



# Can a wage subsidy help reduce 50 percent youth unemployment?

Amina Ebrahim and Jukka Pirttilä

Transformation Towards Better Jobs  
November 21, 2019 | Maputo

# Motivation

- Youth unemployment (15-24 years) 55% in the 1<sup>st</sup> quarter of 2019
  - Broad youth unemployment rate is 69%
  - 33% of youth are Not in Employment, Education or Training (NEET)
  - Unemployment rate for Blacks/Africans (15-64 years) is 31% compared to 6% unemployment rate for Whites.
- Employment Tax Incentive (ETI) a major policy in use to increase youth employment

# Literature

- Much of the early work: Since labour demand more elastic than labour supply, **wage subsidies lead to higher wages** and hence **no or limited** employment increases (e.g. Gruber 1997)
- Recent individual-level studies paint a different picture :  
Limited impact on wages (incidence on employers) and greater **employment impacts** (Kugler and Kugler (2009) for Colombia; Saez et al. (2012) for Greece; Saez et al. (2018) for Sweden; and Cahuc et al. (2018) for France

## No clear policy design for success

**Cahuc et al. (2018):**

*“Simulations of counterfactual policies show that the effectiveness of the hiring credit relied to a large extent on three features: it was nonanticipated, **temporary** and **targeted** at jobs with rigid wages”*

**Saez et al. (2018):**

*“...it targeted young workers but was **encompassing** (i.e. applied not just to new hires out of unemployment or a subset), it was intended to be **permanent**, and it was large.”*

## Literature: South Africa

- Levinsohn et al. (2014): RCT - those who were allocated a wage subsidy voucher were more likely to be in wage employment both one year and two years after allocation.
  - ETI is a firm side subsidy to stimulate labour demand (different policy)
- Ranchhod & Finn (2014, 2015): No change in probability of youth employment, 6 and 12 months after inception.
- Ebrahim et al. (2017): Positive significant increases in youth employment at small and medium ETI claiming firms in a matched DiD setting

# Contribution

- Utilizes a triple difference strategy (**DDD**) to examine worker-level outcomes
- The first study in South Africa to examine the incidence of the subsidy (earnings response)
- Uses both **survey data** (PALMS) and **administrative tax records**
- Contribution to the literature: study of a targeted youth wage subsidy allowing for DDD strategy.

# Employment Tax Incentive

- Introduced 1 Jan 2014 for 3 years, renewed for 2 years and recently renewed for **additional 10 years** ending 2029 (ongoing).
- Targeted to the employers of young workers, aged 18-29, and earning less than **R6,000 (~\$400)** per month
  - Low/unskilled workers
- Max duration 2 years, subsidy cut by 50% during the 2nd year.
- Private sector employees

## Monthly subsidy amount





# Data

## Post Apartheid Labour Market Series (PALMS 3.2)

- Survey data
- Period: 2010-2017
- Cross sectional panel
- Has demographic characteristics
- Earnings self reported

Employment/unemployment rates

## Payroll Tax data (IRP5)

- Anonymised administrative data
- Universe of taxpayers
- Panel data
- Period: 2011-2018
- Indicator if employers used ETI and amount of ETI claimed
- Only age and gender

Earnings responses, entry, separations

## ETI take-up, by year

	ETI eligible	ETI claimed	Take-up
2015	2,692,550	810,834	30%
2016	2,594,056	1,002,556	38%
2017	2,468,684	1,101,897	44%
2018	2,241,741	1,110,552	49%
Source: SARS Tax data			

## High ETI take-up, by industry

	ETI eligible	ETI claimed	Take-up
<b>Wholesale and retail</b>	2,129,276	1,033,152	48%
<b>Agriculture</b>	1,640,091	772,088	47%
<b>Catering and Accommodation</b>	524,519	220,028	41%
<b>Finance and Insurance</b>	2,185,919	909,073	41%
<b>Water services</b>	21,397	8,571	40%

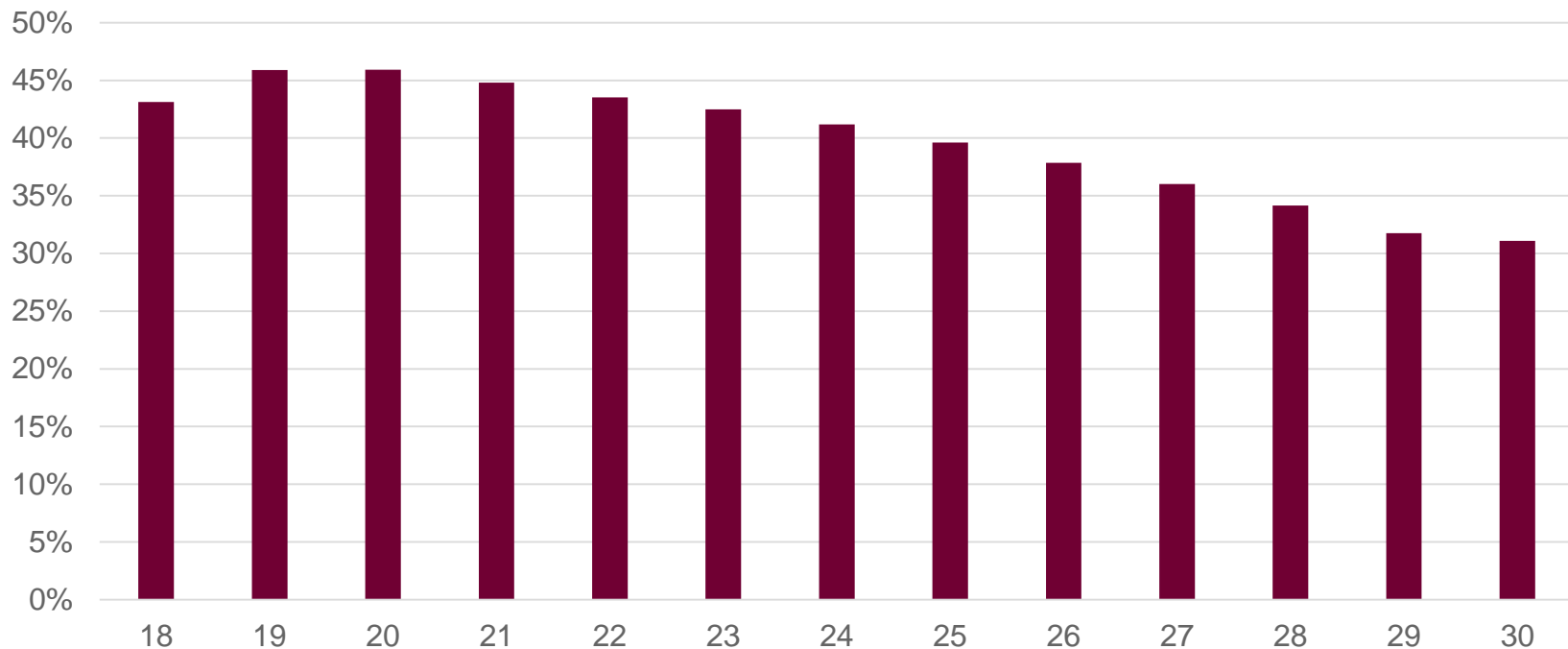
Source: SARS Tax data

## ETI take-up, by gender

	ETI eligible	ETI claimed	Take-up
<b>Female</b>	4,810,189	1,938,743	40%
<b>Male</b>	5,726,930	2,224,692	38%

Source: SARS Tax data

## ETI take-up, by age



## Empirical approach

- The main approach is to estimate intention to treat based on triple differences

$$y_{i,t} = \alpha + \beta * youth_i + \gamma * low_i + \delta * after_t + \zeta * youth * low_i + \eta * youth * after_{i,t} + \theta * low * after_{i,t} + \lambda * youth * low * after_{i,t} + \epsilon_{i,t}$$

- Challenge: earnings only observed if working
  - Solution: predict earnings based on background characteristics (gender, age, education, race) in PALMS data
  - Only observed employed in tax data, no prediction.
- Instead of simple after dummy, year fixed effects used.

# Identifying assumptions

- The strength of a **DDD** over a double difference (DD) approach is that **trends** that may differently affect more broadly defined treatment and control groups are differenced out in a DDD estimator
- If employment downturns disproportionately affect young workers, a DD estimator would lead to a *downwards biased estimate*.
- The **DDD** estimate is robust to such trends



Employment

| 17

Earnings

| 21

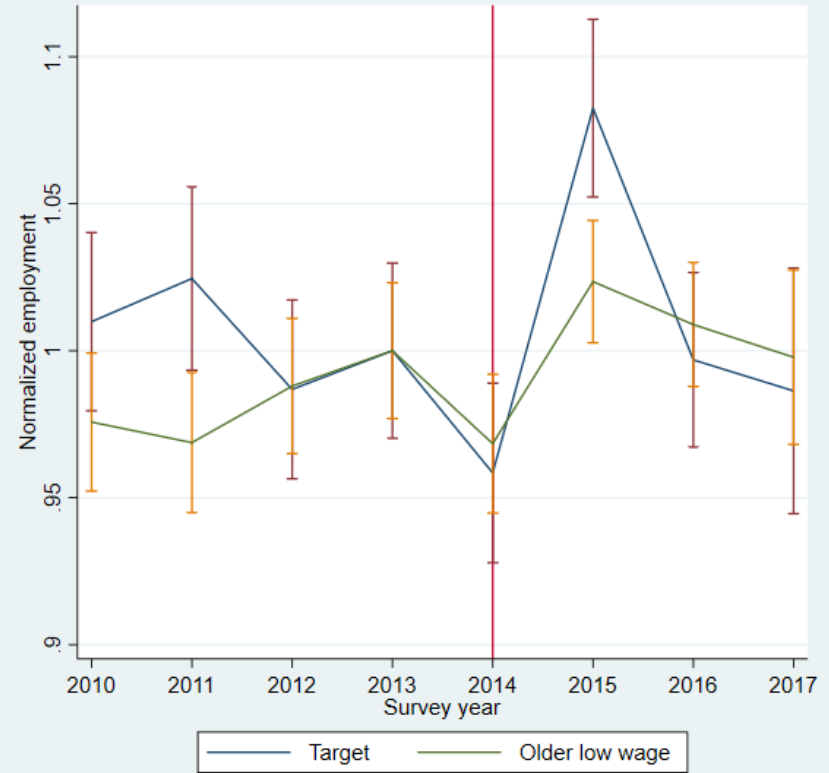
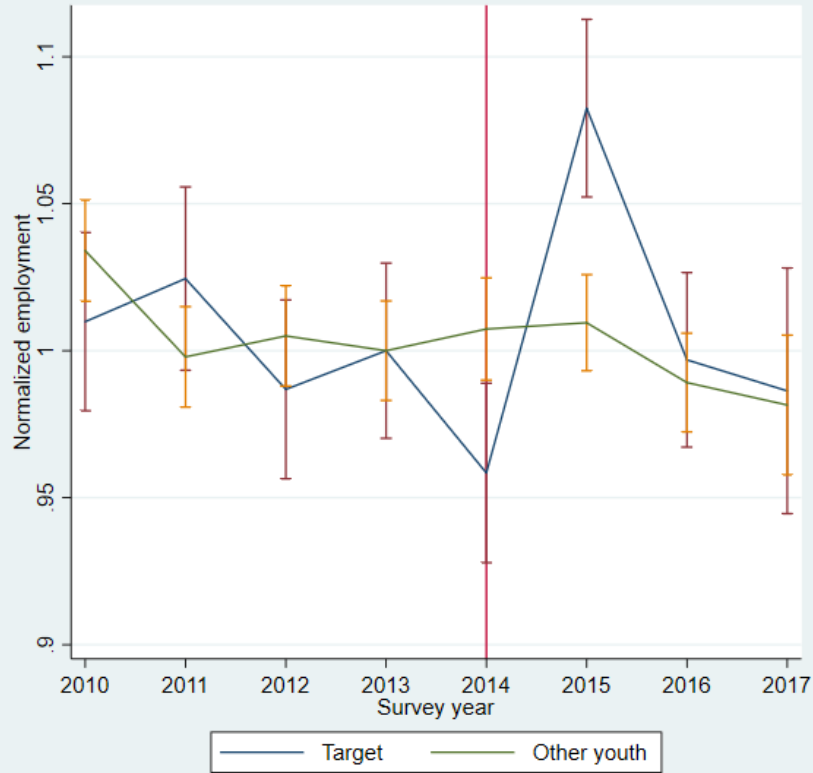
Entry

| 28



# Employment

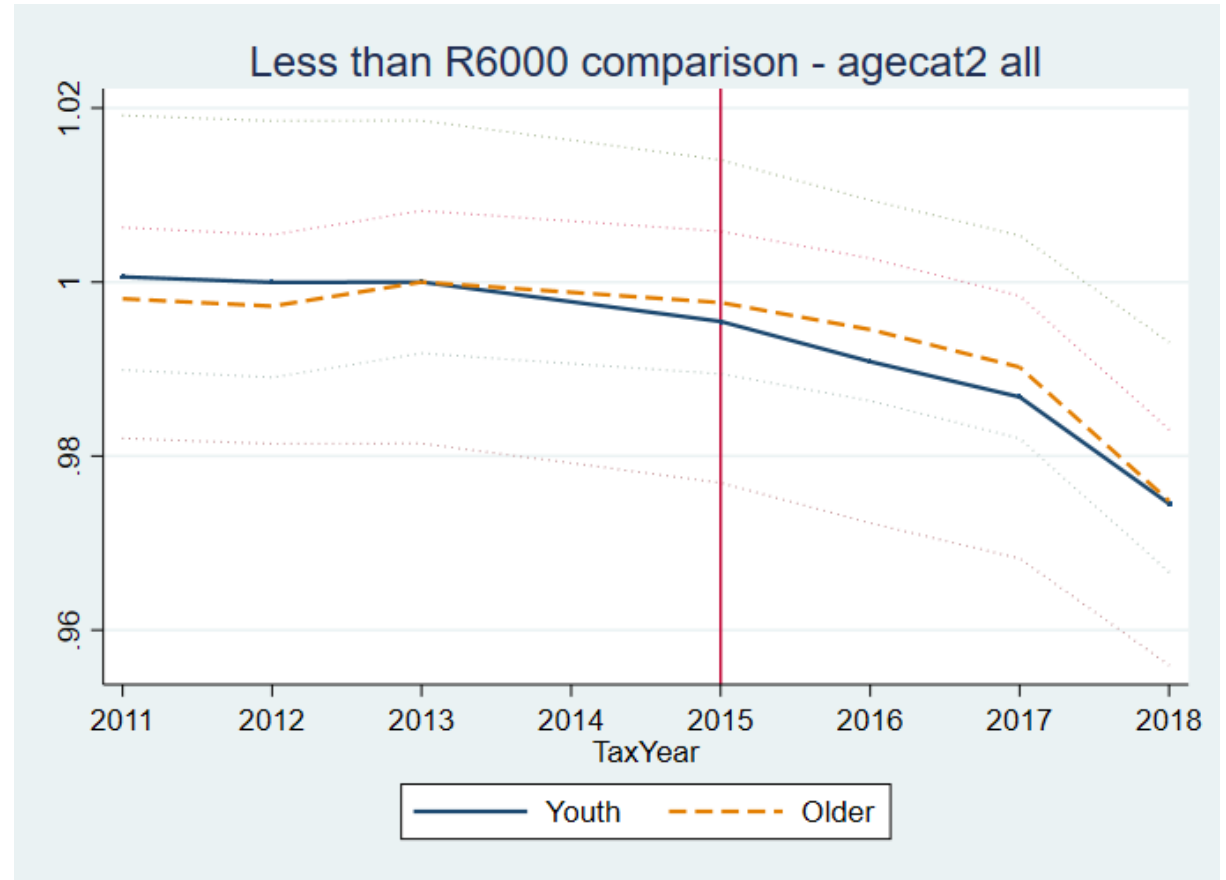
# Private-sector employment rates



Source: PALMS 3.2

# Normalized mean log number of jobs

Young vs older  
workers (<R6,000)



Source: SARS Tax data

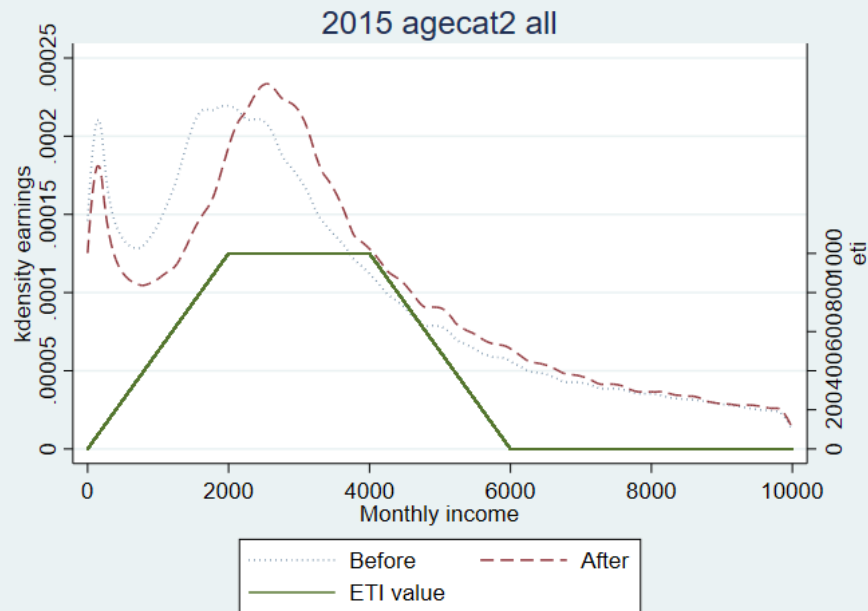
## Estimation results for log number of jobs

VARIABLES	(1)	(2)	(3)
		Pretrends removed	
ddd	0.00365	0.00365	
	(0.131)	(0.131)	
ddd_2015			0.0129
			(0.163)
ddd_2016			0.0189
			(0.161)
ddd_2017			-0.00807
			(0.157)
ddd_2018			-0.00918
			(0.157)
Constant	8.222***	8.139***	8.139***
	(0.0504)	(0.0503)	(0.0503)
Observations	3,024	3,024	3,024
R-squared	0.341	0.413	0.413
Mean	9.045	9.045	9.045

# Earnings

# Earnings Density plots (2015)

## Youth

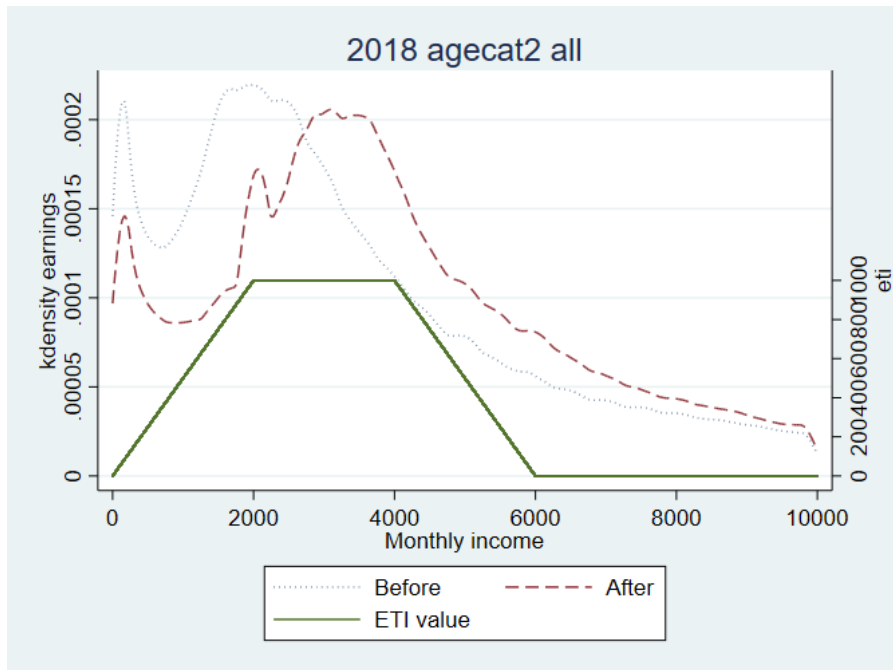


## Older



# Earnings Density plots (2018)

## Youth

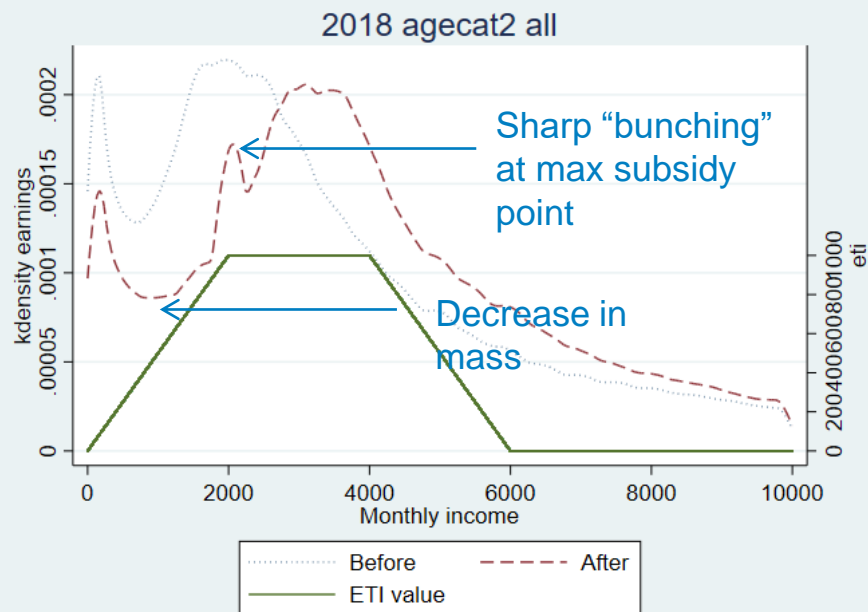


## Older

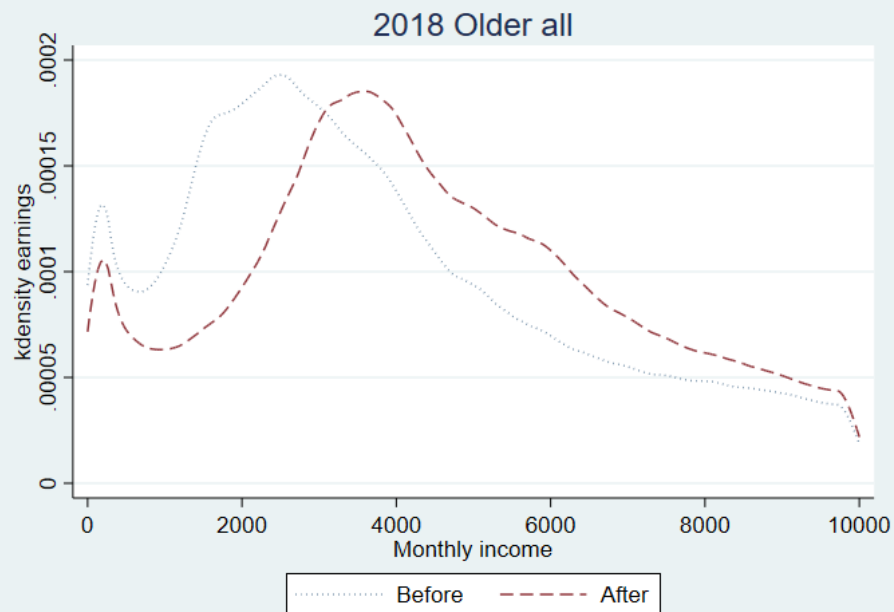


# Earnings Density plots (2018)

## Youth



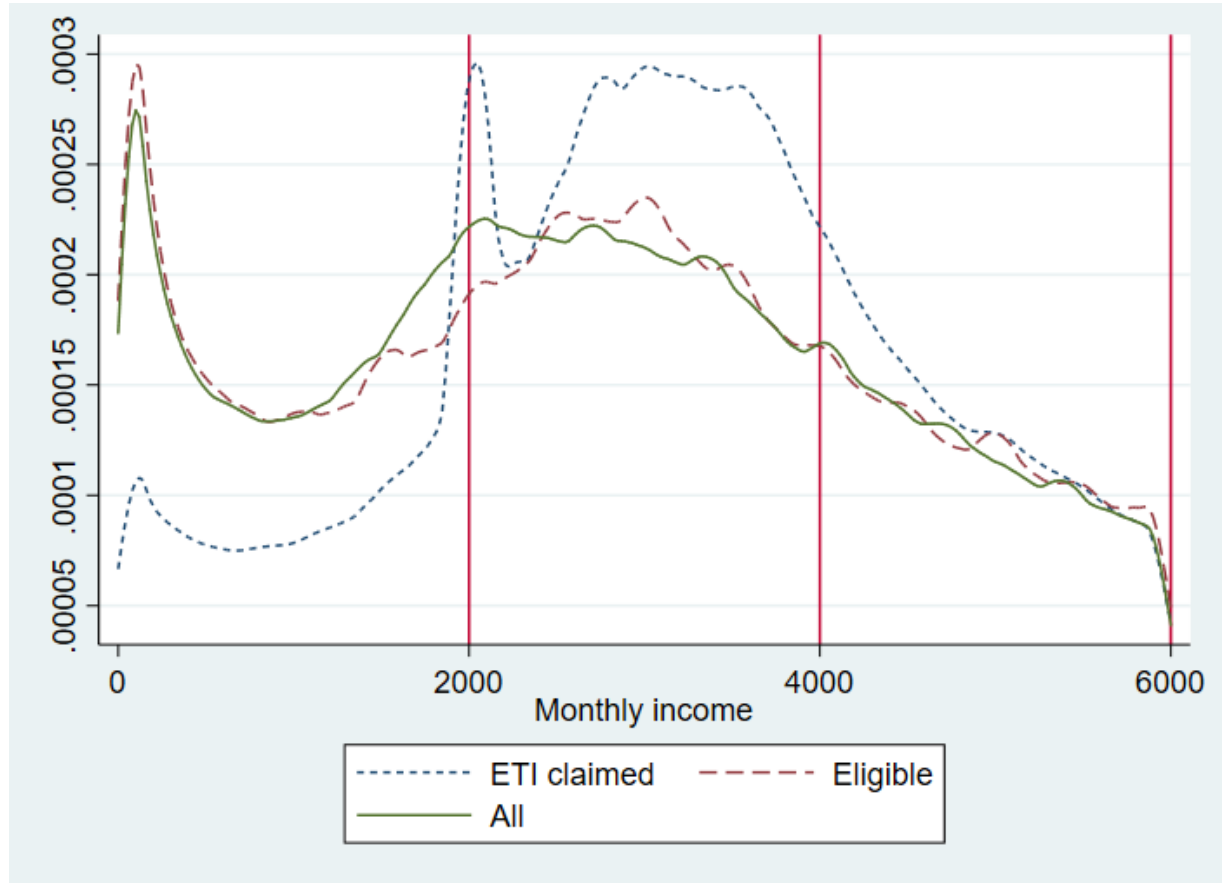
## Older





## Earnings Density plot

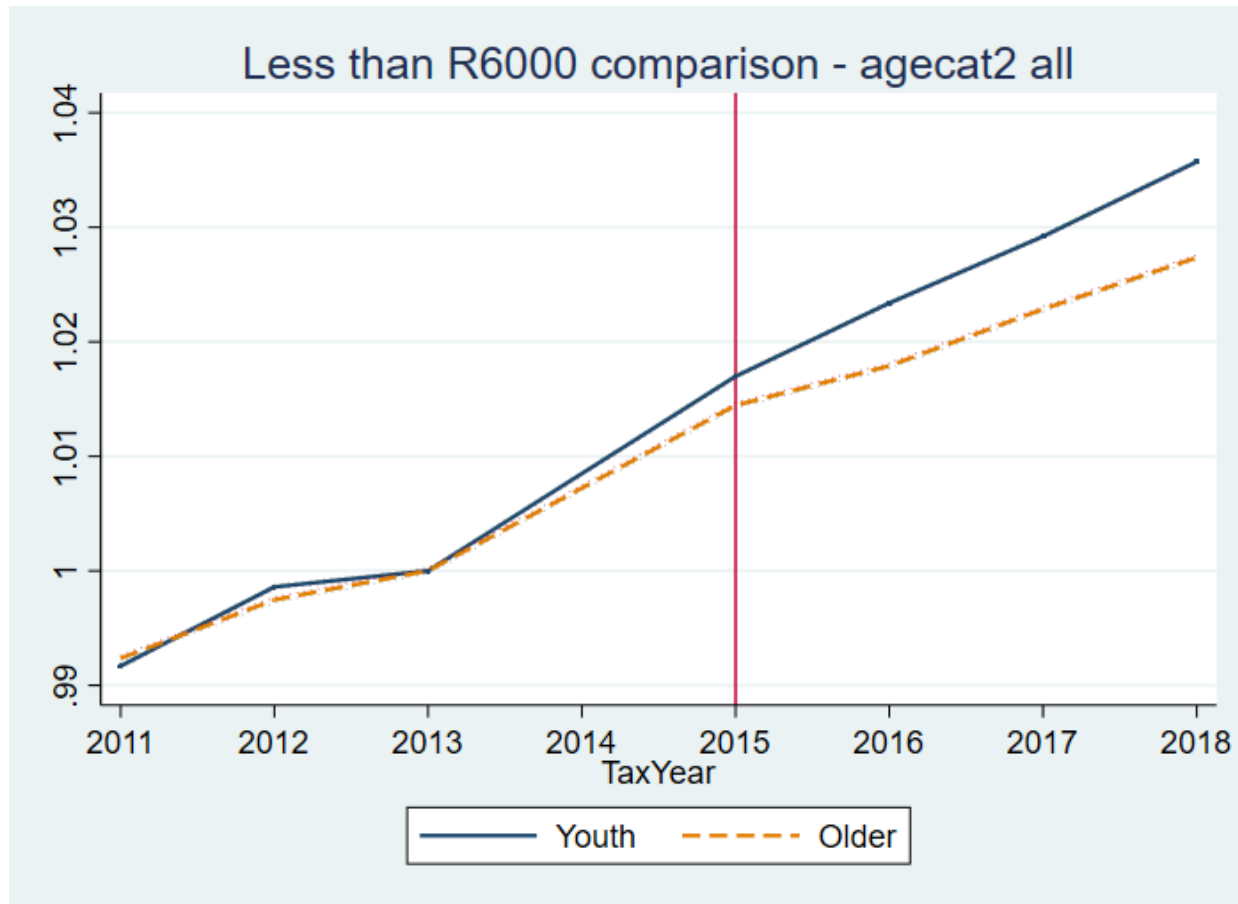
- ETI claimers
- - Eligible non-ETI
- All eligible



Source: SARS Tax data

## Normalized mean log earnings

Same is true for younger (18-24) female workers

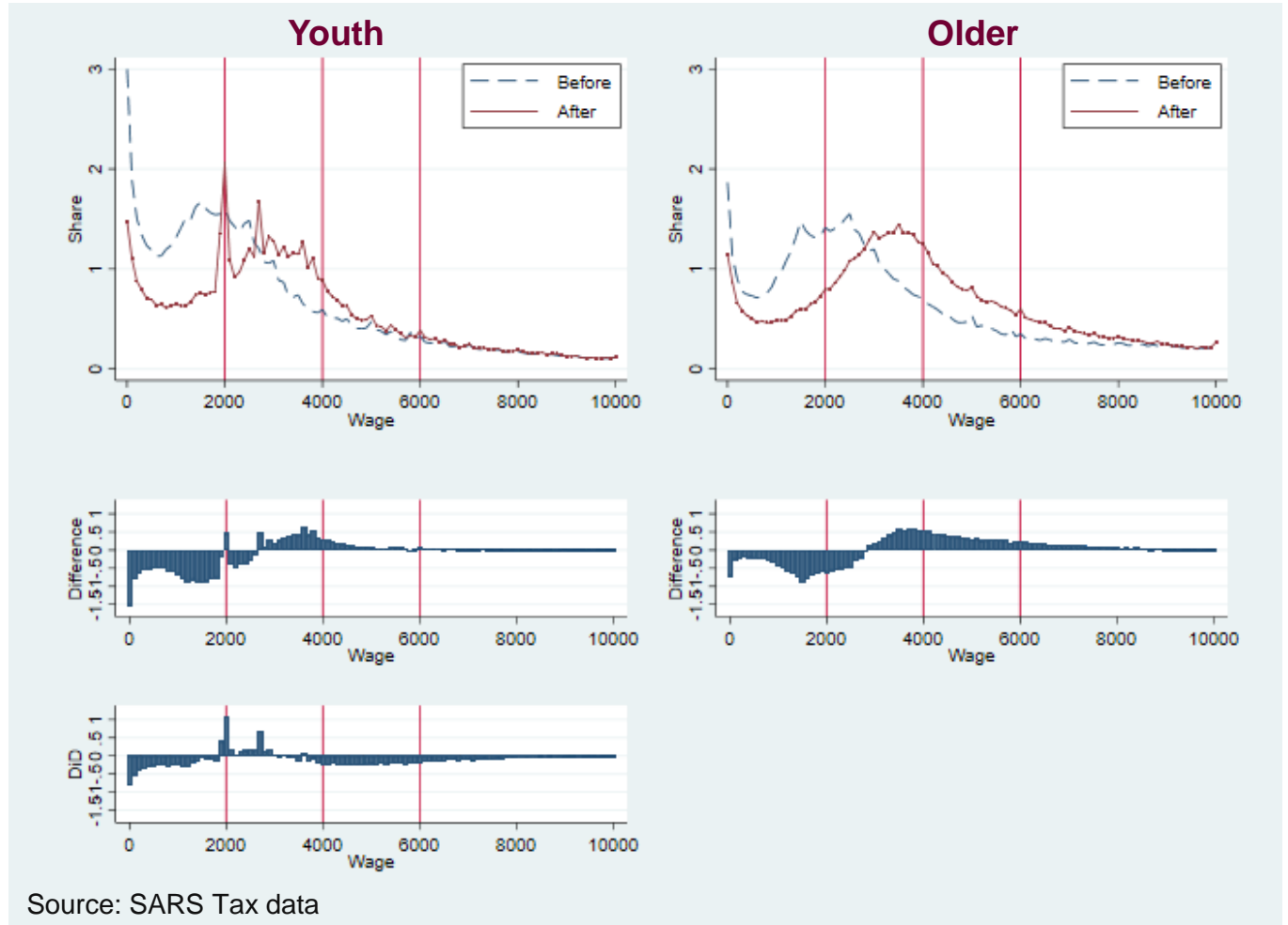


Source: SARS Tax data

# DD comparison (Women)

Before (2013)  
After (2018)

- 18-24 years

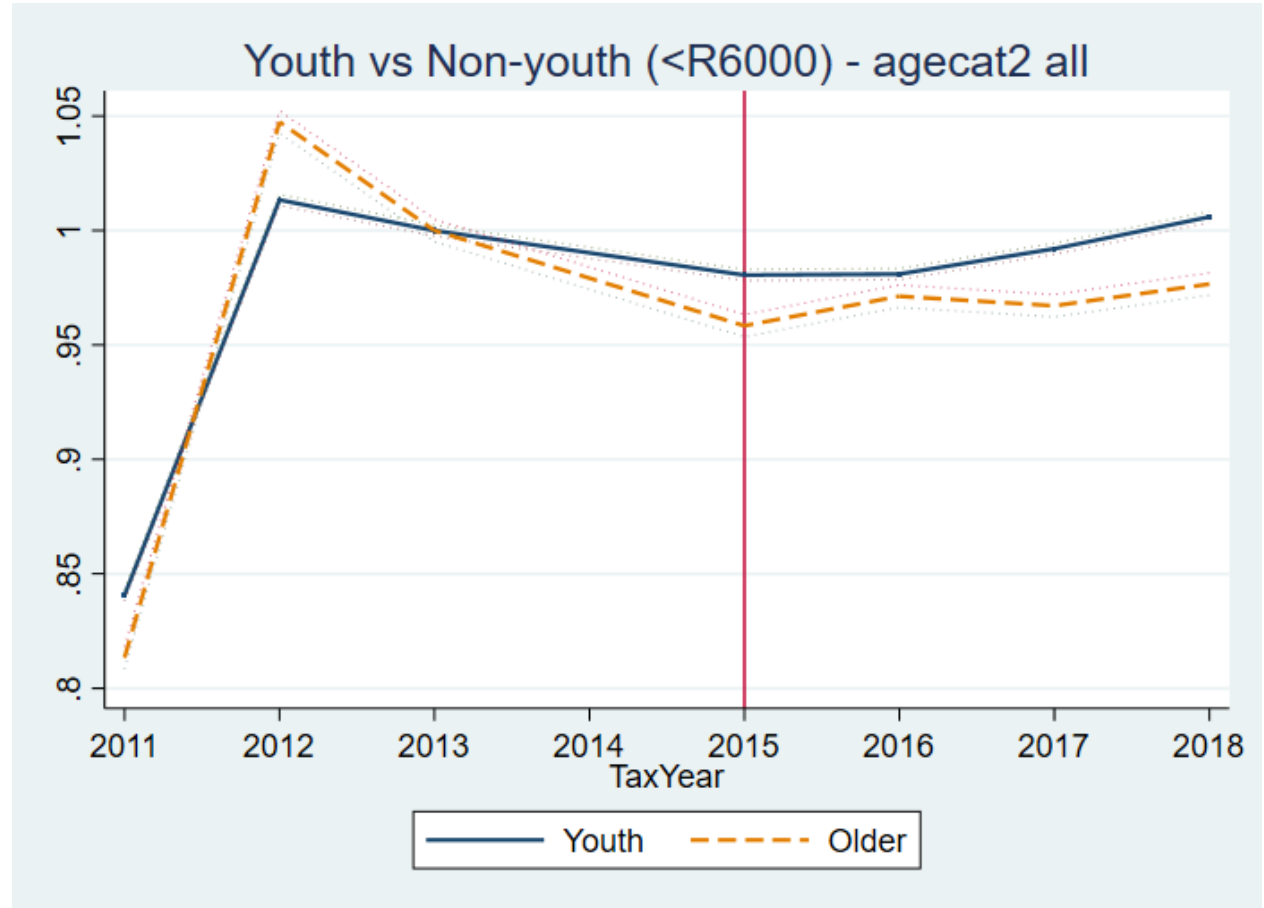


## Estimation results on log earnings (<R6,000)

	(1)	(2)	(3)
VARIABLES	DDD	DDD+trend control	DDD+trend control
ddd	0.0586*** (0.00112)	0.0587*** (0.00112)	
ddd_2015			0.0379*** (0.00132)
ddd_2016			0.0575*** (0.00131)
ddd_2017			0.0605*** (0.00132)
ddd_2018			0.0837*** (0.00133)
Observations	41,403,162	41,403,162	41,403,162
R-squared	0.505	0.992	0.992
Mean	7.568	7.568	7.568

Entry

## Normalized mean entry for workers earning below R6,000



Source: SARS Tax data

## Estimation results on entry (<R6,000)

VARIABLES	(1) DDD	(2) DDD+trend control	(3) DDD+trend control
ddd	-5.96e-05 (0.000624)	0.000459 (0.000624)	
ddd_2015			0.0203*** (0.000706)
ddd_2016			0.00876*** (0.000710)
ddd_2017			-0.0124*** (0.000714)
ddd_2018			-0.0195*** (0.000724)
Constant	0.164*** (0.000306)	-18.87*** (0.000306)	-18.87*** (0.000306)
Observations	41,410,736	41,410,736	41,410,736
R-squared	0.059	1.000	1.000
Mean	0.520	0.520	0.520

## Estimation results on entry (<R2,000)

VARIABLES	(1) DDD	(2) DDD+trend control	(3) DDD+trend control
ddd	-0.0204*** (0.000824)	-0.0190*** (0.000824)	
ddd_2015			0.0270*** (0.000946)
ddd_2016			-0.0104*** (0.000962)
ddd_2017			-0.0377*** (0.000981)
ddd_2018			-0.0766*** (0.00101)
Constant	0.208*** (0.000255)	-35.85*** (0.000255)	-35.85*** (0.000255)
Observations	41,410,736	41,410,736	41,410,736
R-squared	0.060	1.000	1.000
Mean	0.628	0.628	0.0270***



## Estimation results on entry (R2,000-R4,000)

VARIABLES	(1) DDD	(2) DDD+trend control	(3) DDD+trend control
ddd	0.0140*** (0.000714)	0.0148*** (0.000714)	
ddd_2015			0.0107*** (0.000831)
ddd_2016			0.0100*** (0.000835)
ddd_2017			0.0122*** (0.000843)
ddd_2018			0.0284*** (0.000859)
Constant	0.253*** (0.000268)	-36.36*** (0.000268)	-36.36*** (0.000268)
Observations	41,410,736	41,410,736	41,410,736
R-squared	0.030	0.999	0.999
Mean	0.498	0.498	0.498

## Conclusion

- No increase in overall employment rate
- No overall increase in entry for the target group as a whole
  - ETI is a hiring subsidy.
  - Decrease in Entry from the R0-R2,000 group
  - Increase in Entry in the R2,000-R4,000 group
- Wage subsidy may have increased the earnings of those in the target group.
  - For the R0-R2,000 hourly wage or number of working hours increased. Intensive margin response to the subsidy. No admin data on hours worked.
  - R2,000-R4,000 group and increase in earnings

## Conclusion

- The policy has not led to a systematic improvement in employment for the target population, which has been the main goal of the programme.
- Results do not match up with most recent findings in Saez et al (2018) and Cahuc et al (2018) – similar to the older literature.
  - Increase in wages reduces path way to employment effects

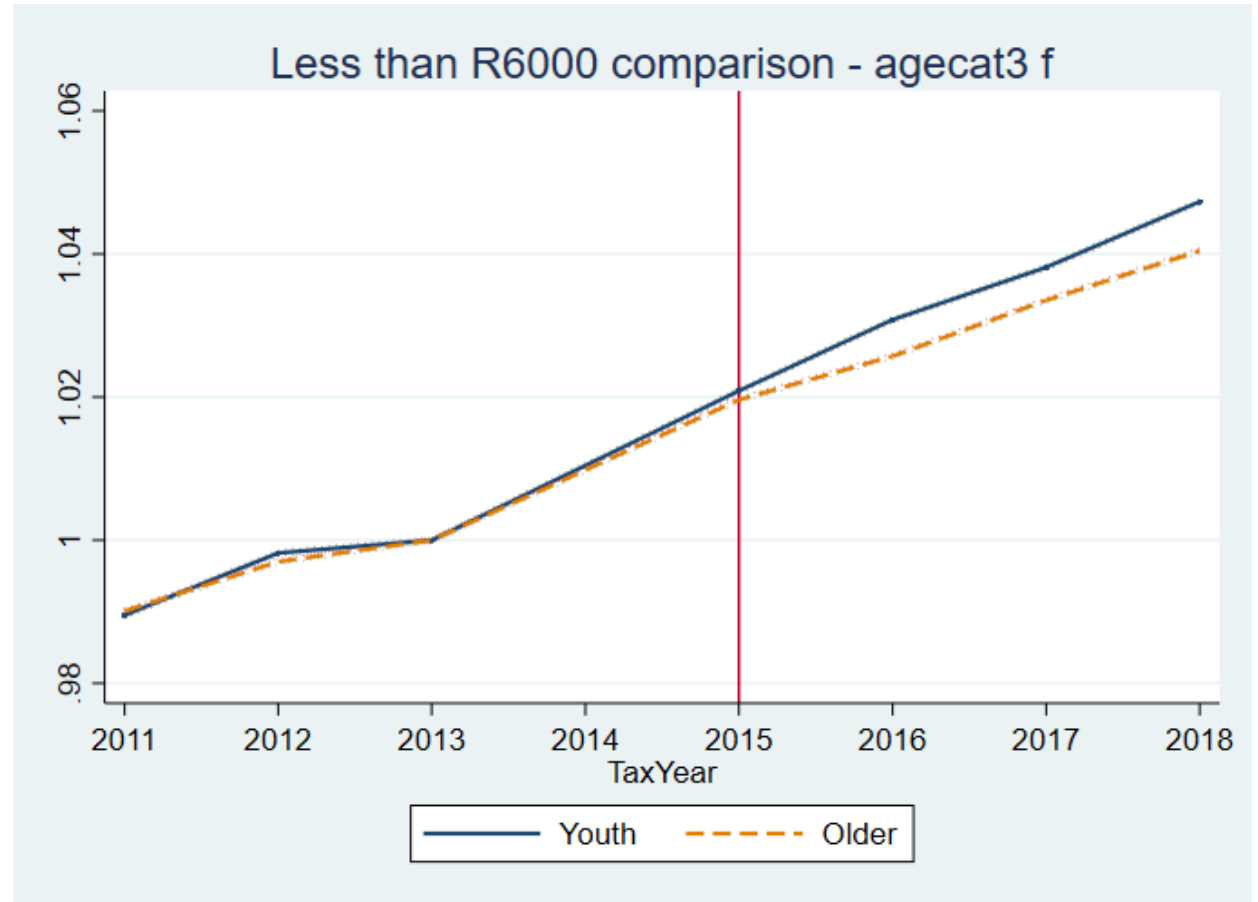
## Further work

- Heterogeneity analyses by age (18-24), gender and by industry, where the policy has been used the most
- Outcomes to be examined
  - Separations
  - Job duration
- Placebo and Robustness tests



## Normalized mean log earnings

- Women
- 18-24 years

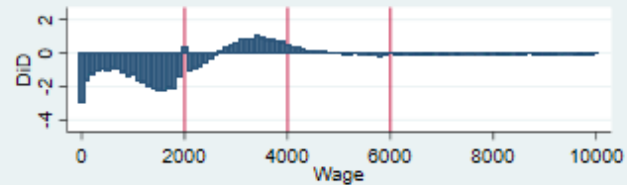
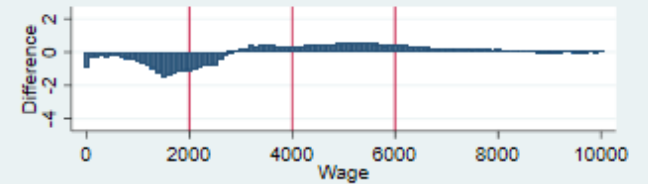
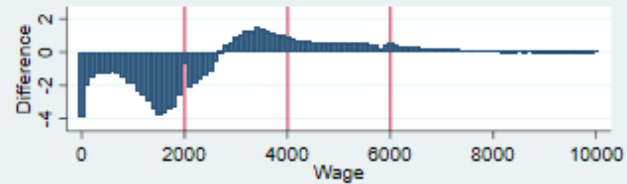
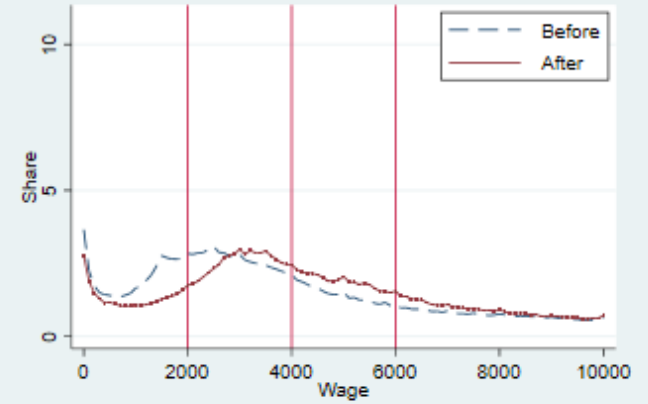
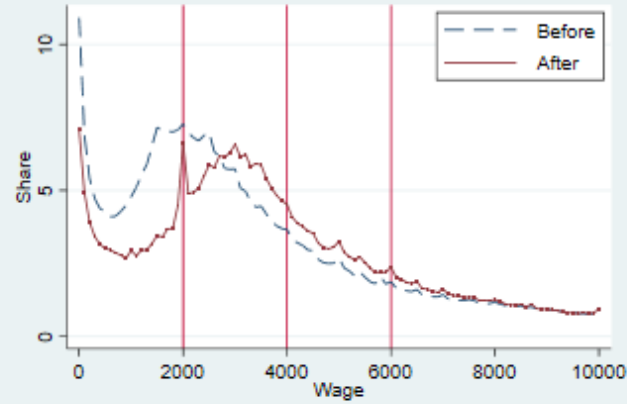


Source: SARS Tax data

# DD comparison (All)

Before (2013)  
After (2018)

- 18-29 years

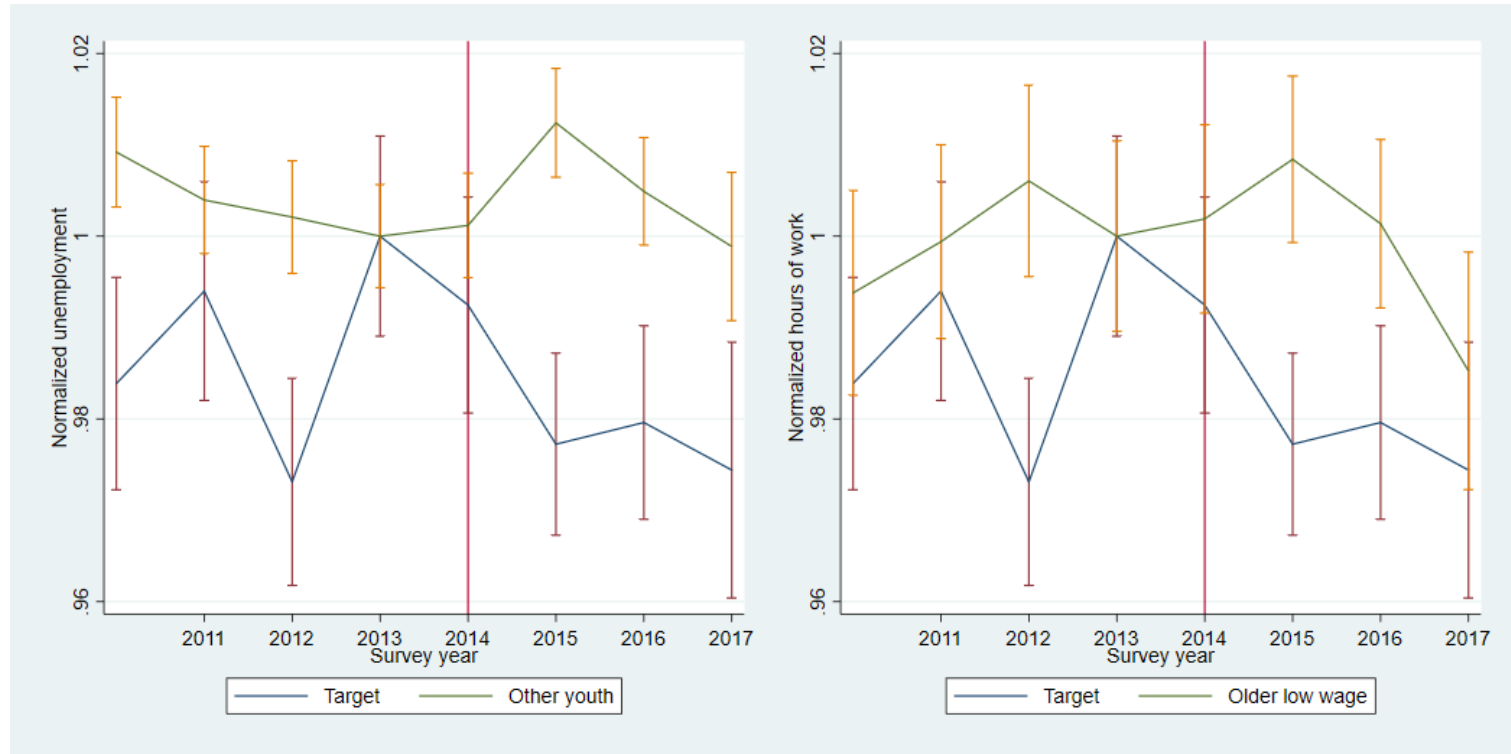


## Estimation results on log earnings (Women, <R6,000)

VARIABLES	(3) DDD	(4) DDD+trend control	(5) DDD	(6) DDD+trend control
ddd	0.0642*** (0.00203)	0.0640*** (0.00203)		
ddd_2015			0.0263*** (0.00255)	0.0290*** (0.00255)
ddd_2016			0.0622*** (0.00250)	0.0631*** (0.00250)
ddd_2017			0.0691*** (0.00249)	0.0680*** (0.00249)
ddd_2018			0.105*** (0.00250)	0.102*** (0.00250)
Constant	9.576*** (0.000964)	-49.41*** (0.000964)	9.576*** (0.000964)	-49.41*** (0.000964)
Observations	11,387,779	11,387,779	11,387,779	11,387,779
R-squared	0.508	0.990	0.508	0.990
Mean	7.403	7.403	7.403	7.403



## Private-sector hours worked



Source: PALMS 3.2