

DISCUSSION PAPER SERIES

IZA DP No. 14793

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Market Policy in Poland**

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# What Works for Whom? Youth Labour Market Policy in Poland

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## ABSTRACT

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# What Works for Whom? Youth Labour Market Policy in Poland\*

This paper compares the relative effectiveness of selected active labour market policies available to young unemployed people in Poland over the 2015-2016 period. We use rich administrative data and propensity score matching techniques to control for the non-random selection of unemployed individuals into alternative interventions. We find large negative employment effects of participating in public works programmes, particularly among disadvantaged individuals. The differences in effectiveness between other interventions are rather small, and most become insignificant over time. We also show that vouchers that allow unemployed individuals find on-the-job training providers themselves are more effective than on-the-job training schemes in which the unemployed individuals are directed to the training providers by the public employment services (PES).

**JEL Classification:** J08, J64, J68

**Keywords:** youth unemployment, ALMP, Youth Guarantee, wage subsidies, public works, training vouchers

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# 1 Introduction

In 2013, the European Commission announced the Youth Guarantee Programme, which offered the EU member states substantial financial support to improve the labour market integration of young unemployed individuals through active labour market policies (ALMP). The objective was to tackle high unemployment among young people, which became particularly persistent after the economic crisis of 2007/2008. Did these policies work in Poland? Were any of them more effective than others? Did the effectiveness vary depending on the participants demographic characteristics? Did the policy design and implementation matter for their effectiveness? These are the key questions we aim to answer in this paper.

The main objective of our study is to compare the relative effectiveness of selected active labour market interventions available to young unemployed individuals in Poland during the period 2015-2016, i.e. on-the-job training, classroom training, public works programmes, wage subsidies, on-the-job training vouchers, and classroom training vouchers. We use rich administrative data and propensity score matching techniques to control for the non-random selection of unemployed individuals into various interventions.

This study contributes to the literature in several different areas. First, it is one of the first studies conducted in the Central and Eastern European region that provides evidence on the effectiveness of recent ALMP with the use of a rich set of administrative data on all registered unemployed individuals. Second, we provide evidence on the effectiveness of the ALMP demand-side financing measures (vouchers), which were introduced to increase participants' flexibility in choosing training providers. We compare these vouchers to standard interventions in which the unemployed have little control over the training provider, while expecting the vouchers to be a more effective support measure. We thus add to the still modest literature on the institutional design of labour market policies. Third, we analyse the heterogeneity of the relative effectiveness of these interventions, while taking into consideration not just supply-side factors (participants

gender, education), but also demand-side factors (distance to the county seat and the local unemployment rate), which have so far been overlooked in the literature.

We find large negative employment effects of participating in public works programmes, in particular among disadvantaged individuals with secondary education or less and those living in high unemployment regions. In contrast, we observe that classroom training vouchers appear to be the most effective policy for men, and wage subsidies and on-the-job training vouchers for women. The differences between other interventions are rather small, and most turn insignificant over time. We also find that vouchers that allow unemployed individuals to find on-the-job training providers themselves are more effective than on-the-job training schemes in which the unemployed are directed to the training providers by the public employment services (PES). However, we observe no such differences in classroom training, which suggests that the details of the institutional design of and the market for training influence the effectiveness of these measures.

The study is structured as follows. Section 2 discusses the literature on the effectiveness of active labour market measures. Section 3 provides information on the labour market situations of young people in Europe, and discusses in detail the ALMP studied in this paper. Section 4 describes the data and the method used. Section 5 investigates the relative effectiveness of selected instruments. The last section concludes.

## **2 Literature review**

The major strand of literature to which we contribute evaluates the employment effects of active labour market programmes (ALMP). Overall, the meta-analysis studies have shown rather consistently that wage subsidies and training have a positive impact on employment, while public works programmes have no effects, or even negative effects (Card et al., 2018; Crépon & Van Den Berg, 2016). Caliendo and Schmidl (2016) focused on studies of programmes targeted at youth, and confirmed these observations. The positive effects of wage subsidies and training seem to increase with time since ALMP

entry. One potential explanation for this result may be the lock-in effect: i.e., during the programme, participants may become less attached to the labour market because they do not look for a job. As a consequence, they have problems finding a job immediately after the end of the programme. The lock-in hypothesis has been confirmed by several studies (Doerr et al., 2017; Flores et al., 2012; Lammers & Kok, 2019).

We also contribute to the literature on ALMP effectiveness in the post-transition countries of Central and Eastern Europe (CEE). The evidence on the effects of ALMP in Poland is limited to the transition period in the 1990s (see Puhani, 2012 for a review). While the effectiveness of ALMP programmes targeted at youth has been the subject of several evaluation reports, none of them provided causal results. One of the limitations of the existing studies is that they were based solely on survey data, because administrative data have not been available for research purposes until recently. Our study is one of the first in the region to use a large administrative dataset.

Additionally, our study looks at the effects of the European Commission’s Youth Guarantee Programme. Despite the large scale of its interventions, there have been very few evaluations investigating the causal effects of this EU-wide programme. Among the few studies that did so, Bratti et al. (2018) exploited the discontinuity in eligibility for a training programme based on age, and found positive but insignificant employment results in Latvia. However, these results may be related to the small sample size. Hora and Sirovátka (2020) find positive effects of ALMP in Czech Republic, but they point out that the disadvantaged unemployed (those with low education, of older age and worse health status) and long-term unemployed are underrepresented in ALMP measures.

Finally, we contribute to the literature on the impact of institutional factors on the effectiveness of ALMP interventions. Based on a large-scale international meta-evaluation of active employment interventions, Kluve (2010) and Kluve et al. (2019) argued that the design and the implementation of an ALMP matter more than the type of the programme itself. Programmes that offer a set of interventions that respond to the multiple

needs and constraints of the participants increase the likelihood of success. For instance, programmes that pay service providers based on results are more likely to have positive impacts. In our study, we analyse differences in the effectiveness of interventions depending on who initiates them: an employment officer making an offer of training to an unemployed person, or an unemployed person proposing a training programme of her own choice and receiving a refund for the cost from the employment office (training vouchers). We expect that the latter has a higher probability of success, as the training programme should better match the preferences of the unemployed person. The existing empirical studies that examined this issue have reported inconclusive results (Doerr et al., 2017; Huber et al., 2018; Rinne et al., 2013; Schwerdt et al., 2012).

### **3 Institutional background: active labour market policies for young unemployed in Poland**

While the labour market prospects of young people in Europe suffered following the financial and economic crisis of 2007/2008, the situation was improving in 2015, when we start our analysis. The youth unemployment rate reached almost 20% at the height of the crisis, and decreased gradually in the following years. In most respects, Poland's labour market situation was similar to that of both the EU28 and the CEE average (see Table 1).

Active labour market policies are an important tool for combating unemployment. Overall, the EU countries spend a total of EUR 50-60 billion on ALMP each year, yet an additional EUR 9 billion was offered by the European Commission to support the EU Member States in the fight against youth unemployment within the framework of the so-called "Youth Guarantee" Programme in 2014-2020. In 2015, Poland spent around 0.4% of its GDP on ALMP, which was less than the EU average, but more than most

other countries in the region (see Table 1). The funding came both from national sources (Labour Fund) and the European Social Fund.

Table 1: Labour market indicators for young people (15 - 24), ALMP participants and ALMP expenditures, 2015.

	Unemployment rate	NEET rate	ALMP participation rate	ALMP expenditure (billion EUR)	ALMP expenditure (% of GDP)
	Aged 15-24			Total population	
EU-28	20.4%	12.0%	36.8%	58.9	0.40%
CEE-8	19.1%	11.9%	22.2%	1.7	0.27%
Poland	20.8%	11.0%	30.3%	3.4	0.38%

Source: own calculation based on Eurostat.

Notes: CEE8: Bulgaria, Czechia, Estonia, Latvia, Lithuania, Hungary, Romania, Slovakia. The ALMP participation rate is calculated as the number of ALMP participants over the number of unemployed. The NEET rate is the share of people who do not work, are not in education, and are not in training.

The active labour market policies in Poland are provided mainly by the public employment services (PES). These services operate at the local level, and work directly with the unemployed. Registration with the PES is mandatory to receive support. After registering, an unemployed person meets with a caseworker to prepare an action plan. Afterwards, among youth, around 60% of the unemployed receive a job offer, whereas 40% receive an offer of an ALMP. The large group of unemployed who receive only a job offer includes two different groups of workers: a smaller part of them are tertiary educated, with job experience, and as such are believed not to need any support other than job counselling. The second, larger subgroup includes mostly lower educated, long term unemployed with little or no job experience, and many women with small children. These individuals are unlikely to actively search for job or be ready to take up ones, and they register mainly to be covered by health insurance. They usually refuse to receive PES support<sup>1</sup>. These institutional factors and differences impact our identification strategy, which we discuss in the next section.

This study analyses the relative effectiveness of selected ALMP measures that were available to young unemployed people in Poland in 2015-2016: on-the-job training, classroom

<sup>1</sup>Formally, refusing to take up the any of the ALMP should result in the person being removed from the register (for a period of 120-270 days), but the PES workers we interviewed suggested that this process is long and register removals are rare.

training, public works programmes, wage subsidies, on-the-job training vouchers, and classroom training vouchers. These measures are presented in detail in the following subsections and their statistics presented in Table 2. There is a set of ALMP measures offered to young people in Poland which we do not take into account in our study, due to particular requirements their beneficiaries must meet and strong selection of unemployed to these measures. These include primarily start-up incentives, employment take up allowance, and different types of mobility allowance.

### **3.1 On-the-job training (*Staż*)**

On-the-job training is provided at the workplace to support unemployed individuals in gaining skills and work experience. Under the supervision of an experienced employee, trainees learn how to use the machines, tools, and equipment required to perform the work. The most popular areas of internship in 2015-2016 were secretarial and office work; sales, marketing, and other services (MRPiPS, 2019). For unemployed people aged 18-29, the on-the-job training can last up to 12 months. In 2015-2016, the trainee received a monthly scholarship of around EUR 220 net (around 75% of the net minimum wage). The employer is exempted from all employment-related costs, since both the scholarship and the social and health insurance contributions are paid for by the PES. Trainees are more likely to be women, younger ones, with no or short job experience. It is taken up largely by graduates.

Employers who would like to employ a trainee report the vacancy to the local PES, and specify what educational level and qualifications the candidates are required to have. A PES caseworker then directs individuals who meet these criteria to take part in a job interview with the potential employer. Finally, the employer selects the best candidates. Employers have no legal obligation to retain trainees after the training ends.

### 3.2 Classroom training (*Szkolenie*)

Classroom training is an educational activity designed to help people acquire or improve the skills or qualifications required in a given occupation. Unlike on-the-job training, it is primarily a school-based form of educational activity. Among the skills an individual can acquire through these training, the most popular in 2015-2016 were driving license, technical skills (such as welding or forklift operator), management and administration, accounting etc. The classroom training can last up to 12 months (in extraordinary cases, up to 24 months, though the average duration is around a month and is the shortest among other ALMP, Table 2). In 2015-2016, the trainees were paid a scholarship of around EUR 220 net (around 75% of the net minimum wage). The training generally ends with the trainee receiving a certificate or other document validating the qualifications she acquired during the course.

Local PES prepare a plan with a list of courses to be organised in a given year. The content of the courses is usually related to the occupations that are in demand in the region. Training providers are selected through a public procurement procedure. Individuals interested in participating in a training programme must go through the recruitment process. The decision about who can take part in the course is made by a caseworker. Some local PES also offer individual training schemes in which an unemployed person can choose the training content and ask the PES to finance it, but these are rare, according to PES staff we have interviewed. There are relatively few women taking part in classroom training (Table 2). There are two major reasons for this, interrelated. First, training fields offered correspond to the local demand reported by employers to the PES, and these vacancies are more likely to be low and medium skilled jobs, often considered male, such as lorry or forklift drivers (MRPiPS, 2019). This training is not suitable for women also because among the registered unemployed, women are twice more likely to be tertiary educated. They seek high skilled jobs and high skilled training (whereas, as Table 2 shows tertiary -educated unemployed are underrepresented among participants of classroom training). Second, these male-biased classes are more likely to

end with certificates (e.g. driving licence). Training firms offering training for women-dominated skills and occupations were not prepared for certification of their offer when Youth Guarantee was implemented (Hardy et al., 2018).

### **3.3 Wage subsidy (*Prace interwencyjne*)**

A wage subsidy is a type of subsidised employment: an employer creates a position for an unemployed individual, bears all of the employment-related costs, and is then reimbursed for these costs. A wage subsidy can be offered in any workplace. For young people, the maximum duration of participation in the scheme is 18 months. The subsidy rate is up to the minimum wage plus social security contributions. The employer is obliged to retain the worker for three or six months after the wage subsidy expires, depending on how long the programme lasted. To receive a subsidy, the employer must submit an application to a call open by the PES, and indicate what employees the firm needs. The caseworker then directs suitable candidates to take part in interviews with selected employers, and the employers decide whom to employ.

Inhabitants of rural areas appear to be overrepresented among wage subsidy beneficiaries, they are also more likely to have longer episodes of unemployment.

### **3.4 Public works (*Roboty publiczne*)**

Public works are another type of subsidised employment in which the employers must be local governments or certain local NGOs. A certain degree of dualism emerges. On the one hand, unemployed individuals are usually engaged in public tasks carried out by the local government, such as road maintenance, agricultural work, water drainage, raking leaves, snow removal, and cleaning of public places. These are often seasonal, ad hoc jobs. On the other hand, a part of public works are office jobs, often in local government bodies<sup>2</sup>. Such dualism is reflected in the distribution of participants by education with relatively high shares of tertiary and primary educated individuals. They

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<sup>2</sup>Based on own revision of public works contract for several PES.

also distinguish themselves with relatively long cumulated unemployment duration and a higher probability of having a small child.

The process for selecting the unemployed candidates is similar to that for the on-the-job training and wage subsidy programmes. The maximum duration of a public works position is 12 months. The reimbursement is up to an average wage (in the economy) plus social security contributions. The employers are not obliged to retain a worker after the subsidy expires, and most do not retain workers—local governments do not have any vacancies available and usually draw on public works as a means of providing free labour to fill in the demand.

### **3.5 On-the-job training voucher and classroom training voucher (Bon stażowy i bon szkoleniowy)**

The PES have been criticised for many years for offering unemployed individuals a narrow range of courses and low quality job offers, thus leaving them with no real choice in the providers and jobs they would like to have. Vouchers were introduced in 2014 to motivate young people (only people aged 18-29 are eligible) to look for training on their own, and to give them more flexibility in choosing the course content and training providers which should ensure a better match with the persons preferences.

Classroom training voucher gives an unemployed individual the freedom to choose the training provider, the course content and allows to finance training costs up to 100% of the average salary in the economy. In standard classroom training, it is up to 300% of the average salary in the economy. The recipients of both classroom training and classroom training voucher are paid a monthly scholarship of around EUR 240 net.

On-the-job training vouchers guarantee a six-month training period if an unemployed individual finds an employer who commits to offering her a job and to retaining her for another six months afterwards (6+6). In contrast to the regular on-the-job training, if the employer fulfils this obligation, the firm gets a one-time bonus of about EUR 350,

which serves as an additional incentive. During the training programme, the unemployed person was paid a scholarship of around EUR 220 in 2015-2016.

Voucher beneficiaries are similar to individuals who participate in standard training (on-the-job and classroom), though some differences arise: those who use on-the-job training vouchers are slightly better educated, more likely to have job experience and have shorter unemployment spells, compared to those who take up on-the-job training with standard path. As for classroom training, vouchers are even more gender-biased than the standard offer, women make only 18% of their beneficiaries. These women are much more likely to be secondary educated, with a strong underrepresentation of tertiary educated female participants, but at the same time they have much longer working experience.

## 4 Data and methods

### 4.1 Polish Public Employment Services administrative data

Our main source of data is an administrative dataset that covers the entire population of young unemployed individuals registered with the PES. The data include information on individual characteristics, including the persons entire history of unemployment spells and participation in ALMP programmes. The socio-demographic variables provided in the data include the individuals age, gender, level of education, place of residence (urban/rural), disability status, number of children aged six or younger, lack of qualifications, and recent graduate status. The data also includes information on the time since the most recent registration as unemployed, short-term and long term unemployment, total work experience, total time in the unemployment register, a dummy for having had any job before, a dummy for having been dismissed for employers reasons, a dummy for eligibility to receive unemployment benefits, a dummy for farm ownership, and a dummy for declaring an interest in migrating to other EU countries (see Table [A.1](#)).

We also draw on aggregate statistics provided by Statistics Poland. In particular, we use data collected at the NUTS 4 level: local unemployment rate, local average wage as

a percentage of the country average, distance to the poviatic city from the municipality of residence, and a variable that controls for changes in labour demand at local level<sup>3</sup>.

Third, we draw on qualitative data: semi-structured interviews with 10 PES representatives: caseworkers, career counselors, data managers and directors - from five PES offices located in different regions. The interviews were conducted in person and via phone. It allowed us to have a better understanding of the institutional setting of ALMP, their design and implementation details. These help us to interpret both some of the aggregate statistics we observe (as referred to in the previous institutional section) and the results we obtain.

We restrict our sample to ALMP granted in 2015 (the start of the Youth Guarantee Programme) and 2016. We cut our sample at the end of 2016, as we follow individuals for consecutive three years, and we have data on individual histories until the end of 2019. We include ALMP episodes that lasted for at least one day. We further restrict the sample to participants who were between 18 and 29 years when the ALMP started. As described in the previous section, we analyse six types of interventions: on-the-job training, on-the-job training vouchers, classroom training, classroom training vouchers, wage subsidies, and public works programmes. As we observe all of the individuals' registered unemployment spells, we focus on the first granted support measure<sup>4</sup>. We end up with a total sample of 319 610 individuals.

The outcome of interest is the individual labour market status after ending the ALMP programme. Therefore, we construct an outcome variable that indicates whether the beneficiary is out of the unemployment register and is not enrolled in another ALMP

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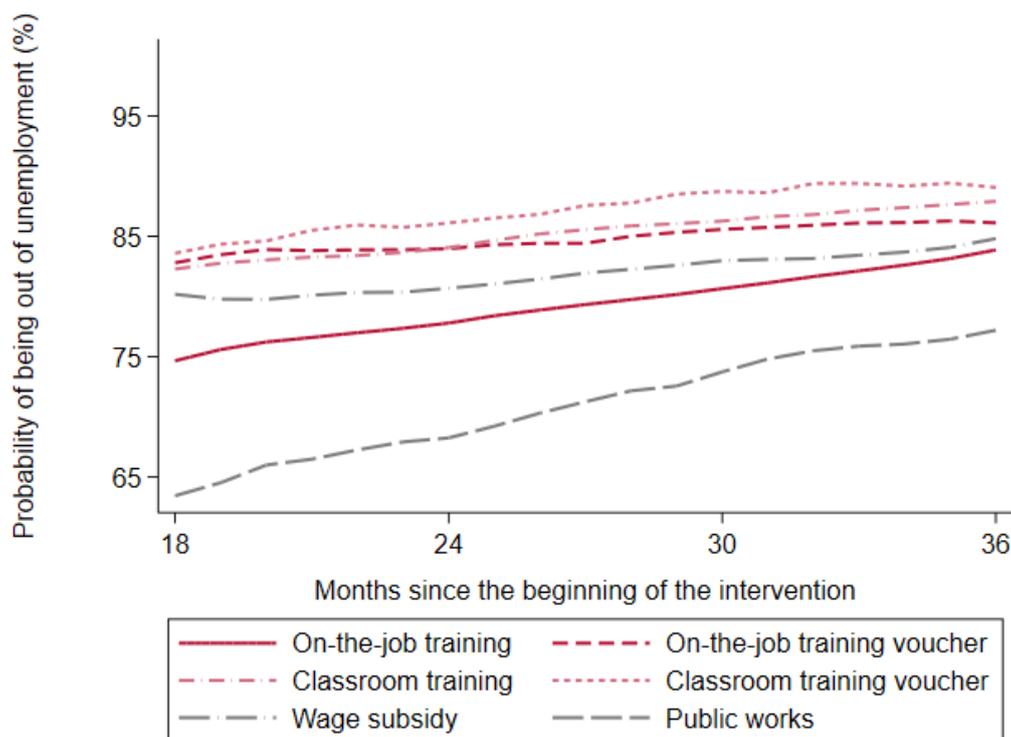
<sup>3</sup>The variable shows how much the labour demand in region R would increase if the labour demand in particular sectors in region R were to grow at the same pace as in the rest of the country (excluding region R). To measure labour demand, we use total employment levels in particular sectors and regions.

<sup>4</sup>Any subsequent programme participation is considered as a consequence of the first treatment. More than 90% of participants receive one support measure. It could be argued that for the proper identification of the effect of a particular programme, observations treated with different programmes should be excluded, as they could confound the effect. However, following our assumption that any subsequent treatment is a consequence of the first programme participation, the exclusion of individuals who received support more than once would lead to selection based on future successful outcomes (see Sianesi, 2004).

programme <sup>5</sup>. For each individual, we measure this outcome at different points in time: every 30 days for 36 consecutive periods since the programme has started.

## 4.2 Summary statistics

Figure 1: Probability of being out of unemployment register: average values of the outcome variable.



On-the-job training was the most popular ALMP taken up by young unemployed in Poland, with over 220 thousand participants in the period we analysed. Classroom training came second, with over 64 thousand beneficiaries. All the other ALMP we study were much more limited in terms of the number of participants (see Table 2).

The characteristics of participants vary significantly depending on the type of the ALMP intervention. ALMP participation is segregated by gender. As we discussed in the in-

<sup>5</sup>A person who participates in an ALMP is automatically removed from the unemployment register.

stitutional section, women are over-represented in on-the-job training, and are under-represented in classroom training. The age differences are small, although the participants in on-the-job training are the youngest, and the participants in public works are the oldest (almost 24 years old on average). Additionally, the participants in on-the-job training have much less professional experience (about a year) than the participants in the other interventions. The participants in classroom training are the most experienced (on average almost two years of job experience), although they are also the least educated. Most of the participants in the on-the-job training are short-term unemployed, in contrast to the participants in public works, who have spent 502 days in the register, on average.

The ALMP interventions differ with respect to their duration. The on-the-job training (standard and financed by vouchers) and the wage subsidies last about six months. The classroom training (both standard classroom training offered by the PES and training financed by vouchers) lasts for up to three months. Most of the public works last up to six months, but the distribution has a heavy tail, with about 10% of interventions lasting more than one year.

Figure 1 shows the average probability of being outside of the unemployment register and not in ALMP over time (our outcome variable) depending on the intervention type<sup>6</sup>. Neither the order nor the gaps between the outcomes change significantly during the presented period: the "raw" success rate is always the lowest for the public works programmes and is always the highest for the classroom training vouchers. However, these "raw" outcomes are likely driven by substantial differences in the characteristics of participants, as shown above. In the next subsection, we describe how we deal with this potential selection into particular interventions.

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<sup>6</sup>It must be noted that our outcome variable may overestimate the successful outcomes, as some of the individuals who did not register with the labour office were not employed, but withdrew from the labour market. However, we expect that the size of this effect was rather similar among the various interventions we compared and as such does not impact our results.

Table 2: Summary statistics.

	On-the-job training	On-the-job training voucher	Classroom training	Classroom training voucher	Wage subsidy	Public works	All
<b>Pre-treatment variables</b>							
Gender: Female	0.67	0.63	0.28	0.18	0.54	0.58	0.59
Age	22	22	23	23	23	23	22
Rural area	0.51	0.48	0.50	0.48	0.57	0.57	0.52
Secondary education	0.62	0.60	0.67	0.71	0.64	0.51	0.62
Tertiary education	0.30	0.32	0.17	0.15	0.25	0.34	0.27
Disability	0.02	0.01	0.02	0.01	0.02	0.03	0.02
No working experience	0.64	0.58	0.45	0.40	0.42	0.47	0.59
Working experience (days)	321	386	602	641	588	451	393
Within 14 days since the last registration	0.10	0.13	0.05	0.15	0.13	0.17	0.10
More than 12 months since the last registration	0.11	0.10	0.11	0.07	0.12	0.11	0.11
Time since the last registration (days)	162	152	171	117	166	161	163
Days in register (total)	244	205	295	269	352	491	266
No competences	0.34	0.29	0.34	0.28	0.31	0.34	0.34
Less than 12 months since finishing education	0.45	0.44	0.24	0.23	0.24	0.21	0.39
Child under 6 years old	0.10	0.09	0.11	0.10	0.13	0.15	0.10
Eligible to unemployment benefit	0.06	0.07	0.14	0.15	0.14	0.12	0.08
Reason for last separation: dismissal	0.01	0.01	0.03	0.03	0.02	0.01	0.01
Owens a farm	0.02	0.01	0.02	0.02	0.02	0.02	0.02
Agrees to work in other EU country	0.10	0.10	0.14	0.17	0.10	0.09	0.10
<b>Intervention characteristics</b>							
Duration of the intervention (days)	154	211	27	49	148	191	136
<b>Post-treatment variables</b>							
Not in register and not during ALMP (18 months)	0.75	0.83	0.82	0.84	0.80	0.63	0.76
Not in register and not during ALMP (24 months)	0.78	0.84	0.84	0.86	0.81	0.68	0.79
Not in register and not during ALMP (36 months)	0.84	0.86	0.88	0.89	0.85	0.77	0.84
Observations	227 755	8 785	64 020	5 373	32 417	9 718	319 610

Notes: Table reports average values of variables among participants of selected ALMP. Variables are described in detail in Table A.1.

### 4.3 Method

To properly estimate the casual effects of particular ALMP on a labour market outcome (in our case, no return to the unemployment register or to ALMP), we need to account for the likely non-random selection of participants into different measures. To this end, we use propensity score matching (PSM), which is one of the established methods for analysing causal relationships in the absence of counterfactual observations (Angrist & Pischke, 2008). Ideally, we would like to compare the labour market outcomes of participants in each of the ALMP interventions to the labour market outcomes of unemployed individuals who were offered no employment support. However, this is not a good strategy in our case. As discussed in the institutional section the group of youth who are registered as unemployed but received no ALMP support is very heterogeneous. On the one hand, it includes well educated individuals who do not need ALMP support, on the other hand it includes many disadvantaged young people who lack motivation to work and/or face severe obstacles to employment (caring obligations, health issues). There are likely several unobserved in our data factors that differentiate the ALMP participants and non-participants. We therefore argue that the make-up of the group of young unemployed individuals who were registered with the local PES and received no ALMP is a heavily selected group and using this group as a control could lead to bias in the estimation of ALMP effects on employment prospects. Therefore, we assess the relative effectiveness of the interventions, choosing for the treatment group a control group from the pool of participants in the other five ALMP (one by one). A similar approach i.e., the pairwise comparison of support measures using propensity score matching is well-established in the ALMP evaluation literature (see Dorsett, 2006, Stephan and Pahnke, 2011, Lechner, 2001, Lechner and Wunsch, 2008, Lechner et al., 2011).

To identify the parameters of interest, we rely on the conditional independence assumption (CIA). Thus, conditional on observable variables that impact selection into treatment, the treatment status is included as if it was randomised. In other words, we assume we are able to observe all of the potential factors that determine whether

an individual took part in a particular ALMP, and conditional on these observables, the observed outcome i.e., success on the labour market depends on participation in a particular ALMP only (Rubin, 1974, 1977). We argue that the CIA assumption is met owing to the comprehensive set of variables that we use in our model (see Caliendo et al., 2017). A similar set of variables, among the others, is used by Doerr et al. (2017), Lechner et al. (2011) and Stephan and Pahnke (2011).

Then, the mean effect of treatment  $m$  relative to treatment  $n$  for those receiving treatment  $m$  is given by the following equation:

$$\alpha_{ATE}^{m,n} = \mathbf{E}[Y^m - Y^n | D = m, \mathbf{X}] = \mathbf{E}[Y^m | D = m, \mathbf{X}] - \mathbf{E}[Y^n | D = m, \mathbf{X}] \quad (1)$$

where  $m$  denotes participants in programme  $m$  as the treated group, and  $n$  denotes the participants in programme  $n$  as the control group.  $Y^m$  ( $Y^n$ ) denotes the potential outcome when the individual is treated (not treated), and  $D = m$  ( $D = n$ ) indicates (not) obtaining a treatment. Obviously,  $\mathbf{E}[Y^n | D = m, \mathbf{X}]$  cannot be observed in the data, but it can be replaced by  $\mathbf{E}[Y^n | D = n, \mathbf{X}]$  (expected value for the control group), under the assumption of null self-selection bias conditional on the observables  $\mathbf{X}$  ( $\mathbf{E}[Y^n | D = m, \mathbf{X}] - \mathbf{E}[Y^n | D = n, \mathbf{X}] = 0$ ). The latter is true thanks to the CIA assumption, and  $\alpha_{ATE}^{m,n}$  is identified.

More specifically, we conduct nearest-neighbour propensity score matching. In the first step, we use a probit regression model to estimate the propensity scores for participants in each pair of the analysed support measures. This approach was proposed by Lechner (2001), and implemented by, among others, Lechner and Wunsch (2008) and Sianesi (2008). The model includes a comprehensive set of socio-economic and regional characteristics, described in the data section. In the second step, we match observations from the treated and the control group in such way that the distributions of the propensity scores are comparable. The parameter of interest ATT, or average treatment on the treated is the mean difference between the comparison groups.

The quality of matching in the performed regressions is sufficiently good. Most studies assume that the mean standardised bias – defined as the difference in the covariates means before and after matching, divided by the square root of the average sample variance (Rosenbaum & Rubin, 1983) – should not exceed 5%. The balance tables are presented in [Appendix B](#). Additionally, all coefficients are inside the Lechner bounds, which suggests that the common support assumption is easily met (Lechner, 2008).

## 5 Results

### 5.1 Main results

Figure 2 shows the estimates of the differences in the relative effectiveness of the six ALMP interventions we analysed. Each graph presents the impact of participating in the particular intervention  $m$ , named above the graph, on the probability of being out of the unemployment register and not in ALMP, compared to the counterfactual outcome of this group of participants if they were offered a different treatment  $n$  (named in the legend). A line above zero indicates that the programme  $m$  has a positive effect relative to the policy  $n$ , associated with that particular line. The marker on the line in each point in time indicates if the difference between compared interventions is statistically significant. For instance, in Figure 2a, we can see that 18 months<sup>7</sup> after the beginning of the intervention, the participants in the on-the-job training were more likely to be out of unemployment (by 10 pp.) than they would have been if they had participated in the public works programme (the counterfactual).

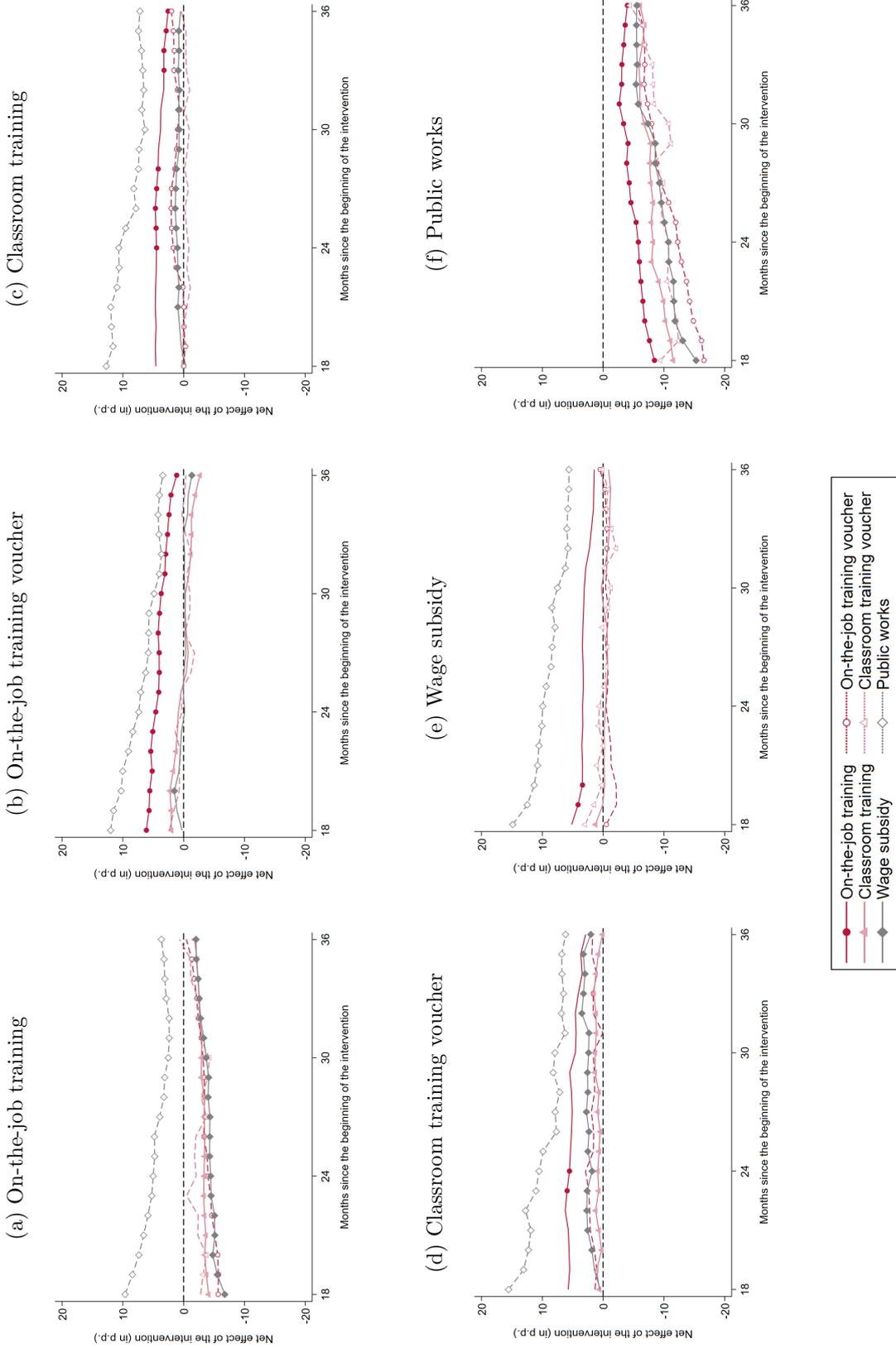
A few key findings emerge. First, it turns out that public works are the least effective intervention among those we evaluated (see Figure 2f). The effects of such intervention are always lower than those of the other ALMPs they are compared to. This finding on public works is in line with several other results in the literature (see Kluge, 2010; Sianesi, 2008). Moreover, on-the-job training is found to be less effective than all of the

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<sup>7</sup>As we are interested in long-term employment outcomes, we present results from 18th month after the intervention. Full results are available upon request.

other interventions apart from the public works (although its effects improve with time). In contrast, classroom training vouchers are represented by a line that is always above zero, indicating a positive effect relative to other interventions throughout the entire period.

Figure 2: Dynamics of ALMP effects depending on the month since the beginning of the intervention; out-of-unemployment differences in percentage points.



Notes: Figure shows the average treatment effect on the treated of participating in programme  $m$  instead of programme  $n$ . Subfigures titles indicate  $m$  programme, while the lines on the figures indicate the programme ( $n$ ) to which  $m$  is compared. The marker on the line in particular point of time indicates if the difference in effectiveness is statistically significant. Subfigure (a) reads as follows: participating in on-the-job training instead of a public works programme increases the probability of success (being out of unemployment and not in ALMP) by about 10 percentage points in the 18th month after the ALMP start and the effect is statistically significant. Estimated with propensity score matching, the balancing scores can be found in [Appendix B](#), and the variables used in the matching procedure are summarised in [Table 2](#).

Second, we find that, apart from the public works, the differences in the effectiveness of most other policies are small and virtually disappear by the end of our observation period of 36 months. Even the initially large differences between public works and other interventions become much smaller 36 months after intervention. In the remainder of this section we compare standard training interventions and training vouchers, and explore heterogeneity of effectiveness gaps depending on the selected supply- and demand-side factors.

## 5.2 Vouchers

We find that on-the-job training vouchers (which allow the unemployed individual to find the workplace that will provide the training) are more effective than standard on-the-job training interventions (in which the PES direct the unemployed person to the training provider, see Figure 3a). The difference is quite large: voucher recipients are 6 p.p. less likely to return to unemployment than they would be if they had been offered the standard on-the-job training. The effectiveness gap narrows with time, but remains significant even three years after the beginning of the intervention.

Surprisingly, we observe no such differences in classroom training (see Figure 3b). The differences in the effects of standard classroom training provided by the PES and the training financed with vouchers are very small, and are statistically insignificant.

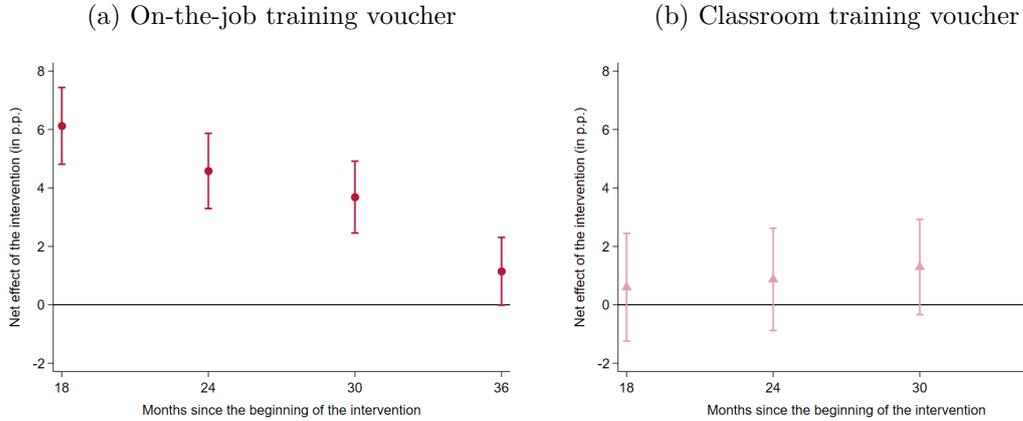
## 5.3 Heterogeneity of the effects

It is likely that the unemployed individuals exhibit different employment effects and thus, that the gaps in the relative effectiveness of the interventions differ depending on their exogenous characteristics. To investigate this heterogeneity of the relative effectiveness of the interventions, we stratify our sample along a set of supply-side (gender, education) and demand-side dimensions (distance to county seat<sup>8</sup> and local unemployment rate).

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<sup>8</sup>Close proximity to county seat means that the route distance (in km) from the municipality of residence to the poviat city is below the median.

Figure 3: Employment effects of vouchers vs standard training interventions.



Notes: Figure shows the average treatment effect on the treated of participation in an intervention financed with a voucher instead through standard financing channels. The point estimates above the zero line indicates by how much the intervention financed with voucher outperforms standard interventions. For example, participation in on-the-job training financed with voucher increased probability of success by about 6 p.p. in comparison to participation in regular on-the-job-training instead, measured in 18th month after intervention. We present 95% confidence intervals. The standard errors are computed with an estimator derived by Abadie and Imbens (2009).

The detailed results of the heterogeneity analysis for all pairwise comparisons are presented in [Appendix C](#). Among other observations, we find large gender differences in the effectiveness gaps. Classroom training (both standard and financed with vouchers) is more efficient than virtually all of the other interventions among men, but not among women. For women, classroom training is clearly more efficient only in comparison to public works. In particular, it is found to be less efficient than wage subsidies at month 18 (we present more detailed estimates in [Figure C.2c](#)). This difference might explain the under-representation of women among classroom training participants. Likely, even if women take up the training offered by local PES, if that training does not match their needs and preferences they are less likely to enter employment afterwards. This acts as a discouragement for other women to enter male-dominated types of classes. We also find that both the supply- and the demand-side factors matter for the heterogeneity of relative negative public works effects; we study these in detail below. No important dif-

ferences emerge in the rural/urban effectiveness gaps, or in the dimension of short/long distance to the county seat.

### 5.3.1 Vouchers

Figure 4: Heterogeneity: vouchers vs. standard interventions.



Notes: Figure shows the average treatment effect on the treated of participation in the intervention financed with a voucher instead of through standard financing channels for different groups. The point estimates on the right-hand-side of the dashed red zero line indicate by how much interventions financed with voucher outperform standard interventions in the given group. For example, participation in on-the-job-training financed with voucher increased probability of success by about 5 p.p. in group of males and about 6 p.p. among females, when compared to participation in standard on-the-job training. However, there is no evidence for difference between these groups, as standard error intervals for point estimates are overlapping. We present 95% confidence intervals. The standard errors are computed with an estimator derived by Abadie and Imbens (2009).

Next, we look in more detail at the heterogeneity of the differences in the effectiveness of standard training interventions and vouchers. These differences are limited (see Figure 4). The on-the-job training vouchers are found to be more effective than the standard on-the-job training interventions for all subgroups of participants, with no statistically

Figure 5: Heterogeneity: Classroom training and classroom training voucher vs. wage subsidy.

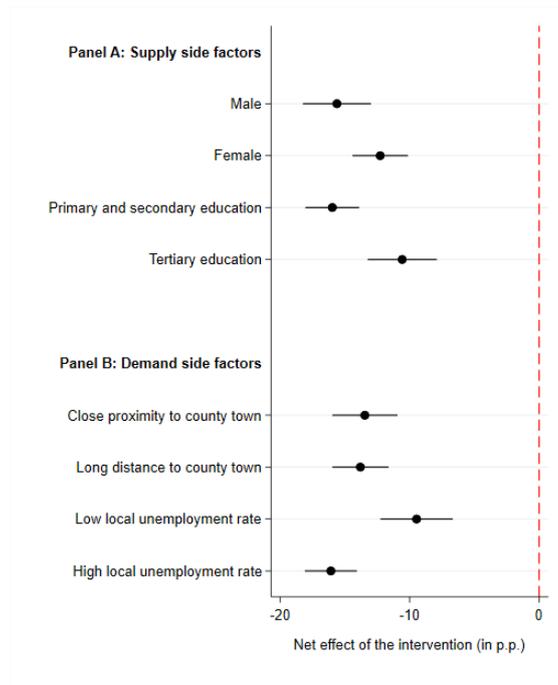


Notes: Figure shows the average treatment effect on the treated of the participation in the classroom training and classroom training financed with a voucher instead of a wage subsidy programme for different groups. The point estimates on the left-hand-side of the dashed red zero line indicate by how much participation in classroom training (standard or financed with voucher) instead of the wage subsidy program decreases the probability of success. For example, participation in standard classroom training in group of females decreased probability of success by about 5 p.p. when compared to participation in wage subsidy instead. We present 95% confidence intervals. The standard errors are computed with an estimator derived by Abadie and Imbens (2009).

significant differences being observed among them (Figure 4a). As we discussed earlier, we find no effectiveness gap between standard classroom training and training paid for with vouchers, and this result applies to all subgroups of unemployed individuals, regardless of their gender, education, or place of residence (Figure 4b). However, we find that both classroom training and classroom training vouchers are less effective for women than wage subsidies (Figures 5a and 5b) and classroom training vouchers are less effective than wage subsidies for tertiary educated (Figure 5b).

### 5.3.2 Public works

Figure 6: Heterogeneity: public works vs. wage subsidy



Notes: Figure shows the average treatment effect on the treated of participation in a public works programme instead of a wage subsidy programme for different groups. The point estimates on the left-hand-side of the dashed red zero line indicate by how much participation in public works instead of the wage subsidy program decreases probability of success. For example, participation in public works in group of tertiary educated individuals decreased the probability of success by about 10 p.p. when compared to participation in wage subsidy instead. We use 95% confidence intervals. The standard errors are computed with an estimator derived by Abadie and Imbens (2009).

Our results indicate that public works are by far the least effective intervention. To analyse the potential heterogeneity in the gap between public works and other interventions, we focus on a comparison with the wage subsidy, which is a different type of subsidised employment that is offered in the private sector. We observe that public works are less effective than other types of interventions for all subgroups of individuals, but particularly for disadvantaged individuals: i.e., those with secondary education or less, and living in areas with a high unemployment rate (Figure 6). The scarring effect identified in the literature (Nilsen & Reiso, 2014) is a likely (at least a partial) explanation of our results. While we believe that our data allows us to account for most of the potential

selection of young unemployed to public works, we cannot rule out that a part of the relative negative effectiveness of this measure does reflect unobserved heterogeneity or participants of public works and other interventions we study. Last but not least, our measure of success may not be the most relevant for public works, as it fail to capture other positive aspects this intervention may offer. These may include support in avoidance of long-term unemployment spells, which have particularly detrimental long-term effects for youth.

## 6 Conclusions

We evaluated the medium-term effects of different labour market interventions provided to young unemployed individuals in Poland between 2015 and 2016. We used rich administrative data and matching techniques that allowed us to adjust for the selection of unemployed individuals into particular interventions. We compared the relative effectiveness of six ALMP by studying the employment effects, measured as non-return to the unemployment register and not being in ALMP for three years after beginning the intervention.

We found that public works were the least effective interventions among those we evaluated, with a gap in the successful outcome of 10 to 15 percentage points at month 18 (after the intervention start) to around five percentage points after 36 months. These negative effects were shown to be particularly large for disadvantaged individuals: i.e., those with low and medium education and those living in regions with high unemployment. Of the policies we examined, classroom training vouchers appeared to be the most effective for men, and wage subsidies and on-the-job training vouchers for women. Yet when we excluded public works from the analysis, the differences in the effectiveness among the interventions were found to be rather small, and most disappeared by the end of our observation period of 36 months.

Important gender differences also concern ALMP take-up, and these may be influenced by gender gaps in ALMP effectiveness. For instance, our results showed that women were not only under-represented in classroom training (both standard forms of training and training financed with vouchers), but the classroom training that women received was less efficient than wage subsidies. Whether women were aware of this difference and therefore opted for interventions other than classroom training, or whether the low participation of women in classroom training influenced its effectiveness (by, for instance, targeting curricula mismatched with local demand), is a question that remains open.

One of the contributions of our study is our analysis of supply-side vs demand-side financing of training schemes. We found that the type of financing made a large difference for on-the-job training, as vouchers were shown to be much more effective than the standard forms of training selected and paid for by the PES. However, we found no such difference for the classroom training schemes, which suggests that who chooses the training provider is not the only factor that influenced the effectiveness of these interventions. It is likely that other institutional factors also came into play, including the structure of supply in the training markets (with many local markets targeting their offers mainly to the PES, which translates into a rather modest offer for individual customers). Thus, it appears that the design of a policy and its implementation matter a great deal for its effectiveness.

We believe that the results of our study provide evidence for policymakers that changing the allocation of unemployed individuals to particular interventions and targeting those with the largest negative effects might increase the overall effectiveness of the Youth Guarantee Programme, and youth ALMP in general. Firstly, we believe that the PES should award more on-the-job training vouchers to unemployed individuals who would typically use standard on-the-job training, especially that the cost of these measures is similar. Secondly, we argue that public works do not fulfil their role. They offer no labour market prospects to young unemployed, and are particularly disappointing for the disadvantaged ones. Too often they appear to be a way of filling up the gaps

in public administration, which under financial constraints have limited number of vacancies, and as such cannot offer continuous employment after the ALMP episode (but benefit from workers supplied by the PES). Therefore, the potential public works participants should use alternative measures. Thirdly, PES should redesign the classroom training (both standard and vouchers) to make it more attractive for women. Finally, we encourage policy-makers to draw more often on administrative data for ALMP evaluations. In the following steps, we suggest combining PES registers with the social security records (ZUS) to obtain more reliable results regarding the employment status of ALMP participants. Also, PES should aim to include in the analysis new information, to be able to better study the labour market outcomes of various unemployed individuals. For example, data from interviews with unemployed individuals that were conducted for the purpose of the profiling process could bring invaluable information about their motivation to work.

We also see several questions that call for further, more detailed research. First, one should explore better to what extent the potentially heterogenous outreach of ALMP to young unemployed impacts the effectiveness of the support offered. Second, given the large regional differences in labour market situation, more research is needed on the most effective interventions in different labour markets including those close to monopsonistic structures. Three, we need to learn more about gender differences in ALMP take up and effectiveness and factors behind these. Related to this is the fourth important research strand, on the detailed role of policy design and implementation for policy successes and failures. Finally, we see the need to study different outcomes of ALMP moving beyond employment and focusing also on job quality, earnings or jobs stability, for instance.

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## Appendix A Descriptive statistics

Table A.1: Variable descriptions (i.)

Variable	Description	Categories/Scale
Gender		0 = male ; 1 = female
Age		individuals between 18 and 29 age old
Rural area		0 = lives in urban area; 1 = lives in rural area
Secondary education		1 = secondary education 0 = other education
Tertiary education		1 = tertiary education 0 = other education
Disability		1 = person with disabilities 0 = person without disabilities
No working experience		1 = individual without professional experience 0 = individual has professional experience
Working experience (days)		Working experience in days
Within 14 days since last registration		1 = True 0 = False
More than 12 month since the last registration		1 = True 0 = False
Time since last registration (days)		Time since last registration in days
Days in register (total)		Total time spent in unemployed register in days
No qualifications	Individual without professional competence	1 = True 0 = False
Less than 12 months since finishing education		1 = True 0 = False
Child under 6 years old	Individual has at least one child under 6 years old	1 = True 0 = False
Eligible to unemployment benefit		1 = True 0 = False
Reason for last separation: dismissal		1 = True 0 = False
Owns a farm		1 = True 0 = False
Agrees to work in other EU country		1 = True 0 = False
Regional unemployment rate	Unemployment rate in poviats (NUTS4)	
Regional income	The ratio of the average income in poviats to the average income in whole country	
Distance to city	The route distance (in km) from municipality of residence to the poviats city	

# Appendix B Balance tables

Table B.1: Balance table: On-the-job training

	On-the-job training - On-the-job training voucher	Classroom training	On-the-job training - Classroom training voucher	On-the-job training - Wage subsidy	On-the-job training - Public works
	Raw std. diff.	Matched std. diff.	Raw std. diff.	Matched std. diff.	Raw std. diff.
Gender: Female	0.087	-0.002	1.149	0.251	0.158
Age	-0.097	-0.010	-0.258	-0.290	-0.465
Rural area	0.054	0.011	0.046	-0.123	-0.117
Secondary education	0.037	0.011	-0.231	-0.063	0.217
Tertiary education	-0.045	-0.013	0.361	0.109	-0.103
Disability	0.065	-0.005	0.096	0.049	-0.064
No working experience	0.123	-0.001	0.418	0.470	0.354
If was ever employed	-0.107	-0.021	-0.449	-0.443	-0.401
Working experience (days)	-0.115	-0.001	-0.510	-0.434	-0.238
Within 14 days since the last registration	-0.077	0.023	-0.165	-0.081	0.024
More than 12 months since the last registration	0.025	-0.007	0.144	-0.030	-0.007
Time since the last registration (days)	0.037	-0.019	0.202	-0.014	0.009
Days in register (total)	0.097	-0.001	-0.029	-0.250	-0.482
No competences	0.123	0.007	0.157	0.083	0.023
Less than 12 months since finishing education	0.004	-0.008	0.466	0.451	0.510
Child under 6 years old	0.030	0.003	0.007	-0.091	-0.148
Eligible to unemployment benefit	-0.052	-0.009	-0.313	-0.268	0.025
Reason for last separation: dismissal	-0.006	0.002	-0.126	-0.083	0.002
Owens a farm	0.055	-0.003	0.017	-0.038	-0.040
Agrees to work in other EU country	0.008	-0.002	-0.228	-0.017	0.045
Regional unemployment rate	0.198	0.029	0.018	-0.150	-0.448
Distance from place of residence to powiat city	-0.022	0.001	-0.003	-0.097	-0.234
Regional wage	-0.174	-0.006	-0.152	0.142	0.181
Labour demand	-0.109	-0.034	0.014	-0.116	-0.119
Total	0.084	0.01	0.214	0.165	0.195

Notes: Table reports standard differences between treated and control groups for raw and matched samples. The quality of matching is considered as sufficient if the standard difference does not exceed 5%.

Table B.2: Balance table: On-the-job training voucher

	On-the-job training voucher - Matched std. diff.	On-the-job training voucher - Raw std. diff.	Classroom training - Matched std. diff.	Classroom training - Raw std. diff.	On-the-job training voucher - Matched std. diff.	On-the-job training voucher - Raw std. diff.	Wage subsidy - Matched std. diff.	Wage subsidy - Raw std. diff.	On-the-job training voucher - Matched std. diff.	On-the-job training voucher - Raw std. diff.
Gender: Female	-0.087	0.743	-0.006	1.036	0.004	0.164	0.020	0.071	0.029	0.029
Age	-0.097	-0.178	-0.006	-0.166	-0.082	-0.197	0.013	-0.374	-0.024	-0.024
Rural area	-0.054	-0.043	0.007	-0.008	0.157	-0.178	-0.008	-0.172	-0.005	-0.005
Secondary education	-0.037	-0.178	0.024	-0.269	0.076	-0.100	-0.084	0.179	0.032	0.032
Tertiary education	0.045	0.344	-0.009	0.406	-0.076	0.153	0.038	-0.058	-0.017	-0.017
Disability	-0.065	-0.031	0.001	0.033	0.004	-0.016	-0.004	-0.127	-0.002	-0.002
No working experience	-0.123	0.282	-0.003	0.390	-0.001	0.342	0.007	0.229	-0.026	-0.026
If was ever employed	0.107	-0.232	0.013	-0.338	-0.050	-0.332	0.001	-0.291	0.010	0.010
Working experience (days)	0.115	-0.338	0.003	-0.399	-0.043	-0.321	-0.015	-0.120	-0.002	-0.002
Within 14 days since the last registration	0.077	0.282	-0.026	-0.088	-0.005	-0.003	-0.006	-0.151	0.061	0.061
More than 12 months since the last registration	-0.025	-0.031	-0.019	0.119	0.058	-0.055	-0.016	-0.032	-0.032	-0.032
Time since the last registration (days)	-0.037	-0.072	-0.017	0.174	0.059	-0.054	-0.011	-0.027	-0.038	-0.038
Days in register (total)	-0.097	-0.230	-0.016	-0.166	-0.004	-0.355	-0.001	-0.580	-0.037	-0.037
No competences	-0.123	-0.099	0.001	0.034	-0.020	-0.040	-0.008	-0.100	0.013	0.013
Less than 12 months since finishing education	-0.004	0.433	-0.009	0.462	-0.024	0.446	-0.000	0.505	-0.004	-0.004
Child under 6 years old	-0.030	-0.071	-0.021	-0.024	-0.026	-0.121	0.015	-0.178	-0.017	-0.017
Eligible to unemployment benefit	0.052	-0.238	0.006	-0.263	0.024	-0.218	-0.015	-0.190	0.016	0.016
Reason for last separation: dismissal	0.006	-0.114	0.008	-0.120	0.030	-0.077	0.011	0.009	-0.001	-0.001
Owns a farm	-0.055	-0.091	-0.015	-0.038	0.050	-0.092	-0.068	-0.094	-0.030	-0.030
Agrees to work in other EU country	-0.008	-0.129	-0.027	-0.235	-0.074	-0.025	-0.025	0.037	-0.045	-0.045
Regional unemployment rate	-0.198	-0.077	-0.016	-0.184	0.071	-0.354	0.006	-0.654	0.011	0.011
Distance from place of residence to poviat city	0.022	0.009	0.000	0.019	0.130	-0.072	0.017	-0.205	-0.014	-0.014
Regional wage	0.174	0.093	0.015	0.023	0.303	0.303	-0.030	0.349	0.012	0.012
Labour demand	0.109	0.012	-0.013	0.121	-0.013	-0.004	0.003	-0.007	0.032	0.032
Total	0.084	0.176	0.012	0.202	0.045	0.159	0.012	0.176	0.023	0.023

Notes: Table reports standard differences between treated and control groups for raw and matched samples. The quality of matching is considered as sufficient if the standard difference does not exceed 5%.

Table B.3: Balance table: Classroom training

	Classroom training - On-the-job training	Classroom training - On-the-job training voucher	Classroom training - Classroom training voucher	Classroom training - Wage subsidy	Classroom training - Public works
	Raw std. diff.	Matched std. diff.	Raw std. diff.	Matched std. diff.	Raw std. diff.
Gender: Female	-0.843	-0.010	-0.743	-0.562	-0.663
Age	0.269	-0.020	0.178	-0.013	-0.181
Rural area	-0.011	0.032	0.043	-0.134	-0.128
Secondary education	0.141	0.024	0.178	0.077	0.360
Tertiary education	-0.298	-0.004	-0.344	-0.189	0.010
Disability	-0.034	-0.014	0.031	0.015	-0.403
No working experience	-0.418	0.005	-0.292	0.049	-0.097
If was ever employed	0.341	0.000	0.232	-0.027	-0.071
Working experience (days)	0.446	-0.010	0.338	0.018	-0.058
Within 14 days since the last registration	-0.207	0.005	-0.282	0.014	0.230
More than 12 months since the last registration	0.006	-0.045	0.031	-0.029	-0.428
Time since the last registration (days)	0.032	-0.046	0.072	-0.033	0.041
Days in register (total)	0.127	-0.015	0.230	-0.124	-0.371
No competences	-0.023	-0.021	0.099	0.059	-0.001
Less than 12 months since finishing education	-0.437	0.001	-0.433	0.013	-0.076
Child under 6 years old	0.041	-0.019	0.071	-0.051	-0.019
Eligible to unemployment benefit	0.288	0.007	0.238	0.020	0.006
Reason for last separation: dismissal	0.120	0.009	0.114	0.039	0.089
Owms a farm	0.037	-0.005	0.091	-0.001	0.026
Agrees to work in other EU country	0.122	0.001	0.129	0.104	-0.003
Regional unemployment rate	-0.117	-0.016	0.077	-0.021	0.166
Distance from place of residence to poviat city	0.013	0.015	-0.009	-0.083	-0.561
Regional wage	0.085	-0.009	-0.093	0.224	-0.218
Labour demand	0.091	-0.002	-0.012	0.030	0.269
Total	0.168	0.013	0.176	0.101	0.016
					0.185
					0.044

Notes: Table reports standard differences between treated and control groups for raw and matched samples. The quality of matching is considered as sufficient if the standard difference does not exceed 5%.

Table B.4: Balance table: Classroom training voucher

	Classroom training voucher - On-the-job training	Classroom training voucher - On-the-job training	Classroom training voucher - On-the-job training	Classroom training voucher - Classroom training	Classroom training voucher - Wage subsidy	Classroom training voucher - Public works
	Raw std. diff.	Matched std. diff.	Raw std. diff.	Matched std. diff.	Raw std. diff.	Matched std. diff.
Gender: Female	-1.149	-0.018	-1.086	-0.016	-0.836	-0.946
Age	0.258	-0.073	0.166	0.004	-0.029	-0.200
Rural area	-0.046	0.039	0.008	-0.004	-0.170	-0.164
Secondary education	0.231	0.017	0.269	0.001	0.167	0.453
Tertiary education	-0.361	-0.049	-0.406	0.014	-0.251	-0.466
Disability	-0.096	0.000	-0.083	0.003	-0.049	-0.157
No working experience	-0.519	0.022	-0.390	-0.006	-0.046	-0.157
If was ever employed	0.449	-0.006	0.338	0.011	0.006	0.046
Working experience (days)	0.510	-0.032	0.399	-0.000	0.083	0.292
Within 14 days since the last registration	0.165	-0.002	0.088	-0.013	0.085	-0.063
More than 12 months since the last registration	-0.144	-0.015	-0.119	0.017	-0.174	-0.151
Time since the last registration (days)	-0.202	-0.018	-0.174	-0.009	-0.227	-0.188
Days in register (total)	0.061	-0.023	0.166	-0.009	-0.199	-0.443
No competences	-0.157	0.029	-0.084	-0.016	-0.074	-0.134
Less than 12 months since finishing education	-0.466	0.019	-0.462	0.001	-0.015	0.042
Child under 6 years old	-0.007	0.005	0.024	0.025	-0.098	-0.154
Eligible to unemployment benefit	0.313	-0.029	0.263	-0.027	0.045	0.074
Reason for last separation: dismissal	0.126	0.000	0.120	-0.040	0.045	0.128
Owns a farm	-0.017	0.012	0.038	-0.032	-0.054	-0.057
Agrees to work in other EU country	0.228	-0.010	0.235	0.001	0.211	0.272
Regional unemployment rate	-0.018	0.011	0.184	-0.018	-0.172	-0.475
Distance from place of residence to poviat city	0.003	0.038	-0.019	-0.014	-0.083	-0.229
Regional wage	0.152	-0.011	-0.023	0.004	0.283	0.329
Labour demand	-0.014	-0.002	-0.121	-0.005	-0.128	-0.131
Total	0.214	0.019	0.202	0.013	0.146	0.228

Notes: Table reports standard differences between treated and control groups for raw and matched samples. The quality of matching is considered as sufficient if the standard difference does not exceed 5%.

Table B.5: Balance table: wage subsidy

	Wage subsidy - On-the-job training		Wage subsidy - On-the-job training voucher		Classroom training		Wage subsidy - Classroom training voucher		Public works	
	Raw std. diff.	Matched std. diff.	Raw std. diff.	Matched std. diff.	Raw std. diff.	Matched std. diff.	Raw std. diff.	Matched std. diff.	Raw std. diff.	Matched std. diff.
Gender: Female	-0.251	0.015	-0.164	0.002	0.562	0.006	0.836	0.012	-0.092	0.009
Age	0.290	-0.000	0.197	-0.000	0.013	0.005	0.029	0.026	-0.173	-0.030
Rural area	0.123	-0.006	0.178	0.007	0.134	0.001	0.170	0.058	0.006	0.010
Secondary education	0.063	0.013	0.100	-0.024	-0.077	0.009	-0.167	-0.038	0.281	0.012
Tertiary education	-0.109	-0.008	-0.153	0.028	0.189	0.010	0.251	0.041	-0.212	-0.013
Disability	-0.049	0.006	0.016	-0.005	-0.015	-0.006	0.049	-0.016	-0.112	-0.031
No working experience	-0.470	-0.003	-0.342	0.017	-0.049	-0.003	0.046	-0.067	-0.111	0.010
If was ever employed	0.443	0.001	0.332	-0.024	0.098	0.007	-0.006	0.037	0.040	-0.001
Working experience (days)	0.434	0.000	0.321	-0.022	-0.026	-0.011	-0.083	0.020	0.210	-0.043
Within 14 days since the last registration	0.081	-0.007	0.003	0.014	0.286	-0.018	-0.085	-0.003	-0.148	0.011
More than 12 months since the last registration	0.030	-0.010	0.055	-0.039	0.024	-0.013	0.174	-0.065	0.023	-0.018
Time since the last registration (days)	0.014	-0.007	0.054	-0.031	-0.018	-0.014	0.227	-0.066	0.024	-0.027
Days in register (total)	0.250	0.005	0.355	-0.024	0.124	-0.010	0.199	0.029	-0.258	-0.030
No competences	-0.083	0.004	0.040	-0.003	-0.059	-0.012	0.074	-0.064	-0.060	0.021
Less than 12 months since finishing education	-0.451	0.002	-0.446	0.023	-0.013	-0.010	0.015	-0.047	0.057	0.031
Child under 6 years old	0.091	0.001	0.121	-0.006	0.051	0.010	0.098	0.003	-0.057	-0.008
Eligible to unemployment benefit	0.268	0.002	0.218	-0.023	-0.020	0.011	-0.045	0.074	0.029	-0.018
Reason for last separation: dismissal	0.083	-0.015	0.077	0.003	-0.039	-0.004	-0.045	0.056	-0.041	-0.041
Owms a farm	0.038	0.001	0.092	0.016	0.001	0.003	0.054	0.084	-0.002	-0.048
Agrees to work in other EU country	0.017	-0.008	0.025	-0.022	-0.104	-0.008	-0.211	0.014	0.062	-0.034
Regional unemployment rate	0.150	0.009	0.354	0.017	0.268	-0.014	0.172	0.094	-0.302	-0.012
Distance from place of residence to poviat city	0.097	-0.004	0.072	0.001	0.083	0.001	0.093	0.034	-0.139	-0.003
Regional wage	-0.142	-0.016	-0.303	-0.035	-0.224	-0.005	-0.283	-0.094	0.024	-0.025
Labour demand	0.116	0.003	0.004	-0.017	0.016	-0.007	0.128	-0.040	-0.003	-0.006
Total	0.165	0.006	0.159	0.017	0.101	0.009	0.146	0.042	0.099	0.019

Notes: Table reports standard differences between treated and control groups for raw and matched samples. The quality of matching is considered as sufficient if the standard difference does not exceed 5%.

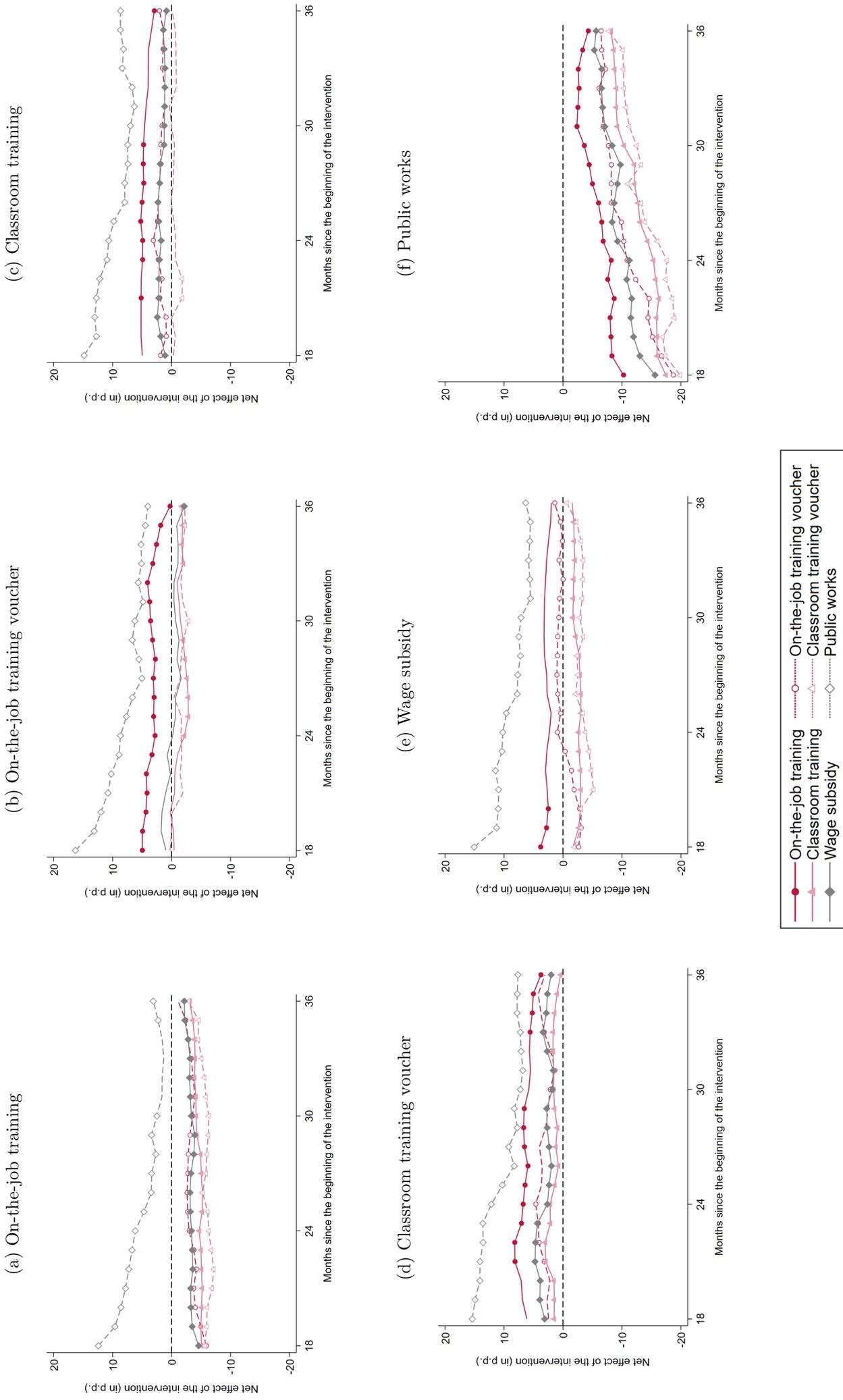
Table B.6: Balance table: public works

	Public works - On-the-job training voucher		Public works - On-the-job training voucher		Public works - Classroom training		Public works - Classroom training voucher		Public works - Wage subsidy	
	Raw std. diff.	Matched std. diff.	Raw std. diff.	Matched std. diff.	Raw std. diff.	Matched std. diff.	Raw std. diff.	Matched std. diff.	Raw std. diff.	Matched std. diff.
Gender: Female	-0.158	0.006	-0.071	0.004	0.663	0.010	0.946	0.041	0.092	0.000
Age	0.465	0.011	0.374	-0.020	0.181	0.002	0.199	0.013	0.173	0.003
Rural area	0.117	-0.014	0.172	-0.006	0.128	0.028	0.163	0.143	-0.006	-0.004
Secondary education	-0.217	0.023	-0.179	0.013	-0.360	-0.002	-0.453	-0.037	-0.281	0.004
Tertiary education	0.103	-0.009	0.058	-0.005	0.403	0.034	0.466	0.073	0.212	-0.013
Disability	0.064	0.005	0.127	0.038	0.097	-0.014	0.157	0.089	0.112	0.010
No working experience	-0.354	-0.022	-0.229	-0.019	0.062	-0.007	0.157	-0.172	0.111	-0.028
If was ever employed	0.401	0.022	0.291	-0.002	0.058	0.019	-0.046	0.053	-0.040	0.029
Working experience (days)	0.238	0.025	0.120	-0.007	-0.230	-0.004	-0.291	0.073	-0.210	0.015
Within 14 days since the last registration	0.228	0.015	0.151	0.030	0.428	0.013	0.063	0.040	0.148	-0.006
More than 12 months since the last registration	0.007	-0.012	0.032	-0.008	0.001	-0.042	0.151	-0.077	-0.023	0.008
Time since the last registration (days)	-0.009	-0.026	0.027	-0.031	-0.041	-0.040	0.188	-0.132	-0.024	-0.005
Days in register (total)	0.482	-0.003	0.580	-0.004	0.371	-0.072	0.442	-0.109	0.258	0.026
No competences	-0.023	-0.003	0.100	-0.027	0.001	-0.034	0.134	-0.106	0.060	-0.024
Less than 12 months since finishing education	-0.510	-0.026	-0.505	0.007	-0.070	0.020	-0.041	-0.010	-0.057	-0.008
Child under 6 years old	0.148	-0.005	0.178	0.009	0.107	-0.014	0.154	0.076	0.057	0.026
Eligible to unemployment benefit	0.240	-0.009	0.190	0.016	-0.049	0.024	-0.074	0.116	-0.029	0.013
Reason for last separation: dismissal	-0.002	-0.020	-0.009	-0.016	-0.122	0.013	-0.128	0.039	-0.085	0.030
Owms a farm	0.040	0.003	0.094	-0.007	0.003	-0.013	0.055	0.005	0.002	-0.006
Agrees to work in other EU country	-0.045	-0.012	-0.037	-0.049	-0.166	-0.013	-0.272	-0.045	-0.062	-0.012
Regional unemployment rate	0.448	-0.016	0.654	0.010	0.561	-0.007	0.474	0.106	0.302	0.004
Distance from place of residence to poviat city	0.234	-0.009	0.205	-0.053	0.218	0.023	0.229	0.075	0.139	0.010
Regional wage	-0.181	0.001	-0.349	-0.007	-0.269	0.008	-0.329	-0.065	-0.024	-0.010
Labour demand	0.119	-0.009	0.007	-0.009	0.019	-0.018	0.131	-0.023	0.003	0.008
Total	0.195	0.013	0.176	0.016	0.185	0.021	0.228	0.066	0.099	0.012

Notes: Table reports standard differences between treated and control groups for raw and matched samples. The quality of matching is considered as sufficient if the standard difference does not exceed 5%.

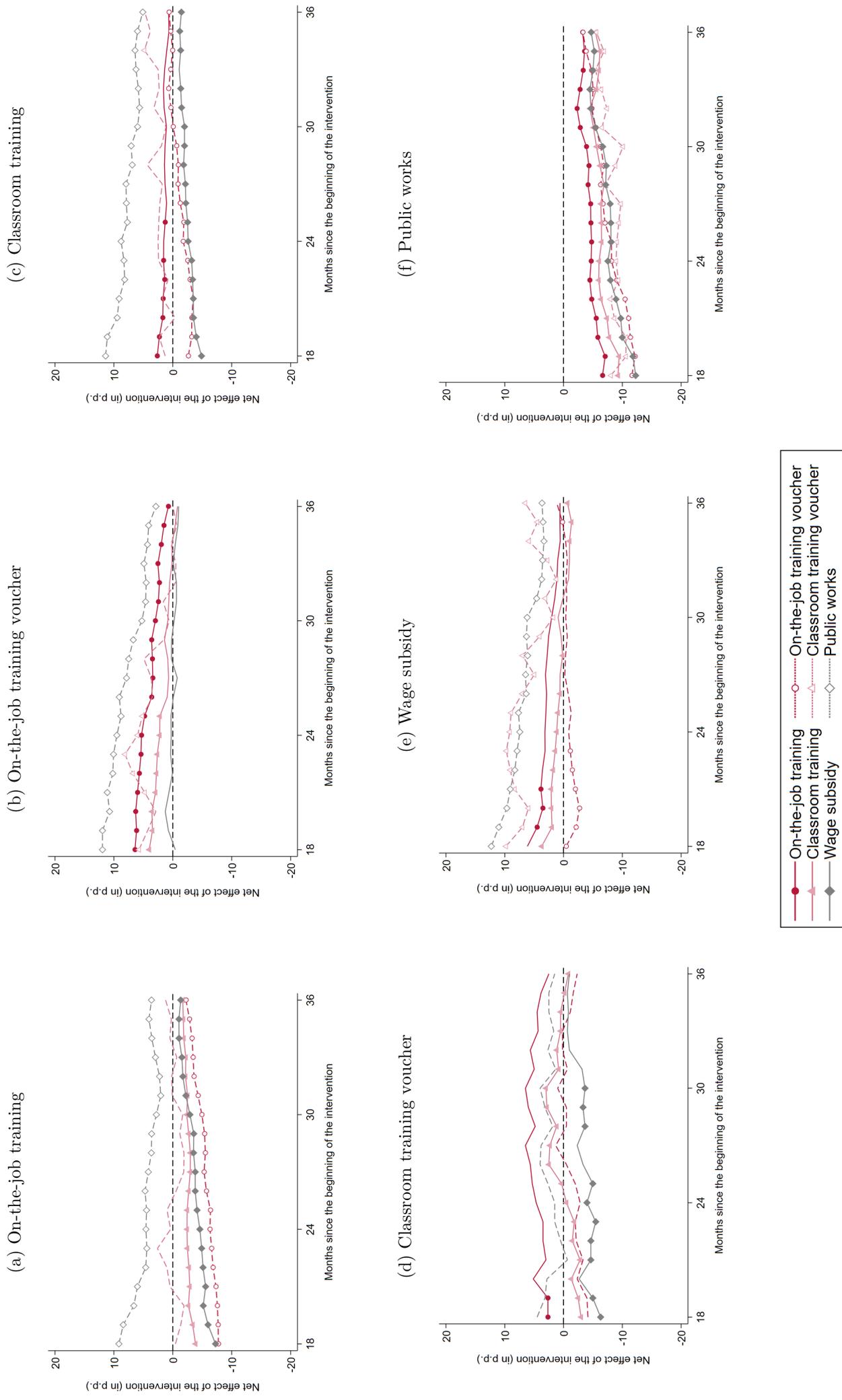
## Appendix C Heterogeneity of the effects

Figure C.1: Estimated effect of the participation in  $m$  ALMP measure compared with participation in  $n$  ALMP measure - males.



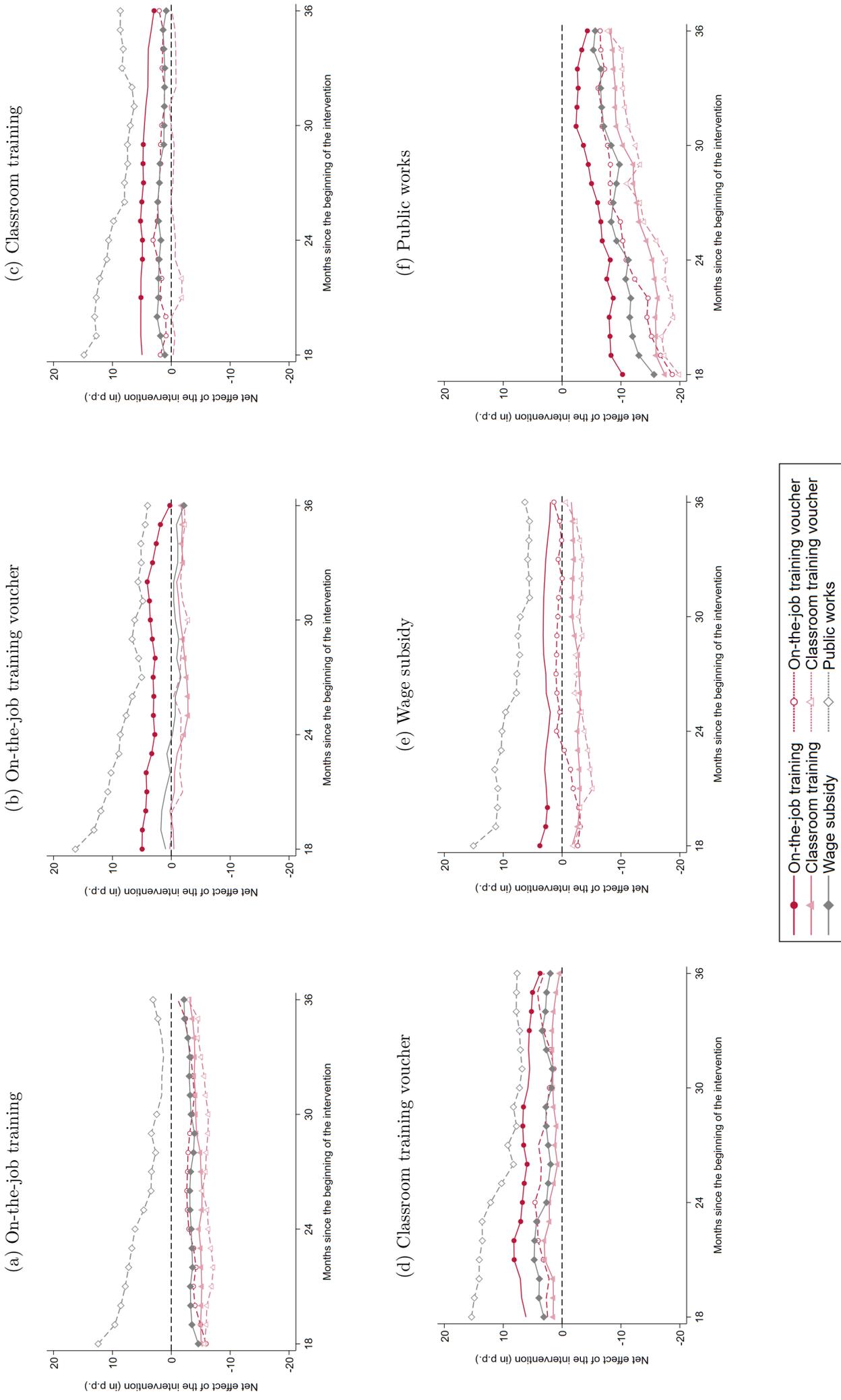
Notes: Figure shows what the net effect of participating in program  $m$  instead of program  $n$ . Subfigures titles indicates  $m$  program, while lines on the figures the program to which is compared ( $n$ ). The marker on the line in particular point of time indicates if the difference in effectiveness is statistically significant. Subfigure (a) reads as follows: participating in on-the-job training instead of public works increases probability of being out of register by about 12 percentage points in 18th month after ALMP start and the effect is statistically significant. Estimated with propensity score matching, balancing scores can be found in [Appendix B](#) and variables used in matching procedure are summarized in [Table 2](#).

Figure C.2: Estimated effect of the participation in  $m$  ALMP measure compared with participation in  $n$  ALMP measure - females.



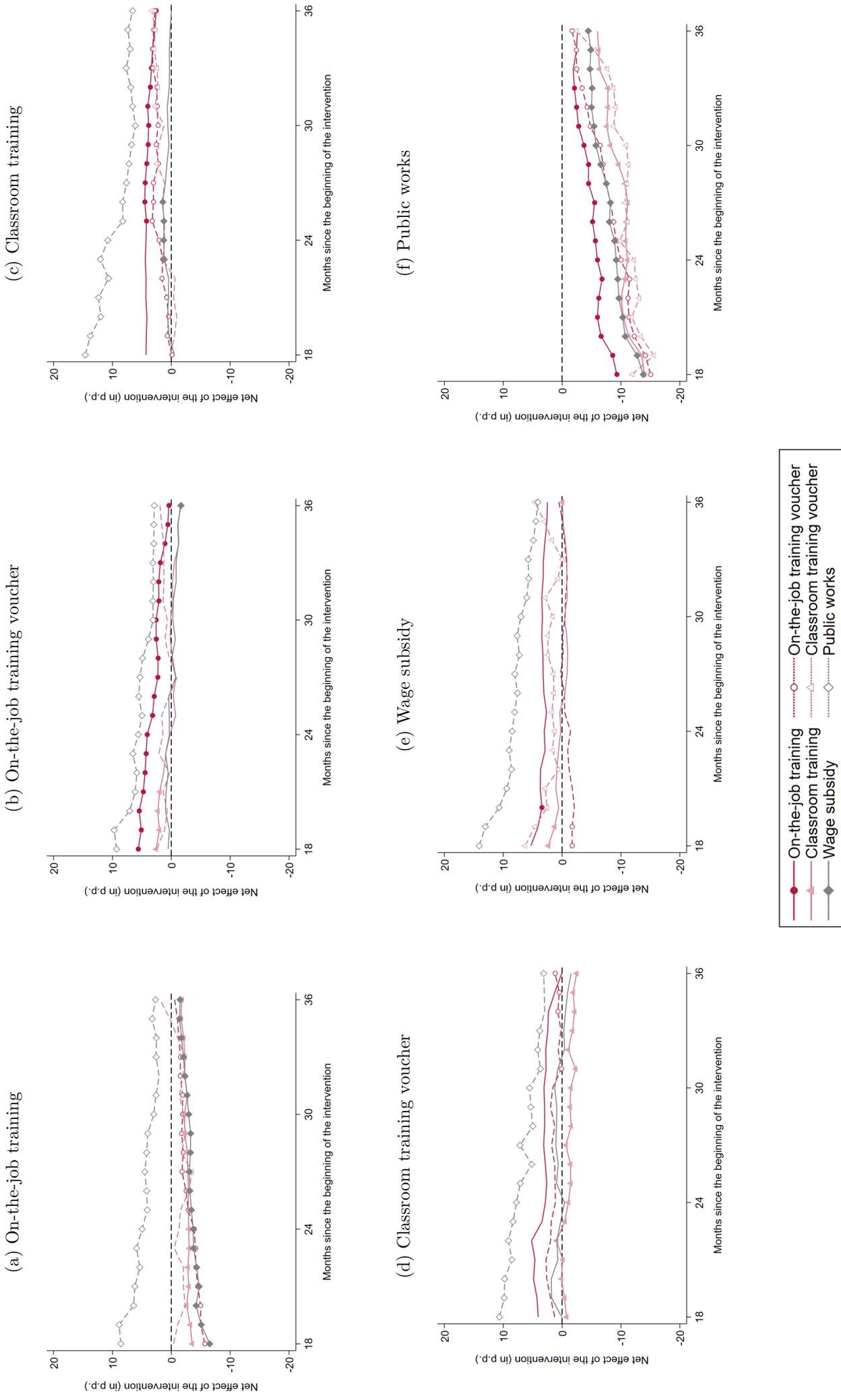
Notes: Figure shows what the net effect of participating in program  $m$  instead of program  $n$ . Subfigures titles indicates program  $m$ , while lines on the figures the program to which is compared ( $n$ ). The marker on the line in particular point of time indicates if the difference in effectiveness is statistically significant. Subfigure (a) reads as follows: participating in on-the-job training instead of public works increases probability of being out of register by about 10 percentage points in 18th month after ALMP start and the effect is statistically significant. Estimated with propensity score matching, balancing scores can be found in [Appendix B](#) and variables used in matching procedure are summarized in [Table 2](#).

Figure C.3: Estimated effect of the participation in  $m$  ALMP measure compared with participation in  $n$  ALMP measure - rural area.



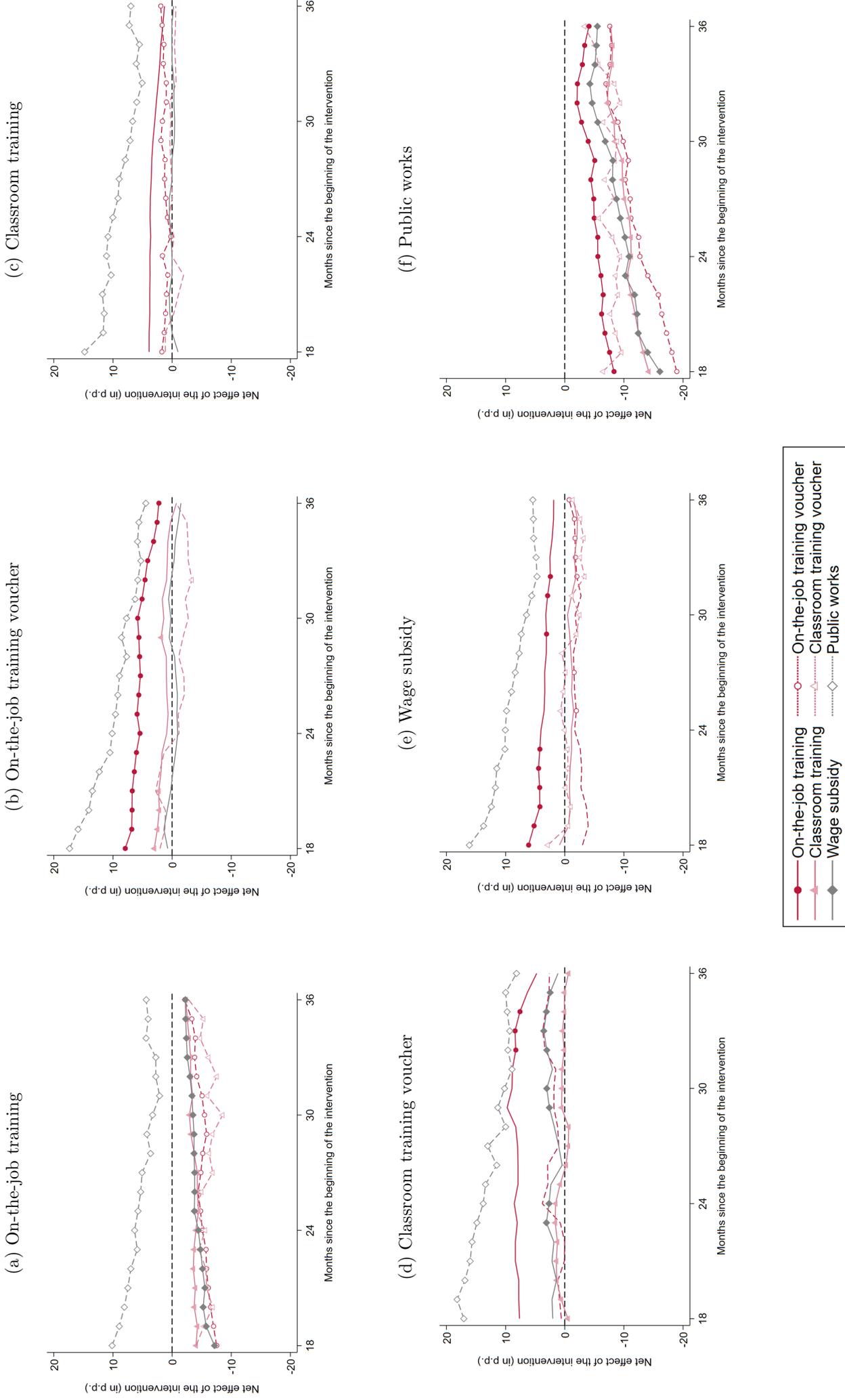
Notes: Figure shows what the net effect of participating in program  $m$  instead of program  $n$ . Subfigures titles indicates  $m$  program, while lines on the figures the program to which is compared ( $n$ ). The marker on the line in particular point of time indicates if the difference in effectiveness is statistically significant. Subfigure (a) reads as follows: participating in on-the-job training instead of public works increases probability of being out of register by about 13 percentage points in 18th month after ALMP start and the effect is statistically significant. Estimated with propensity score matching; balancing scores can be found in [Appendix B](#) and variables used in matching procedure are summarized in [Table 2](#).

Figure C.4: Estimated effect of the participation in  $m$  ALMP measure compared with participation in  $n$  ALMP measure - urban area.



Notes: Figure shows what the net effect of participating in program  $m$  instead of program  $n$ . Subfigures titles indicates  $m$  program, while lines on the figures the program to which is compared ( $n$ ). The marker on the line in particular point of time indicates if the difference in effectiveness is statistically significant. Subfigure (a) reads as follows: participating in on-the-job training instead of public works increases probability of being out of register by about 8 percentage points in 18th month after ALMP start and the effect is statistically significant. Estimated with propensity score matching; balancing scores can be found in [Appendix B](#) and variables used in matching procedure are summarized in [Table 2](#).

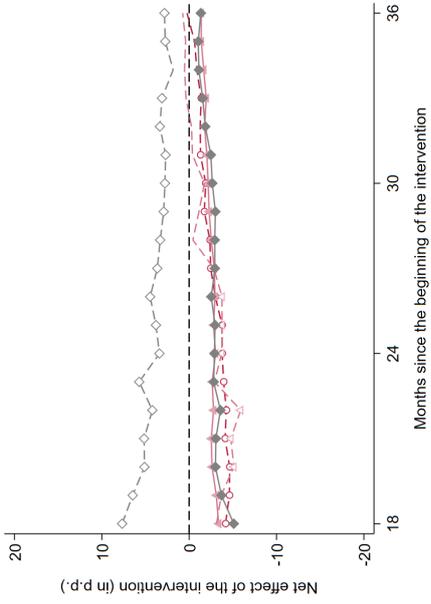
Figure C.5: Estimated effect of the participation in  $m$  ALMP measure compared with participation in  $n$  ALMP measure - unemployment in poviat above median.



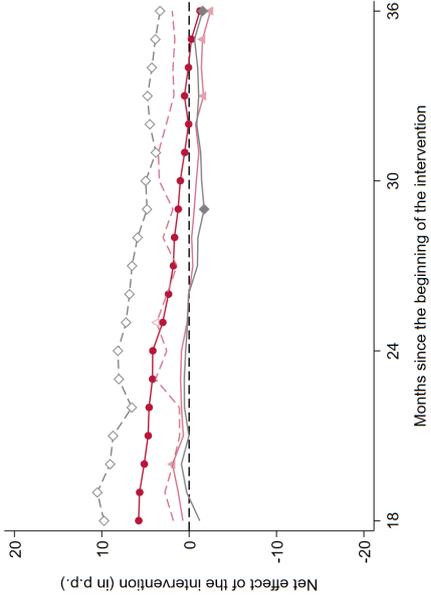
Notes: Figure shows what the net effect of participating in program  $m$  instead of program  $n$ . Subfigures titles indicates  $m$  program, while lines on the figures the program to which is compared ( $n$ ). The marker on the line in particular point of time indicates if the difference in effectiveness is statistically significant. Subfigure (a) reads as follows: participating in on-the-job training instead of public works increases probability of being out of register by about 10 percentage points in 18th month after ALMP start and the effect is statistically significant. Estimated with propensity score matching; balancing scores can be found in [Appendix B](#) and variables used in matching procedure are summarized in [Table 2](#).

Figure C.6: Estimated effect of the participation in  $m$  ALMP measure compared with participation in  $n$  ALMP measure - unemployment in poviat below median.

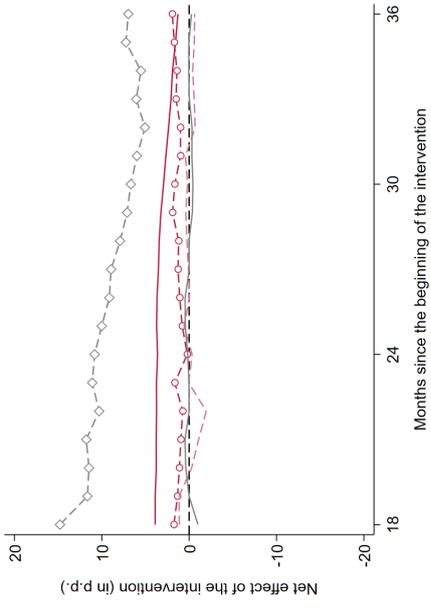
(a) On-the-job training



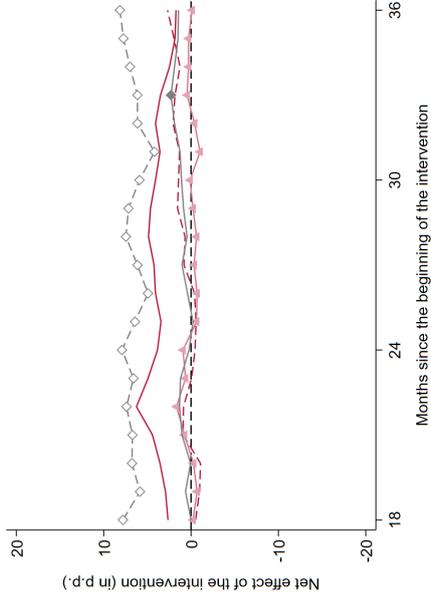
(b) On-the-job training voucher



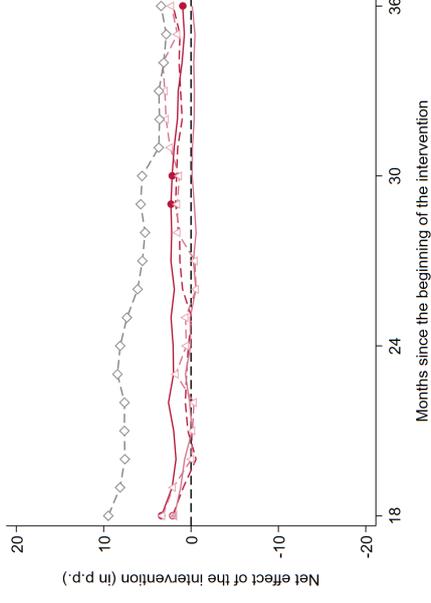
(c) Classroom training



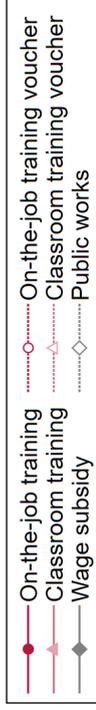
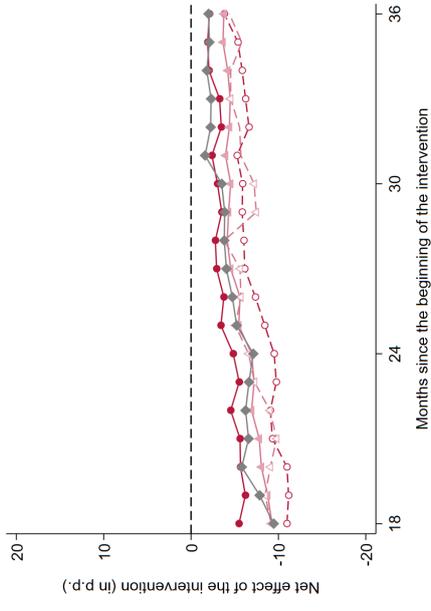
(d) Classroom training voucher



(e) Wage subsidy



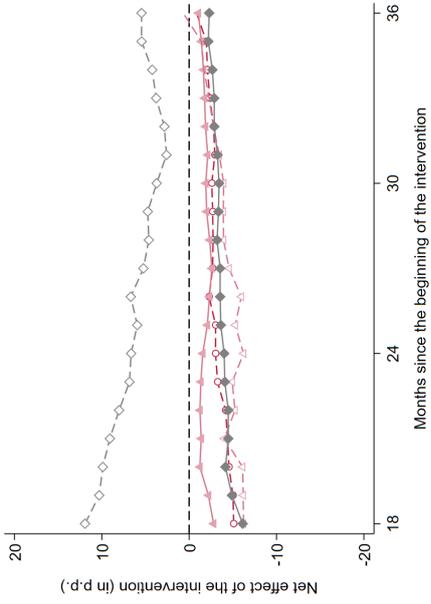
(f) Public works



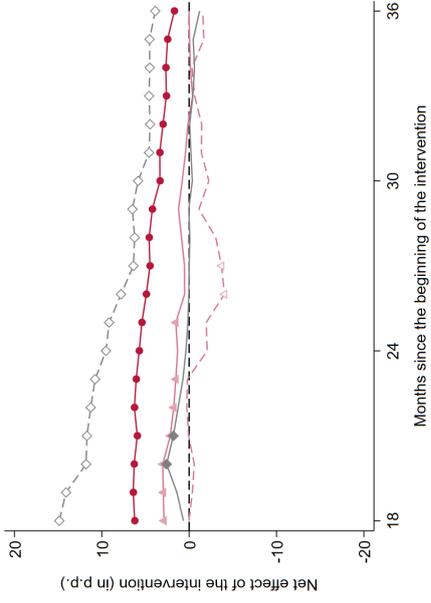
Notes: Figure shows what the net effect of participating in program  $m$  instead of program  $n$ . Subfigures titles indicates  $m$  program, while lines on the figures the program to which is compared ( $n$ ). The marker on the line in particular point of time indicates if the difference in effectiveness is statistically significant. Subfigure (a) reads as follows: participating in on-the-job training instead of public works increases probability of being out of register by about 8 percentage points in 18th month after ALMP start and the effect is statistically significant. Estimated with propensity score matching; balancing scores can be found in [Appendix B](#) and variables used in matching procedure are summarized in [Table 2](#).

Figure C.7: Estimated effect of the participation in  $m$  ALMP measure compared with participation in  $n$  ALMP measure - primary and secondary education.

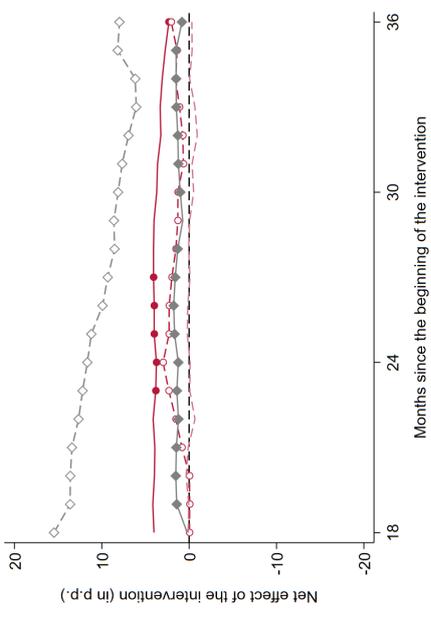
(a) On-the-job training



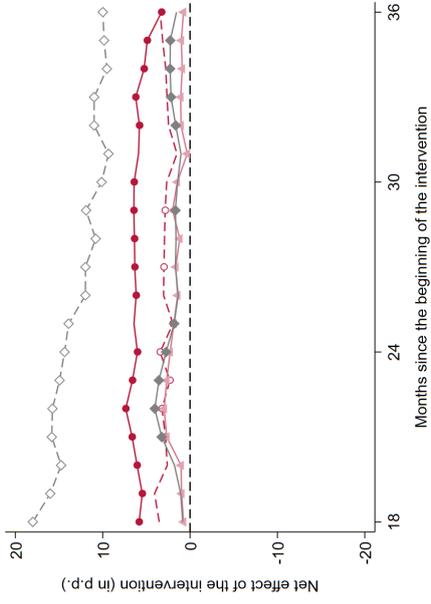
(b) On-the-job training voucher



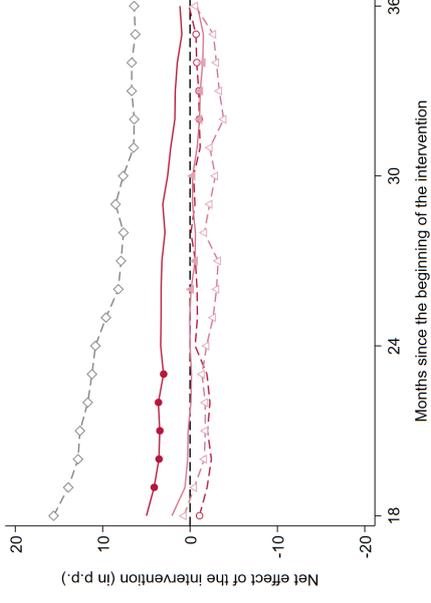
(c) Classroom training



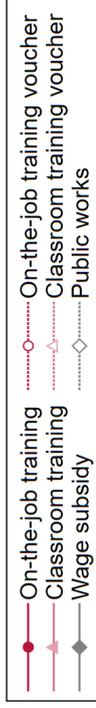
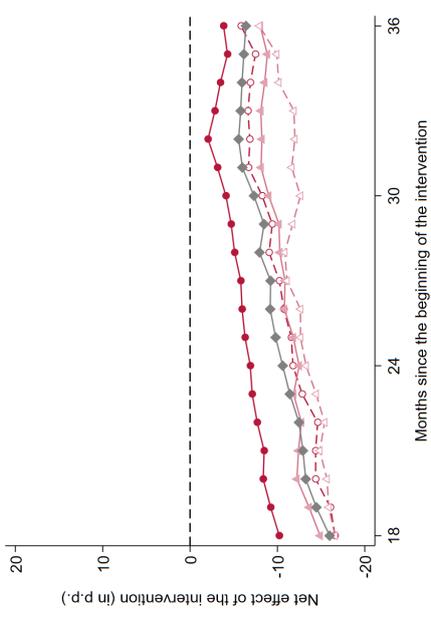
(d) Classroom training voucher



(e) Wage subsidy

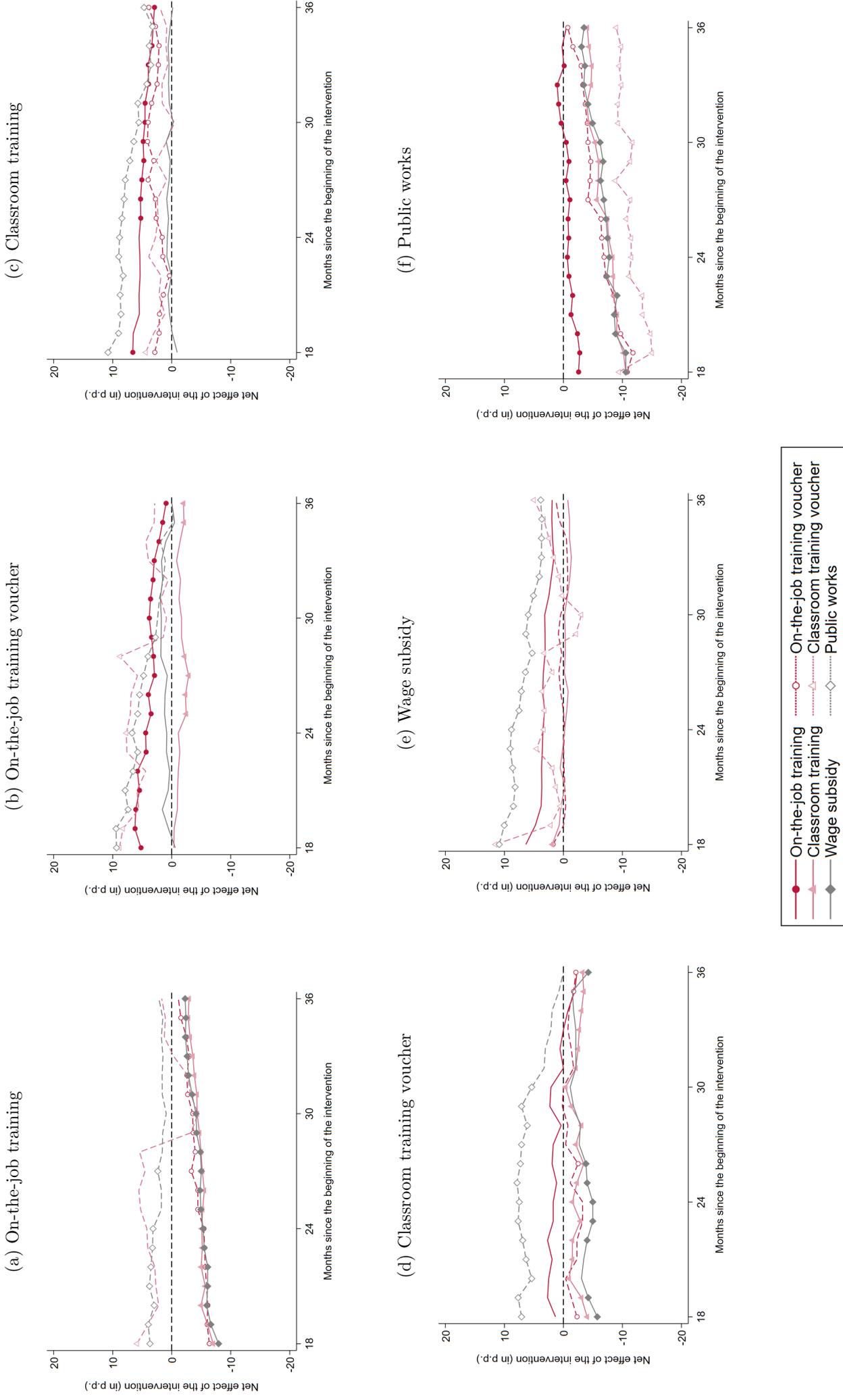


(f) Public works



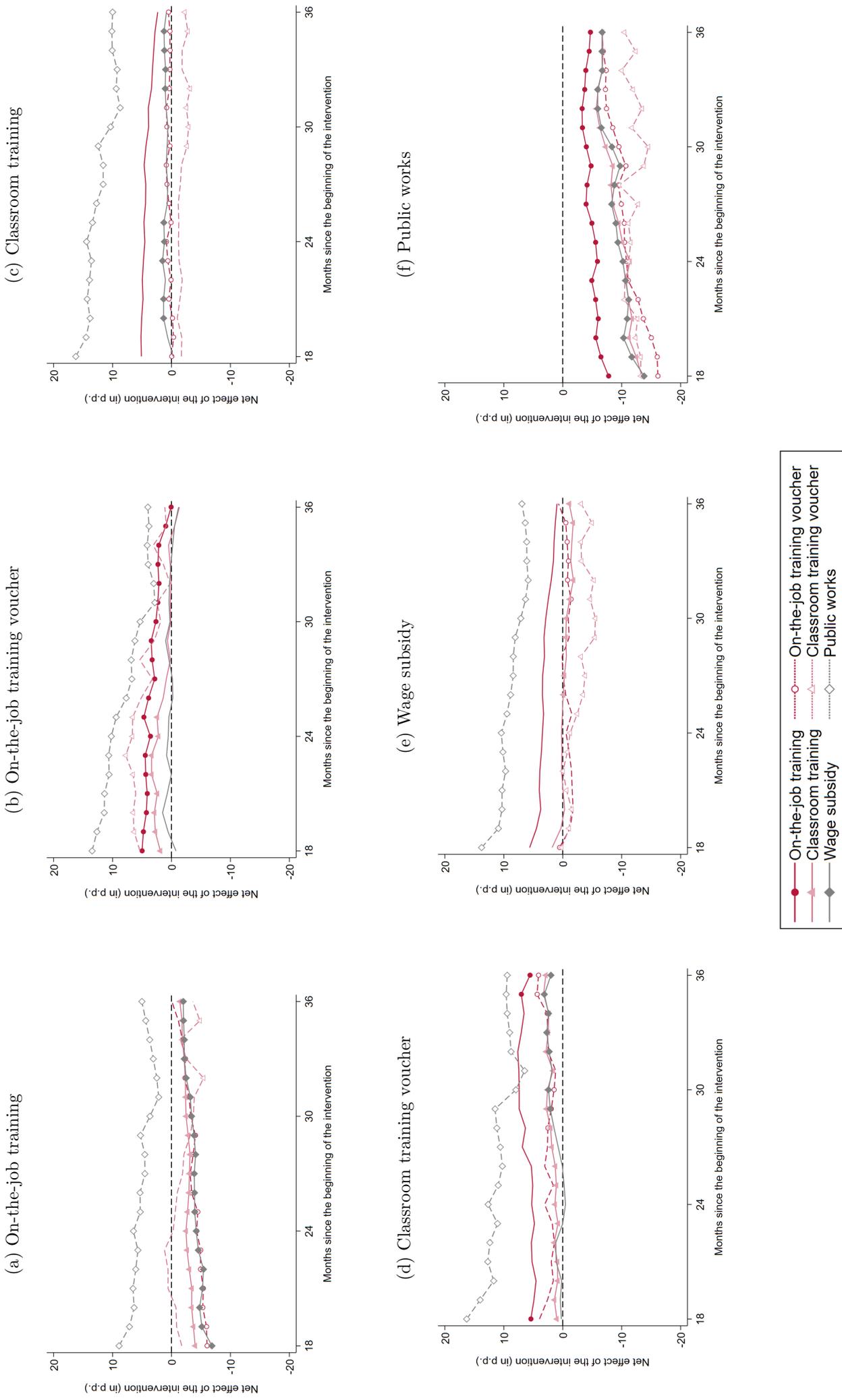
Notes: Figure shows what the net effect of participating in program  $m$  instead of program  $n$ . Subfigures titles indicates  $m$  program, while lines on the figures the program to which is compared ( $n$ ). The marker on the line in particular point of time indicates if the difference in effectiveness is statistically significant. Subfigure (a) reads as follows: participating in on-the-job training instead of public works increases probability of being out of register by about 12 percentage points in 18th month after ALMP start and the effect is statistically significant. Estimated with propensity score matching; balancing scores can be found in [Appendix B](#) and variables used in matching procedure are summarized in [Table 2](#).

Figure C.8: Estimated effect of the participation in  $m$  ALMP measure compared with participation in  $n$  ALMP measure - tertiary education.



Notes: Figure shows what the net effect of participating in program  $m$  instead of program  $n$ . Subfigures titles indicates  $m$  program, while lines on the figures the program to which is compared ( $n$ ). The marker on the line in particular point of time indicates if the difference in effectiveness is statistically significant. Subfigure (a) reads as follows: participating in on-the-job training instead of public works increases probability of being out of register by about 4 percentage points in 18th month after ALMP start and the effect is statistically significant. Estimated with propensity score matching; balancing scores can be found in [Appendix B](#) and variables used in matching procedure are summarized in [Table 2](#).

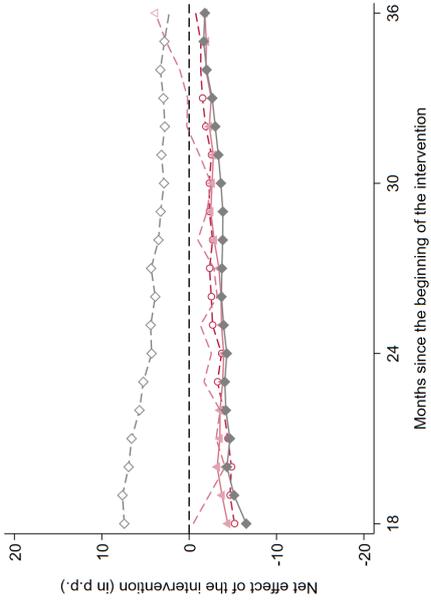
Figure C.9: Estimated effect of the participation in  $m$  ALMP measure compared with participation in  $n$  ALMP measure - long distance to county town.



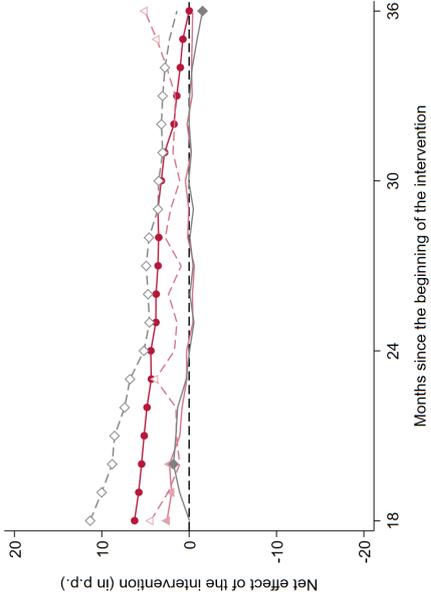
Notes: Figure shows what the net effect of participating in program  $m$  instead of program  $n$ . Subfigures titles indicates  $m$  program, while lines on the figures the program to which is compared ( $n$ ). The marker on the line in particular point of time indicates if the difference in effectiveness is statistically significant. Subfigure (a) reads as follows: participating in on-the-job training instead of public works increases probability of being out of register by about 4 percentage points in 18th month after ALMP start and the effect is statistically significant. Estimated with propensity score matching; balancing scores can be found in [Appendix B](#) and variables used in matching procedure are summarized in [Table 2](#).

Figure C.10: Estimated effect of the participation in  $m$  ALMP measure compared with participation in  $n$  ALMP measure - short distance to county town.

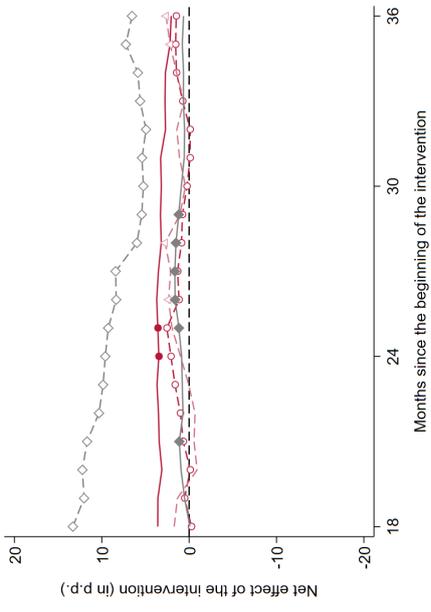
(a) On-the-job training



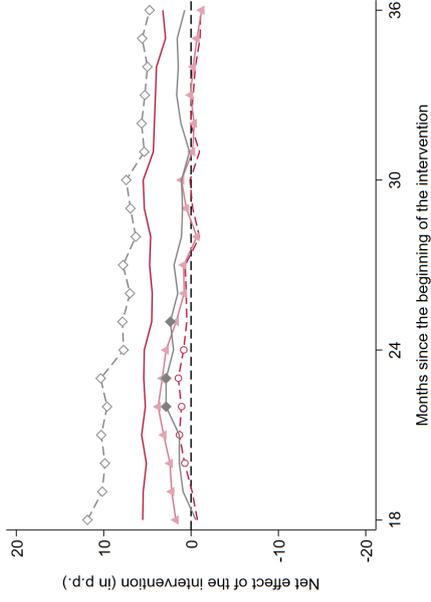
(b) On-the-job training voucher



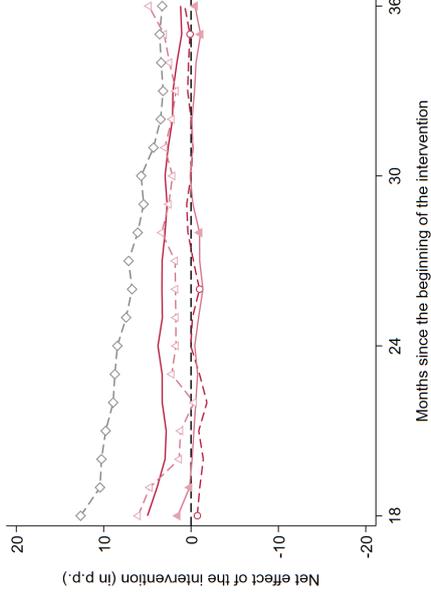
(c) Classroom training



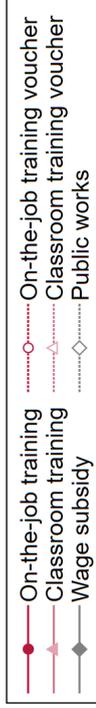
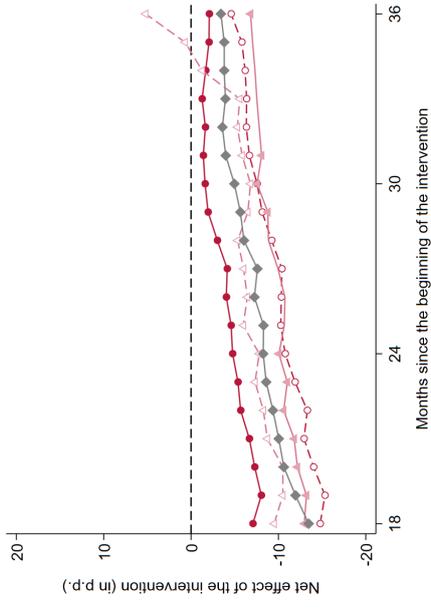
(d) Classroom training voucher



(e) Wage subsidy



(f) Public works



Notes: Figure shows what the net effect of participating in program  $m$  instead of program  $n$ . Subfigures titles indicates  $m$  program, while lines on the figures the program to which is compared ( $n$ ). The marker on the line in particular point of time indicates if the difference in effectiveness is statistically significant. Subfigure (a) reads as follows: participating in on-the-job training instead of public works increases probability of being out of register by about 8 percentage points in 18th month after ALMP start and the effect is statistically significant. Estimated with propensity score matching; balancing scores can be found in Appendix B and variables used in matching procedure are summarized in Table 2.