Does welfare-to-work policy increase employment?: Evidence from the UK New Deal for Young People

Rebecca Riley and Garry Young

National Institute of Economic and Social Research
2 Dean Trench Street, Smith Square
London SW1P 3HE

E-mail: r.riley@niesr.ac.uk

August 2001

Abstract
Welfare-to-work programmes were implemented in several OECD countries during the 1990s. With these programmes, entitlement to unemployment related benefits is conditional on taking up help in finding and actively preparing for work. This paper examines empirically the employment effects of the New Deal for Young People, a welfare-to-work programme for long-term unemployed young people introduced in the UK in 1998. It finds that the programme has reduced measured unemployment among the target group partly by shifting them into non-work activities but also by raising employment.

JEL classification: H53, J64

Keywords: Welfare-to-work programmes; Benefit sanctions; Youth employment; Matching functions; Policy evaluation

Acknowledgements: We are grateful to Susan Scott and Nicky Tarry for assistance with the New Deal Evaluation Database and JUVOS, and to Chris Anderson, Bob Anderton, Ray Barrell, Andy Blake, Monica Dias, Richard Layard, Costas Meghir, Nigel Pain, Dominic Rice, John Van Reenen, and participants at seminars held at NIESR, the Department for Education and Employment, and the Royal Economic Society conference at St. Andrews for comments on this work. We are also grateful for the financial support received from the Employment Service. This paper is a development of an earlier study (Riley and Young, 2000) provided to the Employment Service. The views expressed here are those of the authors.

1. Introduction

For more than two decades, active labour market programmes (ALMPs) have been an integral part of policy in OECD countries aimed at raising sustainable employment. Encompassing a wide range of measures such as job placement schemes, wage subsidies, training programmes, and job search assistance for the unemployed, they are primarily intended to improve the employability of the unemployed and the functioning of the labour market. Evidence of the efficacy of ALMPs has been mixed, but guidelines have emerged as to which policy features contribute to the success of policy (OECD, 1996; Martin, 1998). The co-ordination of ALMPs with the benefit system is one such feature. For example, as suggested in Calmfors *et al.* (1998), job search assistance is likely to be more effective if the benefit system provides strong incentives to accept available jobs.

More recently, several countries have implemented ALMPs in conjunction with stricter benefit rules. These 'compulsory activation' or 'welfare-to-work' programmes generally have two components (Boeri *et al.*, 2000). First, there is a work test of some form to check that those claiming benefits really cannot find work. This ensures that benefits are not paid when work is attainable. Second, this is linked to an active labour market policy that ensures that there is an exit route from unemployment into work. The underlying philosophy is that the unemployed have a 'right' to support and assistance during periods of unemployment and in return a 'responsibility' to engage in job search and to participate in employability enhancing activities.

Extensive welfare-to-work programmes for the unemployed have been implemented and developed during the 1990s in e.g. Denmark, Sweden, Switzerland, Australia, and more recently in Britain.[1] So far they have primarily been targeted at young unemployed people, although increasingly welfare-to-work programmes are being introduced for older age groups. Common to all of these programmes is a limit to the period the unemployed can expect to receive benefits without participating in work placements or training schemes. This limits the possible duration of unemployment claims, thereby ruling out longer-term unemployment on claimant-based definitions and giving the appearance of a successful policy. This raises the question as to whether welfare-to-work programmes merely disguise long-term unemployment under some other name, or whether they genuinely contribute to a rise in sustainable employment, as is ultimately their goal.

An answer to this question requires an evaluation of the unemployment and employment effects of different welfare-to-work programmes. This paper contributes to the evaluation evidence by examining empirically the impact on youth unemployment and employment of the New Deal for Young People (NDYP), a welfare-to-work programme for long-term unemployed 18-24 year olds introduced in the UK in April 1998.

[1] See OECD Economic Surveys for details of individual country reforms.

The NDYP is targeted at young people whose unemployment spell reaches six months. At this point, they are offered assistance in job search and basic skills development in a 'Gateway' period lasting up to four months. Those who have not found a job by the end of the Gateway are offered a number of options, including further skills development through full-time education and training programmes and work experience through job placements and subsidised employment. When participating in options, young people are no longer entitled to unemployment benefit, but are paid at least their previous benefit levels. There is no option to remain on benefit without participating in the programme.

Following the general approach taken by Haskel and Jackman (1988), Disney *et al.* (1992), Lehmann (1993), Boeri and Burda (1996), Dor *et al.* (1997) and Anderton *et al.* (1999), we assess the impact of NDYP on aggregate unemployment flows by estimating flow relationships incorporating measures of the intensity of NDYP that vary across time and/or geographical units. One advantage of the NDYP from an evaluation perspective is that it is targeted at a particular age group. This helps us to identify its impact by comparing the effect of NDYP on the 'treated' (unemployed 18-24 year olds) to its alleged effect on the 'untreated' (unemployed people aged 25+).[2] Having estimated the impact of NDYP on unemployment flows, the programme's implication for youth unemployment and employment is derived using the identity relations between stocks and flows.

This paper considers the impact of NDYP in its first two years to March 2000. Our results suggest that it has reduced youth long-term unemployment by raising the number of young people in short-term unemployment, government training and in employment. So, while NDYP does appear to have caused some reclassification of the long-term unemployed, it also has been successful in raising the number of young people in jobs. [3]

The paper proceeds as follows. Section two discusses the NDYP programme in more detail suggesting how it may affect labour market flows and how these can be evaluated. Section three describes the data. Results are discussed in section four and a final section summarises and concludes.

2. Evaluating the effect of NDYP on labour market flows

The New Deal for Young Unemployed People (NDYP) was introduced nationally in April 1998 following a three month pilot period in a number of Pathfinder areas. It is designed

[2] This is similar to the differences-in-differences approach which is more commonly used in the evaluation of the impact of programme participation on individuals' employment and earnings outcomes. See Heckman *et al.* (1999) for a review.

[3] This estimate takes no account of the general equilibrium effects that the NDYP might have on wage setting and aggregate employment. These are considered in Riley and Young (2001) which suggests that their inclusion would make little difference to our main conclusions.

to discourage young people from a life of welfare dependency by providing them with the skills, opportunities and motivation to find work. It operates by bringing young people into the programme once their unemployment spell reaches six months. At first, participants are given help with job search and basic skills development through a 'Gateway' period lasting up to four months. Those who have not left unemployment after four months on the Gateway are offered either a subsidised job, a job placement in the voluntary sector or environment taskforce options (VS/ETF), or a programme of full-time education and training. It is not possible to opt out of the programme and remain on unemployment benefit. Most options last six months, the exception being the full-time education and training option lasting for up to 12 months, after which some find work. Those who return to claimant unemployment within 13 weeks of having participated in an option, enter the NDYP Follow-Through. Here they receive further assistance in finding a job and may be placed into another NDYP option.

While participants usually enter the programme when their unemployment spell reaches six months, there are some exceptions to this. In its initial stages, the programme had to deal with the stock of young people whose unemployment spell already exceeded six months. Also, some short-term unemployed young people, identified as likely to have special difficulties in finding work, qualify for the programme. Further, those who leave unemployment at the Gateway stage, but who return to claimant unemployment within 13 weeks, automatically re-enter the Gateway and do not have to wait an additional six months to re-qualify for NDYP.

The impact of the programme can be assessed by examining its effect on outflow rates from unemployment to a range of destinations. By design, it should eliminate unemployment durations in excess of ten months so that a significant rise in exits from long-term unemployment is to be expected. Assistance with job search in the Gateway, together with tighter conditions on benefits, should raise job search so that some of these exits are to jobs.[4] Similarly, the wage subsidy associated with the employment option should help the previously long-term unemployed into jobs. The overall impact of the programme on youth employment and unemployment depends on its effect on these and other flows and their interaction.

Following the general approach taken by Haskel and Jackman (1988), Disney *et al.* (1992), Lehmann (1993), Boeri and Burda (1996), Dor *et al.* (1997) and Anderton *et al.* (1999), we assess the impact of NDYP on flow rates by estimating flow relationships incorporating measures of the intensity of NDYP that vary across time and/or geographical units. Our main contribution is in analysing the impact of NDYP on outflows from unemployment to different destinations, although we also assess its effect on total

[4] For example, Boone and van Ours (2000) suggest that job search is stimulated by the threat of benefit sanctions.

inflows to unemployment.[5] The estimated effect of NDYP on flow rates is used to derive counterfactual scenarios for youth long-term and short-term unemployment and youth employment.

2.1 Assessing the impact of NDYP on flow rates

To capture the impact of NDYP on outflow rates we augment standard relationships by including variables that measure the intensity of the programme. In order to help identify the effect of the programme, this is done for a range of age groups, including both those eligible for the NDYP treatment and those who are not, and for a range of initial unemployment duration categories. The impact on flows to different destinations are also examined to evaluate how much of the effect of the NDYP is on flows to jobs. This will help to assess whether the previously long-term unemployed have been reclassified under some other term such as short-term unemployed or 'out of the labour force'.

The relationship between the exit rate from unemployment to jobs and labour market tightness is modelled here as a standard 'matching' function, describing the production of matches made between jobs and jobseekers.[6] In this literature, the average exit rate from unemployment to employment (the ratio of outflows from unemployment to jobs to the stock of unemployment, A/U) is usually modelled as a log-linear function increasing in the number of available jobs (the vacancy stock, V) and decreasing in the number of people competing for those jobs (the unemployment stock, U). The term 'matching function' is arguably less appropriate when the exit rate from unemployment includes exits to all destinations. Nevertheless, this relationship does stand up empirically.[7,8] The basic estimating equation is shown below.

$$\ln(A/U)^i_j = X^i_j \beta^i_j + \lambda^i_j ND + \varepsilon^i_j \qquad (1)$$

In equation (1) the average exit rate from unemployment to a given destination (the ratio of outflows from unemployment to the stock of unemployment, A/U) is modelled as a function of exogenous factors summarised in X and the intensity of the programme, ND; ε is an error term with mean zero. Superscript i denotes age group and subscript j denotes unemployment duration group. A key parameter in equation (1) is λ, the semi-elasticity of the flow rate with respect to the intensity of the programme.

[5] We use other evidence to support our conclusions on inflows to unemployment from jobs.
[6] The theoretical and empirical foundations of the matching function are surveyed in Petrongolo & Pissarides (2000).
[7] See e.g. some of the empirical outflow equations/matching functions surveyed in tables 1 and 2 in Petrongolo & Pissarides (2000).
[8] See e.g. Anderton *et al.* (1999), Lehmann (1993) or Haskel & Jackman (1988) for previous examples of duration and/or age specific outflow rate equations.

To capture the effect of NDYP on the inflow rate to unemployment we follow a similar approach, including variables that measure the intensity of the programme in aggregate inflow relationships. The basic estimating equation is shown below:

$$\ln(I/(POP-U))^i = Y^i\alpha^i + \gamma^i ND + e^i \qquad (2)$$

In equation (2) the inflow rate to unemployment (the ratio of inflows to unemployment from the population not unemployed, I, to the population not unemployed, $POP-U$) is modelled as a function of exogenous factors, *Y*, the intensity of the programme, ND, and an error term with mean zero, e. As above, superscript *i* denotes age group. Here, γ is the semi-elasticity of the flow rate with respect to the intensity of the programme. Factors determining the inflow rate in *Y* include the output gap (the ratio of GDP to trend GDP, OUT), as in Junankar and Price (1984), and/or labour market tightness, as in Burgess (1992). Both are intended to capture the cyclical behaviour of redundancies, quits, and entry or re-entry into the labour force.

The impact of the NDYP is assessed by estimating the parameters λ and γ in equations (1) and (2). Identification of these parameters requires that the variable measuring the programme is not highly correlated with other factors affecting flow rates. If these factors are excluded from *X* and *Y* the intensity of the programme, ND, will be correlated with the error term. In this case estimates of the impact of NDYP will be biased as the impact on flow rates of omitted factors correlated with ND, is attributed to ND. This problem is likely to arise when the programme is introduced at a time of wider structural change affecting labour market flows which makes it difficult to separate the effect of the programme from these other influences. One way of dealing with this is to estimate the relationships for different age groups relative to each other as in (3) and (4),

$$\ln(A/U)_j^T - \ln(A/U)_j^{NT} = X_j^T\beta_j^T - X_j^{NT}\beta_j^{NT} + \pi_j ND + \nu_j \qquad (3)$$

$$\ln(I/(POP-U))^T - \ln(I/(POP-U))^{NT} = Y^T\alpha^T - Y^{NT}\alpha^{NT} + \rho ND + \omega \qquad (4)$$

where, $\pi_j = \lambda_j^T - \lambda_j^{NT}$, $\nu_j = \varepsilon_j^T - \varepsilon_j^{NT}$, $\rho = \gamma^T - \gamma^{NT}$, and $\omega = e^T - e^{NT}$. Equation (3) is simply the difference between relationship (1) for $i=T$ (the age group receiving NDYP 'treatment') and for $i=NT$ (an age group ineligible for NDYP 'treatment').[9] Equation (4) is similarly derived from equation (2). Assuming e.g. in (2) that the error term can be written as $e^i = \bar{e} + \mu^i$, where $E(e^i ND) = E(\bar{e}ND)$, then $\omega = \mu^T - \mu^{NT}$ and $E(\omega ND) = 0$. In other

[9] This is similar to the differences-in-differences approach to programme evaluation. See e.g. Heckman *et al.* (1999).

words, if the intensity of the programme is only correlated with the error term in (2) through an error component which is common to the treated and the untreated, then the error term in (4) is uncorrelated with the intensity of the programme. Estimates of ρ will then be unbiased.

Given these assumptions, it is possible to identify the effect of the programme on the target group *relative* to another group. But it is only possible to identify the effect on the target group itself when other identifying information is available. For example, unbiased estimates of ρ would yield unbiased estimates of γ^T if it were known that $\gamma^{NT} = 0$.

In what follows we estimate the impact of NDYP on flow rates by estimating equations (1)-(4) separately, experimenting with different measures of the intensity of the programme and different non-treatment groups, arguments of the flow equations, and estimation methods. The results of this are reported in section 4 where the exact specification and estimation procedure is described in further detail.

2.2 Assessing the impact of NDYP on stocks

Estimates of λ_j^T and γ^T, obtained by estimating the relationships above, can be used to generate counterfactual flow rates for the treated age group in absence of NDYP. The relation between the counterfactual outflow rate without the programme, f_j^C, and the outflow rate with the programme, f_j^A, is given by $f_j^A = e^{\lambda_j^T ND} f_j^C$.[10] Similarly, the relationship between actual and counterfactual inflow rates is $in^A = e^{\gamma^T ND} in^C$. From these estimates of counterfactual flow rates the implications of NDYP for (un)employment stocks are derived using the identity relation between stocks and flows. If for example the identity between stocks, S, and flow rates can be written as $S^k \equiv G(f^k, in^k)$ for $k = A, C$, then the impact of NDYP on (un)employment is $\Delta S = G(f^A, in^A) - G(f^C, in^C)$. The details of $G(.)$ are shown in the results section.

It is also possible to estimate the impact of NDYP on stocks directly rather than derive it from the estimated impact of NDYP on flows. However, there are a number of reasons for preferring the flows-based approach. First, there exists less information on employment stocks making it difficult to estimate the effect of NDYP directly on employment. Second, we are ultimately interested in whether the programme has reduced long-term unemployment and unemployment generally by raising the numbers in

[10] As NDYP is a relatively large-scale programme, it is unlikely that labour market tightness and the output gap are perfectly orthogonal to ND, so that the difference between actual and counterfactual flow rates

employment. By testing whether the programme has changed the flows from unemployment to jobs, we address exactly this question. Third, the rules of NDYP mean that its effect on outflows to all destinations from long-term unemployment is to some extent predetermined, providing an additional check as to whether we are picking up changes in stocks due to NDYP rather than due to other factors.[11]

3. Data

In March 1998, just before the national introduction of the NDYP, 118 thousand people between the ages of 18 and 24 had been unemployed for more than 6 months. Of these, 51 thousand had been unemployed for over a year and 17 thousand for over two years.[12] In broad terms, these 118 thousand people represented the initial client group of the NDYP.[13] By the end of March 2000, 456.8 thousand young people had participated in the programme. Of these 210.2 thousand had moved at one time or another from the programme into employment.[14] The number of participants has much exceeded the size of the initial client group because large numbers of people flow into and out of unemployment each month.

To assess the impact of the NDYP on the average exit rate from unemployment to jobs we use information on the destination, age and unemployment duration of leavers from the claimant count before and after the introduction of NDYP.[15] Information on the destination of leavers from the claimant count has been collected since January 1995 for all computerised claims.[16] When an individual ceases to claim unemployment benefit, the local benefit office records whether the individual has found work, transferred to other benefits, transferred to a government training programme, started full-time education or left for some other reason.[17] Roughly a quarter of leavers from the claimant count do not state their reason for ceasing to claim or simply fail to sign off. Throughout the analysis, leavers to unknown destinations are not regarded as exits from unemployment to employment.

With the introduction of the NDYP, exits to work may include exits to the NDYP subsidised employment option. To get a breakdown of job flows into subsidised and

---

here captures only the direct effect of the programme. See Riley and Young (2001) for an assessment of the general equilibrium effects of NDYP.

[11] Some direct estimates of the programme's impact on unemployment stocks are provided in Riley and Young (2000).

[12] Source: Table C.12, *Labour Market Trends*, March 2000.

[13] Some short term unemployed will have qualified for early entry to the programme.

[14] DfEE Statistical First Release 24/2000

[15] The claimant count is the count of people claiming Jobseekers' Allowance (JSA) and is the official definition of unemployment. Historically it is lower than unemployment on the ILO definition. The NDYP is only available to JSA claimants.

[16] Computerised claims constitute over 99% of all unemployment benefit claims.

unsubsidised jobs, individuals on the New Deal Evaluation Database (NDED) were matched to the Benefit Agency administrative system by their National Insurance number.[18] The NDED records the destination of individuals leaving the NDYP Gateway, including starts on the different NDYP options. It also includes information on exits to options available through the New Deal for the Long-Term Unemployed (NDLTU).[19] As with exits from the claimant count, the destination of some leavers from the Gateway is not recorded. In the first two years of NDYP, 17 per cent of leavers from the Gateway have gone to unknown destinations.[20] In principle, the date an individual leaves the Gateway to start a NDYP option, recorded on the NDED, should coincide with the date the individual leaves the claimant count, recorded by the benefit office. In practice these dates do not always coincide. In matching individuals between the two databases, individuals were recorded as leaving unemployment to start a NDYP option if the dates on the two databases were within 14 days of each other.[21]

The unemployed were grouped into age bands, 18-24, 25-29 and 30-49 years old, and unemployment duration bands, 0-3, 3-6, 6-9 and over 9 months. The 18-24 year olds unemployed for more than 6 months represent the initial NDYP target group, although many 18-24 year olds classified as short-term unemployed are on NDYP as well. The distinction between the older age groups should also assist in an assessment of the extent of substitution associated with the programme, as the 25-29 group are likely to be closer substitutes for the NDYP age group than the 30-49 year olds.

The NDYP is delivered locally via a network of 144 New Deal Units of Delivery (UoDs). We have information on unemployment stocks and flows separately for each of these units for each month between February 1995 and February 2000. To match this to data on vacancies we need to aggregate up some of the UoDs as the vacancy data are available on a different geographical basis. When this is done we have 105 new UoDs, some of which are aggregates of original UoDs. For the purposes of estimation, further aggregation is helpful as it eliminates small UoDs where the number of people leaving unemployment each month (from a particular age and duration category) is zero. Having done this we are left with 95 'UoDs'. Thus in estimating relationships such as (1)-(4) we have a panel of 95 UoDs covering the whole of Great Britain for 61 months.

---

[17] See any recent issue of *Labour Market Trends* Table C.34 for the breakdown of 'other benefits' and 'other reasons'.

[18] This data was compiled by Opinion Research Corporation International on behalf of the Department for Education and Employment.

[19] The NDLTU was introduced three months after NDYP and is similar to NDYP in some respects. It offers job search assistance to adults who have been unemployed for over two years and a number of options for those who are unsuccessful in finding work. Unlike individuals on NDYP, individuals on NDLTU do not face benefit sanctions if they refuse to participate in NDLTU options. As of April 2001 the NDLTU has been brought more into line with the NDYP. However, this does not affect our sample period.

[20] Table 4b, DfEE Statistical First Release 24/2000

[21] This is the same rule that is applied in producing the New Deal statistics published by the Department for Education and Employment.

Table 1 shows mean monthly outflow rates from unemployment in the three years before and the two years after the introduction of NDYP across the 95 UoDs. As expected, exit rates from unemployment are decreasing in unemployment duration. This is the case for almost all age groups, before and after NDYP, for both exit rates to jobs and to all destinations. There is one exception. After NDYP is introduced, the exit rate to all destinations for 18-24 year olds unemployed for more than 9 months rises above the equivalent for 18-24 year olds unemployed between 3 and 9 months. This reflects the imposition by the NDYP of a time limit to the duration of unemployment benefit. Table 1 also shows, unsurprisingly, that young people leave unemployment more quickly than older people, but a smaller proportion exit to jobs.

Table 1
Monthly outflow rates from unemployment

Destination	*Duration (months)*	Before NDYP			After NDYP			Difference*		
		Age			*Age*			*Age*		
		18-24	*25-29*	*30-49*	*18-24*	*25-29*	*30-49*	*18-24*	*25-29*	*30-49*
unsubs. work	*0-3*	.146	.155	.159	.162	.172	.171	.106	.107	.073
	3-6	.097	.093	.091	.109	.101	.092	.109	.079	.017
	6-9	.077	.072	.070	.089	.072	.065	.143	.001	-.075
	9+	.050	.040	.032	.065	.039	.030	.265	-.006	-.072
work	*0-3*	.146	.155	.159	.162	.172	.171	.117	.108	.074
	3-6	.097	.093	.091	.111	.101	.092	.127	.082	.019
	6-9	.077	.072	.070	.099	.072	.065	.252	.008	-.071
	9+	.050	.040	.032	.077	.041	.031	.432	.030	-.038
all	*0-3*	.288	.263	.259	.353	.307	.292	.204	.155	.122
	3-6	.187	.163	.153	.235	.192	.170	.230	.159	.107
	6-9	.166	.152	.145	.225	.167	.151	.303	.097	.038
	9+	.119	.095	.080	.245	.103	.080	.721	.083	.005

*Log outflow rate "After NDYP" less log outflow rate "Before NDYP"
Source: New Deal Evaluation Database and JUVOS
Notes: mean across 95 Units of Delivery of mean monthly flow rates before and after New Deal; all means refer to geometric means; the 95 Units of Delivery are aggregated from the original 144 Units of Delivery; before NDYP period is March 1995 – February 1998; after NDYP period is March 1998 – February 2000; outflows to unknown destinations, to voluntary sector, environmental taskforce, and education & training options, and to other benefits are included in *all destinations*; outflows to the subsidised employment option included in *work* (subsidised employment option on NDYP for 18-24 year olds and on NDLTU for other age groups).

Comparing outflow rates before and after the introduction of NDYP in the last column of table 1, it appears that the outflow rate to all destinations has risen for all age

and duration groups since the introduction of the programme. However, exit rates to unsubsidised jobs have decreased for long-term unemployed adults. The decrease is less severe when exits to the subsidised employment option on NDLTU are included. In contrast, for 18-24 year olds the exit rate to jobs, including or excluding subsidised jobs, has risen sharply since the introduction of NDYP.

Table 1 can be used to provide 'difference-in-difference' estimates of the effect of the NDYP on outflow rates. Here the difference between the outflow rates for young people before and after the introduction of the NDYP is compared with the difference in outflow rates for another age group and the difference in the differences attributed to the effect of the NDYP. The benefit of this approach is that it provides a straightforward estimate of the effect of the programme. However, this is a special case of equation (3) that is only strictly valid when the outflow rates for different age groups respond in the same way to their various influences. This is discussed further in section 4.

Table 2 shows the numbers leaving unemployment to NDYP options. Looking in the first column, the average numbers leaving to options each month rose after the programme's first 6 months, as the first individuals to join the NDYP had passed through the Gateway. After the first year of the programme, the numbers leaving to options each month fell slightly as the stock of long-term unemployed was cleared. Relatively few people are shown to join the subsidised employment option, which should limit the substitution effects of the programme.

The distribution of exits to options across unemployment duration categories in table 2 suggests that a significant and rising proportion of exits to options is from short-term unemployment. For example, from September 1999 to February 2000, 34 per cent of the 7.3 thousand who left unemployment to options each month, left before their unemployment spell reached 3 months. Leavers to NDYP options from short-term unemployment include 'early entrants', people identified as in need of special help. Of the 456.8 thousand individuals who had joined the NDYP programme by March 2000, 7.5 per cent were classified as early entrants who entered the programme from short-term unemployment (i.e. less than 6 months unemployment).[22] The numbers in table 2 would suggest that over 60 thousand individuals started on an option from short-term unemployment, which is obviously unaccounted for by early entrants alone. Instead the large flows to NDYP options from short-term unemployment reflect the individuals who return to the claimant count within 13 weeks of leaving the NDYP Gateway and NDYP options, who qualify for the Gateway and Follow-Through stages of NDYP respectively. Over the lifespan of NDYP an increasing share of exits to options are from very short-term unemployment. This reflects the rising numbers who return to the claimant count

[22] Table 3, DfEE Statistical First Release 24/2000

having completed their options and the decreasing number of long-term unemployed as NDYP gradually clears the stock.

Table 2
Flows to NDYP options by unemployment duration

	NDYP Option	Total (monthly average) *thousands*	Distribution across unemployment duration groups (months)			
			0-3	3-6	6-9	9+
Mar 98 – Aug 98	ES	1.3	.16	.09	.30	.45
	ETF&VS	0.8	.12	.08	.14	.66
	ET	1.8	.14	.08	.22	.56
	All	3.8	.14	.08	.23	.55
Sep 98 – Feb 99	ES	1.5	.24	.10	.23	.43
	ETF&VS	3.2	.25	.10	.09	.56
	ET	4.1	.20	.09	.17	.53
	All	8.8	.23	.10	.15	.52
Mar 99 – Aug 99	ES	1.3	.26	.12	.31	.31
	ETF&VS	3.5	.33	.12	.11	.44
	ET	2.6	.25	.12	.19	.44
	All	7.4	.29	.12	.18	.42
Sep 99 – Feb 00	ES	1.0	.30	.12	.32	.26
	ETF&VS	3.4	.40	.12	.14	.35
	ET	2.9	.29	.13	.23	.36
	All	7.3	.34	.12	.20	.34

Source: New Deal Evaluation Database and JUVOS
Notes: ES Subsidised Employment; ETF Environmental Taskforce; VS Voluntary Sector; ET Education & Training; 18-24 year olds; last four columns sum to one.

To assess the impact of NDYP on flow rates we include measures of the intensity of the programme, ND, in the flow relationships (1)-(4). We experiment with two different measures. First, a simple dummy variable which equals one when the NDYP is in operation in area d and zero otherwise. Due to the introduction of the NDYP in a number of pilot areas prior to the national launch of the programme, there is some variation in this measure across UoDs. When this measure in included in equations (3) and (4), the estimate of the effect of the programme is similar to a standard conditional differences-in-differences estimator. Second, the share of NDYP clients in total unemployment in area d at time t, multiplied by the 'interview intensity' in that area. The 'interview intensity' equals the average number of days that individuals receive personal advisor interviews compared to the total number of days spent on the programme

in area d.[23] This measure is intended to capture the variation in programme intensity both over UoDs and over time and is illustrated in figure 1. Previous empirical studies of the effects of active labour market policy on unemployment/employment have used similar measures to indicate the strength of the policy. For example, Calmfors and Skedinger (1995) include the programme 'accommodation ratio', defined as the share of the non-employed in programmes, to explain variation in the regional non-employment rate in Sweden. Anderton *et. al.* (1999) use the ratio of NDYP participants to youth long-term unemployed (including those on NDYP options) to measure the effect of NDYP on unemployment outflows in the programme's first year. Dor *et al.* (1997) use the ratio of successfully completed training programmes to aggregate unemployment to measure the effect of training programmes on outflows from unemployment. In a study of the effects of the Restart policy on unemployment flows, Lehmann (1993) and Disney *et al.* (1992) use the ratio of Restart interviews to eligible participants.[24]

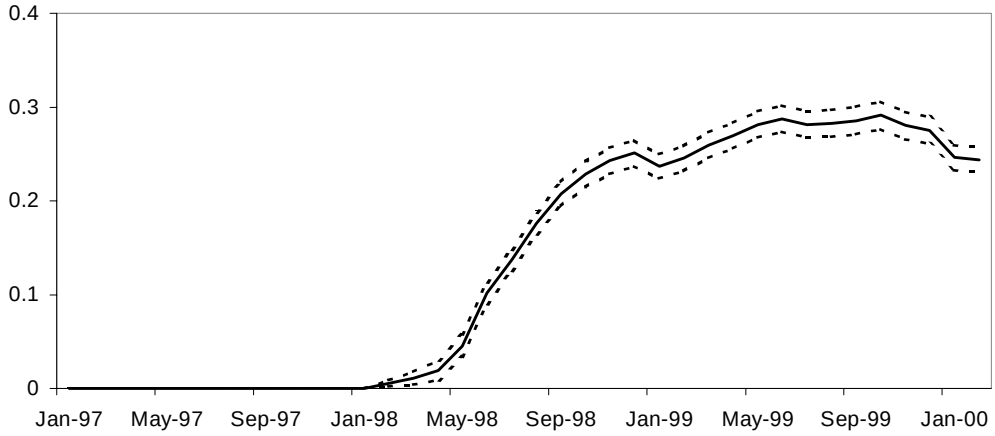

Fig. 1.: *The intensity of NDYP (mean across 95 UoDs)*

Notes: Dashed lines indicate mean plus/minus two times the standard error across UoDs

In sum, our primary source of information includes data on outflows from unemployment to different destinations, for different age groups and unemployment duration groups, for each month and UoD since the beginning of 1995. It also includes information on the number of NDYP participants in each area, the intensity with which they receive advisory interviews, and the number of vacancies recorded at local jobcentres each month.[25] Thus we are able to exploit both geographical and time variation in estimating the flow relationships discussed in the previous section.

[23] Derived from NDED.
[24] The Restart programme was introduced in 1986 in Britain and offered job counselling interviews to those unemployed for more than 6 months.
[25] These are unfilled vacancies at the beginning of the month and new vacancies posted during the month.

4. Empirical results

This section reports the results of estimating the flow relationships specified in section 2. First we discuss results from time series estimation of aggregate inflows to and outflows from unemployment to all destinations for Great Britain. Measures of the intensity of NDYP are not included. Instead the flow relationships are estimated on data before NDYP was introduced and used to forecast a counterfactual scenario for flow rates in absence of NDYP.[26] Next we discuss results from panel estimation of outflows from unemployment to all destinations and jobs in particular and results from panel estimation of unemployment inflow relationships, using both time and geographical variation in the intensity of NDYP to identify its impact on flow rates. The estimated impact of NDYP on flow rates is then used to generate counterfactual youth (un)employment in absence of NDYP using the identity between stocks and flows.

4.1 Simple time series analysis of aggregate unemployment flows

We model *net* outflow and inflow rates from/to unemployment to all destinations as in equations (5) and (6) respectively, where subscript t denotes quarter, j denotes unemployment duration and i denotes age group.[27]

$$\Delta \ln(A/U)^i_{j,t} = \varphi^i_j \ln(A/U)^i_{j,t-1} + \beta_{0j}^{\ i} + \beta_{1j}^{\ i} \ln(V/U)_t + \beta_{2j}^{\ i} \ln(U^i_j/U)_t + \beta_{3j}^{\ i} JSA_t + \beta_{4j}^{\ i} SEAS + \beta_{5j}^{\ i} t + dynam^i_{j,t} + \varepsilon^i_{j,t}; \qquad j = 1,...,5 \qquad (5)$$

$$\Delta \ln(I/(POP-U))^i_t = \varphi^i \ln(I/(POP-U))^i_{t-1} + \alpha_0^{\ i} + \alpha_1^{\ i} \ln(OUT)_t + \alpha_2^{\ i} JSA_t + \alpha_3^{\ i} SEAS + \alpha_4^{\ i} t + dynam^i_t + e^i_t \qquad (6)$$

As in Anderton *et al.* (1999), we include the share of age/duration specific unemployment in aggregate unemployment as a determinant of the age/duration specific outflow rate. Both equations include a dummy variable, JSA, with value one for 1996q4 – 1997q1 and zero elsewhere to control for the introduction of the Jobseeker's Allowance (JSA).[28] They also include a set of seasonal dummies, $SEAS$, and a time trend to capture any secular change in the efficiency of the matching process. The dependent variable in

[26] This follows Anderton *et al.* (1999). They model outflow rates from unemployment to all destinations for the NDYP pilot areas and a selection of control areas based on pre-NDYP data. The difference between actual and forecast flow rates is then attributed to the programme.

[27] Here flows are derived from stocks. As such they represent net rather than gross flows. This means that people who enter and exit unemployment of a particular duration category within the same quarter are not counted. The results in this section are thus not directly comparable with the results presented in the following sections.

[28] See Sweeney and McMahon (1998) for the effects of the introduction of the Jobseeker's Allowance.

both outflow and inflow rates is the difference in the log flow rate and the equations include additional dynamic terms, $dynam$. All other notation is as in section 2.[29]

Outflow rates in (5) constitute a system of five separate equations, one for each of five unemployment duration categories. These are estimated simultaneously by full-information maximum likelihood over the period 1987q1 to 1997q4 before NDYP was introduced.[30] Results of estimating (5) and (6) for 18-24, 25-29, and 30-49 year olds respectively are reported in tables 4.1a-c. The equations are reasonably well specified and the coefficients on JSA and labour market tightness have the expected sign.

Using the relationships estimated in equations (5) and (6) we can forecast what unemployment flows would have been in absence of the New Deal for young people. Forecast errors are reported in table 4.1d. Positive forecast errors mean that actual flow rates are larger than would be expected based on their historical behaviour. There are several points worth noting. First, one quarter after the introduction of NDYP, actual outflow rates from long-term unemployment for 18-24 year olds far exceed the forecast based on historical data. This reflects the mechanics of NDYP as it restricts the duration of youth unemployment. Second, outflow rates for short-term unemployed young people are greater than forecast, although this also applies to other age groups so that it is difficult to attribute this to NDYP. Third, inflow rates are generally lower than expected but less so for the young. This may suggest some churning of young people from long-term to short-term unemployment, but it is not possible to say whether this difference between age groups is statistically significant from this analysis alone.

The last point to note is that the only other systematic and significant deviation from forecast, besides for long-term unemployed 18-24 year olds, is for outflow rates from long-term unemployment for 30-49 year olds in the first year of the programme. Actual outflow rates for this group are lower than forecast, although this is unlikely to reflect an adverse effect of NDYP for several reasons. For one, the decline in outflows for older people suggested by the difference between actual and forecast flow rates is too large to be attributed to NDYP alone. For example, if the forecast errors in table 4.1d could be attributed to NDYP, they would imply that in the third quarter of 1998 an additional net outflow of approximately 13-14 thousand 18-24 year olds resulted in 20 thousand adults remaining unemployed. Also, the magnitude of the negative error has continued to decline over time as more and more people have been through the NDYP.[31] Last, the 25-29 year

[29] Although here the coefficients of the flow equations β and α are short-run coefficients.

[30] Following Anderton *et al.* (1999) we include an auxiliary equation for vacancies to correct for the potential deviation of the jobcentre unfilled vacancy series from other vacancy series in 1998. See Anderton *et al.* (1999) for further details.

[31] This is similar to the findings in Anderton *et al.* (1999) who apply the same methodology to gross rather than net flow rates in the pathfinder and a selection of control areas in the first year of the programme. Since the negative forecast error in the control areas is greater in magnitude than in the areas where NDYP is piloted, and since the magnitude of the error declines over time as the NDYP increases in 'intensity', they do not attribute the decline in outflow rates for older people to the NDYP.

olds, the more likely candidate to suffer from potential substitution effects of NDYP, do not appear to be as adversely affected as the 30-49 year olds.

$$\begin{pmatrix} U_1 \\ U_2 \\ U_3 \\ U_4 \\ U_{>4} \\ POP-U \end{pmatrix}_{t+1} = \begin{pmatrix} 0 & 0 & 0 & 0 & 0 & in \\ 1-f_1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1-f_2 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1-f_3 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1-f_4 & 1-f_{>4} & 0 \\ f_1 & f_2 & f_3 & f_4 & f_{>4} & 1-in \end{pmatrix}_t \cdot \begin{pmatrix} U_1 \\ U_2 \\ U_3 \\ U_4 \\ U_{>4} \\ POP-U \end{pmatrix}_t \qquad (7)$$

Forecast flow rates based on the estimated equations in (5) and (6) give a counterfactual scenario for flow rates in the absence of NDYP. Using the identity relation between unemployment stocks and flows in (7), where f_j is the quarterly net outflow rate from unemployment of duration category j and *in* is the quarterly inflow rate to unemployment from the population "not unemployed" $(POP-U)$, we can use counterfactual flow rates to generate a counterfactual scenario for youth unemployment in absence of NDYP. The difference between actual and counterfactual unemployment can then be attributed to the programme.

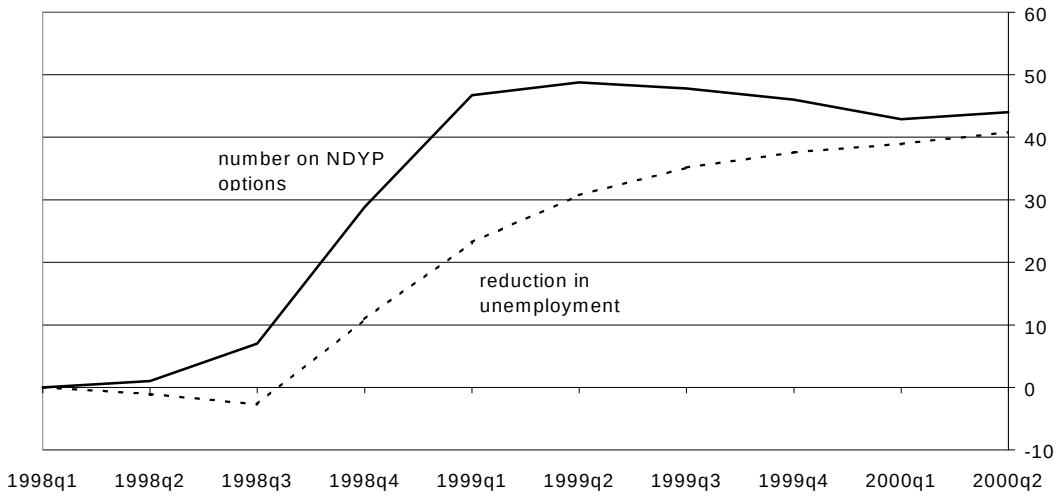

Fig. 2.: *Reduction in youth unemployment and number on NDYP options (18-24 year olds, Great Britain, thousands)*

Figure 2 illustrates the simulated difference between actual and counterfactual

youth unemployment for the case where counterfactual outflow rates from youth long-term ($j \geq 3$) unemployment are as suggested by the forecast errors in table 4.1d. By the second quarter of 2000, after two years of the New Deal, this very simple exercise would suggest that the programme had reduced youth unemployment by 41 thousand. Figure 2 shows that this matches the number of young people on New Deal options, with 44 thousand young people on options at the end of March 2000.[32] This does not necessarily suggest that young people have been reclassified from long-term unemployment to New Deal options. To determine whether the policy has reduced unemployment by raising employment we need to look at the destination of those who leave unemployment due to NDYP and how quickly they return to the claimant count.

4.2 Analysis of unemployment outflows by destination

Outflow rates to unsubsidised jobs, subsidised jobs and all destinations are modelled as in (8).

$$\Delta \ln(A/U)_{j,t}^{i,d} = \varphi_j^i \left[\ln(A/U)_{j,t-1}^{i,d} - \beta_{1_j}^{\ i} \ln(V/U)_t - \beta_{2_j}^{\ i} \ln(V/U)_t^d - \beta_{3_j}^{\ i} C_t - \lambda_j^i ND_t^d \right] + \alpha_{0_j}^{\ i,d} + dynam_{j,t}^{i,d} + \varepsilon_{j,t}^{i,d} \qquad (8)$$

We estimate (8) for each age group, *i*, unemployment duration category, *j*, and destination separately. The additional superscript *d* denotes UoD and *t* denotes month. Destination specific subscripting of the outflow rate and parameters is suppressed. Both local and aggregate labour market tightness are included as explanatory variables. The term C_t captures additional aggregate effects unaccounted for by aggregate labour market tightness. In what follows, we experiment with a time trend to capture omitted trending variables and a set of nine biannual dummies (March to August and September to February) covering the sample period. The constant term, $\alpha_{0_j}^{\ i,d}$, varies across UoDs. The error term, $\varepsilon_{j,t}^{i,d}$, is assumed to be normally distributed with mean zero and variance $\sigma^{2}{}_{j}^{i,d}$.

The main parameter of interest is λ_j^i, the coefficient on the variable ND_t^d, which measures the intensity of NDYP. A positive coefficient implies a rise in match efficiency due to NDYP. In what follows, we experiment with two separate New Deal variables as described in section 3. The outflow equation is estimated in error correction form, where φ_j^i equals the error correction term, and includes additional dynamic terms in the exogenous variables, *dynam*.

[32] DfEE Statistical First Release 24/2000. Options include the subsidised employment option.

The two measures of the New Deal, ND_t^d, and two measures of omitted aggregate effects, C_t, give four combinations. Full estimation results are reported for two of these combinations. Tables 4.2a-c and 4.3a-c show the full results of estimating (8) for outflows to unsubsidised jobs, all jobs, and all destinations, for each unemployment duration group (j = 0-3, 3-6, 6-9 and more than 9 months) and each age group (i = 18-24, 25-29 and 30-49 year olds) respectively. The sample period covers March 1995 to February 2000 and includes 95 New Deal Units of Delivery, some of which are aggregates of original UoDs. In tables 4.2a-c, C_t equals a time trend capturing omitted trending variables and ND_t^d equals a zero-one dummy. In tables 4.3a-c, C_t equals a set of nine biannual time dummies and ND_t^d equals the share of participants in total unemployment multiplied by the interview intensity in the area.

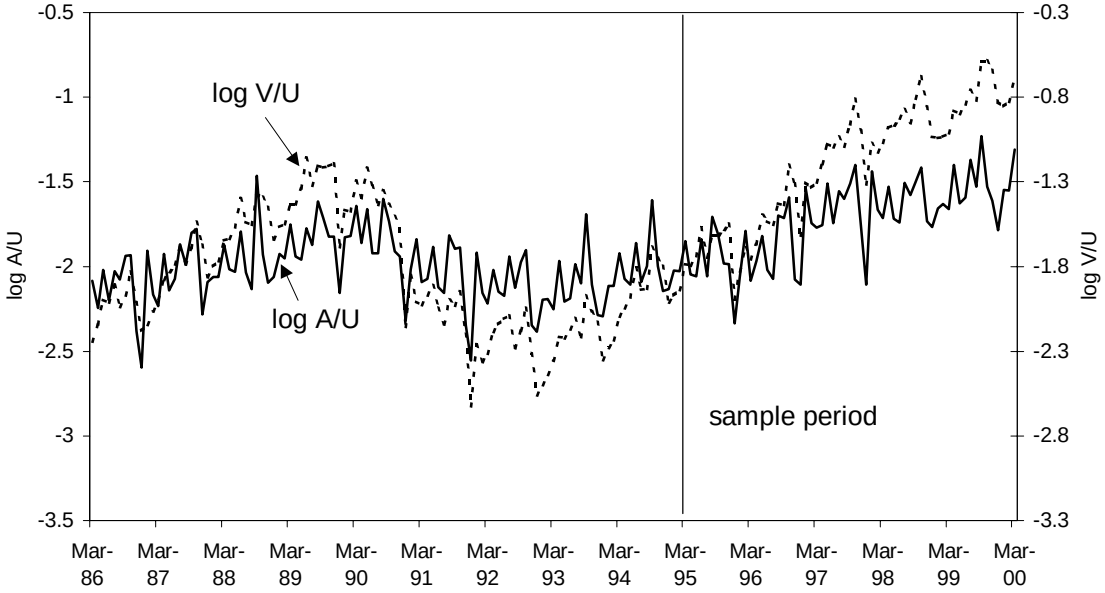

Fig. 3.: *Labour market tightness and the outflow rate from unemployment (Great Britain)*

The estimates reported are mean-group estimates (see Pesaran & Smith, 1995, and Pesaran *et al.*, 1996). In estimating (8) we test for homogeneity of the coefficients across UoDs, and for homogeneity of the long-run coefficients only across UoDs. As suggested by the likelihood ratio test statistics in tables 4.2 and 4.3, both the dynamic-fixed-effects and the pooled-mean-group model (see Pesaran *et al.*, 1999) are rejected due to significant parameter heterogeneity across UoDs in both the short and the long run.[33] It is possible that this is due to the lack of time variation in our sample in the main arguments of the

[33] The Gauss programme used to estimate the pooled-mean-group model can be downloaded from http://www.econ.cam.ac.uk/faculty/pesaran/jasa.exe.

matching function. Although we have sixty months of data, the span is quite short in terms of cyclical variation over time as illustrated in figure 3, which plots aggregate labour market tightness alongside the aggregate exit rate from unemployment to all destinations. The dynamic-fixed-effects and pooled-mean-group estimators are therefore likely to be biased. The mean-group estimator is less efficient than both the dynamic-fixed-effects and pooled-mean-group estimator, but will not suffer the heterogeneity bias that these other estimators do.

In tables 4.2a-c, for most age/duration/destination categories, labour market tightness, both local and aggregate, has the expected sign and is statistically significant at conventional levels. The long run solution is very significant as illustrated by the t-statistic for the error correction term. The error correction term is very close to minus one, suggesting instantaneous adjustment.[34] There is some suggestion of misspecification with several UoDs showing signs of serially correlated and non-normal errors at the five per cent level. The results including time-dummies and the more sophisticated New Deal variable are reported in tables 4.3a-c. This specification is generally poorer than that in tables 4.2a-c. As expected the log-likelihood increases significantly with the inclusion of biannual-dummies. The trend case is however non-nested such that the models cannot be compared using standard procedures.[35] The models in tables 4.3a-c show more severe signs of misspecification than the models in tables 4.2a-c. This is due to the replacement of the time trend with biannual dummies rather than the replacement of the zero-one dummy with the more sophisticated New Deal variable. First, the error correction term rises further in magnitude above one and many more areas show signs of serially correlated errors. Also, albeit in an isolated number of age/duration/destination categories, the coefficient on labour market tightness is either insignificant or negative and significant.

The main parameter of interest is the coefficient on ND_t^d. To facilitate comparison, tables 4.4a-b show the coefficient on ND_t^d only for the different combinations of the New Deal variable and the aggregate controls. Results are shown for each age/duration/destination group. All specifications suggest that NDYP has significantly raised the exit rate from unemployment for 18-24 year olds unemployed for more than nine months. This is to be expected due to the design of the programme. Also, all specifications suggest that this is due in part to a rise in the exit rate to employment. Looking at the long-term unemployed 18-24 year olds in the first column of table 4.4a using the simple zero-one dummy, the New Deal appears to have raised outflows to work by around 5.2 and 15.6 per cent for the 6-9 and 9+ months unemployed respectively.

[34] For many cases the value of the error correction term is slightly less than one. The adjustment process is however clearly stable (stable if $-2 < \varphi < 0$).

However, this is not matched by a positive impact on outflows to unsubsidised jobs, hence it would reflect outflows to the NDYP employment option. Using the more sophisticated dummy in table 4.4b, the results suggest that some of the additional outflow of young people from long-term unemployment can be explained by young people finding unsubsidised jobs more quickly than they normally would. The coefficients on the NDYP variable using the more sophisticated NDYP variable, are generally larger and more significant. Greater geographical variation in this variable means we capture more accurately the impact of NDYP. One way we can be sure of this is by checking the suggested change in the outflow rate from long-term unemployment for 18-24 year olds. By definition of the NDYP, this rate has to rise substantially with the introduction of the programme.

The results in table 4.4b including the time trend suggest that the programme has had a negative impact on outflows to jobs (work) for short-term (less than 6 months) unemployed 18-24 year olds. In the first column of 4.4b, the coefficient on the New Deal dummy is significantly negative at around -.045 for flows to work of 18-24 year olds unemployed between 0-3 months. The magnitude of the impact is greater if we look at flows to unsubsidised work only. Here the negative impact is -.054. On the other hand, the results in the time-dummy case in table 4.4b suggest the opposite. The inclusion of biannual dummies to capture omitted aggregate factors changes the results quite significantly, in both 4.4a and 4.4b. These dramatic changes in results are due to the close correlation over time between the time dummies and the New Deal dummy. The ND_t^d coefficient estimates in the last three columns of 4.4a and 4.4b are therefore likely to be less reliable estimates of the impact of NDYP than those reported in the first three columns, but illustrate the sensitivity to the aggregate controls. This reflects two things. First, the lack of time variation in our sample period as illustrated in figure 3. There the outflow rate and labour market tightness follow one another quite closely over time as theory predicts. However, the limitation of our sample period is that it does not include a full economic cycle. Although the intensity of NDYP varies across UoDs, it primarily represents a shift in the matching function over time. The short span of data makes it difficult to identify this type of shift, despite the variation in vacancies and unemployment across UoDs.[36] Second, as illustrated in section 4.1 where we used aggregate time series data to estimate the matching function, other factors shifting the basic matching function are occurring at the same time as NDYP. These omitted factors bias the estimates of the New Deal coefficients.

These concerns are further highlighted by the coefficients on the New Deal variable reported for other age groups. For example, the second set of results including

[35] The trend is non-nested as the time dummies are biannual rather than monthly. Monthly dummies cannot be incorporated within the mean-group model.
[36] See e.g. Martin *et al.* (1999) on variation in unemployment across UoDs.

time dummies in table 4.4b, suggest that the NDYP variable is picking up a shift in the duration structure of unemployment towards shorter durations for all age groups. In this case it is incorrect to attribute the apparent rise in exits from short-term unemployment to unsubsidised jobs for young people to New Deal. Similarly, the first set of results including a time trend in table 4.4b, suggest that NDYP is picking up a negative effect on outflow rates from unemployment for all age groups, unrelated to NDYP. This is similar to the finding of negative forecast errors for the long-term unemployed in non-participant age groups in table 4.1d discussed in the previous section. As discussed there, these negative effects on non-participant age groups are unlikely to reflect substitution, due to the magnitude of the effects. Indeed in most cases the negative effect on other age groups picked up by the New Deal variable more than offsets the positive impact on the young. Also, the coefficients are generally less negative for the 25-29 group, the more likely candidate to suffer from potential substitution effects of NDYP, compared to the 30-49 group.

The suggestion of a common missing factor affecting all age groups indicates that a relative group estimator may yield less biased estimates of the New Deal effect provided an appropriate non-treatment group is available. Ideally, the non-treatment group and 18-24 year olds react similarly to the missing factors that are correlated with the intensity of the programme. This argues for choosing a group as little different from 18-24 year olds as possible, such as the 25-29 year olds. Also, the non-treatment group should be unaffected by the programme. If substitution is likely to be severe then it is best to choose a non-treatment age group as different as possible from the 18-24 year olds to minimise the bias. For example, it is likely that 30-49 year olds are less affected by substitution than 25-29 year olds, although it is easy to think of particular jobs where age is irrelevant. The finding of relatively little substitution associated with NDYP (see e.g. Anderton *et al.*, 1999) suggests *a priori* that 25-29 year olds constitute a more appropriate non-treatment group than 30-49 year olds. Generally, the use of 25-29 instead of 30-49 year olds as the benchmark group yields more conservative estimates of the impact of NDYP on flow rates.

Table 3 shows the simplest 'difference-in-differences' estimator unconditional on the parameters and arguments of the matching function, using the 25-29 year olds as the non-treatment group. When looking at outflows to unsubsidised jobs, we compare outflows to unsubsidised jobs for 18-24 year olds to outflows to all jobs (both subsidised and unsubsidised) for 25-29 year olds. This is tantamount to assuming 100 per cent deadweight associated with the subsidised employment option available on NDLTU.[37] The results in table 3 suggest that NDYP has been successful in raising the exit rate from long-term unemployment to all destinations, to jobs and to unsubsidised jobs. They would

also suggest that NDYP has raised the exit rate from short-term unemployment to all destinations, and from unemployment spells lasting 3-6 months to jobs.

Table 3
New Deal coefficients (simple difference equations)

Destination	*Duration (months)*	*NT Age=25-29*	
unsubsidised work	*0-3*	-.002	*(0.45)*
	3-6	.027	*(3.95)*
	6-9	.134	*(8.82)*
	9+	.235	*(13.1)*
work	*0-3*	.009	*(1.80)*
	3-6	.045	*(6.52)*
	6-9	.244	*(16.7)*
	9+	.402	*(26.1)*
all	*0-3*	.049	*(10.5)*
	3-6	.071	*(13.4)*
	6-9	.206	*(19.3)*
	9+	.638	*(46.6)*

Notes: Difference-in-difference applied to log outflow rates from youth unemployment; 18-24 year olds compared to 25-29 year olds; Outflows to unknown destinations included in all; Mean group estimator of coefficient on New Deal variable reported; sample period: April 1995 – February 2000; 5605 observations (95 New Deal Units of Delivery and 59 months); |t-statistic| in italics

In principle, better estimates can be obtained by making use of other conditioning information as in equation (9). Table 4.5a reports estimates of π_j from estimating relationship (9) for the different duration/destination categories separately. Compared to the estimates in table 3 these estimates are conditional on the parameters and arguments of the matching function and are estimated in error correction form. The model of the matching function is as above. In (9) T = 18-24 year olds and NT = 25-29 year olds. Comparing to equation (3) $\beta = \beta^T - \beta^{NT}$.

As with the estimates reported above, it is possible that these suffer from lagged dependent variable bias.[38] Hence we report estimates where the lagged dependent variable has been instrumented with its rank order (Durbin, 1954) in table 4.5b. The estimates of π_j in tables 4.5a and 4.5b are generally quite similar. The conditional estimates in tables 4.5 suggest that the NDYP has been successful in raising the outflow rate to jobs, to

[37] In other words, in absence of NDLTU the outflows of older people to subsidised employment would have been to unsubsidised jobs.
[38] Nickell (1981). Lagged dependent variable bias should be minimal with 59 months worth of data.

unsubsidised jobs and to all destinations from long-term unemployment. This finding is robust to different aggregate controls and the specification of the New Deal variable, suggesting that in the first instance NDYP does not simply push people off the claimant count. The magnitude of this effect does however vary significantly, suggesting that other factors correlated with the NDYP are still being picked up by the variable ND_t^d.

$$\begin{aligned}\Delta \ln(A/U)_{j,t}^{T,d} - \Delta \ln(A/U)_{j,t}^{NT,d} &= \varphi_j \left[\ln(A/U)_{j,t-1}^{T,d} - \ln(A/U)_{j,t-1}^{NT,d}\right] \\ &- \varphi_j \left[\beta_{1j} \ln(V/U)_t + \beta_{2j} \ln(V/U)_t^d + \beta_{3j} C_t + \pi_j ND_t^d\right] \\ &+ \alpha_{0j}^{\ d} + dynam_{j,t}^d + v_{j,t}^d \end{aligned} \qquad (9)$$

Due to the geographical variation in the more sophisticated version of ND_t^d, the results using this version are more likely to be capturing the NDYP effect than the results using the simple zero-one dummy. This is generally illustrated by the log-likelihoods for equation (9) reported in table 4.5c. Also, the log-likelihoods suggest that the conditional estimates are statistically superior to the simple unconditional estimates. Restricting our attention to the conditional estimates that use the more sophisticated NDYP variable, the range of estimates is still broad. For example, estimates of π_j in (9) using the NDYP share of unemployment variable and including a time trend (column three in table 4.5b) suggest deadweight associated with total outflows from unemployment through NDYP of approximately 50 per cent. Including time dummies instead of a time trend (column four in table 4.5b) this rises to 80 per cent.[39] Equivalently for outflows to unsubsidised jobs, the numbers vary from 65 to 100 per cent. However, only 25 to 40 per cent of flows to subsidised employment would have been flows to unsubsidised jobs in absence of NDYP.[40]

While it is difficult to discriminate between these models we can establish the direction of the bias associated with them. The estimates in column four of table 4.5b including the biannual dummies are likely to be toward the lower bound of plausible estimates, as the biannual dummies themselves are correlated with our New Deal variable and hence take some proportion of the explanation of NDYP. This is illustrated by the time pattern of the biannual dummies in figure 4, which mimic the pattern of the intensity of NDYP over time. In other words, it is likely that the biannual dummies jointly explain omitted factors and the effects of NDYP.

Conversely, the estimates in column three of table 4.5b including the time trend push explanation onto the measure of the New Deal. The trend like reduction in the

[39] Note that this estimate takes account of any reduction in outflows of non-participating young unemployed people due to potential substitution of NDYP participants for young non-participants.
[40] As reported in Riley & Young (2000).

relative efficiency of the matching process between 18-24 and 25-29 year olds suggested by the time trend in these equations far exceeds the equivalent trend like reduction suggested by similar estimates before NDYP was introduced. It is possible that the relative worsening of the position of 18-24 year olds over the full sample is exaggerated when the New Deal variable is included since the measure of NDYP and the time trend are collinear. Hence, it is possible that they are sharing the same explanation with opposite signs. In this case, these estimates of the impact of NDYP are biased upwards.

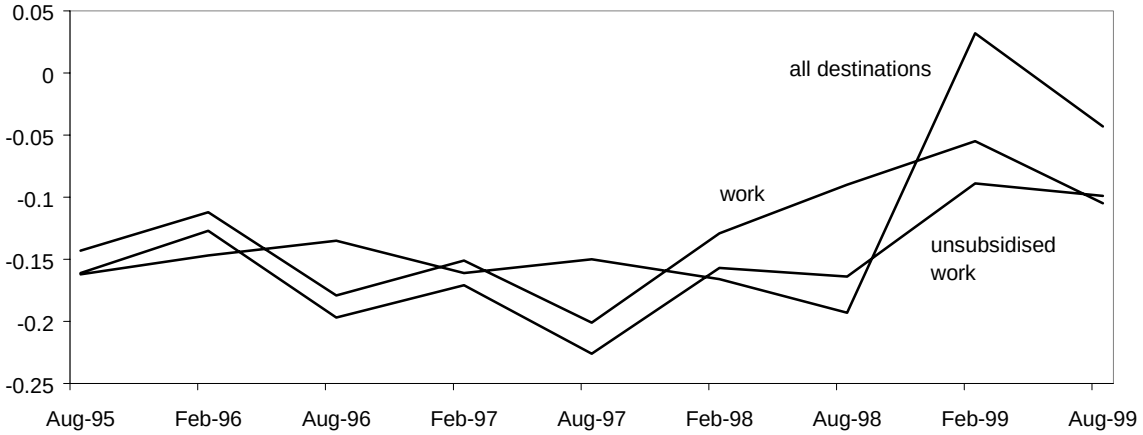

Fig. 4.: *Pattern of biannual dummies in the outflow rate from long-term unemployment*

While the conditional estimates are superior in principle to the simple unconditional estimates of the NDYP, the differences between them are not large. As discussed, it is reasonable to expect the best-fitting conditional model with time dummies to underestimate the impact of the programme and the model with a time trend to overestimate it. Thus, we can be fairly confident that the actual effect of the programme lies within the range between these different estimates. As it turns out, the simple unconditional estimates in table 3 generally lie within the range suggested by the conditional estimates.

4.3 Analysis of unemployment inflows

To assess the impact of the NDYP on inflows we model the log relative inflow rate of 18-24 year olds compared to 25-29 year olds as in equation (10). The inflow rate equals the inflow rate into unemployment from the population not unemployed. As in the previous section T = 18-24 year olds and NT = 25-29 year olds. Compared to equation (4) $\alpha = \alpha^{T} - \alpha^{NT}$. Lacking information on the UoD specific population, the denominator of the inflow rate is for Great Britain. Thus we have assumed that the UoD specific population ratios move in line with the aggregate population ratio. The New Deal variable

is lagged to capture the possible churning effects of the programme as people return to unemployment after participating in the Gateway or the New Deal options. The New Deal variable equals the NDYP share of unemployment.

$$\begin{aligned}\Delta \ln(I^T / I^{NT})_t^d - \Delta \ln((POP-U)^T /(POP-U)^{NT})_t = \\ \varphi[\ln(I^T / I^{NT})_{t-1}^d - \ln((POP-U)^T /(POP-U)^{NT})_{t-1}] \\ - \varphi\left[\alpha_1 \ln(V/U)_t^d + \alpha_2 \ln(OUT)_t + \rho ND_{t-3}^d\right] \\ + a_0{}^d + a_1 \Delta \ln(V/U)_t^d + a_2 \Delta \ln(OUT)_t + a_3 seas + \omega_t^d \qquad (10)\end{aligned}$$

We include an indicator of local demand, local labour market tightness $(V/U)_t^d$, and aggregate demand, the output gap OUT_t, to capture cyclical differences in the behaviour of inflows between the age groups. The equation also includes a set of monthly seasonal dummies $seas$. Thus, ρ in (10) picks up the change in inflows of 18-24 year olds compared to 25-29 year olds that can be attributed to the introduction of NDYP conditional on other factors that affect relative inflow rates.

Table 4.6 reports the results of estimating relationship (10).[41] The first column reports the standard OLS mean group estimate of the coefficients. In the second column results of two-stage-least squares estimation is reported to control for lagged dependent variable bias. Here the lagged dependent variable is instrumented with its rank order. The results in the two columns are very similar. The change in the relative inflow rate of young to older people depends on changes in demand as reflected by the dynamic terms in the output gap and local labour market tightness. In the long-run relative inflow rates are unaffected by local labour market tightness, but depend positively on the output gap. This is consistent with more young people joining the labour market, rather than continuing in full-time education, at times when job opportunities are improving. The coefficient on the intensity of New Deal is positive and significant, suggesting that NDYP has raised the inflow rate to unemployment by approximately 7 per cent.[42]

We do not have direct evidence on the change in inflows to unemployment due to early job terminations, however preliminary analysis of job terminations into non-employment (in White, 2000) using data from the Labour Force Survey suggests no evidence of NDYP inducing an increased rate of movement among young people from jobs to non-employment. There is also preliminary evidence that the rise in the proportion of young people who leave from and come back to unemployment within 12 months of entering long-term unemployment is predominantly due to those returning after having

[41] Additional dummies are included to control for severe outliers due to the changing seasonal pattern of the relative inflow rate.

participated in government supported training rather than work (Wilkinson, 2000). Taken together the evidence so far suggests that the rise in inflows is primarily due to people returning from other destinations than employment.

4.4 The impact of NDYP on youth unemployment and employment

It is straightforward to calculate the implications of these changes in flow rates due to NDYP for unemployment and employment stocks. The identity relationship between unemployment stocks and flows is as in (11), where w_j is the outflow rate from unemployment duration category j to unemployment duration category $j+1$.[43] Duration groups j refer to quarters, e.g. $j = 1$ refers to unemployment spells between 0 and 3 months. Subscript t refers to month. All other notation is as above. The impact of NDYP on the number of young people unemployed is obtained by comparing unemployment derived from actual flow rates, with unemployment derived from counterfactual flow rates. Counterfactual flow rates are calculated as described in section 2.2 using the estimates discussed above. The impact of the programme on the number of young people in jobs is the difference between unemployment derived from counterfactual flow rates and unemployment derived from counterfactual flow rates where the impact of NDYP on flows between unemployment and jobs is set to zero.

$$\begin{pmatrix} U_1 \\ U_2 \\ U_3 \\ U_{>3} \\ POP-U \end{pmatrix}_{t+1} = \begin{pmatrix} 1-f_1-w_1 & 0 & 0 & 0 & in \\ w_1 & 1-f_2-w_2 & 0 & 0 & 0 \\ 0 & w_2 & 1-f_3-w_3 & 0 & 0 \\ 0 & 0 & w_3 & 1-f_{>3} & 0 \\ f_1 & f_2 & f_3 & f_{>3} & 1-in \end{pmatrix}_t \cdot \begin{pmatrix} U_1 \\ U_2 \\ U_3 \\ U_{>3} \\ POP-U \end{pmatrix}_t \qquad (11)$$

Figures 5 and 6 show the results of such a simulation using the different estimates of the effect of NDYP on outflow rates. If NDYP raises inflows to unemployment by 7 per cent as suggested above, the impact of NDYP on unemployment is illustrated in figure 5 by the difference between actual unemployment with NDYP (bold) and counterfactual unemployment without NDYP. The difference varies with the estimate of the effect on the outflow rate, as shown by the different scenarios for counterfactual unemployment.

---

[42] The inclusion of additional aggregate controls in (10), either a time trend or a set of biannual dummies, reduces the impact of NDYP. The aggregate controls pick up a positive but *insignificant* trend.

[43] These are derived from gross flow and stock figures.

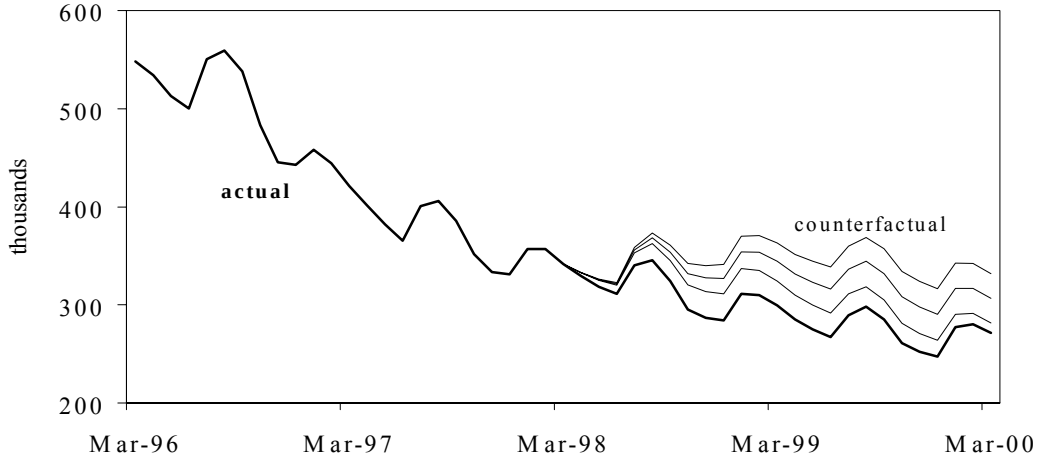

Fig. 5.: Youth unemployment and counterfactual without NDYP

To believe that the NDYP had a large effect on youth unemployment, reducing it by around 60 thousand, it is necessary to believe that in the absence of the programme youth unemployment would have remained fairly static between 1998 and 2000. Such a high unemployment counterfactual without NDYP is generated by estimates of π_j in (9) using the NDYP share of unemployment variable and including a time trend in estimation. The low unemployment counterfactual is generated by estimates including time dummies in estimation instead of a time trend.[44] The results suggest that NDYP has reduced unemployment, although as discussed above it is not possible to estimate the magnitude more precisely with any certainty.

The middle case for counterfactual unemployment in figure 5 is generated by the simple unconditional estimates of the impact of NDYP on outflow rates using 25-29 year olds as the non-treated group reported in table 3. While the conditional estimates suggest a broader range for the effect of NDYP on unemployment, the effect generated by the simple estimator lies in the middle of this range, suggesting a reduction in youth unemployment of approximately 35 thousand by the end of programme's first two years. The reduction in aggregate unemployment obscures the change in its duration composition. It is obvious that long-term unemployment is significantly reduced due to the rules of the programme. However, aggregate unemployment is reduced by less due to a small rise in short-term unemployment. For the middle case, the reduction in youth unemployment is due to a reduction in long-term unemployment of around 45 thousand and a rise in short-term unemployment of around 10 thousand.

[44] These estimates are reported in table 4.5b columns three and four respectively.

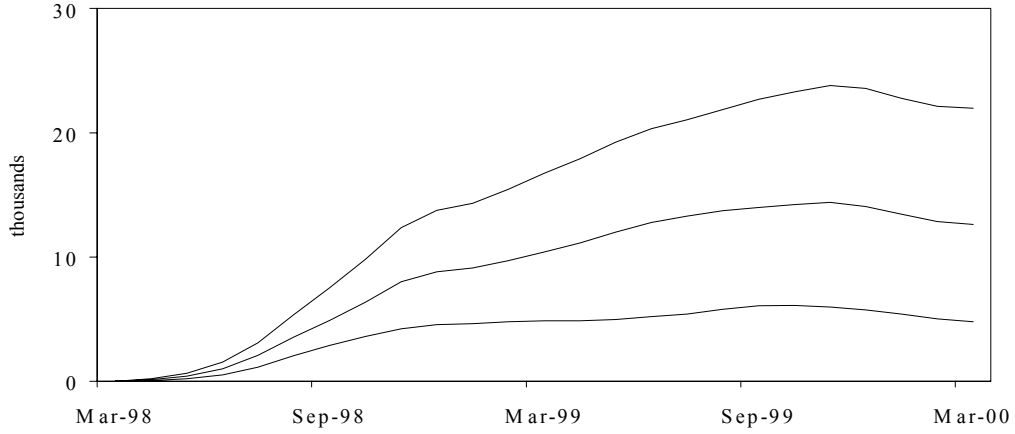

Fig. 6.: Impact of NDYP on youth employment

Figure 6 illustrates the impact of the programme on employment using the same set of estimates. In line with the evidence discussed above, it is assumed that the rise in inflows to unemployment is due to people returning from other destinations than employment. Quite clearly, part of the reduction in unemployment is brought about by an increase in the number of young people in jobs. Our estimates suggest that in March 2000, youth employment was between 5 and 20 thousand higher than it would otherwise have been because of the NDYP.

5. Summary and conclusions

This paper has outlined different approaches to measuring the direct effect of the NDYP on the UK labour market. Here we present a summary of our main findings and their limitations. The key difficulty in measuring the impact of the NDYP is in identifying its influence. Its effect can be identified by the timing of the programme. We have approached this either by the use of dummy variables whose value is set according to whether the programme is in operation in a particular geographical area or by measuring the intensity of the programme by making use of information on the number of NDYP interviews taking place in each area compared to unemployment. A key difficulty with this approach is that any changes in labour market behaviour coincident with the introduction of the NDYP are liable to be attributed falsely to the programme. Identification is made easier because the policy is aimed at a particular group – 18-24 year olds – which is not self-selecting. But such identification is not perfect because the behaviour of non-participants is likely to be affected to some extent by the policy. For example, employers might substitute younger for older workers. Thus, we have attempted to measure the impact of the programme on all age groups and on all types of labour market flows.

Our first set of results for outflow rates from unemployment suggest that the NDYP has raised the outflow rate for the target group with no clear adverse effects on other age groups. This result is obtained by estimating matching functions for different age and unemployment duration categories using information from before the NDYP was introduced and forecasting outflow rates for the NDYP period. For the most part, out-turns for non-participating groups are in line with forecasts whereas outflow rates for the participating groups are significantly higher than is consistent with past experience suggesting a beneficial effect of the policy. While the lack of any clear adverse effects on other groups is re-assuring, the beneficial impact on the target group is relatively uninformative since the policy operates by pushing young people out of long-term unemployment into other activities: it would be surprising if the NDYP had not had this effect.

The key question is whether the young people leaving unemployment had moved into work or had simply been recycled round the benefit system. In order to test this, we investigated flows from different categories of unemployment into work (unsubsidised and subsidised) and all destinations, using detailed information from the units of delivery of the programme. In principle, this should tell us the impact of the NDYP on the outflow rates from unemployment for all age and duration categories. However, we encounter serious problems in identifying the effect of the programme. This is illustrated in the outflow rate equations presented in Tables 4.2 a-c, 4.3 a-c and 4.4a-b. Outflow rate equations are estimated in each UoD over a relatively short time period, from April 1995 to February 2000, over which time outflow rates and the vacancy-unemployment rate are generally trended upwards as shown in Figure 3. But the introduction of the NDYP coincides with a levelling-off in outflow rates while the vacancy-unemployment rate continues to increase. This naturally implies that in most of the estimated equations, the NDYP is estimated to have a negative influence on outflow rates. The geographical variation in the measure of the intensity of the NDYP is not large enough to counter this trend over time. In virtually all cases, the estimated negative effect on non-participant age groups is implausibly large to be consistent with an adverse effect of the NDYP. Instead, it appears that the NDYP is picking up other non-modelled effects on outflow rates affecting all age groups that happen to be coincident with the NDYP. With a longer sample period, we might have been able to investigate these effects further, including an analysis of non-linearity in the outflow rate equations, but generally the sample does not contain enough variation to separate out these effects.

The implication of this is that we are unable to identify the impact of the NDYP on all groups separately. However, the evidence from the forecasting equations and other NDYP evaluation studies suggests that the NDYP has not had an adverse effect on other groups. Using this evidence, we can assume that any change in *relative* outflow rates since the introduction of the NDYP represents the effect on young people with a negligible

effect on other groups. With this identifying assumption, we are able to measure the impact of the NDYP on the young, although the magnitude of the effect is sensitive to how the NDYP itself is measured and the representation of omitted aggregate factors in the equation.

On the basis of these results, we are able to conclude that the NDYP has raised outflow rates from youth unemployment, with a significant increase in outflows to jobs, some of which are unsubsidised. However, using a similar methodology we also find that inflows to unemployment have increased, largely as a consequence of participants returning to unemployment from options. While this effect modifies the impact of the NDYP on unemployment stocks, the overall effect is that the NDYP has directly reduced youth unemployment by approximately 35 thousand by reducing long-term unemployment further than it has raised short-term unemployment. The reduction in youth unemployment is in part due to a rise in the numbers of young people in employment. As with unemployment, the magnitude of this effect is not precisely estimated, however the finding of a small and significant rise is robust. Our results suggest that the number of young people in jobs has risen by approximately 15 thousand as a result of NDYP.

The results are based on analysis of labour market flows during the first two years of the programme, which is still relatively early in terms of assessing the full implications of the programme. For example, if NDYP options benefit individuals in the longer term by mitigating the scarring effects of long-term unemployment, then the effects of the programme on employment are likely to build up over time.[45] It is also worth bearing in mind the context in which the programme has been introduced. The NDYP has been introduced at a time when the UK economy is relatively buoyant and unemployment is at its lowest in two decades. The client group of the programme is thus relatively small and is likely to include the least employable young people. At the same time, the macro economy is providing ample employment opportunities. If the state of the UK economy turns less benign, such that the client group includes more employable young people but fewer employment opportunities, then the employment effects of NDYP will change in an uncertain direction.

[45] See e.g. Arulampalam *et al.* (2000) for evidence on the state dependence of unemployment occurrence.

References

Anderton, B., Riley, R. and Young, G. (1999). 'The New Deal for Young People: Early Findings from the Pathfinder Areas', Research and Development Report ESR34, Employment Service

Arulampalam, W., Booth, A. and Taylor, M. (2000). 'Unemployment Persistence', *Oxford Economic Papers*, Vol.52, p. 24-50

Boeri, T., and Burda, M. (1996). 'Active labor market policies, job matching and the Czech miracle', *European Economic Review*, vol. 40, p. 805-817

Boeri, T., Layard, R., and Nickell, S. (2000). 'Welfare-to-Work and the Fight Against Long-Term Unemployment', DfEE Research Report, RR206

Boone, J. and van Ours, J. (2000). 'Modelling Financial Incentives to Get Unemployed Back to Work', CEPR Discussion Paper No. 2361

Burgess, S. (1992). 'The Flow into Unemployment in Britain', *Economic Journal*, vol. 102, p. 888-895

Calmfors, L., Manning, A. and Saint-Paul, G. (1998). 'A Balanced Approach to Employment Policy in Europe', Paper presented at HM Treasury, January 1998

Calmfors, L. and Skedinger, P. (1995). 'Does Active Labour Market Policy Increase Employment? Theoretical Considerations and Some Empirical Evidence from Sweden', *Oxford Review of Economic Policy*, vol. 11, p. 91-109

Disney, R., Bellmann, L., Carruth, A., Franz, W., Jackman, R., Layard, R., Lehmann, H. and Philpott, J. (1992). *Helping the Unemployed: Active Labour Market Policies in Britain and Germany*, London, Anglo-German Foundation

Doornik, J. and Hendry, D. (1994). *PcFiml 8.0: Interactive Econometric Modelling of Dynamic Systems*, University of Oxford, International Thomson Publishing

Dor, E., Van der Linden, B. and Lopez-Novella, M. (1997). 'On Labour Market Policies and Aggregate Unemployment Outflows', *Oxford Bulletin of Economics and Statistics*, vol. 59, p. 109-131

Durbin, J. (1954). 'Errors in Variables', *Review of the International Statistical Institute*, vol. 22, p. 23-32

Haskel, J. and Jackman, R. (1988). 'Long-Term Unemployment in Britain and the Effects of the Community Programme', *Oxford Bulletin of Economics and Statistics*, vol. 50, p. 379-408

Heckman, J., Lalonde, R. and Smith, J. (1999). 'The Economics and Econometrics of Active Labor Market Programs', in Ashenfelter. O and Card, D. (eds.), *Handbook of Labor Economics, Volume 3A*, p. 1865 - 2097, Elsevier.

Junankar, P. and Price, S. (1984). 'The Dynamics of Unemployment: Structural Change and Unemployment Flows', *Economic Journal*, vol. 94, p. 158-165

Lehmann, H. (1993). 'The Effectiveness of the Restart Programme and the Enterprise Allowance Scheme', CEP Discussion Paper No. 139

Martin, J. (1998). 'What Works Among Active Labour Market Policies: Evidence from OECD Countries' Experiences', Labour Market and Social Policy: Occasional Papers No. 35, OECD

Martin, R., Nativel, C. and Sunley, P. (1999). 'The Local Impact of the New Deal: Does Geography Make a Difference?', paper presented at Annual Conference of the Institute of British Geographers, University of Sussex, January 2000

Nickell, S. (1981). 'Biases in Dynamic Models with Fixed Effects', *Econometrica*, vol. 49, p. 1399-1416

OECD (1996). *The OECD Jobs Strategy: Enhancing the Effectiveness of Active Labour Market Policies*, OECD

Pesaran, H., Shin, Y. and Smith, R. (1999). 'Pooled Mean Group Estimation of Dynamic Heterogeneous Panels', *Journal of the American Statistical Association*, vol. 94, p. 621-634

Pesaran, H., and Smith, R. (1995). 'Estimating Long-Runs Relationships from Dynamic Heterogeneous Panels', *Journal of Econometrics*, vol. 68, p.79-113

Pesaran, H., Smith, R., and Im, K. (1996). 'Dynamic Linear Models for Heterogeneous Panels', in *The Econometrics of Panel Data*, eds. L. Matyas and Sevestre, P., Kluwer Academic Publishers

Petrongolo, B. and Pissarides, C. (2000). 'Looking into the Black Box: A Survey of the Matching Function', CEPR Discussion Paper No. 2409

Riley, R. and Young, G. (2000). 'The New Deal for Young People: Implications for Employment and the Public Finances', Research and Development Report ESR62, Employment Service

Riley, R. and Young, G. (2001). 'The Macroeconomic Impact of the New Deal for Young People', NIESR Discussion Paper No. 184

Sweeney, K. and McMahon, D. (1998). 'The effect of Jobseeker's Allowance on the claimant count', *Labour Market Trends*, vol. 106(4), p. 195-202

White, M. (2000). 'New Deal for Young Unemployed People and Matching in the Youth Labour Market: An Exploratory Analysis for the Period March 1998-November 1999', Policy Studies Institute mimeo, June

Wilkinson, D. (2000). 'Individual Transitions Out of Unemployment – An Evaluation of New Deal for Young People', Policy Studies Institute mimeo, December

Annex to section 4

Table 4.1a

Forecasting equations for net unemployment flows (18-24 year olds, Great Britain)

Outflows from unemployment

Duration	*Coefficient estimates*												*SE*
	constant		$\ln(A/U)^i_{j,t-1}$		$\ln(V/U)_t$		$\ln(U^i_j/U)_t$		JSA_t		time trend		
less than 1 quarter	.013	*(0.18)*	-.639	*(7.26)*	.155	*(5.21)*	.151	*(4.62)*	.137	*(4.43)*	.0007	*(1.49)*	.0370
1-2 quarters	.357	*(2.05)*	-.647	*(8.05)*	.204	*(4.84)*	.245	*(5.02)*	.191	*(3.84)*	.0022	*(2.68)*	.0614
2-3 quarters	-.261	*(3.46)*	-.529	*(7.35)*	.196	*(4.53)*	-	-	.143	*(3.07)*	-.0001	*(0.15)*	.0579
3-4 quarters	-.244	*(2.20)*	-.577	*(8.18)*	.259	*(4.32)*	-	-	.215	*(3.14)*	-.0011	*(1.02)*	.0847
more than 4 quarters	-.042	*(0.41)*	-.482	*(6.39)*	.271	*(4.66)*	.081	*(4.42)*	.137	*(2.53)*	.0036	*(3.71)*	.0670
	Diagnostics												
	H_0: No vector AR(1)			$F(36,108)$ = 0.715		(.874)							
	H_0: Vector normality			$\chi^2(12)$ = 13.37		(.343)							

Inflows to unemployment

	Coefficient estimates												*SE*
	constant		$\ln(I/(POP-U))_{i,t-1}$		$\ln(outgap)_t$						time trend		
	-1.729	*(4.37)*	-.583	*(4.33)*	-4.381	*(3.98)*					-.0026	*(2.66)*	.0574
	Diagnostics												
	H_0: No AR(1)			$F(1,35)$ = 0.090		(.767)							
	H_0: Normality			$\chi^2(2)$ = 4.160		(.125)							

Notes: sample period 1987q1-1997q4; |t-statistics| for coefficient estimates in parentheses; probability under the null hypothesis in parentheses; see Doornik & Hendry (1994) for a description of the autocorrelation and normality tests; auxiliary equation for vacancy-unemployment ratio included in system of outflow equations; full-information maximum likelihood estimates; seasonal dummies included; additional difference terms included where significant; dummy variables for outlying observations in 1987q2 and 1991q1 included; (-) coefficient restricted to zero

Table 4.1b

Forecasting equations for net unemployment flows (25-29 year olds, Great Britain)

Outflows from unemployment

Duration	*Coefficient estimates*												*SE*
	constant		$\ln(A/U)^i_{j,t-1}$		$\ln(V/U)_t$		$\ln(U^i_j/U)_t$		JSA_t		time trend		
less than 1 quarter	.267	*(2.29)*	-.646	*(7.06)*	.175	*(4.69)*	.218	*(6.28)*	.155	*(3.65)*	.0011	*(1.60)*	.0519
1-2 quarters	.419	*(2.08)*	-.668	*(9.12)*	.223	*(4.37)*	.259	*(5.86)*	.237	*(3.86)*	.0028	*(2.65)*	.0765
2-3 quarters	-.304	*(3.47)*	-.447	*(7.13)*	.192	*(3.97)*	-	-	.163	*(3.10)*	.0007	*(0.83)*	.0658
3-4 quarters	-1.016	*(2.57)*	-.730	*(7.52)*	.341	*(4.35)*	-.187	*(2.36)*	.251	*(2.95)*	-.0048	*(3.08)*	.1043
more than 4 quarters	-.259	*(2.24)*	-.369	*(5.01)*	.260	*(3.51)*	-	-	.162	*(2.31)*	.0021	*(1.83)*	.0872

Diagnostics

H_0: No vector AR(1)	$F(36,99)$	= 1.431	(.085)
H_0: Vector normality	$\chi^2(12)$	= 8.042	(.782)

Inflows to unemployment

Coefficient estimates													*SE*
constant		$\ln(I/(POP-U))_{i,t-1}$		$\ln(outgap)_t$						time trend		
-1.511	*(3.50)*	-.459	*(3.71)*	-3.201	*(3.22)*					-.0032	*(3.02)*	.0451

Diagnostics

H_0: No AR(1)	$F(1,33)$	= 0.083	(.775)
H_0: Normality	$\chi^2(2)$	= 1.136	(.567)

Notes: sample period 1987q1-1997q4; |t-statistics| for coefficient estimates in parentheses; probability under the null hypothesis in parentheses; see Doornik & Hendry (1994) for a description of the autocorrelation and normality tests; auxiliary equation for vacancy-unemployment ratio included in system of outflow equations; full-information maximum likelihood estimates; seasonal dummies included; additional difference terms included where significant; dummy variables for outlying observations in 1987q2 and 1991q1 included; (-) coefficient restricted to zero

Table 4.1c

Forecasting equations for net unemployment flows (30-49 year olds, Great Britain)

Outflows from unemployment

Duration	*Coefficient estimates*												*SE*
	constant		$\ln(A/U)^i_{j,t-1}$		$\ln(V/U)_t$		$\ln(U^i_j/U)_t$		*JSA*$_t$		time trend		
less than 1 quarter	-.071	*(0.90)*	-.534	*(7.92)*	.131	*(4.56)*	.111	*(4.51)*	.154	*(4.89)*	-.0012	*(2.23)*	.0379
1-2 quarters	.405	*(1.99)*	-.412	*(5.88)*	.164	*(3.14)*	.231	*(4.74)*	.252	*(4.20)*	-.0011	*(1.04)*	.0750
2-3 quarters	.553	*(1.94)*	-.226	*(4.26)*	.153	*(2.83)*	.198	*(2.99)*	.175	*(2.92)*	-.0017	*(1.65)*	.0754
3-4 quarters	-.257	*(2.06)*	-.477	*(7.99)*	.251	*(3.71)*	-	-	.229	*(3.08)*	-.0016	*(1.37)*	.0930
more than 4 quarters	-.398	*(2.42)*	-.250	*(3.51)*	.215	*(2.49)*	-.107	*(2.71)*	.179	*(2.03)*	.0016	*(1.06)*	.1109
	Diagnostics												
	H_0: No vector AR(1)				$F(36,103)$ = 1.189		(.247)						
	H_0: Vector normality				$\chi^2(12)$ = 9.542		(.656)						

Inflows to unemployment

	Coefficient estimates												*SE*
	constant		$\ln(I/(POP-U))_{i,t-1}$		$\ln(outgap)_t$						time trend		
	-1.691	*(2.88)*	-.450	*(3.14)*	-3.319	*(2.66)*					-.0022	*(2.20)*	.0468
	Diagnostics												
	H_0: No AR(1)				$F(1,33)$ = 1.115		(.299)						
	H_0: Normality				$\chi^2(2)$ = 1.705		(.426)						

Notes: sample period 1987q1-1997q4; |t-statistics| for coefficient estimates in parentheses; probability under the null hypothesis in parentheses; see Doornik & Hendry (1994) for a description of the autocorrelation and normality tests; auxiliary equation for vacancy-unemployment ratio included in system of outflow equations; full-information maximum likelihood estimates; seasonal dummies included; additional difference terms included where significant; dummy variables for outlying observations in 1987q2 and 1991q1 included; (-) coefficient restricted to zero

Table 4.1d

Unemployment flows - difference from forecast

Age	Duration (months)	98q1	98q2	98q3	98q4	99q1	99q2	99q3	99q4	00q1
		OUTFLOWS								
18-24	0-3	-.002	.000	.001	.114*	.083*	.077	.011	.123*	.059
	3-6	.034	-.057	.003	.067	.155*	.090	.121	.144*	.169*
	6-9	-.002	-.012	.316*	.413*	.380*	.411*	.474*	.630*	.576*
	9-12	-.001	.029	.237*	.923*	.922*	.948*	.806*	1.149*	1.184*
	>12	-.055	-.125*	.220*	.560*	.811*	.866*	.872*	1.112*	1.180*
25-29	0-3	.012	-.042	-.020	.023	.011	.065	.015	.028	.015
	3-6	.061	-.066	-.010	-.001	.087	.082	.096	.051	.086
	6-9	.001	-.068	-.050	.044	.033	.071	.066	.087	.084
	9-12	.031	-.046	.012	.026	-.043	.252*	.136	.120	.191*
	>12	-.030	-.228*	-.189*	-.081	-.029	.071	.057	.069	.099
30-49	0-3	-.004	.003	.014	.049	.053	.109*	.078*	.101*	.080*
	3-6	.002	-.103	-.088	-.049	.042	.037	.081	.071	.076
	6-9	-.034	-.124	-.171*	-.098	-.117	-.049	-.047	-.021	-.009
	9-12	-.022	-.094	-.078	-.167*	-.152*	-.022	-.011	-.015	.031
	>12	-.133	-.353*	-.344*	-.299*	-.262*	-.215	-.193	-.188	-.167

Age		98q1	98q2	98q3	98q4	99q1	99q2	99q3	99q4	00q1
		INFLOWS								
18-24		-.015	-.070	-.093	.037	.038	-.079	-.115	-.057	-.053
25-29		-.023	-.006	-.043	.044	-.016	-.040	-.097	-.059	-.097
30-49		-.007	-.047	-.082	-.037	-.060	-.086	-.156*	-.151*	-.184*

Notes: reported difference from forecast equals $(f^A - f^C)/f^C$, where f^C is the forecast flow and f^A is the actual flow; * indicates a significant forecast error at the 5 per cent level; flows refer to *net* flows rather than *gross* flows, which means that individuals who join and leave a particular unemployment duration category within the quarter are not counted.

Table 4.2a

Outflow rate equations (New Deal variable equals zero/one dummy): 18-24 year olds

Destination	*Duration (months)*	*Long run coefficients*										*Diagnostics**					
		$\ln(V/U)_t^d$		$\ln(V/U)_t$		ND_t^d		time trend		error correction		LL	$\chi^2(760)$	$\chi^2(376)$	$\chi^2(940)$	AR1	Norm
unsubs.	0-3	.143	*(4.85)*	.567	*(15.5)*	-.034	*(4.86)*	-.007	*(15.9)*	-1.024	*(80.5)*	4167	8312	665	1533	13	5
work	3-6	.077	*(1.35)*	.454	*(7.22)*	-.041	*(3.70)*	-.003	*(3.21)*	-.871	*(81.3)*	2191	7277	527	1450	13	7
	6-9	.135	*(2.35)*	.232	*(3.13)*	-.056	*(3.57)*	.002	*(1.76)*	-.976	*(63.1)*	1129	5571	752	2072	10	18
	9+	.266	*(3.16)*	.631	*(6.11)*	-.007	*(0.31)*	-.006	*(4.49)*	-.888	*(49.0)*	548	6505	854	2134	5	27
work	0-3	.143	*(4.90)*	.565	*(15.5)*	-.025	*(3.44)*	-.007	*(15.5)*	-1.025	*(80.7)*	4184	8367	679	1543	14	7
	3-6	.080	*(1.43)*	.451	*(7.23)*	-.023	*(2.02)*	-.003	*(3.24)*	-.871	*(81.9)*	2212	7328	535	1455	14	7
	6-9	.124	*(2.33)*	.250	*(3.68)*	.052	*(3.32)*	.001	*(1.42)*	-.978	*(67.4)*	1297	5983	772	2072	10	17
	9+	.221	*(2.53)*	.667	*(6.71)*	.156	*(7.21)*	-.005	*(4.75)*	-.837	*(48.8)*	782	6975	813	2052	11	25
all	0-3	.151	*(5.07)*	.540	*(16.2)*	.007	*(1.12)*	-.005	*(13.7)*	-.994	*(75.2)*	5026	8713	679	1488	11	1
	3-6	.096	*(2.36)*	.490	*(9.68)*	-.005	*(0.56)*	-.002	*(3.15)*	-.936	*(76.3)*	3072	7000	504	1294	14	47
	6-9	.115	*(2.06)*	.323	*(4.68)*	.023	*(1.67)*	.003	*(3.74)*	-.943	*(53.3)*	2630	6136	836	1913	9	6
	9+	.038	*(0.33)*	.425	*(3.01)*	.356	*(10.5)*	.007	*(4.11)*	-.477	*(30.5)*	1800	6342	529	1388	23	9

Notes: Outflows to unknown destinations included in all; Mean group estimator reported; sample period: April 1995 – February 2000; 5605 observations (95 New Deal Units of Delivery and 59 months); |t-statistic| in brackets

*Diagnostics: LL=loglikelihood; $\chi^2(760)$ = likelihood ratio test statistic for all slope coefficients restricted to zero (except φ), significant at 5 per cent level if greater than 825; $\chi^2(376)$ = likelihood ratio test statistic for common long-run slope coefficients (pooled mean group model), significant at 5 per cent level if greater than 422; $\chi^2(940)$ = likelihood ratio test statistic for common long-run and short-run slope coefficients and common error variances across UoDs (dynamic fixed effects model), significant at 5 per cent level if greater than 1012; the last columns indicate the number of UoDs for which there is evidence, at the five per cent level, of first order serial correlation (AR1) or non-normal errors (Norm).

Table 4.2b

Outflow rate equations (New Deal variable equals zero/one dummy): 25-29 year olds

Destination	*Duration (months)*	*Long run coefficients*										*Diagnostics**					
		$\ln(V/U)_t^d$		$\ln(V/U)_t$		ND_t^d		time trend		error correction		LL	$\chi^2(760)$	$\chi^2(376)$	$\chi^2(940)$	AR1	Norm
unsubs. work	0-3	.089	*(2.28)*	.330	*(7.19)*	-.043	*(4.74)*	-.002	*(4.46)*	-1.068	*(70.0)*	3631	6382	686	1559	16	10
	3-6	-.022	*(0.43)*	.172	*(2.72)*	-.100	*(7.77)*	.004	*(5.01)*	-1.004	*(70.8)*	1690	5720	602	1768	11	12
	6-9	.119	*(1.65)*	.299	*(3.45)*	-.118	*(5.74)*	-.002	*(2.10)*	-1.023	*(64.2)*	-236	4229	601	1858	9	28
	9+	.334	*(5.79)*	.585	*(8.22)*	-.209	*(10.5)*	-.009	*(8.18)*	-1.004	*(62.1)*	637	6075	730	1958	7	23
work	0-3	.089	*(2.29)*	.329	*(7.17)*	-.042	*(4.65)*	-.002	*(4.39)*	-1.069	*(70.2)*	3634	6392	685	1558	16	10
	3-6	-.023	*(0.44)*	.171	*(2.69)*	-.098	*(7.66)*	.005	*(5.04)*	-1.003	*(70.2)*	1702	5737	602	1751	11	12
	6-9	.116	*(1.62)*	.301	*(3.51)*	-.113	*(5.50)*	-.002	*(2.05)*	-1.023	*(64.7)*	218	4237	600	1865	9	27
	9+	.337	*(5.84)*	.548	*(7.77)*	-.188	*(9.32)*	-.008	*(7.25)*	-1.005	*(64.0)*	700	6122	754	1980	8	22
all	0-3	.133	*(3.92)*	.356	*(9.11)*	-.028	*(3.76)*	-.002	*(6.28)*	-1.040	*(67.5)*	4548	7166	585	1434	4	2
	3-6	.048	*(1.39)*	.265	*(5.67)*	-.086	*(8.62)*	.003	*(4.63)*	-1.015	*(75.5)*	3011	6331	584	1565	5	8
	6-9	.141	*(3.09)*	.388	*(7.02)*	-.097	*(7.28)*	-.003	*(3.30)*	-1.041	*(69.5)*	1901	5000	642	1762	7	12
	9+	.231	*(4.37)*	.478	*(7.03)*	-.160	*(10.3)*	-.004	*(5.77)*	-.958	*(53.6)*	2563	6447	823	1870	7	15

Notes: Outflows to unknown destinations included in all; Mean group estimator reported; sample period: April 1995 – February 2000; 5605 observations (95 New Deal Units of Delivery and 59 months); |t-statistic| in brackets

*Diagnostics: LL=loglikelihood; $\chi^2(760)$ = likelihood ratio test statistic for all slope coefficients restricted to zero (except φ), significant at 5 per cent level if greater than 825; $\chi^2(376)$ = likelihood ratio test statistic for common long-run slope coefficients (pooled mean group model), significant at 5 per cent level if greater than 422; $\chi^2(940)$ = likelihood ratio test statistic for common long-run and short-run slope coefficients and common error variances across UoDs (dynamic fixed effects model), significant at 5 per cent level if greater than 1012; the last columns indicate the number of UoDs for which there is evidence, at the five per cent level, of first order serial correlation (AR1) or non-normal errors (Norm).

Table 4.2c

Outflow rate equations (New Deal variable equals zero/one dummy): 30-49 year olds

Destination	*Duration (months)*	*Long run coefficients*										*Diagnostics**					
		$\ln(V/U)_t^d$		$\ln(V/U)_t$		ND_t^d		time trend		error correction		LL	$\chi^2(760)$	$\chi^2(376)$	$\chi^2(940)$	AR1	Norm
unsubs. work	0-3	.100	*(3.06)*	.166	*(4.27)*	-.014	*(1.66)*	-.002	*(3.57)*	-1.114	*(64.9)*	3773	5318	724	1690	18	7
	3-6	.016	*(0.40)*	-.087	*(1.58)*	-.122	*(10.4)*	.007	*(7.70)*	-.959	*(78.1)*	3248	7064	683	1832	10	7
	6-9	.239	*(4.15)*	.034	*(0.51)*	-.123	*(7.03)*	-.002	*(2.31)*	-.917	*(55.6)*	1553	5906	632	1766	15	10
	9+	.319	*(5.53)*	.411	*(5.56)*	-.260	*(15.9)*	-.006	*(6.34)*	-.941	*(55.5)*	2471	7790	953	2087	10	16
work	0-3	.100	*(3.08)*	.165	*(4.26)*	-.014	*(1.63)*	-.002	*(3.52)*	-1.114	*(64.9)*	3774	5322	723	1689	18	7
	3-6	.017	*(0.42)*	-.089	*(1.62)*	-.121	*(10.4)*	.007	*(7.76)*	-.959	*(78.4)*	3252	7071	682	1825	9	8
	6-9	.240	*(4.19)*	.031	*(0.46)*	-.122	*(6.96)*	-.002	*(2.21)*	-.919	*(55.1)*	1566	5910	633	1774	15	10
	9+	.312	*(5.56)*	.388	*(5.26)*	-.245	*(15.2)*	-.005	*(5.15)*	-.948	*(57.3)*	2532	7815	969	2103	8	18
all	0-3	.115	*(3.38)*	.311	*(8.22)*	-.026	*(3.51)*	-.003	*(6.88)*	-1.076	*(68.8)*	4529	6342	672	1483	13	3
	3-6	.042	*(1.05)*	.125	*(2.36)*	-.104	*(11.0)*	.005	*(6.87)*	-.999	*(72.5)*	4358	7832	765	1795	8	3
	6-9	.143	*(3.10)*	.291	*(5.92)*	-.124	*(9.74)*	-.002	*(2.27)*	-.938	*(63.7)*	3223	6587	628	1558	9	4
	9+	.235	*(4.50)*	.369	*(5.44)*	-.237	*(13.3)*	-.002	*(2.86)*	-.887	*(45.5)*	3597	7485	956	2022	8	4

Notes: Outflows to unknown destinations included in all; Mean group estimator reported; sample period: April 1995 – February 2000; 5605 observations (95 New Deal Units of Delivery and 59 months); |t-statistic| in brackets

*Diagnostics: LL=loglikelihood; $\chi^2(760)$ = likelihood ratio test statistic for all slope coefficients restricted to zero (except φ), significant at 5 per cent level if greater than 825; $\chi^2(376)$ = likelihood ratio test statistic for common long-run slope coefficients (pooled mean group model), significant at 5 per cent level if greater than 422; $\chi^2(940)$ = likelihood ratio test statistic for common long-run and short-run slope coefficients and common error variances across UoDs (dynamic fixed effects model), significant at 5 per cent level if greater than 1012; the last columns indicate the number of UoDs for which there is evidence, at the five per cent level, of first order serial correlation (AR1) or non-normal errors (Norm).

Table 4.3a

Outflow rate equations (New Deal variable reflects NDYP proportion of unemployment and interview intensity): 18-24 year olds

Destination	*Duration (months)*	*Long run coefficients*								*Diagnostics**					
		$\ln(V/U)_t^d$		$\ln(V/U)_t$		ND_t^d		time dummies	error correction						
										LL	$\chi^2(1615)$	$\chi^2(1222)$	$\chi^2(1786)$	AR1	Norm
unsubs. work	0-3	.140	*(3.42)*	.588	*(12.9)*	.132	*(8.89)*	incl.	-1.137 *(97.9)*	4935	9849	1689	2587	37	3
	3-6	-.053	*(0.48)*	.310	*(2.52)*	-.136	*(4.71)*	incl.	-.969 *(80.6)*	2924	8743	1466	2452	27	7
	6-9	.178	*(2.85)*	.298	*(3.48)*	-.038	*(0.93)*	incl.	-1.156 *(82.2)*	1855	7024	2121	3476	31	10
	9+	.239	*(2.13)*	.944	*(7.05)*	.216	*(4.47)*	incl.	-1.085 *(67.5)*	1388	8186	2198	3548	57	25
work	0-3	.140	*(3.43)*	.585	*(12.7)*	.138	*(9.43)*	incl.	-1.139 *(100)*	4952	9902	1697	2590	37	5
	3-6	-.045	*(0.41)*	.300	*(2.46)*	-.116	*(4.11)*	incl.	-.971 *(80.9)*	2951	8806	1477	2462	28	5
	6-9	.147	*(2.49)*	.308	*(3.80)*	.066	*(1.71)*	incl.	-1.165 *(92.9)*	2017	7423	2159	3483	27	9
	9+	.192	*(1.79)*	.953	*(7.96)*	.366	*(8.75)*	incl.	-1.087 *(71.4)*	1734	8880	2212	3525	52	18
all	0-3	.162	*(4.43)*	.519	*(12.7)*	.162	*(12.9)*	incl.	-1.155 *(99.9)*	5790	10241	1593	2452	42	1
	3-6	.005	*(0.01)*	.360	*(3.29)*	.009	*(0.44)*	incl.	-1.074 *(76.3)*	3766	8388	1445	2289	9	27
	6-9	.089	*(1.56)*	.495	*(6.89)*	.147	*(4.91)*	incl.	-1.179 *(71.3)*	3542	7961	2255	3377	14	6
	9+	.053	*(0.60)*	.718	*(7.11)*	.668	*(18.4)*	incl.	-.961 *(57.4)*	3165	9074	1904	2925	23	5

Notes: Outflows to unknown destinations included in all; Mean group estimator reported; sample period: April 1995 – February 2000; 5605 observations (95 New Deal Units of Delivery and 59 months); |t-statistic| in brackets

*Diagnostics: LL=loglikelihood; $\chi^2(1615)$ = likelihood ratio test statistic for all slope coefficients restricted to zero (except φ), significant at 5 per cent level if greater than 1710; $\chi^2(1222)$ = likelihood ratio test statistic for common long-run slope coefficients (pooled mean group model), significant at 5 per cent level if greater than 1304; $\chi^2(1786)$ = likelihood ratio test statistic for common long-run and short-run slope coefficients and common error variances across UoDs (dynamic fixed effects model), significant at 5 per cent level if greater than 1885; the last columns indicate the number of UoDs for which there is evidence, at the five per cent level, of first order serial correlation (AR1) or non-normal errors (Norm).

Table 4.3b

Outflow rate equations equations (New Deal variable reflects NDYP proportion of unemployment and interview intensity): 25-29 year olds

Destination	*Duration (months)*	*Long run coefficients*								*Diagnostics**					
		$\ln(V/U)_t^d$		$\ln(V/U)_t$		ND_t^d		time dummies	error correction	LL	$\chi^2(1615)$	$\chi^2(1222)$	$\chi^2(1786)$	AR1	Norm
unsubs. work	0-3	.037	*(0.81)*	.258	*(4.73)*	.106	*(5.92)*	incl.	-1.253 *(100)*	4423	7967	1882	2785	35	9
	3-6	-.115	*(1.58)*	-.010	*(0.12)*	-.057	*(2.00)*	incl.	-1.155 *(77.4)*	2404	7148	1805	3020	27	12
	6-9	.029	*(0.31)*	.384	*(3.59)*	-.031	*(0.43)*	incl.	-1.182 *(83.0)*	476	5655	1823	3098	34	26
	9+	.301	*(3.71)*	.645	*(6.74)*	-.060	*(1.42)*	incl.	-1.134 *(79.9)*	1336	7472	1947	3203	44	18
work	0-3	.037	*(0.81)*	.258	*(4.73)*	.106	*(5.92)*	incl.	-1.253 *(101)*	4424	7971	1880	2783	34	9
	3-6	-.116	*(1.60)*	-.007	*(0.09)*	-.056	*(1.98)*	incl.	-1.154 *(76.9)*	2416	7165	1807	3005	27	12
	6-9	.015	*(0.17)*	.400	*(3.74)*	-.031	*(0.45)*	incl.	-1.182 *(83.9)*	494	5660	1827	3110	31	26
	9+	.311	*(3.92)*	.610	*(6.46)*	-.024	*(0.55)*	incl.	-1.130 *(81.4)*	1379	7479	1944	3193	43	19
all	0-3	.084	*(2.23)*	.291	*(6.22)*	.138	*(8.95)*	incl.	-1.248 *(94.7)*	5449	8968	1798	2713	30	1
	3-6	-.021	*(0.40)*	.110	*(1.67)*	.015	*(0.61)*	incl.	-1.180 *(82.7)*	3769	7847	1774	2822	18	4
	6-9	.102	*(1.58)*	.326	*(4.26)*	.071	*(1.87)*	incl.	-1.222 *(88.9)*	2704	6606	1955	3108	30	6
	9+	.141	*(2.14)*	.576	*(7.44)*	.048	*(1.70)*	incl.	-1.113 *(73.3)*	3318	7957	2075	3158	30	9

Notes: Outflows to unknown destinations included in all; Mean group estimator reported; sample period: April 1995 – February 2000; 5605 observations (95 New Deal Units of Delivery and 59 months); |t-statistic| in brackets

*Diagnostics: LL=loglikelihood; $\chi^2(1615)$ = likelihood ratio test statistic for all slope coefficients restricted to zero (except φ), significant at 5 per cent level if greater than 1710; $\chi^2(1222)$ = likelihood ratio test statistic for common long-run slope coefficients (pooled mean group model), significant at 5 per cent level if greater than 1304; $\chi^2(1786)$ = likelihood ratio test statistic for common long-run and short-run slope coefficients and common error variances across UoDs (dynamic fixed effects model), significant at 5 per cent level if greater than 1885; the last columns indicate the number of UoDs for which there is evidence, at the five per cent level, of first order serial correlation (AR1) or non-normal errors (Norm).

Table 4.3c

Outflow rate equations equations (New Deal variable reflects NDYP proportion of unemployment and interview intensity): 30-49 year olds

Destination	*Duration (months)*	*Long run coefficients*								*Diagnostics**					
		$\ln(V/U)_t^d$		$\ln(V/U)_t$		ND_t^d		time dummies	error correction	LL	$\chi^2(1615)$	$\chi^2(1222)$	$\chi^2(1786)$	AR1	Norm
unsubs. work	0-3	.039	*(0.98)*	.046	*(1.03)*	.138	*(8.55)*	incl.	-1.302 *(92.1)*	4570	6912	1866	2869	34	3
	3-6	-.070	*(1.45)*	-.207	*(3.23)*	-.127	*(4.26)*	incl.	-1.142 *(91.5)*	4024	8617	1942	3142	21	4
	6-9	.136	*(1.83)*	.146	*(1.48)*	-.115	*(3.56)*	incl.	-1.135 *(83.4)*	2504	7806	2110	3218	44	13
	9+	.191	*(2.51)*	.542	*(6.11)*	-.080	*(2.92)*	incl.	-1.107 *(79.4)*	3316	9480	2359	3513	39	17
work	0-3	.039	*(1.00)*	.046	*(1.02)*	.138	*(8.56)*	incl.	-1.302 *(92.0)*	4569	6912	1865	2867	34	3
	3-6	-.071	*(1.47)*	-.206	*(3.22)*	-.125	*(4.20)*	incl.	-1.142 *(92.2)*	4027	8622	1944	3137	21	4
	6-9	.139	*(1.87)*	.143	*(1.44)*	-.114	*(3.55)*	incl.	-1.136 *(83.4)*	2516	7809	2114	3229	45	13
	9+	.176	*(2.36)*	.541	*(6.25)*	-.066	*(2.44)*	incl.	-1.108 *(83.6)*	3343	9438	2348	3502	36	11
all	0-3	.045	*(1.36)*	.223	*(5.45)*	.178	*(13.1)*	incl.	-1.332 *(92.3)*	5667	8618	2100	2992	31	2
	3-6	-.041	*(1.09)*	-.010	*(0.19)*	-.011	*(0.41)*	incl.	-1.222 *(91.1)*	5330	9776	2139	3259	15	6
	6-9	.064	*(1.16)*	.272	*(4.15)*	-.022	*(0.79)*	incl.	-1.187 *(88.1)*	4275	8692	2159	3135	34	6
	9+	.102	*(1.73)*	.544	*(8.29)*	.013	*(0.58)*	incl.	-1.104 *(77.0)*	4614	9519	2586	3736	26	4

Notes: Outflows to unknown destinations included in all; Mean group estimator reported; sample period: April 1995 – February 2000; 5605 observations (95 New Deal Units of Delivery and 59 months); |t-statistic| in brackets

*Diagnostics: LL=loglikelihood; $\chi^2(1615)$ = likelihood ratio test statistic for all slope coefficients restricted to zero (except φ), significant at 5 per cent level if greater than 1710; $\chi^2(1222)$ = likelihood ratio test statistic for common long-run slope coefficients (pooled mean group model), significant at 5 per cent level if greater than 1304; $\chi^2(1786)$ = likelihood ratio test statistic for common long-run and short-run slope coefficients and common error variances across UoDs (dynamic fixed effects model), significant at 5 per cent level if greater than 1885; the last columns indicate the number of UoDs for which there is evidence, at the five per cent level, of first order serial correlation (AR1) or non-normal errors (Norm).

Table 4.4a

New Deal coefficients (New Deal variable equals zero/one dummy)

Destination	*Duration (months)*	*Regressions include time trend*						*Regressions include time dummies*					
		age 18-24		*age 25-29*		*age 30-49*		*age 18-24*		*age 25-29*		*age 30-49*	
unsubs. work	0-3	-.034	*(4.86)*	-.043	*(4.74)*	-.014	*(1.66)*	-.005	*(0.45)*	.023	*(2.12)*	.069	*(7.33)*
	3-6	-.041	*(3.70)*	-.100	*(7.77)*	-.122	*(10.4)*	-.092	*(4.55)*	-.092	*(5.00)*	-.087	*(6.03)*
	6-9	-.056	*(3.57)*	-.118	*(5.74)*	-.123	*(7.03)*	.001	*(0.05)*	-.020	*(0.65)*	-.002	*(0.11)*
	9+	-.007	*(0.31)*	-.209	*(10.5)*	-.260	*(15.9)*	-.037	*(1.35)*	-.129	*(5.07)*	-.113	*(5.57)*
work	0-3	-.025	*(3.44)*	-.042	*(4.65)*	-.014	*(1.63)*	.001	*(0.11)*	.023	*(2.14)*	.069	*(7.34)*
	3-6	-.023	*(2.02)*	-.098	*(7.66)*	-.121	*(10.4)*	-.077	*(3.83)*	-.092	*(4.99)*	-.087	*(6.01)*
	6-9	.052	*(3.32)*	-.113	*(5.50)*	-.122	*(6.96)*	.084	*(3.72)*	-.018	*(0.58)*	-.002	*(0.09)*
	9+	.156	*(7.21)*	-.188	*(9.32)*	-.245	*(15.2)*	.066	*(2.56)*	-.120	*(4.74)*	-.109	*(5.44)*
all	0-3	.007	*(1.12)*	-.028	*(3.76)*	-.026	*(3.51)*	.028	*(3.96)*	.037	*(4.26)*	.066	*(8.93)*
	3-6	-.005	*(0.56)*	-.086	*(8.62)*	-.104	*(11.0)*	-.058	*(4.41)*	-.057	*(4.55)*	-.035	*(3.46)*
	6-9	.023	*(1.69)*	-.097	*(7.28)*	-.124	*(9.74)*	.036	*(2.04)*	.010	*(0.53)*	.017	*(1.18)*
	9+	.356	*(10.5)*	-.160	*(5.77)*	-.237	*(13.4)*	.094	*(3.73)*	-.081	*(4.80)*	-.059	*(4.02)*

Notes: Outflows to unknown destinations included in all; Mean group estimator of coefficient on New Deal variable reported; sample period: April 1995 – February 2000; 5605 observations (95 New Deal Units of Delivery and 59 months); |t-statistic| in brackets

Table 4.4b

New Deal coefficients (New Deal variable reflects NDYP proportion of unemployment and interview intensity)

Destination	*Duration (months)*	*Regressions include time trend*						*Regressions include time dummies*					
		age 18-24		*age 25-29*		*age 30-49*		*age 18-24*		*age 25-29*		*age 30-49*	
unsubs. work	0-3	-.054	*(6.06)*	-.088	*(7.79)*	-.063	*(5.19)*	.132	*(8.89)*	.106	*(5.92)*	.138	*(8.55)*
	3-6	-.015	*(0.82)*	-.106	*(6.83)*	-.130	*(8.33)*	-.136	*(4.71)*	-.057	*(2.00)*	-.127	*(4.26)*
	6-9	-.040	*(2.20)*	-.179	*(8.69)*	-.167	*(9.88)*	-.038	*(0.93)*	-.031	*(0.43)*	-.115	*(3.56)*
	9+	.219	*(8.74)*	-.190	*(10.5)*	-.227	*(12.5)*	.216	*(4.47)*	-.060	*(1.42)*	-.080	*(2.92)*
work	0-3	-.045	*(5.01)*	-.087	*(7.66)*	-.063	*(5.14)*	.138	*(9.43)*	.106	*(5.92)*	.138	*(8.56)*
	3-6	-.003	*(0.15)*	-.103	*(6.67)*	-.128	*(8.22)*	-.116	*(4.11)*	-.056	*(1.98)*	-.125	*(4.20)*
	6-9	.036	*(2.10)*	-.175	*(8.75)*	-.164	*(9.66)*	.066	*(1.71)*	-.031	*(0.45)*	-.114	*(3.55)*
	9+	.353	*(16.9)*	-.152	*(8.14)*	-.195	*(10.6)*	.366	*(8.75)*	-.024	*(0.55)*	-.066	*(2.44)*
all	0-3	.016	*(2.04)*	-.049	*(5.26)*	-.052	*(4.61)*	.162	*(12.9)*	.138	*(8.95)*	.178	*(13.1)*
	3-6	.065	*(4.95)*	-.060	*(4.82)*	-.089	*(6.05)*	.009	*(0.44)*	.015	*(0.61)*	-.011	*(0.41)*
	6-9	.143	*(10.0)*	-.114	*(6.06)*	-.130	*(8.07)*	.147	*(4.91)*	.071	*(1.87)*	-.022	*(0.79)*
	9+	.700	*(24.5)*	-.056	*(3.59)*	-.123	*(6.14)*	.668	*(18.4)*	.048	*(1.70)*	.013	*(0.58)*

Notes: Coefficients have been rescaled to be comparable to the coefficients on the zero/one dummy; rescaled by 0.2223 - the average of the New Deal variable over UoDs since the New Deal was introduced; Outflows to unknown destinations included in all; Mean group estimator of coefficient on New Deal variable reported; sample period: April 1995 – February 2000; 5605 observations (95 New Deal Units of Delivery and 59 months); |t-statistic| in brackets

Table 4.5a
New Deal coefficients (difference equations)

Destination	*Duration (months)*	*Regression type*							
		ND_t^d =							
		zero/one dummy				*NDYP share of unemployment x interview intensity**			
		C_t =				C_t =			
		time trend		*time dummies*		*time trend*		*time dummies*	
unsubs. work	0-3	.007	*(0.76)*	-.045	*(3.80)*	.034	*(3.66)*	.013	*(0.77)*
	3-6	.065	*(5.13)*	-.031	*(1.38)*	.096	*(4.43)*	-.111	*(2.94)*
	6-9	.057	*(2.25)*	.007	*(0.22)*	.136	*(5.38)*	-.008	*(0.10)*
	9+	.188	*(7.73)*	.070	*(2.18)*	.377	*(14.4)*	.223	*(4.86)*
work	0-3	.016	*(1.75)*	-.039	*(3.27)*	.042	*(4.65)*	.020	*(1.20)*
	3-6	.083	*(6.51)*	-.016	*(0.72)*	.109	*(4.98)*	-.090	*(2.39)*
	6-9	.164	*(6.73)*	.089	*(2.86)*	.213	*(9.16)*	.097	*(1.28)*
	9+	.348	*(15.0)*	.169	*(5.64)*	.507	*(22.0)*	.374	*(8.92)*
all	0-3	.035	*(4.85)*	-.018	*(1.95)*	.068	*(8.01)*	.021	*(1.90)*
	3-6	.080	*(7.52)*	-.014	*(0.82)*	.122	*(10.0)*	-.026	*(0.80)*
	6-9	.114	*(6.34)*	.009	*(0.40)*	.255	*(13.3)*	.066	*(1.62)*
	9+	.460	*(15.5)*	.118	*(4.72)*	.741	*(29.9)*	.549	*(2.47)*

*Coefficients have been rescaled to be comparable to the coefficients on the zero/one dummy; rescaled by 0.2223 - the average of the New Deal variable over UoDs since the New Deal was introduced

Notes: Outflows to unknown destinations included in all; Mean group estimator of coeffcient on New Deal variable reported; sample period: April 1995 – February 2000; 5605 observations (95 New Deal Units of Delivery and 59 months); |t-statistic| in italics; difference between 18-24 and 25-29 year olds

Table 4.5b

New Deal coefficients (difference equations; lagged dependent variable instrumented)

Destination	*Duration (months)*	*Regression type*							
		ND_t^d =							
		zero/one dummy				*NDYP share of unemployment x interview intensity**			
		C_t =				C_t =			
		time trend		*time dummies*		*time trend*		*time dummies*	
unsubs. work	0-3	.006	*(0.66)*	-.050	*(4.32)*	.039	*(4.03)*	.012	*(0.67)*
	3-6	.066	*(5.28)*	-.033	*(1.61)*	.110	*(5.21)*	-.119	*(3.40)*
	6-9	.064	*(2.55)*	.018	*(0.61)*	.145	*(5.42)*	.017	*(0.24)*
	9+	.185	*(7.13)*	.063	*(1.92)*	.390	*(12.8)*	.225	*(4.68)*
work	0-3	.015	*(1.70)*	-.039	*(3.26)*	.045	*(4.73)*	.016	*(0.94)*
	3-6	.081	*(6.40)*	-.017	*(0.79)*	.119	*(5.49)*	-.090	*(2.40)*
	6-9	.161	*(6.74)*	.090	*(2.98)*	.220	*(8.92)*	.117	*(1.62)*
	9+	.362	*(14.0)*	.171	*(5.66)*	.525	*(19.2)*	.374	*(9.53)*
all	0-3	.033	*(4.58)*	-.020	*(2.17)*	.073	*(7.94)*	.022	*(1.93)*
	3-6	.074	*(6.68)*	-.014	*(0.84)*	.124	*(9.58)*	-.026	*(0.86)*
	6-9	.115	*(6.41)*	.014	*(0.61)*	.265	*(11.7)*	.073	*(1.82)*
	9+	.470	*(11.9)*	.117	*(4.58)*	.780	*(17.3)*	.574	*(14.4)*

*Coefficients have been rescaled to be comparable to the coefficients on the zero/one dummy; rescaled by 0.2223 - the average of the New Deal variable over UoDs since the New Deal was introduced

Notes: Outflows to unknown destinations included in all; Mean group estimator of coeffcient on New Deal variable reported; sample period: April 1995 – February 2000; 5605 observations (95 New Deal Units of Delivery and 59 months); |t-statistic| in italics; difference between 18-24 and 25-29 year olds; Two stage least squares estimates; Lagged dependent variable instrumented with its rank order

Table 4.5c
Loglikelihoods (difference equations)

Destination	*Duration (months)*	*Regression type*					
		$ND_t^d =$					constant**
		zero/one dummy			*NDYP share of unemployment x interview intensity**		
		$C_t =$		simple d.i.d.*	$C_t =$		simple d.i.d.*
		time trend	*time dummies*		*time trend*	*time dummies*	
unsubs. work	0-3	4587	5302	3727	4600	5289	3724	3668
	3-6	1236	1873	591	1284	1896	592	547
	6-9	-999	-319	-1446	-957	-290	-1382	-1636
	9+	-502	331	-944	-327	341	-799	-1266
work	0-3	4591	5309	3735	4608	5298	3732	3672
	3-6	1255	1893	612	1305	1915	613	558
	6-9	-955	-263	-1410	-897	-227	-1321	-1786
	9+	-372	518	-813	-115	556	-586	-1416
all	0-3	5981	6754	5275	6048	6736	5306	5122
	3-6	3047	3686	2418	3122	3703	2436	2311
	6-9	1274	2153	805	1439	2183	1003	429
	9+	1718	2911	1296	2490	3240	2048	669

*restricting all coefficients to zero, with the exception of φ and π and the constant terms.

**restricting all coefficients to zero, with the exception of φ and the constant terms.

Table 4.6

Dependent variable: Monthly change in log relative inflow rate of 18-24 year olds to 25-29 year olds

		OLS		2SLS**	
Long run coefficients*	$\ln(V/U)_t^d$	.003	(0.07)	.004	(0.08)
	$\ln(OUT)_t$	6.664	(2.03)	6.367	(1.92)
	ND_{t-3}^d	.071	(3.55)	.067	(3.05)
Short run coefficients	error correction	-1.069	(79.2)	-1.073	(50.7)
	$\Delta \ln(V/U)_t^d$	-.520	(4.07)	-.499	(3.95)
	$\Delta \ln(OUT)_t$	-27.82	(5.68)	-27.30	(5.42)
	LL	1252			

*Coefficient on New Deal variable is rescaled to illustrate the implied shift in the inflow rate; rescaled by 0.0657 - the average of the NDYP share of unemployment over UoDs since the New Deal was introduced

**Lagged dependent variable instrumented with its rank order

Notes: Mean group estimator reported; sample period: May 1995 – February 2000; 5510 observations (95 New Deal Units of Delivery and 58 months); |t-statistic| in italics; a set of eleven seasonal dummies and dummies for June 1995, August 1995, June 1996, July 1997, and July 1999 included in estimation