaca and Ransom (1988, 1994) that the two benchmark non-discriminatory counterfactuals (in the case of gender, one assuming that the non-discriminatory structure would pay everyone male wages and the other female wages, often referred to as the ‘male’ and the ‘female’ models) were not defining the upper and lower limits of the decomposition results, due to the nonlinear left-hand-side wage variable conventionally used in this context.

above the pooled wage and disadvantage of the worse-paid group below it. An important element of this type of weighted decomposition is that it uses a counterfactual that assumes the total wage bill in the economy to be the actual one. This is the method followed in this paper. In the context of public–private pay differences, this method makes good sense, as it is not clear what would happen if wages were determined in the absence of those factors that may generate either a public sector or a private sector premium. Another possible reason for concern in this context may be sample selection by sector of employment. First, public sector choice may not be random (e.g. Hartog and Oosterbeek, 1993; Dustmann and van Soest, 1997; Heitmueller, 2006). Second, productivity adjustments within sectors as a response to excessively high wage levels in the East may have led to a selection of the most productive workers while others may have been made redundant to help reduce the gap between actual performance and set wages (Burda and Schmidt, 1997). Estimating a selection model would be complicated especially due to the difficulties involved in finding appropriate instruments which would influence sector choice but would have little direct effect on wages. Using inappropriate instruments would in itself open the possibility of biased results. On balance it was decided to avoid modelling selection. As the present analysis largely concentrates on the differences of the wage gaps (and their decompositions) between two periods of time and between two regions, the implicit assumption made by not modelling selection is that its effects will not vary in an empirically relevant manner across periods and regions. This is a caveat that should be borne in mind when interpreting the results of the paper. The paper simply assumes that, in the absence of a public and/or private sector premium, wages would be re-adjusted in a way which would utilize all other information apart from the sector in which employees work.

5 ESTIMATION RESULTS, DECOMPOSITIONS AND DISCUSSION

5.1 *Fixed-effects Estimation Results*

Equation (2) was estimated three times: once using the complete sample pooled across all four sectors and regions, once using the East subsample and once using the West subsample. The dependent variable was log hourly wages. We controlled for marital status, gender, firm size, occupation, job tenure, house ownership, children and their age group, skills and qualifications, region, and year. Four interaction variables were used for sector and region. Results are presented in Table 2.

A clear and simple message comes out of Table 2. Column (1) shows that when the country is looked at as a whole, the East–West differences dominate the picture. The reference category for the interaction variables is the public sector in the East. Both public and private wages in the West are higher than those in the East. There appear to be no public–private differences within the

TABLE 2
FIXED-EFFECTS ESTIMATION RESULTS

	(1) <i>East and West</i>	(2) <i>East</i>	(3) <i>West</i>
Private × West	0.126 (2.60)	—	0.001 (0.15)
Public × West	0.124 (2.54)	—	Reference category
Private × East	−0.001 (−0.15)	−0.020 (−2.10)	—
Public × East	Reference category	Reference category	—
Sample size	57,741	16,695	41,046

Notes: *t* ratios in brackets. Full results can be found in Table A1 in the Appendix.

East and within the West. These results are primarily due to two reasons. First, all evidence points towards the fact that the two regions have very different economies with different capital investment and human capital productivity, so the result of strong East–West differences could be expected. Second, the data contain very little movement between the two regions, so that fixed-effects estimation cannot be expected to be very informative regarding public–private differences between the East and the West.¹⁰ Columns (2) and (3) in Table 2 split the sample by region to reveal no public–private sector premium in the West and a positive public sector premium in the East. This is a valuable result for two reasons. First, it indicates that, after controlling for individual unobserved heterogeneity, there is a positive (zero) public sector premium in the East (West). Second, this result lends empirical support to the more detailed decompositions developed below, which are based on pooled data, estimated using OLS and not controlling for unobserved individual heterogeneity.

5.2 OLS Estimation Results

Equation (3) was estimated 12 times: by sector (public, private and pooled), by region (East and West) and by time period (1991–96 and 1997–2001). The dependent variable was log hourly wages. We controlled for marital status, gender, firm size, occupation, job tenure, house ownership, children and their age, skills and qualifications, age, region, and year. All estimations contained the same explanatory variables in order to make them comparable for the wage gap decompositions presented in equation (4). Estimation results are presented in Table 3. This is necessary in order to establish the performance of the wage estimations as they are in essence the material used to generate the decompositions. It should be borne in mind that, at the end of the day, all decompositions can only be as good as the underlying models they stem from.

Estimated associations between hourly pay and the right-hand-side variables largely accord with intuition. Being married is associated with higher

¹⁰The data contain only 185 changes between the two regions.

TABLE 3
OLS ESTIMATION RESULTS

	<i>East</i>				<i>West</i>			
	<i>1991–96</i>		<i>1997–2001</i>		<i>1991–96</i>		<i>1997–2001</i>	
	<i>Public</i>	<i>Private</i>	<i>Public</i>	<i>Private</i>	<i>Public</i>	<i>Private</i>	<i>Public</i>	<i>Private</i>
Married	0.04 (2.25)	0.02 (1.34)	0.06 (2.38)	0.04 (1.85)	0.06 (4.37)	0.02 (1.96)	0.06 (3.61)	0.05 (4.33)
Male	0.01 (0.74)	0.19 (14.19)	0.01 (0.41)	0.13 (7.29)	0.08 (6.01)	0.20 (22.54)	0.06 (4.01)	0.12 (9.76)
Large firm	0.05 (3.75)	0.13 (10.51)	0.11 (5.34)	0.20 (11.14)	0.03 (2.72)	0.16 (20.55)	0.05 (3.09)	0.17 (17.48)
Basic occupation	-0.11 (-8.16)	-0.080 (-5.72)	-0.01 (-0.40)	-0.07 (-4.25)	-0.14 (-9.75)	-0.15 (-18.44)	-0.09 (-5.02)	-0.06 (-5.56)
Part time	0.06 (1.71)	0.03 (1.38)	-0.01 (-0.23)	-0.02 (-0.78)	0.01 (0.19)	-0.03 (-1.62)	-0.05 (-2.68)	-0.16 (-9.45)
Owner	-0.02 (-1.25)	-0.01 (-0.50)	0.01 (0.26)	-0.01 (-0.78)	0.04 (3.22)	0.06 (7.41)	0.04 (2.37)	0.05 (4.59)
Nationality	0.03 (0.22)	0.21 (3.30)	0.06 (0.72)	0.28 (4.50)	0.01 (0.72)	-0.01 (-0.71)	0.01 (0.42)	0.01 (0.34)
Child0–4	0.01 (0.79)	-0.02 (-1.39)	0.05 (1.81)	0.04 (2.41)	0.02 (1.64)	0.03 (3.57)	0.02 (1.11)	0.02 (1.83)
Child5–11	0.03 (2.15)	-0.01 (-0.95)	-0.01 (-0.19)	-0.04 (-2.19)	0.04 (3.73)	-0.01 (-1.23)	0.03 (2.45)	0.03 (2.82)
Child12–16	0.01 (0.69)	-0.02 (-1.65)	-0.01 (-0.67)	-0.04 (-2.26)	0.02 (1.59)	-0.01 (-0.99)	0.01 (0.12)	-0.04 (-3.94)
Single parent	0.02 (0.62)	0.01 (0.05)	0.05 (1.22)	-0.04 (-1.09)	0.03 (0.97)	-0.04 (-1.95)	0.01 (0.19)	-0.02 (-0.68)
Mid-level education	0.20 (3.36)	0.35 (8.14)	0.29 (3.90)	0.45 (11.81)	0.09 (5.07)	0.09 (8.88)	0.18 (6.87)	0.21 (16.14)
Vocational education	0.34 (5.62)	0.54 (11.81)	0.43 (5.84)	0.60 (14.59)	0.10 (4.59)	0.20 (12.87)	0.22 (7.89)	0.31 (18.05)
Higher education	0.51 (8.13)	0.60 (11.91)	0.62 (8.29)	0.74 (16.74)	0.40 (16.28)	0.45 (21.53)	0.46 (15.20)	0.57 (28.48)
Age34	0.12 (4.05)	0.16 (6.61)	0.36 (6.44)	0.58 (15.82)	0.12 (5.64)	0.19 (14.81)	0.39 (10.00)	0.52 (24.54)
Age44	0.19 (6.40)	0.18 (6.69)	0.44 (7.38)	0.60 (15.32)	0.22 (9.06)	0.24 (16.02)	0.52 (12.52)	0.59 (25.98)
Age54	0.22 (6.87)	0.15 (5.56)	0.45 (7.92)	0.55 (13.83)	0.28 (11.02)	0.23 (13.92)	0.57 (13.24)	0.59 (24.32)
Age65	0.20 (5.06)	0.16 (4.76)	0.45 (7.72)	0.47 (10.69)	0.25 (8.97)	0.19 (10.82)	0.58 (12.55)	0.56 (20.68)
Ten3to6	0.10 (6.19)	0.04 (3.01)	0.25 (9.31)	0.10 (6.57)	0.07 (4.11)	0.08 (9.84)	0.16 (7.15)	0.11 (10.26)
Ten7to14	0.15 (7.25)	0.03 (1.31)	0.31 (11.33)	0.14 (7.30)	0.13 (7.13)	0.12 (11.11)	0.22 (9.36)	0.19 (15.42)
Ten15+	0.18 (9.49)	0.05 (2.95)	0.38 (12.25)	0.18 (6.84)	0.16 (8.04)	0.19 (15.81)	0.25 (9.81)	0.23 (15.04)
Constant	1.67 (11.09)	1.63 (19.63)	1.93 (16.60)	1.45 (18.81)	2.64 (64.12)	2.58 (85.11)	2.21 (35.68)	2.10 (45.71)
R ²	0.5552	0.3280	0.4980	0.5261	0.4363	0.4167	0.5030	0.5200
Sample size	3,997	6,942	2,569	5,321	6,143	18,095	4,488	13,608

Notes: Region (Länder) and year dummies have been included in the estimation. *t* ratios in parentheses. Omitted categories are: No children, Low education, Age below 25 and Tenure below three months.

pay, the association being weaker in the private sector. Males are paid more with the exception of the public sector in the East. Large firms pay higher wages in both sectors. Lower-status occupation groups are paid less with the only exception of the public sector in the East in 1997–2001 with a very imprecise estimate. Part-time employment is paid less than full-time employment but only in the West in 1997–2001. A positive and rather imprecise estimate in the East public sector in 1991–96 cannot be explained. Home ownership is associated with higher hourly pay but only in the West. Being non-German appears to carry a small pay penalty, especially in the East. A very complex relationship appears with regard to children in the household. It appears that the association between children and hourly pay depends on the sector as well as the age of the children but not in a clearly intuitive way. Being a single parent is not associated with hourly pay with the sole exception of a negative association in the private sector in the West between 1991 and 1996. Skills and qualifications are always positively associated with hourly pay to a degree that varies by sector, by region and by period. The skills and qualifications results are discussed in some more detail below. Age is positively associated with hourly pay forming a quadratic relationship. Length of tenure is always positively associated with hourly pay, in a stronger way in the public sector where progression is more reliant on seniority than in the private sector. Regional dummies (at the level of *Länder*) and year dummies were included as control variables. Several alternative model specifications were run to test the robustness of the results. For example, yearly decompositions have been estimated and the evidence in trends agrees very much with the above results (but is much noisier). Also, we have used overlapping five-year panels to decompose the public–private sector gap and again the results reported here were confirmed, as was the empirical justification of splitting the subsamples between the years 1996 and 1997 in order to capture privatization and wage setting changes.

5.3 *Level of Skills and Qualifications*

Examination of the detailed estimation results shows some interesting differences in the associations of wages with skills and qualifications between public and private sector estimations.¹¹ Table 4 shows a considerably larger proportion of vocational and higher skills and qualifications in the public sector in both East and West. It shows that the proportion of vocational

¹¹The measurement of skills and qualifications in household survey data sets typically leaves a lot to be desired. One has to live with noisy answers to questions that are often not particularly pertinent and that are asked of the wrong people. Ideally, one would wish to have a more objective, employer-based assessment of (general and specific) skills to work alongside with more precisely defined highest qualifications level. Notwithstanding this caveat, the message coming out of these data is sufficiently precise and intuitively appealing.

TABLE 4
MEAN LEVEL OF SKILLS AND QUALIFICATIONS

Skills and qualifications	East				West			
	1991–96		1997–2001		1991–96		1997–2001	
	Public	Private	Public	Private	Public	Private	Public	Private
Low	2.4	4.3	4.6	11.2	14.3	26.5	11.4	22.6
Middle	51.4	71.0	44.7	61.7	41.8	54.2	40.9	52.8
Vocational	27.7	17.0	25.5	14.9	22.7	11.2	23.3	13.4
Higher	18.5	7.7	25.2	12.2	21.2	8.1	24.4	11.2

Note: Definition of variables included in the Appendix.

TABLE 5
THE REMUNERATION OF SKILLS AND QUALIFICATIONS

Skills and qualifications	East				West			
	1991–96		1997–2001		1991–96		1997–2001	
	Public	Private	Public	Private	Public	Private	Public	Private
Middle	0.20	0.35	0.29	0.45	0.09	0.09	0.18	0.21
Vocational	0.34	0.54	0.43	0.60	0.10	0.20	0.22	0.31
Higher	0.51	0.60	0.62	0.74	0.40	0.45	0.46	0.57

Note: Detailed results in the Appendix show that all skills and qualifications coefficients are statistically significant at least at the 1 per cent level.

qualifications remained largely stable in the 1990s with a small decrease in the East and a small increase in the West. The most prominent change has been in employees with higher education in the East whose proportion increased by 6.7 (4.5) percentage points in the public (private) sector to reach the level of 25.2 (12.2) per cent. Clearly, the public sector in the East became more attractive to employees with higher education as the 1990s decade progressed. Interestingly, the private sector in the West experienced a very similar increase of 3.1 per cent, but the public sector did not, increasing its proportion of employees with higher education by only 1.6 per cent.

Table 5 shows the differences in the way the market remunerated skills and qualifications in the East and the West. Coefficients from all eight estimations must be interpreted using low skills as the reference category.

There are some prominent regularities. First, being well educated paid better in the East. This was true throughout the 1990s and in both sectors. Second, in both East and West the highest-paid educated employees are in the private sector. Finally, although both sectors in the East increased their pay for highly qualified employees, a lower increase in the public sector (coefficient increased by 0.11 in the public and 0.13 in the private sector) resulted in

TABLE 6
OAXACA–RANSOM DECOMPOSITIONS OF PUBLIC–PRIVATE PAY DIFFERENTIAL

	<i>East</i>		<i>West</i>	
	<i>1991–96</i>	<i>1997–2001</i>	<i>1991–96</i>	<i>1997–2001</i>
Observed mean log wage gap	0.1149	0.2994	0.1030	0.1214
Explained (95 per cent confidence interval)	0.0628 0.0511–0.0746	0.2075 0.1888–0.2268	0.1168 0.1090–0.1254	0.1465 0.1345–0.1585
Unexplained (95 per cent confidence interval)	0.0521 0.0412–0.0624	0.0919 0.0757–0.1071	–0.0138 –0.0221 to –0.0051	–0.0251 –0.0347 to –0.0142

Notes: Oaxaca–Ransom wage decompositions based on results reported in Table 3. Confidence intervals (95 per cent) based on bias-corrected bootstrapping with 1000 repetitions.

a higher proportionate increase in employees (proportion rose by 6.7 per cent in the public and 4.5 per cent in the private sector).¹²

5.4 Decompositions of the Public–Private Pay Gap

Results were decomposed in accordance with equation (4) and categorized following the arguments of the previous sections. Decomposition results were bootstrapped in order to establish their statistical significance.

Table 6 presents the decompositions of the public–private mean log hourly wage gap. Differences are in log points which correspond roughly to percentage points. The regional split of public–private pay differentials is clear.

5.4.1 The Public–Private Pay Gap in the West. The average public–private pay gap was 10 log points between 1991 and 1996 and 12 log points between 1996 and 2001. Most of this pay gap is due to observed (explained) differences in the characteristics of the employees in the two sectors. Estimates suggest that there was only a small negative public sector premium in this part of Germany throughout the decade. A negative premium implies that, after all observed characteristics have been controlled for, the public sector pays less than the private sector. Note, however, that this premium, although statistically different from zero throughout the decade, is very small. The finding of no substantial public sector pay premium supports the well-documented view that the wage-setting process in the public sector in Germany follows quite closely that of the private sector (Dustmann and van Soest, 1997), and so is indirectly subjected to market forces. It is interesting to note that the bout of

¹²Note, however, that although Table 5 contains conditional estimates, differences between subsamples may still be driven by differences in the compositions of the subsamples.

TABLE 7
EAST PUBLIC SECTOR PAY GAP

(1) 1991–96 period	(2) Change between periods	(3) 1997–2001 period
Total gap: 11.49	Change in the gap: Increased by 18.45	Total gap: 29.94
Explained: Attributed to differences in characteristics: 6.28 (54.7 per cent of 11.49)	Change in differences in characteristics: 14.47 (78.4 per cent of 18.45)	Explained: Attributed to differences in characteristics: 20.75 (69.3 per cent of 29.94)
Unexplained: Public sector pay premium: 5.22 (45.3 per cent of 11.49)	Change in the public sector pay premium: 3.97 (21.6 per cent of 18.45)	Unexplained: Public sector pay premium: 9.19 (30.7 per cent of 29.94)

Note: Results from Table 6 in log points and, where indicated, in percentages.

privatization in the mid-1990s does not appear to have influenced either the overall size of the public–private sector pay gap or its decomposition components. The relative overtime stability of the pay gap and its decompositions lends further indirect support to the suggestion that the privatized parts of the public sector had already followed the private sector (in their pre-privatization wage setting), so that privatization made no great difference to the overall picture of wages.

5.4.2 *The Public–Private Pay Gap in the East.*¹³ The situation in the East was more complex and less stable over time. The average public–private pay gap was 11.5 log points between 1991 and 1996. The 11.5 log points pay gap between the two sectors in 1991–96 can be decomposed almost in half between the effect of observed (explained) differences in the characteristics of the employees (6.3 log points) and an unexplained public sector pay premium (5.2 log points). A very different picture arises when we examine the 1997–2001 period. First, the total pay gap *almost trebled* from 11.5 to 29.9 log points. Second, the explained part of it *more than trebled* jumping from 6.3 log points to almost 21 log points. Third, the public sector premium *almost doubled* from 5.2 to 9.2 log points. It is noteworthy that these estimates appear to be statistically very precise. These changes reflect some of the economic adjustments that followed re-unification in the East. We look at each of them separately with the help of Table 7. Remember that the large

¹³All wage developments should be viewed alongside the intense post-unification subsidization of capital in the East, which altered the relative price of capital and labour. What we observe is the net effect on wages which was positive. However, the development of the price of capital would not in itself be able to explain the differences between the private and the public sectors. Privatization (as a selection mechanism) and differences in the influence of trade unions are much more likely to have been the cause of changes.

increase in the public–private pay gap in the East (column (2), top row, 18.45 log points) was primarily due to increases in public sector pay with private sector pay remaining largely unchanged. There was little market discipline in these increases in the East; rather, they reflected the political and social objective of pay convergence across the whole of (re-unified) Germany. In contrast, public sector pay market discipline in the West remained largely unchanged, indeed with an indication that it may have been tightened, as the small but statistically significant increase in the estimated negative premium may reflect.

Looking at column (1), in 1991–96, 54.7 per cent of the (11.49 log point) pay gap was due to differences in characteristics between public and private sector employees, and 45.3 per cent of the pay gap was due to a public sector premium. For the German reality 5.22 log points was an unprecedented premium in favour of public sector employees. Other things equal, one would expect such a premium to generate flows towards the public sector across all skill levels, which flows over time would increase the proportion of more employable persons within the public sector. In 1997–2001 (column (3)) the proportion of the pay gap that was due to characteristics differences between public and private employees went up from 54.7 per cent (6.28/11.49) to 69.3 per cent (20.75/29.94). Note that the 18.45 change of the pay gap between the early and late 1990s consists primarily of changes in its characteristics component (78.4 per cent), making this point clearer. Skills and qualifications means presented in Table 4 also point towards the view that the proportion of better-qualified employees increased in the public sector in the East much faster than in the private sector. But clearly, skills and qualifications are not covering the whole picture in terms of the market value attached to individuals in the two sectors. Looking at the changes in the relative characteristics between the two sectors suggests that the large public sector premium has been attracting/retaining the more employable individuals, leaving the private sector in short supply for its necessary post-unification development, supporting the proposition that public sector employment has been crowding out private sector employment in East Germany.

The remaining decomposition results in the bottom row of Table 7 suggest that further problems may lie ahead in the future. On the premise that the public sector premium was a major underlying factor for the observed changes in the employee composition of the public and private sectors between 1991–96 and 1997–2001, one could expect the situation to get worse in the post-2001 period. This is because the public sector pay premium has increased from 5.22 log points in 1991–96 to 9.19 in 1997–2001, so the starting private sector disadvantage for the early 2000s is much higher. In terms of the policy implications, the decomposition results suggest that the short-term alleviation of the economic disadvantage of the East through the higher public wages and their overall economic impact was achieved at the cost of having crowded out the private sector and having established a

long-term imbalance in the form of the public sector pay premium. It could take time and political will to address the resulting private sector disadvantage, and tackling the public sector pay premium will be an important element of any comprehensive policy aiming to (re-)establish the competitiveness of the East private sector. Given the constraints imposed on the German economy by the European Union, it is not easy to see how the detrimental impact of this unprecedented public sector pay premium on the competitiveness of the East will be counteracted and how the discipline of the public sector wage-setting process in the West will be extended to encompass the East.

6 CONCLUSION

In this paper we examined the development of the public–private sector pay gap in post-unification Germany. It estimated earnings equations and then used the Oaxaca–Ransom method to decompose the public–private sector pay gap into its explained (characteristics) and unexplained (premium) constituents. Major differences between the East and the West were discovered. The West appears to have continued in its tradition of setting public wages in a reactive way to wage developments in the private sector. In contrast, the East embarked on a policy of East–West wage convergence which was abandoned as unsustainable by the private sector in the mid-1990s. Decomposition results revealed a considerable public sector pay premium in the early 1990s. Later 1990s results suggest that the public sector premium has been crowding out private sector employment. Furthermore, decomposition results indicate that the problem is not likely to be short-lived, as the public sector premium, which is an underlying factor for crowding out private employment, increased during the late 1990s. We conclude that, given the fiscal discipline imposed by the European Union, it will be difficult to find remedial policies to re-establish the competitiveness of the East in the short run.

APPENDIX

Description of Variables

<i>Variable name</i>	<i>Variable description/value</i>
Married	1 if married or co-habiting, 0 otherwise
Male	1 if male, 0 otherwise
Large firm	1 if working in a large firm, 0 otherwise
Basic occupation	1 if manual occupation, 0 otherwise
Part time	1 if in part time paid employment, 0 if full time
Owner	1 if home owner, 0 otherwise
Nationality	1 if German national, 0 otherwise
<i>Reference category: no children in household or children older than 16</i>	
Child0–4	1 if child up to 4 years old in household, 0 otherwise
Child5–11	1 if child between 5 and 11 years old in household, 0 otherwise
Child12–16	1 if child between 12 and 16 years old in household, 0 otherwise
Single parent	1 if single parent, 0 otherwise

Reference category: elementary education

Mid-level education	1 if middle vocational education, 0 otherwise
Vocational education	1 if vocational, Abitur, higher vocational education, 0 otherwise
Higher education	1 if higher education, 0 otherwise

Reference category: age less than 25

Age34	1 if 35 > age > 24, 0 otherwise
Age44	1 if 45 > age > 34, 0 otherwise
Age54	1 if 55 > age > 44, 0 otherwise
Age65	1 if age > 54, 0 otherwise

Reference category: tenure less than 2 months

Ten3 to 6	1 if tenure in present job between 3 and 6 months, 0 otherwise
Ten7 to 14	1 if tenure in present job between 7 and 14 months, 0 otherwise
Ten15+	1 if tenure in present job 15 months and over, 0 otherwise
Log hourly wage	Natural log of gross hourly pay including overtime in 2000 prices
East	1 if former East Germany, 0 former West Germany
Public	1 if employed in the public sector, 0 if in the private sector

TABLE A1
FIXED-EFFECTS ESTIMATIONS

	(1) <i>East and West</i>		(2) <i>East</i>		(3) <i>West</i>	
	<i>Coeff.</i>	<i>t ratio</i>	<i>Coeff.</i>	<i>t ratio</i>	<i>Coeff.</i>	<i>t ratio</i>
Married	0.010	1.93	-0.011	-0.91	0.022	3.91
Large firm	0.039	10.24	0.042	5.85	0.038	8.69
Basic occupation	0.009	2.41	-0.002	-0.29	0.010	2.26
Part time	-0.026	-4.90	-0.017	-1.61	-0.015	-2.40
Owner	-0.001	-0.28	-0.006	-0.61	-0.007	-1.37
Child 0–4	0.011	2.93	0.023	2.82	0.014	3.50
Child 5–11	-0.013	-3.68	0.005	0.70	-0.005	-1.13
Child 12–16	-0.014	-4.11	-0.008	-1.26	-0.012	-3.23
Elementary education	-0.016	-1.04	0.181	3.22	-0.026	-1.66
Middle vocational education	0.188	11.54	0.501	9.18	0.143	8.59
Vocational or Abitur education	0.308	15.41	0.674	10.88	0.248	12.06
Higher vocational education	0.225	12.38	0.544	9.66	0.165	8.44
Higher education	0.307	15.43	0.547	9.40	0.303	13.70
Tenure square	-0.001	-6.96	-0.001	-2.68	-0.001	-3.64
Tenure	0.006	10.03	0.006	5.73	0.005	7.55
Age square	-0.059	-28.13	-0.057	-12.91	-0.062	-25.99
Age	0.068	38.55	0.093	24.88	0.066	33.92
Private—West	0.126	2.60	—	—	0.001	0.15
Private—East	-0.001	-0.15	-0.020	-2.10	—	—
Public—West	0.124	2.54	—	—	—	—
Constant	1.041	19.14	-0.538	-4.96	1.335	17.99
R^2						
Within	0.1375		0.2438		0.1089	
Between	0.3977		0.2677		0.3707	
Overall	0.3157		0.1874		0.2882	
Observations	57,741		16,695		41,046	
Individuals	10,951		3,383		7,718	

Notes: Dependent variable is log hourly wage. (Länder) and year dummies have been included in the estimation.

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