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HIRING SUBSIDIES AND TEMPORARY WORK AGENCIES

Natalia Bermúdez-Barrezueta
Sam Desiere
Giulia Tarullo

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GHENT UNIVERSITY

Department of Economics

Faculty of Economics and Business Administration
Campus Tweekerken, St.-Pietersplein 5, 9000 Ghent - BELGIUM

Hiring subsidies and temporary work agencies*

Natalia Bermúdez-Barrezueta†, Sam Desiere‡, Giulia Tarullo§

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Abstract

This paper evaluates a hiring subsidy for lower-educated youths in Flanders (Belgium) that reduced labour costs by approximately 13% for a period of two years, starting in 2016. Using a donut Regression Discontinuity Design, we find no evidence that the subsidy improved the job finding rate of eligible job seekers in 2016-19, a period marked by a tight labour market. We then investigate the role of temporary work agencies, which disproportionately employ the target group and obtain 25% to 34% of the subsidies. Using Difference-in-Differences regressions, we demonstrate that agencies did not raise wages of eligible agency workers in response to the policy. Remarkably, despite a 3.3% labour cost reduction, full-time equivalent employment of eligible workers in these agencies decreased by 9.2% over the three years following the reform. Our findings highlight how an active labour market policy affects agency employment.

Keywords: hiring subsidy, temporary work agencies, youth employment, ALMP
JEL Codes: J08, J23, J53, J64, J68

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†Ghent University and IRES/LIDAM/UCLouvain. natalia.bermudez@ugent.be
‡Ghent University and IZA. sam.desiere@ugent.be
§Ghent University and IRES/LIDAM/UCLouvain. giulia.tarullo@ugent.be

1 Introduction

Wage and hiring subsidies, designed to reduce labour costs of young workers, are popular policy instruments to combat youth unemployment in both the EU (Escudero and López Mourelo, 2015) and the US (Neumark and Grijalva, 2017). The effectiveness of this policy depends not only on the type of workers it targets but also on the type of employers benefiting from the subsidy. A broad range of employers, including temporary work agencies (TWAs)—which serve as intermediaries between job seekers and employers needing temporary staff—can take advantage of these subsidies. While agency work has steadily increased in the last decade across the OECD (see Figure A.1), and agencies usually hire a disproportionate share of disadvantaged job seekers,[1] their response to hiring subsidies has not yet been examined.

This paper evaluates the effectiveness of a typical hiring subsidy targeted at lower-educated youths in improving their job finding rate and explores how the subsidy affects wages, labour costs, and employment within TWAs. Specifically, we evaluate a hiring subsidy offered to firms that hire a high school dropout or graduate under 25 years of age in Flanders, the Dutch-speaking region of Belgium. Importantly, both job seekers, individuals out of the labour force, as well as those who were previously employed (job-to-job transitions) are eligible for the subsidy when hired by a (new) employer. The hiring subsidy reduces labour costs of the median subsidised worker by approximately 13% for a period of two years without imposing specific requirements on employers or employees. In 2019, TWAs received 34% of the subsidy for dropouts and 25% of the subsidy for graduates.

The first part of the paper investigates whether the hiring subsidy improves the job finding rate of eligible job seekers. To this end, we exploit the age-discontinuity in a donut Regression Discontinuity Design (RDD) using data on the population of eligible job seekers ($n = 46,316$). While the take-up of the subsidy was high, it failed to improve the job finding rate. We can reject at the 95% confidence level that the subsidy increased the probability of being employed at least once over a six-month period after entry into unemployment by more than 2.2 percentage points, or by 3.5% in relative terms. The null-finding finding holds for both dropouts, a group that encounters serious challenges in securing (stable) employment, and graduates, a group that performs relatively well.[2]

The second part of the paper investigates the response of TWAs to the subsidy. To this end, we exploit firm-level data on the population of TWAs and a Difference-in-Differences design that contrasts outcomes for agency workers aged 24 (treated group) to those aged 26 (control group) before and after the implementation of the policy in July 2016. We find that wage rates of

[1] Autor and Houseman (2010) note that 15% to 40% of former welfare recipients who found a job in the years following the 1996 US welfare reform were employed by TWAs. In Italy, TWAs accounted for 25% of the new hires in 2020 (Assolavoro, 2020). In France, 54% of fixed-term contracts in 2019 were TWA contracts (Bergeaud et al., 2024). In the Netherlands, Van der Klaauw and Ziegler (2022) find that around 30 percent of benefit recipients of an activation programme mainly used by the young found a job via a TWA. In Spain, TWA contracts accounted for 13% of all contracts signed each month in 2019 (Carrasco et al., 2024b).

[2] According to the Labour Force Survey, in 2019, 63% of the dropouts and 85% of the graduates aged 20 to 29 (excluding students) were employed in Flanders (Steunpunt Werk, 2020).

the eligible agency workers are not affected by the subsidy, whereas labour costs per full-time worker decreased by 3.3% following the 2016 reform. This indicates that the hiring subsidy is entirely captured by the TWA rather than shared with the subsidised worker, in line with existing evidence for Belgium (Albanese et al., 2024). However, despite the reduction in labour costs, TWAs employed on average 9.2% fewer eligible full-time workers over the three years following the reform. This decline in agency employment is also evident (−10.4%) for workers aged 22-24. Furthermore, there is no evidence that agency employment among ineligible 26-year-olds increases after the reform, suggesting that TWAs did not substitute eligible workers by ineligible ones.

What can explain these puzzling findings? The null effect on the job finding rate indicates that the hiring subsidy did not create additional opportunities for eligible job seekers. A likely explanation is that the labour market was tight during the study period (2016-19), limiting the potential of hiring subsidies to generate new jobs (Neumark and Grijalva, 2017; Cahuc et al., 2019; Bruhn, 2020; Benzarti and Harju, 2021). Furthermore, the subsidy may not effectively address the skills mismatch for dropouts, whose employment rate remains persistently low (Card and Hyslop, 2005; Cahuc et al., 2021).

Why, then, did the hiring subsidy reduce agency employment among those eligible for the subsidy? In a tight labour market, TWAs and regular firms compete for a fixed pool of eligible individuals. This zero-sum competition implies that the decline in agency employment was offset by increased employment in regular firms.[3] Regular firms' increased demand for eligible workers could be met by either hiring eligible job seekers—thereby increasing transitions of job seekers to regular firms at the expense of transitions to TWAs—or by poaching eligible workers from agencies, thereby increasing the outflow from agencies to regular firms without affecting transitions from unemployment to employment. However, our data on job seekers do not allow distinguishing transitions to agencies from those to regular firms, and our data on TWAs only contain the level of employment. Thus, we cannot identify the precise channel through which agency employment decreases.

Regardless of the precise mechanism, TWAs could have responded by raising wages for workers eligible for the subsidy. Yet, compelling evidence shows they did not respond. This might be because it is more profitable to pocket the hiring subsidy rather than share it with their workers[4], or because institutional features and fairness norms prevent TWAs from raising wages for a specific subgroup of workers (Dube et al., 2019; Saez et al., 2019; Benzarti, 2024). For instance, labour law mandates equal pay for temporary and in-house workers performing the same tasks, and, while paying agency workers more than in-house workers is not strictly forbidden, it contradicts common sense and well-established norms at the workplace.

[3]Regular firms include those that never use agency work and those that regularly rely on agency work (so-called client firms). The latter may substitute agency workers with direct hires if TWAs do not share the subsidy with their clients (Micco and Muñoz, 2024).

[4]TWAs' response depends on the labour supply elasticity. TWAs are less likely to increase wages if few job seekers are willing to switch from a standard job to agency work in exchange for higher wages. This elasticity is close to zero if job seekers strongly prefer standard employment over agency work, which appears to be the case (Datta, 2019).

The paper's main contribution is to the literature on agency employment, which has recently received renewed attention due to the rising prevalence of agency work in OECD countries over the last decade (Mas and Pallais, 2020). A central and long-standing topic in this literature is whether agency work serves as a stepping stone to regular employment (e.g., Autor and Houseman, 2010; Givord and Wilner, 2015; Van der Klaauw and Ziegler, 2022; Carrasco et al., 2024a). Recent papers have investigated whether agency workers receive lower wages than in-house workers for the same tasks (Drenik et al., 2023; Bergeaud et al., 2024), and under which conditions domestic outsourcing, including to agencies, has positive macroeconomic effects (Bilal and Lhuillier, 2021; Bergeaud et al., 2024; Carrasco et al., 2024b).

We contribute to this literature by investigating how a hiring subsidy affects TWAs and agency workers—a topic that has not yet been explored. While several studies find favourable firm-level employment effects of hiring subsidies for firms that benefit most from them (e.g., Kangasharju, 2007; Lombardi et al., 2018; Cahuc et al., 2019; Saez et al., 2019), our results reveal a decline in employment within TWAs, which are the primary beneficiaries of the subsidy. This contrast highlights the distinct nature of TWAs compared to the regular private-sector firms analysed in previous studies.

Additionally, we show that eligible agency workers do not experience a wage increase, indicating that the hiring subsidy is incident on the agencies or their clients. This finding is consistent with several recent papers challenging the canonical tax incidence model by showing that the incidence of payroll taxes is not necessarily on workers (e.g., Benzarti, 2024). To the best of our knowledge, only Hamersma and Heinrich (2008) have explored the effects of hiring subsidies on agency workers. Studying hiring subsidies for welfare recipients in the US, they show that subsidised agency workers have a similar job duration as non-subsidised ones but have higher earnings. Contrary to our findings, this suggests that hiring subsidies in the US are partially passed on to the worker.

Our second contribution is to the vast literature on active labour market policies (ALMP) and, more specifically, to the smaller literature on hiring subsidies targeted at lower-educated youths.[5] The reviews of Kluve (2010) and Card et al. (2018) find that ALMP tend to be less effective for youths than for the general population. Caliendo and Schmidl (2016), who review the effectiveness of youth employment programmes in Europe, report that four out of the eight studies evaluating wage or hiring subsidies find positive employment effects. We add a precisely estimated null effect to this literature.

Within this literature, our paper is closely related to the recent papers of Albanese et al. (2024) and Dejemeppe et al. (2024). Albanese et al. (2024) evaluate a one-shot[6] hiring subsidy for high school dropouts and graduates in Wallonia, the French-speaking part of Belgium, in the aftermath of the Great Recession. This specific subsidy increased the job finding rate in the private sector by

[5] For systematic reviews see, Card et al. (2010); Kluve (2010); Caliendo and Schmidl (2016); Card et al. (2018); Kluve et al. (2019); Vooren et al. (2019).

[6] It is a one-shot subsidy in the sense that only employers who hired eligible workers in 2010 or 2011 were eligible. The hiring subsidy we examine is a permanent policy because it was not expected to expire at some pre-announced date.

10 percentage points, but reduced transitions to public employment and self-employment, resulting in no net increase in employment. In the context of Wallonia, Dejemeppe et al. (2024) find no net effect on the job finding rate in 2017-19 of a hiring subsidy similar to the one we study. They highlight that TWAs are keen users of the subsidy, and find evidence that increased transitions from unemployment to employment in regular firms are counterbalanced by fewer transitions to TWAs.

The rest of the paper is organised as follows. The next section discusses the policy and the institutional setting. Section 3 describes the panel dataset of job seekers, as well as the firm-level panel dataset of TWAs. Using the first dataset, Section 4 examines the impact of the subsidy on the job finding rate. Using the second dataset, Section 5 investigates the response of TWAs to the subsidy. Section 6 concludes.

2 The Belgian setting

2.1 The policy

Belgium has a long tradition of wage and hiring subsidies for disadvantaged socioeconomic groups (Albanese and Cockx, 2019; Godefroid et al., 2021; Desiere and Cockx, 2022; Leduc and Tojerow, 2024). Hiring subsidies became a regional competence in 2015, and the four regions subsequently reformed the existing hiring subsidies. Flanders, the Dutch-speaking region in the north of Belgium, replaced the existing subsidies by hiring subsidies for three target groups: high school dropouts and graduates under 25 years of age; individuals over 55 years of age; and individuals with a disability.

This paper focuses on the hiring subsidy for individuals under 25 years of age. Employers receive a temporary hiring subsidy when hiring an eligible worker. Workers are eligible if they meet four conditions: (1) they are less than 25 years old on the last day of the quarter in which they are hired; (2) they have at most a high school degree; (3) their wage does not exceed a certain threshold[7]; and (4) they have a part-time or full-time contract, or work at least 27.5% of a full-time worker in a given quarter. This last condition implies that (agency) workers who are only employed for a few days over a quarter are not eligible for the subsidy. The policy does not only target the unemployed: individuals who were previously employed (i.e., job-to-job transitions), who were out of the labour force, or who entered the labour market after graduating are also eligible, as long as they meet the four eligibility criteria.

The subsidy is slightly more generous for individuals without a high school degree—referred to as *high school dropouts*—than for those with a high school degree but without a university or university college degree—referred to as *high school graduates*. Employers receive a quarterly Social Security Contribution (SSC) reduction of at most €1,150 for high school dropouts and €1,000 for high school graduates during eight subsequent quarters after hiring. The subsidy is reduced almost

[7]The quarterly wage cannot exceed €7,500 during quarters one to four and €8,100 during quarters five to eight. Most young, lower-educated workers earn less, implying that this condition does not bind. One might be concerned that wages bunch just below the wage cap. Figure A.2 plots the distribution of gross wages in subsidised spells. There is no bunching at the threshold of €7,500.

proportionally for part-time workers.[8]

The reduction cannot exceed the SSCs an employer would have paid without the subsidy. In Belgium, the SSC rate increases with the gross wage rate, resulting in lower contributions for low-wage workers. Because many young, lower-educated workers earn low wages, a substantial fraction of employers do not receive the maximum SSC reduction. For instance, without the subsidy, an employer hiring a graduate in 2016 with a quarterly wage of €5,000 would pay SSCs of about €800. With the subsidy, the employer no longer pays SSCs, since the SSC is lower than the maximum reduction of €1,000, but does not receive the maximum reduction. As we will show below, this cap implies that the subsidy has a more pronounced effect on labour costs of workers with relatively higher wages.

A crucial feature of the policy for our identification strategy is that a worker, once hired, does not age out of eligibility. Stated differently, employers who hire an eligible worker will receive the subsidy for eight quarters as long as this worker remains employed, even if the worker becomes older than 25 during the employment spell. This feature ensures a sharp discontinuity at age 25. Conditional on employing the worker full-time for eight quarters, employers who hire a worker just under 25 years of age can claim a subsidy over eight quarters of at most €8,000 (graduates) or €9,250 (dropouts) whereas employers who hire a worker just over 25 years of age receive nothing.

In practice, few employers claimed the subsidy for eight consecutive quarters for the same worker, most likely because most subsidised jobs are short-lived. A subsided spell lasted on average 2.7 quarters. Approximately 40% of the subsidised employment spells lasted only one quarter, while less than 5% of the subsidised spells lasted eight quarters (Figure A.3). Subsidised employment spells in TWAs are shorter than those in regular firms (2.4 vs. 3.1 quarters), while spells of dropouts are similar to those of graduates (2.7 vs. 2.8 quarters).

The policy came into effect on July 1, 2016, but was reformed in subsequent years. On January 1, 2019, the hiring subsidy became more generous for high school dropouts. Since then, employers have been exempt from SSCs for dropouts during eight quarters. The hiring subsidy for high school graduates was abolished on January 1, 2020, and for dropouts on July 1, 2024.

Figure 1 shows the projected impact of the hiring subsidy on labour costs for dropouts (red line) and graduates (black dashed line) over the wage distribution.[9] Labour costs are defined as the gross wages (paid to the employee) plus SSCs minus the SSC reduction for a full-time worker. We show the labour cost reduction induced by the subsidy in 2016-17 (left panel) and 2019 (right panel). We focus on these two periods because dropouts are exempt from SSCs since 2019. Additionally, within the framework of the so-called tax shift, the federal government gradually reduced SSCs between 2016 and 2019.[10] This federal policy makes the Flemish hiring subsidy slightly less generous in 2019 than in 2016-17. The distribution of quarterly wages of subsidised workers is highlighted in

[8] Employers receive the entire subsidy if the employee works at least 80%.

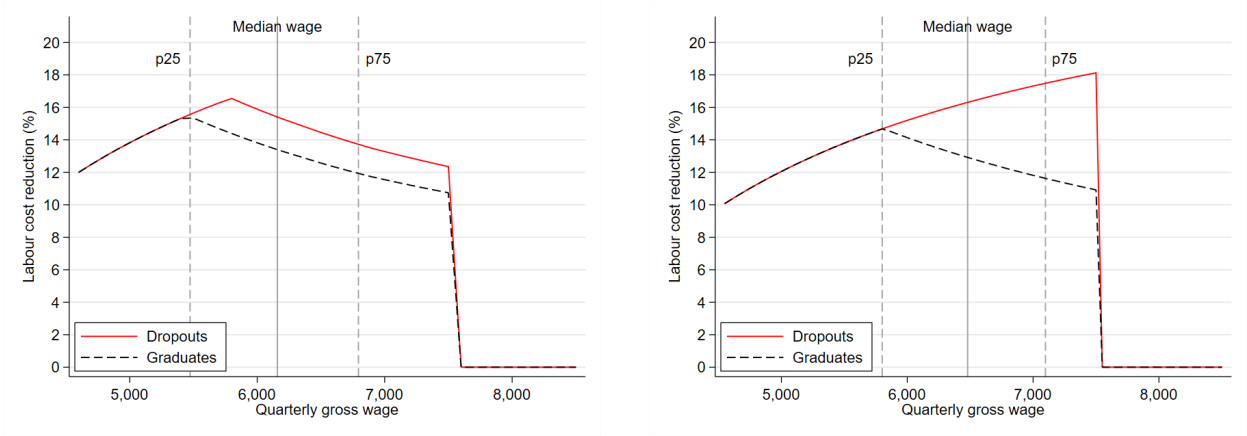
[9] The minimum monthly gross wage for a full-time worker was €1,532 in June 2016 and €1,626 in March 2020, which corresponds to a quarterly wage of €4,596 and €4,878, respectively.

[10] The SSC rate depends on the wage level, with lower rates for low-wage workers. The tax shift gradually reduced the maximum rate from from 32.4% in 2015 to 25% in 2019. This is accounted for in the computations.

the figures.

Figure 1: Labour cost reduction induced by the subsidy

(a) 2016-17 **(b)** 2019



Notes: The figures shows the labour cost reduction induced by the hiring subsidy by educational level for a full-time worker over the wage distribution in 2016-17 and 2019. The vertical lines indicate the 25th, 50th and 75th percentile of the distribution of wages of subsidised workers in 2017 and 2019. The median quarterly wage of subsidised workers is €6,158 in 2017 and €6,356 in 2019. In both periods, median wages of subsidised dropouts and graduates are comparable.

Figure 1 demonstrates that the subsidy reduced labour costs by 11% to 15% for graduates in both periods. The impact of the subsidy on labour costs initially increases with wages because the Social Security reduction can never exceed the amount the employer would have paid without the subsidy, and decreases with wages when the reduction surpasses the theoretically payable contributions. For the same reason, the impact of the subsidy on labour costs is the same for dropouts and graduates at low wage levels, despite the fact that the maximum reduction is higher for dropouts than graduates. At higher wage levels, the labour cost reduction is about two percentage points higher for dropouts than graduates in 2016-17.

The SSC exemption for dropouts, in place since 2019, further increases the impact of the subsidy on labour costs for dropouts relative to graduates, though only for those with relatively high wages. At the median wage of a subsidised worker, the labour cost reduction for dropouts in 2019 is 16%, three percentage points higher than the reduction for graduates.

The hiring subsidy is not automatically granted but has to be claimed by employers when filing quarterly wages to the National Social Security Office (NSSO). However, since almost all employers outsource payroll administration to specialised payroll agencies, which are well aware of the subsidies, the take-up rate is likely to be substantial. A non-representative survey among employers indicates that approximately 60% of employers are aware of the existence of hiring subsidies for disadvantaged job seekers (Boucq and López-Novella, 2018).

Using publicly available NSSO data, Table 1 documents the number of full-time equivalent (fte) workers per quarter for whom a subsidy was granted, the quarterly subsidy per fte-worker, and the annual cost of the subsidy for the years 2016 to 2022. In 2019, just before the abolition of

the subsidy for graduates, the subsidy was granted to 9,596 dropouts and 25,552 graduates per quarter. The annual cost amounted to €140 million, of which nearly 70% was allocated to high school graduates.

Table 1: Summary statistics of the hiring subsidy, by year and educational level

Year	Dropouts				Graduates			
	Beneficiaries (fte)	Annual cost (€1,000)	Subsidy/fte (per quarter)	TWA (% of subsidy)	Beneficiaries (fte)	Annual cost (€1,000)	Subsidy/fte (per quarter)	TWA (% of subsidy)
2016	3,833	7,571	988	65	9,980	18,164	910	58
2017	7,613	30,008	985	43	19,857	73,252	922	34
2018	9,753	40,048	1,027	36	26,613	100,898	948	27
2019	9,596	44,001	1,146	34	25,552	95,844	938	25
2020	7,369	33,643	1,141	31	13,020	50,175	963	15
2021	7,431	34,006	1,144	29	2,981	11,554	969	10
2022	7,178	31,886	1,111	N.A.	-	-	-	-

Notes: The table reports the average number of full-time equivalent subsidised workers per quarter (averaged over four quarters), the annual cost of the subsidy, and the quarterly subsidy per fte-worker. The subsidy for high school graduates was abolished on January 1, 2020, but employers who had hired eligible individuals before that date continued to receive the subsidy for the remaining quarters. The subsidy for the dropouts remained in place. The outbreak of COVID-19 explains the drop in the number of dropouts benefiting from the subsidy between 2019 and 2020.
Source: Publicly available NSSO data, and own calculations based on confidential DWSE data.

The quarterly subsidy per fte-worker in 2018 is €1,027 for high school dropouts and €948 for graduates. The average subsidy is lower than the maximum subsidy of €1,150 (€1,000) for dropouts (graduates) because the subsidy cannot exceed SSCs. The average subsidy remained fairly constant over the entire period for high school graduates but slightly increased for dropouts from 2019 (from €1,027 in 2018 to €1,146 in 2019) as a result of the 2019 reform that exempts dropouts from SSCs.

A hiring subsidy for high school graduates[11] did not exist prior to the 2016 reform. By contrast, various subsidies existed for high school dropouts, of which the generosity depended on the level of education and unemployment duration (see Desiere et al. (2020) for details). All these subsidies were abolished in Flanders on July 1, 2016. The existence of a myriad of subsidies for dropouts in the pre-reform period is one of the reasons why we do not estimate Difference-in-Differences regressions for this group. We will instead exploit the age discontinuity in a donut Regression Discontinuity Design, which does not require interpreting the findings relative to the pre-reform period.

2.2 Temporary work agencies

Temporary work agencies (TWAs) are private-sector firms that employ agency workers and outsource them to other firms, referred to as the *client* firm. They serve as intermediaries between job seekers looking for (short-term) employment and firms needing temporary staff. The workplace of the agency workers is situated at the client firm, even though the agency is the formal employer (Mas and Pallais, 2020). These agencies provide human resource services to firms that wish to outsource these activities. According to the OECD, in 2019, 2.1% of the employed population in Belgium were agency workers, up from 1.5% in 2007 (Figure A.1).

Agency work is subject to strict regulations in Belgium.[12] Agencies are required to obtain

[11] With the exception of a hiring subsidy for high school graduates unemployed for at least six months.
[12] Temporary agency work is regulated by the Act of 24 July 1987.

a license granted by the region where they intend to operate before starting their activities. In principle, private sector firms can only resort to agency work to (1) temporarily replace a permanent worker, (2) address a temporary increase in work due to a demand shock, (3) execute exceptional work, or (4) temporarily employ an agency worker with the aim of offering a permanent contract after a probation period as an agency worker. Depending on the specific reason, client firms can employ an agency worker for a maximum of six to twelve months.

As the formal employer of the agency worker, the TWA is responsible for payroll tax administration and wage payments. This is the reason why the TWA, rather than the client firm, receives the hiring subsidy. The client firm pays a fee to the TWA, which includes a profit margin. This fee, often a fraction of the worker's wage, is negotiated between the TWA and the client firm. In line with European legislation, Belgian labour law mandates wages of agency workers, including fringe benefits, to be at least equal to wages of in-house workers.

Like other firms, TWAs are eligible for the hiring subsidy that we evaluate. In 2019, TWAs received 34% (25%) of the subsidies for dropouts (graduates), as shown in Table 1. The proportion of subsidised jobs in TWAs among all subsidised jobs is even higher. In 2019, 47% (35%) of the subsidised jobs for dropouts (graduates) were temporary agency jobs. The observation that TWAs receive a substantial share of the subsidy is the key motivation to investigate how these agencies respond to the introduction of the subsidy.

3 Data

We rely on three data sources: (1) data on job seekers provided by the VDAB, the Flemish Public Employment Service; (2) data on subsidised employment spells from the Flemish Department of Work and Social Economy (DWSE); and (3) firm-level data covering the population of TWAs in Flanders, obtained from the National Social Security Office (NSSO). The first two datasets are used to evaluate the impact of the hiring subsidy on the job finding rate. The last dataset is used to evaluate the response of TWAs to the subsidy.

VDAB data on job seekers

Since registration at the VDAB is mandatory to claim unemployment benefits, we obtained a panel dataset from the VDAB on the population of job seekers with at most a high school degree under 30 years of age, covering the period 2012–2020. The analysis sample is restricted to the population of job seekers who received unemployment benefits or who are in their so-called *waiting period*. This latter category consists of job seekers who (typically) graduated recently but have insufficient work experience to claim unemployment benefits. These job seekers have to wait about twelve months after graduation before becoming eligible for an activation allowance (see Cockx et al. (2020) for details).

The dataset identifies the exact start and end dates of an unemployment spell. The VDAB is automatically notified when a job seeker resumes employment. Our main outcome is the job finding rate within six months. This indicator is equal to one if the job seeker was employed at least

once over a period of six months following entry into unemployment. This outcome is, for instance, equal to one if the job seeker obtains a permanent contract. In our dataset, it is not possible to discern whether individuals are employed by TWAs or by regular firms. Individuals who regularly accept agency work (at least ten days over the last 28 days) are classified as employed.

The main identification strategy is a *donut* RDD. As explained in detail in the next section, the running variable is the number of months a job seeker remains eligible for the subsidy after the start of the unemployment spell. Job seekers who are eligible for at most six months before aging out of eligibility are excluded from the analysis ("the donut"). The analysis is conducted on the population of job seekers (1) who have at most a high school degree, (2) whose unemployment spells started between July 1, 2016 and June 30, 2019,[13] and (3) who, at the start of their unemployment spell, remain eligible for the subsidy for at least 6 and at most 42 months (treatment group) or aged out of eligibility at most 36 months before the start of the unemployment spell (control group). In other words, individuals in the treatment group are always eligible for the subsidy when hired within 6 months, whereas individuals in the control group are never eligible since their unemployment spell started after ageing out of eligibility. With these restrictions, the dataset comprises 46,316 unemployment spells of 38,099 unique job seekers, of which 19,110 unemployment spells are from dropouts and 27,206 from graduates.

Two job seeker characteristics are crucial for the analysis: date of birth and educational level. For confidentiality reasons, the exact birthday is not provided. Instead, we observe the year and month of birth. Job seekers' level of education is either self-reported at the time of registration at VDAB or is obtained from an administrative dataset.[14] The level of education can increase over time. We always use the highest level of education reported at the start of the unemployment spell.

DWSE data on subsidised employment spells

We match the VDAB dataset with data on subsidised employment spells obtained from the Flemish Department of Work and Social Economy (DWSE), the administration in charge of the Flemish hiring subsidies. This quarterly dataset contains individual-level information on all employees who received a subsidy, including the amount of the subsidy, the wage, the number of days worked, and the sector. We use this dataset to estimate the take-up rate of the subsidy and to determine the amount of the subsidy conditional on being employed in a subsidised job. In addition, this dataset allows us to document the distribution of the subsidy by sector.

The VDAB dataset limits the analyses to the effect of the subsidy on the job finding rate of job seekers. Because the VDAB only gathers data on (registered) job seekers, we cannot examine whether the subsidy affects job-to-job transitions or improves the job finding rate among those who are out of the labour force. Seven out of ten subsidised employment spells are observed in the VDAB data, suggesting that three out of ten subsidised spells involve individuals who are not

[13] As the subsidy was abolished for graduates on January 1, 2020, this restriction ensures that job seekers are eligible for the subsidy when hired within six months.

[14] The LED contains degrees awarded by Flemish educational institutions.

unemployed when hired (e.g., job-to-job transitions, individuals who found a job immediately after leaving school without registering at the VDAB). Our investigation of the response of TWAs to the subsidy does not suffer from this limitation, because the NSSO observes the entire population of employed individuals, regardless of their previous labour market position.

Using the VDAB and DWSE data, Table 2 presents descriptive statistics for (1) job seekers eligible for the subsidy (the treated group in the RDD); (2) job seekers ineligible for the subsidy (the control group in the RDD); and (3) job seekers who obtained a subsidised job within six months. Slightly less than two-thirds of the eligible job seekers are graduates, while one-third are dropouts. The main outcomes, which are then examined in the RDD regressions, are reported at the bottom of the table: 65% (46%) of the eligible job seekers will find a (subsidised) job within six months, and these job seekers are on average employed for 2.6 months over a six-month period following the start of their unemployment spell.

Table 2: Job seekers' characteristics

	Eligible	Ineligible	Job seekers with subsidised jobs
Age			
Mean	22.8	26.3	22.9
Range (min - max)	21y3m - 24y5m	24y9m - 28y	21y3m - 25y
Characteristics (%)			
Woman	41.8	43.5	41.9
Belgian nationality	84.9	72.2	85.9
Belgian origin	67.1	29.7	68.6
Driving licence	38.7	40.8	38.8
Disability	1.3	4.1	1.2
Education (%)			
Dropouts	35.7	51.6	36.8
Graduates	64.3	48.4	63.2
Unemployment status (%)			
Unemployment benefits	61.5	99.4	67.6
Waiting period	38.5	0.6	32.4
Outcomes (%)			
Subsidised job within 6m	45.6	2.8	100
Job finding rate within 6m	65.1	60.0	99.3
Months of employment within 6m	2.6	2.4	4.0
N	30,205	16,111	15,022

Notes: The table reports summary statistics on eligible, ineligible, and subsidised job seekers based on the VDAB and DWSE datasets. Job seekers are classified as eligible if they remain eligible for the subsidy for more than 6 to 42 months after the start of the unemployment spell, and as ineligible if they aged out of eligibility 1 to 36 months before the start of the unemployment spell. Finally, subsidised job seekers are eligible job seekers who found a subsidised job within six months after the start of the unemployment spell.
Sources: VDAB and DWSE data.

Comparing columns (1) to (3) of Table 2 demonstrates that job seekers who find a subsidised job have relatively similar characteristics as eligible job seekers. Thus, they do not seem to be positively selected. By contrast, ineligible job seekers (column 2) appear more disadvantaged than younger, eligible job seekers. For instance, 67% of the eligible job seekers are of Belgian origin vs. only 29% of the ineligible job seekers. Moreover, the older ineligible job seekers are considerably

more likely to be high school dropouts, pointing out to the potential negative association between age and the job finding rate in the RDD regressions.

NSSO data on TWAs

To investigate the response of TWAs to the subsidy, we obtained firm-level data on TWAs from the National Social Security Office (NSSO), the federal administration in charge of SSCs. More specifically, we gathered firm-level data for the population of TWAs active in Flanders for the years 2009 to 2022.[15]

For each TWA, we observe the headcount of agency workers on the last day of the quarter, full-time equivalent (fte) employment, the wage bill (defined as the sum of gross wages paid to the agency workers), the hiring subsidy, and SSCs paid by the firm.[16] This information is disaggregated by the workers' age measured on the last day of the quarter. Because agency workers typically do not work full-time during an entire quarter, it is important to emphasise that fte-employment is defined as the total number of days worked by all agency workers over a quarter.

This information allows computing the wage rate, labour costs per fte-worker, and employment by age group. The wage rate is defined as the quarterly wage bill divided by fte-employment in that quarter. Labour costs per fte-worker are defined as the sum of the wage bill and SSCs minus the SSC reductions, divided by fte-employment. The wage rate and labour costs are deflated using the CPI and are expressed in 2013 prices.

The NSSO dataset has two limitations. First, in contrast to the VDAB data, someone's age on the last day of the quarter is recorded in years rather than months. Second, we do not observe workers' educational level nor the number of individuals who worked less than 27.5% of a fte-worker in a given quarter. This means that some agency workers below 25 years of age are ineligible for the subsidy. However, the share of subsidised fte agency workers aged 24 is 42%.

We restrict the population of TWAs to a balanced panel of firms that were active throughout the period 2011 to 2022, employ temporary workers aged 24 and 26 in all years, and have at least 5 fte-workers, on average, in the pre-reform period.[17] While 285 TWAs were active over this period in Flanders, only 77 firms meet the three conditions mentioned above. A minority of these firms (7%) are excluded because they do not employ workers in the relevant age groups, but many firms have less than 5 fte-workers or are not observed throughout the entire 2011-2022 period (68%). However, the firms included in the balanced sample account for a large share of temporary agency work. In 2015, the last pre-reform year, TWAs in the balanced sample employed 95% of agency workers aged 24 and captured 95% of the hiring subsidies allocated to TWAs in 2016. In 2015, the ten largest TWAs together employed 63% of the agency workers aged 18 to 25, indicating that the market is dominated by a few large agencies.

[15] Before 2013, statistics for TWAs active in Flanders are only available in the second and fourth quarter. Since 2013, data for all four quarters are available. In the analysis, we compute yearly averages across the available quarters.

[16] TWAs' own staff, students, and flexi-jobs are excluded. These groups are not eligible for the subsidy.

[17] The latter criterion is implemented because many TWAs are tiny and have less than 5 fte-worker. For these firms, discrete adjustment of employment would result in very high employment growth values (e.g., 100 percent for TWAs growing from 1 to 2 workers).

According to our confidential NSSO dataset, in 2019, TWAs employed on average 2,972 fte subsidised dropouts and 5,944 fte subsidised graduates per quarter and received 14 million and 22 million euros in subsidy for dropouts and graduates, respectively (see Table C.1 for statistics by year). These figures are consistent with the publicly available figures reported in Table 1.

4 Impact on the job finding rate

4.1 The Donut Regression Discontinuity Design (RDD)

We exploit the age discontinuity in a donut RDD to identify the Intent-to-Treat (ITT) effect of the hiring subsidy on the job finding rate of eligible job seekers. Job seekers are eligible for the subsidy when they are under 25 years of age on the last day of the quarter in which they are hired. This eligibility criterion implies that the running variable is not exactly equal to the job seeker's age at the start of the unemployment spell, but is defined as the number of months between the start of the unemployment spell and the first month in which the job seeker is no longer eligible for the subsidy. Consequently, the running variable depends on the job seeker's birthday and the start date of the unemployment spell, is strictly negative for job seekers eligible for the subsidy, and is equal to zero or positive for ineligible job seekers.

We provide an example to clarify the definition of the running variable. Suppose an individual named John celebrates his 25th birthday in March 2018. The first month during which John is no longer eligible for the hiring subsidy is January 2018. This means that the running variable equals 0 if John's unemployment spell starts in January 2018, is strictly positive for spells starting after January 2018, and is strictly negative for spells starting in preceding months (e.g., equal to -1 if John's unemployment spell starts in December 2017). Note that the value of the running variable is the same for all individuals born in the same quarter if their unemployment spell starts in the same month. For instance, John and an individual who turns 25 in January 2018 (i.e., three months older than John) have the same value of the running variable if the start of their unemployment spell coincides.

One complication is that some job seekers are only eligible for the subsidy when hired shortly after the start of the unemployment spell. Job seekers who are eligible for a few months are less likely to benefit from the subsidy than younger job seekers who are eligible for the subsidy for several months or even years before ageing out of eligibility. To address this issue, we estimate a donut RDD after removing job seekers who are eligible for the subsidy for six months or less (e.g., Gerard and Gonzaga 2021; Albanese et al. 2024; Auerbach et al. 2024). Concretely, job seekers with a running variable in the range of -6 to -1 (the "donut") are excluded from the analysis. By doing so, we ensure that all individuals younger than 25 years are eligible for the subsidy if hired within six months. We extrapolate the linear spline within the donut to estimate the causal effect of the policy at the cutoff.

The following donut RDD is estimated:

$$y_i = \alpha + \beta T_i + \delta_1 z_i T_i + \delta_2 z_i + \tau X_i + \mu_i \qquad z_i \in [-42, -7] \cup [0, 36] \tag{1}$$

where z_i defines the running variable of unemployment spell i, and $T_i = \mathbf{1}[z_i < 0]$ equals one if the job seeker is eligible for the subsidy.

The terms $\delta_1 z_i T_i$ and $\delta_2 z_i$ capture a linear association between the outcome and the running variable on the left- and right-hand sides of the cutoff. X_i are control variables included in a sensitivity analysis, and ϵ_i is the idiosyncratic error component clustered by individuals, as some individuals experience several unemployment spells.[18] The coefficient of interest, β, captures the ITT effect at the cutoff. Following Albanese et al. (2024), we choose a symmetric bandwidth of 36 months on each side of the donut. Observations are weighted using triangular kernel weights to account for the distance of each observation to the cutoff.

We first explore whether the subsidy creates exogenous variation at the age cutoff in terms of the take-up rate of the subsidy, the subsidy amount, and labour costs. We then examine the impact of the subsidy on the job finding rate. Our primary outcome of interest is the cumulative job finding rate within six months following the start of the unemployment spell. In this case, the outcome y_i equals one if a job seeker is employed at least once within a period of six months after the start of the unemployment spell, and zero otherwise.[19] As a sensitivity check, we also examine whether the job finding rate increased in months 1 to 6 after the start of the unemployment spell and whether the total number of months worked over a six-month period increased.[20]

We implement numerous robustness and placebo tests. We first test for the continuity of the density of the running variable to rule out manipulation and sorting above and below the cutoff. We then examine the continuity of predetermined covariates at the threshold to rule out differences in the composition of the population of job seekers at the cutoff. Next, we examine the sensitivity of the results to using different bandwidths, different donut holes, the inclusion of covariates, and restricting the sample to job seekers claiming unemployment benefits thereby excluding those in their waiting period. As a placebo test, we estimate the donut RDD for the population of high school graduates before the policy was in place and after it was abolished.

Finally, we implement Difference-in-Differences (DiD) regressions for the graduates. Specifically, we use a standard DiD framework to compare the job finding rates of young (eligible) and older (ineligible) graduates before and after the introduction of the subsidy in July 2016. We do not estimate DiD regressions for dropouts, as this group already benefited from hiring subsidies in the

[18] Clustering by the running variable, as recommended by Lee and Card (2008) but opposed by Kolesár and Rothe (2018) for RDD with discrete running variables, does not alter the findings.

[19] Individuals in subsidised on-the-job training (called *IBO* in Dutch) are classified as unemployed, differently from VDAB's official classification which classifies them as employed. This choice is unlikely to affect our findings, as only about 4% of the job seekers included in the main analysis participate in this programme within six months after the start of their unemployment spell.

[20] VDAB only records the transition from unemployment to employment. To compute this indicator, we assume that individuals remain employed as long as they do not re-register at the VDAB, which signals the start of a new employment spell.

pre-reform period. The DiD estimates for graduates enable us to validate the RDD estimate and to assess whether the effects extend beyond the local impact at the cutoff.

4.2 Results

4.2.1 Subsidy take-up

We start by presenting graphical evidence to assess whether the eligibility criterion creates exogenous variation in the take-up of the subsidy and in labour costs at the cutoff, which is crucial for establishing causal effects (if any) of the subsidy on the job finding rate in an RDD setting.

Figure 2a shows the share of job seekers who transition to a subsidised job within six months after entry into unemployment. The figure demonstrates a sizeable discontinuity at the cutoff. Slightly more than 40% of the eligible job seekers just below the cutoff find a subsidised job within six months, compared to less than 10% of those who are just over the cutoff.[21] The differential take-up rate at the cutoff is estimated at 30 percentage points (pp).

The discontinuity in the take-up of the subsidy induces exogenous variation in labour costs. Figure 2b displays the quarterly subsidy for a full-time equivalent worker on each side of the cutoff, conditional on finding a job within six months. The quarterly subsidy is equal to zero if the job seeker found a job but did not receive the subsidy. We observe a differential quarterly subsidy of €507 at the cutoff. This finding indicates that employers obtain a considerable subsidy when hiring eligible workers.

Figure 2c shows that, conditional on finding a job, the subsidy reduces labour costs by approximately 7.7%.[22] This estimate includes individuals who found a job but did not receive the subsidy, a group for whom the labour cost reduction is by definition zero. Furthermore, this estimate assumes that the hiring subsidy is entirely captured by the employer, an assumption that will be validated for the TWAs.

The findings hold for both high school dropouts and graduates (see Figures B.1, B.2, and B.3 for the equivalent figures by educational level). The hiring subsidy has a slightly larger effect on the labour cost of dropouts (a reduction of 8.5%) compared to graduates (a reduction of 7.0%). Both groups have similar wages, but the subsidy for dropouts is slightly higher than for graduates.

4.2.2 The job finding rate

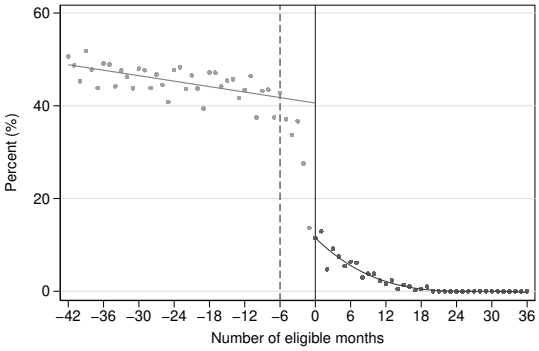
We now investigate whether the labour cost reduction induced by the subsidy translates into higher job finding rates among eligible job seekers. Figure 3a presents compelling evidence that the subsidy does not improve the job finding rate. The figure shows the probability of resuming work over a six-month period after entry into unemployment, as a a function of the number of

[21] The observation that a small fraction of ineligible job seekers still obtain the subsidy is most likely due to measurement error arising from the conversion of quarterly DWSE data into monthly data suitable for matching with the VDAB data.

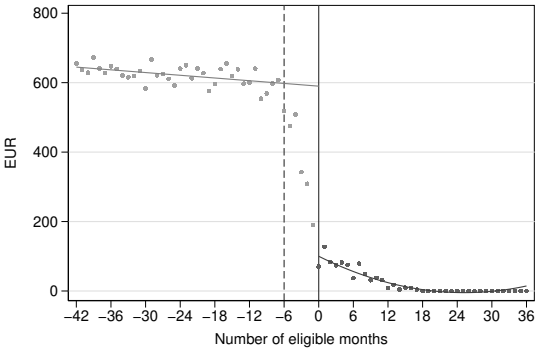
[22] The estimated labour cost reduction increases to 12.6% when restricting the analyses to job seekers who found a job and received the subsidy. This estimate closely aligns with the simulated impact of the subsidy on labour costs reported in Section 2.1.

Figure 2: The discontinuity at the cutoff

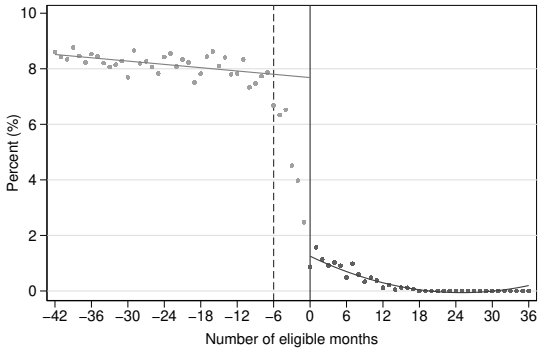
(a) Take-up rate



(b) Quarterly subsidy per fte-worker



(c) Labour cost reduction



Notes: The bandwidth of the donut RDD is 36 months on each side of the donut. Each dot represents a one-month spaced bin. The outcome in Panel (a) is the probability of having a subsidised job within six months after entry into unemployment. The outcome in Panel (b) is the average quarterly subsidy for a fte-worker conditional on finding a job within six months. The outcome in Panel (c) is the average labour cost reduction conditional on finding a job within six months. In Panel (a), the RDD estimate is 0.32 pp [95% CI: 0.30; 0.34] with N = 46,316. In Panel (b), the RDD estimate is €507 [95% CI: 482; 531] with N = 29,378. In Panel (c), the RDD estimate is 6.6 [95% CI: 6.3; 7.0] with N = 29,378. The number of observations is lower in Panels (b) and (c) than in Panel (a) because we condition on finding a job within six months after entry into unemployment. The six observations within the donut, indicated by the vertical lines, are excluded when estimating the RDD.

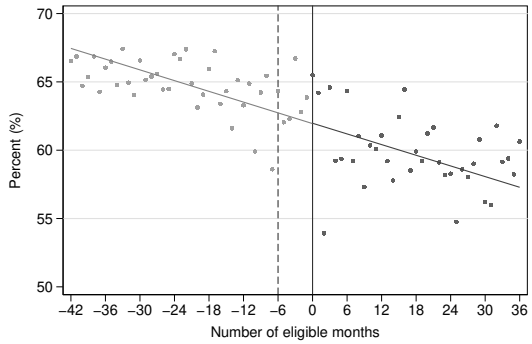
months the job seeker remains eligible for the subsidy. Even though the treated group has a higher probability of receiving the subsidy, there is no discontinuity in the job finding rate at the cutoff. The RDD estimate is small and insignificant (−0.03 pp, [95% CI: −2.27; 2.22]). The average job finding rate at the cutoff is 62.0%. Hence, we can rule out at the 95% confidence level that the subsidy increases the job finding rate by more than 3.5%.[23]

Figure 3b displays the effect of the hiring subsidy on the job finding rate measured at different elapsed unemployment durations. More specifically, the outcome is now defined as the probability of being employed at least one month over a period of d months after the start of the unemployment spell, where d ranges from one to six. The effect is always small and never significantly different from zero at the 95% confidence level. Similarly, we find no effect of the subsidy on the total number of months worked over a six-month period (results not shown). Both analyses demonstrate that

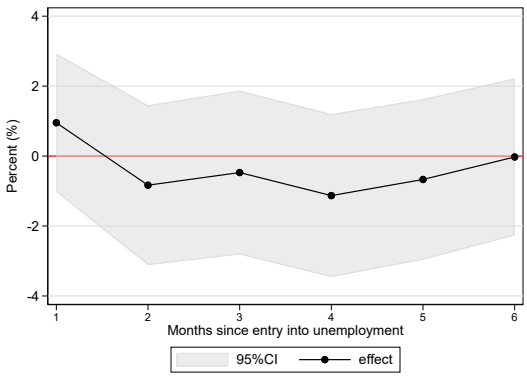
[23] = 2.2/62.0

Figure 3: Effect on the job finding rate

(a) Job finding rate within 6 months



(b) Effect on the job finding rate up to 6 months



Notes: Panel (a) shows the probability of being employed at least one month within six months after entry into unemployment, as a function of the running variable. The RDD estimate in Panel (a) is −0.03 pp [95% CI: −2.27; 2.22] with N=46,316. Panel (b) shows the RDD estimates (and their 95% CI) of the effect of the hiring subsidy on the probability of being employed at least one month over a period of d months after entry into unemployment, where d ranges from one to six months.

our main finding is not sensitive to defining the outcome as being employed within six months.

Figure 4 shows the effect of the subsidy on the job finding rate within six months separately for high school dropouts and graduates. The effect is small and not statistically significant for either group. The RDD estimate is 0.38 pp [95% CI: −3.07; 3.83] for dropouts[24] and −0.71 pp [95% CI: −3.69; 2.27] for graduates.[25]

4.2.3 Validation and placebo tests

We conduct several validation and placebo tests. We briefly discuss the results here, and include the relevant tables and figures in the appendices.

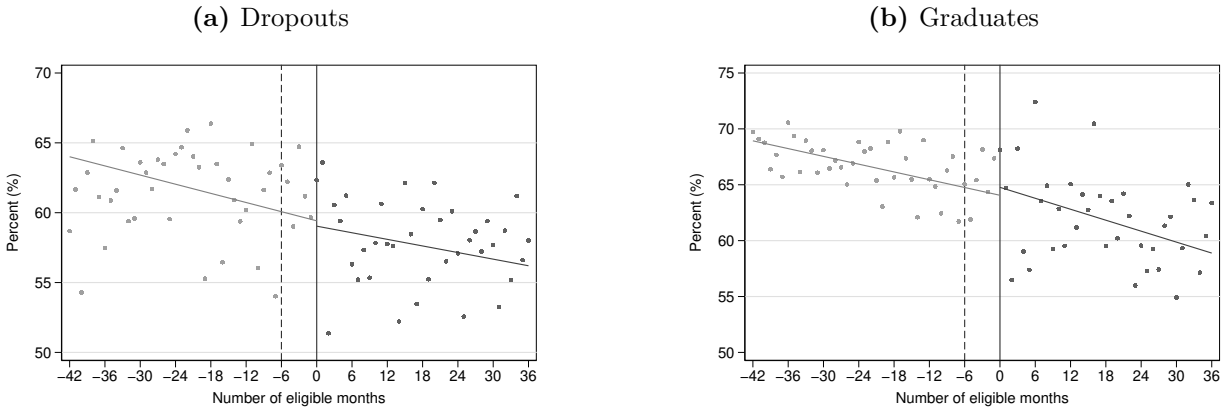
First, the local polynomial density estimation test proposed by Cattaneo et al. (2020) confirms that the density of the running variable evolves continuously around the cutoff, which rules out manipulation and sorting across the running variable, which is, in any case, unlikely in our setting.

Second, we test whether the predetermined covariates—such as the origin of the job seeker, place of residence, and year-quarter of unemployment entry—evolve continuously around the cutoff. This is an important robustness check, as it addresses concerns that the composition of the population of job seekers might differ at the cutoff. For instance, if the hiring subsidy affects job-to-job transitions, it could have a differential effect on the inflow of job seekers above and below the

[24]Since the 2020 reform only abolished the hiring subsidy for graduates but kept the subsidy for dropouts in place, the sample of dropouts can be expanded to those that entered unemployment between July 2016 and August 2019 (six months before the COVID-19 crisis). This increases the sample size to 20,180 (+1,070 observations). Using this extended sample, we obtain a larger RDD estimate for dropouts and a slightly smaller 95% CI: 0.73 pp [95% CI: −2.62; 4.09].

[25]As some studies have reported larger effects of hiring subsidies for women than men (Kunze et al., 2023), we also examined effect heterogeneity by gender. If anything, we find the opposite with larger effects for men than women. The RDD estimate is 0.88 pp [95% CI: −2.07; 3.82] for men (N =26,679) and −1.27 pp [95% CI: −4.73; 2.19] for women (N =19,637).

Figure 4: Job finding rate by educational level



Notes: The figures show the probability of being employed at least one month within six months after entry into unemployment for dropouts (Panel (a)) and graduates (Panel (b)) as a function of the running variable. The RDD estimate is 0.38 pp [95% CI: −3.07; 3.83] for dropouts and −0.71 pp [95% CI: −3.69; 2.27] for graduates. The number of observations is 19,110 in Panel (a) and 27,206 in Panel (b).

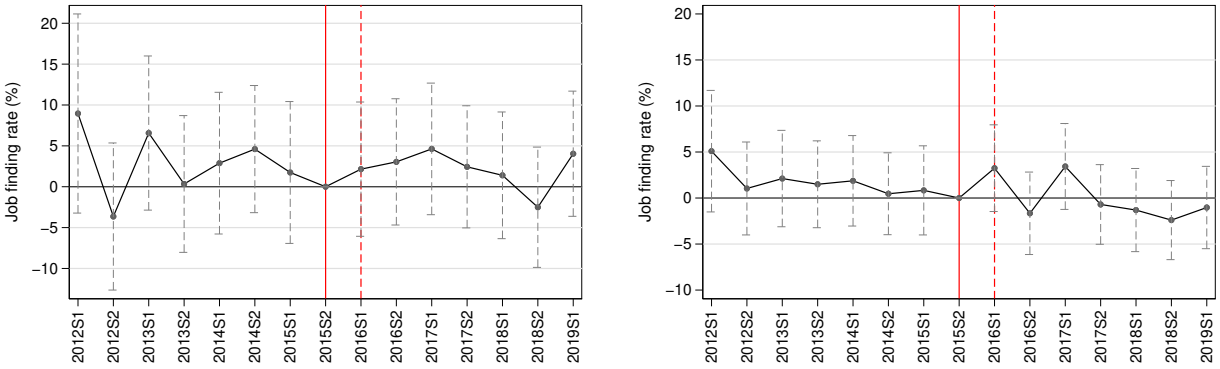
cutoff. Compositional differences at the cutoff would invalidate the RDD. Reassuringly, we observe no significant discontinuities at the cutoff for the dropouts (Table B.1) and only a few small but statistically significant discontinuities for high school graduates (Table B.2). Overall, these tests suggest that, at the cutoff, the composition of job seekers in the control and treatment groups is similar.

Third, we examine whether the results are sensitive to using different bandwidths, different donut holes (9 and 12 months rather than 6 months), and the inclusion of covariates. Regardless of the specification and the significance of some covariates, all point estimates lie within the 95% CI of our benchmark estimate (Table B.3).

Fourth, we consider the possibility that the "Activation allowance" threatens the validity of our identification strategy. After dropping out of school or graduating from high school or higher education, job seekers have to wait about one year before becoming eligible for an activation allowance, which is similar to unemployment benefits but does not require work experience. The rules governing the waiting period and activation allowance are complex and depend on the job seeker's age and educational level (Cockx et al., 2020, 2023). One rule stipulates that job seekers have to be registered for the first time at the VDAB before 24 years of age to be eligible for an activation allowance in the future, implying that individuals who are 24 or older at the time of graduation are never eligible for an activation allowance. One might be concerned that this specific rule changes the composition of the population around the cutoff. For instance, our data restrictions imply that job seekers over 25 years of age always claim unemployment benefits, while 39% of the job seekers aged 21.5-24.5 are in their waiting period and do not yet claim benefits (see Table 2). To test the sensitivity of our estimates to the inclusion of job seekers in their waiting period, we exclude this group from the analysis and estimate the donut RDD for the population of job seekers claiming unemployment benefits. This restriction reduces the sample size by 26%,

Figure 5: DiD regressions for graduates

(a) 23.5-24.5 vs. 25-26 **(b)** 21.5-24.5 vs. 25-28



Notes: The figure shows the results of DiD regressions using different control and treatment groups. Panel (a) compares graduates aged 23.5-24.5 (treatment group, $N = 10,474$) to those aged 25-26 (control group, $N = 6,295$). Panel (b) compares graduates aged 21-24.5 (treatment group, $N = 53,939$) to those aged 25-28 (control group, $N = 15,837$). The outcome is being employed for at least one month over a six-month period following the start of the unemployment spell. Job seekers are grouped according to the semester of the start of the unemployment spell. The reference semester is 2015S2. The subsidy came into force on July 1, 2016, which implies that job seekers in 2016S1 are only partially treated. The vertical bars indicate 95% confidence intervals based on robust standard errors.

but our findings for both dropouts and graduates remain unaltered (Table B.3).

Fifth, we implement a placebo test to examine whether there is a significant difference in the job finding rate at the cutoff for high school graduates when the hiring subsidy was not yet in place or after the policy was abolished. In both periods, the difference in the job finding rate at the cutoff is not statistically significant (Table B.3). We cannot conduct a similar placebo test for dropouts because this group was already eligible for various hiring subsidies before 2016, and the hiring subsidy for this group was not abolished in 2020 but remained in place until July 1, 2024.

Finally, we implement Difference-in-Differences (DiD) regressions for high school graduates. We first contrast the job finding rate of job seekers aged 23.5-24.5[26] (treatment group) to those aged 25-26 (control group) in pre-reform and post-reform period. We choose small age groups because this choice makes it likely that the parallel trend assumption holds and makes the DiD estimate comparable to the RDD estimate, which identifies a local effect for job seekers around the age of 25. Figure 5a plots DiD estimates. Reassuringly, we do not observe differential trends in the pre-reform period. Consistent with the RDD estimate, the DiD estimates in the post-reform period are small and not statistically significant. We then expand the age groups to go beyond a local effect and to increase the precision of the estimates. The DiD plot contrasting the job finding rate of job seekers aged 21-24.5 to those aged 25-28 does not show differential trends in the pre-reform period, and does not suggest an increase in the job finding rate of the treated group in the post-reform period (Figure 5b). Overall, the DiD regressions confirm that the subsidy had no effect on the job finding rate of high school graduates and suggest that the null finding not only holds for the 25-year-olds

[26] Age is measured on the last day of the quarter in which the job-seeker became unemployed.

but for all job seekers aged 21-24.5.

5 The response of TWAs

The previous section shows that the hiring subsidy does not improve the job finding rate among eligible job seekers. As noted earlier, in 2019, TWAs obtained 34% (25%) of the subsidies for dropouts (graduates). For this reason, understanding the response of TWAs to the subsidy could help explain the null finding. In this section, we study the response of TWAs by exploiting that only individuals under 25 years of age are eligible for the subsidy using a DiD design.

We focus on three outcomes that reveal TWAs response to the hiring subsidy: the (gross) wage rate, labour costs per full-time worker, and full-time equivalent employment in TWAs.[27] The first two outcomes allow us to study the incidence of the hiring subsidy. The third outcome allows us to test if TWAs expanded employment of eligible individuals as a response to the policy, thereby creating new jobs.

5.1 Difference-in-Differences

We implement a DiD regression using firm-level data on a balanced sample of 77 TWAs for the years 2011 to 2022 in Flanders. This design compares two groups of young agency workers within TWAs: (i) agency workers aged 24 (eligible group) and (ii) agency workers aged 26 (control group). We choose two groups close in age, as this choice makes it likely that the parallel trend assumption holds.[28]

More specifically, we estimate the following specification:

$$\frac{y_{i,g,t}}{y_{i,g,2015}} = \sum_{t\,=\,2011,\ t\,\neq\,2015}^{t\,=\,2022} \beta_t\ \mathbf{1}(g\ <\ 25)\ \times\ \mathbf{1}(t\ >\ 2015)\ +\ \alpha_t + \gamma_g\ +\ \rho_i\ +\ \varepsilon_{igt} \quad (2)$$

where $y_{i,g,t}$ is the outcome variable in firm i in year t for the age cohort g, normalised to the outcome in the reference year 2015. α_t are year fixed effects and γ_g are cohort fixed effects. ρ_i are firm fixed effects that control for firms' time-invariant characteristics. ε_{igt} is the error term. Standard errors are clustered at the firm level. Regressions are weighted by the firm-level average employment in the pre-reform years.

Because the reform was implemented in July 2016, we define each annual period as starting in the third quarter of the calendar year and ending in the second quarter of the subsequent calendar year (e.g., the year 2015 corresponds to the period 2015q3—2016q2). This ensures that the re-defined year 2016 corresponds to the first year after the implementation of the policy.

[27] In contrast to the DWSE dataset, the NSSO data provides information on employers' SSCs and SSC reductions allowing us to precisely measure labour costs.

[28] We do not use agency workers aged 25 as the control group because individuals hired by a TWA before turning 25 stay eligible for the subsidy as long as they remain employed by the agency. Indeed, 13% of temporary agency workers aged 25 are subsidised and this share is stable in years 2017 to 2019. By contrast, there are almost no subsidised agency workers aged 26.

The parameters of interest are β_t, which correspond to the difference in the outcome for individuals aged 24 versus those aged 26 before and after the reform within the same TWA. β_t capture the ITT as not all agency workers in the treatment group meet the eligibility criteria. Identification rests on the assumption that firm-specific time shocks have the same effect on agency workers aged 24 and 26. This assumption is plausible as, in the absence of the subsidy, both groups are likely to be similar and face similar labour market conditions. The estimated pre-reform coefficients allow testing for the absence of a differential trend in the pre-reform period.

Because the subsidy for graduates was abolished in January 2020 while the one for dropouts remained in place, we distinguish two periods in the post-reform period. The coefficients $\widehat{\beta}_{2016}$ to $\widehat{\beta}_{2018}$ identify the average treatment effects during the period that both subsidies were in place, while the coefficients $\widehat{\beta}_{2020}$ to $\widehat{\beta}_{2022}$ identify the effects after the subsidy for graduates was abolished.[29] Note that this second period overlaps with the COVID-19 pandemic.

5.2 Results

Figure 6 displays the point estimates and the 95% CI of the DiD regression for each outcome for the (re-defined) years 2011 to 2022. For the three outcomes, there is no differential trend in the pre-reform period, which supports the parallel trends assumption. The average of the coefficients in the post-reform period when the subsidy was in place for dropouts and graduates ($\widehat{\beta}_{2016-2018}$) and for the period when only the subsidy for dropouts remained in place ($\widehat{\beta}_{2020-2022}$) are reported.

Let us first discuss the results when the subsidy for both groups was in place. During this period, the hiring subsidy does not affect the wage rate of eligible workers (Figure 6a) but reduced labour costs by 3.3% (Figure 6b). Together, these findings indicate that the hiring subsidy is not passed on to the eligible workers but is fully incident on the TWA, in line with existing evidence for Belgium (Albanese et al., 2024). Despite the labour cost reduction, the hiring subsidy gradually reduces employment in TWAs for eligible youths by, on average, 9.2% (Figure 6c).

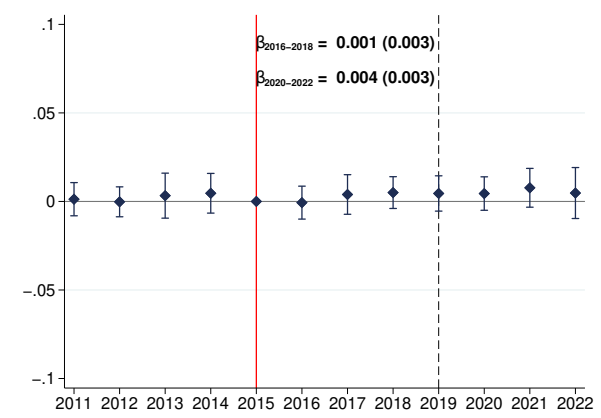
Let us now turn to the DiD estimates after the abolition of the subsidy for graduates. While the wage rate remains unaffected, the difference in labour costs between agency workers aged 24 and 26 disappears entirely during this period. TWAs continue to receive subsidies for dropouts during this period, but TWAs primarily employ graduates, implying that the total subsidy for dropouts is limited. Before the abolition of the subsidy for graduates, about 60% to 70% of the hiring subsidy obtained by TWAs were for graduates.[30] The remaining subsidy for dropouts might be too low to have a noticeable effect on labour costs. While the labour cost converges after the abolition of the subsidy for graduates, the difference in employment between the two groups does not narrow, pointing to the persistent effect of the policy on TWA employment. In addition, the COVID-19 pandemic, which started in 2020, might have slowed the adjustment to a new equilibrium as TWAs were reluctant to hire during this period.

[29] $\widehat{\beta}_{2019}$ captures the effect in 2019q3-2020q2, when firms are partially treated.

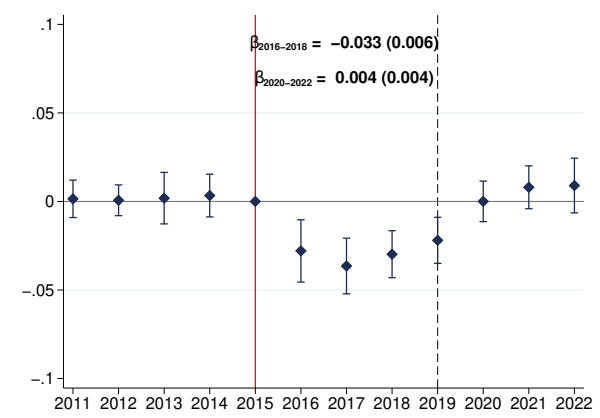
[30] For instance, in calendar year 2019, TWAs received 2.3 and 3.2 million euros for, respectively, dropouts and graduates aged 24.

Figure 6: DiD plots of the effect of the hiring subsidy

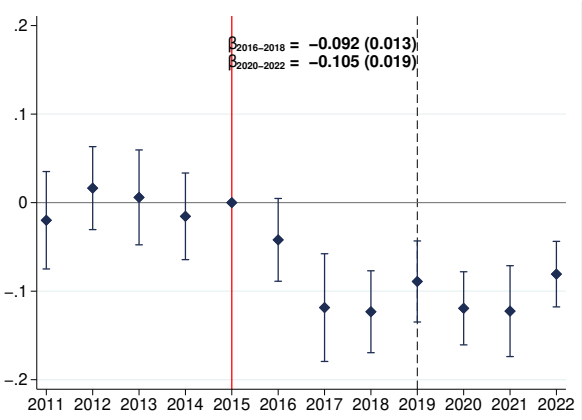
(a) Wage rate



(b) Labour costs per fte-worker



(c) Employment



Notes: These graphs show the coefficients $\hat{\beta}_t$ from the DiD regression for all years $t \in [2011, 2022]$ for the firm-level growth rate of wage rates, labour costs per fte-worker, and employment, contrasting agency workers aged 24 (treated group) vs. those aged 26 (control group), relying on the balanced sample of 77 firms. A year is defined from the third quarter of calendar year t to the second quarter of calendar year $t + 1$. The wage rate is defined as the wage bill divided by full-time equivalent employment. Labour costs per fte-worker are defined as the sum of the wage bill and SSCs minus SSC reductions, and are normalized by full-time equivalent employment. The red solid line indicates the period of policy implementation. The black dashed line indicates the year when the subsidy for graduates was abolished. The omitted year is 2015. The vertical bars indicate 95% confidence intervals based on standard errors clustered at the firm level.

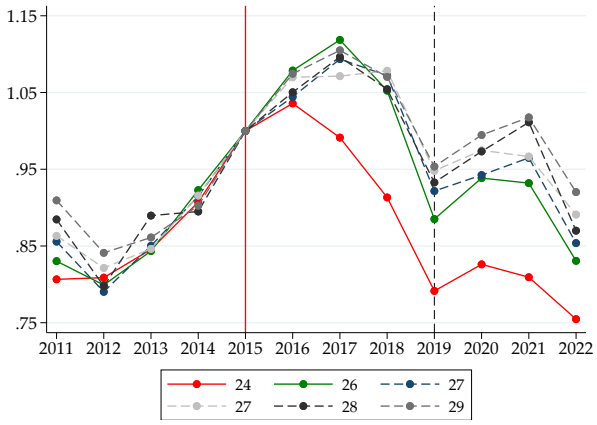
We conduct three additional analyses. First, we test whether our findings hold when we expand the age groups. More specifically, we contrast outcomes for agency workers aged 22-24 and agency workers aged 26-28 using a balanced set of 81 firms (Figure C.1). One-third of the agency workers aged 22-24 are subsidised. We again find that the the wage rate is unaffected by the subsidy, whereas labour costs per fte-worker decrease by 1.9%. Although the parallel trend in the pre-reform period is not as convincing as in the baseline regression, full-time agency employment among this age group decreases by on average 10.4% over the years 2016-18, similar to the decrease observed for individuals aged 24.

Second, the DiD regressions rely on a balanced sample of TWAs. One concern of this approach is that we do not capture the effect of the subsidy on the entire sector. To rule out this concern,

we aggregate the data at the sector level (collapsing across all TWAs) and contrast the evolution of the three outcomes between control and treatment groups at the sector-level, as in Saez et al. (2019). Results from the sector-level analysis using the universe of TWAs in Flanders closely align with the firm-level effects (Figure C.2).

Third, our baseline regression assumes that agency workers aged 26 (the control group) are unaffected by the hiring subsidy. This Stable Unit Treatment Value Assumption (SUTVA) could be violated if the control group is directly affected by the hiring subsidy. One potential channel for such a violation is that demand for agency employment may remain stable after the reform, but agencies replace 24-year-olds (who might be more likely to be hired by regular firms after the reform) with 26-year-olds, who are likely to be close substitutes of 24-year-olds (e.g., Kreiner et al. 2020). In this scenario, the 26-year-olds benefit directly from the hiring subsidy, causing our DiD estimates to overstate the negative impact of the hiring subsidy on agency workers aged 24. To test (and rule out) this mechanism, Figure 7 plots the sector-level evolution of agency employment by age group.[31] Reassuringly, agency employment of workers aged 26 and older evolves similarly in both the pre-reform and post-reform periods. This indicates that the 26-year-olds do not benefit from the hiring subsidy.

Figure 7: Sector-level evolution of agency employment by age group



Notes: The figure shows growth in fte agency employment relative to 2015 by age group. In 2015, the TWA sector employed per quarter on average 3,853 fte-workers aged 24, 2,990 workers aged 26, 2,687 workers aged 27, 2,421 workers aged 28, and 2,250 workers aged 29.

Fourth, our preferred outcome is fte-employment, which precisely measures the total number of days worked by all agency workers within a quarter. However, changes in fte-employment result from either changes in the number of agency workers or changes in the number of days worked per agency worker. Although the total number of unique individuals employed by an agency within a quarter is unobserved, the headcount of agency workers employed on the last day of a quarter is recorded. The DiD regression shows that this headcount decreased by 8.0% in 2016-18, which is comparable to the effect on fte-employment (−9.2%) (Figure C.3). This suggests that the hiring

[31] We focus on the sector-level outcome because many agencies employ relatively few agency workers aged 27 and older, leading to large standard errors in the firm-level DiD regressions contrasting, for instance, the growth in employment of agency workers aged 26 to those aged 29.

subsidy primarily reduces the number of unique workers employed by TWAs, rather than the number of days worked per worker within a quarter.

6 Conclusion

This paper evaluates a hiring subsidy for lower-educated youths that reduced labour costs by approximately 13% for a period of two years in Flanders, Belgium. Using population data on job seekers combined with a donut RDD, we do not find any evidence that the subsidy enhanced the job finding rate of eligible job seekers within six months following the start of the unemployment spell. The findings hold for high school graduates, who perform well on the Flemish labour market, and dropouts, who struggle to secure employment even during economic booms.

To gain a better understanding of this finding, we examine how TWAs respond to the subsidies. These agencies obtain 25% and 34% of the subsidies for, respectively, graduates and dropouts. Relying on firm-level data and a DiD framework, we find that wage rates of the eligible agency workers did not increase, whereas labour costs of agency workers aged 24 decreased by 3.3%. Together, these two observations imply that the subsidy is not passed on to agency workers but is entirely captured by the agency. The most surprising and puzzling finding, however, is that, despite the labour cost reduction, TWAs employ on average 9.2% fewer workers aged 24. The decline in agency employment among the eligible population is not compensated by an increase in agency employment among slightly older ineligible workers, who may benefit from the reform if TWAs replace eligible by ineligible workers.

The combination of tight labour markets, upward wage rigidity, and a preference for regular over agency jobs could explain our findings. The hiring subsidy might have been ineffective because the labour market was tight during the study period (2016-19). As a result, regular firms and TWAs competed for a fixed pool of eligible workers. Upward wage rigidity, possibly due to fairness considerations (Dube et al., 2019), institutional features and norms, or the complexity of wage bargaining due to the temporary nature of the subsidy, prevent TWAs from offering higher wages. Since TWAs do not compete by offering higher wages and regular jobs are typically preferred over agency jobs, regular firms fill more vacancies with eligible individuals either by poaching workers from TWAs or by hiring eligible job seekers. Consequently, TWAs face a mechanical decrease in the number of workers available to accept agency work.

Conversations with relevant stakeholders support the view that agencies do not respond to the hiring subsidy. They indicated that TWAs have no internal policies to offer higher wages to eligible job seekers, attract more eligible job seekers, or prioritise them.[32] In this sense, TWAs are passive players supporting individuals who take the initiative to reach out to them without actively recruiting eligible individuals. At the same time, agencies are well aware of the existence of the subsidy and always claim it for eligible workers.

[32] One reason cited by stakeholders is that, in times of labour market shortages, TWAs do not have the luxury to be selective but must place all candidates into client firms.

It is important to emphasize that our findings do not necessarily imply that the subsidy is pocketed by the agencies. A key finding of Saez et al. (2019) is that a permanent payroll tax rate cut for young workers in Sweden did not increase their wages but was instead shared among all workers in subsidised firms and led to job creation at the firm level. We lack the necessary identifying variation to test whether a similar mechanism is at play in our setting. Similarly, we cannot examine whether the subsidy increased the agencies' competitiveness, leading to job creation at the sectoral level across all age groups, or whether it resulted in an overall decline in agency work, possibly due to client firms substituting agency workers by direct hires.

Despite these insights, one limitation of this paper—and much of the literature—is the limited understanding of how TWAs bargain with client firms when setting prices (Fernandez-Mateo, 2007), whether hiring subsidies are passed on to clients, and to what extent regular and agency workers are substitutes (Micco and Muñoz, 2024). This gap implies that we do not know whether the drop in agency employment is driven by increased demand for eligible workers from regular firms that never rely on agency workers—thereby decreasing the pool of eligible workers available for agency work—or by client firms replacing agency workers by direct hires. Access to proprietary TWA data would offer fascinating opportunities to address these questions and could provide novel insights into the role of agencies in matching employees and employers.

From a policy perspective, our null effect on the job finding rate implies that the recent decision of the Flemish government to abolish all hiring subsidies for young individuals, including those for dropouts, is unlikely to have harmed their job prospects while generating substantial savings. Furthermore, our findings lend some support to making hiring subsidies conditional on offering permanent contracts or jobs with a minimal duration of, for example, a year. These conditions make it harder for TWAs to claim the subsidy, thereby reducing the budgetary costs and, potentially, leading to more favourable outcomes for the target group. The recent decision in Wallonia, the French-speaking region in Belgium, to make hiring subsidies for youths hired after July 1, 2023, conditional on offering a permanent contract or a contract of at least two months goes in this direction.

Our paper explores the impact of a hiring subsidy on agency employment in Flanders. Whether the response of TWAs to such subsidies is equally relevant in other settings remains an open question. Existing evaluations do not report whether, as in Flanders, these agencies are eligible for the subsidy, employ a disproportionate share of subsidised workers, and obtain a substantial share of the subsidy. Future evaluations of hiring subsidies should therefore discuss the role of TWAs.

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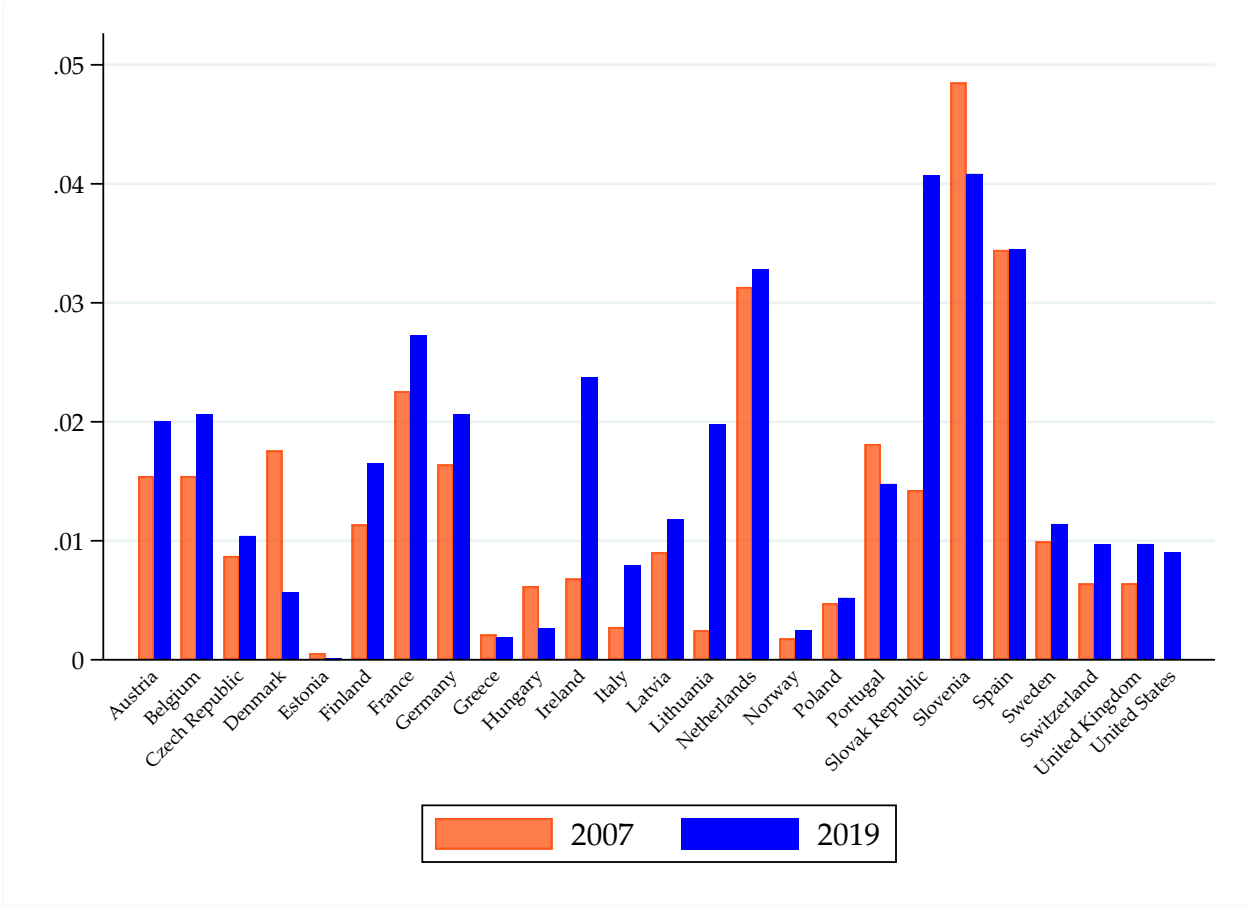
Appendices

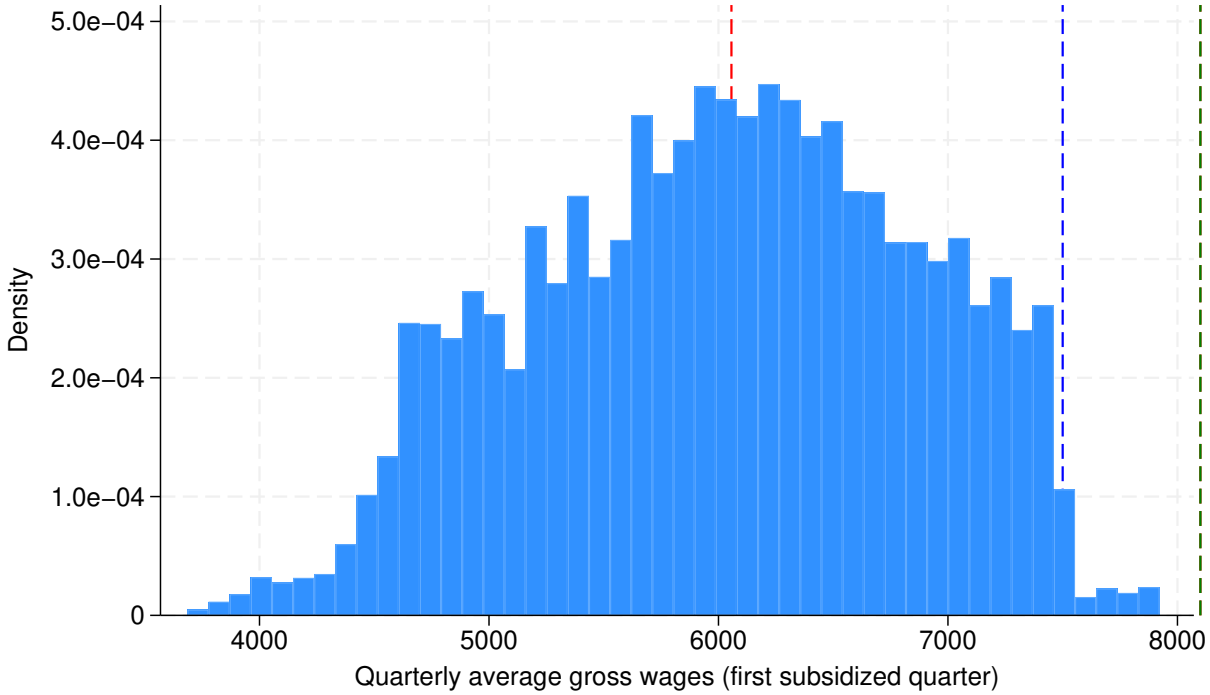
A Temporary agency work - OECD statistics

Figure A.1: Share of temporary agency employment in OECD countries in 2007 and 2019



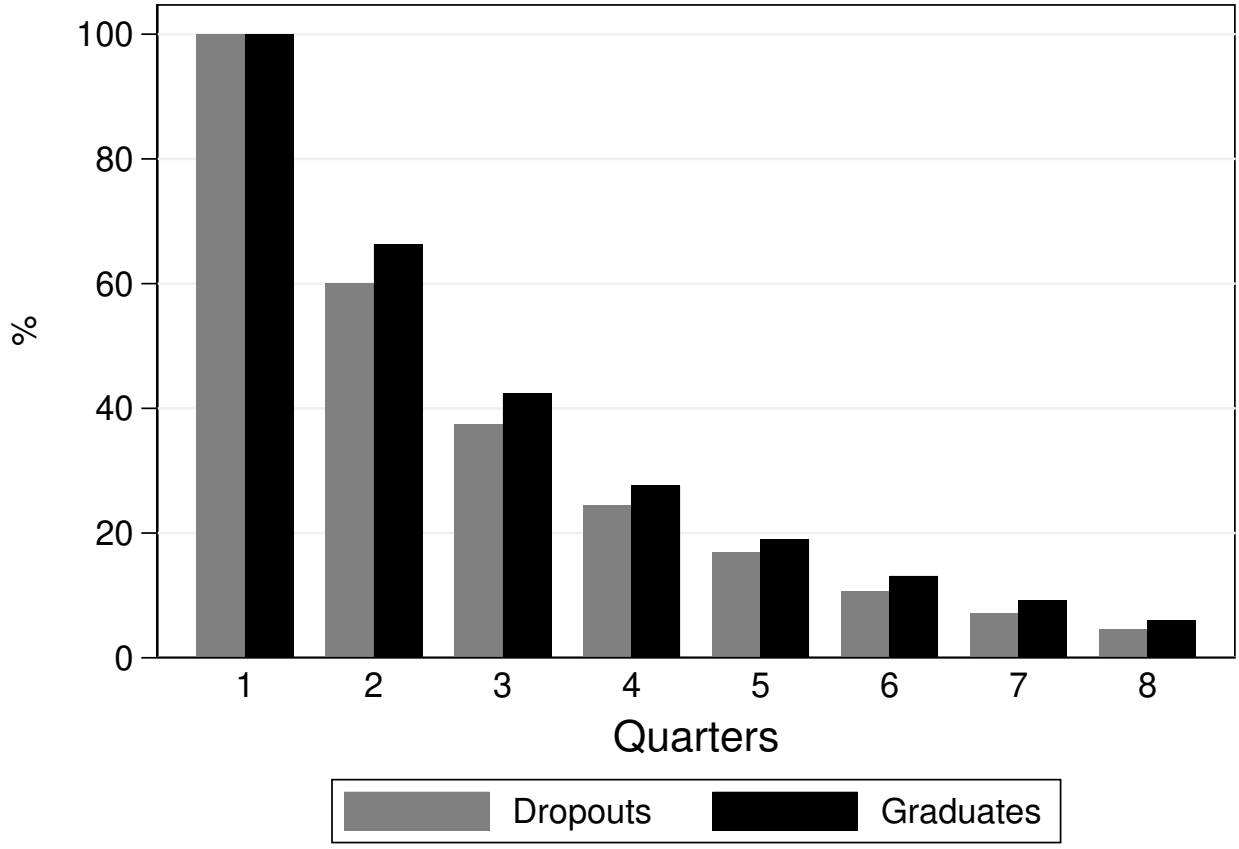
Notes: This figure plots temporary agency employment as a share of overall (15-64 years old) employment in OECD countries in 2007 and 2019.
Source: OECD (2021).

Figure A.2: The distribution of gross wages in subsidised employment spells



Notes: This figure plots the distribution of the gross wage of the first quarter in a subsidised employment spell for spells between the third quarter of 2016 and the second quarter of 2019. The blue line corresponds to the maximum wage to remain eligible (€7,500). The red line corresponds the median gross wage (€6,056). The green line corresponds to the maximum wage to remain eligible after four quarters (€8,100). The bottom and top 1% of the distribution are trimmed.

Figure A.3: Duration in subsidised employment

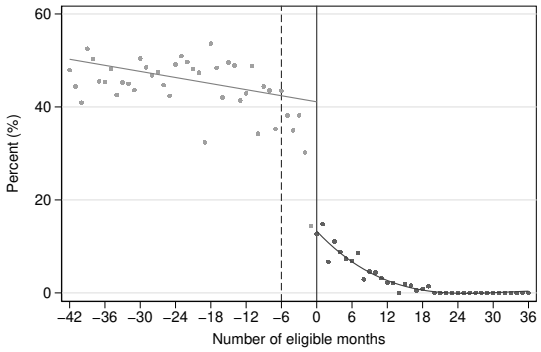


Notes: This figure plots the percentage of individuals that received the subsidy during X consecutive quarters. By construction, 100% of individuals received the subsidy in the first quarter. The total number of subsidised spells is 74,931 between 2016Q3 and 2019Q2.

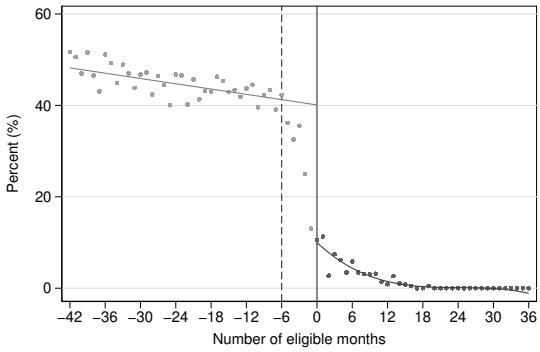
B Additional analyses - job finding rate (VDAB data)

Figure B.1: Take-up rate by educational level

(a) Dropouts



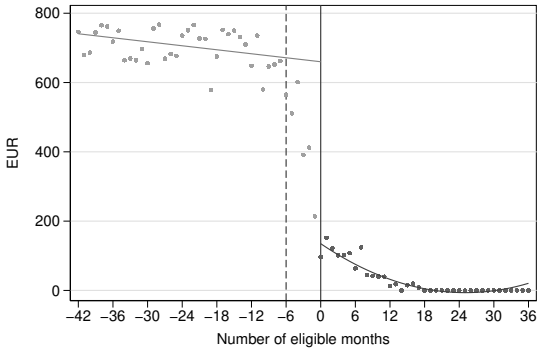
(b) Graduates



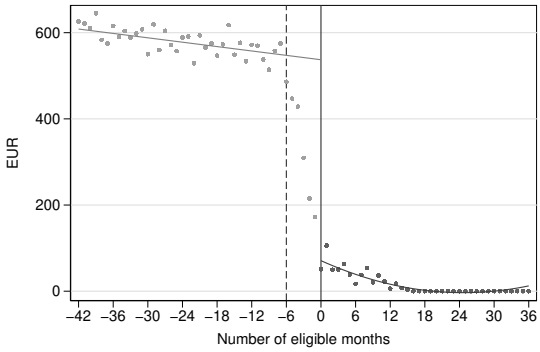
Notes: The outcome is the probability of having a subsidised job within six months after entry into unemployment for dropouts (Panel (a)) and graduates (Panel (b)). The RDD estimate for dropouts and graduates is, respectively, 0.31 [95% CI: 0.28; 0.34] with N = 19,110 and 0.33 [95% CI: 0.30; 0.35] with N = 27,206.

Figure B.2: Quarterly subsidy per fte-worker by educational level

(a) Dropouts



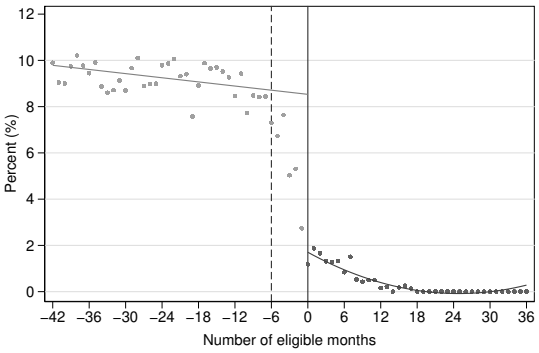
(b) Graduates



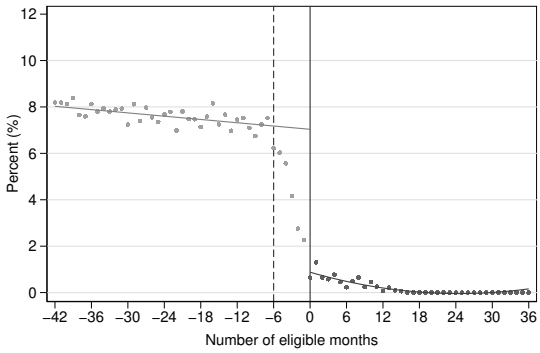
Notes: The outcome is the average quarterly subsidy for a fte-worker conditional on finding a job within six months for dropouts (Panel (a)) and graduates (Panel b). The RDD estimate for dropouts and graduates is, respectively,€549 [95% CI: 506; 592] with N = 11,278. The RDD and €478 [95% CI: 449; 508] with N = 18,100.

Figure B.3: Labour cost reduction by educational level

(a) Dropouts



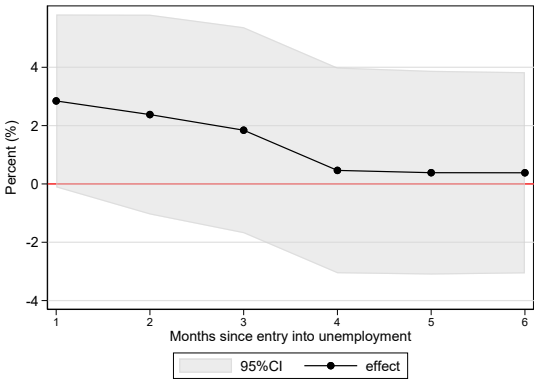
(b) Graduates



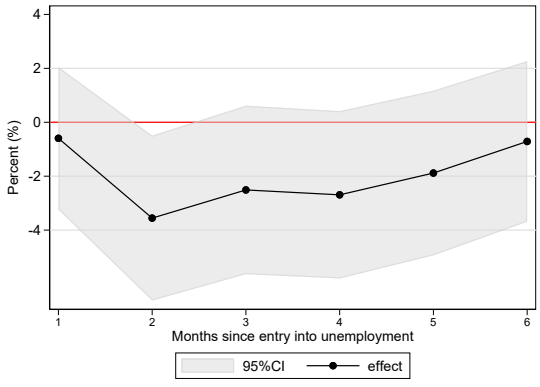
Notes: The outcome is the labour cost reduction conditional on finding a job within within six months for dropouts (Panel (a)) and graduates (Panel (b)). The RDD estimate for dropouts and graduates is, respectively, is 7.14 [95% CI: 6.59; 7.68] with N = 11,278 and is 6.31 [95% CI: 5.94; 6.68] with N = 18,100.

Figure B.4: Effect on the job finding rate in month 1 to 6 by educational level

(a) Dropouts



(b) Graduates



Notes: The figures show the effect of the hiring subsidy on the probability of being employed at least one month over a period of d months after entry into unemployment, where d ranges from one to six months, for dropouts (Panel (a)) and graduates (Panel (b)).

Table B.1: Validation test on pre-determined covariates (Dropouts)

	Discontinuity	SE	Ll	Ul	P__value	N__left	N__right
Jobseeker characteristics							
D. Woman	0.007	0.017	-0.027	0.040	0.700	10,795	8,315
D. Belgian nationality	-0.020	0.016	-0.050	0.011	0.205	10,795	8,315
D. Belgian origin	0.020	0.016	-0.012	0.051	0.229	10,795	8,315
D. Dutch speaking	0.004	0.010	-0.015	0.024	0.672	10,795	8,315
D. Driving licence	-0.013	0.015	-0.043	0.017	0.410	10,795	8,315
D. Disability	-0.007	0.007	-0.021	0.007	0.340	10,787	8,310
Provinces in Flanders							
Flandre-Orientale	0.008	0.014	-0.020	0.036	0.560	10,795	8,315
Flandre-Occidentale	0.008	0.014	-0.020	0.036	0.560	10,795	8,315
Limbourg	-0.003	0.012	-0.027	0.021	0.793	10,795	8,315
Anvers	-0.015	0.016	-0.047	0.017	0.360	10,795	8,315
Brabant Flamand	0.005	0.012	-0.018	0.028	0.668	10,795	8,315
Other regions							
Bruxelles	0.001	0.002	-0.002	0.004	0.413	10,795	8,315
Wallonia	0.001	0.001	-0.001	0.002	0.536	10,795	8,315
Year-quarter of inflow into unemployment							
2016q3	-0.010	0.010	-0.028	0.009	0.321	10,795	8,315
2016q4	0.016	0.010	-0.002	0.035	0.088	10,795	8,315
2017q1	-0.018	0.010	-0.038	0.003	0.089	10,795	8,315
2017q2	-0.013	0.009	-0.031	0.006	0.177	10,795	8,315
2017q3	0.014	0.011	-0.007	0.035	0.191	10,795	8,315
2017q4	0.002	0.010	-0.017	0.022	0.818	10,795	8,315
2018q1	0.006	0.011	-0.016	0.027	0.605	10,795	8,315
2018q2	0.000	0.010	-0.019	0.019	0.9996	10,795	8,315
2018q3	-0.005	0.010	-0.025	0.016	0.661	10,795	8,315
2018q4	0.008	0.010	-0.011	0.027	0.414	10,795	8,315
2019q1	-0.015	0.011	-0.036	0.006	0.167	10,795	8,315
2019q2	0.013	0.010	-0.006	0.032	0.181	10,795	8,315

Notes: Donut RDD estimates. This table refers only to Dropouts. Dependent variables are characteristics at the moment of registration into unemployment. We report the absolute effect ("Discontinuity"), standard deviation ("SE"), the lower and upper bound of a 95% confidence interval in "LL" and "UL", respectively, the p-value ("P-value") and the number of units at the left- ("N left") and right-hand ("N right") side of the cutoff.

Table B.2: Validation test on pre-determined covariates (Graduates)

		Discontinuity	SE	Ll	Ul	P_value	N_left	N_right
Jobseeker characteristics								
	D. Woman	0.009	0.015	-0.021	0.039	0.572	19,410	7,796
	D. Belgian nationality	0.016	0.011	-0.006	0.038	0.155	19,410	7,796
	D. Belgian origin	0.049	0.015	0.020	0.077	0.001	19,410	7,796
	D. Dutch speaking	0.020	0.013	-0.004	0.045	0.102	19,410	7,796
	D. Driving licence	0.002	0.015	-0.028	0.032	0.885	19,410	7,796
	D. Disability	-0.005	0.003	-0.010	0.000	0.073	19,410	7,793
Provinces in Flanders								
	Flandre-Orientale	-0.001	0.013	-0.026	0.023	0.911	19,410	7,796
	Flandre-Occidentale	-0.001	0.013	-0.026	0.023	0.911	19,410	7,796
	Limbourg	0.000	0.011	-0.022	0.022	0.992	19,410	7,796
	Anvers	0.007	0.014	-0.021	0.035	0.625	19,410	7,796
	Brabant Flamand	0.023	0.012	-0.001	0.046	0.059	19,410	7,796
Other regions								
	Bruxelles	0.002	0.002	-0.001	0.005	0.209	19,410	7,796
	Wallonia	0.000	0.001	-0.001	0.001	0.843	19,410	7,796
Year-quarter of inflow into unemployment								
	2016q3	0.014	0.010	-0.005	0.034	0.144	19,410	7,796
	2016q4	0.027	0.008	0.010	0.043	0.001	19,410	7,796
	2017q1	0.006	0.009	-0.011	0.022	0.518	19,410	7,796
	2017q2	-0.006	0.008	-0.021	0.009	0.444	19,410	7,796
	2017q3	0.011	0.010	-0.009	0.030	0.273	19,410	7,796
	2017q4	-0.003	0.009	-0.019	0.014	0.764	19,410	7,796
	2018q1	-0.020	0.009	-0.038	-0.003	0.024	19,410	7,796
	2018q2	-0.010	0.008	-0.025	0.006	0.213	19,410	7,796
	2018q3	0.013	0.010	-0.007	0.033	0.200	19,410	7,796
	2018q4	-0.007	0.009	-0.025	0.010	0.411	19,410	7,796
	2019q1	-0.017	0.009	-0.035	0.002	0.074	19,410	7,796
	2019q2	-0.008	0.008	-0.024	0.007	0.305	19,410	7,796

Notes: Donut RDD estimates. This table refers only to Graduates. Dependent variables are characteristics at the moment of registration into unemployment. We report the absolute effect ("Discontinuity"), standard deviation ("SE"), the lower and upper bound of a 95% confidence interval in "LL" and "UL", respectively, the p-value ("P-value") and the number of units at the left- ("N left") and right-hand ("N right") side of the cutoff.

Table B.3: Validation and placebo tests - RDD estimates

	Entire population	Dropouts	Graduates
A. Different bandwidths			
[-48, 42]	0.543	1.452	−0.414
	(1.041)	(1.602)	(1.384)
N	54,934	22,075	32,859
[-36, 30]	-0.644	−0.840	-1.871
	(1.288)	(1.980)	(1.706)
N	38,284	16,196	22,088
[-30, 36]	−1.302	−1.769	-1.396
	(1.435)	(2.218)	(1.889)
N	34,793	15,456	19,337
[-42, 24]	−0.135	−0.034	-0.427
	(1.238)	(1.890)	(1.650)
N	41,940	16,801	25,139
B. Donut hole width			
9 months	0.502	1.700	−0.666
	(1.222)	(1.920)	(1.600)
N	44,291	18,238	26,053
12 months	1.632	3.050	0.373
	(1.335)	(2.147)	(1.725)
N	42,212	17,372	24,840
C. Inclusion of covariates			
Covariates 1	−0.598	0.309	−1.387
	(1.132)	(1.740)	(1.501)
N	46,300	19,097	27,203
Covariates 2	−0.288	0.380	−0.894
	(1.127)	(1.730)	(1.500)
N	46,300	19,097	27,203
D. Pre- and post-reform (Graduates)			
Pre-reform			-0.868
			(1.645)
N			27,605
Post-reform			-4.339
			(4.119)
N			3,874
E.Without job seekers in Activation Allowance			
	−0.323	− 0.794	− 0.003
	(1.276)	(1.845)	(1.762)
N	34,577	17,159	17,418

Notes: Robust standard errors are reported in parentheses. ***,**,* denotes statistical significance at the 1%, 5% and 10%, respectively. This table shows the donut RDD estimates using the job finding rate within six months as the outcome. " Covariates 1" include: sex, country of origin, disability and driving licence dummies." Covariates 2" include all the covariates in " Covariates 1" as well as province of residence and quarter of inflow into unemployment.

C Additional analyses - response TWAs (NSSO data)

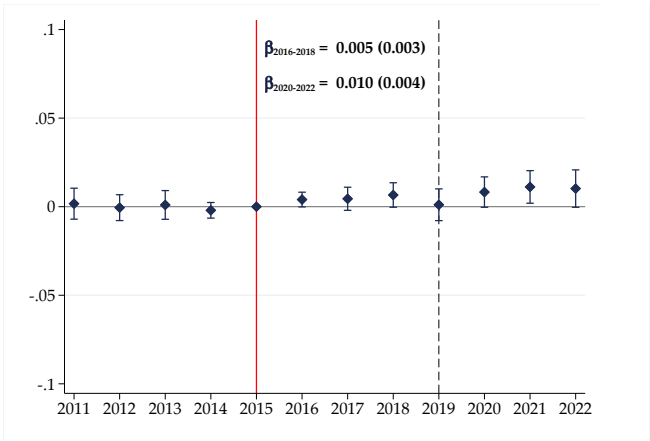
Table C.1: Hiring subsidies for TWAs in Flanders — NSSO data

Year	Dropouts			Graduates		
	Beneficiaries (fte)	Annual cost (€1,000)	Subsidy/fte (per quarter)	Beneficiaries (fte)	Annual cost (€1,000)	Subsidy/fte (per quarter)
2016	2,318	4,738	1,023	5,505	10,063	912
2017	3,319	13,678	1,030	7,066	26,223	928
2018	3,350	14,011	1,045	6,872	25,884	942
2019	2,972	14,110	1,181	5,944	22,164	931
2020	2,102	9,871	1,166	1,841	6,960	947
2021	2,397	11,471	1,179	300	863	962
2022	2,264	10,275	1,119	-	-	-

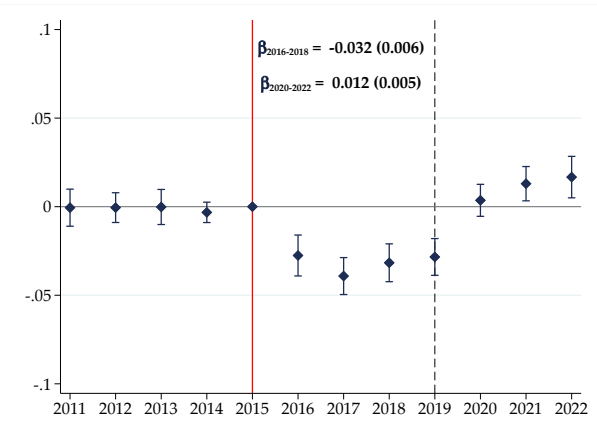
Notes: This table provides descriptive statistics based on confidential NSSO data on TWAs in Flanders. Statistics reported are the average number of full-time equivalent subsidised workers per quarter (averaged over four quarters), the annual cost of the subsidy, and the quarterly subsidy per fte-worker. The subsidy for high school graduates was abolished on January 1, 2020, but employers who had hired eligible individuals before that date continued to receive the subsidy for the remaining quarters.

Figure C.1: DiD plots of the effect of the hiring subsidy - agency workers aged 22-24 vs. those aged 26-28

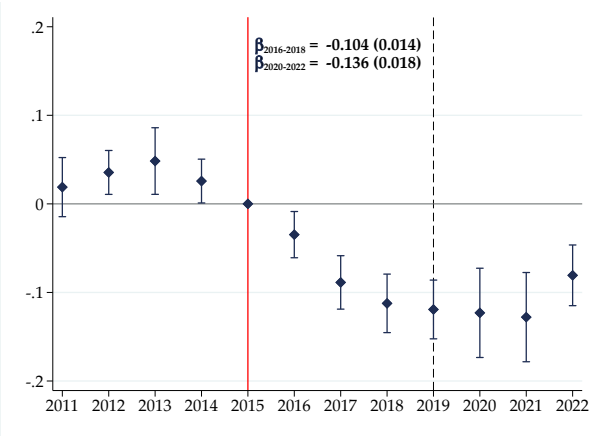
(a) Wage rate



(b) Labour costs

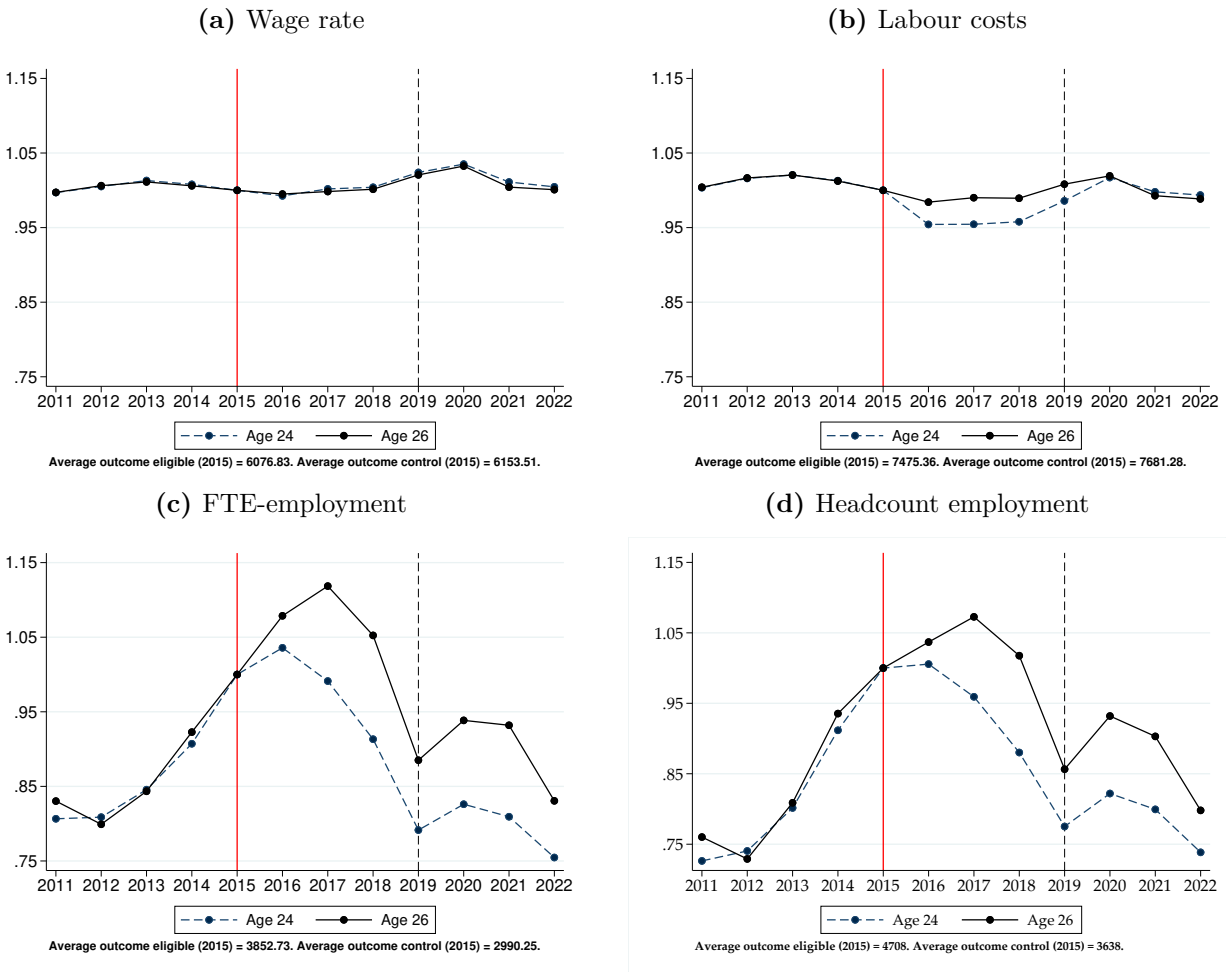


(c) Employment



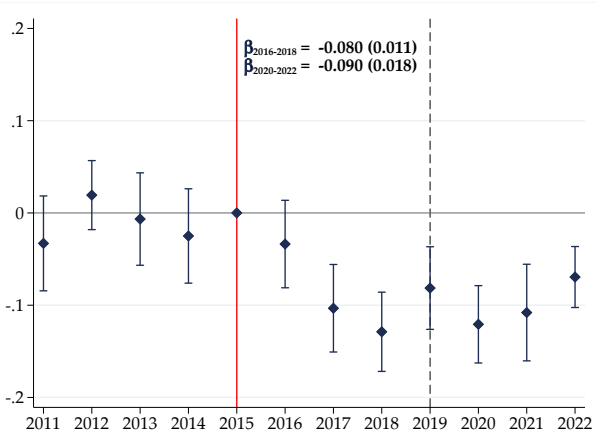
Notes: These graphs show the coefficients $\hat{\beta}_t$ from the DiD event study for all years $t \in [2011, 2022]$ for the firm-level growth rate of wages, labour costs, and employment, contrasting agency workers aged 22-to-24 (treated group) vs. those aged 26-to-28 (control group), relying on the balanced sample of 81 firms. The wage rate is defined as the wage bill divided by full-time equivalent employment. Labour costs are defined as the sum of the wage bill and SSC minus SSC reductions, and are normalized by full-time equivalent employment. The red solid line indicates the period of policy implementation. The black dashed line indicates the year when the subsidy for graduates was abolished. The omitted year is 2015. The vertical bars indicate 95% confidence intervals based on standard errors clustered at the firm level. Average fte-employment in the TWA firm in the pre-reform period 2011-2015 are used as weights.

Figure C.2: Sector-level evolution of wages, labour costs and employment



Notes: These graphs show the evolution of the wage rate, labour costs, full-time equivalent employment, and headcount employment in the TWA sector in Flanders for agency workers aged 24 (eligible for the subsidy) and workers aged 26 (ineligible). Wages and labour costs are expressed in 2013 prices. Outcomes are normalized to the reference year 2015. The red solid line indicates the period of policy implementation. The black dashed indicates the year when the subsidy for graduates was abolished.

Figure C.3: DiD plot of the effect of the hiring subsidy on headcount employment



Notes: Headcount employment is defined as the number of unique agency workers on the last day of a quarter.