Economic Effects of Social Protection

Cammeraat, E.

2 Preventing NEETs During the Great Recession – The Effects of a Mandatory Activation Program for Young Welfare Recipients

Abstract

We study the impact of a mandatory activation program for young welfare recipients in the Netherlands. What makes this reform unique is that it clashed head on with the Great Recession. We use differences-in-differences and regression discontinuity and data for the period 1999–2012 to estimate the effects of this reform. We find that the reform reduced the number of welfare recipients but had no effect on the number of NEETs (individuals not in employment, education or training). This last finding contrasts with previous studies, which we argue is due to the reform taking place during a severe economic recession.

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2.1 Introduction

Young individuals not in employment, education or training (NEETs) are a major policy concern, in particular during periods of recession. NEETs are a prime concern for the European Commission (Carcillo et al. 2015). In his 2016 State of the Union speech, President Juncker of the European Commission stated he wants to "continue to roll out the Youth Guarantee across Europe, improving the skillset of Europeans and reaching out to regions and young people most in need." (European Commission 2016) This increased policy attention for reducing the number of NEETs is accompanied with a trend towards stricter conditions for receiving welfare benefits, via e.g. the imposition of job search requirements and/or by making welfare benefits receipt conditional on participation in so-called work-learn programs. Prominent examples of such policies that are targeted at young unemployed individuals include the New Deal for Young People in the UK and the Job Corps in the US (Kluve 2014). Previous studies have found that stricter conditionality of welfare benefits decreases welfare claims and increases employment rates (Blundell et al. 2004; Dahlberg et al. 2009; Persson and Vikman 2014; Hernæs et al. 2016; Kluve et al. 2016; Bolhaar et al. 2018).

In this paper, we study the effects of a mandatory activation program for young individuals during a severe economic recession. Specifically, we study the WIJ (*Wet Investeren in Jongeren*, Work Investment Act for Young Individuals) reform, introduced in the Netherlands at the end of 2009, just after the start of the Great Recession. The reform targeted individuals up to and including 26 years of age. The goal of the WIJ reform was to reduce the number of young NEETs. To this end, welfare benefits were made conditional on participation in 'work-learn programs'. We consider the effects of the WIJ reform on key outcome variables: NEETs claiming welfare benefits, NEETs not claiming welfare benefits, the overall NEETs rate, the employment rate and the enrollment rate in education.

We use differences-in-differences and regression discontinuity and the large administrative dataset Labour Market Panel (*Arbeidsmarktpanel*) of Statistics Netherlands (2015) to estimate the causal effects of the WIJ reform. The Labour Market Panel tracks 1.2 million individuals over the

period 1999–2012 and contains a large set of labour market outcomes and a large number of individual and household characteristics. We consider the treatment effect for three different age groups, 20–22, 23–24 and 25–26 years of age, while our base control group consists of individuals 27–28 years of age. A key challenge in the empirical analysis is to control for potentially different time effects between the treatment and control groups, due to e.g. differential trends or different business cycle responses (Bell and Blanchflower 2011). In our preferred specification we therefore include demographic controls, a full set of unemployment-age dummies, age-specific trends and control-specific trends. We also present an extensive placebo analysis, including placebo treatment dummies for the years just before the reform and placebo treatment dummies for the earlier economic downturn in 2002–2004.

Our main findings are as follows. First, we find that the reform had a statistically significant large negative effect on the number of young NEETs claiming welfare benefits of –24% in the age group 25–26 years of age, the only treatment group that passes all the placebo tests. Second, the reform had only a small and statistically insignificant effect on the total number of NEETs. The reform pushed young individuals out of welfare, but did not increase the number of young individuals in employment or education. Third, our analysis shows that controlling for differential trends in a differences-in-differences analysis may be important for some outcome variables, like the enrollment rate in education, when studying a reform that targets young individuals and using somewhat older individuals as a control group. Furthermore, we show that standard pre-reform placebo reform dummies may be insufficient to test for common time effects, as business cycle responses may differ still.

Our paper relates to a number of studies that consider the effects of mandatory activation programs for young individuals.[1] Blundell et al. (2004) use area-based piloting and age-related eligibility rules to identify

[1]Our analysis also contributes to a broader literature on the effect of training programs targeted at the youth. The overall success rate of programs on employment and wage earnings is found to be small, see e.g. a recent meta-analysis by Kluve et al. (2016). According to Kluve et al. (2016), one of the key determinants of success is that programs consist of a comprehensive set of interventions, like training, counseling, mediation and private sector incentives.

the employment impact of a mandatory job search programme in the UK, the New Deal for Young People. They find that the program increased the probability to find employment by about five percentage points. Dahlberg et al. (2009) and Persson and Vikman (2014) analyze respectively the effect on the number of welfare recipients and entry and exit effects of a welfare reform in Sweden where city districts in Stockholm implemented mandatory activation programs at different rates. They find that the reform reduced welfare participation and increased employment rates of younger individuals, with the main effect operating through the entry rate into welfare. Hernæs et al. (2016) exploit a geographically differentiated implementation of conditionality of welfare benefits for Norwegian youth and find that stricter conditionality reduces welfare claims and increases high school completion rates. These analyses suggest that the combination of welfare conditionality and welfare-to-work programs can reduce the number of NEETs and promote employment and enrollment in education among young individuals.

We make the following contributions to this literature. First, we show that stricter conditionality combined with welfare-to-work programs does not always increase employment or enrollment in education. Indeed, we find that for the WIJ reform there was no effect on the number of NEETs. The main effect of the reform was simply to push young individuals out of welfare. We argue that this is likely to be due to the state of the business cycle, as the reform clashed head on with the start of the Great Recession, during which it was hard for people, in particular young individuals, to find a job. Second, we consider all potential outcome states, not only NEETs on welfare but also NEETs not on welfare, and the enrollment in education next to employment (and we also consider the effect on entry and exit rates). Indeed, our analysis for young individuals in the treated group shows that when looking at the effects on the employment rate, it is important to study changes in the enrollment rate in education as well. Third, we use an exceptionally large and long data set, that allows us to study and account for differential trends and test for differences in business cycle responses across age groups in an earlier economic downturn. The latter turns out to be crucial, as standard pre-reform

placebo treatment dummies may fail to reject the common time effects assumption.

The outline of the paper is as follows. Section 2.2 describes the institutional setting and the main features of the reform. Section 2.3 discusses the empirical methodology. Section 2.4 discusses the dataset and gives descriptive statistics. In Section 2.5 we then present graphical evidence, the estimation results and a large number of robustness checks. Section 2.6 discusses our findings and concludes. An appendix contains supplementary material.

Institutional setting and the reform 2.2

Young NEETs are a policy concern in all OECD countries. However, there is considerable variation in the share of NEETs among the young across OECD countries, and the extent to which the share of NEETs has changed during the Great Recession, see Table 2.1. Panel A gives indicators for individuals 20–24 years of age, and panel B gives indicators for individuals 25–29 years of age. The Netherlands has one of the lowest NEETs shares among OECD countries, in 2015 only 8.9% of 20–24 year olds in the Netherlands were NEETs.[2] Over the period 2005–2015, there has been a moderate rise in the share of NEETs in the Netherlands. The low share of NEETs in the Netherlands is mirrored by the high share of 20–24 year olds that are in education, as well as by the high share of 20–24 year olds that are employed, whereas the share of unemployed 20–24 year olds is relatively low, see again Table 2.1.[3] Turning to individuals 25–29 years of age, the Netherlands also scores relatively favorable in terms of a low NEETs rate, a high enrollment rate in education, a high employment-to-population rate and a relatively low unemployment rate.

[2]In 2015, the only country in the OECD with a lower share of NEETs was Iceland (6.6%). Below we will compare our results to studies for e.g. Norway, Sweden and the UK. In this respect it is relevant to note that Norway had a NEETs rate that was only slightly higher than in the Netherlands, the NEETs rate in Sweden was somewhat higher still, whereas the NEETs rate in the UK was considerably higher (almost double the NEETs rate in the Netherlands for individuals 20–24 years of age).

[3]The shares of individuals in education and individuals in employment add up to more than 100% because individuals in education can be employed, and employed individuals can also be in education.

Table 2.1: An international perspective on NEETs

Year	NEETs-to-population rate 2005	NEETs-to-population rate 2015	Education-to-population rate 2015	Employment-to-population rate 2015	Unemployment-to-population rate 2015
Panel A: Individuals 20–24 years of age					
Continental Europe					
Netherlands	8.1	8.8	57.7	69.4	6.7
Belgium	18.3	15.8	45.3	42.0	9.8
France	17.8	20.9	44.4	46.2	14.2
Germany	18.7	9.3	54.4	64.3	5.1
Scandinavia					
Denmark	8.3	12.4	59.1	63.4	7.6
Finland	13.0	18.3	47.8	52.5	14.7
Norway	9.6	10.2	42.1	66.6	5.8
Sweden	13.4	11.8	46.0	56.4	13.0
Anglo-Saxon countries					
Australia	11.6	13.1	44.5	71.5	7.3
Canada	14.4	14.4	41.6	64.7	8.3
United Kingdom	16.8	15.6	33.8	65.3	8.2
Unites States	15.5	15.8	38.5	64.1	6.5
OECD average	17.3	16.9	44.8	53.4	9.9
Panel B: Individuals 25–29 years of age					
Continental Europe					
Netherlands	10.7	12.1	20.8	82.2	5.7
Belgium	17.7	20.2	8.5	74.4	11.0
France	19.8	23.4	8.5	72.1	12.5
Germany	21.2	12.8	20.8	77.9	5.0
Scandinavia					
Denmark	11.6	15.2	30.4	73.8	7.9
Finland	14.0	18.2	26.9	70.2	10.1
Norway	12.3	14.0	14.6	77.1	5.2
Sweden	10.0	10.8	25.1	75.6	8.7
Anglo-Saxon countries					
Australia	15.4	15.5	19.1	78.5	4.4
Canada	15.7	17.6	12.8	76.7	7.0
United Kingdom	16.6	16.2	12.7	79.4	5.0
Unites States	18.1	20.0	13.2	75.4	4.7
OECD average	19.0	19.3	16.3	73.5	9.4

Notes: Using data from OECD (2016a), OECD (2016b) and OECD (2016c). The education-to-population rate is the enrollment in education divided by the relevant age population. The unemployment-to-population rate is calculated as the unemployment rate multiplied by the labour force participation rate.

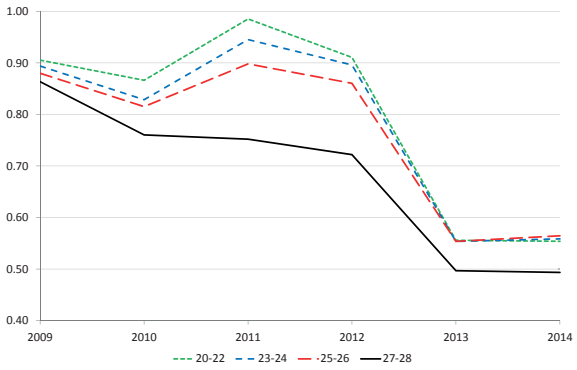
The reform we consider targets young individuals on welfare benefits. In the Netherlands, welfare benefits form a safety net that is provided by municipalities to support unemployed individuals who are not, or are no longer, entitled to other types of social insurance benefits like unemployment insurance. The vast majority of new welfare recipients consists of individuals with insufficient work history for entitlement to unemployment insurance.[4] Welfare benefits are means-tested and assets-tested.[5] The level of welfare benefits differs across household types and age groups. In 2008, before the start of the WIJ reform, welfare benefits ranged from 220 euro per month for singles of 18–20 years of age to 1,320 euros per month for couples with children (Ministry of Social Affairs and Employment 2008).

The Work Investment Act for Young Individuals (*Wet Investeren in Jongeren*, WIJ) came into force in October 2009 as a consequence of increased policy attention for NEETs and welfare dependency. The reform was designed before the start of the Great Recession, but the implementation was after the start of the Great Recession (Recession started in September 2008). Similar to e.g. the New Deal for Young People in the UK, the aim of the WIJ was both to activate young welfare recipients and to foster their human capital formation. The WIJ stipulated that for individuals below the age of 27, entitlement to welfare benefits became conditional on participation in a mandatory activation program. These mandatory programs were defined as 'work-learn offers' and consisted of public employment programs, apprenticeships and internships. Any wage earnings in these programs were supplemented up to the level of welfare benefits. As Figure 2.1 shows, the WIJ increased the coverage rate of activation programs for young welfare recipients in our respective treatment groups (individuals 20–22, 23–24 and 25–26 years of age, discussed below) from around 85% in January 2010 to around 95% in 2011 (on average). Hence, the reform restricted the discretionary room of caseworkers in administering welfare benefits and work-learn offers.

[4] In 2014, only 22% of all new welfare recipients consisted of unemployed workers who exhausted their unemployment insurance benefits (UWV 2014).

[5] For single individuals, net worth should not exceed 5,765 euro. For households with more persons, net worth should not exceed 11,895 euro.

Figure 2.1: Participation rate of individuals on welfare in activation programs



Notes: Statistics Netherlands (personal communication). This figure gives the share of individuals on welfare participating in an activation program in the respective treatment groups 20–22, 23–24 and 25–26 years of age and the control group 27–28 years of age.

The WIJ applied to all new entrants into welfare from October 2009 onward. However, as the enactment of the WIJ implied a substantial increase in the workload for municipalities, municipalities were given 9 additional months – until July 2010 – to increase coverage of the WIJ to 100% of the pre-existing stock of welfare recipients. Figure 2.1 suggests that in the end it took until January 2011 for the WIJ to achieve its largest coverage.

To get a better understanding of the implementation of the WIJ reform at the municipality level, we interviewed policymakers and caseworkers in the city of Amsterdam that were involved in the design and implementation of the WIJ. In Amsterdam, the majority of work-learn offers were provided by retail companies, local industries and welfare-to-work organizations. The respondents in our interviews stressed that some aspects of the WIJ were already common practice in Amsterdam. That is, apprenticeships, internships and public employment programs were already provided for individuals up to 23 years of age (Board of Amsterdam 2009). In effect, in Amsterdam the WIJ reform thus implied the extension of these programs to individuals with 24–26 years of age, together with the

imposition of welfare conditionality for all young individuals below the age of 27. In our empirical analysis, we focus on the group of individuals 25–26 years of age, because they are the most comparable to the control group of 27–28 years of age (as indicated by e.g. placebo pre-reform dummies), but we also consider the effects for younger age groups.

A previous social security reform implemented in the early 2000s already went in the direction of improving opportunities for youth who enter the labour market while tightening up their obligations to find work or improve their employability (OECD 2008; OECD 2010).[6] However, this reform was much smaller than the WIJ-reform and the obligations were enforced much less strictly, which also follows from Figure 2.1. The huge effect of the WIJ-reform on exit rates from welfare, which we will present in the results section, provides evidence that the WIJ-reform had a substantial additional effect on welfare conditionality on top of this previous reform.

Finally, next to the WIJ reform, there were two other reforms relevant for our analysis that took place in January 2012. First, the government replaced the mandatory acceptance of work-learn offers with 'work-first' arrangements. Specifically, the government introduced an initial one-month 'job-search period' during which individuals younger than 27 years of age did not receive welfare benefits. This may explain the small drop in the participation rate in activation programs in January 2012, and the larger drop in January 2013, see Figure 2.1. Second, adult children living at home were no longer eligible to welfare benefits when they lived in a household in which first-degree relatives had sufficient income or assets (the 'household-income test'). To study to what extent these additional reforms may affect our results, we also present treatment effects by individual treatment years, the treatment effect on the probability of being an adult child living at home and the treatment effects for the subgroup of adult children living at home.

[6]This reform was called "Chain for Work and Income" which was established in 2002 with the SUWI Law (Law on implementation structure for work and income)

2.3 Empirical methodology

We use differences-in-differences (DD) and regression discontinuity (RD) to estimate the effects of the WIJ reform on a number of outcome variables. Our preferred method is DD because this gives us an average treatment effect for a larger group than the local average treatment effect of regression discontinuity. Indeed, we are also interested in the treatment effect for individuals further away from the cutoff (20–24 years of age). Furthermore, we may be concerned that welfare recipients or their caseworkers might anticipate the 27th birthday of the welfare recipient, when participation in work-learn arrangements is no longer obligatory, or that participation in work-learn arrangements may continue after the 27th birthday of the welfare recipient.[7]

2.3.1 Differences-in-differences

The reform was targeted at individuals up to 27 years of age and started in October 2009. A key assumption of the DD approach is common time effects for the treatment and control group (in the absence of the reform). In this context, our preferred treatment group consists of individuals 25–26 years of age and a control group consisting of individuals 27–28 years of age. Our baseline model also considers the treatment effects for the treatment groups consisting of individuals 20–22 and 23–24 years of age, but we will show that changes in the enrollment in education complicate the analysis for these groups (young individuals in the treated group have a choice of staying in education, while this is hardly a choice for individuals in the older control group). The age variable is measured on the 1st of October of each year, and the outcome variables are averages for October each year.

As outcome variables we consider (i) the 'participation rate' in NEETs, defined as not being in employment or education[8], (ii) the participation

[7] A robustness analysis where we leave out observations close to the threshold using a so-called donut-RD design yields similar results as the base RD specification with these observations included though.

[8] Similar to the OECD, we do not observe participation in training programs in our dataset.

rate in NEETs on welfare, (iii) the participation rate in NEETs not on welfare, (iv) the employment rate, and (v) the enrollment rate in education. The participation rate in NEETs, the employment rate and the enrollment rate in education sum to one, but we analyse them independently.

For all these outcome variables we estimate a linear probability model (Angrist and Pischke 2009). Let y_{iat} be a dummy variable that is 1 if individual i in age group a is 'participating', 'employed' or 'enrolled' in period t. In our preferred DD specification, we regress the outcome variable on a set of year fixed effects (α_t), age fixed effects (β_a), age-specific trends (with coefficients γ_a), an interaction term between age and the unemployment rate (u_t) with age-specific coefficients ϕ_a, a set of demographic controls X_i (gender and ethnicity) with coefficients μ_x, a set of demographic-control-specific trends with coefficients ψ_x, a treatment effect (DD_{gt}) for individuals in the treatment group g in a given year t in the post-reform period with coefficient $\delta_{g,t}$, and an error term ϵ_{iat}:

$$y_{iat} = \alpha_t + \beta_a + \gamma_a t + \phi_a u_t + X_i' \mu_x + X_{it}' \psi_x t + \delta_{g,t} \mathrm{DD}_{gt} + \epsilon_{iat}. \quad (2.1)$$

We are primarily interested in the treatment coefficients $\delta_{g,t}$. We include an interaction term between age and the unemployment rate to allow for different business cycle responses across age groups (Bell and Blanchflower 2011). Furthermore, we include age-specific and demographic-control-specific trends to allow for trend differences.[9]

In an extension to this model, we add placebo treatment dummies for the pre-reform years 2008 and 2009. The coefficients on these placebo treatment dummies are informative about potential remaining differential time effects between the treatment and control groups, for example because of changes in group specific trends or differences in business cycle responses not captured by the age-specific unemployment terms, and also about potential anticipation effects of the reform.

Finally, to allow for correlation in the error terms at a higher level than the individual and over time, we use cluster-robust standard errors

[9] We have 10 years of pre-reform data to estimate the coefficients on these trends.

(Bertrand et al. 2004; Donald and Lang 2007). We cluster the standard errors by month of birth. This results in 264 clusters in our base DD specification, which is deemed sufficiently large by Angrist and Pischke (2009) to use the large-sample properties of the estimator.

2.3.2 Regression discontinuity

In the RD approach we estimate the impact of the policy by comparing differences in the outcome variables for individuals that are just younger than the cutoff of 27 years that determines treatment by the WIJ reform with individuals that are just older than this cutoff. The advantage of using an RD approach is that the treatment and control group are likely to share the same time-effects, however we only obtain a local average treatment effect and we need to assume that in the absence of the reform the outcome variables are a smooth function in age. Related to the last point, we assume that individuals and caseworkers did not anticipate the end of the WIJ obligations by already lowering their effort preceding the age cutoff of 27 years.[10]

Similar to our DD setup, we use linear probability models in our RD setup. In our preferred RD specification, we regress participation status y_{iat} on a year fixed effect (β_t), age in months a_{it} (recentered[11], with coefficient β_a), an interaction term that captures the additional effect of age when the person is younger than the cutoff a' (with coefficient $\beta_{a<a'}$) to allow for a different slope to the left of the discontinuity, a treatment effect if the age of the person is below 27 (with coefficient β_{RD}) capturing the discontinuity, individual characteristics X_i and an error term ϵ_{it}:[12]

$$y_{it} = \beta_t + \beta_a a_{it} + \beta_{a<a'} 1(a_{it} < a') a_{it} + \beta_{RD} \mathrm{RD}_{it} + X_i' \mu_x + \epsilon_{it}. \qquad (2.2)$$

[10] We will address this issue by also presenting 'donut' RD regressions (Barreca et al. 2011) that exclude months around the age cut-off of 27 years.

[11] Age is recentered so that individuals that have turned 27 in September have a value of 1, they are the first age group to the 'right' of the discontinuity.

[12] We also estimated models with a quadratic term in age, and with a different quadratic term in age to the left of the threshold. The estimated discontinuities are similar to the results of our preferred specification (available on request).

Our primary interest is in coefficient β_{RD}, which measures the size of the discontinuity in the relationship between the outcome variable and age due to the policy. For an accurate measurement of the discontinuity it is important to get a precise estimate of the relation between age and the outcome variables around the discontinuity. In the RD analysis we therefore use month of birth relative to the discontinuity as the running variable.[13] Since the identification in the RD approach comes from differences in month of birth, we cluster standard errors by month of birth, where we put persons born in the same month but in different years in different clusters. This generates 72 clusters in the base specification, again deemed sufficiently large to use the large-sample properties of the estimator.

In an extension of the RD analysis we consider a 'difference-in-discontinuity' setup, using both the pre- and post-reform data – see e.g. the analysis in Bettendorf et al. (2014). This specification may be relevant if the age cutoff of 27 years of age cannot be uniquely linked to the WIJ reform but that other pre-existing policies use a similar cutoff. To test for this possibility, we use observations both before and after the policy reform to control for a potential discontinuity before the reform. In this specification we include a treatment effect γ_{PRD} that captures the pre-reform discontinuity, and an additional treatment effect for the post-reform discontinuity relative to the pre-reform discontinuity γ_{DRD}. In the specification below, the discontinuity before the reform equals γ_{PRD} and the discontinuity after the reform equals $\gamma_{PRD} + \gamma_{DRD}$:

$$\begin{aligned} y_{it} &= \gamma_t + \gamma_a a_{it} + \gamma_{a^2} (a_{it})^2 + \gamma_{a<a'} 1(a_{it} < a') a_{it} \\ &\quad + \gamma_{PRD} \text{PRD}_{it} + \gamma_{DRD} \text{DRD}_{it} + X_i' \nu + v_{it}, \end{aligned} \tag{2.3}$$

where for the same reasons as in the RD analysis we use age measured in months relative to the discontinuity as the running variable, and we cluster the standard errors by month of birth.

[13] The exact date of birth during the month is not available in our data set.

2.4 Data

We use data from the Labour Market Panel (*Arbeidsmarktpanel*) of Statistics Netherlands (2015). The Labour Market Panel is a large and rich household panel data set, tracking 1.2 million individuals over the period 1999–2012.[14] We use the years 1999–2009 as the pre-reform years, and 2010–2012 as the treatment years.

We consider three treatment groups: i) individuals 25–26 years of age, ii) individuals 23–24 years of age and iii) individuals 20-22 years age. Our main control group consists of individuals 27–28 years of age. As we will see below, the treatment group of individuals 25–26 years of age is the most similar to our main control group in terms of demographic characteristics, levels of the outcome variables and business cycle responses. The other two treatment groups with younger individuals are more likely to differ from the main control group, and hence we have to be extra careful when interpreting the estimated treatment effects for these younger treatment groups.

The outcome variables are based on the social-economic classification (SEC) variable in the Labour Market Panel. The SEC variable classifies individuals according to their main source of income, where individuals in education are always classified as being in the state of education (even if their wage income is larger than their study grant) and individuals with profit income are always classified as being self-employed (even if their wage income exceeds their profit income). According to the SEC individuals can be in the following states: (1) employee, (2) owner of closely-held company, (3) self-employed, (4) another type of employment, (5) on unemployment insurance, (6) on welfare benefits, (7) on disability or sickness benefits, (8) on retirement benefits, (9) on other social insurance, (10) in education with income, (11) in education without income, (12) without income. We count individuals in states (1)-(4) as employed, in states (10)-(11) as in education, and in states (5)-(9) and (12) as NEETs. Within the state of NEETs we count individuals in state (6) as NEETs on welfare and individuals in states (5), (7)-(9) and (12) as NEETs not

[14] For a limited number of variables, not used in this study, the data set also contains data for 2013.

Table 2.2: Descriptive statistics treatment groups and control group

	Treatment Group (1999–2009)		Differences (treatment–control)		Normalized differences (treatment–control)	
	Mean	SD	1999–2009	2010–2012	1999–2009	2010–2012
Panel A: Treatment group 25–26						
Explanatory variables						
Female	0.506	0.500	−0.006	0.000	−0.009	0,000
Non-Western immigrant	0.102	0.302	0.001	−0.004	0.003	−0.008
Western immigrant	0.072	0.258	−0.003	−0.002	−0.007	−0.005
Dependent variables						
NEETS rate on welfare	0.025	0.155	−0.001	−0.004		
NEETs rate not on welfare	0.088	0.283	−0.011	0.005		
Total NEETs rate	0.112	0.316	−0.012	0.001		
Employment rate	0.818	0.386	−0.036	−0.065		
Enrollment rate education	0.069	0.254	0.048	0.063		
Panel B: Treatment group 23–24						
Explanatory variables						
Female	0.499	0.500	−0.013	−0.002	−0.018	−0.002
Non-Western immigrant	0.101	0.302	0.001	−0.004	0.002	−0.009
Western immigrant	0.069	0.253	−0.005	−0.004	−0.015	−0.010
Dependent variables						
NEETS rate on welfare	0.022	0.146	−0.004	−0.007		
NEETs rate not on welfare	0.078	0.268	−0.021	0.004		
Total NEETs rate	0.099	0.299	−0.025	−0.003		
Employment rate	0.714	0.452	−0.140	−0.212		
Enrollment rate education	0.187	0.390	0.165	0.215		
Panel C: Treatment group 20–22						
Explanatory variables						
Female	0.492	0.500	−0.020	−0.004	−0.029	−0.005
Non-Western immigrant	0.101	0.301	0.001	0.007	0.001	0.016
Western immigrant	0.067	0.249	−0.008	−0.006	−0.021	−0.017
Dependent variables						
NEETS rate on welfare	0.014	0.118	−0.012	−0.013		
NEETs rate not on welfare	0.063	0.243	−0.035	−0.012		
Total NEETs rate	0.077	0.267	−0.047	−0.025		
Employment rate	0.491	0.500	−0.363	−0.459		
Enrollment rate education	0.432	0.495	0.410	0.484		

Notes: Own calculations using the Labour Market Panel (Statistics Netherlands). Treatment groups: individuals 20–22, 23–24 and 25–26 years of age. Control group: individuals 27–28 years of age. Observations 1999-2012: treatment group 20–22: 582,364, treatment group 23–24: 375,182, treatment group 25–26: 376,083, control group 27-28: 391,627. Normalized differences are mean differences divided by the square root of the sum of the variances (see Imbens and Wooldridge 2009).

on welfare. As demographic control variables we include gender and ethnicity (native/Western immigrant/non-Western immigrant).

Table 2.2 gives descriptive statistics for the respective treatment groups, along with the differences and normalized differences (for the demographic control variables) with the control group in the pre- and the post-reform period. The differences in the demographic control variables gender and ethnicity are small for all treatment groups, in particular for the oldest treatment group with individuals 25–26 years of age. The same is true for the so-called normalized differences (mean differences divided by the square root of the sum of variances). Imbens and Wooldridge (2009) argue that these normalized differences are an informative way to check if the treatment and control group have sufficient overlap in the covariates, and as a rule of thumb they suggest that when the normalized difference exceeds a value of .25, linear regression becomes sensitive to the specification. The normalized differences for gender and ethnicity stay well below .25. Furthermore, the differences in the demographic control variables hardly change from the pre- to the post-reform period. Hence, there is no indication of differential changes in the composition of the treatment and control group.[15]

Table 2.2 also gives descriptive statistics for the outcome variables. The NEETs rate on welfare in the oldest treatment group is very similar to the control group in the pre-reform period, but drops relative to the control group in the post-reform period, suggesting a negative treatment effect on this outcome variable for this treatment group. The pre-reform differences in the NEETs rate on welfare are larger for the younger treatment groups, in particular for the youngest treatment group. Also for these groups the difference becomes larger in the post-reform period, suggesting a negative treatment effect for the NEETs rate on welfare benefits for these groups. The NEETs rate not on welfare is also quite similar for the older treatment group and the control group before the reform, though somewhat lower for the treatment group than the control group, and lower still for the younger treatment groups. After the reform, the NEETs rate not on welfare move closer to the control group, suggesting a positive treatment effect on this outcome variable. The total NEETs rate again is quite similar for the oldest treatment group and the control group before the reform,

[15]Figure A.2.1 in the Supplementary material plots the shares of the demographic control variables for the treatment and control group over time.

though again somewhat lower for this treatment group, and lower still for the younger treatment groups. After the reform, the total NEETs rate of the treatment groups move closer to the control group, which suggests a positive treatment effect for the total NEETs rate. The employment rate is lower for the treatment groups than the control group in the pre-reform period, and the difference becomes more negative in the post-reform period, suggesting a counterintuitive negative treatment effect on the employment rate. Finally, the enrollment rate in education shows the mirror image of the employment rate. The enrollment is higher in the treatment groups than in the control group in the pre-reform period, and this difference also becomes bigger in the post-reform period, suggesting a positive treatment effect on the enrollment in education. However, these simple treatment effects do not account for differential trends between the treatment and control groups. These differential trends will turn out to be important for some outcome variables, in particular for the younger treatment groups, in the empirical analysis below.

Results 2.5

Differences-in-differences 2.5.1

We first present graphical evidence on the treatment effects of the reform on the outcome variables, see Figure 2.2. The solid black line denotes the control group of individuals 27–28 years of age, whereas the red, blue and green lines denote the treatment groups of 25–26, 23–24 and 20-22 years of age, respectively. The dotted lines denote the difference between the respective treatment groups and the control group. Figure 2.2(a) shows that the NEETs rate on welfare moves very much in tandem for the treatment groups 23–24 and 25–26 years of age and the control group in the pre-reform period, and there is a clear negative treatment effect in 2010, which subsequently becomes smaller in 2011 and then remains roughly constant in 2012. For the youngest treatment group 20–22 years of age, the NEETs rate on welfare also shows a quite similar pattern to the control group prior to the reform, but there is no apparent treatment

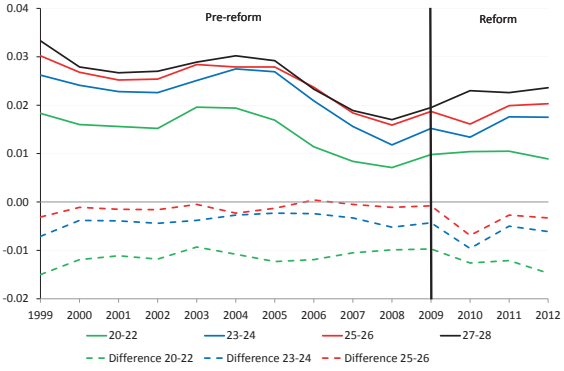
dip in 2010 (although the control group moves 'up', presumably due to the Great Recession, and the treatment group 20–22 does not) nor is there an apparent recovery in the NEETs rate in 2011 or 2012 for this treatment group relative to the control group. Figure 2.2(b)-(e) make clear that there are apparent trend differences between the treatment and control group for the other outcome variables, also for the treatment group 25–26 years of age. The main culprit here is the difference in trends in the enrollment in education by age groups, see Figure 2.2(e). Hence, accounting for differential trends will be important to isolate the treatment effect of the reform for these outcome variables.

Table 2.3 gives the base differences-in-differences regression results. In all specifications we use a single treatment dummy per treatment group for the post-reform years 2010–2012.[16] First consider the results for the treatment group 25–26 years of age in Panel A, the group that is the most similar to the control group in observable characteristics and means of the outcome variables. Column (1) shows the results of the basic DD setup, where we only include year dummies, a group dummy for each individual age group and a treatment dummy for the age group 25–26. This setup suggests a negative and statistically significant treatment effect of –0.30 percentage points on the NEETs rate on welfare. In column (2) we add demographic controls. Consistent with the observation that there were negligible compositional changes in these characteristics, this hardly affects the estimated treatment effect. In column (3) we add interaction terms for age and the national unemployment rate, to allow for a potential different business-cycle response by age. Again, this does not substantially affect the estimated treatment effect for the NEETs rate on welfare. In column (4) we then also allow for age-specific trends, and this leads to a somewhat larger treatment effect in absolute terms (more negative) of –0.44 percentage points. Finally, column (5), our richest and preferred specification, shows that the inclusion of demographic-control specific trends gives a treatment effect that is very similar to the treatment effect in column (4). The treatment effect in column (5) of –0.46 percentage points also suggests a sizable negative treatment effect on the NEETs rate on

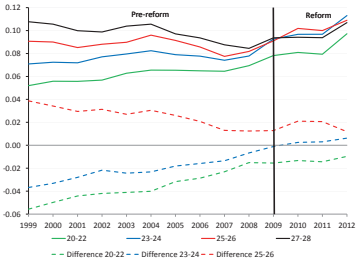
[16] Full regression results can be found in Table A.2.1 in the Supplementary material.

Figure 2.2: Means outcome variables treatment and control groups: 1999–2012

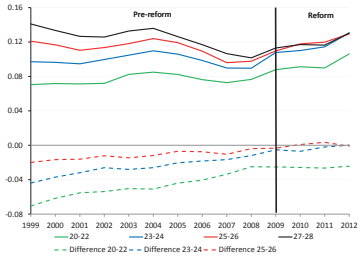
(a) NEETs rate on welfare



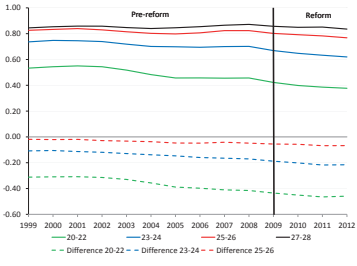
(b) NEETs rate not on welfare



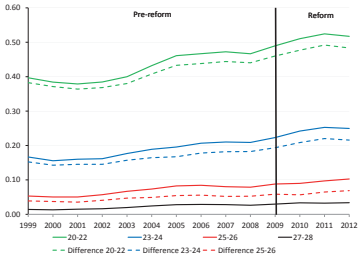
(c) Total NEETs rate



(d) Employment rate



(e) Enrollment rate in education



Notes: Own calculations using the Labour Market Panel (Statistics Netherlands). The solid black line denotes the control group of individuals 27–28 years of age, the red lines denote the treatment group 25–26 years of age, the blue lines denote the treatment group 23–24 years of age and the green lines denote the treatment group 20–22 years of age. The dotted lines denote the difference between the treatment group and the control group. NEETs rates are individuals not in employment or education relative to the relevant age population, employment rates are individuals in employment relative to the relevant age population and enrollment rates in education are individuals in education relative to the relevant age population.

welfare of –24% relative to a baseline of 1.9 percentage points in the last pre-reform year (2009).

As noted earlier, accounting for trend differences between the treatment and control group is important for the other outcome variables in Table 2.3. In particular, we find rather similar treatment effects for the specification in columns (1)-(3)[17], but allowing for differential trends in age in column (4) has an important impact on the treatment effects on the employment rate and the enrollment rate in education.[18] Our preferred specification is in column (5), with results suggesting a positive and statistically significant treatment effect on the NEETs rate not on welfare, but no effect on the total NEETs rate. Also, there appears to be no effect on the employment rate and the enrollment rate in education. Hence, the reform seems to have pushed or kept the treated individuals in this age group out of welfare without higher employment and/or enrollment in education. This is at odds with previous studies on related reforms, as we will discuss more extensively in the final section.

Panels B and C give the results for the younger age groups. We focus on our preferred specification controlling for differential trends in column (5). Similar to the age group of 25–26 years of age, negative and statistically significant treatments effects on the NEETs rate on welfare of about –0.4 percentage points are found for the age groups of 23–24 and 20–22 years of age. We find no effect on the overall NEETs rate for those aged 23–24, but a large statistically significant decrease for those aged 20–22. For the individuals aged 23–24, the suggested treatment effect on the enrollment rate in education is positive and the treatment effect on the employment rate is negative. An optimistic interpretation of this result is that this treatment group was stimulated to remain in (or return to) education following the WIJ reform. As we will show in our robustness tests, however, this finding should be interpreted with the appropriate care.

Turning to the placebo analyses, first consider the results in Table 2.4. In this table we take specification (5) of Table 2.3 and add placebo

[17] Although the 'treatment effect' for the employment rate and enrollment rate in education do vary in absolute size over the different specifications in columns (1)-(3).

[18] The inclusion of demographic-control specific trends in column (5) again hardly affects the results when compared to column (4).

Table 2.3: Differences-in-differences: base regression results

	(1)	(2)	(3)	(4)	(5)
Panel A: Treatment group 25–26					
NEETs rate on welfare	−0.0030***	−0.0028***	−0.0032***	−0.0044***	−0.0046***
	(0.0010)	(0.0010)	(0.0011)	(0.0014)	(0.0014)
NEETs rate not on welfare	0.0159***	0.0161***	0.0137***	0.0061***	0.0060***
	(0.0017)	(0.0016)	(0.0019)	(0.0023)	(0.0023)
NEETs rate	0.0129***	0.0133***	0.0105***	0.0017	0.0014
	(0.0019)	(0.0019)	(0.0020)	(0.0027)	(0.0028)
Employment rate	−0.0298***	−0.0303***	−0.0213***	−0.0027	−0.0027
	(0.0032)	(0.0031)	(0.0035)	(0.0036)	(0.0036)
Enrollment rate in education	0.0169***	0.0170***	0.0108***	0.0010	0.0013
	(0.0027)	(0.0027)	(0.0030)	(0.0032)	(0.0032)
Panel B: Treatment group 23–24					
NEETs rate on welfare	−0.0028***	−0.0027***	−0.0037***	−0.0039***	−0.0040***
	(0.0011)	(0.0010)	(0.0011)	(0.0015)	(0.0015)
NEETs rate not on welfare	0.0248***	0.0248***	0.0209***	0.0022	0.0022
	(0.0020)	(0.0019)	(0.0020)	(0.0026)	(0.0026)
NEETs rate	0.0220***	0.0220***	0.0172***	−0.0016	−0.0017
	(0.0023)	(0.0022)	(0.0023)	(0.0030)	(0.0030)
Employment rate	−0.0728***	−0.0730***	−0.0598***	−0.0145***	−0.0145***
	(0.0041)	(0.0040)	(0.0043)	(0.0047)	(0.0047)
Enrollment rate in education	0.0508***	0.0509***	0.0426***	0.0161***	0.0163***
	(0.0036)	(0.0036)	(0.0040)	(0.0049)	(0.0048)
Panel C: Treatment group 20–22					
NEETs rate on welfare	−0.0017*	−0.0024**	−0.0025**	−0.0043***	−0.0040***
	(0.0010)	(0.0010)	(0.0011)	(0.0014)	(0.0014)
NEETs rate not on welfare	0.0232***	0.0219***	0.0175***	−0.0061***	−0.0057***
	(0.0018)	(0.0017)	(0.0019)	(0.0021)	(0.0021)
NEETs rate	0.0215***	0.0195***	0.0151***	−0.0104***	−0.0097***
	(0.0022)	(0.0020)	(0.0023)	(0.0027)	(0.0027)
Employment rate	−0.0968***	−0.0946***	−0.0720***	0.0030	0.0027
	(0.0046)	(0.0045)	(0.0051)	(0.0054)	(0.0054)
Enrollment rate in education	0.0753***	0.0751***	0.0570***	0.0075	0.0070
	(0.0044)	(0.0044)	(0.0051)	(0.0055)	(0.0056)
Demographic controls	NO	YES	YES	YES	YES
Unemployment-age dummies	NO	NO	YES	YES	YES
Age-specific trends	NO	NO	NO	YES	YES
Control-specific trends	NO	NO	NO	NO	YES
Observations	1,725,256	1,725,256	1,725,256	1,725,256	1,725,256
Clusters	264	264	264	264	264

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 1999–2012. Treatment groups: individuals 20–22, 23–24 and 25–26 years of age. Control group: individuals 27–28 years of age. Cluster-robust standard errors in parentheses, clustered by month of birth (264 clusters), All specifications include age and year fixed effects. See Table A.2.1 in the Supplementary material for the full regression results.

Table 2.4: Differences-in-differences: pre-reform placebo's and annual treatment effects

	(1) NEETs rate on welfare	(2) NEETs rate not on welfare	(3) Total NEETs rate	(4) Employment rate	(5) Enrollment rate in education
Panel A: Treatment group 25–26					
Placebo 2008	−0.0023	0.0046	0.0022	−0.0037	0.0014
	(0.0022)	(0.0038)	(0.0044)	(0.0053)	(0.0044)
Placebo 2009	−0.0022	0.0027	0.0005	−0.0032	0.0027
	(0.0023)	(0.0039)	(0.0048)	(0.0056)	(0.0048)
Treatment 2010	−0.0086***	0.0114***	0.0028	−0.0019	−0.0009
	(0.0021)	(0.0036)	(0.0045)	(0.0057)	(0.0047)
Treatment 2011	−0.0045*	0.0097**	0.0051	−0.0102	0.0050
	(0.0024)	(0.0038)	(0.0047)	(0.0062)	(0.0051)
Treatment 2012	−0.0052**	0.0039	−0.0013	−0.0038	0.0052
	(0.0022)	(0.0040)	(0.0047)	(0.0059)	(0.0054)
Panel B: Treatment group 23–24					
Placebo 2008	−0.0034**	0.0006	−0.0029	−0.0030	0.0058
	(0.0017)	(0.0031)	(0.0035)	(0.0051)	(0.0052)
Placebo 2009	−0.0026	0.0044	0.0018	−0.0109	0.0090
	(0.0020)	(0.0037)	(0.0043)	(0.0070)	(0.0073)
Treatment 2010	−0.0082***	0.0056	−0.0026	−0.0171**	0.0197**
	(0.0024)	(0.0035)	(0.0046)	(0.0076)	(0.0078)
Treatment 2011	−0.0041	0.0030	−0.0011	−0.0273***	0.0284***
	(0.0027)	(0.0041)	(0.0050)	(0.0068)	(0.0077)
Treatment 2012	−0.0059**	0.0038	−0.0021	−0.0154**	0.0175**
	(0.0026)	(0.0042)	(0.0049)	(0.0076)	(0.0076)
Panel C: Treatment group 20–22					
Placebo 2008	−0.0003	0.0015	0.0012	−0.0035	0.0023
	(0.0015)	(0.0026)	(0.0031)	(0.0050)	(0.0051)
Placebo 2009	−0.0004	−0.0019	−0.0023	−0.0077	0.0099
	(0.0017)	(0.0030)	(0.0037)	(0.0065)	(0.0063)
Treatment 2010	−0.0035*	−0.0032	−0.0067*	−0.0065	0.0132*
	(0.0019)	(0.0030)	(0.0037)	(0.0077)	(0.0076)
Treatment 2011	−0.0034	−0.0087***	−0.0121***	−0.0080	0.0201**
	(0.0022)	(0.0031)	(0.0040)	(0.0083)	(0.0082)
Treatment 2012	−0.0062***	−0.0067**	−0.0129***	0.0128	0.0002
	(0.0022)	(0.0034)	(0.0042)	(0.0091)	(0.0090)
Demographic controls	YES	YES	YES	YES	YES
Unemployment-age dummies	YES	YES	YES	YES	YES
Age-specific trends	YES	YES	YES	YES	YES
Control-specific trends	YES	YES	YES	YES	YES
Observations	1,725,256	1,725,256	1,725,256	1,725,256	1,725,256
Clusters	264	264	264	264	264

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 1999–2012. Treatment groups: individuals 20–22, 23–24 and 25–26 years of age. Control group: individuals 27–28 years of age. Cluster-robust standard errors in parentheses, clustered by month of birth (264 clusters). All specifications include demographic controls, unemployment-age interaction terms, age-specific trends and control-specific trends.

treatment dummies for the years 2008 and 2009. For each treatment group, we also split the single treatment dummy (for 2010–2012) into single-year treatment dummies for 2010, 2011 and 2012. With this specification, we can both test for common time effects as well as for anticipation effects and the evolution of the treatment effect of the WIJ reform over time. From the table, the general picture that emerges is that the placebo dummies are small and statistically insignificant. It is only for the NEETs rate on welfare in the treatment group of 23–24 years of age that we find a significant placebo dummy for 2008, but this effect would become insignificant if we would correct for multiple testing. Another finding is that treatment effects on NEETs rate on welfare for 2011 and 2012 are often smaller than for 2010, which is consistent with the pattern in Figure 2.2. Hence, most of the treatment effect seems to be confined to the first period of the reform. Also for the NEETs rate not on welfare, most of the effect appears to be in 2010, after which the effect becomes smaller again. Finally, it should be noted that there is still no statistically significant treatment effect for the total NEETs rate, the employment rate nor the enrollment rate in education when we consider single-year treatment dummies.

We also exploit the richness of our data by conducting additional placebo analyses that capture the economic downturn in 2002–2004 in the Netherlands – see Table 2.5 for the estimation results. The general idea here is to detect possible differences in responses to the business cycle between younger treatment groups and the control group of individuals aged 27–28 not accounted for by the interactions between the unemployment rate and individual ages. If such responses are different, this casts doubt on the common-time effects assumption underlying our DD approach. As the table shows, we do find placebo effects in the two youngest treatment groups. This particularly casts doubt on the large treatment effects on employment and education enrollment rates we find for these groups. As business cycle effects have been substantially different for the outcome measures between the group of 27–28 years of age and those below the age of 25, we cannot interpret the effect estimates as causal.

The Supplementary material presents some additional robustness checks. First, one may worry that the reform created spillovers for the control group via e.g. the job-finding rate (Blundell et al. 2004; Gautier

Table 2.5: Differences-in-differences: placebo treatment dummy economic downturn 2002-2004

	(1) NEETs rate on welfare	(2) NEETs rate not on welfare	(3) Total NEETs rate	(4) Employment rate	(5) Enrollment rate in education
Panel A: Treatment group 25–26					
Treatment 2010–2012	−0.0045***	0.0060***	0.0015	−0.0023	0.0008
	(0.0014)	(0.0023)	(0.0027)	(0.0035)	(0.0032)
Placebo 2002–2004	0.0001	0.0003	0.0004	0.0018	−0.0023
	(0.0012)	(0.0021)	(0.0026)	(0.0030)	(0.0020)
Panel B: Treatment group 23–24					
Treatment 2010–2012	−0.0039***	0.0025	−0.0015	−0.0139***	0.0153***
	(0.0015)	(0.0026)	(0.0030)	(0.0047)	(0.0049)
Placebo 2002–2004	0.0004	0.0027	0.0032	0.0047	−0.0078**
	(0.0015)	(0.0023)	(0.0028)	(0.0038)	(0.0032)
Panel C: Treatment group 20–22					
Treatment 2010–2012	−0.0038***	−0.0058***	−0.0096***	0.0046	0.0050
	(0.0014)	(0.0021)	(0.0027)	(0.0055)	(0.0056)
Placebo 2002–2004	0.0021**	−0.0006	0.0015	0.0239***	−0.0255***
	(0.0010)	(0.0019)	(0.0022)	(0.0039)	(0.0035)
Demographic controls	YES	YES	YES	YES	YES
Unemployment-age dummies	YES	YES	YES	YES	YES
Age-specific trends	YES	YES	YES	YES	YES
Control-specific trends	YES	YES	YES	YES	YES
Observations	1,725,256	1,725,256	1,725,256	1,725,256	1,725,256
Clusters	264	264	264	264	264

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 1999–2012. Treatment groups: 20–22, 23–24, and 25–26 years of age. Control group: 27–28 years of age. Cluster-robust standard errors in parentheses, clustered by month of birth (264 clusters). All specifications include demographic controls, unemployment rate-age interactions, age-specific trends and control-specific trends.

et al. 2018). In Table A.2.2 we address this concern by using individuals with 29–30 years of age as an alternative control group, and introduce 'treatment dummies' for our main control group of individuals 27–28 years of age. We then find rather similar treatment effects as in the base specification for the treatment groups 20-22, 23–24 and 25–26 years of age, and no statistically significant placebo treatment effects for our control group (27–28 years of age).[19] Second, Table A.2.3 addresses the concern that treatment effects may persist as individuals age into the control group, another type of spillover effect that may bias our estimates. Here we use individuals 30–31 years of age as the control group, as these were never in the treatment group during the WIJ reform period, and introduce 'treatment dummies' for individuals 27–29 years of age. Again, the results

[19]The proverbial exception is the employment rate, which is 'borderline' significant at the 10% level.

for the treatment groups 20–22, 23–24 and 25–26 years of age are (quite[20]) similar to the base specification, and the treatment effects for individuals 27–29 years of age are statistically insignificant. Third, Table A.2.4 shows that we obtain similar results when we narrow the treatment group down to individuals 26 years age and the control group to individuals 27 years of age. Finally, Table A.2.5 shows that the different levels of clustering (at the individual level, by month of birth or by year of birth, respectively) (virtually) does not affect the statistical significance of the results.

Table A.2.6 considers to what extent the changes in the stocks are driven by changes in the respective entry and exit rates.[21] When focussing on the older treatment group of individuals 25–26 years of age for which the baseline results turned out to be robust, we find that the effect on the NEETs rate on welfare runs entirely via an increased exit rate, with no effect on the entry rate (suggesting the 'threat effect' for new potential welfare recipients is limited). And vice versa, we find that the effect on the NEETs rate not on welfare is mainly due to an increase in the entry rate (although this coefficient is only statistically significant at the 10% level), with no effect on the exit rate. The exit and entry rates for the total NEETs rate, employment rate and the enrollment rate are statistically insignificant and typically small.

The Supplementary material section also presents the outcomes for selected other outcome variables and by subgroups. In light of our earlier results, we now focus on the treatment group of 25–26 years of age. Table A.2.7 shows that the effects of the WIJ on the enrollment rate in unemployment insurance (UI) and disability insurance (DI) are insignificant for this group. Next, Table A.2.8 gives the treatment effect on being in a particular household type. Distinguishing between adult children living at home, childless singles, single parents and couples, we do not find any

[20]Of course the control group becomes increasingly dissimilar to the main treatment groups, which results in some treatment effects (total NEETs rate and employment rate) for the age group 25–26 to become borderline significant at the 10% level, though with a counter-intuitive sign, also suggesting this is not a causal effect.

[21]Specifically, for entry the dependent variable equals 1 when, for each state, the current state is 1 and the previous state was a different state, and zero otherwise. For exit the dependent variable equals 1 when, for each state, the current state is a different state than the previous state, and the previous state is 1, and zero otherwise. We present results for our most elaborate specification, including demographic controls, unemployment-age interaction terms, age-specific trends and demographic-control-specific trends.

statistically significant treatment effects. Given that being in a particular household type seems largely exogenous to the treatment, Table A.2.9 then studies the treatment effects by household type. Focusing again on the treatment group of 25–26 year olds, the largest drop in the NEETs rate on welfare in absolute terms is for adult children living at home and single parents, –1.0 and –7.0 percentage points respectively. In percentages however, the drop for single parents is –22% (relative to the 2009 level), which is comparable to the average treatment effect over all household types. But for adult children living at home it is –45% (relative to the 2009 level), which can be explained by the additional reform in 2012, when adult children living at home were no longer eligible to welfare benefits when they lived in a household in which first-degree relatives had sufficient income or assets (see Section 2). The effect for childless singles is comparable to the average over all household types, whereas the effect for couples is close to zero. In line with the base results where we pool all household types, the NEETs rate not on welfare increases for all household types. The treatment effects for the other outcome variables are typically not statistically significant.

In addition to stratifying with respect to household types, Table A.2.10 gives the results by gender and ethnicity. The treatment effects for males and females are similar. The treatment effects for natives are somewhat smaller than the base results, whereas the results for immigrants are larger in absolute terms. But in percentage terms, the effects are much more comparable to the average, –29% for natives and –22% for immigrants for the NEETs rate on welfare (and a statistically significant effect on the total NEETs rate). Finally, Table A.2.11 considers the treatment effects for provinces that had a relatively low or a relatively high pre-reform unemployment rate. The treatment effect appears to be smaller (about half) in the provinces which had a lower pre-reform unemployment rate. However, the percentage drop is almost the same in regions with low and high pre-reform unemployment rates, 25% (relative to baseline 2009) for low unemployment regions and 24% for high unemployment regions.

Regression discontinuity 2.5.2

We next consider the more local treatment effect of the WIJ reform by considering outcomes around the cutoff age of 27, using regression discontinuity. To gauge the presence of such cutoff effects, Figure 2.3 shows the NEETs rate on welfare, the NEETs rate not on welfare and the total NEETs rate by month of birth of 25–28 year olds, relative to the discontinuity – both for the pre-reform period (2007–2009, left panels) and post-reform period (2010–2012, right panels).[22] In the figures, value averages are centered around the cutoff age of 27. The solid lines give the predictions from a RD regression without control variables, estimated separately on the left- and right-hand side of the discontinuity. The dashed lines give the corresponding 95% confidence intervals. These graphs suggest a small positive pre-reform discontinuity in the NEETs rate on welfare and a small negative post-reform discontinuity in the NEETs rate on welfare, and no pre-reform discontinuity for the NEETs rate not on welfare but a small positive post-reform discontinuity for the NEETs rate not on welfare. Finally, we observe a small and positive but similar pre- and post-reform discontinuity in the total NEETs rate.

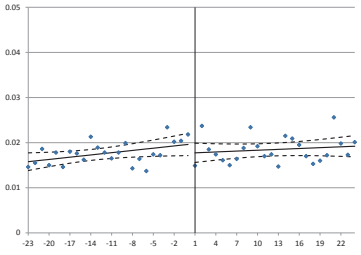
Table 2.6 gives the RD regression results. The RD dummy captures a different intercept on the left-hand side of the discontinuity, but we also allow for a different slope on the left-hand side of the discontinuity and include year fixed effects and demographic control variables. We present results for the pre- and post-reform period, in Panel A and B respectively.[23] We find a small positive but statistically insignificant pre-reform treatment effect for the NEETs rate on welfare, the NEETs rate not on welfare and the total NEETs rate. In addition, both the treatment effect on the employment rate and the education enrollment rate are negative and statistically insignificant. For the post-reform period we find a small

[22] Similar plots for the employment rate and the enrollment rate in education are given in Figure A.2.2 in the Supplementary material.

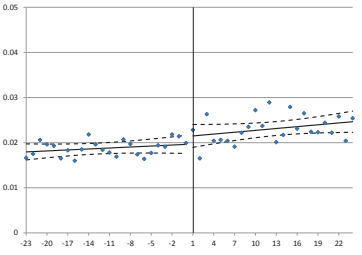
[23] Full regression results for the preferred RD specifications, for the pre- and post-reform period respectively, can be found in Table A.2.12 and Table A.2.13 in the Supplementary material. Furthermore, results for different RD specifications, for the pre- and post-reform period respectively, can be found in Table A.2.14 and Table A.2.15 in the Supplementary material. Figure A.2.3 shows that there is no manipulation in the running variable (age of the child in months), and Figure A.2.4 and A.2.5 show that there are also no discontinuities in the demographic control variables, either pre- or post-reform.

Figure 2.3: Pre-reform (2007–2009) and post-reform (2010–2012) outcome variables relative to the age threshold

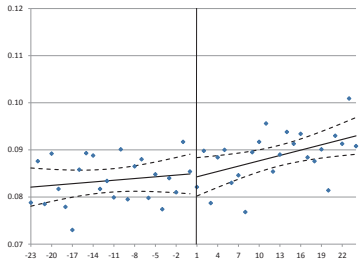
(a) NEETs rate on welfare: pre-reform



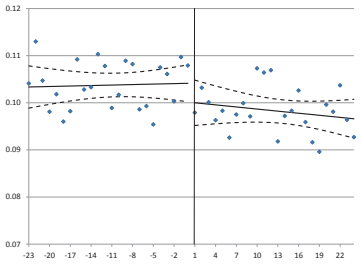
(b) NEETs rate on welfare: post-reform



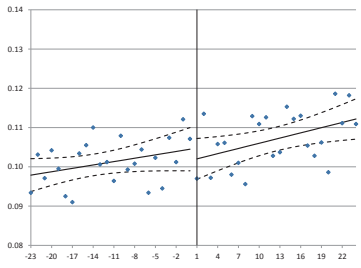
(c) NEETs rate not on welfare: pre-reform



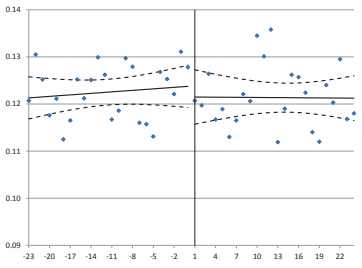
(d) NEETs rate not on welfare: post-reform



(e) Total NEETs rate: pre-reform



(f) Total NEETs rate: post-reform



Notes: Own calculations using the Labour Market Panel (Statistics Netherlands). Age is recentered around the discontinuity (outcomes are measured in October, 1 is a person who has turned 27 in September). The solid lines give the predictions from a RD regression without control variables, estimated separately on the left- and right-hand side of the discontinuity. The dashed lines give the corresponding 95% confidence interval. NEETs rates are individuals not in employment or education relative to the relevant age population.

Table 2.6: Regression discontinuity: base regression results

	(1) NEETs rate on welfare	(2) NEETs rate not on welfare	(3) Total NEETs rate	(4) Employment rate	(5) Enrollment rate in education
Panel A: RD for the period 2007–2009					
RD dummy	0.0020	0.0011	0.0031	−0.0044	0.0013
(placebo)	(0.0014)	(0.0023)	(0.0030)	(0.0034)	(0.0022)
Observations	157,543	157,543	157,543	157,543	157,543
Clusters	72	72	72	72	72
Panel B: RD for the period 2010–2012					
RD dummy	−0.0014	0.0044**	0.0030	−0.0022	−0.0008
	(0.0013)	(0.0022)	(0.0023)	(0.0030)	(0.0024)
Observations	158,195	158,195	158,195	158,195	158,195
Clusters	72	72	72	72	72
Panel C: DRD for the period 2007–2012					
DRD dummy	−0.0033*	0.0032	−0.0001	0.0022	−0.0021
	(0.0020)	(0.0031)	(0.0038)	(0.0046)	(0.0030)
Observations	315,738	315,738	315,738	315,738	315,738
Clusters	108	108	108	108	108

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Cluster-robust standard errors in parentheses, clustered by month of birth (72 cluster for the RD estimates, 108 clusters for the DRD estimates). The RD parameter estimates are for the RD dummy capturing a different intercept on the left-hand side of the discontinuity, and also allow for a different slope on the left-hand side of the discontinuity, include year fixed effects and include demographic control variables. Full regression results for the RD specifications for the period 2007–2009 and 2010–2012 can be found in Table A.2.12 and A.2.13 in the Supplementary material, respectively. The DRD parameter estimates are for the DRD dummy capturing the difference in the different intercept on the left-hand side of the discontinuity from the period 2007–2009 to the period 2010–2012, and also allow for a different slope on the left-hand side of the discontinuity, a change in the different slope on the left-hand side of the discontinuity, include year fixed effects and include demographic control variables. Full regression results for the DRD specification can be found in Table A.2.16 in the Supplementary material.

but now negative treatment effect for the NEETs rate on welfare, though not statistically significant, a bigger positive and statistically significant treatment effect for the NEETs rate not on welfare (at the 5% level), and a small positive treatment effect for the total NEETs rate that is similar to the effect in the pre-reform period. Furthermore, the post-reform treatment effect is somewhat larger for the employment rate and somewhat smaller for the enrollment rate in education.

Panel C of Table 2.6 then gives the coefficient on the 'difference-in-discontinuity' dummy, which is very close to the difference in the discon-

tinuity between the pre- and post-reform period.[24] The results are similar to the DD analysis. That is, there is a negative treatment effect on the NEETs rate on welfare, statistically significant at the 10% level, a positive treatment effect on the NEETs rate not on welfare and essentially no effect on the total NEETs rate (and the treatment effects for the employment rate and enrollment rate in education are insignificant).

The Supplementary material gives some additional analyses for the RD analysis as well. RD plots by year are given in Figure A.2.6, A.2.7 and A.2.8. Consistent with the DD analysis, these graphs show that most of the effect on the NEETs rate on welfare and the NEETs rate not on welfare was confined to the year 2010, whereas there is no apparent effect on the total NEETs rate in any year. Table A.2.17, A.2.18 and A.2.19 show that we obtain qualitatively similar results when we use quarter of birth instead of month of birth, or use a smaller or a larger bandwidth in age, respectively. To control for potential anticipation and adaptation effects close to and after reaching the age of 27, Table A.2.20 gives results of a so-called donut RD (and DRD) analysis where we drop observations of individuals three months on either side of the cutoff.[25] These results are very similar to the base RD and DRD specifications (and even closer to the DD results than the base RD and DRD analysis). Finally, Table A.2.21 gives the difference-in-discontinuity results for entry and exit probabilities. The difference-in-discontinuity analysis also suggests a positive effect on the exit probability from welfare, in line with the DD analysis, significant at the 10 percent level. At the same time, however, it also suggests a negative effect on the entry probability into welfare, significant at the 10 percent level. Hence, the DRD analysis suggests there may have been some 'threat effect' of the WIJ reform.

[24] Full regression results for the difference-in-discontinuity specification can be found in Table A.2.16 in the Supplementary material.

[25] For an analysis of the implementation of donut RD designs, see e.g. Barreca et al. (2011) or Barreca et al. (2016).

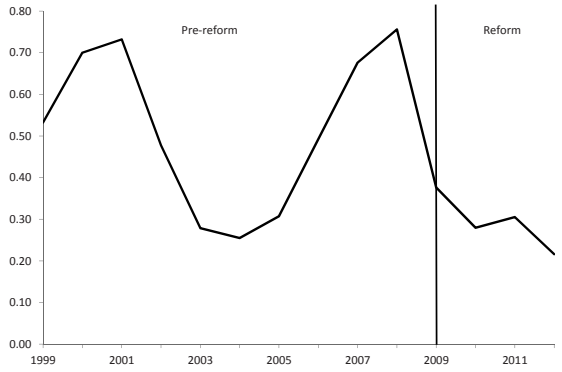
2.6 Discussion and conclusion

In this paper we have studied the labour market effects of a Dutch mandatory activation program for individuals up to 26 years of age in The Netherlands. We used differences-in-differences and regression discontinuity, and a long and rich administrative dataset to uncover the effect of the WIJ reform on the NEETs rate on welfare, the NEETs rate not on welfare, the total NEETs rate, the employment rate and the enrollment rate in education. We considered the separate treatment effects on individuals 20–22, 23–24 and 25–26 years of age, using individuals 27–28 years of age as the main control group. An extensive number of placebo tests suggests that we can interpret the effects on the group 25–26 years of age as causal, whereas the assumption of common-time effects seems questionable for the the younger treatment groups. Focusing on the results for the group 25–26 years of age, we find that the reform reduced the number of NEETS on welfare with a substantial 24%, with most of the effect in the first year of the reform. However, the reform did not reduce the overall NEETs rate, neither did it increase the employment rate nor did in increase the enrollment rate in education. The reform mainly pushed individuals out of welfare, where most of the effect appears to have come from an increase in the exit rate from welfare rather than a decrease in the entry rate into welfare.

Part of our findings are in line with previous studies on mandatory activation programs targeted at young individuals. Consistent with Blundell et al. (2004), Dahlberg et al. (2009), Persson and Vikman (2014) and Hernæs et al. (2016), we find a substantial negative effect on the number of young individuals on welfare. In line with Blundell et al. (2004), we find a substantial positive effect of the reform on the exit rate out of welfare.[26] Consistent with Blundell et al. (2004) and Dahlberg et al. (2009) we also find that most of the effect was in the beginning of the reform period, and then the effect diminishes in subsequent periods. As a potential explanation Blundell et al. (2004) consider 'cleaning up the registers', which

[26] For a reform in Sweden, Persson and Vikman (2014) find no significant effect on the exit rate from welfare, but a negative and statistically significant effect on the entry rate into welfare. We find that the effect on entry is insignificant in our DD setup, but is also negative and statistically significant in our DRD setup.

Figure 2.4: Vacancy-to-unemployment ratio: 1999–2012



Source: Statistics Netherlands (Statline).

have been noted of previous UK labour market reforms (Blundell et al. 2004, p. 594). A similar mechanism could be at work in the Dutch case. Also consistent with Blundell et al. (2004), we find no evidence of spillover effects to other groups. In particular, we find no effects on the group of individuals that is one or two years older than the treatment group.

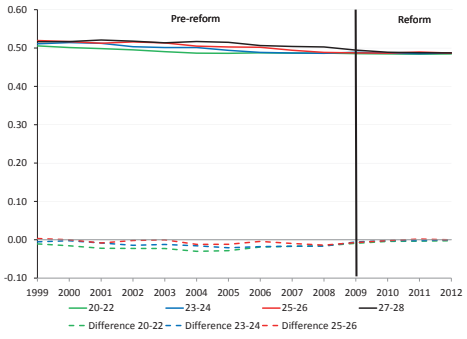
That being said, part of our findings are also at odds with previous studies. In particular, while mandatory programs for young individuals are usually associated with increased employment (Blundell et al. 2004; Dahlberg et al. 2009; Persson and Vikman 2014) or education enrollment (Hernæs et al. 2016), we find no evidence in this direction. One potential explanation for this difference in findings is that we consider a country where the NEETs rate is relatively low, see Table 2.1. The findings of Hernæs et al. (2016) for Norway, a country with comparable level of NEETs rates, however point at substantial program effects on employment and education enrollment. Furthermore, also note that we find rather similar treatment effects for regions with relatively low and relatively high pre-reform unemployment rates. We argue that a more plausible explanation for the absence of program effects on employment is that the reform clashed head on with the Great Recession that started just prior to the start of the WIJ reform. The Great Recession made it inherently

more difficult for individuals, especially young individuals, to find work. Indeed, Figure 2.4 shows the steep drop in the vacancy-to-unemployment ratio during the reform period. This was quite different for the reforms considered in previous studies. For the UK, (Blundell et al. 2004) note that the New Deal was introduced at a favorable point of the business cycle by historical standards, while stressing that "[C]learly, the program in this favorable climate may not apply to less favorable periods."Likewise, the reforms in Sweden and Norway studied by Dahlberg et al. (2009), Persson and Vikman (2014) and Hernæs et al. (2016) were implemented in relatively favorable periods (the end of the 1990s). Our results thus suggest that mandatory activation programs and work-learn arrangements are a much less effective policy tool during a recession.

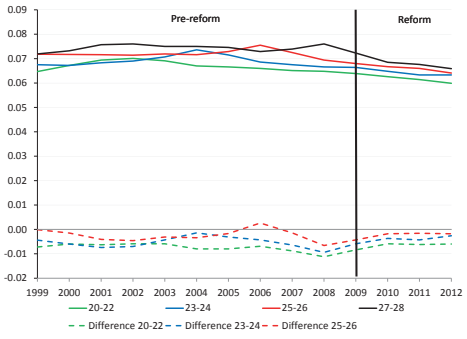
2.A Supplementary material

Figure A.2.1: Means of the control variables treatment and control groups: 1999–2012

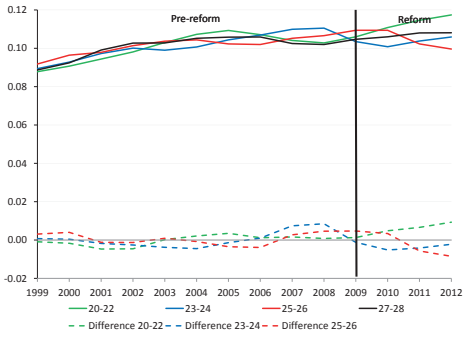
(a) Share female



(b) Share Western immigrant



(c) Share non-Western immigrant



Notes: Own calculations using the Labour Market Panel (Statistics Netherlands). The solid black line denotes the control group (27–28 years of age), the green lines denote treatment group 20–22, the blue lines denote treatment group 23–24 and the red lines denote the treatment group 25–26 years of age. The dotted lines denote the difference between the treatment group and the control group.

Table A.2.1: Differences-in-differences: full results base regressions

	(1) NEETs rate on welfare	(2) NEETs rate not on welfare	(3) Total NEETs rate	(4) Employment rate	(5) Enrollment rate in education
Treatment group 25–26	−0.0046***	0.0060***	0.0014	−0.0027	0.0013
	(0.0014)	(0.0023)	(0.0028)	(0.0036)	(0.0032)
Treatment group 23–24	−0.0040***	0.0022	−0.0017	−0.0145***	0.0163***
	(0.0015)	(0.0026)	(0.0030)	(0.0047)	(0.0048)
Treatment group 20–22	−0.0040***	−0.0057***	−0.0097***	0.0027	0.0070
	(0.0014)	(0.0021)	(0.0027)	(0.0054)	(0.0056)
Group age 20	−0.0113***	−0.0523***	−0.0636***	−0.3659***	0.4296***
	(0.0021)	(0.0044)	(0.0049)	(0.0108)	(0.0109)
Group age 21	−0.0088***	−0.0532***	−0.0620***	−0.2886***	0.3506***
	(0.0023)	(0.0044)	(0.0050)	(0.0093)	(0.0092)
Group age 22	−0.0114***	−0.0436***	−0.0550***	−0.2069***	0.2619***
	(0.0024)	(0.0048)	(0.0054)	(0.0087)	(0.0085)
Group age 23	−0.0088***	−0.0369***	−0.0457***	−0.1333***	0.1790***
	(0.0026)	(0.0050)	(0.0053)	(0.0086)	(0.0083)
Group age 24	−0.0065**	−0.0325***	−0.0390***	−0.0674***	0.1065***
	(0.0029)	(0.0049)	(0.0056)	(0.0083)	(0.0075)
Group age 25	−0.0037	−0.0231***	−0.0269***	−0.0151**	0.0419***
	(0.0030)	(0.0052)	(0.0056)	(0.0071)	(0.0054)
Group age 26	−0.0015	−0.0193***	−0.0209***	0.0036	0.0173***
	(0.0026)	(0.0052)	(0.0057)	(0.0065)	(0.0042)
Group age 27	−0.0001	−0.0095***	−0.0096**	0.0033	0.0063**
	(0.0018)	(0.0036)	(0.0040)	(0.0045)	(0.0030)
Female	0.0203***	0.0675***	0.0878***	−0.0728***	−0.0151***
	(0.0008)	(0.0027)	(0.0029)	(0.0035)	(0.0026)
Non-Western immigrant	0.1046***	0.1271***	0.2317***	−0.2087***	−0.0229***
	(0.0031)	(0.0034)	(0.0051)	(0.0062)	(0.0041)
Western immigrant	0.0241***	0.0411***	0.0652***	−0.0828***	0.0176***
	(0.0019)	(0.0031)	(0.0038)	(0.0045)	(0.0033)
Unemployment rate	11.241***	−1.5904**	−0.4663	−2.2783**	27.446***
	(0.3483)	(0.7155)	(0.7731)	(1.1161)	(0.9373)
Unemployment rate*	−0.1330***	−0.2315**	−0.3645***	−0.3974*	0.7619***
1(age=20)	(0.0440)	(0.0928)	(0.0972)	(0.2334)	(0.2389)
Unemployment rate*	−0.0526	−0.1317	−0.1844*	−0.0603	0.2447
1(age=21)	(0.0489)	(0.0916)	(0.0978)	(0.2062)	(0.2042)
Unemployment rate*	0.0572	−0.2257**	−0.1685	0.0558	0.1126
1(age=22)	(0.0484)	(0.0966)	(0.1032)	(0.1937)	(0.1920)
Unemployment rate*	0.0697	−0.1697*	−0.1000	0.1004	−0.0004
1(age=23)	(0.0529)	(0.1028)	(0.1070)	(0.1810)	(0.1802)
Unemployment rate*	0.0614	−0.0737	−0.0124	−0.0911	0.1034
1(age=24)	(0.0635)	(0.1071)	(0.1174)	(0.1833)	(0.1685)

Table A.1: *Continued*

Unemployment rate*	0.0170	−0.0496	−0.0326	−0.2982**	0.3308***
1(age=25)	(0.0645)	(0.1093)	(0.1166)	(0.1501)	(0.1194)
Unemployment rate*	−0.0177	0.0302	0.0125	−0.2024	0.1899**
1(age=26)	(0.0558)	(0.1110)	(0.1189)	(0.1397)	(0.0888)
Unemployment rate*	−0.0143	−0.0180	−0.0323	−0.0081	0.0405
1(age=27)	(0.0408)	(0.0756)	(0.0845)	(0.0998)	(0.0634)
Trend age 20	0.0035**	−0.0034	0.0001	−0.0121***	0.0121***
	(0.0014)	(0.0029)	(0.0032)	(0.0045)	(0.0038)
Trend age 21	0.0032**	−0.0034	−0.0002	−0.0108**	0.0110***
	(0.0014)	(0.0029)	(0.0032)	(0.0045)	(0.0038)
Trend age 22	0.0032**	−0.0030	0.0002	−0.0093**	0.0091**
	(0.0014)	(0.0029)	(0.0032)	(0.0044)	(0.0037)
Trend age 23	0.0030**	−0.0038	−0.0008	−0.0069	0.0076**
	(0.0014)	(0.0029)	(0.0032)	(0.0045)	(0.0037)
Trend age 24	0.0030**	−0.0046	−0.0015	−0.0039	0.0054
	(0.0014)	(0.0029)	(0.0031)	(0.0045)	(0.0038)
Trend age 25	0.0032**	−0.0057**	−0.0026	−0.0017	0.0042
	(0.0014)	(0.0029)	(0.0032)	(0.0045)	(0.0038)
Trend age 26	0.0032**	−0.0065**	−0.0032	0.0004	0.0028
	(0.0014)	(0.0029)	(0.0032)	(0.0045)	(0.0038)
Trend age 27	0.0030**	−0.0069**	−0.0039	0.0018	0.0021
	(0.0014)	(0.0030)	(0.0033)	(0.0045)	(0.0037)
Trend age 28	0.0030**	−0.0080***	−0.0050	0.0035	0.0015
	(0.0014)	(0.0029)	(0.0032)	(0.0045)	(0.0037)
Trend female	−0.0012***	−0.0049***	−0.0061***	0.0041***	0.0020***
	(0.0001)	(0.0003)	(0.0004)	(0.0004)	(0.0004)
Trend non-Western	−0.0059***	−0.0043***	−0.0102***	0.0023***	0.0079***
immigrant	(0.0003)	(0.0004)	(0.0006)	(0.0007)	(0.0005)
Trend Western	−0.0011***	−0.0001	−0.0013***	−0.0012**	0.0025***
immigrant	(0.0002)	(0.0004)	(0.0004)	(0.0006)	(0.0005)
Observations	1,725,256	1,725,256	1,725,256	1,725,256	1,725,256
Clusters	264	264	264	264	264

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 1999–2012. Treatment groups: 20–22, 23–24 and 25–26 years of age.Control group: 27–28 years of age. Cluster-robust standard errors in parentheses, clustered by month of birth (264 clusters). All specifications include demographic controls, unemployment rate-age interactions, age-specific trends and control-specific trends.

Table A.2.2: Differences-in-differences: 27–28 as placebo treatment group and 29–30 as control group

	(1) NEETs rate on welfare	(2) NEETs rate not on welfare	(3) Total NEETs rate	(4) Employment rate	(5) Enrollment rate in education
Treatment group 27–28	−0.0003	0.0038	0.0035	−0.0052*	0.0017
(placebo)	(0.0014)	(0.0025)	(0.0031)	(0.0031)	(0.0017)
Treatment group 25–26	−0.0048***	0.0097***	0.0048	−0.0076*	0.0028
	(0.0015)	(0.0030)	(0.0033)	(0.0040)	(0.0032)
Treatment group 23–24	−0.0042***	0.0059**	0.0017	−0.0194***	0.0177***
	(0.0014)	(0.0028)	(0.0030)	(0.0046)	(0.0046)
Treatment group 20–22	−0.0043***	−0.0021	−0.0064**	−0.0021	0.0085
	(0.0012)	(0.0024)	(0.0026)	(0.0054)	(0.0053)
Observations	2,143,282	2,143,282	2,143,282	2,143,282	2,143,282
Clusters	288	288	288	288	288

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 1999–2012. Treatment groups: 20–22, 23–24, and 25–26 years of age, placebo treatment group: 27–28 years of age. Control group: 29–30 years of age. Cluster-robust standard errors in parentheses, clustered by month of birth (288 clusters).

Table A.2.3: Differences-in-differences: 27–29 as placebo treatment group and 30–31 as control group

	(1) NEETs rate on welfare	(2) NEETs rate not on welfare	(3) Total NEETs rate	(4) Employment rate	(5) Enrollment rate in education
Treatment group 27–29	0.0010	0.0027	0.0038	−0.0029	−0.0009
(placebo)	(0.0015)	(0.0024)	(0.0027)	(0.0028)	(0.0013)
Treatment group 25–26	−0.0037**	0.0093***	0.0057*	−0.0067*	0.0010
	(0.0016)	(0.0030)	(0.0032)	(0.0040)	(0.0031)
Treatment group 23–24	−0.0030**	0.0056*	0.0025	−0.0185***	0.0160***
	(0.0014)	(0.0030)	(0.0030)	(0.0047)	(0.0045)
Treatment group 20–22	−0.0032***	−0.0025	−0.0056**	−0.0012	0.0068
	(0.0012)	(0.0026)	(0.0026)	(0.0054)	(0.0053)
Observations	2,362,916	2,362,916	2,362,916	2,362,916	2,362,916
Clusters	300	300	300	300	300

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 1999–2012. Treatment groups: 20–22, 23–24, and 25–26 years of age and placebo treatment group: 27–29 years of age. Control group: 30–31 years of age. Cluster-robust standard errors in parentheses, clustered by month of birth (300 clusters).

Table A.2.4: Differences-in-differences: 26 as treatment group and 27 as control group

	(1)	(2)	(3)	(4)	(5)
NEETs rate on welfare	−0.0031***	−0.0028***	−0.0031***	−0.0043***	−0.0044***
	(0.0010)	(0.0010)	(0.0011)	(0.0016)	(0.0016)
NEETs rate not on welfare	0.0078***	0.0080***	0.0063***	0.0019	0.0019
	(0.0016)	(0.0016)	(0.0019)	(0.0025)	(0.0026)
NEETs rate	0.0047**	0.0052***	0.0031	−0.0024	−0.0025
	(0.0020)	(0.0019)	(0.0022)	(0.0033)	(0.0033)
Employment rate	−0.0110***	−0.0118***	−0.006**	0.0041	0.0041
	(0.0025)	(0.0024)	(0.0026)	(0.0036)	(0.0036)
Enrollment rate in education	0.0063***	0.0065***	0.0033	−0.0017	−0.0016
	(0.0021)	(0.0020)	(0.0021)	(0.0029)	(0.0029)
Demographic controls	NO	YES	YES	YES	YES
Unemployment-age dummies	NO	NO	YES	YES	YES
Age-specific trends	NO	NO	NO	YES	YES
Control-specific trends	NO	NO	NO	NO	YES
Observations	381,495	381,495	381,495	381,495	381,495
Clusters	180	180	180	180	180

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 1999–2012. Treatment group: 26 years of age. Control group: 27 years of age. Cluster-robust standard errors in parentheses, clustered by month of birth 180 clusters).

Table A.2.5: Differences-in-differences: estimated standard errors for different levels of clustering

	(1) NEETs rate on welfare	(2) NEETs rate not on welfare	(3) Total NEETs rate	(4) Employment rate	(5) Enrollment rate in education
Treatment group 25–26	−0.0046	0.0060	0.0014	−0.0027	0.0013
Cluster(Individual)	(0.0012)***	(0.0025)**	(0.0027)	(0.0032)	(0.0020)
Cluster(Month of birth)	(0.0014)***	(0.0023)***	(0.0028)	(0.0036)	(0.0032)
Cluster(Year of birth)	(0.0014)***	(0.0013)***	(0.0022)	(0.0035)	(0.0043)
Treatment group 23–24	−0.0040)***	0.0022)	−0.0017)	−0.0145)***	0.0163)***
Cluster(Individual)	(0.0013)***	(0.0027)	(0.0030)	(0.0039)***	(0.0030)***
Cluster(Month of birth)	(0.0015)***	(0.0026)	(0.0030)	(0.0047)***	(0.0048)***
Cluster(Year of birth)	(0.0014)***	(0.0016)	(0.0025)	(0.0059)**	(0.0059)**
Treatment group 20–22	−0.0040	−0.0057	−0.0097	0.0027	0.0070
Cluster(Individual)	(0.0012)**	(0.0024)**	(0.0026)***	(0.0035)	(0.0029)**
Cluster(Month of birth)	(0.0014)***	(0.0021)***	(0.0027)***	(0.0054)	(0.0056)
Cluster(Year of birth)	(0.0014)***	(0.0013)***	(0.0023)***	(0.0056)	(0.0054)
Observations	1,725,256	1,725,256	1,725,256	1,725,256	1,725,256

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 1999–2012. Treatment groups: 20–22, 23–24 and 25–26 years of age. Control group: 27–28 years of age. Cluster-robust standard errors in parentheses, clustered by individuals (321,474 clusters), month of birth (264 clusters) and year of birth (23 clusters).

Table A.2.6: Differences-in-differences: entry and exit

	(1) NEETs rate on welfare	(2) NEETs rate not on welfare	(3) Total NEETs rate	(4) Employment rate	(5) Enrollment rate in education
Panel A: Treatment group 25–26					
Entry	0.0000	0.0028*	0.0007	0.0034	−0.0008
	(0.0008)	(0.0015)	(0.0016)	(0.0026)	(0.0008)
Exit	0.0022***	−0.0003	−0.0002	−0.0025	0.0060**
	(0.0008)	(0.0015)	(0.0016)	(0.0017)	(0.0024)
Panel B: Treatment group 23–24					
Entry	−0.0004	0.0023	0.0004	0.0005	−0.0003
	(0.0007)	(0.0017)	(0.0016)	(0.0024)	(0.0009)
Exit	0.0022***	−0.0033**	−0.0026*	−0.0027*	0.0058**
	(0.0007)	(0.0015)	(0.0016)	(0.0016)	(0.0024)
Panel C: Treatment group 20–22					
Entry	−0.0011*	−0.0031**	−0.0042***	−0.0127***	−0.0003
	(0.0006)	(0.0014)	(0.0014)	(0.0021)	(0.0008)
Exit	0.0020***	−0.0045***	−0.0025*	−0.0065***	−0.0082***
	(0.0006)	(0.0013)	(0.0014)	(0.0014)	(0.0022)
Observations	1,588,817	1,588,817	1,588,817	1,588,817	1,588,817
Clusters	252	252	252	252	252

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 1999–2012. Treatment groups: 20–22, 23–24 and 25–26 years of age. Control group: 27–28 years of age. Cluster-robust standard errors in parentheses, clustered by month of birth (252 clusters). Entry and exit are measured relative to the relevant age population. In this way entry and exit effects are directly comparable to the effects on the stocks, and to each other.

Table A.2.7: Differences-in-differences: treatment effect enrollment rate in other types of social insurance

	(1) Unemployment insurance	(2) Disability insurance
Treatment group 25–26	−0.0012	0.0009
	(0.0010)	(0.0009)
Treatment group 23–24	−0.0019**	−0.0010
	(0.0009)	(0.0009)
Treatment group 20–22	−0.0033***	−0.0024***
	(0.0007)	(0.0009)
Observations	1,725,256	1,725,256
Clusters	264	264

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 1999–2012. Treatment groups: 20–22, 23–24 and 25–26 years of age. Control group: 27–28 years of age. Cluster-robust standard errors in parentheses, clustered by month of birth (264 clusters).

Table A.2.8: Differences-in-differences: treatment effect on the probability of being a particular household type

	(1) Adult children living with parent	(2) Singles	(3) Single parents	(4) Couples
Treatment group 25–26	−0.0002	−0.0016	−0.0020	0.0047
	(0.0051)	(0.0034)	(0.0013)	(0.0059)
Treatment group 23–24	−0.0019	0.0029	−0.0020	0.0036
	(0.0077)	(0.0039)	(0.0014)	(0.0074)
Treatment group 20–22	−0.0039	−0.0016	−0.0016	0.0099
	(0.0072)	(0.0038)	(0.0012)	(0.0061)
Observations	1,725,256	1,725,256	1,725,256	1,725,256
Clusters	264	264	264	264

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 1999–2012. Treatment groups: 20–22, 23–24 and 25–26 years of age. Control group: 27–28 years of age. Cluster-robust standard errors in parentheses, clustered by month of birth (264 clusters).

Table A.2.9: Differences-in-differences: treatment effects by household types

	Adult children living with parent	Singles	Single parents	Couples
Panel A: Treatment group 25–26				
NEETs rate on welfare	−0.0099***	−0.0058*	−0.0697**	0.0000
	(0.0029)	(0.0031)	(0.0298)	(0.0010)
NEETs rate not on welfare	0.0006	0.0062	0.0745***	0.0052*
	(0.0070)	(0.0041)	(0.0229)	(0.0031)
NEETs rate	−0.0094	0.0003	0.0048	0.0052
	(0.0071)	(0.0055)	(0.0289)	(0.0032)
Employment rate	0.0049	0.0063	−0.0025	−0.0082**
	(0.0083)	(0.0082)	(0.0300)	(0.0036)
Enrollment rate in education	0.0045	−0.0067	−0.0023	0.0029
	(0.0061)	(0.0068)	(0.0164)	(0.0024)
Panel B: Treatment group 23–24				
NEETs rate on welfare	−0.0096***	−0.0056*	−0.0731**	0.0019
	(0.0026)	(0.0032)	(0.0370)	(0.0015)
NEETs rate not on welfare	−0.0036	0.0022	0.0893***	0.0021
	(0.0062)	(0.0046)	(0.0249)	(0.0039)
NEETs rate	−0.0132**	−0.0034	0.0162	0.0041
	(0.0064)	(0.0057)	(0.0343)	(0.0040)
Employment rate	−0.0131	−0.0035	−0.0052	−0.0162***
	(0.0086)	(0.0100)	(0.0349)	(0.0055)
Enrollment rate in education	0.0262***	0.0069	−0.0110	0.0122**
	(0.0069)	(0.0091)	(0.0237)	(0.0051)
Panel C: Treatment group 20–22				
NEETs rate on welfare	−0.0091***	−0.0090***	−0.0161	0.0020
	(0.0025)	(0.0029)	(0.0387)	(0.0015)
NEETs rate not on welfare	−0.0129**	−0.0052	0.0391	0.0098**
	(0.0056)	(0.0041)	(0.0267)	(0.0041)
NEETs rate	−0.0220***	−0.0142***	0.0230	0.0118***
	(0.0058)	(0.0055)	(0.0401)	(0.0044)
Employment rate	0.0010	0.0269***	0.0433	0.0004
	(0.0088)	(0.0079)	(0.0330)	(0.0081)
Enrollment rate in education	0.0210***	−0.0126	−0.0663**	−0.0122
	(0.0077)	(0.0077)	(0.0281)	(0.0077)
Observations	605,177	361,488	23,566	714,313
Clusters	264	264	264	264

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 1999–2012. Treatment groups: 20–22, 23–24 and 25–26 years of age. Control group: 27–28 years of age. Cluster-robust standard errors in parentheses, clustered by month of birth (264 clusters). All specifications include demographic controls, unemployment rate-age interactions, age-specific trends and control-specific trends.

Table A.2.10: Differences-in-differences: treatment effect by gender and ethnicity

	Females	Males	Natives	Immigrants
Panel A: Treatment group 25–26				
NEETs rate on welfare	−0.0049**	−0.0044***	−0.0032***	−0.0120**
	(0.0021)	(0.0015)	(0.0011)	(0.0052)
NEETs rate not on welfare	0.0057	0.0058**	0.0019	0.0244***
	(0.0036)	(0.0029)	(0.0025)	(0.0064)
NEETs rate	0.0009	0.0013	−0.0014	0.0124
	(0.0041)	(0.0032)	(0.0027)	(0.0079)
Employment rate	−0.0030	−0.0023	−0.0002	−0.0117
	(0.0047)	(0.0045)	(0.0036)	(0.0090)
Enrollment rate in education	0.0021	0.0010	0.0016	−0.0007
	(0.0037)	(0.0036)	(0.0031)	(0.0066)
Panel B: Treatment group 23–24				
NEETs rate on welfare	−0.0050**	−0.0035**	−0.0040***	−0.0062
	(0.0024)	(0.0014)	(0.0012)	(0.0056)
NEETs rate not on welfare	0.0028	0.0015	−0.0017	0.0179**
	(0.0042)	(0.0031)	(0.0027)	(0.0076)
NEETs rate	−0.0022	−0.0020	−0.0057*	0.0117
	(0.0049)	(0.0033)	(0.0030)	(0.0094)
Employment rate	−0.0071	−0.0220***	−0.0133***	−0.0141
	(0.0061)	(0.0060)	(0.0050)	(0.0118)
Enrollment rate in education	0.0093	0.0240***	0.0190***	0.0024
	(0.0060)	(0.0054)	(0.0049)	(0.0094)
Panel C: Treatment group 20–22				
NEETs rate on welfare	−0.0047**	−0.0039***	−0.0036***	−0.0084*
	(0.0022)	(0.0014)	(0.0011)	(0.0050)
NEETs rate not on welfare	−0.0088**	−0.0028	−0.0085***	0.0044
	(0.0036)	(0.0029)	(0.0023)	(0.0071)
NEETs rate	−0.0135***	−0.0067**	−0.0121***	−0.0040
	(0.0044)	(0.0032)	(0.0028)	(0.0090)
Employment rate	0.0179***	−0.0117*	−0.0019	0.0324***
	(0.0064)	(0.0065)	(0.0055)	(0.0107)
Enrollment rate in education	−0.0044	0.0182***	0.0139**	−0.0285***
	(0.0065)	(0.0061)	(0.0055)	(0.0095)
Observations	858,695	866,561	1,429,549	295,707
Clusters	264	264	264	264

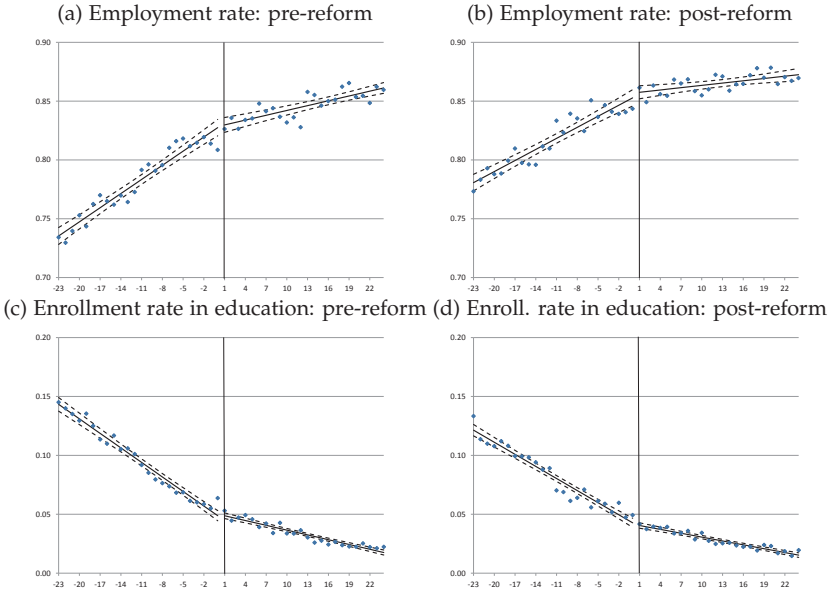
Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 1999–2012. Treatment groups: 20–22, 23–24 and 25–26 years of age.Control group: 27–28 years of age. Cluster-robust standard errors in parentheses, clustered by month of birth (264 clusters). All specifications include demographic controls, unemployment rate-age interactions, age-specific trends and control-specific trends.

Table A.2.11: Differences-in-differences: treatment effect by pre-reform regional unemployment rate

Pre-reform regional unemployment	(1) Low	(2) High
Panel A: Treatment group 25–26		
NEETs rate on welfare	−0.0031**	−0.0059***
	(0.0055)	(0.0058)
NEETs rate not on welfare	0.0041	0.0081**
	(0.0030)	(0.0035)
NEETs rate	0.0010	0.0022
	(0.0035)	(0.0038)
Employment rate	−0.0034	−0.0024
	(0.0045)	(0.0046)
Enrollment rate in education	0.0024	0.0002
	(0.0038)	(0.0037)
Panel B: Treatment group 23–24		
NEETs rate on welfare	−0.0034**	−0.0044**
	(0.0017)	(0.0020)
NEETs rate not on welfare	0.0016	0.0032
	(0.0035)	(0.0037)
NEETs rate	−0.0018	−0.0011
	(0.0040)	(0.0043)
Employment rate	−0.0202***	−0.0095
	(0.0059)	(0.0063)
Enrollment rate in education	0.0220***	0.0106*
	(0.0055)	(0.0058)
Panel C: Treatment group 20–22		
NEETs rate on welfare	−0.0033**	−0.0048***
	(0.0015)	(0.0018)
NEETs rate not on welfare	−0.0081***	−0.0035
	(0.0029)	(0.0031)
NEETs rate	−0.0114***	−0.0083**
	(0.0035)	(0.0038)
Employment rate	0.0023	0.0035
	(0.0064)	(0.0064)
Enrollment rate in education	0.0091	0.0048
	(0.0062)	(0.0065)
Observations	859,405	865,851
Clusters	264	264

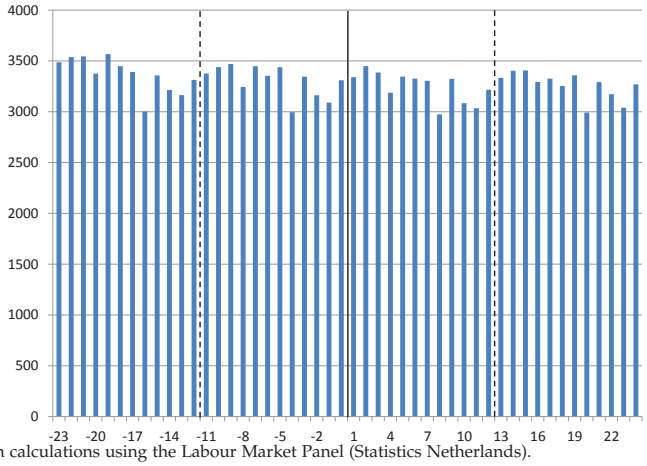
Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 1999–2012. Treatment groups: 20–22, 23–24 and 25–26 years of age. Control group: 27–28 years of age. Cluster-robust standard errors in parentheses, clustered by month of birth (264 clusters). 5 regions with on average the lowest unemployment in 1999-2009: Utrecht, Noord-Brabant, Zeeland, Gelderland, Noord-Holland, 7 regions with on average the highest unemployment in 1999-2009:Zuid-Holland, Overijssel, Limburg, Flevoland, Friesland, Drenthe, Groningen.

Figure A.2.2: Regression discontinuity: pre-reform (2007–2009) and post-reform (2010–2012) other outcome variables



Notes: Own calculations using the Labour Market Panel (Statistics Netherlands). Employment rates are the employed relative to the population and enrollment rates are individuals in education relative to the population.

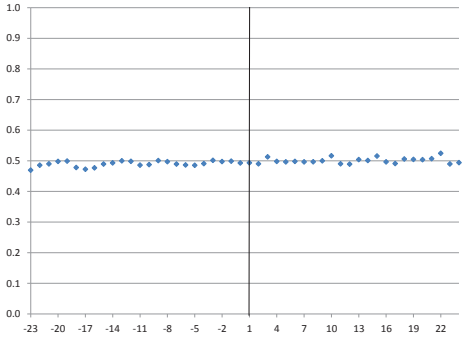
Figure A.2.3: Regression discontinuity: observations by month of birth (2010–2012)



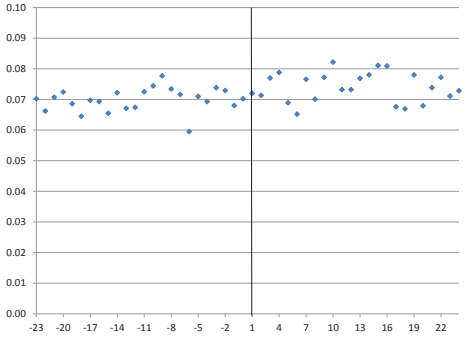
Notes: Own calculations using the Labour Market Panel (Statistics Netherlands).

Figure A.2.4: Regression discontinuity: control variables relative to discontinuity (2007–2009)

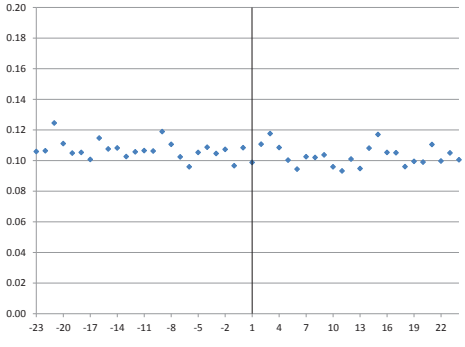
(a) RD: pre-reform share female



(b) RD: pre-reform share Western immigrant



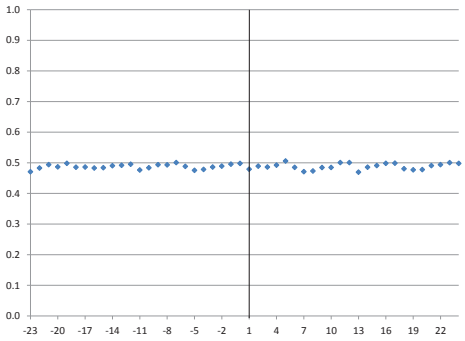
(c) RD: pre-reform share non-Western immigrant



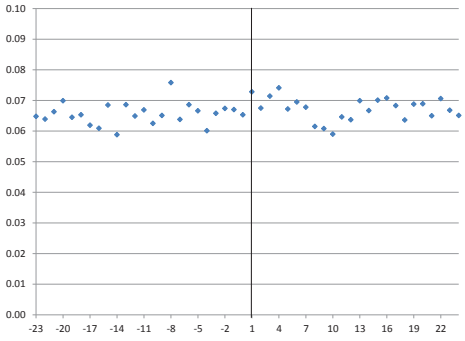
Notes: Own calculations using the Labour Market Panel (Statistics Netherlands).

Figure A.2.5: Regression discontinuity: control variables relative to discontinuity (2010–2012)

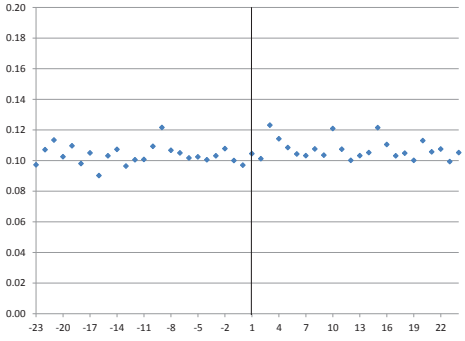
(a) RD: post-reform share female



(b) RD: post-reform share Western immigrant

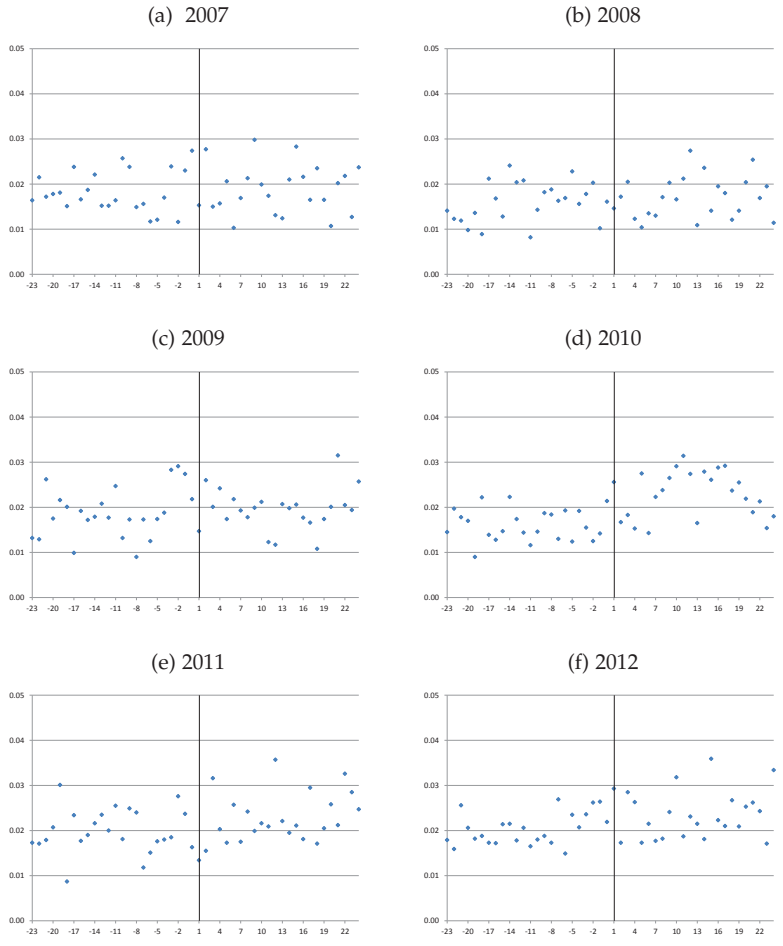


(c) RD: post-reform share non-Western immigrant



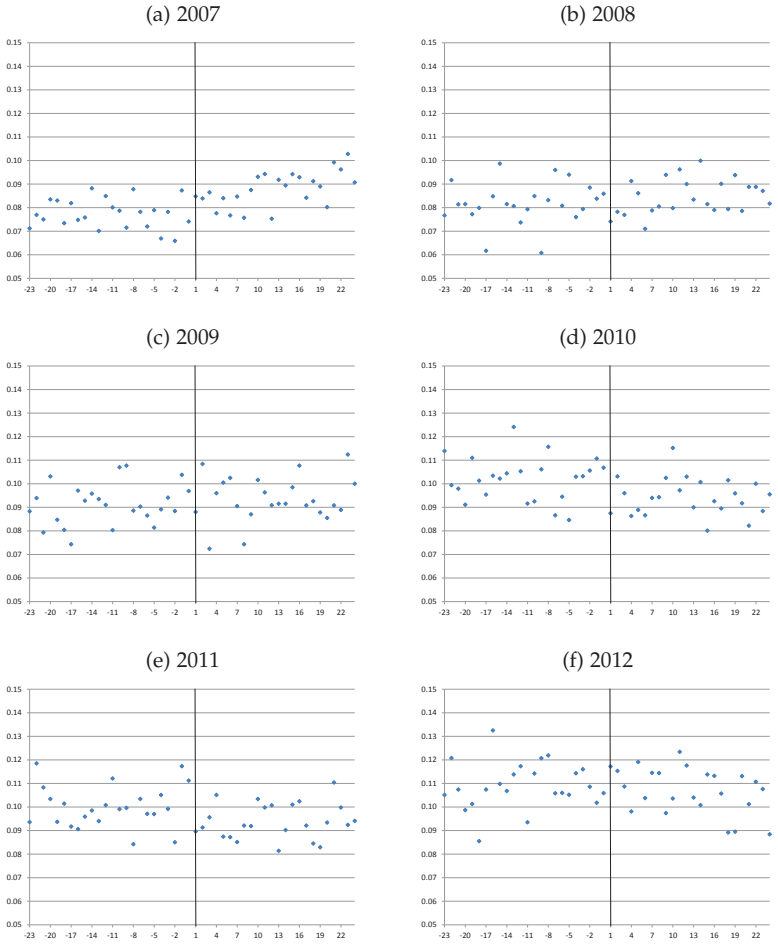
Notes: Own calculations using the Labour Market Panel (Statistics Netherlands).

Figure A.2.6: Regression discontinuity: NEETs rate on welfare by year



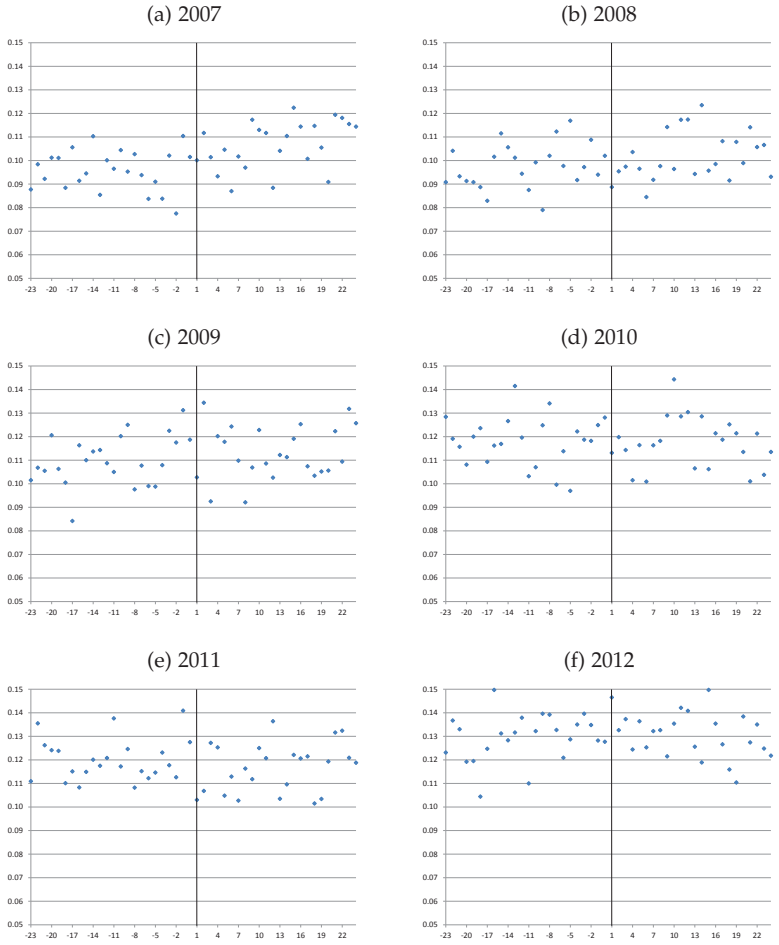
Notes: Own calculations using the Labour Market Panel (Statistics Netherlands).

Figure A.2.7: Regression discontinuity: NEETs rate not on welfare by year



Notes: Own calculations using the Labour Market Panel (Statistics Netherlands).

Figure A.2.8: Regression discontinuity: total NEETs rate by year



Notes: Own calculations using the Labour Market Panel (Statistics Netherlands).

Table A.2.12: Regression discontinuity: pre-reform full regression results (2007–2009)

	(1) NEETs rate on welfare	(2) NEETs rate not on welfare	(3) Total NEETs rate	(4) Employment rate	(5) Enrollment rate in education
Treat RD	0.0020	0.0011	0.0031	−0.0044	0.0013
	(0.0014)	(0.0023)	(0.0030)	(0.0034)	(0.0022)
Age in months	0.0001	0.0004***	0.0004***	0.0007***	−0.0011***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Age in months -left from cutoff	0.0001	−0.0002	−0.0001	0.0024***	−0.0023***
	(0.0001)	(0.0002)	(0.0002)	(0.0002)	(0.0001)
Year 2008	−0.0022***	0.0007	−0.0015	0.0033**	−0.0018
	(0.0006)	(0.0012)	(0.0013)	(0.0016)	(0.0011)
Year 2009	0.0004	0.0099***	0.0103***	−0.0145***	0.0042***
	(0.0009)	(0.0014)	(0.0016)	(0.0019)	(0.0012)
Female	0.0107***	0.0400***	0.0507***	−0.0328***	−0.0179***
	(0.0007)	(0.0025)	(0.0027)	(0.0035)	(0.0015)
Non-Western immigrant	0.0610***	0.1002***	0.1612***	−0.2077***	0.0464***
	(0.0029)	(0.0038)	(0.0051)	(0.0055)	(0.0034)
Western immigrant	0.0165***	0.0331***	0.0496***	−0.0881***	0.0385***
	(0.0020)	(0.0039)	(0.0046)	(0.0063)	(0.0037)
Observations	157,543	157,543	157,543	157,543	157,543
Clusters	72	72	72	72	72

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 2007–2009. Treatment group 25–26 and control group 27–28. Cluster-robust standard errors in parentheses, clustered by month of birth (72 clusters).

Table A.2.13: Regression discontinuity: post-reform full regression results (2010–2012)

	(1) NEETs rate on welfare	(2) NEETs rate not on welfare	(3) Total NEETs rate	(4) Employment rate	(5) Enrollment rate in education
Treat RD	−0.0014	0.0044**	0.0030	−0.0022	−0.0008
	(0.0013)	(0.0022)	(0.0023)	(0.0030)	(0.0024)
Age in months	0.0001*	−0.0001	0.0000	0.0013***	−0.0013***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Age in months -left from cutoff	−0.0001	0.0002	0.0001	0.0026***	−0.0028***
	(0.0001)	(0.0002)	(0.0002)	(0.0003)	(0.0002)
Year 2011	0.0019**	−0.0008	0.0011	−0.0036*	0.0025
	(0.0008)	(0.0012)	(0.0013)	(0.0018)	(0.0015)
Year 2012	0.0027***	0.0104***	0.0132***	−0.0195***	0.0063***
	(0.0008)	(0.0015)	(0.0017)	(0.0021)	(0.0015)
Female	0.0073***	0.0247***	0.0319***	−0.0157***	−0.0163***
	(0.0009)	(0.0021)	(0.0022)	(0.0030)	(0.0018)
Non-Western immigrant	0.0570***	0.0969***	0.1539***	−0.2164***	0.0626***
	(0.0027)	(0.0039)	(0.0041)	(0.0054)	(0.0039)
Western immigrant	0.0165***	0.0466***	0.0630***	−0.0982***	0.0352***
	(0.0020)	(0.0045)	(0.0044)	(0.0053)	(0.0033)
Observations	158,195	158,195	158,195	158,195	158,195
Clusters	72	72	72	72	72

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 2010–2012. Treatment group 25–26 and control group 27–28. Cluster-robust standard errors in parentheses, clustered by month of birth (72 clusters).

Table A.2.14: Regression discontinuity: different sets of control variables (2007–2009)

	(1)	(2)	(3)	(4)	(5)	(6)
NEETs rate on welfare	0.0020	0.0020	0.0019	0.0020	0.0020	0.0020
	(0.0016)	(0.0016)	(0.0016)	(0.0014)	(0.0014)	(0.0014)
NEETs rate not on welfare	0.0009	0.0009	0.0010	0.0010	0.0010	0.0011
	(0.0025)	(0.0025)	(0.0025)	(0.0022)	(0.0022)	(0.0023)
Total NEETs rate	0.0028	0.0028	0.0029	0.0030	0.0030	0.0031
	(0.0035)	(0.0035)	(0.0035)	(0.0030)	(0.0030)	(0.0030)
Employment rate	−0.0032	−0.0031	−0.0041	−0.0035	−0.0034	−0.0044
	(0.0043)	(0.0038)	(0.0041)	(0.0038)	(0.0032)	(0.0034)
Enrollment rate in education	0.0003	0.0003	0.0012	0.0004	0.0003	0.0013
	(0.0031)	(0.0020)	(0.0022)	(0.0031)	(0.0020)	(0.0022)
Age in months squared	NO	YES	NO	NO	YES	NO
(Age in months) x 1(age<27)	NO	NO	YES	NO	NO	YES
Demographic controls	NO	NO	NO	YES	YES	YES
Observations	157,543	157,543	157,543	157,543	157,543	157,543
Clusters	72	72	72	72	72	72

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 2007–2009. Treatment group 25–26 and control group 27–28. Cluster-robust standard errors in parentheses, clustered by month of birth (72 clusters).

Table A.2.15: Regression discontinuity: different sets of control variables (2010–2012)

	(1)	(2)	(3)	(4)	(5)	(6)
NEETs rate on welfare	−0.0018	−0.0018	−0.0017	−0.0014	−0.0014	−0.0014
	(0.0014)	(0.0014)	(0.0014)	(0.0013)	(0.0013)	(0.0013)
NEETs rate not on welfare	0.0041	0.0041	0.0040	0.0045**	0.0044**	0.0044**
	(0.0029)	(0.0029)	(0.0029)	(0.0022)	(0.0022)	(0.0022)
Total NEETs rate	0.0023	0.0023	0.0023	0.0031	0.0030	0.0030
	(0.0032)	(0.0032)	(0.0032)	(0.0023)	(0.0023)	(0.0023)
Employment rate	0.0005	0.0002	−0.0009	−0.0008	−0.0011	−0.0022
	(0.0047)	(0.0038)	(0.0041)	(0.0038)	(0.0027)	(0.0030)
Enrollment rate in education	−0.0028	−0.0025	−0.0013	−0.0023	−0.0019	−0.0008
	(0.0035)	(0.0022)	(0.0024)	(0.0035)	(0.0021)	(0.0024)
Age in months squared	NO	YES	NO	NO	YES	NO
(Age in months) x 1(age<27)	NO	NO	YES	NO	NO	YES
Demographic controls	NO	NO	NO	YES	YES	YES
Observations	158,195	158,195	158,195	158,195	158,195	158,195
Clusters	72	72	72	72	72	72

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level.Sample period 2010–2012. Treatment group 25–26 and control group 27–28. Cluster-robust standard errors in parentheses, clustered by month of birth (72 clusters).

Table A.2.16: Difference-in-discontinuity: full regression results (2007–2012)

	(1) NEETs rate on welfare	(2) NEETs rate not on welfare	(3) Total NEETs rate	(4) Employment rate	(5) Enrollment rate in education
Treat RD x 1(year>2009)	−0.0033*	0.0032	−0.0001	0.0022	−0.0021
	(0.0020)	(0.0031)	(0.0038)	(0.0046)	(0.0030)
Treat RD	0.0020	0.0011	0.0031	−0.0044	0.0013
	(0.0014)	(0.0022)	(0.0030)	(0.0034)	(0.0022)
Age in months	0.0001	0.0004***	0.0004***	0.0006***	−0.0011***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Age in months x 1(year>2009)	0.0001	−0.0005***	−0.0004**	0.0007***	−0.0003**
	(0.0001)	(0.0002)	(0.0002)	(0.0002)	(0.0001)
Age in months x 1(age<27)	0.0001	−0.0002	−0.0001	0.0024	−0.0023
	(0.0001)	(0.0002)	(0.0002)	(0.0002)	(0.0001)
Age in months x 1(age<27)	−0.0002	0.0004	0.0002	0.0002	−0.0004
x1(year>2009)	(0.0001)	(0.0003)	(0.0003)	(0.0004)	(0.0003)
Year 2008	−0.0022***	0.0007	−0.0015	0.0033**	−0.0018
	(0.0006)	(0.0012)	(0.0013)	(0.0016)	(0.0011)
Year 2009	0.0004	0.0098***	0.0102***	−0.0144***	0.0042***
	(0.0009)	(0.0014)	(0.0016)	(0.0019)	(0.0012)
Year 2010	0.0014	0.0167***	0.0181***	−0.0243***	0.0061***
	(0.0018)	(0.0028)	(0.0033)	(0.0036)	(0.0022)
Year 2011	0.0033*	0.0159***	0.0192***	−0.0278***	0.0086***
	(0.0019)	(0.0028)	(0.0034)	(0.0035)	(0.0023)
Year 2012	0.0041**	0.0271***	0.0313***	−0.0437***	0.0124***
	(0.0018)	(0.0027)	(0.0032)	(0.0033)	(0.0022)
Female	0.0090***	0.0323***	0.0413***	−0.0242***	−0.0171***
	(0.0007)	(0.0018)	(0.0020)	(0.0025)	(0.0011)
Non-Western immigrant	0.0590***	0.0987***	0.1577***	−0.2122***	0.0545***
	(0.0022)	(0.0029)	(0.0035)	(0.0043)	(0.0029)
Western immigrant	0.0165***	0.0397***	0.0562***	−0.0931***	0.0370***
	(0.0015)	(0.0031)	(0.0035)	(0.0045)	(0.0026)
Observations	315,738	315,738	315,738	315,738	315,738
Clusters	108	108	108	108	108

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 2007–2012. Treatment group 25–26 and control group 27–28. Cluster-robust standard errors in parentheses, clustered by month of birth (72 clusters).

Table A.2.17: Difference-in-discontinuity: wider bandwith, quarter of birth

	(1) NEETs rate on welfare	(2) NEETs rate not on welfare	(3) Total NEETs rate	(4) Employment rate	(5) Enrollment rate in education
Treat RD x 1(year>2009)	−0.0030	0.0023	−0.0007	0.0030	−0.0023
	(0.0019)	(0.0034)	(0.0043)	(0.0054)	(0.0030)
Treat RD	0.0016	0.0017	0.0033	−0.0072	0.0039
	(0.0013)	(0.0025)	(0.0032)	(0.0043)	(0.0025)
Observations	315,738	315,738	315,738	315,738	315,738
Clusters	36	36	36	36	36

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 2007–2012. Treatment group 25–26 and control group 27–28. Cluster-robust standard errors in parentheses, clustered by month of birth (108).

Table A.2.18: Difference-in-discontinuity: smaller age range 26–27

	(1) NEETs rate on welfare	(2) NEETs rate not on welfare	(3) Total NEETs rate	(4) Employment rate	(5) Enrollment rate in education
Treat RD x 1(year>2009)	−0.0013	0.0081	0.0068	−0.0027	−0.0041
	(0.0036)	(0.0059)	(0.0072)	(0.0076)	(0.0046)
Treat RD	0.0033	0.0024	0.0058	−0.0130**	0.0072**
	(0.0026)	(0.0041)	(0.0052)	(0.0053)	(0.0030)
Observations	157,399	157,399	157,399	157,399	157,399
Clusters	84	84	84	84	84

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 2007–2012. Treatment group 26 and control group 27 Cluster-robust standard errors in parentheses, clustered by month of birth (84).

Table A.2.19: Difference-in-discontinuity: wider age range 24–29

	(1) NEETs rate on welfare	(2) NEETs rate not on welfare	(3) Total NEETs rate	(4) Employment rate	(5) Enrollment rate in education
Treat RD x 1(year>2009)	−0.0030*	0.0050*	0.0020	−0.0000	−0.0019
	(0.0017)	(0.0026)	(0.0032)	(0.0046)	(0.0031)
Treat RD	0.0013	0.0009	0.0021	0.0036	−0.0057**
	(0.0011)	(0.0018)	(0.0024)	(0.0033)	(0.0024)
Observations	475,213	475,213	475,213	475,213	475,213
Clusters	132	132	132	132	132

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 2007–2012. Treatment group 24–26 and control group 27–29. Cluster-robust standard errors in parentheses, clustered by month of birth (132).

Table A.2.20: Regression discontinuity and difference-in-discontinuity: treatment effects using donut regression discontinuity and donut difference-in-discontinuity (2007–2012)

	(1) NEETs rate on welfare	(2) NEETs rate not on welfare	(3) Total NEETs rate	(4) Employment rate	(5) Enrollment rate in education
Panel A: Donut RD for the period 2007–2009					
RD dummy	0.0017	–0.0011	0.0006	0.0024	–0.0031
(placebo)	(0.0016)	(0.0026)	(0.0031)	(0.0036)	(0.0022)
Observations	137,698	137,698	137,698	137,698	137,698
Clusters	72	72	72	72	72
Panel B: Donut RD for the period 2010–2012					
RD dummy	−0.0024	0.0032	0.0008	0.0042	–0.0050**
	(0.0013)	(0.0025)	(0.0028)	(0.0033)	(0.0022)
Observations	138,456	138,456	138,456	138,456	138,456
Clusters	72	72	72	72	72
Panel C: Donut DRD for the period 2007–2012					
DRD dummy	−0.0041*	0.0042	0.0001	0.0018	−0.0019
	(0.0023)	(0.0037)	(0.0044)	(0.0055)	(0.0033)
Observations	276,154	276,154	276,154	276,154	276,154
Clusters	108	108	108	108	108

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Sample period 2007–2012. Treatment group 25–26 and control group 27–28. RD and DRD without observations for 3 age months before and after the cutoff. Cluster-robust standard errors in parentheses, clustered by month of birth. The RD parameter estimates are for the RD dummy capturing a different intercept on the left hand side of the discontinuity, and also allow for a different slope on the left hand side of the discontinuity, include year fixed effects and include demographic control variables. The DRD parameter estimates are for the DRD dummy capturing the difference in the different intercept on the left hand side of the discontinuity from the period 2007–2009 to the period 2010–2012, and also allow for a different slope on the left hand side of the discontinuity, a change in the different slope on the left hand side of the discontinuity, include year fixed effects and include demographic control variables.

Table A.2.21: Difference-in-discontinuity: entry and exit

	(1) NEETs rate on welfare	(2) NEETs rate not on welfare	(3) Total NEETs rate	(4) Employment rate	(5) Enrollment rate in education
Entry					
DRD dummy	−0.0023*	0.0014	−0.0005	0.0024	−0.0005
	(0.0013)	(0.0028)	(0.0028)	(0.0040)	(0.0014)
Exit					
DRD dummy	0.0021*	−0.0026	−0.0001	−0.0011	0.0026
	(0.0012)	(0.0024)	(0.0023)	(0.0030)	(0.0030)
Observations	315,495	315,495	315,495	315,495	315,495
Clusters	108	108	108	108	108

Notes: * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level. Cluster-robust standard errors in parentheses, clustered by month of birth (108 clusters). The DRD parameter estimates are for the DRD dummy capturing the difference in the different intercept on the left hand side of the discontinuity from the period 2007–2009 to the period 2010–2012, and also allow for a different slope on the left hand side of the discontinuity, a change in the different slope on the left hand side of the discontinuity, include year fixed effects and include demographic control variables.