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Who Enters Fixed-Term Contracts: Evidence from East and West Germany

by Klaus Schoemann and Thomas Kruppe

In recent years, most European Community countries have increasingly allowed employers to hire workers for a fixed time period. This enables employers to avoid the usual dismissal regulations of a standard work contract.

Differences in the number of fixed-term contract employees, and in the rules with respect to redundancy payments or "social plan" obligations in the standard work contracts, might result in substantial differences in labour costs across European Community countries. Since reducing total labour costs is frequently seen as a means of gaining a competitive edge, member countries with high cost labour regulations could face fierce competition from other member states¹.

Proponents of deregulation, however, argue that fixed-term contracts increase flexibility in the labour market, and thus increase employment (Büchtemann and Quack 1989). Hence, decisions to use fixed-term contracts in EC member states should be made based on their influence on labour market flexibility, occupational mobility and job creation.

This paper analyzes employment contracts across industries and occupational skills in East and West Germany. Deregulation of fixed-term employment began in May 1985 in West Germany with the passage of the Employment Promotion Act (Beschäftigungsförderungsgesetz, BeschFG). Prior to the Act, German employers had to justify offering a fixed-term contract. The reunification of East and West Germany extended this law to the East German labour market.

In the first part of our empirical analysis we test whether employees are more likely to have fixed-term contracts in specific industries, or on lower-skilled jobs. Since most regulations concerning fixed-term contracts explicitly state that employees with fixed-term contracts cannot be disadvantaged in other aspects of employment, the second part of our analysis will look at the importance of fixed-term contracts in explaining earning differentials.

Data

We use various cross-sections of the Socio-Economic Panel (SOEP) in our analysis. Initially we look at 5,156 persons with no missing data who held a job in 1985. Of these 318 (6.17%) had a fixed-term contract. The sample size in our probit estimates is 4,788, of whom 270 (5.64%) had a fixed-term contract. Missing values lower our sample to 4,306 cases in the estimation of the earnings functions in 1988. The 1988 SOEP-West contains 4,170 cases, of whom 230 (5.52%) had a fixed-term contract. In the earnings regression the sample size was 3,671. Rendtel and Schwarze (1991) and Löwenbein and Rendtel (1991) argue that missing data on earnings do not lead to biased estimates of earnings functions in their analyses using the

SOEP-West data. The percentages of fixed-term contracts we find corresponds to that from the micro-census of the German Statistical Office and other publications based on the SOEP data for these years (Büchtemann and Quack 1989, Panelgruppe 1990).

In our probit estimates, based on 1991 SOEP-West data, we have 3,499 observations, of whom 256 (7.32%) are in fixed-term employment. The regression analysis contains 3,250 women and men. The 1991 SOEP-West wave does not directly ask about fixed-term employment, but it is possible to construct this answer by using information provided by job changers, all of whom were asked the reasons for the termination of their previous job and the permanency of the new job. The 1991 SOEP-East wave contains 2,252 women and men, of whom 102 (4.53%) had fixed-term employment. The earnings analysis on these data has 2,111 cases. The corresponding figures for the 1992-SOEP East wave are 1,893 cases, 90 of whom have fixed-term employment (4.75%) and 1,790 of whom have complete information on earnings².

Fixed-Term Employment Contracts and Labour Market Segmentation

To find the probability of being in fixed-term employment, we estimate a probit model where the dependent variable takes the value one if the current job is for a fixed term and zero otherwise. Following Büchtemann and Quack (1989) and Alba-Ramírez (1991), we exclude apprentices, conscripts for military or compulsory civil service and the self-employed from the sample. Although apprentices and conscripts have fixed-term appointments in principle, the basis of their labour contracts derive also from other legal sources, and subsequently earnings estimates would be artificially biased downward.

Results

Our models were estimated in a stepwise manner in which personal characteristics such as education, age, age-squared, and gender were first entered. In a second step, job characteristics were entered. Finally six dichotomous variables were added that represent different industrial sectors based on Stinchcombe (1979). The reference category is the bureaucratic service industries, notably banking, insurance and social administration. Here, we report estimates from the model in which all variables are included. The results using other specific categories are basically the same.

¹ It is uncertain whether competition is really increasing or not. The GATT negotiations have helped to reduce trade barriers between countries. Of more direct concern for our paper is the creation of a true European common market with enhanced competition between member states.

² For more details about sample sizes in the Eastern Waves compare, for example, Schwarze (1991) and Schupp and Wagner (1991) who use the same or a similar design of the empirical part.

Table 1

Probit Estimates of Employment with Fixed-Term Contract
Standard errors in parantheses

| Variables | WEST 1985 | WEST 1988 | WEST 1991 | EAST 1991 | EAST 1992 |
|----------------------|---------------------|---------------------|---------------------|--------------------|--------------------|
| Education | 0.14*** (0.03) | 0.09** (0.03) | 0.04 (0.03) | 0.01 (0.04) | 0.05 (0.04) |
| Age | -0.13*** (0.042) | -0.023*** (0.04) | -0.025*** (0.04) | -0.31*** (0.06) | -0.40*** (0.08) |
| Age*Age | 0.00* (0.00) | 0.00*** (0.00) | 0.00*** (0.00) | 0.00*** (0.00) | 0.01*** (0.00) |
| Female | 0.23 (0.15) | 0.12 (0.16) | 0.51*** (0.15) | -0.05 (0.23) | 0.33 (0.26) |
| White-Collar | -0.49*** (0.18) | -0.70*** (0.20) | -0.49*** (0.18) | 0.39 (0.27) | 0.20 (0.29) |
| Civil Servant | -0.07 (0.26) | -0.04 (0.29) | -0.42 (0.32) | 1.38* (0.73) | 2.54*** (0.60) |
| Large Firm | 0.07 (0.18) | -0.03 (0.20) | 0.00 (0.09) | 0.22 (0.35) | 0.11 (0.36) |
| Skilled Job | -0.64*** (0.20) | -0.70*** (0.22) | -0.39 (0.34) | -0.43 (0.29) | -0.66** (0.32) |
| Large*Skilled | -0.12 (0.26) | 0.18 (0.29) | 0.10 (0.12) | -0.19 (0.43) | 0.10 (0.47) |
| Qualified last year | 1.09*** (0.22) | 1.24*** (0.24) | 0.40 (0.26) | 0.63* (0.34) | 0.54 (0.55) |
| Primary Industries | -1.38 (1.06) | 0.02 (0.65) | 0.26 (0.78) | 0.27 (0.36) | -0.23 (0.58) |
| Small Competitive | -0.17 (0.23) | -0.72*** (0.28) | -0.30 (0.24) | -0.25 (0.31) | -0.08 (0.32) |
| Classical Capitalist | -0.60*** (0.27) | -0.80*** (0.29) | -0.55* (0.30) | -1.44** (0.62) | -1.02 (0.75) |
| Competitive Craft | -0.68*** (0.26) | -0.89*** (0.27) | -0.82*** (0.28) | -1.65*** (0.55) | -1.97*** (0.75) |
| Large-Scale Engineer | -0.55*** (0.19) | -0.94*** (0.21) | -0.37* (0.20) | -1.07*** (0.33) | -1.05*** (0.36) |
| Professional Service | -0.13 (0.21) | 0.09 (0.22) | 0.19 (0.21) | -0.86** (0.37) | -0.82** (0.36) |
| Intercept | -0.45 (0.77) | 1.96** (0.79) | 3.00*** (0.78) | 3.64*** (1.16) | 4.96*** (1.37) |
| Number of Cases | 4,788 | 4,170 | 3,499 | 2,252 | 1,893 |
| -2 Log Likelihood | 1,872 | 1,568 | 1,636 | 752 | 619 |

* Significance at the 10 percent level. — **Significance at the 5 percent level. — ***Significance at the 1 percent level. —
Source: Socio-Economic Panel West and East Germany, 1984-1992.

In Table 1 the education coefficient is positive in all samples although its size and level of significance in the later years. This suggests that since the Employment Promotion Act (BeschFG 1985) employees with lower qualifications take jobs with fixed term contracts.

Older workers are less likely to have fixed-term employment in all years. In West Germany the likelihood of a fixed-term contract has increased for younger workers, while in East Germany this kind of age selectivity into fixed-term employment is even more pronounced. This suggests that fixed-term contracts may be a prolonged probationary period for young labour market entrants. Such an interpretation is consistent with the increasing value of the variable "square of age".

Surprisingly we find no significant differences between men and women in their likelihood to be in fixed-term employment, which indicates that allowing fixed-term employment does not enhance or reduce other discriminatory factors in the hiring of women. Separate estimation of models for men and women shows that higher skilled women are more likely than higher skilled men to be employed on a fixed-term basis.

White-collar employees are significantly less likely to have fixed-term contracts than blue-collar workers in the three West German waves. White-collar employees are more likely to hold managerial positions, so it is in the firms' immediate interest to have longer-term relationships with them. In addition, it is more difficult to measure labour productivity on white-collar jobs. Hence, the risk of losing one's job with the expiration of a fixed-term contract is not as plausible a threat to white collar workers. The special circumstances of the transforming East German labour market may explain the insignificant effect for white-collar employees in East Germany.

A first measure of labour market segmentation following Lutz and Sengenberger (1974), which has proved to be of some importance in analyses of the labour market in West Germany (Blossfeld and Mayer 1988, Schömann 1992), shows that there is no difference in hiring practices between small and large firms. But the skill level required for the job does affect the probability of a fixed-term contract. The higher the required skill level, the lower the likelihood of fixed-term employment in West Germany until 1988 and in East Germany in 1992. However, there are no further differentiations of skill level and firm size as indicated by the coefficient on the interaction of skill level and firm size. This indicates that labour market segments which could be reasonably defined as internal labour markets are not significantly different in their use of fixed-term contracts.

It is within high skill occupations that fixed-term employment is least likely, although this situation changed in West Germany in 1991. Skill shortages in the rapidly expanding West German economy since then may contribute to this finding. The reunification-based economic boom in West Germany has created additional opportunities for lower-

skilled labour to obtain permanent appointments. The same explanation holds for the higher risk of fixed-term employment for women in 1991 in West Germany. The high rate of reunification-based job creation has favoured the employment of women, but only on a fixed-term basis to cover temporary peaks in production after reunification³.

Labour Market Segmentation

The industrial sectors variable shows that East and West Germany have already developed a number of similarities with respect to labour market segmentation. Large-scale engineering industries such as steel and chemicals make significantly less use of fixed term contracts in their recruitment. Competitive craft industries, such as construction and the electrical components industries, also make few fixed-term appointments. Due to shortages of skilled labour in these industries, firms do not offer extended probationary periods or fixed-term contracts since they face difficulties in recruitment or retaining employees. The size of the coefficient of competitive craft industries, i.e., in particular the construction sector, in East Germany reflects the effects of a shortage of skilled labour within this regionalized labour market.

Compared to the bureaucratic service industries (the reference category for all industrial segment dummies) most other industrial segments had lower probabilities of fixed-term employment during 1985 and 1988.

It remains to be seen how this pattern will evolve during periods of less favourable aggregate labour market conditions, or during a recession. We observed some polarization in fixed-term employment patterns across labour market segments, but during periods of economic growth the negative impact of this selection mechanism may be hard to observe due to lower overall new hires by firms. A prediction of labour market segmentation theory, however, is that, particularly in periods of stagnation or recession, jobs in the secondary labour market segment are adversely affected and expirations of fixed-term contracts will lead to increased unemployment of those with the worst chance of finding another job.

Earnings Differentials Due to Fixed-Term Employment

Earnings functions are usually estimated using linear regression models where the dependent variable is the log of earnings (Licht and Steiner 1991, Schwarze 1991, 1992, Schömann 1992). Here we use the log of net hourly wages to measure labour earnings, taking account of differences

³ Before we put too much emphasis on these results for West Germany in 1991 we must corroborate these findings through estimates which include a Heckman-type of correction for influences of changes in the labour force participation of women. Possibly a similar approach for sources of panel mortality between 1984 and 1991 needs to be included before we can interpret these results with sufficient statistical reliability from a methodological point of view.

Table 2

Estimates of Earnings Functions in East and West Germany
Dependent Variable: Logarithm of Net Hourly Wage Rate
 Standard errors in parantheses

| Variables | WEST 1985 | WEST 1988 | WEST 1991 | EAST 1991 | EAST 1992 |
|---------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Hours (ln) | -0.34*** (0.02) | -0.14*** (0.02) | -0.27*** (0.02) | -0.59*** (0.02) | -0.40*** (0.03) |
| Experience | 0.02*** (0.00) | 0.03*** (0.00) | 0.02*** (0.00) | 0.01*** (0.00) | 0.02*** (0.00) |
| Experience ²) | -0.00*** (0.00) | -0.00*** (0.00) | -0.00*** (0.00) | -0.00*** (0.00) | -0.00*** (0.00) |
| Female | -0.37*** (0.01) | -0.33*** (0.01) | -0.35*** (0.01) | -0.29*** (0.02) | -0.20*** (0.02) |
| Education | 0.04*** (0.00) | 0.06*** (0.00) | 0.05*** (0.00) | 0.03*** (0.00) | 0.03*** (0.00) |
| White-Collar | 0.14*** (0.01) | 0.12*** (0.01) | 0.13*** (0.01) | 0.04** (0.02) | 0.02 (0.02) |
| Civil Servant | 0.23*** (0.02) | 0.20*** (0.02) | 0.19*** (0.02) | 0.01 (0.08) | -0.01 (0.08) |
| Large Firm | 0.11*** (0.01) | 0.09*** (0.01) | 0.06*** (0.01) | 0.03 (0.03) | 0.12*** (0.03) |
| Skilled Job | 0.09*** (0.01) | 0.08*** (0.02) | 0.07*** (0.03) | 0.09*** (0.02) | 0.10*** (0.02) |
| Large* Skilled | 0.01 (0.02) | -0.00 (0.02) | -0.00 (0.01) | -0.02 (0.03) | -0.05 (0.03) |
| Qualified last year | -0.09*** (0.03) | -0.10*** (0.03) | -0.08*** (0.03) | 0.06* (0.03) | 0.03 (0.05) |
| Primary Industries | -0.12** (0.05) | -0.15** (0.06) | -0.11 (0.07) | -0.19*** (0.03) | -0.14*** (0.04) |
| Small Competitive | -0.16*** (0.01) | -0.13*** (0.02) | -0.15*** (0.02) | -0.03 (0.03) | -0.07*** (0.03) |
| Classical Capitalist | -0.02 (0.02) | -0.03* (0.02) | 0.01 (0.02) | -0.06* (0.03) | -0.07* (0.04) |
| Competitive Craft | 0.02 (0.02) | 0.01 (0.02) | 0.03* (0.02) | 0.09*** (0.03) | 0.11*** (0.03) |
| Large—Scale Engineer | 0.07*** (0.01) | 0.05*** (0.01) | 0.08*** (0.02) | 0.06** (0.02) | -0.01 (0.02) |
| Professional Service | 0.02 (0.02) | 0.04*** (0.02) | 0.04** (0.02) | -0.01 (0.03) | 0.01 (0.02) |
| Fixed-Term Contract | -0.09*** (0.02) | -0.12*** (0.02) | -0.12*** (0.02) | -0.04 (0.04) | -0.00 (0.04) |
| Intercept | 2.79*** (0.07) | 2.01*** (0.08) | 0.98*** (0.10) | 2.67*** (0.14) | 1.66 (0.20) |
| Number of Cases | 4,306 | 3,671 | 3,250 | 2,111 | 1,790 |
| Adjusted R ² | 50.0 | 53.6 | 52.0 | 38.7 | 23.7 |

* Significance at the 10 percent level. — ** Significance at the 5 percent level. — *** Significance at the 1 percent level. —
 Source: Socio-Economic Panel West and East Germany, 1984-1992.

in number of hours worked between East and West Germany. Following Schwarze (1991) and Alba-Ramírez (1991) we exclude apprentices, conscripts for military or compulsory civil service and the self-employed from the sample.

Results

Our earnings functions results are reported in Table 2. Overall, the levels of R^2 reported in Table 2 are similar to those in Löwenbein and Rendtel (1991), Schmidt and Zimmermann (1991), and Schwarze (1991, 1992).

Educational qualifications measured in years has the expected positive sign, but its magnitude is slightly below that estimated by Schwarze (1991)⁴. The additional independent variables controlling for labour market segmentation are likely to reduce the importance of education. Segmentation theories hypothesize that there are labour market segments that reward educational qualifications, and others that do not reflect levels of education in their labour earnings (Stinchcombe 1979, Schömann 1992). Returns to education in 1991, two years after reunification, were still higher in West than in East Germany.

Experience shows the usual non-linear positive effect with more experienced workers having higher net hourly wages. The transformation of the East German economy has reduced the monetary value of labour force experience. Estimates for 1992 in East Germany suggest that the returns to experience are equalizing between East and West Germany.

Women have lower earnings than men, even after accounting for education, labour force experience, and skill level. The difference is smaller in East Germany than in West Germany⁵.

White-collar employees have significantly higher labour earnings in both East and West. Civil servants receive higher earnings in the West but not in the East. However, West German civil servants working in the East are paid at the West German rate. In West Germany, firms with more than 200 employees pay significantly higher net hourly wages. Jobs requiring high qualifications are also better rewarded in both East and West Germany. The interaction of firm size and skill level does not further enhance wage differentials. There are wage premiums to be gained when working in the skilled labour market segment. Tables 1 and 2 demonstrate that skilled workers still dominate the German labour market. This labour market group has both high employment protection (fewer fixed-term contracts) and higher earnings, in addition to higher returns to investment in education.

Persons who have qualified for a job during the last year are likely to receive lower earnings in West Germany. These are most likely labour market entrants, probably involved in some form of on-the-job search (Hotchkiss 1993) for a better match of skills and pay.

The cross-classification of labour market segments according to Stinchcombe (1979) marginally improves the overall R^2 . Traditional primary industries, such as forestry and agriculture pay significantly lower wages in both East and West Germany relative to the bureaucratic service industries. Small competitive industries such as restaurants, personal services and trading industries offer significantly lower wages than the bureaucratic services in East and West Germany.

In West Germany large-scale engineering industries, such as the steel and automobile industries, are well known for their above average wages even after controlling for education and experience. For West Germany this corresponds to findings based on retrospective longitudinal data where these industries were found to pay significantly higher wages during the 1950 to 1980 period (Hannan, Blossfeld, and Schömann 1991). Surprisingly, in East Germany three years after reunification, this positive effect is no longer statistically significant: the large-scale engineering industries no longer pay premium wages. These industries had been among the most favoured labour market segments in the Socialist economies (Schömann 1992).

Finally, we added a variable indicating whether the person has a fixed-term job. We found that those holding such jobs received significantly lower wage earnings in West Germany. Other things equal, they received about 10 percent lower net hourly wages. Thus, allowing fixed-term employment not only reduces indirect labour-costs via lower redundancy payments, but by directly reducing net hourly wages. This result does not hold for East Germany, where wage levels in general are still substantially lower than in West Germany. However, similar findings are reported by Alba-Ramírez (1991) for the Spanish labour market. Fixed-term contracts in West Germany and Spain appear to have operated as a form of worker discipline device (Shapiro and Stiglitz 1984), although the increasing age- and skill selectivity suggests that only specific groups are affected by such a device.

⁴ This is due to the difference in the basic data sets of the two studies. We did not correct for the oversampling of foreigners in our data set. When we excluded foreigners, the education coefficients approach those estimated by Schwarze (1991). Our major results do not change signs or significance in a separate analysis of earnings for nationals and foreigners, nor by separate analysis of women and men. These estimates will be provided upon request.

⁵ Any evaluation of the equalization of labour earnings between West and East German women must account for discouraged East German women who decided to leave the labour market. A narrowing of the wage gap could simply be the outcome of a selection mechanism of who stays in the labour market.

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