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ABSTRACT

Distributional Effects of Welfare Reform for Young Adults: An Unconditional Quantile Regression Approach*

The paper evaluates the distributional effects on earnings and income of requiring young welfare recipients to fulfill conditions related to work and activation. It exploits within-social insurance office variation in policy arising from a geographically staggered reform in Norway. The reform reduced welfare uptake and for women had large, positive effects in the lower part of the earnings distribution. The effect on the distribution of total income is also positive, thus gains in earnings more than offset reduced welfare benefits. Fewer welfare payments and smaller caseloads make the policy highly cost-effective.

JEL Classification: C21, D31, H55, I38, J18, J22

Keywords: social assistance, activation, conditionality, welfare reform, labor supply, quantile treatment effects

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1 Introduction

In all countries with social insurance systems, there is a question of how to handle the fact that income support programs may discourage work due to moral hazard problems (Krueger and Meyer, 2002). Activation programs may reduce the incidence and duration of benefit claims; however, a worry with such strategies is that they may have negative distributional effects if individuals who are already in a difficult financial situation lose what little income they have. Recent evidence of this in the case of an activation program for young welfare recipients in the Netherlands has been provided by Cammeraat, Jongen and Koning (2017). Negative distributional effects might be a problem even in the case of a positive earnings response on average – Avram, Brewer, Salvatori (2018) find that job search requirements for single parents on welfare in the UK lead to more people finding work, but also increased transitions to non-claimant unemployment or health-related benefits.

This paper relates to the substantial body of research covering the 1996 reform of the cash-based welfare program for single mothers in the US, see Blank (2002), Grogger and Karoly (2005), and Moffitt (2007) for reviews. The reform lowered welfare uptake and government expenditure, had positive average effects on employment, earnings, and income, and reduced poverty. Of particular relevance are the contributions within that literature that went beyond the average, and evaluated distributional effects and were part of the debate about whether income and/or consumption declined for a subset of claimants (Blank and Schoeni, 2003; Bitler, Gelbach and Hoynes, 2006; Meyer and Sullivan, 2008).

The US welfare reform focused on lone mothers on cash welfare, thus that is where the research agenda has been. Consequently, individuals outside the program or covered by other programs have received little attention. Welfare policy affects both those actually receiving welfare and a wider population with only a potential connection to the welfare system, but who still may be impacted through a "threat effect" (Black et al., 2003; Koning, 2015) or a general "regime effect" (Arni, van den Berg and Lalive, 2015). I am able to capture effects on both these groups, as well as spillover effects, by using administrative registers covering the complete Norwegian population. Additionally, in contrast to studying a program targeted at a specific group, like cash welfare for lone parents, I analyze a broader program more akin to the major US programs considered together, as in Currie (2006), where everyone is in principle eligible.

Even though the reform involved several components in the sense of different requirements, the main tool of the social insurance offices regarding young claimants was activation and

requirements related to getting work. In this respect, the paper also connects to the literature on active labor market policies, see Card, Kluve and Weber (2010, 2015) and Kluve et al. (2016) for reviews, and on evaluations of specific welfare-to-work programs. Dyke et al. (2006) find that intensive training is more successful than work-first strategies in increasing earnings of women on welfare in Missouri and North Carolina. Likewise, Hotz, Imbens and Klerman (2006) find that training raises earnings and employment more in the long term than a work-first program for the mostly female-headed households receiving welfare in California, while the opposite is the case in the short term. Close to the present article in terms of both topic and methods are Autor, Houseman and Kerr (2017), who study the effect on the earnings distribution of a welfare-to-work program in Detroit. They find direct-hire placements to have no effects in the lower part of the earnings distribution and substantial positive effects in the upper part, and temporary-help placements also to have no effects in the lower part, but negative in the upper part. Like the literature on US welfare reform referenced above, Autor et al. (2017) study program participants, thus these results refer to the earnings distribution of program participants, mostly black women. The present paper complements this by studying the wider population, thereby capturing effects also on people not currently on welfare. Another important difference is that Autor et al. (2017), who employ the instrumental variable quantile regression method due to Chernozhukov and Hansen (2004, 2005, 2006), mainly study effects on the conditional earnings distribution, as in traditional quantile regression, while the present paper studies effects on the unconditional (overall) distribution.

This paper studies the distributional effects on earnings and total income of requiring young welfare recipients in Norway to satisfy a set of conditions related to activation and work – "conditionality". Exploiting a geographically staggered implementation of conditionality in Norway in the 1990s and 2000s, I implement unconditional quantile regressions (UQR) following the recentered influence regression approach of Firpo, Fortin and Lemieux (2009). Other applications of this method for policy evaluation using repeated cross-sectional data are Havnes and Mogstad (2015) on child care and Dube (2017) on minimum wages. I focus on the reduced form effects on everyone (aged 26-30) residing in the treatment areas. Since most of the literature has been concerned with effects on women, I present estimated effects by gender.

In the lower end of the earnings distribution, I find substantial positive effects for women, around 20-25 percent, or € 2000 per year, and no or small, negative effects for men. As expected, there are no effects in the upper part of the distribution. Further, I find that although welfare payments decline, for women the effect on total income is also positive in the lower end of the

distribution, indicating that they were able to find gainful employment that in sum made them financially better off. In addition to reducing welfare payments, results from data on operating expenses at the office level suggest that the reduced caseload from the reform more than made up for the increased workload; thus, the reform was highly cost-effective.

The rest of the paper is organized as follows. Section 2 describes the institutional setting and the reform, Section 3 presents the empirical strategy, Section 4 contains results and discussion, and Section 5 concludes.

2 Welfare reform in Norway

2.1 Institutional setting and data

Means-tested social assistance ("welfare") is the last resort in the Norwegian social insurance system. In most Norwegian social insurance programs, individuals can only claim benefits if they have earned the right to do so through previous social security contributions (this is the case with e.g. unemployment benefits), or have gone through a lengthy bureaucratic process (e.g. disability benefits). People not covered by these programs and not able to support themselves have the right to welfare from their local social insurance office to cover basic needs such as food, housing, etc. The social insurance offices have traditionally had a large degree of autonomy in determining policy related to such welfare payments. One important aspect of such policy has been conditions the welfare claimant needs to comply with in order to receive the benefit, in particular requirements to participate in workfare program. In this respect, the welfare system in Norway has had more in common with the US system than with other European ones (Gubrium, Harsløf and Lødemel, 2014).

There has been an ongoing discussion in Norway of whether parts of the welfare system are too lenient, and in the late 1990s and early 2000s, many social insurance offices increased their use of conditions for welfare. To get an overview of the variation in policy, the Norwegian Directorate for Health and Social Affairs in 2005 tasked Telemark Research Institute (TRI) with writing a report on Norwegian system of means-tested social assistance (Brandtzæg et al., 2006). As part of this work, TRI administered a survey to the country's 470 local social insurance offices. In this paper, I use information from the part of the survey that concerned whether there had been any changes in the office's use of conditions for receiving welfare during the period 1994-2004.

Of the 470 offices, 223 did not reply. Of the 247 replies, 33 are discarded due to missing or inconsistent information regarding the timing of policy changes. Further, for 7 offices there lacks a link between individuals and offices due to multiple offices operating in the largest municipalities and residency data being available only at the municipality level. This is the case for the two largest cities, Oslo and Bergen, which are thus excluded from the analysis. There was a clear move towards more use of conditions – 43 of the offices reported more use of at least one type of condition and reduced use of none, while 6 reported a mix of more and less use. To have a clear comparison between offices that increased their use of conditions vs. those that maintained status quo, I also exclude the 6 offices with an ambiguous policy change. Table A1 in the appendix lists these sample restrictions, which together leave 201 offices in the final sample. In this paper, I use only information about people residing in areas covered by these 201 offices, amounting to around 60 % of the Norwegian population. The requirement that individuals, for whom residency is available only at the municipality level, be unambiguously linked to a social insurance office implies that there is a 1-1 correspondence between social insurance office areas and municipalities for the estimation sample.

The 43 offices with an unambiguous change to more use of conditions constitute the treatment group. They intensified their use of conditions for welfare at various times throughout the period 1994-2004, with a majority doing so in the latter half of the period. The treatment variable is a dummy variable that for a given office permanently switches from 0 to 1 when the office changes its policy. In this context, with relatively young people, this treatment dummy should be interpreted as a comprehensive policy shift towards greater work and activation requirements.

Table 1 lists the types of conditions employed by the social insurance offices, and the number of offices reporting increased use for each condition. Five conditions are activation or work requirements, three concern the economic situation of the claimant, and one is health related. Most offices increased their use of several of these conditions at once, in average more than four.

Table 1. Types of conditions and number of offices with increased use.

Activation and work requirements	Number of offices with increased use	Fraction of treated offices
Participate in program: A requirement to take part in a work/training or educational program.	26	0.60
Work for welfare: Requirement to participate in a work program organized by the municipality or others.	15	0.35
Register as seeking work: A requirement to register as an active job-seeker, keeping an updated CV etc.	25	0.58
General counseling: Attend counseling meetings with caseworker or others to discuss the current situation.	26	0.60
Career counseling: Attend career counseling meeting(s) with caseworker or others to improve work prospects.	10	0.23
At least one activation/work requirement	41	0.95
Economic		
Document expenses: A requirement to show documentation for housing costs and other additional costs exceeding the welfare benefit	29	0.67
How to use the benefit: Restrictions on how the recipient spend the benefit	17	0.40
Move to cheaper housing: Refuse to cover housing costs exceeding the norm and require that one move to cheaper housing for obtaining housing support.	16	0.37
At least one economic condition	34	0.79
Health		
Medical examination: Willingness to undergo a medical examination.	14	0.33
Total number of conditions changed	175	
Total number of offices changing policy	43	

In evaluations of US welfare reforms, it has often been challenging to disentangle different program components (Blank, 2002). The reform I study was simpler, as it did not involve changes to quantities such as tax rates, earnings disregards, time limits, or income or asset limits, though the same challenge is also present to some extent, as most of the offices changed their use of several conditions at once. However, the report also contained information about which groups where targeted by conditionality, as well as qualitative information from interviews with caseworkers and office directors. Young welfare clients were by far the group for whom conditions were applied the most – 97 % of respondents reported that they "often" used conditions for welfare towards this group. Moreover, the offices also emphasized that they make an effort to avoid passive arrangements for young people, for whom conditions typically

involved some sort of activation requirement, in the form of actual work, or training/education. Hence, even though many offices also increased their use of conditions other than activation and work requirements, for young people, the activation-related ones were the main tool. This is also confirmed by a qualitative study of four more recently reforming municipalities, which all required young claimants actually to show up several times a week, with sanctions for absences (Dahl and Lima, 2016). As there is universal health insurance in Norway, there is also no danger of complicating factors related to health insurance coverage, as investigated for the US by Bitler, Gelbach and Hoynes (2005) and DeLeire, Levine and Levy (2005).

One immediate prediction is that welfare payments should decline, as there is a clear tightening of policy, and sanctions are often used in case of non-compliance with requirements (Terum, Torsvik and Øverbye, 2015). Regarding earnings, it is possible that fulfilling mandatory requirements could take time away from other types of work or job search; however, given that the law stipulates that requirements should not be disproportionally burdensome or unreasonable,[1] such cases would likely not dominate. In contrast, lower welfare payments, the higher cost of obtaining welfare, and obtaining work experience would all be forces pushing for increased employment and earnings. Thus on net, earnings should increase for those affected by the policy change. Finally, the expectation of the effect on all income combined is ambiguous, as it is hard to say whether increased earnings would compensate for the loss of welfare.

2.2 Descriptive statistics

The rest of the data comes from administrative registers covering the complete Norwegian population. I focus on individuals aged 26-30. The cut-off at 30 is motivated by the fact that in 2017, mandatory activation requirements were introduced nationally for welfare recipients below age 30. I set a lower cut-off at 26 in order to avoid complications related to the timing of higher education, which may be affected by the reform.[2] 1993 is the first year with available earnings data, and 2004 is the last year with information about conditionality policies. I include 2005 in the dataset in order to have post-treatment observations for all treatment areas, thus the sample period is 1993-2005.

[1] Act relating to Social Services (the Social Services Act) (Lov om sosiale tjenester i arbeids- og velferdsforvaltningen (Sosialtjenesteloven)), § 20.
[2] The effect of the same reform on the high school completion of 21-year olds has been analyzed in Hernæs, Markussen and Røed (2017).

Figure 1 shows how the probability of claiming welfare during the calendar year 1993 is highest in the beginning to mid-20s and declines with age, a pattern driven by people increasingly earning the right to other benefits through work or getting access to disability programs. This pattern is stable through time. Of the age group I analyze in this paper, 26-30 year olds, around 7 percent received welfare some time during the year in 1993.

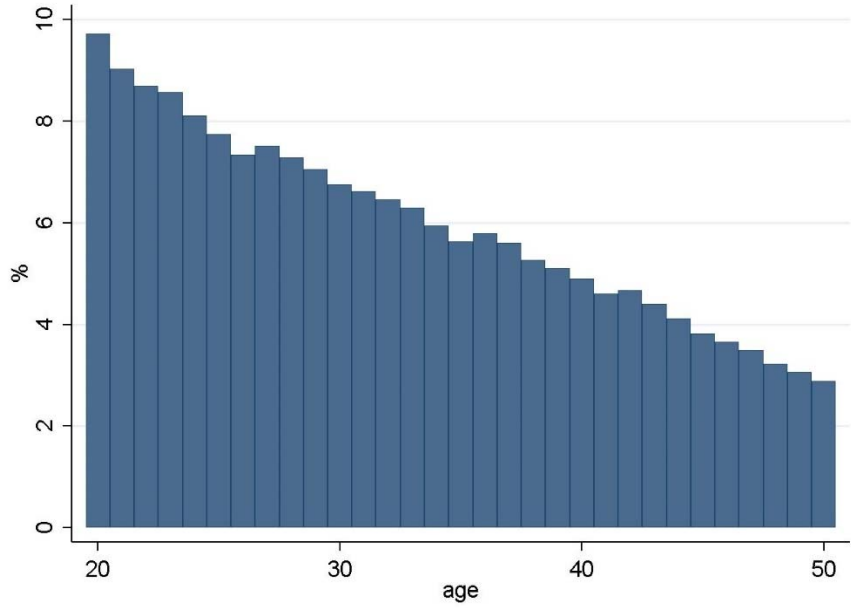

Figure 1. Share receiving welfare by age in 1993.

Both the treatment, control and excluded municipalities are spread all over the country, see Figure A1 in the appendix for a map. In Table 2 we can see that the three groups are also quite similar when it comes to broad, observable socioeconomic characteristics in 1993 and 2005, the first and the final year of the sample period. For the treatment and control groups, there is a 1-1 correspondence between social insurance office areas and municipalities. The treatment municipalities tend be somewhat larger than the control municipalities. For other characteristics, the differences in levels are quite small, and the development in time is similar with one notable exception: the fraction receiving welfare, which declined much more in the treatment than in control group. Regarding external validity, the excluded municipalities are larger, and include large cities, but are not very different in terms of other characteristics.

Table 2. Municipality characteristics in excluded, control and treatment municipalities.

	Excluded municipalities (n= 227)		Control municipalities (n=158)		Treatment municipalities (n=43)	
	1993	2005	1993	2005	1993	2005
Inhabitants	11,674	12,621	7,207	7,581	10,392	11,235
Employment rate	0.66	0.72	0.67	0.70	0.65	0.69
Mean income (1,000 €)	40	44	38	41	37	41
Unemployment rate	0.044	0.030	0.040	0.027	0.046	0.028
Fraction with tertiary education	0.23	0.31	0.18	0.25	0.17	0.24
Fraction with at least secondary education	0.47	0.62	0.42	0.58	0.41	0.58
Fraction receiving welfare benefits	0.027	0.020	0.021	0.017	0.027	0.019
Fraction receiving disability benefits	0.085	0.094	0.087	0.102	0.090	0.104
Fraction immigrants	0.11	0.18	0.07	0.11	0.09	0.14
Fraction in working age of total population	0.59	0.60	0.59	0.58	0.59	0.59

Note: All variables refer to the age group 18-61 years if not specified otherwise, and reported means are weighted by population size. Income levels are yearly, inflated to 2013-value with the adjustment factor used in the Norwegian pension system (approximately corresponding to the average wage growth). Income converted to Euros with the exchange rate €=9.1 NOK

Table 3 shows characteristics of welfare recipients and others in the estimation sample for 1993, the first year of the analysis and before any of the policy changes had occurred. As most of the related literature focuses on women, the data are broken down by gender. Recipients of welfare are of course very different from non-recipients, in particular, they have less education and much lower earnings and employment rates. There are also some substantial gender differences, both among welfare recipients and others. Most importantly, men are employed to a greater extent, and among welfare recipients, men's median earnings are more than twice as large as females'. The gender differences in earnings and employment imply that there is a larger scope for increases in the labor supply of women. There is also a substantial gender difference in the share with children, as men tend to wait longer before having their first child, and there are more men have immigrant background among welfare recipients.

Table 3. Estimation sample. Descriptive statistics at baseline (year=1993).

	Welfare recipients		Others	
	Men	Women	Men	Women
Age	28.0	28.0	28.0	28.0
High school completed	0.28	0.23	0.60	0.56
University/college completed	0.07	0.06	0.20	0.25
Earnings, mean, €	11 165	7 407	39 923	26 143
Earnings, median, €	3 871	847	44 815	27 207
Employed	0.39	0.27	0.82	0.72
Have children	0.47	0.78	0.44	0.67
Immigrant background	0.25	0.14	0.08	0.09
N	4 964	3 893	56 396	51 949

Note: All variables except age and earnings are measured as dummy variables. Income levels are yearly, inflated to 2013-value with the adjustment factor used in the Norwegian pension system (approximately corresponding to the average wage growth). Income converted to Euros with the exchange rate €=9.1 NOK. Employed defined as having yearly earnings of at least one Norwegian "basic amount" (G), corresponding to € 9,377.

3 Empirical strategy

3.1 Identification

I compare outcomes for individuals measured before and after implementation of conditionality. At the core of the empirical strategy lies a linear difference-in-differences (DiD) model, set out in Equation (1). y_{it} denotes the outcome of interest for person *i* in year *t*, primarily welfare uptake some time during the year, measured as a dummy variable, or yearly earnings. Municipality fixed effects γ_m capture all factors that are fixed at the municipality (office) level, such as local area health and worker characteristics, while time fixed effects δ_t capture time-varying factors that are common across muncipalities, such as aggregate business cycles or other time trends. Time fixed effects are essential, as the social insurance office plays an important part of the social safety net protecting against poverty in economic downturns, like in the US (Bitler and Hoynes, 2016). The treatment variable T_{mt} is 0 for all municipalities in the beginning of the time period, then for a given municipality turn permanently to 1 when the social insurance office in the municipality increases its use of conditions for welfare. Finally, I include a small set of time-varying municipality level characteristics x_{mt}, consisting of the share of population with tertiary education, average age of working age population and share of immigrants.

$$y_{it} = \beta T_{mt} + \gamma_m + \delta_t + x_{mt} + \varepsilon_o \quad (1)$$

As discussed above, the treatment indicates a policy change consisting of a combination of a greater use of activation and a higher degree of monitoring than what was previously the case. Equation (1) will be used first as a standard difference-in-differences model to estimate mean impacts on welfare uptake and earnings, and later at the heart of the distributional analysis, set out in section 3.2. In the difference-in-differences analyses, the standard errors are clustered at the office level.

Welfare policy affects both those actually receiving welfare, and a wider population with only a potential connection to the welfare system. To capture effects on both these groups, as well as spill-over effects, I focus on the reduced form effects on everyone of age 26-30 residing in the treatment areas. It would be interesting to disentangle the effect on claimants directly exposed to conditionality from the broader "regime effect" (Arni et al., 2015), however, as I do not observe the treatment at the individual level, that is not feasible. I will nevertheless try to approximate such an analysis in subsection 4.4 on mechanisms.

The increased use of conditionality was decided by the social insurance offices themselves, and as I do not observe the factors that influenced those decisions, it is possible that the introduction of the reforms correlate with pre-existing trends in the municipality. To investigate pre-treatment time trends in outcomes, I employ an event-study specification along the lines of Jakobson, LaLonde and Sullivan (1993). Specifically, I expand the treatment variable T_{mt} in Equation (1) to a series of one-year dummy variables indicating time relative to the reform year. Figure 2 displays the results from this specification, where the year prior to the reform is the omitted category. As there are reforms occurring towards both the beginning and the end of the period, only coefficients from three years before and after the reform are displayed and the sample period is expanded to 2007 to avoid compositional effects from an unbalanced sample. It is reassuring that the estimated coefficients before the reform are close to 0 and that the estimates go in the expexcted direction from the reform onwards.

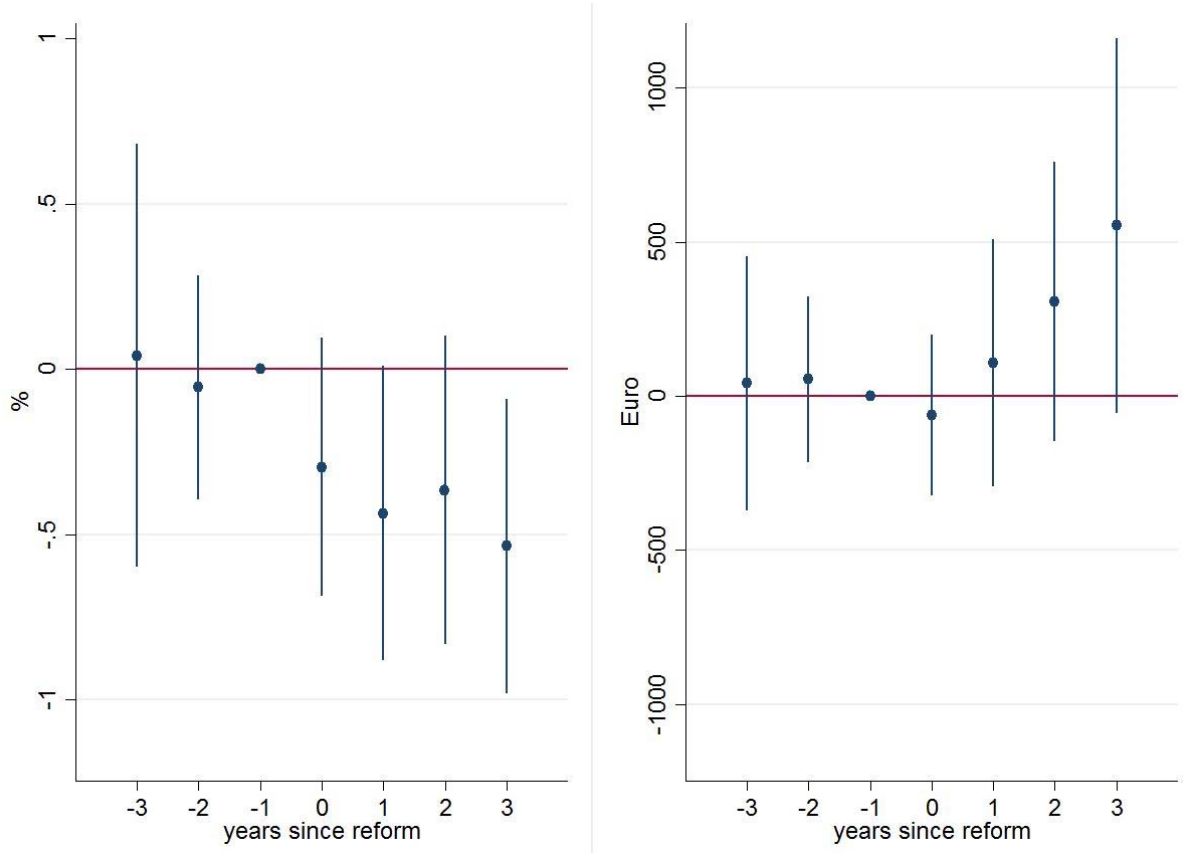

Figure 2. Event study estimates of welfare uptake (left) and earnings (right).
Note: Estimation sample. Welfare uptake is defined as receiving welfare at least once during the year. Earnings are yearly earnings. Vertical bars indicate 95 % confidence intervals.

3.2 Econometric model for distributional analysis

One way to evaluate distributional effects is to implement conventional quantile regression, which estimates effects on each quantile conditional on the control variables (Koenker and Bassett, 1978). However, when it comes to welfare policy, it is more relevant to look at those who have a low income in an absolute sense, thus I am here interested in evaluating the effect of the policy change on the quantiles of the unconditional distribution. Firpo et al. (2009) showed how to do this with the recentered influence function (RIF) regression approach under a selection-on-observables assumption. For each quantile τ, the influence function IF$(Y; q_\tau, F_Y)$ equals $(\tau - \mathbb{1}\{y \leq q_\tau\})/f_Y(q_\tau)$, where q_τ denotes the τth quantile of the distribution of earnings, and F_Y and f_Y its cumulative distribution and density function, respectively. The *recentering* only involves adding the statistic in question, in this case the quantile q_τ. I follow the baseline approach of Firpo et al. (2009) of estimating the resulting *unconditional quantile regression* E[RIF$(Y; q_\tau, F_Y)|X$] by ordinary least squares and a kernel estimate of the density.

The RIF regression approach can be seen as first defining a series of earnings cutoffs corresponding to specified quantiles of the empirical earnings distribution, and then for each such cutoff estimating the effect of the policy on the probability of being above that cutoff; in this paper by the model specified in Equation (1). To arrive at the quantile treatment effects, the resulting estimates are (locally) inverted using a kernel density estimate of the slope of the CDF of the earnings distribution at each particular quantile.[3] The identifying assumption is that in the absence of treatment, the change in the population shares at each threshold would have been the same in the treatment and the comparison group.

I employ the RIF approach both because it allows straightforward inclusion of covariates, as opposed to other nonlinear difference-in-differences methods such as the quantile DiD and the Changes-in-Changes estimators (Athey and Imbens, 2006), and because it is less computationally demanding than the distribution regression approach of Chernozhukov, Fernández-Val and Melly (2013). Because of the uncertainty in the estimate of the kernel density estimate, standard errors are block bootstrapped with 200 replications with the municipality as the block. The estimated distributional effects are presented graphically in percent of earnings at each quantile, with the underlying numbers reported in tables in the appendix.

4 Results

4.1 Mean impacts

Table 4 shows estimated average effects of welfare conditionality on welfare uptake and earnings. The implementation of conditionality reduces welfare uptake by 0.41 percentage points, corresponding to a reduction of between 5 and 10 percent. The estimated average effects on other variables are quite small, however, the fact that changes in welfare policy mainly will have effects on people with a low earnings potential makes it interesting to go beyond the mean impact, and analyze effects on the distribution. It is likely that the relatively small average effects for women mask the effect of higher earnings among low-earners, and no effects among high-earners.

[3] The kernel density estimate is based on an Epanechnikov kernel and the STATA default "optimal" bandwidth.

Table 4. Estimated intention to treat (ITT) effect of welfare conditionality (standard errors in parentheses).

	Welfare uptake	Earnings, €	Any earnings	Employed	Total income, €
ITT	-0.0041 (0.0024) *	-237 (254)	-0.0025 (0.0031)	-0.0060 (0.0040)	-26 (329)
Office fixed effects	Yes	Yes	Yes	Yes	Yes
Cohort fixed effects	Yes	Yes	Yes	Yes	Yes
Municip. covariates	Yes	Yes	Yes	Yes	Yes
Mean of dependent variable	0.06	34,062	0.89	0.78	42,607
N observations	1,450,061	1,450,061	1,450,061	1,450,061	1,450,061

Note: Welfare uptake, Any earnings and Employed are measured as dummy variables. Yearly earnings and income, in 2013 value. Municipality covariates include share of population with tertiary education, average age of working age population and share of immigrants in the office area. Standard errors are clustered at the 201 offices. *(**)(***) indicates statistical significance at the 10(5)(1) percent level.

4.2 QTE on Earnings

Figure 3 shows the baseline quantile treatment effect (QTE) estimates on earnings. The numbers underlying the figure can be found in the appendix in Tables A2 and A3. Because the previous literature has concentrated on women, the treatment variable T_{mt} is here constructed as a two-element vector containing separate treatment indicators for men and women to facilitate interpretations of estimated effects by gender.

According to the baseline results, conditionality increases earnings for women substantially in the lower part of the earnings distribution – by 20-25 percent at the 15th to 25th percentiles. Welfare recipients often have relatively low earnings potential, hence it is reasonable that the estimated effects show up in the lower end. As expected, estimated effects decline towards 0 in the upper part of the distribution. The point estimate for women at the 20th percentiles is around € 2000, or € 170 per month. The estimated QTEs for men are consistently quite close to and never significantly different from zero.

There is a substantial gender difference in the effects of the policy. One explanation may be that since women worked less and had lower earnings to begin with, see Table 3, they had more room for increased labor supply. It is possible to interpret the negative point estimates for men as reflecting increased competition from women, consistent with evidence from the US welfare reform (Groves, 2016), however the uncertainty is too large to conclude at this point.

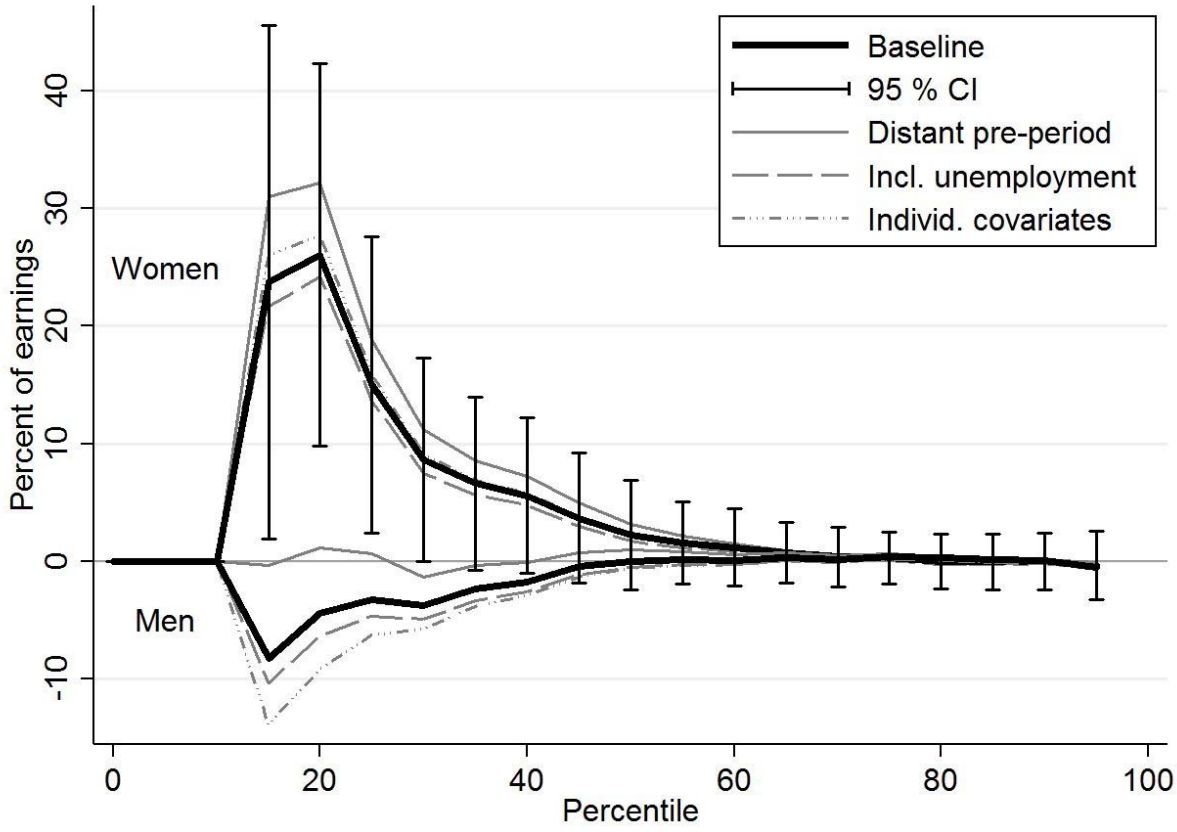

Figure 3. Main QTE estimates on earnings.
Note: QTE estimates at each fifth percentile in percent of earnings at each percentile. Regressions include office and cohort fixed effects, gender, share of population with tertiary education, average age of working age population and share of immigrants. "Distant pre-period" excludes observations three years or less before treatment. "Individ. covariates" includes fixed effects for age and immigrant status. Standard errors are block bootstrapped with 200 replications with the municipality as the block. Vertical bars indicate 95% confidence intervals for the baseline results for women.

4.3 Robustness

The main threat to identification is that the policy change may be endogenous; for example, a (local) economic downturn may trigger implementation of conditionality, which may appear to have an effect simply because of mean-reversion of the business cycle. To challenge the baseline specification at his point, I provide estimates that are based only on pre-treatment periods four or more years prior to the policy change ("distant pre-period"), and perform a sensitivity check where contemporaneous unemployment is included as a covariate. I do not include municipality-specific time trends because these could readily pick up a treatment effect that is increasing with time due to learning and accumulating exposure to the stricter regime.

The results from these specifications are displayed by the gray lines in Figure 3. The QTE estimates are stable across specifications. Of particular importance is the specification "Distant pre-period," which excludes observations three years or less before treatment. This serves as a check of the possibility that the office changes its policy after a few bad years, which could depress the baseline against which the treatment is compared. From the figure we see that this was not the case, as leaving out these observations in fact increases the estimates. Neither including unemployment nor including individual-level covariates (age and immigrant status) alters the results much.

A final concern is the possibility of selective migration. Although Edmark (2009) found no migration effects in Sweden of a similar type of welfare reform based on activation requirements, Fiva (2009), using Norwegian data, found effects of the level of the welfare benefit on migration. The welfare reform that I study, which was geographically based, could have induced some people to move somewhere with less demanding requirements. If these individuals would have been low earners if they had stayed, the likelihood of attaining a particular earnings treshold would artificially seem to have increased. To handle this, I use treatment status in the municipality of residence five years earlier as an instrumental variable for actual treatment. In this specification I exclude post-treatment observations from more than three years after the reform in order to ensure that the instrument is measured before the reform. Residential mobility is fairly low in Norway, and the first stage is strong, with a coefficient on the instrument of 0.78 and an F-statistic of 614. As it has not been shown how instrumental variables should be handled with the UQR method, thus I perform only the first step of the procedure, i.e. DiD estimates of the treatment effect on the probability of earning above given percentiles of the earnings distribution, with and without instrumenting. The results are graphed in Figure A2 in the appendix. The IV results closely mirror the baseline estimates – the probability of earning above the lower percentiles of the earnings distribution increases, and declines for higher percentiles – thus selective migration does not appear to be important in this case.

4.4 QTE on Total income

Although the policy is successful in boosting labor supply and increasing wage earnings, it is important to analyze the effect on total income (all income combined) to get a fuller grasp of the welfare effects. Even if earnings increase, it is not clear whether the effects on total income

will also be positive, since welfare payments are reduced. The estimated quantile treatment effects for women on the sum of income from all sources is shown in Figure 4, with the baseline estimates on earnings reproduced for reference. The estimates are shown in detail in Table A5 in the appendix.

Fewer people have zero income than have zero earnings, thus for total income it is feasible to obtain estimated effects also in the first percentiles. We see that also for total income, there are substantial positive effects in the lower end of the distribution. These estimates are not statistically significantly different from zero, but from a policy perspective, it is nevertheless encouraging that more use of conditionality is not estimated to reduce total income.

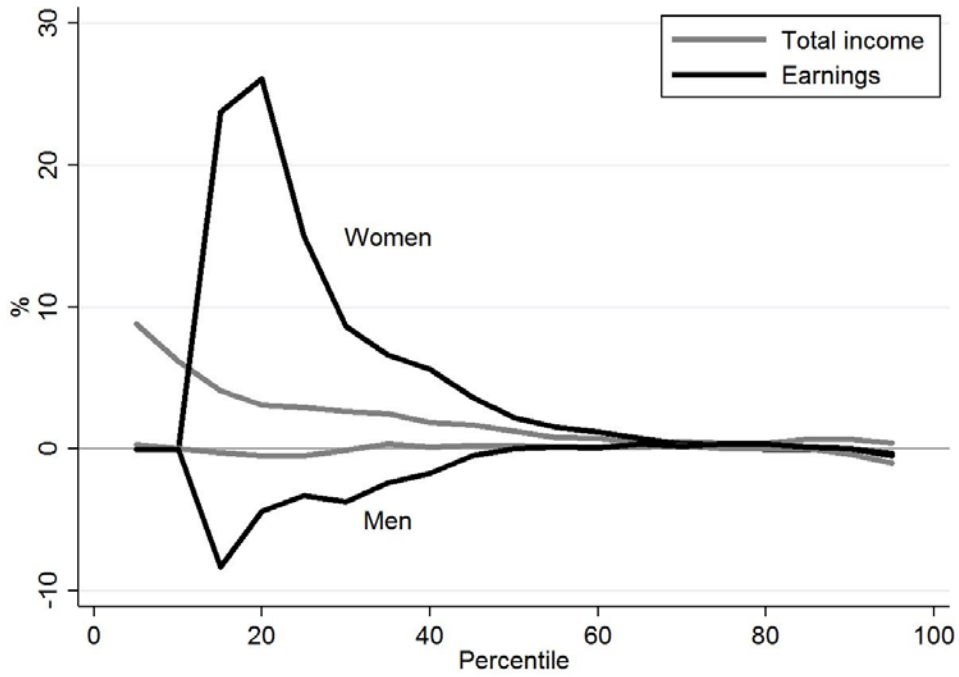

Figure 4. QTE estimates on total income, women.
Note: Income from all sources, including welfare. QTE estimates at each fifth percentile in percent of the level at each percentile. All specifications include office and cohort fixed effects, gender, share of population with tertiary education, average age of working age population and share of immigrants.

4.5 Mechanism

As discussed above, work requirements and other activation policies were the primary conditions targeted at young people. The office caseworkers report that a subset of young claimants is in need of support and guidance to obtain some structure in their daily life; for this group, the experience with work requirements is particularly positive. In addition to providing work experience, being at a workplace teaches "that one has to be precise, that it is an advantage

to have breakfast before going to work, that one has to give notice if sick, that one needs to go to the physician to get a sickness certificate (Brandtzæg et al., 2006, p. 81)." These are basic concepts, but ones that not everyone has had the opportunity to learn growing up. Such positive experiences are echoed in interviews with youth actually facing activation requirements: One said that it was good getting training in getting up in the morning, another that having to work for the social assistance benefit was a reasonable requirement and "Would only have been at home if not. Good to get up in the mornings (Brandtzæg et al., 2006, p. 84)." This mechanism, along with counseling and support in the job application process, would be examples of *participation*, or *ex post*, effects. In addition, having to meet up and participate at an organized activity would make regular paid work relatively more attractive, thereby also providing *ex ante* effects on potential claimants.

It is possible to gain some more insight into the mechanism by investigating how various outcome combinations are affected. First, define four mutually exclusive combinations of indicator variables for welfare uptake and employment. Table 5 displays how these outcome combinations are affected by the reform. I will concentrate the discussion on the estimated treatment effects for women. The most important lesson from these results is that the positive effect on employment occurs together with the absence of welfare uptake, see Column (3). Much of this positive effect is likely to have come about from people previously outside either welfare and employment shifting into employment, as this combination saw a substantial decline, see Column (4). This suggests that *ex ante* effects were important. Combining welfare uptake with employment showed no change, see Column (1), while it became less common to combine welfare uptake with non-employment, see Column (2). This suggests that some non-employed women shifted out of welfare, possibly due to "participation effects" in the form of productivity-enhancing training or increased sanctions, or due to stricter screening.

Table 5. Estimated ITT effect on outcome combinations.

	(1)	(2)	(3)	(4)
	Welfare uptake *and* Employed	Welfare uptake *and* *not* Employed	*No* welfare uptake *and* Employed	*No* welfare uptake *and* *not* Employed
ITT, Men	-0.0029 (0.0011) **	-0.0010 (0.0020)	-0.0006 (0.0062)	0.0044 (0.0056)
ITT, Women	0.0000 (0.0014)	-0.0049 (0.0025) **	0.0175 (0.0076) **	-0.0126 (0.0065) *
Female	-0.0081 (0.0005) ***	-0.0001 (0.0010)	-0.0718 (0.0044) ***	0.0801 (0.0043) ***
Dep. var. mean	0.02	0.04	0.76	0.18
Number of observations	1,419,726	1,419,726	1,419,726	1,419,726

Note: Welfare uptake indicates receiving welfare some time during the year. Employed defined as having yearly earnings of at least one Norwegian "basic amount" (G), corresponding to € 9,377. All specifications include office and cohort fixed effects, share of population with tertiary education, average age of working age population and share of immigrants. Standard errors are clustered at the municipality level. *(**)(***) indicates statistical significance at the 10(5)(1) percent level.

With any activation program, there is a danger of lock-in effects, as the activities may impede getting work elsewhere. Figure 5 shows estimated effects when distinguishing between short (1-2 years) and long (3+ years) term exposure to the treatment. Any lock-in effects appear to be minimal, as there is a substantial response in short-term (1-2 years). We can also note that the long-term effects (3+ years) are very similar to the short-term ones, consistent with small returns to work experience for low earners (Card and Hyslop, 2005; Dustmann and Meghir, 2005).

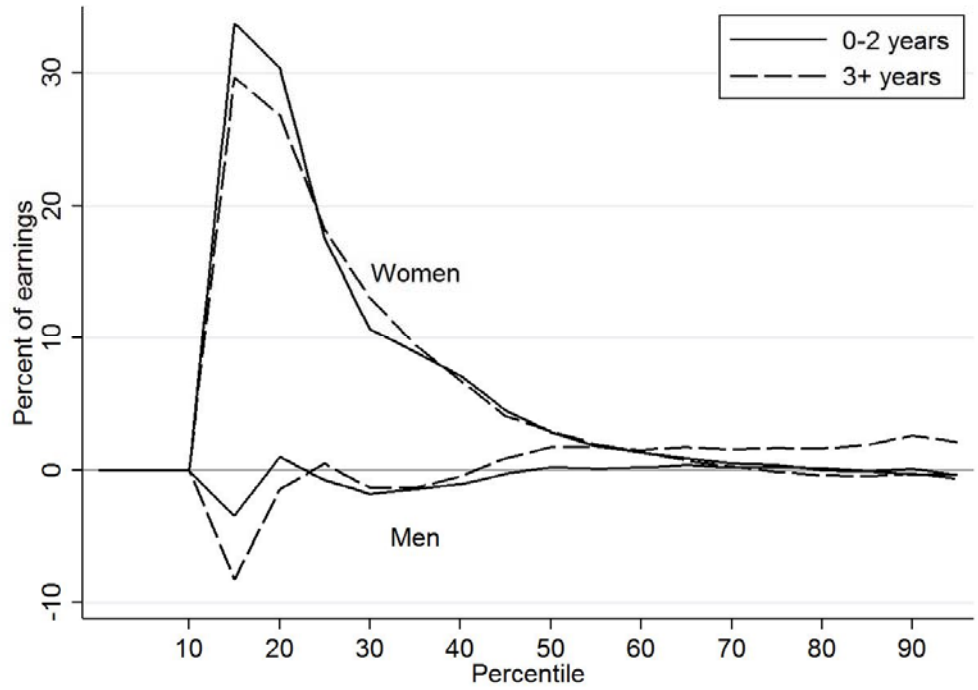

Figure 5. Short and long term QTE estimates on earnings, women.
Note: QTE estimates at each fifth percentile in percent of earnings at each percentile. All specifications include office and cohort fixed effects, gender, share of population with tertiary education, average age of working age population and share of immigrants. Data until 2007 included in order to have a balanced sample of municipalities for both exposure periods.

4.6 Cost-effectiveness

So far, we have seen that the welfare reform was successful in getting people off welfare and into work. This must have reduced public expenditures on welfare and increased tax revenue. However, this is not enough to pass a cost-benefit test, as it could still be the case that the new policy required inordinate amount of resources at the offices. To examine this question, I use information about the municipalities' operating expenses related to welfare, published in the Kostra database by Statistics Norway. These data are available only from 2003 onwards, thus the treatment effect will be identified solely on the basis of the reforms that took place in 2004.

The results of the baseline DiD analysis is shown in Table 6. Encouragingly, operating expenses related to welfare decreased, as shown in column (1). This suggests that the treatment effect of a reduced caseload more than made up for some of the conditions requiring higher expenses at the office. Column (2), which contains operating expenses related to all types of social assistance also declined substantially, thus the savings related specifically to welfare were not undone by effects on other of the offices' activities.

Finally, from the TRI report (Brandtzæg et al., 2006), we know that people suffering from substance abuse are rarely subject to strict requirements, as these are not seen as productive in their case. Thus increased use of conditions should not affect this group much. Column (3) therefore provides a placebo test using operating expenses related to people suffering from substance abuse. A significant negative estimate here would imply that the caseload related to this group also fell, which would be worrying, since it should not be affected. Although the estimate is not very precise, it is reassuring to find that there was no clear reduction in expenditure related to substance abuse.

These findings, together with the savings related to a reduced number of welfare checks paid out and increased tax revenue, imply that the reform was highly cost-effective policy.

Table 6. Estimated ITT effect on local social insurance office operating expenses. 2003-2005. Expenditure per inhabitant, €.

	(1)	(2)	(3)
Operating expenses related to…	Welfare	Overall social assistance	Substance abuse
ITT	-32.1 (9.7) ***	-46.1 (12.0) ***	-0.1 (2.8)
Dep. var. mean	140	229	17
Number of observations	576	576	576

Note: All regressions contain municipality and office fixed effects and municipality characteristics (share of population with tertiary education, average age of working age population, share of immigrants). Standard errors are clustered at the municipality level.
*(**)(***) indicates statistical significance at the 10(5)(1) percent level.

5 Conclusion

I find that attaching conditions to welfare payments for young people reduced welfare uptake and increased both earnings and total income for women at the lower end of the earnings and income distributions. I find evidence that effects on both program participants as well as non-participants are important. The policy I study, containing activation and work-related requirements, is highly cost-effective: It gets welfare recipients into work and brings savings to the social insurance system through reducing both administrative costs and welfare payments.

It is important to be aware that the reform took place in a beneficial environment, which may help explain the good results. Firstly, the reforming municipalities were themselves responsible for undertaking and implementing the changes. They therefore had a large degree of ownership to the reform and a planned strategy for implementing it. This may be hard to replicate in the

case of mandatory changes from above. Secondly, the social insurance offices had a large degree of discretion in deciding who should face conditions and what to demand of them. This may be beneficial compared to uniform requirements if caseworkers have relevant information about how to adapt the conditionality policy. Nevertheless, the policy represents a promising avenue to explore for other countries in need of reforming their social insurance systems.

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Appendix

Table A1. Sample restrictions – survey data

Number of social insurance districts in Norway	470
- Non-responding districts	-223
= Offices with returned surveys	247
- Missing time information	-32
- Cannot link office to individuals	-7
- Ambiguous policy change	-6
- Inconsistent information	-1
= Final sample	201
…of which:	
Treated	43
Control	158

Table A2. Main QTE on earnings and robustness results. In percent of earnings at each percentile.

	Baseline				Distant pre-period		Incl. unempl.		Individ. cov.		Earnings
Percentile	M	se	W	se	M	W	M	W	M	W	
0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0
15	-8.3	10.5	23.7	11.1	-0.3	31.1	-10.4	21.7	-13.9	26.0	2472
20	-4.4	7.8	26.1	8.3	1.1	32.2	-6.3	24.2	-9.1	27.7	7466
25	-3.3	5.8	15.0	6.4	0.7	18.9	-4.6	13.7	-6.3	15.9	13245
30	-3.7	4.8	8.7	4.4	-1.3	11.2	-4.9	7.5	-5.7	9.1	18903
35	-2.4	3.7	6.6	3.8	-0.4	8.6	-3.3	5.7	-3.8	6.9	23981
40	-1.7	3.8	5.6	3.4	-0.1	7.2	-2.6	4.8	-2.9	5.8	28752
45	-0.5	3.1	3.7	2.8	0.7	5.0	-1.1	3.0	-1.3	3.8	33192
50	0.0	2.5	2.2	2.4	1.0	3.1	-0.5	1.7	-0.6	2.3	36992
55	0.1	1.6	1.6	1.8	0.9	2.2	-0.3	1.2	-0.3	1.6	40129
60	0.1	1.4	1.2	1.7	0.6	1.5	-0.3	0.9	-0.3	1.2	42870
65	0.4	1.2	0.7	1.3	0.7	0.9	0.1	0.5	0.1	0.8	45403
70	0.2	1.2	0.4	1.3	0.4	0.4	-0.1	0.1	-0.1	0.4	47847
75	0.4	1.1	0.3	1.1	0.7	0.3	0.1	0.0	0.2	0.3	50380
80	0.4	1.1	0.0	1.2	0.4	-0.2	0.1	-0.3	0.2	0.0	53237
85	0.1	1.2	0.0	1.2	0.3	-0.2	-0.1	-0.3	-0.1	-0.1	56820
90	0.0	1.2	0.0	1.2	0.2	-0.2	-0.2	-0.2	-0.1	0.0	61665
95	-0.5	1.1	-0.3	1.5	-0.1	-0.4	-0.7	-0.5	-0.6	-0.4	70036

Note: M and W indicate point estimates for men and women, respectively. Standard errors are block bootstrapped with 200 replications with the municipality as the block.

Table A3. Main QTE on earnings and robustness results. Absolute amounts, €.

	Baseline				Distant pre-period		Incl. unempl.		Individ. cov.	
Percentile	M	se	W	se	M	W	M	W	M	W
0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0
15	-205	259	587	275	-8	755	-256	536	-344	643
20	-330	584	1946	618	83	2375	-471	1806	-682	2070
25	-431	768	1990	851	87	2477	-614	1809	-828	2100
30	-708	903	1637	833	-247	2099	-931	1417	-1086	1722
35	-564	876	1590	900	-85	2049	-796	1360	-917	1659
40	-497	1101	1608	968	-23	2074	-741	1366	-828	1666
45	-154	1013	1219	937	246	1637	-377	998	-444	1264
50	11	931	824	883	378	1152	-178	637	-222	854
55	50	633	623	713	342	864	-113	462	-135	642
60	30	612	509	713	238	638	-115	365	-123	519
65	159	543	339	594	338	411	24	205	29	343
70	88	588	175	619	214	192	-43	44	-26	174
75	197	555	149	566	332	144	66	19	91	144
80	188	581	-13	639	228	-125	59	-141	86	-23
85	71	701	-24	692	174	-99	-57	-150	-31	-38
90	25	749	4	766	99	-96	-112	-132	-75	-18
95	-342	793	-231	1042	-63	-261	-494	-382	-446	-268

Note: M and W indicate point estimates for men and women, respectively. Standard errors are block bootstrapped with 200 replications with the municipality as the block.

Table A4. Main QTE on total income.

	Baseline, %		Income	Baseline, €	
Percentile	M	W		M	W
0	0.0	0.0	0	0	0
5	0.3	8.8	8775	25	772
10	0.0	6.2	15519	7	962
15	-0.3	4.1	21148	-56	873
20	-0.5	3.1	25288	-124	778
25	-0.5	3.0	28844	-135	851
30	-0.1	2.7	32118	-19	854
35	0.4	2.5	35281	124	873
40	0.2	1.9	38117	59	714
45	0.3	1.7	40631	113	701
50	0.3	1.3	42921	110	541
55	0.2	0.8	45046	71	367
60	0.2	0.8	47116	73	368
65	0.2	0.4	49183	75	215
70	0.2	0.5	51352	125	270
75	0.1	0.4	53782	28	233
80	0.0	0.4	56658	19	250
85	0.0	0.7	60297	18	434
90	-0.4	0.7	65476	-235	444
95	-1.0	0.4	74979	-731	319

Note: M and W indicate point estimates for men and women, respectively. Baseline results are in percent of income at each percentile.

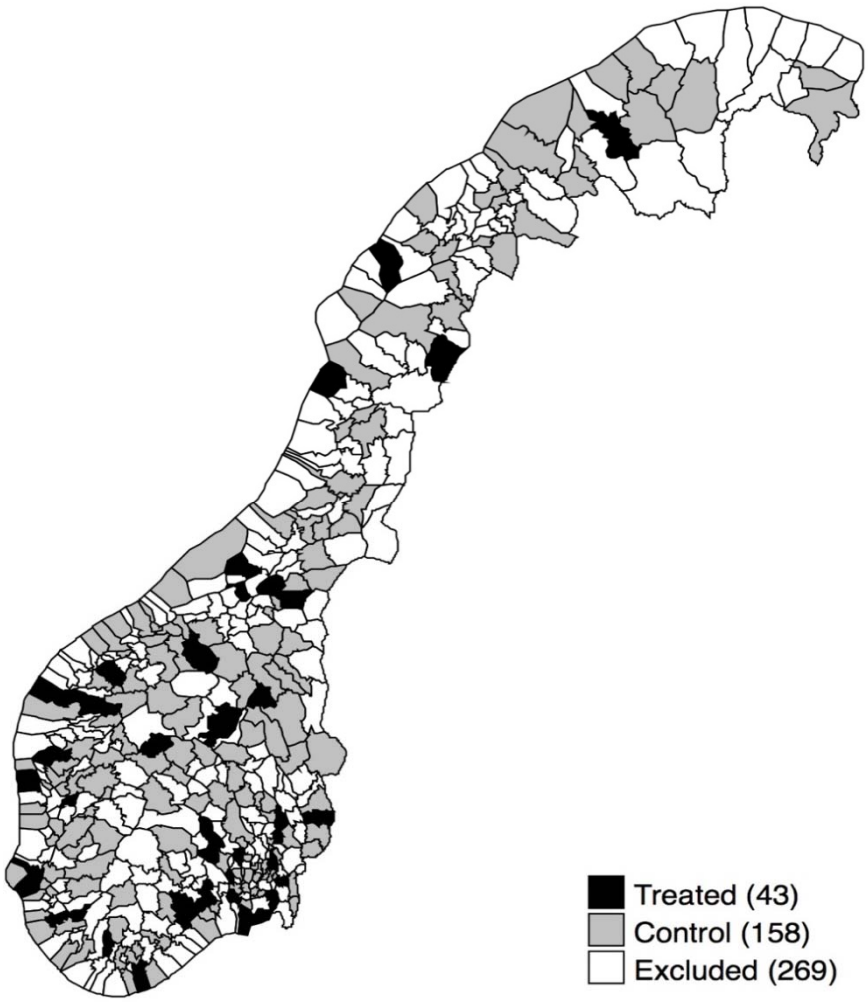

Figure A1. Treatment and control offices

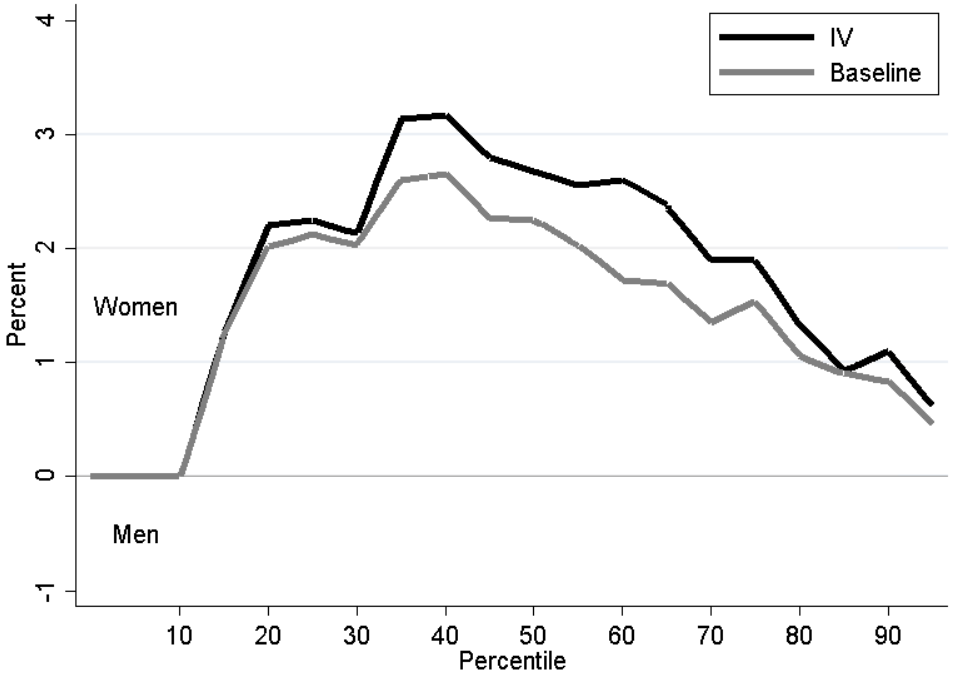

Figure A2. IV and baseline estimates of the effect of earning above 5th to 95th percentile. Women. All specifications include office and cohort fixed effects, gender, share of population with tertiary education, average age of working age population and share of immigrants.