Are the effects of training programmes in Germany sensitive to the choice and measurement of labour market outcomes?*

*Michael Lechner and Conny Wunsch***

We reconsider the evidence of Lechner, Miquel and Wunsch (2004, 2005) on the effectiveness of training programmes for the unemployed conducted in East and West Germany in the period 1993–1994 by investigating whether, and if so, how overall policy conclusions depend on the particular choice of the outcome variable. We find that different measures of employment and earnings provide very similar results. In contrast, considering unemployment as an outcome measure shows rather different results as the positive long-run effects on employment are not mirrored by a corresponding decrease in unemployment. We show furthermore that it is important to consider the cumulated (net) effects of the programmes for an assessment of the overall effectiveness of different training programmes because they can yield conclusions which differ from those of the point-in-time estimates.

Contents

* This paper was released for publication by the responsible editor in September 2006.

** The first author is also affiliated with ZEW, Mannheim, CEPR, London, IZA, Bonn, and PSI, London. Financial support from the Institute for Employment Research (Institut für Arbeitsmarkt- und Berufsforschung – IAB), Nuremberg, Germany (project 6–531A), is gratefully acknowledged. Conny Wunsch is also grateful for financial support from the IAB (thesis grant). The data originated from a joint effort with Ruth Miquel, Stefan Bender, Annette Bergemann, Bernd Fitzenberger and Stefan Speckesser to make various German administrative databases usable for econometric research. We greatly benefited from the work by Ruth Miquel on two companion papers. We also thank two anonymous referees for valuable comments and suggestions. The usual disclaimer applies.

1 Introduction

Recent studies on the effectiveness of government-sponsored training (GST) for the unemployed in Germany, i.e. Fitzenberger and Speckesser (2005), Fitzenberger, Osikominu and Völter (2006), and Lechner, Miquel and Wunsch (2004, 2005), exploited newly available administrative data to estimate not only short-term effects, but also medium and long-run effects of different types of training programmes.[1] This data source covers training conducted in Germany before 1997 and permits the observation of outcome variables up to 2003. Although the studies of Fitzenberger et al. differ considerably from those of Lechner et al. in terms of definition of the programme types, definition of participation status and econometric estimation methods, their results are similar in many respects.[2]

The conclusions that can be drawn from their findings can be summarised as follows: all types of training exhibit negative short-run effects on employment whose magnitude and length of occurrence are directly related to the programme duration (so-called lock-in effects in the terminology of Van Ours, 2004). In the medium to long run all of the studies find positive employment effects for most types of training. The time when these positive effects occur depends on the length of the lock-in period. One insight from these studies is therefore that overall conclusions about the effectiveness of different types of training strongly depend on the point in time after programme start when outcomes are measured. Moreover, they show that looking at the net long-run gain in employment, i.e. cumulated employment, can change overall conclusions about the effectiveness of training compared with long-run point-in-time estimates of employment effects.

In this paper we analyse in more detail how conclusions on the effectiveness of training programmes in Germany depend on the way in which labour market outcomes are measured. For this purpose we reconsider the evidence of Lechner, Miquel and Wunsch (2004, 2005) on the effectiveness of training programmes for the unemployed conducted in East and West Germany in the period 1993–1994[3] by comparing different outcome measures. We find that different measures of employment provide very similar results and that earnings effects are mainly driven by employment effects. For different measures of the quality of employment the similarity of the results implies that training participants not only succeed in finding employment more easily than nonparticipants, but also that this employment seems to be both stable in the sense that it outlives the usual probation period, and comparable with previous jobs in terms of earnings so that no serious earnings losses have to be incurred. Moreover, for East Germany there seem to be no excessive increases in subsidised employment compared with total employment.

Considering unemployment provides rather different results as the positive long-run effects on employment are not mirrored by a corresponding decrease in unemployment. Furthermore, we confirm that it is important to consider the cumulated (net) effects of the programmes for an assessment of the overall effectiveness of different training programmes because they can yield conclusions which differ from those of the point-in-time estimates. In particular, we show that for the net effects it is also important to contrast the results for employment and unemployment since the latter make clear the cost of a potentially positive net long-run gain in employment in terms of prolonged benefit payments. We also find that the gender differences in the effectiveness of relatively long and intense training reported by Lechner, Miquel and Wunsch (2005) for East Germany are robust to the choice of the outcome variable.

The remainder of the paper proceeds as follows. The next section provides information on the use of ALMP, in particular training, in East and West Germany and describes the different types of training we evaluate. Section 3 outlines the data and the definition of our evaluation sample and provides descriptive statistics of the data. In Section 4 we describe how the different outcome measures are defined and estimated and we discuss the different results. The last section concludes.

2 Labour market policies in Germany

2.1 The use of ALMP in Germany

Since 1991 Germany has spent between 20 and 25 billion Euros or about one per cent of GDP on

[1] Recent studies that only focus on the short-run effects of training for the unemployed in Germany are Klose and Bender (2000), Speckesser (2004), Hujer, Thomsen and Zeiss (2004), Biewen, Fitzenberger, Osikominu and Waller (2006) and Schneider et al. (2006). With the exception of the first two studies, these studies evaluate training conducted after 1999 and they also confirm negative lock-in effects of training in the short run. However, as it was not possible to observe outcomes after 2004, long-run estimates are not available for these programmes.

[2] The general pattern of how the effects evolve over time is very similar. However, there are differences in the magnitude and significance of the long-run employment effects of some programmes as well as in the cumulated effects.

[3] Note that this period is before the introduction of the Hartz reforms, which started in 2001.

Table 1
Expenditure on active and passive labour market policies in billion Euros 1991–2003

	1991		1993		1995		1997		1999		2001		2003	
	East	West	East	West	East	West	East	West	East	West	East	West	East	West
Total expenditure	15.4	25.0	27.7	35.4	21.2	39.3	24.1	42.8	25.4	41.9	24.6	40.7	25.8	47.6
of which, %														
Training	14	13	19	10	17	10	12	8	13	11	14	12	10	8
Employment programmes	10	6	17	4	20	4	15	3	17	3	12	2	7	1
Temporary wage subsidies	35	5	3	7	2	2	1	1	2	3	3	3	4	3
Other ALMP measures	11	17	28	11	10	8	5	7	7	8	11	11	12	12
Unemployment benefits	26	33	24	43	31	46	42	47	33	39	33	40	31	44
Unemployment assistance	1	14	7	15	14	19	18	23	21	24	21	18	28	19
Other expenditure	3	13	4	11	6	10	7	10	6	11	5	12	6	12
Unemployment rate as %	10.2	6.2	15.4	8.0	14.8	9.1	19.1	10.8	18.7	9.6	18.8	8.0	20.1	9.3

Source: BA (1992–2004).
Note: Temporary wage subsidies include short-time work. Early retirement schemes are included in Other ALMP measures.

ALMP per year. Amounting to one third of this expenditure, training is by far the most important instrument. Table 1 displays the expenditure on different active and passive policy measures in East and West Germany for the years 1991 to 2003. In line with the development of the unemployment rate, an increasing and now substantial proportion of expenditure is devoted to the payment of income support during unemployment (unemployment benefits, unemployment assistance).[4]

Reflecting the very different economic development in East and West Germany, there are large differences in the use of ALMP. The rapid contraction of the East German economy after unification led to sharp reductions in labour demand. To cope with the immediate strongly adverse effects of this development, short-time work (a reduction in working hours combined with a subsidy from the unemployment insurance system to compensate for the earnings loss) and early retirement schemes played a major role. In East Germany, especially in 1991, the main objective of short-time work was to delay the transition into unemployment in order to prevent the official unemployment rate from skyrocketing. In that year, more than 1.6 million people were directly absorbed into short-time work. Moreover, training was used on a large scale to adapt the skills of the East German labour force to the requirements of a modern market economy. Subsidised employment, which comprises temporary wage subsidies to compensate for reduced productivity during the phase of initial skill adaptation in a new job, and so-called employment programmes, which provide subsidised temporary jobs outside the regular labour market, also play an important role in improving the employability and labour market attachment of participants. In West Germany, subsidised employment plays only a minor role. There, training is by far the most important instrument, the objective of which is to update and increase the human capital of those workers who drop out of the production process and become unemployed.

2.2 Training as a part of German ALMP

In Germany, labour market training comprises very heterogeneous instruments that differ largely in the form and intensity of the human capital investment as well as in their respective durations. Traditionally, German training courses have the aim of assessing, maintaining or improving the participant's occupational knowledge and skills, of adapting skills to technological changes, of facilitating a career improvement, or of awarding a first vocational qualification. In the East German transition process, however, the use of the two latter categories was negligible since the main objective of training programmes was to adapt the skills of the East German labour force to the requirements of a modern market economy. Participants in such training programmes usually receive a transfer payment that is equivalent to unemployment benefits (a so-called maintenance allowance, MA).[5] Moreover, the public

[4] For a recent survey on German labour market policy and the effectiveness of German ALMP see Wunsch (2005).

[5] Before 1994, the replacement rate was somewhat higher than for unemployment benefit.

Table 2
Definition of programmes

Programme	Description
Short training	Further training in the occupation held with planned duration ≤ 6 months.
Long training	Further training in the occupation held with planned duration > 6 months.
Retraining	Training to obtain a new vocational qualification in a field other than the occupation currently held.
Other programmes	Practice firms: further training that simulates a job in a specific field of work. Career improvement: further training to obtain a higher qualification, e.g. master craftsman, technician, or a (below university) qualification in business administration. Residual category: various very small and heterogeneous programmes.

Note: Due to insufficient sample size the last category is not evaluated.

employment service bears the direct cost of the programme, and it may cover parts of additional expenses for childcare, transport and accommodation. One important aspect of participation in government-sponsored training is that periods in which participants receive MA count towards the acquisition of unemployment benefit claims, which provides strong incentives to participate for unemployed people whose entitlement to unemployment benefits is almost exhausted.

For our analysis, we aggregate the different programmes into groups according to their homogeneity with respect to the selection of participants, educational contents and organisation, as well as sample size and information available to distinguish different types of programmes. Table 2 shows the resulting groups of training programmes plus a residual category. Ignoring the programme types for which the number of observations is too small, we restrict our analysis to general further vocational training and retraining programmes.

Further training comprises courses that provide a general adjustment of working skills or an additional qualification in the occupation currently held, as well as courses that lead to a first vocational qualification. Planned durations range from one month to about two years. Since further training is a fairly large and heterogeneous group, we split it into two subgroups based on the planned duration of an individual course: short training with a planned duration of up to 6 months (mean duration 3 and 4 months in East and West Germany, respectively), and long training with a planned duration of more than 6 months (10 months on average). As a characterisation of the programme and not of its participants, *planned* instead of *actual* duration has the advantage that it is independent of the individual's behaviour during participation (e.g. a short actual duration could be associated with a short course or a long course that a participant left early).

Retraining makes it possible to work in a different occupation than the one currently held by awarding a new vocational qualification. Planned durations are long (up to three years, 20 months on average). The acquired skills are equivalent to an apprenticeship in the German apprenticeship system. Thus, the human capital investment is quite substantial.

3 Data and definition of the evaluation sample

3.1 Data

We use the same administrative database as in Lechner, Miquel and Wunsch (2004, 2005) and refer the reader to these papers for more details. It combines three different sources: the IAB Employment Subsample, the benefit payment register and the training participants data.[6] For East Germany, it covers the period 1990–2002 and for West Germany 1976–2002. This database is the most comprehensive one in Germany with respect to training conducted prior to 1998. It contains detailed personal, regional, employer and earnings information. Thus, it allows controlling for many, if not most, of the factors that determine selection into programmes (see the detailed discussion in Lechner, Miquel and Wunsch 2004, 2005) as well as a precise measurement of interesting outcome variables (employment status, earnings) on a monthly basis over eight years after programme start. Moreover, we are able to distinguish different programme types and we have a sufficient number of observations for the major programme groups to account for programme heterogeneity.

[6] The common German abbreviations for these data sources are IABS, LED and FuU, respectively. A detailed description of the IABS and the LED is provided by Bender et al. (1996) and Bender, Haas and Klose (2000). For FuU see Miquel, Wunsch and Lechner (2002). See also Bender et al. (2005) for how the data was prepared for evaluation purposes.

Of course, there are several drawbacks as well. The following ones could be important: First, the data do not cover non-active recipients of social assistance because they do not receive benefits from the PES but from the local authorities. Second, employment that is not subject to social security contributions is unobserved. This includes on the one hand self-employment and working as a civil servant ("Beamter") and on the other hand, minor employment below the relevant earnings threshold. Third, it is only possible to distinguish between subsidised employment (such as in job creation schemes) and regular employment in the so-called first labour market from the year 2000 onwards. This problem is particularly severe for East Germany, because a substantial part of the labour force was in subsidised employment during the 1990s (see Table 1). Fourth, the training information for East Germany prior to 1993 is incomplete and not correctly coded. Fifth, the unification process had a direct impact on the data-gathering process. Data collection, which depends to a considerable extent on reports from employers, was phased in after unification. Some employers provided information as early as 1991 but in most cases it took until 1992 until all employers were registered with the authorities. Thus, later on, we impose the condition of having observed an employment spell prior to the unemployment spell leading to participation. The sixth drawback is that information about long-term employment histories is not available for East Germany. However, since unemployment did not (officially) exist in the German Democratic Republic and labour force participation was very high, the resulting additional unobserved heterogeneity should be very small, in particular since unification *per se* certainly discounted the value of human capital and experience obtained under the old centrally planned economic system.

Despite these drawbacks, compared with what has been used in evaluation studies for Germany so far, this database is a substantial improvement in several dimensions, such as sample size, selection and outcome information, as well as observable programme heterogeneity. Moreover, relative to what is available for other countries, the database is unique with respect to the length of observable post-treatment employment histories (8 years after entry in a programme).

3.2 Definition of programme participation, the population and our sample

In this section, we define 'participation in a programme' and our population of interest. We consider programme participation in 1993–1994. By choosing this period, we are able to focus on the most recent programmes that still permit a long enough observation period for detecting long-run effects.[7] Second, a person is included in our population of interest if she/he started an unemployment spell in the period 1993–1994 (so-called 'defining' unemployment spell). The group of participants in training consists of all people entering a programme between the beginning of the 'defining' unemployment spell and the end of 1994. If there are multiple participations in this period, then only the first one is included in the analysis. Nonparticipants are all people who did not enter a programme in this period.

When choosing the appropriate subpopulation from our inflow sample into unemployment, we aim to have a homogenous group of people that covers the prime age part of the West German population which is eligible for participation in training. We therefore require that all individuals received unemployment benefits (UB) or assistance (UA) in the month before programme start (as well as in the month of programme start for nonparticipants).[8] This, however, requires the use of variables measured relative to the start of the programme.[9] In this paper, we follow one of the approaches suggested by Lechner (1999). We simulate start dates for nonparticipants by drawing start dates from the empirical distribution for participants. We exclude nonparticipants for whom this date lies before the beginning of the 'defining' unemployment spell, or after 1994, or after the person's last spell that is observed in the data if it ended before 1995.

To avoid most influences coming from retirement and early retirement as well as schooling, university education and apprenticeship training, we also impose an age restriction (20–55 years for West Germany, 20–53 for East Germany) in the year of the (hypothetical) programme start. Concentrating on the main body of the active labour force, we exclude unemployed people who were trainees, home workers, apprentices or without previous employment or

[7] Furthermore, since we observe only training spells after the participant left training, and some courses have a duration of more than two years, and there is no training information after 1997, concentrating on the years 1993 and 1994 does not lead to a selective underrepresentation of long training spells.

[8] In fact, receipt of UB or UA directly before entering a programme is not entirely sufficient to ensure eligibility. Individuals must also have a formal vocational qualification plus three years of work experience (since 1994, zero years), or alternatively at least six years (since 1994, three years) of work experience. Thus, by also requiring individuals to have been employed at least once before the programme, the remaining group of participants and nonparticipants is most likely to be eligible.

[9] Moreover, all of the variables potentially influencing both selection into programmes and outcomes are measured relative to the start of the programme.

Table 3
Selected descriptive statistics

	Nonparticipation		Short training		Long training		Retraining	
	East	West	East	West	East	West	East	West
Number of observations	4,604	9,197	321	572	538	329	445	413
Personal characteristics								
Women	63	41	65	37	65	39	43	38
Age* ++	37	37	36	35	38	35	32	31
Nationality: German	100	81	100	91	100	92	100	89
No vocational qualification	12	26	7	16	4	11	14	25
Polytechnic or university degree	4	6	3	6	15	14	3	3
Occupational status in last job								
Salaried employee	26	28	30	38	54	57	21	23
Unskilled worker	22	40	25	31	13	19	28	53
Last monthly earnings								
Salary in EUR*	947	1,680	1,053	1,773	1,204	1,889	1,144	1,640
Unemployment benefit claim in months								
Directly before programme start*	2	8	2	8	2	7	2	5
At the beginning of the UE spell before the programme	6	13	5	12	6	11	6	9
Employment rate in								
January 1992	60.0	69.1	69.2	70.0	73.7	73.3	75.2	68.5
1993	50.2	60.9	53.9	60.5	61.9	64.7	59.0	57.8
1994	21.9	24.1	20.9	22.7	16.0	22.5	16.0	20.3
1995	26.2	17.9	28.4	29.9	14.1	19.8	4.3	9.4
1997	34.4	30.1	48.6	49.3	51.5	52.6	40.2	46.3
1999	39.1	33.5	52.3	49.5	51.7	51.4	54.6	56.7
2001	37.3	36.2	49.5	53.2	49.3	55.0	52.6	60.0

*Note: *Figures marked by an asterisk are means (rather than proportions). ++Measured in the year in which the programme began.*

whose last employment before the 'defining' unemployment spell was less intensive than half of the usual full-time working hours. Furthermore, since the group of foreigners is extremely heterogeneous in East Germany (there is no 'stable' and at least partly assimilated guest worker population, as there is in West Germany), we exclude them from this part of the study. This procedure leaves us with a sample of about 9,200 (West) and 4,600 (East) nonparticipants and about 300–600 participants in the different programme groups that we consider in the econometric analysis (see Table 3).

3.3 Descriptive statistics

Table 3 shows descriptive statistics for selected variables for the different subsamples defined by treatment status for East and West Germany. For both parts of Germany we find that participants in *retraining* are much younger (about five years on average) than other unemployed people, which is in line with the idea that substantive human capital investments are most beneficial if the productive period of the new human capital is fairly long. Moreover, they are less highly educated and have a lower skill level than the rest. In contrast, participants in *long training* seem to be the better risks in terms of education, past occupational status and earnings. Remaining unemployment benefit claims before participation do not show much variation across states.

When comparing East and West Germany, we find that the share of women among the unemployed is much higher in the East than in the West, which is reflected in their large share among nonparticipants

and participants in long and short training, but not in their share observed in retraining, which shows a 'male' bias. Moreover, earnings are considerably lower in East Germany although average education among the eligible unemployed is higher and the proportion of unskilled workers is much lower. This is because, on the one hand, the education policy of the former German Democratic Republic (GDR) aimed to provide a vocational training to everyone. On the other hand, in 1990 wages were substantially lower than in West Germany and it had been agreed that they should rise to West German levels gradually over a period of about 5–8 years.

Table 3 also displays employment rates over time. Due to the construction of our sample (everyone has to be unemployed before the actual or simulated programme start) the employment rates show the well-known Ashenfelter's dip (Ashenfelter 1978). After programme start the rates recover quickly, the speed depending on programme duration, and participants reach a substantially higher level after 7–8 years than nonparticipants. Note that the employment dip is somewhat deeper for East German participants and that the employment rates recover to a higher level for participants in West Germany.

4 Results

4.1 Measurement and estimation of the outcomes in the labour market

To examine the consequences of using different outcome variables, on the one hand we compare three alternative measures of success: the effects of training on employment, on unemployment and on earnings as a crude measure of productivity. On the other hand, we consider different ways of measuring these three outcomes. Table 4 summarises the 16 outcome measurements we consider and how they are constructed. Some of the measurements are rather technical like monthly estimates versus three-month moving averages: as choosing one particular month may be a noisy measurement of the effect of training we calculate so-called *smooth* employment and earnings by averaging the respective outcome over three months.

Other outcomes measure different aspects of the respective outcome such as different characteristics of employment: on the one hand, so-called *stable* employment measures job stability and is defined as a binary outcome which equals one if a person has been employed for at least seven consecutive months. This number of months is chosen because the usual probation period in Germany, during which either employer or employee can terminate the job very easily, is six months. If a person is employed for longer than this period we can regard the integration into the regular labour market as having been successful. On the other hand, employment *with stable earnings* is a binary outcome which equals one if a person is employed with earnings amounting to at least 90 % of the earnings from the last job before entering training. This variable aims at measuring whether a person has succeeded in finding a job which is equivalent to the previous one in terms of earnings or whether labour market integration has only been possible with a significant downgrade in earnings. For East Germany, we also compare total employment with unsubsidised employment since there, in contrast to West Germany, subsidised employment has always been quite a substantial part of employment. Thus, it is of interest whether East German unemployed succeed in finding unsubsidised employment and to what extent they exit into subsidised jobs.

Finally, we attempt to assess the overall effectiveness of training by computing the long-run net effect of training on employment, unemployment and earnings by cumulating the monthly outcomes over time. For employment and earnings these measures show whether the positive long-run effects are sufficiently large to offset the initial negative lock-in effects. For unemployment, which here implicitly measures unemployment insurance costs since it is defined as receipt of unemployment benefits/assistance or participation in training where the unemployed also receive benefits in more than 95 % of the cases, the cumulated outcomes assess one important component of the long-run fiscal consequences of training in terms of potentially prolonged or shortened benefit payments.

All of the outcomes are measured on a monthly basis beginning in the month after the (hypothetical) programme start. Focusing on the beginning instead of the end rules out the possibility that programmes appear to be successful just because they keep their participants busy by making them stay in the programme. We consider a programme to be most successful if everybody left for 'good' employment immediately after starting participation. Whenever a person participates in any of the programmes he is regarded as unemployed (and not employed).

To estimate the effects of the different training programmes on the above outcome variables we apply the methodology of Lechner, Miquel and Wunsch

Table 4
Definition of alternative outcome variables

Outcome variable measured in month t		Description
1	Employment	Dummy which equals one if the person is employed in subsidised or unsubsidised employment subject to social security contributions in month t
2	Unsubsidised employment	Dummy which equals one if the person is employed in unsubsidised employment subject to social security contributions in month t
3	Stable employment*	(1) for at least seven consecutive months
4	Unsubsidised stable employment*	(2) for at least seven consecutive months
5	Employment with stable earnings	(1) with earnings of at least 90 % of last pre-programme employment
6	Unsubsidised employment with stable earnings	(2) with earnings of at least 90 % of last pre-programme employment
7	Smooth employment	Three-month moving average of (1)
8	Unsubsidised smooth employment	Three-month moving average of (2)
9	Cumulated employment	(1) cumulated over each month up to month t (measured in months)
10	Unemployment	Unemployed with receipt of UB or UA or participation in training in month t
11	Cumulated unemployment	(10) cumulated over each month up to month t (measured in months)
12	Earnings	Monthly gross earnings from (1) in EUR
13	Unsubsidised earnings	Monthly gross earnings from (2) in EUR
14	Smooth earnings	Three-month moving average of (12)
15	Unsubsidised smooth earnings	Three-month moving average of (13)
16	Cumulated earnings	(12) cumulated over each month up to month t

*Note: *We consider a job to be stable if it lasted for at least seven months as the usual probation period in Germany is six months.*

(2004, 2005). They argue that the data described in Section 3 are sufficiently rich to account for selectivity in programme participation by controlling for all of the main factors that jointly influence participation status and the outcome variables of interest, which allows estimation of the effects using matching techniques. They propose and apply an improved version of a matching estimator that allows for multiple treatments. For all details regarding the estimation procedure and its sensitivity to implementational issues we refer the reader to Lechner, Miquel and Wunsch (2004).

4.2 Comparing different measures of employment

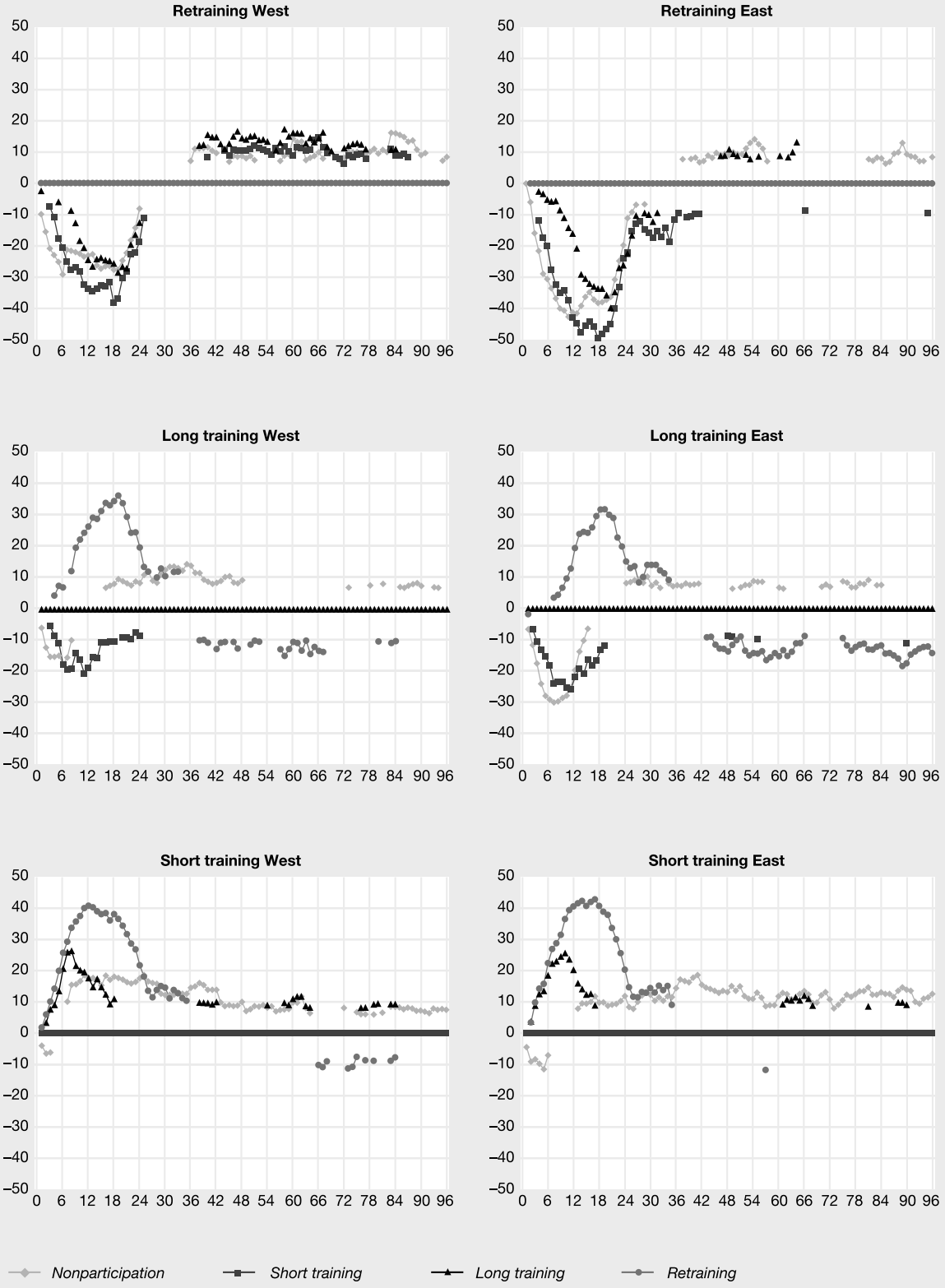
As our baseline results, Figure 1 restates the estimates of the monthly employment effects of the three programmes we consider as obtained by Lechner, Miquel and Wunsch (2004, 2005) for East and West Germany. A line above zero indicates that the programme has a positive effect relative to the state associated with that particular line. In other words, a line above zero is good news for the programme appearing in the header of the respective graph and bad news for the one associated with the particular line. Only effects significant at the 5 % level are displayed.

The graphs suggest that all of the programmes have some negative lock-in effect (in the terminology of Van Ours, 2004) due to reduced job search or received job offers during participation in the programme. The magnitude and duration of this negative effect is very much tied to the length of the programme. However, these lock-in effects are stronger and last longer for East than for West German participants.

Despite the larger lock-in effect, long training and in particular retraining exhibit positive employment effects compared with nonparticipation of about 5–10 percentage points in the medium and long run. For short training, we also find positive effects on employment which are even larger for East German (10–20 percentage points) than for West German participants (5–10 percentage points). Inter-programme comparisons show that retraining dominates over all other programmes in West Germany

Figure 1

Differences in employment rates (percentage points) for 96 months after programme start



Note: Only effects that are significant at the 5 % level (point wise) appear in the figures.

Table 5

Mean effects for programme participants for all employment outcomes eight years (month 96) after programme start

Participants in	Matched comparison group participating in		Employment	Unsubsidised employment	Stable[a] employment	Unsubsidised stable[a] employment	Employment with stable earnings[b]	Unsubsidised employment with stable earnings[b]	Smooth[c] employment	Unsubsidised smooth[c] employment
Short training	Nonparticipation	West	**7.5**	–	**9.2***	–	**8.5***	–	**7.2**	–
		East	**12.5***	**13***	**11.4***	**11.4***	**13***	**12.6***	**11.9***	**12.7***
Long training	Nonparticipation	West	4.5	–	*6.4*	–	5.2	–	3.4	–
		East	4.6	3.8	3.7	4.2	4.8	4.2	3.9	3.4
Retraining	Nonparticipation	West	**8.5**	–	**9.6**	–	*7.1*	–	7.7	–
		East	**8.5**	**7.3**	5.3	4.3	**8.8**	**7.8**	**6.9**	*6.3*
Short training	Long training	West	6.1	–	5	–	5.3	–	6.4	–
		East	5.8	4.3	5.9	6.5	*7.9*	6.3	4.8	3.6
Short training	Retraining	West	–6.8	–	–3.2	–	–3.8	–	–6.2	–
		East	–3.9	–5.2	–3.1	–3.2	–2	–4	–4.1	–5.6
Long training	Short training	West	1.2	–	0.5	–	–0.6	–	0.7	–
		East	–4.6	–3.2	–7.7	–5.6	–4	–3.3	–4.3	–3
Long training	Retraining	West	–3.2	–	–0.2	–	–2.1	–	–2.5	–
		East	**–14.3***	**–14.7***	**–14.9***	**–15.2***	**–16.1***	**–17***	**–12.9***	**–13.9***
Retraining	Short training	West	6.8	–	*8.2*	–	3	–	7	–
		East	–6.5	*–8.4*	–4.9	–6.2	–5.3	–6.3	–7.5	*–9.2*
Retraining	Long training	West	8.9	–	4.9	–	4.5	–	8.7	–
		East	*7.2*	6.1	4.6	5.3	7.5	7.3	5.7	5

Note: ***Bold*** *figures indicate significance at the 5 % level, figures in italics relate to the 10 % level and * to the 1 % level. If not stated otherwise the effects are differences in percentage points.*

[a] *Dummy variable which equals 1 for a particular month if the individual is employed in this month as well as in the previous six months.*

[b] *Dummy that equals 1 if earnings in the respective month are at least 90 % of monthly earnings during the last employment spell before entry in the programme.*

[c] *Moving average over three months.*

and not only for participants in retraining but also for those in the other programmes. In East Germany, retraining would also have been most beneficial for participants in long training.

Since it is difficult to identify the differences in the results for different measures of employment just by visual inspection of the evolution of the effects over time, we focus on the long-run estimate of the programme effects eight years after programme start. Table 5 displays these estimates for all of the employment measures and all of the comparisons of programmes and nonparticipation for East and West Germany.

The most important conclusion from Table 5 is that qualitative results do not change when different measures of employment are used. Moreover, considering the fact that all estimates are subject to sampling uncertainty, the differences in the magnitude of the effects are not huge and do not show many regularities. Given the different definitions of employment and focusing on the comparison with nonparticipation this implies that training participants succeed in finding employment more easily and that this employment seems to be not only stable in the sense that it outlives the usual probation period, but also comparable with previous jobs in terms of earnings so that no serious earnings losses

have to be incurred. For East Germany, we also find only small differences between total and unsubsidised employment outcomes so that there seem to be no excessive increases in subsidised employment (but note that subsidised employment is not as important at the time of measurement as it was in the 1990s).

With respect to the significance of the effects there is only one change for retraining compared with nonparticipation in East Germany. For most of the employment outcomes the estimated effect is positive at about 7–8 % and significant. Only for *stable* (total and unsubsidised) employment is the effect smaller and no longer significant. Thus, it seems that for some East German retrainees employment is less stable compared with nonparticipants.

Overall the only regularity occurs for the smoothed employment outcomes, which use three-month moving averages of monthly employment: the estimates are almost always below the monthly effects, though not considerably so. It therefore seems that employment status varies in the three-month window eight years after programme start and that average employment in this period is more similar in the different comparisons than employment in month 96 after programme start.

4.3 Earnings as a measure of productivity

Some types of training for the unemployed in Germany constitute quite substantial human capital investments which may affect not only job-finding rates but also productivity. Using the effect of the programmes on gross earnings (while employed) is one way of measuring potential gains in productivity. Figure 2 displays monthly estimates of the earnings effects up to eight years after programme start for East and West Germany.

With the exception of retraining in East Germany, which does not show any significant earnings effects in the medium to long run, the earnings effects exhibit the same pattern of negative lock-in effects in the short run and positive effects in the medium to long run as the employment effects. Again, the lock-in effects seem to be somewhat larger in East than in West Germany but the difference seems to be smaller than for the employment effects. Moreover, the gains in earnings after the lock-in period often seem to be larger in West Germany. Both findings are consistent with overall higher wage levels in West Germany.

On the whole it seems that the earnings effects are mainly driven by the employment effects and probably the East-West wage differential. The only notable exception is retraining in East Germany, which exhibits positive long-run effects on employment but no significant gains in earnings.

In Table 6 we compare different measures of earnings and find again that they yield the same qualitative conclusions on the effectiveness of training as well as only small differences in the magnitude of the effects. Moreover, the same regularities occur as for the comparable measures of employment. In East Germany the earnings gains from unsubsidised employment are very similar to those from both subsidised and unsubsidised employment. Interestingly, the earnings gain from unsubsidised employment is not always larger than from total employment including subsidised employment. As for employment, we also find that the smoothed estimates are almost always below the monthly estimates, though not considerably so.

Compared with the overall findings for employment there are three notable differences in the effects of training on earnings. First, as already indicated by Figure 2, there is no long-run gain in earnings for East German retrainees compared with nonparticipation. Second, and consistent with this finding, long training is no longer dominated by retraining for participants in long training. Finally, we find positive long-run earnings gains for long training compared with nonparticipation but no corresponding effect on employment.

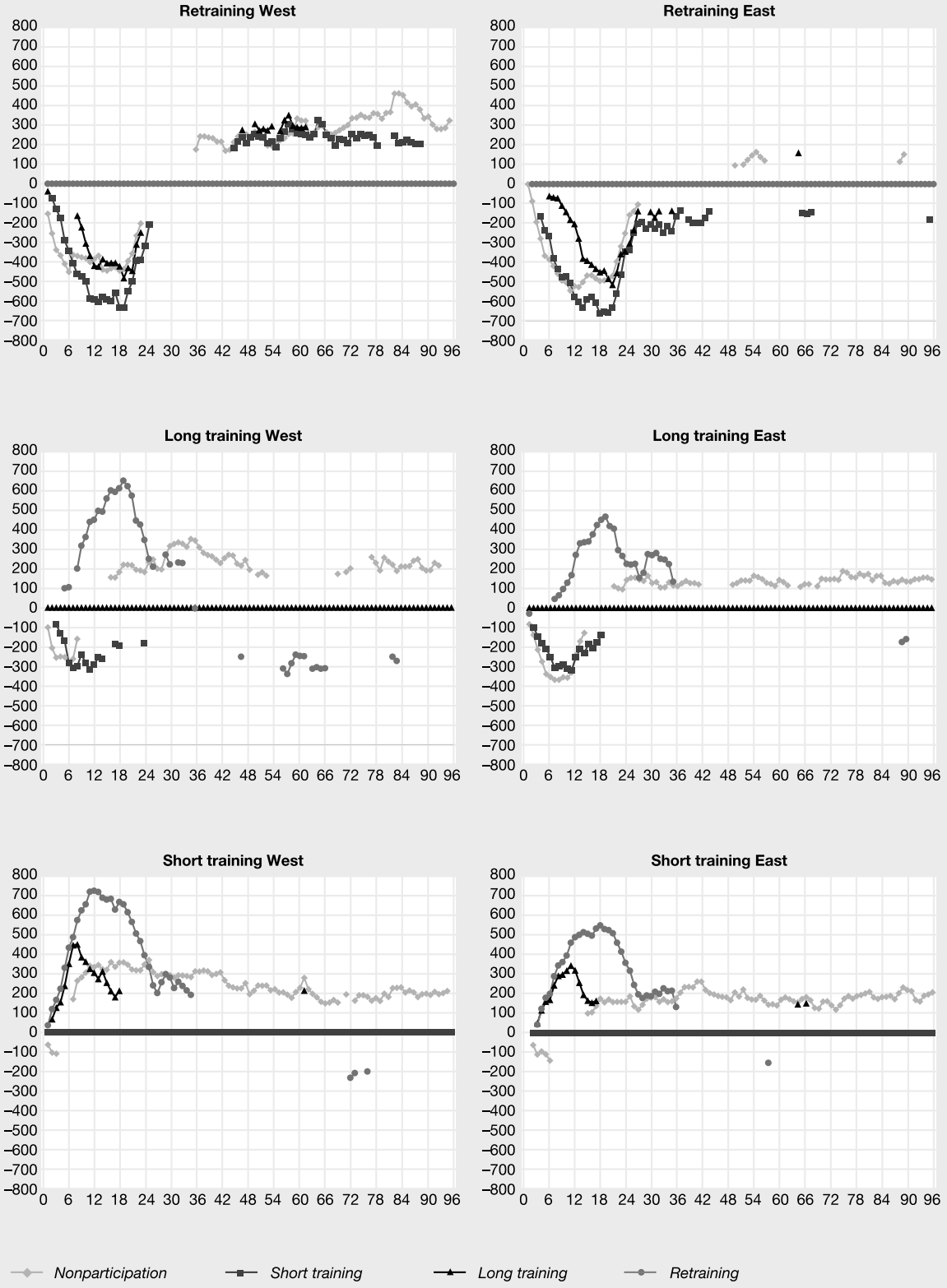
4.4 Unemployment as an alternative outcome variable

Since the fiscal objective of active labour market policies is to reduce expenditure on unemployment benefits and assistance by increasing the job-finding rate of participants and, therefore, reducing the duration of unemployment, it is interesting to investigate whether the long-run gains of training in terms of higher employment rates are mirrored by a corresponding decline in unemployment rates. Figure 3 shows the monthly estimates of the effects of the different training programmes on registered unemployment (defined as receipt of UB or UA or participation in training) for East and West Germany.

We find that the lock-in effects in terms of unemployment are even more severe than in terms of employment. However, in contrast to the results for employment, with the exception of long training in

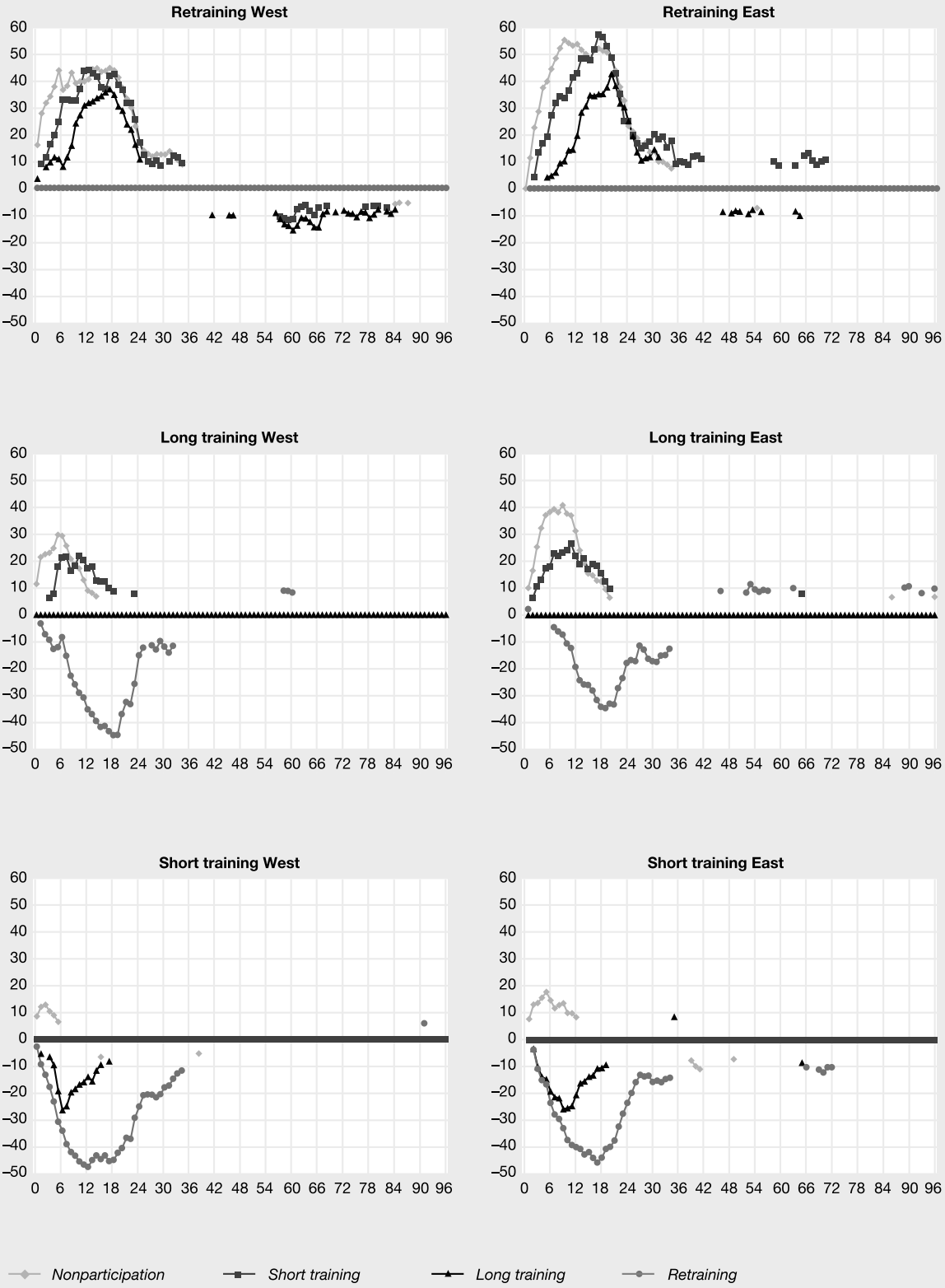
Figure 2

Differences in earnings (EUR) for 96 months after programme start



Note: Only effects that are significant at the 5 % level (point wise) appear in the figures.

Figure 3
Differences in unemployment rates (percentage points) for 96 months after programme start



Note: Only effects that are significant at the 5 % level (point wise) appear in the figures.

Table 6
Mean effects (ATET) for all earnings outcomes eight years after programme start

Treated	Comparison		Earnings in EUR	Unsubsidised earnings in EUR	Smooth[a] earnings in EUR	Unsubsidised smooth[a] earnings in EUR
Short training	Nonparticipation	West	**211***	–	197	–
		East	**208***	**217***	**199***	**212***
Long training	Nonparticipation	West	150	–	110	–
		East	**145**	**136**	**138**	**132**
Retraining	Nonparticipation	West	**323***	–	**296***	–
		East	101	87	78	71
Short training	Long training	West	28	–	52	–
		East	55	37	35	20
Short training	Retraining	West	–148	–	–139	–
		East	–75	–84	–77	–86
Long training	Short training	West	123	–	109	–
		East	20	28	28	34
Long training	Retraining	West	–58	–	–72	–
		East	–102	–108	–81	–95
Retraining	Short training	West	178	–	181	–
		East	–120	*–147*	–138	*–163*
Retraining	Long training	West	117	–	134	–
		East	32	17	1	–10

Note: ***Bold*** *figures indicate significance at the 5 % level, figures in italics relate to the 10 % level and * to the 1 % level. If not stated otherwise the effects are differences in percentage points.*
[a] *Moving average over three months.*

East Germany, none of the programmes dominates over nonparticipation systematically in the medium to long run (see also Table 7). Thus, the major effect of the programmes compared with nonparticipation is that they get those unemployed people back into work who would otherwise leave the labour force.[10] The explanation for this finding is probably that programme participation increases benefit receipt – directly through the benefits paid during participation and indirectly because these periods count towards the acquisition of new unemployment benefit claims – so that the economically inactive have an incentive to remain registered. Thus, it is important to look at both employment and unemployment in order to obtain a complete picture of the effects of training. Moreover, looking only at unemployment would have been particularly spurious since the conclusion would have been that training is not effective at all in the medium to long run although there

Table 7
Mean effects (ATET) for unemployment eight years after programme start

		Unemployment	
Treated	Comparison	West	East
Short training	Nonparticipation	3.3	3.3
Long training	Nonparticipation	1.1	**6.8**
Retraining	Nonparticipation	-1.7	-0.1
Short training	Long training	0.9	-2.8
Short training	Retraining	4.6	0.6
Long training	Short training	-2.6	3.8
Long training	Retraining	0.8	**9.8**
Retraining	Short training	-5.5	1.5
Retraining	Long training	-6.4	-5.2

Note: ***Bold*** *figures indicate significance at the 5 % level, figures in italics relate to the 10 % level and * to the 1 % level. If not stated otherwise the effects are differences in percentage points.*

[10] A similar finding is reported by Johansson (2001) for labour market programmes in Sweden.

Table 8
Effects eight years after the beginning of the programme by gender

Treated	Com-parison	Employment		Unsubsidised employment		Unemployment		Earnings		Unsubsidised earnings in EUR	
		M	W	M	W	M	W	M	W	M	W
Short training	nonpart.	**18.7***	**11.8**	**20.7***	**11.7**	–9.2	2.6	**355***	**190**	**397***	**197**
Long training	nonpart.	**–11.7**	**9.4**	**–11.2**	**11.0***	**16.7***	1.7	–96	**228***	–102	**245***
Retraining	nonpart.	1.2	**25.3***	0.8	**25.5***	2.3	–8.3	4	**386***	–1	**397***
Short training	long train.	15.5	–0.4	13.7	–2.8	–11.1	4.2	142	–79	124	–106
Short training	retraining	0.2	**–14.7**	–0.8	**–17.5**	0.1	3.5	–84	**–275**	–94	**–307**
Long training	retraining	1.6	**–17**	1.5	**–19.5***	12.4	8.4	227	*–199*	231	–236
Long training	short train.	–13.4	4.7	0.7	3.2	7.2	–9	16	136	125	114
Retraining	short train.	–9.3	**16.3**	–11.1	13.7	5.6	**–23.3***	–154	198	–182	169
Retraining	long train.	7.6	6.5	7.9	3.4	–5.7	**–10.9**	80	–16	84	–51

*Note: **Bold** figures indicate significance at the 5 % level, figures in italics relate to the 10 % level and * to the 1 % level. Cells shaded in grey indicate that the difference between the two estimated effects is significant at the 5 % level. M: Men, W: Women. Results are based on estimates in the different subsamples (including the MNP estimation) for men and women. Since the effects for men and women based on the common estimation of the MNP model show considerable effect heterogeneity, it appears to be possible that more flexibility is required when estimating the decision to participate in a programme. Therefore, we estimate MNPs for men and women separately, but we do not find significant differences in the effects compared with the case using a common MNP model.*

are quite substantial positive effects on employment.

4.5 Gender differences in East Germany

In German legislation particular attention is paid to gender differences in labour market outcomes. While there seem to be no substantial differences with respect to gender for West Germany,[11] Lechner, Miquel and Wunsch (2005) report considerable differences with respect to the two longer training programmes in East Germany (see Table 8). Compared with nonparticipation, retraining increases the employment rate of female participants by about 25 percentage points. It decreases unemployment by about 8 percentage points and increases monthly earnings by about 400 EUR. Retraining is, however, completely ineffective for male participants. A similar picture emerges for long training although the male-female difference is smaller than for retraining.[12] Short training courses appear to be effective for both men and women.

Lechner, Miquel and Wunsch (2005) find that the reason for these stark gender differences appears to be different types of training obtained by women and men, especially in the case of retraining. For about 71 % of the unemployed males the target occupation of retraining was construction-related (in particular craft-related occupations), whereas this share was only 5 % for women, who where mainly trained for occupations in the service sector. However, the construction sector went from boom in the early 1990s to recession in the second half of the 1990s – just at the time when most of the retrainees were completing their programmes. In contrast, women were luckier. The unemployment rates in their main target occupations were still below average in 2002.

Table 8 shows that the size of the gender gap differs to some extent depending on whether total or unsubsidised employment is used as the outcome variable but that the qualitative results are unchanged. For earnings, however, we find that the gender difference in the comparison between retraining and short training is no longer significant when using unsubsidised earnings and that there is now a significant gender gap between the earnings effect of long training compared with retraining. For registered unemployment we find that the overall increase in unemployment due to participation in long training compared with nonparticipation stems from a large positive estimate for men. Moreover, while there seems to be no significant overall impact on unem-

[11] Note, however, that practice firms, which are not considered here, do exhibit substantial gender differences in West Germany (see Lechner, Miquel and Wunsch 2004).
[12] The negative effects for month 96 indicate that participating in long training really has a detrimental effect for men by reducing their employment probabilities and increasing their unemployment probabilities. But this month is really an exception. For almost all other months, a zero effect for long training compared with nonparticipation cannot be rejected by the data.

Table 9
Estimated cumulated effects eight years after programme start

Participants in	Comparison group participates in	Employment	Unemployment	Earnings
Short training	Nonparticipation	**9.3***	–0.3	**21,604***
Long training	Nonparticipation	*4.9*	2.5	**14,817**
Retraining	Nonparticipation	0.4	**9.4***	*9,918*
Short training	Long training	**7.8**	–3	11,189
Short training	Retraining	**5.5**	**–9.4***	8,891
Long training	Short training	–4	*3.7*	–2,278
Long training	Retraining	1.2	**–5.8***	198
Retraining	Short training	–1.4	**6.2***	810
Retraining	Long training	2.7	1	–4,452

*Note: **Bold** figures indicate significance at the 5 % level, figures in italics relate to the 10 % level and * to the 1 % level.*

ployment for retraining versus short training, unemployment is reduced substantially for women in this comparison whereas men show no effect.

4.6 Net effects for West Germany

Figure 1 showed that there are indirect costs of the programmes in terms of the initial negative effects most likely due to lock-in, i. e. a reduced job-finding probability during programme participation. Here, we investigate whether the conclusions obtained from the point-in-time estimates of the programme effects change when conducting a first step of a cost-benefit analysis by comparing the initial negative effects with the positive effects that may occur later. To do this, we cumulate the effects over time, starting with the first month of the programme. Note that since we cannot distinguish between subsidised and unsubsidised employment before the year 2000 and since subsidised employment is substantial in East Germany, Table 9 displays the results for West Germany only.

We find that from this perspective *short training* rather than *retraining* is the most attractive programme in terms of net long-run gains in employment. Short programmes have only a small lock-in effect, and thus their positive effect accumulates for a much longer period, suggesting a gain of about nine months of employment over the eight years following programme start compared with *nonparticipation* and a corresponding gain of almost six months compared with *retraining.* A similar pattern emerges for *long training* compared with nonparticipation, but the level of the effects is somewhat different. For *retraining,* eight years are not sufficient to recover fully from the initial lock-in effect and to create an overall significantly positive effect despite the largest long-run effect (compared with all programmes and nonparticipation). Assuming a continuing trend, it seems likely that positive effects appear after about ten years, but of course this projection remains a speculation. Nevertheless, for participants in retraining it is impossible to conclude after eight years which of the available training schemes would be most effective for them overall. For cumulated earnings, which shows a pattern over time which is similar to the one obtained for cumulated employment, there is, however, a positive and significant gain of about € 10,000 for *retraining* compared with nonparticipation (not discounted). For short and long training the gains are about € 20,000 and € 15,000 respectively.[13]

With respect to registered unemployment, even after eight years all programmes apart from *short training* increase the duration of benefit receipt compared with nonparticipation. The increase due to *retraining* is about nine months, and three months (though not significant) for *long training.* These figures point to the fact that the positive and sustainable employment (and earnings) effects of *retraining* come at a considerable cost in terms of prolonged benefit payments. Thus, only considering employment and in particular only point-in-time estimates would provide a very incomplete picture of the ef-

[13] Note that when we cumulate employment (earnings) over time we do not take into account different qualities of employment, e. g. in terms of earnings (hours worked which are not observable in the data).

fects of these training programmes. Considering cumulated unemployment helps to assess at least one important aspect of the long-run fiscal consequences of training.

5 Conclusion

We examine how conclusions on the effectiveness of training programmes in Germany depend on the way that labour market outcomes are measured. For this purpose, we reconsider the evidence of Lechner, Miquel and Wunsch (2004, 2005) on the effectiveness of training programmes for the unemployed conducted in the period 1993–1994 in East and West Germany by comparing different measures of labour market outcomes.

We find that different definitions of employment and earnings provide very similar results and confirm previous findings of negative lock-in effects which depend on programme duration in the short run, and positive effects in the medium to long run. For different measures of the quality of employment the similarity of the results implies that training participants not only succeed in finding employment more easily than nonparticipants but also that this employment seems to be both stable in the sense that it outlives the usual probation period, and comparable with previous jobs in terms of earnings so that no serious earnings losses have to be incurred. Moreover, for East Germany there seem to be no excessive gains in subsidised employment compared with total employment indicating that there seems to be successful integration into the regular labour market.

Compared with employment, considering unemployment provides rather different results as the positive long-run effects on employment are not mirrored by a corresponding decrease in unemployment.

We confirm the previous findings concerning the value of the additional information provided by the cumulated (net) effects of the programmes for an assessment of the overall effectiveness of different training programmes because they can yield conclusions which are different from those of the point-in-time estimates. In particular, we show that for the net effects, too, it is important to contrast the results for employment and unemployment since the latter makes explicit the cost of a potentially positive long-run gain in employment in terms of prolonged benefit payments.

We also find that the gender differences in the effectiveness of relatively long and intense training reported by Lechner, Miquel and Wunsch (2005) for East Germany are robust to the choice of the outcome variable.

References

Ashenfelter, O. (1978): Estimating the Effect of Training Programs on Earnings, Review of Economics and Statistics, 6 (1), 47–57.

Bender, S., A. Bergemann, B. Fitzenberger, M. Lechner, R. Miquel, S. Speckesser, and C. Wunsch (2005): Die Wirksamkeit von FuU-Maßnahmen: Ein Evaluationsversuch mit prozessproduzierten Daten aus dem IAB, Beiträge zur Arbeitsmarkt- und Berufsforschung, 289.

Bender, S., Haas, A. and C. Klose (2000): The IAB employment subsample 1975–1995, Schmollers Jahrbuch, Zeitschrift für Wirtschafts- und Sozialwissenschaften, 120/4, 649–662.

Bender, S., J. Hilzendegen, G. Rohwer, and H. Rudolph (1996): Die IAB-Beschäftigtenstichprobe 1975–1990, Beiträge zur Arbeitsmarkt- und Berufsforschung, 197.

Biewen, M., B. Fitzenberger, A. Osikominu and M. Waller (2006): Employment Effects of Short and Medium Term Further Training Programs in Germany in the Early 2000s, Department of Economics, Goethe-University, Frankfurt am Main.

Bundesanstalt für Arbeit (BA, 1992–2004): Arbeitsstatistik – Jahreszahlen, Amtliche Nachrichten der Bundesanstalt für Arbeit, 40–52, Special Issue, Nuremberg.

Fitzenberger, B., A. Osikominu and R. Völter (2006): Get Training or Wait? Long-Run Employment Effects of Training Programs for the Unemployed in West Germany, Department of Economics, Goethe-University, Frankfurt am Main.

Fitzenberger, B. and S. Speckesser (2005): Employment Effects of the Provision of Specific Professional Skills and Techniques in Germany, Department of Economics, Goethe-University, Frankfurt am Main.

Hujer, R., S. Thomsen and C. Zeiss (2004): The Effects of Vocational Training Programmes on the Duration of Unemployment in East Germany, IZA Discussion Paper 1117.

Johansson, K. (2001): Do labour market programs affect labor force participation, Swedish Economic Policy Review, 8 (2), 215–234.

Klose, C. and S. Bender (2000): Berufliche Weiterbildung für Arbeitslose – Ein Weg zurück in Beschäftigung? Analyse einer Abgängerkohorte des Jahres 1986 aus Maßnahmen zur Fortbildung und Umschulung mit einer ergänzten IAB-Beschäftigtenstichprobe 1975–1990,

Mitteilungen aus der Arbeitsmarkt- und Berufsforschung, 33/3, 421–444.

Lechner, M. (1999): Earnings and Employment Effects of Continuous Off-the-job Training in East Germany after Unification, Journal of Business Economics and Statistics, 17, 74–90.

Lechner, M., R. Miquel and C. Wunsch (2004): Long-run effects of Public Sector Sponsored Training in West Germany, Discussion Paper 2004–19, Department of Economics, University of St. Gallen.

Lechner, M., R. Miquel and C. Wunsch (2005): The Curse and Blessing of Training the Unemployed in a Changing Economy: The Case of East Germany after Unification, forthcoming in the German Economic Review, 1/2008, forthcoming.

Miquel, R., C. Wunsch and M. Lechner (2002): Die FuU-Teilnehmer-Datei 1976–1997, Graues Papier des Instituts für Arbeitsmarkt- und Berufsforschung, Nuremberg.

Schneider, H., K. Brenke, L. Kaiser, J. Steinwede, B. Jesske and A. Uhlendorff (2006): Evaluation der Maßnahmen zur Umsetzung der Vorschläge der Hartz-Kommission, IZA Report No. 7.

Speckesser, S. (2004): Using Social Insurance Data for the Evaluation of Active Labour Market Policy: Employment Effects of Further Training for the Unemployed in Germany, University of Mannheim, Unpublished Manuscript.

Van Ours, J. (2004): The Locking-in Effect of Subsidized Jobs, Journal of Comparative Economics, 32, 37–52.

Wunsch, C. (2005): Labour Market Policy in Germany: Institutions, Instruments and Reforms since Unification, Discussion Paper 2005–06, Department of Economics, University of St. Gallen.