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Bridging gaps, building futures: evaluating a multinational's employment programme vs. work-first for youth with diverse education levels

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ABSTRACT

In the Netherlands, public work-first support tends to cause unemployed young people to exit into primarily non-standard jobs. A worldwide-renowned Dutch company, Royal Philips, has offered since the mid-1980s a two-year lasting work experience and vocational training programme to long-term unemployed youth as an alternative to public work-first support. This quasi-experimental study uses data from the company programme's participants and national longitudinal register data for the matched control group receiving public work-first support. The present study observes the employment impact of this private company's employment programme compared to the public programme for inadequately skilled youth (aged 16–35) by education level. Participants' employment levels are compared with a carefully matched public work first-subjected control group up to a maximum of ten years later. Fixed-effects panel regression models show that, due to its upskilling and work experience features, the employment programme positively affects sustained wage-fitted employment over ten years compared with the control group subjected to public work-first support. The programme's employment effect associated with upskilling is achieved notably with low-educated participants who received vocational training. In contrast, participating high-educated young people seem to profit from human capital and signalling effects.

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1. Introduction

From early in their careers, young people without the desired qualifications face intense competition for sustainable entry-level positions. This uncertain situation poses risks for those with limited job prospects and those with prior work experience, as they may be

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trapped in uncertainty during their transition from school to work. Young people lacking essential skills face challenges due to the high demand for specific skill sets, which leads to limited growth opportunities and less promising career prospects (Honkatukia and Lähde 2021; Pastore, Quintano, and Rocca 2021; Scandurra, Cefalo, and Kazepov 2021). Consequently, many of those youths face low-paid jobs and periods of unemployment, especially during economic downturns, particularly among those with lower levels of education (Mattijssen, Pavlopoulos, and Smits 2020; McTier and McGregor 2018; Muffels 2013).

As an essential part of Dutch active labour market policies, the public work-first support programme aims to assist young individuals not in employment, education, or training (NEET) transitioning into paid work or full-time education. First, It has received criticism for its 4-week waiting period during which youth (aged <27) are required to actively search for jobs or take steps to continue their educational careers before any income support and reintegration activities are considered. high. A second point of criticism is the low investment in skills during work-first support and post-unemployment jobs, while many young people are in need of such endowment growth opportunities (Chung, Bekker, and Houwing 2012; van Vugt, Levels, and van der Velden 2024). Even though work-first support may successfully limit short-term benefit dependency due to job-search obligations, imposed benefit sanctions, job application and education support, little effect is shown on sustained employment or the return of youth to full-time education (Abbring, Berg, and Ours 2005; Fervers 2021).

Since 1983, Royal Philips, a multinational corporation renowned for its array of products, including household appliances, lighting solutions, and healthcare technology, has implemented the Philips Employment Scheme (*Philips Werkgelegenheidsplan [WGP]* in Dutch). This initiative offers work-experience positions alongside vocational education to a selected number of officially registered unemployed youths without establishing a fixed annual intake. The present study evaluates the effects of a private sector-driven work experience and training programme on unemployed young individuals aged 16 to 35, comparing its outcomes with those of traditional public sector employment initiatives across different educational backgrounds. The focus is on analysing the long-term impacts, up to a decade later, on stable and fairly-paid jobs for participants of both programmes. Additionally, it explores the benefits of providing young people with access to formal vocational training alongside work experience, enabling them to gain on-the-job training for one to two years.

Investments in human capital, such as work-experience positions or training, may decrease the likelihood of transitioning into employment in the short term – especially during the training programmes – compared with public work-first initiatives offering minimal or no training. These human capital initiatives are primarily observed to yield medium- to long-term benefits, as supported by existing literature (Card, Kluve, and Weber 2018; Kluve et al. 2019). An anticipated locking-in effect aims to deter young individuals from engaging in unstable or 'patchwork' careers marked by intermittent precarious employment and reliance on benefits. Contrary to the abovementioned findings, Gerards, Muysken, and Welters (2014) found evidence of improved employment prospects for WGP participants one year after programme completion. Unlike individuals receiving public work-first support, participants of the WGP were found to earn salaries surpassing their social assistance benefits and foremost had the opportunity to obtain credentials, facilitating access to more sustainable and wage-fitted employment – the

latter refers to fairly-paid jobs where wages are aligned with the worker's skills and knowledge, ensuring fair compensation based on qualifications and job responsibilities. The latter concept suggests that the remuneration for a job should be fair and commensurate with the skills, effort, and responsibilities required, while also taking into account the economic context and industry standards. Therefore, if the long-term employment prospects of young participants are enhanced in association with extended exposure to human-capital investments, the duration spent in the WGP could be deemed beneficial for their career trajectories.

The present study enhances the literature on youth intervention (cf. Caliendo and Schmidl 2016; Kluve et al. 2019) by offering long-term, quasi-experimental evidence of sustained employment and access to fair wages. It contrasts the employment outcomes of a high-investment, privately-owned employment programme for unemployed youths across various educational backgrounds with the more traditional, low-investment public work-first support. In doing so, it illuminates the differing effects of these two distinct institutional contexts. Separating the long-term impacts for low, intermediate and high-educated youth significantly reduces the population's heterogeneity, rendering a more detailed picture of both interventions' causal effects. While the literature provides ample evidence of vocational training's impact on employment probabilities (e.g. Muja et al. 2019; Rözer and van de Werfhorst 2020), the differential effects of such an employment programme for young participants with varying education levels have not been explored hitherto. Additionally, the dissimilarity in vocational training provided by Philips to participants with low, intermediate, and high levels of education may influence the longer-term career outcomes of young individuals differently.

There is no conclusive evidence on the long-term employment gains of either of these public or private programmes, as most studies merely focus on exit rates and post-unemployment wages, perceived job fit, and job candidates' ratings (Card, Kluve, and Weber 2018; Grunau and Lang 2020; Kluve et al. 2019; Liechti et al. 2017; van Hooft et al. 2021). The competitive environment and belonging to a reputable company are supposed to mitigate further employers' stigma related to participation in such supportive programmes and prevent cooling-out effects among young participants (see Walther 2022). Herewith, the example of the WGP makes a unique contribution to the literature and future policy development by providing evidence on a private employment programme that combines two seemingly successful measures, work experience and training, in the context of a multinational enterprise. Other studies focusing on policies to support unemployed young people back into work typically offer either of the two but never in parallel (i.e. Waugh and Circelli 2021; Wesseling 2021).

2. The Philips Employment Scheme

2.1. Brief history

In the 1980s, the Netherlands faced a steep rise in youth unemployment, posing a challenge for those leaving school early due to lacking work experience and skills development opportunities. The Dutch government, aiming to revitalise the job market, launched the Wassenaar Agreement in 1982. This initiative sought to make the labour market more adaptable and reduce employment costs through wage controls

and reduced working hours. Despite these reforms, a skills gap in technical fields hindered the full impact on job creation, as many unemployed lacked the necessary qualifications.

Philips, a leading company, introduced the Youth Work Plan (YWP) to offer early school leavers a year of work experience and training aligned with regional labour market needs. The goal was to ease their entry into employment, particularly in small and medium-sized enterprises, rather than ensuring long-term roles within Philips. By 1985, Philips claimed that the YWP had successfully placed 60% of its participants in jobs. This led to its integration into Philips' central wage agreement and budget allocation for work-experience positions, accounting for about 1% of Philips' workforce in the Netherlands. In 1988, the scheme expanded to support other disadvantaged groups, including partially disabled workers and ethnic minorities. It was renamed the Philips Employment Scheme (WGP), which is still operational.

2.2. Selection of participants and programme set-up

The Public Employment Services (*Uitvoeringsinstituut Werknemersverzekeringen [UWV]* in Dutch) in local municipalities select potential participants from the registered unemployed based on these guidelines: (1) unemployment of six months or longer; (2) early school-leavers; (3) ethnic minorities, including immigrants; and (4) partially disabled individuals. WGP participants may have initially been officially unemployed and received work-first support like the control group.

The WGP consists of two tracks: regular and vocational. The regular track lasts one year, with a possible half-year extension. It involves work experience in various departments (e.g. administration, IT, sales, marketing, engineering, and HRM) at Philips branches. Philips pays its participants the statutory minimum wage, regardless of job duties, encouraging the pursuit of higher-paying roles. The one-week notice period aims to prevent the 'locking-in' effect (van Ours 2004). Within the WGP, while participants are safeguarded against dismissal for performance alone, acknowledging minor errors as part of the learning process, Philips retains the right to terminate temporary contracts in cases of serious misconduct, including aggression or sexual impropriety. Participants are required to attend career development courses designed for young employees, such as CareerSKILLS and JOBS. These courses enhance motivation, networking, self-profiling, job search, career control and behaviours, self-efficacy, resilience, perceived employability, and work engagement (Akkermans et al. 2015).

The two-year vocational track offers a blend of a four-day work placement with a single day of fully subsidised vocational upper secondary education at Philips (*Beroeps Begeleidende Leerweg [BBL]* in Dutch). While most participants engage in specialist training for mechanics and technological process industries, alternative formal training opportunities exist in diverse fields. This vocational track mirrors the regular route, including wage levels, a one-week notice period, and career development programmes. Unlike the German dual vocational education system, which is closely tied to the labour market with apprenticeships, the Dutch vocational education system does not offer this direct linkage. Philips employs young individuals temporarily, providing an on-the-job learning environment beyond the boundaries of a formal education programme.

3. Theoretical framework

3.1. Postponing integration vs rapid integration

Work-first support strategies prioritise the rapid reintegration of unemployed youth into the workforce or full-time education. This approach operates on the premise that access to employment is universal amongst young people and that it is more beneficial for them to accept any job offer immediately rather than wait for a more suitable opportunity to avoid the depreciation of their skills. However, this approach has been criticised for assuming that rapid entry into employment or education automatically leads to skill enhancement. There is a belief that securing any form of employment can act as a bridge to future opportunities, irrespective of the job's stability or the alignment of the individual's skills with the job requirements. However, this thought has been contested by researchers, who argue that such policies may lead young individuals into accepting positions that do not match their skills or provide growth opportunities, owing to the limited entitlement to unemployment benefits and the pressure to take work to avoid benefit sanctions. This results in a cycle of temporary employment and limited career progression (Albert, Davia, and Legazpe 2023; Caliendo, Tatsiramos, and Uhlendorff 2013; de Lange, Gesthuizen, and Wolbers 2014; Klug, Drobnič, and Brockmann 2019; Mooi-Reci and Dekker 2015).

Critics have highlighted that work-first support underestimates the complexity of job requirements today and increases the likelihood of individuals taking up precarious, non-standard jobs. Such positions are often characterised by minimal training opportunities and a lack of prospects for career advancement (Eichhorst and Marx 2021; Fouarge et al. 2012; Piore 1972; Rueda 2014; Sicherman and Galor 1990; Westerman 2021).[1] The stigma associated with unemployment and temporary contracts further exacerbates the issue, as workers on temporary contracts are less likely to receive employer-funded training, hindering their adaptability to the evolving demands of the labour market (Benda, Koster, and van der Veen 2019; Gangl 2006; Mattijssen and Pavlopoulos 2019; Muffels 2013; Schmelzer 2012).

In contrast, programmes that focus on investing in human capital often delay entry into the labour market, concentrating instead on enhancing people's productivity through targeted training and work experience. The WGP offers participants practical work experience at Philips, addressing skill gaps and significantly enhancing their employability. Being associated with Philips, a top employer, can improve substantially participants' appeal to future employers, owing to the high standards of performance and training associated with Philips. This experience is deemed more valuable by employers compared to continued unemployment. The investment in skills through the WGP surpasses that of public work-first support and is likely to lead to more sustained and fairly-paid jobs (cf. Borghouts-van de Pas, Bosmans, and Freese 2021; Gerfin, Lechner, and Steiger 2005; Lindsay 2014; Sianesi 2008). Thus, the WGP offers a promising alternative to the immediate job entry approach of work-first support, with the former aiming for long-term career success.[2]

Consequently, for young participants of the WGP programme, significantly better long-term outcomes are expected in terms of achieving sustained employment (*Hypothesis 1a*) and securing wage-fitted employment (*Hypothesis 1b*), in stark contrast to the experiences

of unemployed youth in the control group who are reliant on public work-first support strategies.

3.2. More to win for low and intermediate-educated youth

The impact of the WGP on participants' careers is anticipated to vary according to their education level due to differences in the provision of skills across educational tracks compared to those provided by work-first support. Specifically, the WGP's vocational track enables participants to apply vocational-specific skills directly in the workplace, offering a significant advantage, particularly when these skills align with the demands of the growing technology industry, thus opening more and improved labour market opportunities. This advantage is most pronounced for participants with low and intermediate levels of education, as they have fewer opportunities to develop such skills through work-first support, giving them a distinct edge over their peers in similar educational brackets (cf. Južnik Rotar 2021). While participation in such programmes might initially signal lower productivity to potential employers (Bonoli and Hinrichs 2012; van der Aa and van Berkel 2014), the WGP's targeted approach to those distant from the labour market can counteract this perception, especially when employers anticipate the need for additional support like vocational training (Liechti et al. 2017). This leads to the proposition that low and intermediate-educated participants in the WGP will experience positive outcomes in terms of sustained (*Hypothesis 2a*) and wage-fitted employment (*Hypothesis 2b*), largely due to the vocational training component.

For participants with higher education (tertiary education or higher, ISCED2011-Level ≥ 5), the WGP's regular track is the only option, as their education level exceeds the vocational track's offerings. These participants can further their skills through on-the-job learning and career development courses, although the programme's focus on rapid reintegration into the workforce may limit the benefits for this group. The impact of their WGP participation on long-term employment prospects is less clear, raising questions about the value of the qualifications gained during their work experience at Philips, especially since the programme lacks vocational training tailored for highly-educated young people.

The WGP also provides participants additional time to find suitable employment opportunities, helping eliminate the stigma associated with past unemployment (Schmelzer 2012; Shi and Di Stasio 2022). However, once employment at Philips begins, public employment services stop monitoring job-search activities, potentially reducing motivation for further job pursuit and slowing career progression. To counteract this, the WGP incentivises active job searching by offering participants the statutory minimum wage (Kalleberg and Mastekaasa 2001). However, once participants commence their employment at Philips, public employment services stop monitoring their job-search activities, potentially offering a sense of relief but at the risk of decreasing their motivation and effort to pursue additional job opportunities. This could slow down career progression and lessen the chances of securing employment beyond Philips. To counteract this, the WGP adopts a proactive stance by compensating its participants with the statutory minimum wage, encouraging them to continue actively seeking job opportunities.

The availability of formal vocational training within the WGP presents a disparity between higher-educated participants and those with low or intermediate levels of

education. This discrepancy indicates that low-educated youth stand to gain more in human capital development than their higher-educated counterparts. Nonetheless, from a signalling perspective, the WGP can still positively influence sustained employment and appropriate wage alignment for highly educated participants, offering a crucial nudge towards better employment outcomes. Despite this, the anticipated benefits of the WGP on achieving sustainable (*Hypothesis 3a*) and wage-fitted employment (*Hypothesis 3b*) are expected to be somewhat less for highly educated participants, who primarily receive on-the-job learning, in comparison to lower-educated participants who benefit from the programme's formal vocational training.

4. Material and methods

4.1. Data and design

This study used the social security numbers of participants in the WGP from 1999 to 2014 to link them with national register data from Statistics Netherlands, which contains comprehensive information on the Dutch population. A quasi-experimental design was adopted, employing Propensity Score Matching (PSM) to create a control group from the public work first-subjected population based on the young WGP participants' pre-treatment characteristics (aged 18–35). The matching was done one-to-one without replacement, and a calliper of 0.01 was used. The pre-treatment covariates are based on human capital and signalling factors.

In the context of evaluating a job training programme, pre-treatment covariates include educational background and years of work experience as human capital factors and credentials as signalling factors. These elements collectively represent the participants' skills, achievements, and potential value to employers. The selection criteria for the WGP programme are not exhaustive and serve as guidelines, allowing programme administrators to exercise a certain degree of discretion in the selection process. This selection implies that selection effects may be present based on factors such as higher motivation and personality traits, which could positively impact the outcomes. Therefore, it is crucial to consider the young participants' two-year labour market histories just before starting the WGP to implicitly capture unobserved variables associated with selection bias (Caliendo, Mahlstedt, and Mitnik 2017).

We further match participants based on labour market status at programme entry (i.e. unemployment, social assistance, disability or full-time student). Receiving unemployment or social assistance benefits is inherently tied to the public work-first approach. Although we lack specific data on whether unemployed youth fully utilise available support opportunities, it is reasonable to assume they are subject to public work-first support based on the associated obligations accompanying benefit entitlement. By doing so, we can implicitly address the diversity among Dutch youth, especially school-leavers, who experience the mentioned waiting period. Please see Supplementary Material A.1 for the theoretical base that yields the choice of other pre-treatment covariates.

The matching procedure successfully matched 99.71% of the participants identified in the register data ($N = 1{,}713$) to a member of the Dutch labour force in the control group (aged 18–35). The sample comprises 1,708 matched WGP participants and an

equal number of people for the control group subjected to work first. The WGP participants matched to others subjected to public work first could be considered similar, except for being subjected to another treatment. See Table 1 for the required balance checks.

4.2. Dependent variables

This study examines the employment effects of the company-based programme using two dependent variables. The first variable measures sustained employment by calculating the number of weeks in any form of employment within a year, including subsidised jobs and disregarding periods of unemployment. The range of employment duration is from 0 to 12 months, divided by 12 to interpret coefficients as ratios. It is calculated for every year up to ten years after leaving the programme.

The second dependent variable indicates the level of wage-fitted employment, a job where the wage is aligned with the worker's skills and knowledge, ensuring fair compensation based on qualifications and job responsibilities, where we correct employment for a proper wage match by only counting the months when the observed wage in the register data matches or exceeds an expected wage level based on the human capital endowments of the individual – to be explained in the next paragraph. Two more conditions apply here to be considered wage-fitted employment: the job must be unsubsidised, and the job must be on an open-ended contract. If so, we assume that young people's skills match the skills required for jobs (Bol et al. 2019; Sattinger 1993). Thus, suppose a month in which the observed wage was higher or equal to this predicted expected wage – with a 5% margin on the lower limit – and the job was on a permanent contract and not subsidised. In that case, we assume that employers are willing to pay the market wage and that jobs match the individuals' skills. As such, we observe the wage potential and actual salaries earned. Both dependent variables do not include any months spent in the WGP and are measured every year up to ten years after leaving the programme.

Heckman's two-step selection models utilised comprehensive register data on all jobs held by the labour force between 1999 and 2016 to predict expected wage levels. These models mitigate selection bias in wage predictions by initially estimating employment probability and refining wage estimates according to this probability. The calculations are based on individuals' main jobs every month in the years above based on the primary source of income – all wages are recalculated to full-time wages if people work part-time. The first step, the selection part, estimates the probability of employment using variables such as education level, field of education, age, and family position, including the youngest child's age in the family and its interaction term with gender. The second step predicts the natural logarithm of the worker's wage based on variables including the operating sector, collective labour agreement sector, contract type, educational attainment, the field of education, job tenure, age, and gender. The so-called 'exclusion restriction' criteria – those covariates not included in the second step – are the family position and its interaction with gender (see Supplementary Material A.2). Controlling for variables like educational background, age, and family position in the first step is essential because these factors significantly influence employment likelihood. Neglecting them could lead to biased wage estimates, as the model would not account for the employment

Table 1. Balance check in creating the treatment and control group (aged 16–35).

Variables	Mean		*t*-test	
	WGP ($N = 1{,}708$)	Control group ($N = 1{,}708$)	*t*	$p > t$
Labour market history (Past two years)				
Months in any form of employment	14.63	14.62	0.03	0.97
Number of unemployment spells	0.31	0.32	−0.42	0.68
Number of employers				
0	0.16	0.15	0.19	0.85
1	0.26	0.26	−0.31	0.76
2	0.22	0.22	0.04	0.97
3	0.13	0.12	0.62	0.54
4	0.09	0.09	−0.84	0.40
5 or more	0.15	0.15	0.24	0.81
Individuals' previous job				
Highest daily wage	3.20	3.27	−0.95	0.34
Part-time factor	0.77	0.76	0.37	0.71
Subsidised job	0.05	0.05	−0.08	0.94
Occupational statuses in the year of matching				
Unemployment benefits/Social assistance	0.48	0.49	−0.96	0.34
(Youth) disability benefit	0.13	0.15	−2.08	0.04
Full-time student	0.17	0.16	0.28	0.78
Ethnic minority group				
Native Dutch	0.57	0.56	0.83	0.41
Moroccans	0.06	0.06	0.22	0.83
Turkish	0.07	0.09	−1.33	0.18
Surinamese	0.03	0.04	−0.91	0.36
Former Netherlands Antilleans	0.02	0.02	1.24	0.21
Other non-Western	0.12	0.12	0.05	0.96
Western	0.12	0.13	−0.36	0.72
Continent				
Africa	0.11	0.12	−0.53	0.59
Americas	0.07	0.07	0.47	0.64
Asia	0.08	0.08	−0.06	0.95
Europe	0.74	0.74	0.08	0.94
Oceania	0.00	0.00	1.41	0.16
Parental information				
Foreign-born father	0.41	0.42	−0.76	0.44
Generation				
Native Dutch	0.57	0.56	0.83	0.41
1st generation (foreign-born)	0.30	0.30	−0.26	0.79
2nd generation (born in the Netherlands)	0.13	0.14	−0.84	0.40
Age	26.96	26.99	−0.20	0.85
Gender				
Male	0.63	0.62	0.60	0.55
Female	0.375	0.39	−0.60	0.55
Educational attainment				
Low educated	0.20	0.19	0.74	0.46
Intermediate educated	0.19	0.20	−1.13	0.26
High educated	0.18	0.17	0.45	0.65
Unknown	0.44	0.44	−0.03	0.97
Field of education				
General programmes	0.13	0.12	0.28	0.78
Education	0.00	0.00	0.28	0.78
Humanities and Arts	0.02	0.01	0.82	0.41
Social Sciences, Business, and Law	0.17	0.18	−0.95	0.34
Science, Mathematics, and Computing	0.02	0.02	0.23	0.81
Engineering, Manufacturing, and Construction	0.13	0.13	−0.31	0.76
Agriculture and Veterinary	0.01	0.01	−0.24	0.81

(*Continued*)

Table 1. Continued.

Variables	Mean		*t*-test	
	WGP ($N = 1{,}708$)	Control group ($N = 1{,}708$)	*t*	$p > t$
Health and Welfare	0.02	0.02	0.24	0.81
Services	0.05	0.05	0.30	0.76
Not known or unspecified	0.01	0.01	0.00	1.00
Missing	0.44	0.44	−0.03	0.97
Position in the household				
Single	0.29	0.29	−0.34	0.73
Partner without children	0.17	0.18	−0.64	0.53
Partner with children (youngest child < 5 years old)	0.13	0.12	0.47	0.64
Partner with children (youngest child ≥ 5 years old)	0.02	0.01	0.57	0.57
Lone parent (youngest child < 5 years old)	0.03	0.04	−1.39	0.16
Lone parent (youngest child ≥ 5 years old)	0.02	0.02	−0.14	0.89
Child living at home	0.32	0.31	0.88	0.38
Other	0.04	0.04	0.09	0.93
Position in the household x Female				
Single	0.09	0.10	−0.53	0.60
Partner without children	0.09	0.10	−0.65	0.51
Partner with children (youngest child < 5 years old)	0.04	0.04	0.00	1.00
Partner with children (youngest child ≥ 5 years old)	0.01	0.01	0.60	0.55
Lone parent (youngest child < 5 years old)	0.03	0.04	−1.39	0.16
Lone parent (youngest child ≥ 5 years old)	0.02	0.02	−0.14	0.89
Child living at home	0.09	0.08	0.91	0.36
Other	0.01	0.01	0.00	1.00
Part of the Netherlands				
North	0.17	0.18	−1.08	0.28
East	0.15	0.13	1.24	0.22
West	0.12	0.12	−0.42	0.67
South	0.57	0.57	0.24	0.81
Year of the first occurrence in data[a]	1413.20	1405.00	0.26	0.79
Availability in the data[b]	9.13	9.14	−0.10	0.92
PS R^2 / *LR* Chi^2 / $P > Chi^2$	*Mean Bias*	*B*	*R*	*%Var*
0.01 / 30.00 / 1.00	1.9	18.8	0.92	29

Note(s): The abovementioned estimates of the *pstest* (i.e. means and t-test estimates). To be considered proper balancing, the *t*-values should be insignificant after matching, where B should be <25 and *R* should be between 0.5 and 2.0. Please see Supplementary Material A.2 for more information on the selection of pre-treatment covariates.
[a]For foreign-born individuals (1st generation) only, the 2nd generation gets the value of 0.
[b]Number of future years available for each individual in the data (maximum is ten years).
Source: Statistics Netherlands (1999–2017).

probability differences across individuals. By adjusting for these variables, the model corrects for potential selection bias, ensuring more accurate and reliable wage predictions. This step is crucial for isolating covariates' true effects on wages, at least free from employment selection influences.

4.3. Empirical models

Difference-in-difference models evaluate the additional impact of the WGP on sustained employment, compared to a control group receiving public work-first support, for participating youth with varying education levels. Separate models are estimated for each initial education level to capture the upskilling effect of the vocational track

and the potential locking-in effect for highly educated individuals (see Supplementary Material A.3).

Fixed-effects models estimate within-individual variation, capturing the relationship between changes in human capital and employment improvements over time. This approach eliminates unobserved heterogeneity and confounding effects from time-constant variables, providing more precise estimates of the causal relationship. The panel structure also considers how these young people's newly acquired education and field may affect expected wage levels. Consequently, the impact of WGP participation on wage-fitted employment may be less pronounced for low-educated individuals due to changes in expected wage levels as they upgrade their education to an intermediate level.

Underestimating the impact of the treatment on wage matches compared to public work-first support scenarios may lead to an underestimation of its effect on employment. Considering the wage disparity between skilled and low-skilled non-standard jobs that require minimal or no skills is essential. Assuming a constant wage level for low-educated individuals over time is not logical, given that 36.5% of WGP participants and 14.7% of the control group attain an intermediate education degree after leaving either the WGP or receiving public work-first support. The observed impact of post-intervention training suggests positive outcomes for both low and intermediate-educated youth, possibly driven by their pursuit of further education after exiting the WGP and an altered mindset towards lifelong learning (see Table 2).

The control variables consist of commonly used economic literature variables, such as age (and its squared term), which measure time-varying human capital. The quadratic term accounts for the non-linear impact of age on employment outcomes. The model controls for time-fixed effects (i.e. dummy variables for 1999 to 2017) and to correct estimates for over-time policy changes and the quality of WGP participants due to business cycle differences (see Gerards, Muysken, and Welters 2014). The model also controls for regional unemployment rates (NUTS-2 level) to correct for regional labour market differences in the demand for vocational skills because work-first support's strictness has been applied differently across municipalities. The other control variables entail the position in the family, including the youngest child's age with an interaction term with gender and residential area (NUTS-3 level). It can be argued that household changes, particularly

Table 2. Youth that follow formal training during or after either intervention.

	Low-educated youth		Intermediate-educated youth		High-educated youth	
Variables	WGP	Control group	WGP	Control group	WGP	Control group
No training followed	308 (42.4%)	488 (67.2%)	313 (46.2%)	446 (65.8%)	198 (65.1%)	188 (61.8%)
Training followed during the intervention	265 (36.5%)	107 (14.7%)	193 (28.5%)	120 (17.7%)	65 (21.4%)	66 (21.7%)
Training followed after the intervention	153 (21.1%)	131 (18.0%)	172 (25.4%)	112 (16.5%)	41 (13.5%)	50 (16.4%)
Total	726 (100%)	726 (100%)	678 (100%)	678 (100%)	304 (100%)	304 (100%)

Source: Statistics Netherlands (1999–2017).

getting children, affect employment but are unrelated to both interventions' strategies (Hakim 2002).

5. Results

In the following sections, we present findings for each education level separately, considering various upskilling options in a private sector-initiated programme. Tables 3, 5, and 6 present the regression output for the three models for every education level. Table 4 contains an additional analysis for low-educated youth. Figure 1 displays the predicted sustained and wage-fitted employment – based on fixed-effects panel regression modelling – by education level in the post-intervention period.

5.1. Higher levels of sustained employment for low-educated youth

Table 3 presents the impact of the WGP on sustained employment and wage-fitted employment over a 10-year period for participants with low education levels. Participants in the WGP showed a significant increase in sustained employment compared to the control group receiving traditional public work-first support. The net treatment effect for WGP participants was an additional 13.56 months of employment over the control group (Model 1). Wage-fitted employment also benefited from WGP participation, with an additional 4.56 months of employment noted in certain instances across the decade (Model 4).

Further analysis revealed a significant mediating effect of vocational training on these outcomes (Model 2: $b = 0.06$, $p < 0.001$; Model 5: $b = 0.05$, $p < 0.001$), underscoring the value of upskilling. This mediation suggests that vocational training is a key factor in the enhanced employment outcomes post-WGP participation, supporting Hypothesis 2. It indicates that vocational training can explain the long-term benefits of the WGP on sustained employment by comparing models with and without this variable (Models 1 vs. 2 and Models 4 vs. 5). Early vocational training (within the first two years of WGP participation) also demonstrated a positive and lasting effect on employment (Model 3 and Model 6: $b = 0.07$, $p < 0.01$), reinforcing the programme's effectiveness for those with lower education levels. This indicates that WGP participation positively impacts employment outcomes, and early vocational training during or shortly after the programme amplifies this effect. Thus, WGP participation notably increases sustained and wage-fitted employment over ten years for low-educated individuals, especially when combined with early vocational training. This confirms the critical role of vocational training in enhancing long-term employment prospects for low-educated youth.

The influence of the WGP on motivating former participants to pursue further education post-programme warrants closer examination. Analysing low-educated youth exclusively, Models 7 and 8 investigate the impact of training undertaken at three different times post-WGP participation (immediately within the first two years, between the third and tenth year, and those engaging in training across both periods). These models introduce a comparative analysis with a reference group receiving no further training (see Table 4). The findings reveal that while the immediate post-programme training's impact on sustained employment diminishes over time, training pursued between the third and tenth year, and consistently across both periods, significantly

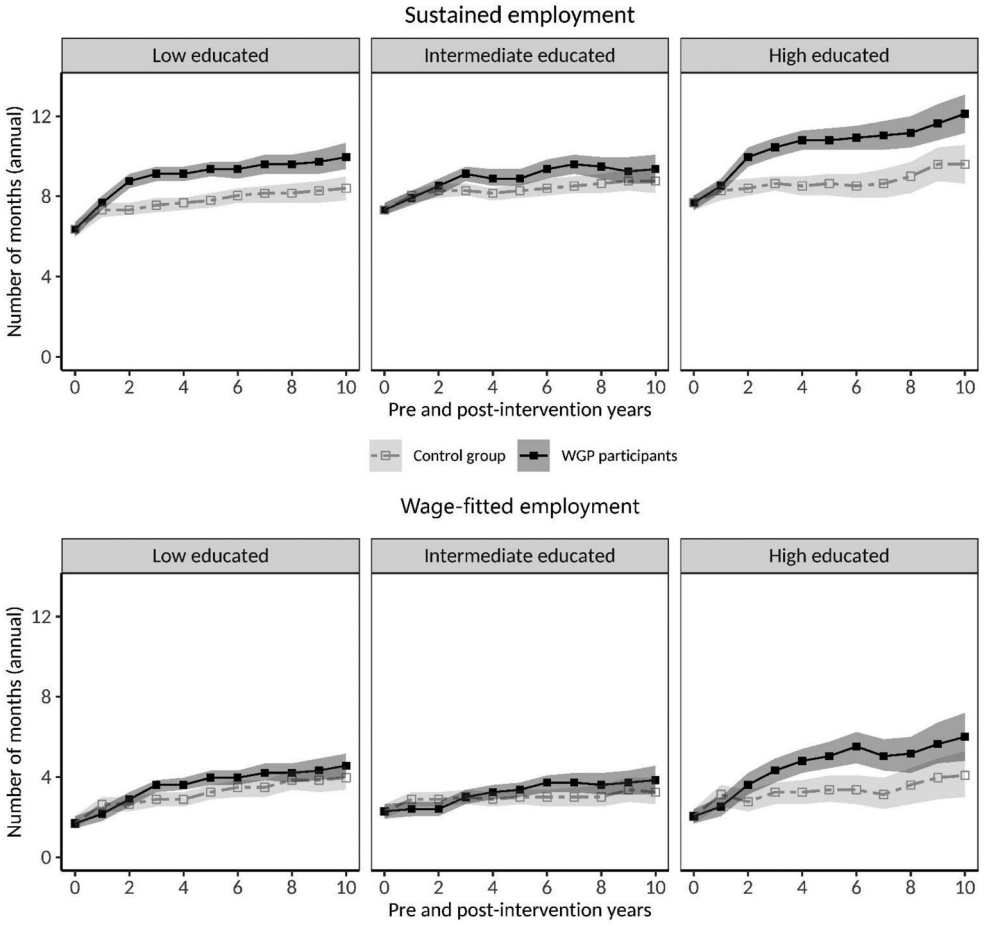

Figure 1. Predicted marginal effects of sustained and wage-fitted employment by education level. Source: Statistics Netherlands (1999–2016).

Note(s): Scores are based on Models 1 (upper) and (lower) for each education level. Shaded bars show the 95%-confidence intervals.

enhances employment outcomes ($b = 0.07$, $p < 0.01$ for both). This pattern also holds for wage-fitted employment, with similar positive effects ($b = 0.05$, $p < 0.01$ for both training periods), indicating a trend among low-educated youth towards further education after completing the WGP. This analysis underscores the lasting influence of the WGP on participants' educational and career trajectories, particularly highlighting the value of ongoing training and education to improve employment prospects over the long term.

5.2. Negligible impact of WGP's vocational component on intermediate-educated youth their careers

Table 5 outlines the long-term outcomes of the WGP on sustained and wage-fitted employment for participants with intermediate education levels, comparing these to the control group's results over a ten-year period post-programme. The analysis shows

Table 3. Unstandardised coefficients on sustained and wage-fitted employment for low-educated youth, from fixed-effects panel regression models.

	Sustained employment						Wage-fitted employment					
Variables	M1		M2		M3		M4		M5		M6	
Post-intervention period (ref. = 0)												
1	0.07***	(0.02)	0.06***	(0.02)	0.05***	(0.02)	0.07***	(0.02)	0.06***	(0.02)	0.06***	(0.02)
2	0.08***	(0.02)	0.06***	(0.02)	0.06**	(0.02)	0.08***	(0.02)	0.06***	(0.02)	0.06***	(0.02)
3	0.10***	(0.02)	0.07***	(0.02)	0.07***	(0.02)	0.09***	(0.02)	0.07***	(0.02)	0.07***	(0.02)
4	0.10***	(0.02)	0.08***	(0.02)	0.07***	(0.02)	0.10***	(0.02)	0.07**	(0.02)	0.07**	(0.02)
5	0.12***	(0.02)	0.09***	(0.02)	0.09***	(0.02)	0.13***	(0.02)	0.10***	(0.02)	0.10***	(0.02)
6	0.14***	(0.03)	0.11***	(0.03)	0.11***	(0.03)	0.14***	(0.03)	0.12***	(0.03)	0.12***	(0.03)
7	0.15***	(0.03)	0.11***	(0.03)	0.11***	(0.03)	0.14***	(0.03)	0.11***	(0.03)	0.11***	(0.03)
8	0.15***	(0.03)	0.11***	(0.03)	0.11***	(0.03)	0.18***	(0.03)	0.15***	(0.03)	0.15***	(0.03)
9	0.15***	(0.03)	0.12***	(0.03)	0.11**	(0.03)	0.17***	(0.04)	0.14***	(0.04)	0.14***	(0.04)
10	0.17***	(0.04)	0.12***	(0.04)	0.12**	(0.04)	0.19***	(0.04)	0.15***	(0.04)	0.15***	(0.04)
x WGP												
Post-intervention period (ref. = 0)												
1	0.04+	(0.02)	0.04*	(0.02)	0.04*	(0.02)	−0.04+	(0.02)	−0.03	(0.02)	−0.03	(0.02)
2	0.12***	(0.02)	0.10***	(0.02)	0.10***	(0.02)	0.02	(0.02)	0.01	(0.02)	0.01	(0.02)
3	0.13***	(0.02)	0.11***	(0.02)	0.11***	(0.02)	0.06*	(0.02)	0.04+	(0.02)	0.04+	(0.02)
4	0.13***	(0.02)	0.11***	(0.02)	0.11***	(0.02)	0.06**	(0.02)	0.05*	(0.02)	0.05*	(0.02)
5	0.13***	(0.03)	0.11***	(0.03)	0.11***	(0.03)	0.06*	(0.02)	0.04+	(0.02)	0.04+	(0.02)
6	0.11***	(0.03)	0.09***	(0.03)	0.09***	(0.03)	0.04+	(0.02)	0.03	(0.02)	0.03	(0.02)
7	0.12***	(0.03)	0.10***	(0.03)	0.10***	(0.03)	0.07**	(0.02)	0.05*	(0.02)	0.05*	(0.02)
8	0.12***	(0.03)	0.10***	(0.03)	0.10***	(0.03)	0.03	(0.02)	0.02	(0.02)	0.02	(0.02)
9	0.13***	(0.03)	0.11***	(0.03)	0.11***	(0.03)	0.04+	(0.03)	0.03	(0.03)	0.03	(0.03)
10	0.13***	(0.03)	0.12***	(0.03)	0.12***	(0.03)	0.05+	(0.03)	0.04	(0.03)	0.04	(0.03)
No training followed (ref.)												
Training followed			0.06***	(0.02)					0.05***	(0.01)		
No training followed (ref.)												
Training followed												
in the first two years					0.07**	(0.02)					0.05**	(0.02)
between third and tenth year					0.07**	(0.02)					0.05*	(0.02)
Intercept	0.10	(0.13)	0.02	(0.13)	0.02	(0.13)	0.09		0.02	(0.11)	0.02	(0.11)
σ_μ	0.28		0.28		0.28		0.28		0.28		0.28	
σ_ε	0.31		0.31		0.31		0.31		0.31		0.31	
ρ	0.45		0.45		0.45		0.45		0.45		0.45	

$N_{Obs.}$	18,291	18,291	18,291	18,291	18,291	18,291
$N_{Ind.}$	1,452	1,452	1,452	1,452	1,452	1,452
R^2						
overall	0.06	0.06	0.06	0.05	0.05	0.05
within	0.11	0.11	0.11	0.10	0.10	0.10
between	0.03	0.03	0.04	0.03	0.03	0.03

Note(s): ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$, +$p < 0.10$, robust standard errors in parentheses, models are controlled for age(-squared), time-fixed effects (year dummies), regional unemployment rate (NUTS-2 Level), position in the household (incl. youngest child's age) interacted with sex, and residential area (NUTS-3 Level).
Source: Statistics Netherlands (1999–2017).

Table 4. Unstandardised coefficients on sustained and wage-fitted employment for low-educated youth (Model 4), from fixed-effects panel regression models,

	Sustained employment		Wage-fitted employment	
Variables	M4		M4	
Post-intervention period (ref. = 0)				
1	0.05***	(0.02)	0.05**	(0.02)
2	0.06**	(0.02)	0.05**	(0.02)
3	0.07***	(0.02)	0.06**	(0.02)
4	0.07**	(0.02)	0.06**	(0.02)
5	0.09***	(0.03)	0.09***	(0.02)
6	0.11***	(0.03)	0.10***	(0.03)
7	0.11***	(0.03)	0.10**	(0.03)
8	0.11***	(0.03)	0.13***	(0.03)
9	0.11**	(0.03)	0.12**	(0.04)
10	0.12**	(0.04)	0.13***	(0.04)
x WGP				
Post-intervention period (ref. = 0)				
1	0.04*	(0.02)	−0.02	(0.02)
2	0.10***	(0.03)	0.01	(0.02)
3	0.11***	(0.03)	0.05*	(0.02)
4	0.11***	(0.03)	0.06*	(0.02)
5	0.11***	(0.03)	0.05*	(0.02)
6	0.09**	(0.03)	0.04	(0.02)
7	0.10***	(0.03)	0.06*	(0.02)
8	0.10***	(0.03)	0.03	(0.02)
9	0.11***	(0.03)	0.04+	(0.03)
10	0.12***	(0.03)	0.05+	(0.03)
		(0.03)		
No training followed (ref.)				
Training followed				
in the first two years	0.06	(0.06)	0.04	(0.03)
between third and tenth year	0.07**	(0.02)	0.05*	(0.02)
In the first two years and between the third and tenth year	0.07**	(0.02)	0.05*	(0.02)
Intercept	0.02	(0.13)	−0.01	(0.11)
σ_μ	0.28		0.28	
σ_ε	0.31		0.30	
ρ	0.02		0.45	
$N_{\text{Obs.}}$	18,291		18,291	
$N_{\text{Ind.}}$	1,452		1,452	
R^2				
overall	0.06		0.04	
within	0.11		0.09	
between	0.04		0.02	

Note(s): ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$, +$p < 0.10$, robust standard errors in parentheses, models are controlled for age(-squared), time-fixed effects (year dummies), regional unemployment rate (NUTS-2 Level), position in the household (incl. youngest child's age) interacted with sex, and residential area (NUTS-3 Level).
Source: Statistics Netherlands (1999–2017).

that the positive impact of the WGP on sustained employment is notably less for intermediate-educated individuals than for those with low education, with a net effect of 6.24 additional months of employment, which fades to insignificance nine years after programme completion. Notably, increases in employment in the third and seventh years post-completion do not correlate with vocational training effects under the WGP (Model 2). Similarly, wage-fitted employment benefits are observed only in the sixth and seventh years, resulting in a modest net increase of 2.76 months over the control group across the decade.

Table 5. Unstandardised coefficients on sustained and wage-fitted employment for intermediate-educated youth, from fixed-effects panel regression models.

	Sustained employment						Wage-fitted employment					
Variables	M1		M2		M3		M4		M5		M6	
Post-intervention period (ref. = 0)												
1	0.05***	(0.01)	0.05***	(0.01)	0.05***	(0.01)	0.05**	(0.02)	0.04**	(0.02)	0.04**	(0.02)
2	0.08***	(0.02)	0.08***	(0.02)	0.08***	(0.02)	0.05**	(0.02)	0.05**	(0.02)	0.05**	(0.02)
3	0.08***	(0.02)	0.08***	(0.02)	0.08***	(0.02)	0.06**	(0.02)	0.06**	(0.02)	0.06**	(0.02)
4	0.06**	(0.02)	0.06**	(0.02)	0.06**	(0.02)	0.05*	(0.02)	0.05+	(0.02)	0.05+	(0.02)
5	0.07**	(0.02)	0.08**	(0.02)	0.08**	(0.02)	0.06*	(0.03)	0.06*	(0.03)	0.06*	(0.03)
6	0.09***	(0.03)	0.09***	(0.03)	0.09***	(0.03)	0.06*	(0.03)	0.05+	(0.03)	0.05+	(0.03)
7	0.10***	(0.03)	0.10***	(0.03)	0.10***	(0.03)	0.06*	(0.03)	0.06+	(0.03)	0.05+	(0.03)
8	0.11***	(0.03)	0.11***	(0.03)	0.11***	(0.03)	0.06+	(0.03)	0.06	(0.03)	0.06	(0.03)
9	0.12***	(0.03)	0.12***	(0.04)	0.12***	(0.04)	0.09*	(0.04)	0.08*	(0.04)	0.08*	(0.04)
10	0.12**	(0.04)	0.12**	(0.04)	0.12**	(0.04)	0.08*	(0.04)	0.08+	(0.04)	0.08+	(0.04)
x WGP												
Post-intervention period (ref. = 0)												
1	−0.00	(0.02)	−0.00	(0.02)	−0.00	(0.02)	−0.04*	(0.02)	−0.04+	(0.02)	−0.04+	(0.02)
2	0.01	(0.02)	0.02	(0.02)	0.02	(0.02)	−0.04+	(0.02)	−0.04+	(0.02)	−0.04+	(0.02)
3	0.06**	(0.02)	0.06**	(0.02)	0.06**	(0.02)	−0.00	(0.02)	−0.00	(0.02)	−0.00	(0.02)
4	0.07**	(0.03)	0.07**	(0.03)	0.07**	(0.03)	0.03	(0.03)	0.03	(0.03)	0.03	(0.03)
5	0.05*	(0.03)	0.05*	(0.03)	0.05*	(0.03)	0.03	(0.03)	0.03	(0.03)	0.03	(0.03)
6	0.08**	(0.03)	0.08**	(0.03)	0.08**	(0.03)	0.06*	(0.03)	0.06*	(0.03)	0.06*	(0.03)
7	0.09***	(0.03)	0.09***	(0.03)	0.09***	(0.03)	0.06*	(0.03)	0.05*	(0.03)	0.05*	(0.03)
8	0.07*	(0.03)	0.07*	(0.03)	0.07*	(0.03)	0.05+	(0.03)	0.05+	(0.03)	0.05+	(0.03)
9	0.04	(0.03)	0.04	(0.03)	0.04	(0.03)	0.03	(0.03)	0.03	(0.03)	0.03	(0.03)
10	0.05	(0.03)	0.05	(0.03)	0.05	(0.03)	0.05+	(0.03)	0.05+	(0.03)	0.05+	(0.03)
No training followed (ref.)												
Training followed			−0.01	(0.02)					0.01	(0.02)		
No training followed (ref.)												
Training followed												
in the first two years					0.00	(0.02)					0.02	(0.02)
between third and tenth year					−0.01	(0.02)					−0.00	(0.02)
Intercept	0.17	(0.13)	0.17	(0.13)	0.17	(0.13)	−0.00	(0.12)	−0.01	(0.12)	−0.01	(0.12)
σ_μ	0.27		0.27		0.27		0.26		0.26		0.26	
σ_ε	0.29		0.29		0.29		0.32		0.32		0.32	
ρ	0.46		0.46		0.46		0.41		0.41		0.41	
$N_{Obs.}$	17,134		17,134		17,134		17,134		17,134		17,134	
$N_{Ind.}$	1,356		1,356		1,356		1,356		1,356		1,356	

(*Continued*)

Table 5. Continued.

	Sustained employment			Wage-fitted employment		
Variables	M1	M2	M3	M4	M5	M6
R^2						
overall	0.06	0.06	0.06	0.04	0.04	0.04
within	0.09	0.09	0.09	0.09	0.09	0.09
between	0.04	0.04	0.04	0.02	0.02	0.02

Note(s): ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$, +$p < 0.10$, robust standard errors in parentheses, models are controlled for age(-squared), time-fixed effects (year dummies), regional unemployment rate (NUTS-2 Level), position in the household (incl. youngest child's age) interacted with sex, and residential area (NUTS-3 Level).
Source: Statistics Netherlands (1999–2017).

The absence of significant benefits from vocational training for those with intermediate education (as seen in Models 2, 3, 5, and 6) suggests a mismatch between the WGP's training focus and the actual skill needs of these participants. Despite receiving more formal vocational training than the control group, the outcomes indicate that the public work-first support model was just as effective as the WGP's approach. This highlights a critical area for programme improvement, emphasising the need to tailor vocational training more closely to participants' career progression paths and educational levels.

5.3. Strong impact on sustained and wage-fitted employment for high-educated youth

Table 6 highlights the outcomes of the WGP on sustained and wage-fitted employment for highly educated youth over a decade post-intervention, demonstrating a marked positive trend for both WGP participants and the control group. For WGP participants, the net treatment effect shows a significant gain of 19.56 months in sustained employment and 13.80 months in wage-fitted employment over the control group throughout the ten years.

The analysis suggests that high-educated youth in the control group, who received public work-first support, likely had better access to formal training opportunities not provided by the WGP. Despite this, WGP participants still achieved higher sustained employment levels. This discrepancy implies that the benefits of participating in the WGP extend beyond immediate employment outcomes, with the added value possibly attributed to the human capital gains from vocational training and the prestige of working for a multinational enterprise. The reduced effect on control group variables versus the unchanged impact on WGP participants underscores the significant long-term advantages of WGP participation for highly educated individuals, pointing to the programme's comprehensive benefits beyond formal training opportunities.

6. Conclusions and discussion

This longitudinal quasi-experimental study revealed significant long-term benefits of a privately-owned employment programme (Philips' WGP) for unemployed youth aged 18–35, offering vocational training and work experience at multinational enterprises, over public work-first support, observed up to a decade after programme exit. The present study highlighted variation in sustained and wage-fitted employment outcomes among young participants with different education levels, in contrast to those receiving work-first support. This variation is largely attributed to differences in access to vocational training, especially for youth entering the programme with lower levels of education. However, the impact of this programme was less pronounced among those with intermediate education, while, surprisingly, those with higher education levels benefited significantly from the programme.

6.1. Sustained and wage-fitted employment across educational levels

The WGP's enduring effect on the sustained employment of low-educated youth is anticipated to be linked to its vocational component. Theoretically, this could also be

Table 6. Unstandardised coefficients on sustained and wage-fitted employment for high-educated youth, from fixed-effects panel regression models.

	Sustained employment						Wage-fitted employment					
Variables	M1		M2		M3		M4		M5		M6	
Post-intervention period (ref. = 0)												
1	0.05*	(0.02)	0.04+	(0.02)	0.04+	(0.02)	0.08***	(0.02)	0.07**	(0.02)	0.07**	(0.02)
2	0.06**	(0.02)	0.05+	(0.02)	0.05+	(0.02)	0.06*	(0.02)	0.05+	(0.02)	0.05+	(0.02)
3	0.08**	(0.02)	0.06*	(0.03)	0.06*	(0.03)	0.09**	(0.03)	0.08**	(0.03)	0.08**	(0.03)
4	0.07*	(0.03)	0.06+	(0.03)	0.05+	(0.03)	0.10**	(0.03)	0.09*	(0.03)	0.09*	(0.03)
5	0.08*	(0.03)	0.06+	(0.03)	0.06+	(0.03)	0.11**	(0.04)	0.10*	(0.04)	0.10*	(0.04)
6	0.07+	(0.04)	0.05	(0.04)	0.04	(0.04)	0.11**	(0.04)	0.10*	(0.04)	0.09*	(0.04)
7	0.08+	(0.04)	0.05	(0.04)	0.05	(0.04)	0.09*	(0.04)	0.08+	(0.05)	0.07	(0.05)
8	0.11*	(0.04)	0.08+	(0.04)	0.08+	(0.04)	0.12*	(0.05)	0.11*	(0.05)	0.11*	(0.05)
9	0.16***	(0.05)	0.13**	(0.05)	0.13**	(0.05)	0.16**	(0.06)	0.14*	(0.06)	0.14*	(0.06)
10	0.16**	(0.05)	0.13*	(0.05)	0.13*	(0.05)	0.17**	(0.06)	0.15*	(0.06)	0.15*	(0.06)
x WGP												
Post-intervention period (ref. = 0)												
1	0.02	(0.03)	0.03	(0.03)	0.03	(0.03)	−0.05	(0.03)	−0.04	(0.03)	−0.04	(0.03)
2	0.13***	(0.03)	0.13***	(0.03)	0.13***	(0.03)	0.07+	(0.04)	0.07+	(0.04)	0.07+	(0.04)
3	0.15***	(0.03)	0.15***	(0.03)	0.15***	(0.03)	0.09*	(0.04)	0.09*	(0.04)	0.09*	(0.04)
4	0.19***	(0.03)	0.18***	(0.03)	0.18***	(0.03)	0.13**	(0.04)	0.13**	(0.04)	0.13**	(0.04)
5	0.19***	(0.03)	0.18***	(0.03)	0.18***	(0.03)	0.14**	(0.04)	0.14**	(0.04)	0.14**	(0.04)
6	0.20***	(0.04)	0.20***	(0.04)	0.20***	(0.04)	0.17***	(0.04)	0.17***	(0.04)	0.17***	(0.04)
7	0.20***	(0.04)	0.20***	(0.04)	0.20***	(0.04)	0.16***	(0.04)	0.16***	(0.04)	0.16***	(0.04)
8	0.19***	(0.04)	0.18***	(0.04)	0.18***	(0.04)	0.13**	(0.05)	0.13**	(0.05)	0.13**	(0.05)
9	0.18***	(0.04)	0.17***	(0.04)	0.17***	(0.04)	0.14**	(0.05)	0.14**	(0.05)	0.14**	(0.05)
10	0.21***	(0.04)	0.21***	(0.04)	0.21***	(0.04)	0.16**	(0.05)	0.16**	(0.05)	0.16**	(0.05)
No training followed (ref.)												
Training followed			0.05*	(0.02)					0.03	(0.03)		
No training followed (ref.)												
Training followed												
in the first two years					0.07*	(0.03)					0.04	(0.03)
between third and tenth year					0.03	(0.04)					0.04	(0.04)
Intercept	−0.73***	(0.17)	−0.78***	(0.17)	−0.79***	(0.17)	−0.67***	(0.17)	−0.70***	(0.17)	−0.71***	(0.18)
σ_μ	0.24		0.24		0.24		0.28		0.28		0.28	
σ_ε	0.29		0.29		0.29		0.33		0.33		0.33	
ρ	0.41		0.42		0.42		0.41		0.41		0.41	

$N_{Obs.}$	7,990	7,990	7,990	7,990	7,990	7,990
$N_{Ind.}$	608	608	608	608	608	608
R^2						
overall	0.10	0.10	0.10	0.05	0.05	0.05
within	0.16	0.16	0.16	0.14	0.14	0.14
between	0.07	0.06	0.06	0.01	0.01	0.01

Note(s): ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$, +$p < 0.10$, robust standard errors in parentheses, models are controlled for age(-squared). time-fixed effects (year dummies), regional unemployment rate (NUTS-2 Level), position in the household (incl. youngest child's age) interacted with sex, and residential area (NUTS 3-Level).
Source: Statistics Netherlands (1999–2017).

ascribed to the signalling and screening effects on employers due to the work experience gained at a reputable firm. Concurrently, for the control group subjected to public work-first support, the focus on returning to school might elucidate the diminished employment effects observed. A return to education is not intrinsically negative. However, low-educated youth may benefit more from on-the-job or workplace-based learning and securing credentials than from classroom-based learning experiences, as suggested by Arellano-Bover and Saltiel (2024). As a result, these young individuals subjected to public work-first support have a very low chance of ascending from the lower echelons of the labour market, as indicated by the adverse impacts on wage-fitted employment tier (Mattijssen and Pavlopoulos 2019; Mattijssen, Pavlopoulos, and Smits 2020).

Furthermore, it was observed that youth with lower education levels sought further training following their involvement in the WGP. While direct empirical evidence for this finding is absent, it was hypothesised that the WGP may have encouraged an adaptive orientation towards lifelong learning. Alternatively, this tendency could also be attributed to inherent personality traits. For those with intermediate levels of education, the employment benefits are considerably more modest. It appears they benefit from participation in the WGP only in the first two years following completion, potentially due to the programme offering retraining and training in areas outside their initial field of education. Nevertheless, there is no formal enhancement of their skills as observed for low-educated youth.

The most notable discovery pertains to the significant positive impact of WGP participation on the sustained employment of highly educated youth. The inclusion of work experience at Philips on the résumés of young individuals for prospective employers may be of greater significance than previously assumed, possibly exceeding the value of formal training. The favourable outcomes for highly educated youth are consistent with Hypotheses 1a and 1b. Yet, they challenge Hypotheses 3a and 3b, which anticipated a negligible effect of WGP participation for this group due to the absence of formal training. Highly educated youth appear to benefit from the prestige of Philips and the reduced stigma effects, thanks to work experience and on-the-job learning featured on their résumés.

Furthermore, in agreement with the theories of dualism and segmentation, the enhanced opportunities available to higher-educated individuals may elucidate why workplace-based learning profoundly influences sustained and suitably compensated employment. Evidence supports the hypothesis that participants with low and intermediate levels of education gain from the WGP's formal vocational training, while highly educated youth derive significant advantages primarily through work experience. Their prospects of achieving sustained employment are broadly improved by training investments in areas of education that equip them for more secure technology-related positions.

6.2. Limitations and future research directions

The current study's principal strength, yet also a significant limitation, is its reliance on national register data, which lacks subjective information on motivation, innate abilities, effort, and the personal views and assessments of these young people engaged in the

WGP or those receiving public work-first support. Although fixed-effects regression models were employed to account for selection effects and unobserved heterogeneity – stemming from the WGP's selective recruitment strategy – our findings cannot reveal the underlying mechanisms. Neither Philips nor public local employment agencies significantly invest in tracking young people's motivations, perceptions, opinions, and expectations throughout and following their involvement in private or public work-first support programmes. Future research could explore how the feature of having a regular job during the programme or adaptive orientations towards lifelong learning may directly contribute to sustainable employment. Additionally, the potential moderating or mediating roles of these subjective factors on proactive coping strategies, such as job search behaviours and adaptability in learning, could further influence the programmes' impacts on long-term employment outcomes.

Our study indicates that the observed trends of job polarisation, characterised by a diminishing share of mid-level routine positions, may have wider implications (see Elsayed, de Grip, and Fouarge 2017). In the context of current economic growth and high job vacancy rates, there are emerging doubts regarding the efficacy of a work-first approach. The Netherlands boasts one of Europe's lowest youth unemployment rates and offers abundant employment opportunities for young individuals (Pennoni and Bal-Domańska 2022). Nevertheless, employers encounter challenges in recruiting skilled labour, as numerous positions require scarce specialised vocational competencies. This impasse is exacerbated by policies prioritising immediate job placement over skills development, resulting in suboptimal employment matches and restricted career advancement for young people. This scenario echoes the circumstances that prompted Philips to initiate YWP in 1983, a period marked by a demand for skilled labour. Yet, the unemployed youth were bereft of the requisite skills.

6.3. Policy implications

From a policy perspective, vocational training and workplace-based learning, set within a competitive environment, could be crucial in enabling unemployed youths from varied educational backgrounds to enhance their career prospects. This approach is especially pertinent for those with lower levels of education, who tend to have a negative view of classroom-based learning and prefer learning on the job. Our findings advocate for a public policy that promotes on-the-job and vocational training and encourages the involvement of private sector actors in policy practices, particularly in supporting low-educated youths. For high-educated youths facing significant obstacles in securing regular employment, targeted employment and training programmes designed to bridge the observed skills gaps may be beneficial for policy consideration. These individuals benefit substantially from job experience and career development courses, potentially increasing their resilience to job insecurity. Formal retraining programmes at the bachelor level might be viable for addressing shortages in skilled occupations. Both large corporations and small to medium-sized enterprises (SMEs), particularly through collaborative efforts could offer more opportunities for young individuals in employment and training programmes than smaller entities. Larger organisations are potentially more effective to overcome stigma effects and maintain participant motivation (Hyggen and Vedeler 2021; Walther 2022).

Integrating employment creation with vocational training presents a practical solution for overcoming the barriers that NEET young individuals encounter in contemporary labour markets, which are characterised by high demands for skills and fluctuating job opportunities, especially during economic or health crises. Moreover, amid current and prospective labour shortages, initiatives like the WGP can serve as an effective recruitment conduit (Gerards, Muysken, and Welters 2014), especially for potential employees whom employers might initially overlook due to skill gaps. Such an employment programme permits businesses to invest in the necessary skills and assess employees' productivity levels over an extended period. However, employers need to pivot their focus from young individuals' credentials to their competencies and potential to swiftly acquire the required skills through targeted re-skilling and upskilling efforts, thereby addressing their immediate and long-term skill shortages.

Notes

1. Since Philips established its lighting bulb operations in the Eindhoven area in 1891, founding a lighting bulb manufacturing facility, the development precipitated the emergence of technical enterprises in a locale historically characterised by agricultural and textile industries.
2. The primary focus lies in examining the influence of varying initial education levels among young people entering the programme rather than delving extensively into the impact of other variables included as controls in the modelling process.

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