Wage subsidies and COVID-19: The distribution and dynamics of South Africa's TERS policy

By Tim Köhler and Robert Hill

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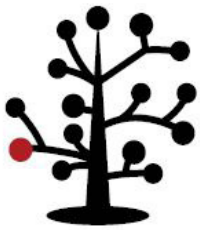

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Wage subsidies and COVID-19:

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TIM KÖHLER
tim.kohler@uct.ac.za

ROBERT HILL
robert.hill@uct.ac.za

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Abstract

Wage subsidy-based job retention policy has served as a dominant tool used to mitigate job losses in the context of COVID-19. In South Africa, such a policy served as a core component of the government's policy response: the Temporary Employer-Employee Relief Scheme (TERS). We make use of longitudinal survey data to analyse aggregate and between-group TERS receipt during the pandemic as well as the relationship between receipt and job retention. We find that although the policy reached millions of workers, coverage was highest during the beginning of the pandemic. Although several groups disproportionately benefited, many vulnerable groups became more likely to receive benefits over time. Benefits were higher in relative terms for lower-wage workers. We find evidence of a significant, positive relationship between TERS receipt and job retention, suggesting the policy may have succeeded in its aim of minimizing job losses, however only during the most stringent lockdown period.

JEL codes:

J08, J38

Keywords:

Wage subsidy, Job retention, South Africa, COVID-19, Temporary Employer-Employee Relief Scheme, Labour market

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Corresponding authors

Tim Köhler (Junior Researcher and PhD candidate) tim.kohler@uct.ac.za
Robert Hill (Junior Researcher, Assistant Lecturer and PhD candidate) robert.hill@uct.ac.za
Development Policy Research Unit, School of Economics, Faculty of Commerce, University of Cape Town.

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Contents

1. Introduction

Job retention policy has served as one of the main tools used by governments across the world to mitigate job losses in response to the COVID-19 pandemic. These policies aim to preserve jobs at firms experiencing a temporary reduction in activity by alleviating labour costs and supporting the incomes of workers (OECD, 2020). By subsidising incomes and firm liquidity, they seek to help employers retain workers and avoid the potentially costly process of hiring and training new workers as economic activity recovers (Keenan & Lydon, 2020). Indeed, job retention policy is argued to be an important tool for speeding up economic recoveries due to labour market frictions which prevent quick re-hiring (Giupponi & Landais, 2020). Additionally, these policies can benefit workers in the long run by helping them avoid labour market scarring effects associated with periods of unemployment (OECD, 2020).

Near the beginning of the crisis in May 2020, for several countries this type of active labour market policy (ALMP) supported ten times as many jobs as during the financial crisis of 2008/09 (OECD, 2020). One year later, over 800 ALMPs were in place in nearly 180 countries in response to the pandemic (Gentilini et al., 2021). Job retention policies typically take one of two forms: short-time work schemes (which subsidise hours not worked) or wage subsidy schemes (which subsidise hours worked, but which can also be used to top up wages). The latter form has been particularly prevalent during the pandemic. As of May 2021, wage subsidies represent nearly one third (31%) of all active labour market programs in place globally in response to the pandemic, with most countries (52%) having implemented at least one (Gentilini et al., 2021).

Job retention policy in the form of a wage subsidy served as a core component of the South African government's economic policy response to the pandemic. Initially, R40 billion (or 8%) of the government's R500 billion fiscal package was accounted for by the expansion of the Unemployment Insurance Fund (UIF) to provide wage support to affected workers (Bhorat et al., 2020), both through existing benefits (such as Illness, Reduced Work Time, and Unemployment) as well as a new scheme: the Temporary Employer-Employee Relief Scheme (TERS). Although financed by the UIF, the TERS is technically a wage subsidy which aims to prevent retrenchments amongst the employed by providing wage support to employers who have fully or partially closed their operations in response to the pandemic. The TERS was introduced relatively quickly after the onset of South Africa's national lockdown in March 2020 and was the largest UIF component during the lockdown period – by March 2021, nearly R59 billion had been dispensed to 5.4 million individual workers.

In this paper, we seek to provide a detailed, quantitative, descriptive analysis of TERS receipt over time in South Africa by making use of representative, longitudinal survey data collected over the course of

2020 and 2021. We conduct uni-, bi-, and multivariate analyses to gain insight into trends in aggregate and between-group variation in receipt, receipt across the wage distribution, variation in TERS benefit amounts, and importantly, the relationship between receipt and job retention.

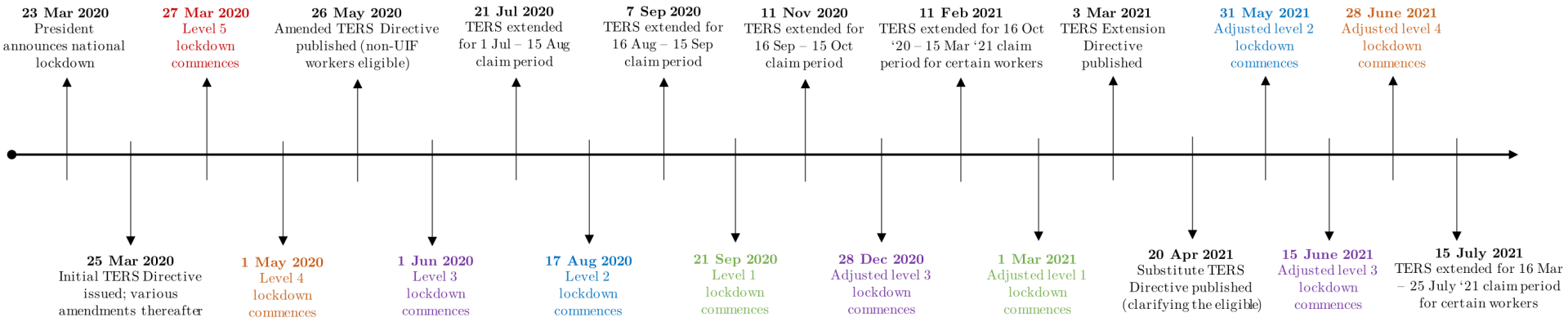
2. Overview of the Temporary Employer-Employee Relief Scheme

As discussed above, the TERS aims to prevent retrenchments amongst the employed. It is not applicable to cases where employment relationships are completely terminated. Recognising that allowing each worker to apply for benefits may be inefficient, initially workers did not receive benefits from the UIF directly but rather from their employer (or the applicable bargaining council).[1] Three months into the programme, over 96% of TERS claim payments were paid to employers (Auditor-General South Africa (AGSA), 2020). Upon receipt of payment from the UIF, employers are liable to pay their workers the relevant benefit within two days and submit proof of payment to the UIF within five days. Despite initial pay-out delays owing to large application backlogs and infrastructure breakdowns (Jain et al., 2020), most benefits (approximately 96%) were paid within 30 days after application receipt (AGSA, 2020a; 2020b). TERS has clearly been the largest UIF component during the lockdown period. By March 2021 nearly R59 billion had been dispensed to 5.4 million individual employees[2] – equivalent to nearly half of all workers employed in the formal sector, or two thirds of all UIF contributors.[3] For other UIF benefits, the Fund paid out R7.5 billion in 1.3 million payments during 2020.

The TERS was introduced relatively quickly after the onset of South Africa's national lockdown and was subsequently revised and amended in response to varying lockdown regulations. Figure 1 presents a timeline of the evolution of TERS policy over the course of 2020 and 2021. The initial Directive was issued on 25 March 2020 – two days after the announcement of the lockdown and two days prior to its commencement. Initially, the scheme was only available from April to June 2020 and only UIF-registered and contributing workers were eligible. Following a legal challenge by several organizations,[4] the scheme was expanded from the end of May 2020 to include any worker who could prove an employment relationship – registered for UIF or not. In the second half of 2020, the policy was subject to several extensions to mid-October following government's extensions of the National State of Disaster.

[1] An exception to this is when an employer employs fewer than 10 workers. In this case, the UIF paid these workers directly upon receipt of their individuals bank account details from the employer. However, this changed from May 2020 where the UIF introduced direct payments to employee bank accounts although applications still needed to be submitted by the employer.
[2] https://www.engineeringnews.co.za/article/nxesi-reports-on-challenges-successes-in-labour-markets-handling-of-pandemic-2021-06-11.
[3] Calculated using QLFS 2021Q1 (StatsSA) microdata.
[4] Namely, the Casual Workers Advice Office, the Women on Farms Project, and Izwi Domestic Workers Alliance.

Figure 1: Timeline of the TERS in the context of South Africa's national lockdown

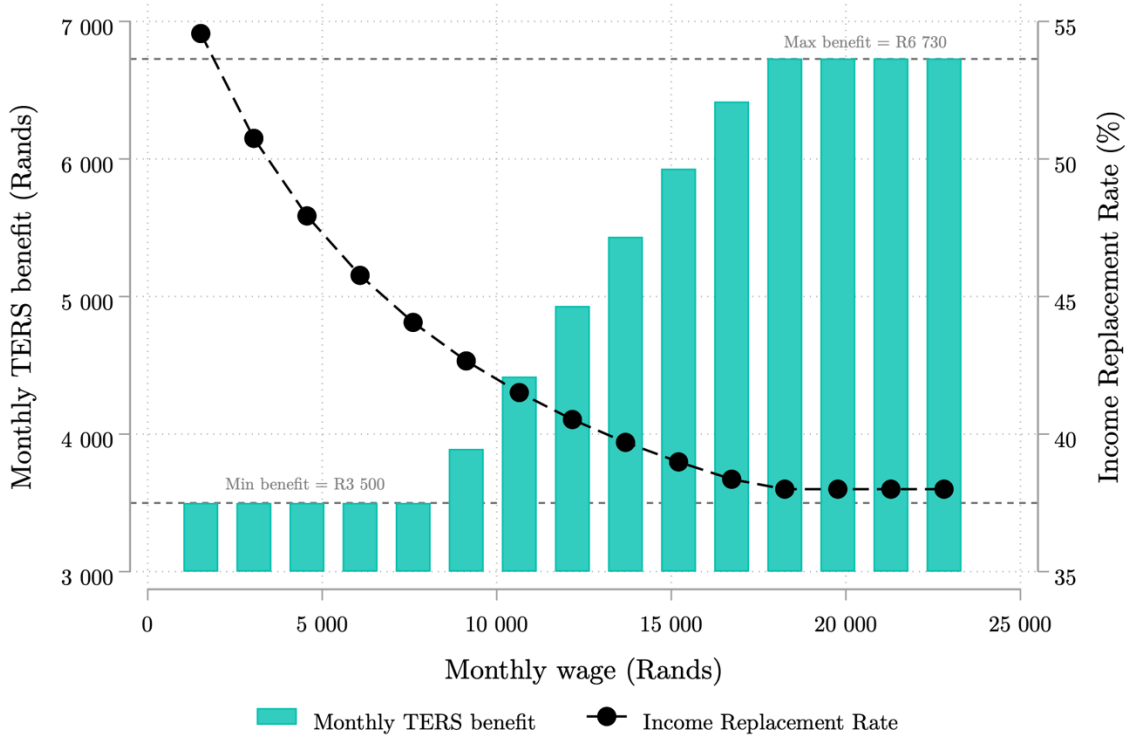


On 11 February 2021, President Ramaphosa announced a further extension of the TERS for the October 2020 to March 2021 period – but only for workers who operated in an industry which was not permitted to commence operations either partially or in full due to the lockdown regulations. These eligible industries included, but were not limited to, tourism, hospitality, liquor services, and any other industry included in an affected value chain. Importantly, only UIF-contributing workers in these industries were eligible for benefits, therefore reversing the policy's prior expansion. Workers in special circumstances were also eligible, such as those in COVID-19-related isolation, older workers with comorbidities who are unable to work from home, and those who are unable to work due to operational requirements (such as a limit on the number of workers at a workplace). Following the latest surge in COVID-19 infections, South Africa was placed under more stringent lockdown levels from 31 May 2021. A few weeks after the Adjusted Level 4 lockdown regulations were imposed from 28 June 2021, the TERS was extended for the third time.

To determine benefits, the UIF makes use of a benefit formula which indicates the percentage of a given worker's wage to which they are entitled in the form of TERS benefits. Simply put, benefits are a function of an Income Replacement Rate (IRR) which itself is a function of the worker's wage. The IRR ranges between 38% and 60% with a maximum salary threshold of R17 712 per month.[5] Benefits range from a minimum of approximately the monthly equivalent of the national minimum wage of R3 500 per month (regardless of if the calculated benefit falls below this amount) to a maximum of R6 730 per month (regardless of if the calculated benefit exceeds this amount, given the salary upper-bound above). The implications of the benefit formula are presented in Figure 2. Because of the progressive sliding-scale IRR and upper and lower benefit thresholds, lower-wage workers receive proportionally greater benefits despite higher-wage workers receiving more in absolute terms. For example, disregarding the lower and upper benefit thresholds for simplicity, a worker earning R9 125 per month is entitled to an IRR of 43%, resulting in a monthly benefit of nearly R3 900. A higher-wage worker earning R16 730 per month is entitled to an IRR of 38%, resulting in a monthly benefit of nearly R6 420.

[5] The TERS may only cover the cost of salaries and no other firm expense. Employers are permitted to supplement the TERS support, but employees may not get their full salary in addition to the benefit. Therefore, the maximum an employee is permitted to receive is equivalent to 100% of their salary, subject to the minimum TERS benefit of R3 500 per worker per month.

Figure 2: Simulation of the calculation of TERS benefits



3. Data and methodology

3.1. The National Income Dynamics: Coronavirus Rapid Mobile Survey (NIDS-CRAM)

This study makes use of individual-level microdata from all fives waves of the National Income Dynamics: Coronavirus Rapid Mobile Survey (NIDS-CRAM) conducted between May 2020 and May 2021. The NIDS-CRAM is a broadly[6] representative, longitudinal telephone survey designed as a 'barometer' for assessing the socio-economic impact of the COVID-19 pandemic on South African individuals and households. The sampling frame is a subsample of adults who were previously surveyed as part of Wave 5 of the National Income Dynamics Study (NIDS) in 2017. Between 5 600 - 7 000 adults were successfully surveyed in a given wave, and in Wave 3 a top-up sample of 1 100 observations was included. Unless specified otherwise, all our estimates are weighted using the relevant sampling weights after accounting for the complex survey design to adjust for non-random non-response and

[6] Because of the NIDS-CRAM sampling design, the sample is regarded as 'broadly' representative of the adult South African population in 2020. Specifically, the weighted NIDS-CRAM estimates are only representative of the outcomes in 2020 of those aged 15 years and older who were surveyed as part of the NIDS in 2017 and were followed up on 3 years later.

attrition. For more information on the NIDS-CRAM sampling design, the interested reader is referred to Ingle et al. (2021).

Apart from Wave 1,[7] the NIDS-CRAM includes two similarly-phrased questions regarding TERS receipt – one for regular and casual workers and the other for employers and the self-employed.[8] An employed respondent only answered one of the two questions. Respondents could respond "Yes", "No", "No, I've applied but still waiting", or "Don't know", whereas employers and the self-employed could choose a few additional response options.[9] To identify recipients, we generate a binary TERS receipt variable equal to one for any respondent who reported TERS receipt and zero if they reported non-receipt, irrespective of employment type. All reports of "Don't know" and refusals were coded as missing. Our coding here therefore results in all reasons related to non-receipt being collapsed into zero, which does not significantly affect our estimates.[10] Importantly, our estimates here represent the number of workers who received a TERS benefit *in* a particular month, but not necessarily *for* a particular month.[11] Considering payment delays, we emphasize that – particularly for more recent waves of data given the recent TERS extension – the reported figures are likely to underestimate the true reach of the programme.

3.2. Wage data adjustments

In our analysis here, we make use of the wage data collected in the NIDS-CRAM. In each wave, respondents were asked to report the actual monetary (Rand) amount of their take-home pay after deductions in a given reference month. If they were not willing, they were asked to report which bracket their labour market income lies in. Simply ignoring bracket responses incorrectly ignores responses that may come from the top end of the income distribution.[12] Any wage analysis which does not address these concerns beforehand may produce biased estimates. We adopt several statistical techniques to address these issues and adjust the raw wage data as follows. First, outlier values are identified and coded as missing by using the "extreme studentised regression residuals" approach as advised by

[7] Wave 1 included only the relevant TERS question for regular and casual workers. One possible implication of this may be that the Wave 1 estimate of the number of recipients is underestimated. However, the magnitude of such an underestimate is not expected to be large given that in Waves 2 to 5, the weighted estimate of TERS receipt among those who run a business and the self-employed is between just 2.3% and 5.2% of TERS recipients.
[8] The questions for both samples are as follows, respectively: "Did you receive any money from the UIF's TERS in [reference month]?" and "Did you receive any money from the UIF's TERS for yourself or any staff in this business in [reference month]?".
[9] These are as follows: "No because my company is not eligible", "No because I do not know where or how to apply", or "No because I get support from other private institutions".
[10] This is because the sample sizes for each relevant "No" response are too small for any reliable statistical inference (1 - 30 observations in a given wave). The coding of reports of "Don't know" and refusals to answer the relevant question also do not significantly affect our estimates given the very small subsample affected (1 to 36 observations in a given wave).
[11] For instance, due to payment delays, a worker may report receiving a TERS payment in June 2020, but this payment may have been intended to cover the worker for May 2020. We are unable to identify the extent of this discrepancy given data limitations.
[12] For instance, in an analysis of South African household survey data, Wittenberg (2017) shows that individuals who respond in brackets rather than with point estimates tend to have higher incomes.

Wittenberg (2017).[13] Second, we address selection into responding with bracket information by constructing bracket weights, calculated as the inverse of the probability of an actual monetary (Rand) response in a particular bracket in a particular wave, multiplied by the sampling weight. This process weights up individuals in brackets where the proportion of actual monetary responses are lower, relative to brackets where such response is high.[14] All our wage estimates for all periods are weighted using these computed bracket weights. Lastly, it is important to note that this reweighting approach does not do anything about observations with missing wage data – it only corrects for bracket responses. Despite this, Ardington (2020) shows that the weighted distribution of wages in the NIDS-CRAM is plausible given its similarity to distributions in other surveys (such as the NIDS Wave 5 and General Household Survey 2018). All wage data are expressed in monthly or hourly frequencies and in real terms (April 2021 Rands).

3.3. Methodology

Our analysis consists of three sections. First, we conduct a quantitative, descriptive analysis to understand aggregate trends in TERS receipt and benefits over the five-wave period. Second, we extend the descriptive analysis to investigate how receipt and benefits vary between different groups of workers over time with respect to several demographic and labour market characteristics. We also analyse to what extent variation in receipt might be explained by variation in employment shares. Thereafter, we analyse variation in receipt and benefits across the wage distribution by estimating ratios of benefits relative to wages, as well as concentration curves.

Thirdly, considering the policy's primary aim of minimizing job losses, we conduct a multivariate regression analysis to understand the relationship between TERS receipt and job retention during South Africa's lockdown. Theoretically, one might expect that a TERS-claiming establishment would be more likely to be able to continue operations and be under less financial strain relative to a comparable non-claiming establishment, thus allowing the former the freedom to retain more employees relative to the latter. For a given wave-to-wave period, we estimate the probability of remaining employed in period t conditional on TERS receipt status in period $t-1$ for a sample of employed individuals in period $t-1$. To do so, we employ Linear Probability Models (LPMs) using Ordinary Least Squares (OLS) combined with a propensity score matching (PSM) technique. The use of non-linear models is often preferred to OLS for binary outcome models because (1) predicted OLS estimates may not be

[13] Using this method, the following number of values per wave were identified as outliers: 3 for February 2020 wages in Wave 1, 2 for April 2020 wages in Wave 1, 2 for June 2020 wages in Wave 2, 5 for October 2020 wages in Wave 3, 1 for January 2021 wages in Wave 4, and 4 for March 2021 wages in Wave 5.

[14] For example, if we observe 95% of individuals within the bracket R1 000 - R2 000 gave actual Rand responses, then these individuals will get revised weights equal the sampling weight divided by 0.95. On the other hand, individuals within the bracket R20 000 – R30 000 where 35% gave actual Rand responses will get revised weights equal the sampling weight divided by 0.35. The latter will be weighted up relative to individuals in the lower bracket.

constrained to the unit interval leading to potentially biased and inconsistent estimates and (2) OLS in this case imposes heteroskedasticity. However, we opt to use OLS for its ease of interpretability and less strict modelling assumptions. We do however address these concerns. We address (2) by employing heteroskedasticity-consistent robust standard errors in our OLS models, a common response taken by researchers. Regarding (1), it has been argued that if the purpose is to estimate average partial effects, then this concern may not be very important (Wooldridge, 2002; Angrist & Pischke, 2009). Moreover, post-estimation we find that the predicted probabilities from our LPM models range between 0.047 and 0.974, remaining inside the unit interval. Despite this, we re-estimate our models using probit regressions to assess the sensitivity of our estimates to specification choice. We find that the model estimates are all similar in terms of magnitude and significance, with a correlation of 0.999517 between the two coefficient vectors.[15] With this in mind, we continue with OLS estimation as follows:

$$Job\ retention_{it} = \alpha + \beta TERS_{it-1} + \gamma \boldsymbol{X}_{it-1} + \delta PS_{it-1} + \varepsilon_{it} \quad (1)$$

where $TERS_{it-1}$ represents a binary TERS receipt status variable for individual i in period $t-1$, $\boldsymbol{X}_{it-1}$ a vector of observable covariates, PS_{it-1} an individual's estimated propensity score, ε_{it} the error term, and $Job\ retention_{it}$ our binary outcome variable of interest. We measure job retention in three alternative ways. First, we define job retention broadly as 'employment retention' by simply considering whether an individual remained employed over two periods. Second, 'same-job retention' is defined as remaining employed in the same job. Given the high levels of churning in the South African labour market during the pandemic, we believe that same-job retention is important and distinct to simply considering employment-retention. However, due to data limitations we cannot determine whether an individual remains in precisely the same job. We therefore employ two proxies for same-job retention given the available data. First, we define same-job retention as remaining employed in the same main occupation and main industry as measured at the 1-digit level available in the data.[16] However, since the NIDS-CRAM Wave 1 did not collect industry data, we also define a second, broader same-job retention proxy by only considering those who remained employed in the same main occupation.

[15] Our probit results are not shown here but are available upon request.
[16] The occupation codes used follow the International Standard Classification of Occupations (ISCO-08). The industry codes used are those found in the Statistics South Africa's General Household Survey (2005) industry code list. The 1-digit level is the lowest level of disaggregation in the data.

Table 1: Characteristics of TERS recipients and non-recipients

Variable	Never received TERS	Ever received TERS	Difference	Observations
Age (years)	37.903 (12.009)	38.028 (10.934)	0.125 (0.879)	3 807
Male	0.532 (0.499)	0.628 (0.483)	0.095*** (0.031)	3 803
Urban	0.852 (0.355)	0.844 (0.363)	-0.009 (0.023)	3 804
Tertiary education	0.455 (0.498)	0.403 (0.490)	-0.053 (0.039)	3 180
Written contract	0.656 (0.475)	0.775 (0.418)	0.119*** (0.038)	2 261
High-skilled	0.236 (0.425)	0.157 (0.364)	-0.079** (0.033)	3 152
Semi-skilled	0.534 (0.499)	0.634 (0.482)	0.100*** (0.034)	3 152
Less-skilled	0.230 (0.421)	0.208 (0.406)	-0.021 (0.028)	3 152
Primary sector	0.071 (0.257)	0.106 (0.308)	0.034 (0.024)	2 804
Secondary sector	0.196 (0.397)	0.288 (0.453)	0.093*** (0.033)	2 804
Tertiary sector	0.733 (0.443)	0.606 (0.489)	-0.127*** (0.039)	2 804
Mean weekly working hours	30.510 (21.870)	27.971 (21.739)	-2.539 (1.889)	1 781

Authors' own calculations. Source: NIDS-CRAM Waves 1 to 5.
Notes: [1] Estimates weighted using sampling weights. [2] Wave 1 characteristics used. [3] Significance levels of differences in means as follows: * p<0.1, ** p<0.05, *** p<0.01. [3] Skill level of individuals defined according to 1-digit occupation code: Managers and professionals classified as high-skilled; technicians, clerical staff, service and sales workers, skilled agricultural workers, craft and machine operators, and plant and machine operators classified as semi-skilled; and elementary occupations classified as less-skilled. [4] Sector data for Wave 1 imputed from Wave 2 responses and are defined as follows: Agriculture, hunting, fishing, mining and quarrying classified as primary; manufacturing, electricity and gas, and construction classified as secondary; remainder classified as tertiary.

Considering TERS recipients and non-recipients differ in characteristics other than TERS receipt status itself (see Table 1), β will likely be biased. To address this selection into TERS receipt, we opt to combine our regression with a PSM technique which allows us to compare conditional job retention probabilities by TERS receipt status in a sample of observationally comparable recipients and non-recipients. We employ a logit model to estimate the probability of TERS receipt on a vector of observable covariates[17] as follows:

$$Pr(z_{it}) \stackrel{\text{def}}{=} Pr(TERS_{it} = 1 \mid \boldsymbol{X}_{it}) \tag{2}$$

We use the estimated coefficients to predict each observation's probability of TERS receipt, regardless of actual TERS receipt status. Thereafter we control for these propensity scores in our regressions, represented by PS_{it-1} in equation (1). Although there are several ways to account for propensity scores

[17] This vector includes age, sex, racial population group, geographic area, province, highest level of education, and sector and skill level defined as per the main industry and occupation.

in a regression context,[18] we opt to use covariate adjustment by simply including the propensity scores as a covariate given the already small sample size of the NIDS-CRAM. There is some evidence that such an approach can perform just as well as, if not better than, conventional matching methods (Elze et al., 2017). Figure A1 highlights sufficient overlap in the distribution of propensity scores across TERS recipients and non-recipients by wave, implying that the identifying assumption of PSM – that is, there must be both treatment and control units for every given estimated propensity score ("common support") – holds.

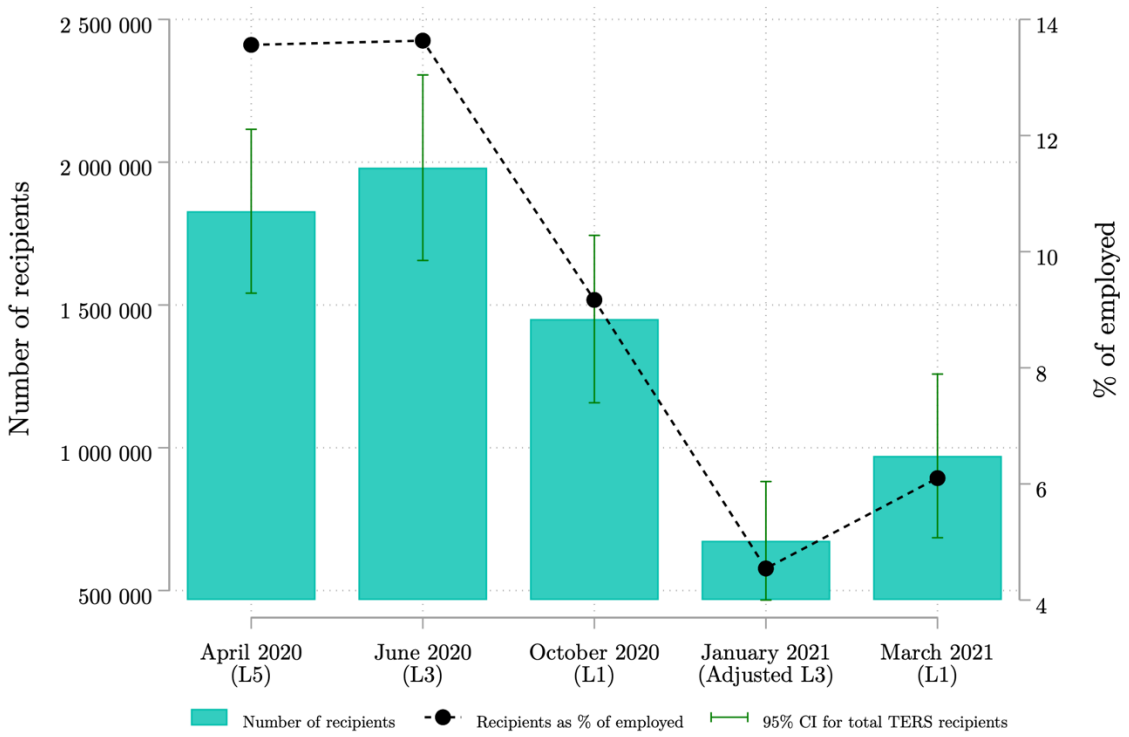
4. Results

4.1. Aggregate trends in receipt

On aggregate, we estimate that just over 4 million unique workers (95% CI: 3 204 669 - 4 883 867) received TERS at least once during the period (either in April 2020, June 2020, October 2020, January 2021, or March 2021).[19] This estimate is not statistically different from the number of beneficiaries as announced by government as of February 2021 (Ramaphosa, 2021a). As shown in Figure 3, the reach of the TERS was highest during the beginning of the lockdown, with relatively few benefiting in 2021 so far. Receipt was highest during the most stringent lockdown level 5 in April 2020 (1.8 million, or 13.56% of workers) and level 3 in June 2020 (2 million, or 13.63% of workers). Although many workers continued to benefit throughout the year as the economy re-opened, the scheme has reached far fewer workers during 2021 so far (675 000 or 4.5% of workers in January and 970 000 or 6.1% of workers in March) – a statistically significant difference relative to any estimate during 2020. This reduction in the number of recipients is likely partially attributable to payment delays and backlogs, but additionally to recovering economic activity which reduces the number of workers eligible, as well as actual changes to the policy's eligibility criteria in later claim periods.

[18] These include creating a smaller, matched sample of treatment and control observations with similar propensity scores, stratifying observations on their propensity scores and estimating effects within strata, or inverse probability weighting.
[19] However, it should be noted that the NIDS-CRAM data does not permit us to estimate TERS receipt across the whole period (that is, in every month) but only in given reference months. As such, the aggregate estimate of 4.5 million is likely underestimated.

Figure 3: Trends in aggregate TERS receipt, April 2020 – March 2021



Authors' own calculations. Source: NIDS-CRAM Waves 1 to 5.
Notes: [1] Estimates weighted using sampling weights after accounting for complex survey design.

By exploiting the panel nature of the data, we estimate transition matrices to analyse the probability of TERS receipt in a future period conditional on receipt (or non-receipt) in a past period. As shown in Table 2, we find that more than half (53.4%) of all TERS recipients in April 2020 continued to receive TERS in June 2020. This relatively high proportion did not however persist into the remainder of the year. Most recipients in June 2020 did not receive it in October 2020 (76.4%). Similarly, close to 90% of October 2020 recipients did not report receipt in January 2021. Considering these transition matrices model TERS receipt in a given reference month, it is possible that they underestimate the true number of recipients in each wave-to-wave period. Furthermore, since only the employed are eligible, it is possible that some degree of this variation in receipt over time can be explained by job loss. We explore this in more detail in the section to follow.

Table 2: Transition matrices of TERS receipt, April 2020 – March 2021

		June 2020 (%)					October 2020 (%)		
		No	Yes	Total			No	Yes	Total
April 2020 (%)	No	92.4	7.6	100.0	June 2020 (%)	No	93.4	6.6	100.0
	Yes	46.6	53.4	100.0		Yes	76.4	23.6	100.0
	Total	85.7	14.3	100.0		Total	91.3	8.7	100.0
		January 2021 (%)					March 2021 (%)		
		No	Yes	Total			No	Yes	Total
October 2020 (%)	No	96.1	3.9	100.0	January 2021 (%)	No	96.5	3.5	100.0
	Yes	89.9	10.1	100.0		Yes	89.6	10.5	100.0
	Total	95.6	4.4	100.0		Total	96.2	3.8	100.0

Authors' own calculations. Source: NIDS-CRAM Waves 1 to 5.
Notes: [1] Estimates weighted using relevant balanced panel sampling weights after accounting for complex survey design.

To analyse the value of TERS benefits received by the average recipient over time, we would of course require data on TERS benefits. Unfortunately, this data was not collected in the NIDS-CRAM. However, we can estimate rough magnitudes by making use of pre-pandemic (February 2020) wage data in the survey and the UIF's TERS benefit formula.[20] Specifically, accounting for the upper monthly wage threshold and minimum and maximum benefits discussed above, we estimate recipient i's TERS monthly benefit as follows:

$$Benefit_i = IRR_i \times w_i = \left\{29.2 + \frac{7\,173.92}{232.92 + w_i}\right\} w_i \quad (3)$$

where w_i represents recipient i's monthly wage as reported for February 2020 and IRR_i the recipient's calculated Income Replacement Rate. Although our estimates using this approach are useful, it should be noted that our estimates could be biased to some extent for several reasons. We include a discussion of these reasons in the appendix. Overall, we emphasize that the reader interprets these benefit estimates as rough approximations given the data limitations. Using the above approach, we find that the average worker who reported receipt at least once over the period received a monthly benefit of R4 093 (95% CI: R3 792.84 - R4 392.47). This is statistically equivalent to the most recent estimate of the median wage of R3 926 in March 2021. We observe no significant variation in the average monthly benefit over time (see Figure A2) with point estimates ranging between R3 993 and R4 125 – none of which are statistically significantly different from one another. This lack of variation is not unexpected given that our benefit estimates here are calibrated on wage data from one period (February 2020), as discussed above. We explore how these benefits vary across the wage distribution in the following section.

[20] We choose to use pre-pandemic (February 2020) wage data in this calculation given that self-reported wages in every period thereafter in the NIDS-CRAM likely includes any benefit received among TERS recipients.

4.2. Between-group trends in receipt

Many studies conducted during South Africa's lockdown show how the incidence of job loss has not been distributed equally across groups (see, for example, Jain et al. (2020); Bassier et al. (2021); Casale & Shepherd (2020a; 2020b; 2021a; 2021b); Hill & Köhler (2021); Köhler et al. (2021); and Ranchhod & Daniels (2021), amongst others). Given that the TERS could only be claimed by those who were employed, disproportionate job loss amongst any one group would necessarily impact that group's ability to claim benefits. To this end, we examine trends in TERS receipt between groups to understand which groups benefited most from the policy. Table 3 presents univariate proportions of TERS recipients made up by different demographic and labour market groups over the period.

Table 3: Between-group variation in TERS receipt, April 2020 – March 2021

	Wave 1 (April 2020)	Wave 2 (June 2020)	Wave 3 (October 2020)	Wave 4 (January 2021)	Wave 5 (March 2021)
Gender					
Male	0.61 [0.52; 0.70]	0.60 [0.50; 0.71]	0.63 [0.51; 0.75]	0.65 [0.50; 0.81]	0.64 [0.50; 0.78]
Female	0.39 [0.30; 0.48]	0.40 [0.29; 0.50]	0.37 [0.25; 0.49]	0.35 [0.19; 0.50]	0.36 [0.22; 0.50]
Race					
African/Black	0.75 [0.64; 0.85]	0.69 [0.58; 0.80]	0.77 [0.66; 0.88]	0.79 [0.63; 0.95]	0.91 [0.84; 0.98]
Coloured	0.13 [0.04; 0.22]	0.10 [0.03; 0.18]	0.14 [0.04; 0.24]	0.09 [0.06; 0.11]	0.05 [0.01; 0.09]
Asian/Indian	0.02 [-0.01; 0.05]	0.06 [-0.01; 0.13]	0.01 [-0.01; 0.03]	0.08 [-0.09; 0.24]	0.01 [-0.01; 0.03]
White	0.10 [0.04; 0.16]	0.15 [0.06; 0.23]	0.08 [0.01; 0.15]	0.04 [-0.01; 0.10]	0.03 [-0.02; 0.08]
Age					
18-34 years	0.42 [0.33; 0.51]	0.41 [0.31; 0.51]	0.41 [0.30; 0.52]	0.40 [0.19; 0.62]	0.35 [0.15; 0.56]
35-59 years	0.55 [0.45; 0.64]	0.53 [0.43; 0.63]	0.55 [0.44; 0.66]	0.59 [0.38; 0.81]	0.63 [0.43; 0.84]
60+ years	0.03 [0.00; 0.06]	0.06 [0.00; 0.13]	0.04 [0.00; 0.09]	0.00 [-0.01; 0.02]	0.01 [-0.01; 0.04]
Pre-pandemic real hourly wage quintile					
Quintile 1 (R0 to R7.76 per hour)	0.12 [0.03; 0.21]	0.06 [0.01; 0.10]	0.08 [0.00; 0.16]	0.06 [-0.06; 0.17]	0.08 [-0.04; 0.19]
Quintile 2 (R7.76 to R17.06 per hour)	0.15 [0.07; 0.23]	0.19 [0.08; 0.30]	0.22 [0.10; 0.34]	0.30 [0.14; 0.47]	0.18 [0.03; 0.33]
Quintile 3 (R17.06 to R29.09 per hour)	0.31 [0.21; 0.40]	0.35 [0.22; 0.48]	0.25 [0.09; 0.41]	0.35 [0.11; 0.60]	0.16 [0.01; 0.32]
Quintile 4 (R29.09 to R72.73 per hour)	0.30 [0.18; 0.42]	0.27 [0.15; 0.38]	0.32 [0.12; 0.52]	0.24 [-0.04; 0.52]	0.55 [0.26; 0.83]
Quintile 5 (R72.73+ per hour)	0.13 [0.03; 0.22]	0.14 [0.05; 0.22]	0.13 [-0.01; 0.26]	0.05 [-0.07; 0.17]	0.04 [0.00; 0.07]
Skill level					
High-skilled	0.16 [0.08; 0.24]	0.16 [0.09; 0.24]	0.12 [0.05; 0.19]	0.12 [0.03; 0.20]	0.10 [-0.03; 0.23]

	Wave 1 (April 2020)	Wave 2 (June 2020)	Wave 3 (October 2020)	Wave 4 (January 2021)	Wave 5 (March 2021)
Semi-skilled	0.68	0.63	0.61	0.50	0.64
	[0.59; 0.77]	[0.53; 0.74]	[0.50; 0.71]	[0.28; 0.72]	[0.50; 0.79]
Less-skilled	0.16	0.20	0.28	0.38	0.26
	[0.09; 0.24]	[0.11; 0.29]	[0.17; 0.38]	[0.16; 0.60]	[0.14; 0.38]
Sector					
Primary	0.15	0.09	0.10	0.04	0.05
	[0.06; 0.24]	[0.03; 0.14]	[0.03; 0.17]	[-0.01; 0.09]	[0.01; 0.08]
Secondary	0.28	0.31	0.20	0.40	0.30
	[0.17; 0.40]	[0.22; 0.40]	[0.13; 0.27]	[0.26; 0.54]	[0.15; 0.44]
Tertiary	0.57	0.60	0.70	0.56	0.66
	[0.44; 0.70]	[0.51; 0.70]	[0.61; 0.79]	[0.41; 0.71]	[0.52; 0.79]
Written contract					
No written contract	0.19	0.25	0.19	0.27	0.15
	[0.11; 0.27]	[0.14; 0.35]	[0.09; 0.29]	[0.05; 0.50]	[0.04; 0.27]
Written contract	0.81	0.75	0.81	0.73	0.85
	[0.73; 0.89]	[0.65; 0.86]	[0.71; 0.91]	[0.50; 0.95]	[0.73; 0.96]
Ability to work from home					
No	.	0.81	0.81	0.91	0.94
		[0.72; 0.91]	[0.72; 0.91]	[0.85; 0.98]	[0.89; 0.99]
Sometimes	.	0.12	0.14	0.05	0.03
		[0.04; 0.19]	[0.05; 0.22]	[0.00; 0.11]	[-0.01; 0.07]
Yes	.	0.07	0.05	0.04	0.03
		[0.01; 0.13]	[0.01; 0.09]	[0.00; 0.07]	[0.00; 0.06]
Highest level of education					
Up to primary	0.08	0.11	0.11	0.04	0.20
	[0.04; 0.13]	[0.04; 0.18]	[0.04; 0.18]	[-0.01; 0.09]	[0.03; 0.38]
Incomplete secondary	0.29	0.35	0.27	0.46	0.30
	[0.20; 0.37]	[0.26; 0.45]	[0.19; 0.35]	[0.25; 0.67]	[0.16; 0.45]
Complete secondary	0.29	0.22	0.26	0.16	0.20
	[0.20; 0.37]	[0.13; 0.31]	[0.14; 0.37]	[-0.03; 0.36]	[0.07; 0.32]
Tertiary	0.34	0.32	0.37	0.34	0.30
	[0.25; 0.44]	[0.22; 0.41]	[0.26; 0.47]	[0.17; 0.51]	[0.14; 0.46]

Authors' own calculations. Source: NIDS-CRAM Waves 1 to 5.

Note: [1] Estimates weighted using sampling weights after accounting for complex survey design. Variances have been scaled to account for strata with single observations. [2] Working from home data only available from Wave 2 onwards. Relevant question phrased as: "Are you able to work from home? If yes, some or most of the time?" [3] Own account workers defined as those who report being self-employed or running their own business. [4] 95% confidence intervals included in square parentheses below point estimates. [5] Skill level of individuals defined according to 1-digit occupation code: Managers and professionals classified as high-skilled; technicians, clerical staff, service and sales workers, skilled agricultural workers, craft and machine operators, and plant and machine operators classified as semi-skilled; and elementary occupations classified as less-skilled. [6] Sector data for Wave 1 imputed from Wave 2 responses and are defined as follows: Agriculture, hunting, fishing, mining and quarrying classified as primary; manufacturing, electricity and gas, and construction classified as secondary; remainder classified as tertiary.

TERS benefits disproportionately accrued to men during the lockdown period. In any given month, the majority of TERS recipients are men, and the group's receipt share has not drastically changed during the period under observation. In April 2020, 61% of recipients were men, increasing slightly to 64% (albeit insignificantly) nearly one year later in March 2021. This gender-gap in receipt is likely at least partially explained by male workers' higher probabilities of being employed and UIF-registered. On the other hand, there has been a shift in the racial composition of TERS recipients, with African/Black individuals increasing from 75% to 91% of recipients over time, while Coloured and White individuals decreased from 13% to 5%, and 10% to 3% of recipients, respectively. These shifts, particularly when considered in conjunction with the sharp increases in recipients who are less skilled, those who fell into the second quintile of the pre-pandemic wage distribution, those with education levels up to primary school, and casual workers, suggest that the TERS programme broadly provided greater support to vulnerable groups in the labour market over time.

TERS receipt also significantly varies by age, contract type, and ability to work from home. The decline in the proportion of 18- to 34-year-old recipients over time, although insignificant, is potentially of concern, and indicate that the youth – a vulnerable group in and of themselves – were less than proportionally supported by the TERS programme relative to the group's share of employment.[21] Unsurprisingly, given the nature of the TERS programme, those employees who had a written contract made up a much larger proportion of TERS recipients (73 - 85%) than those who did not. Furthermore, most recipients were those who were not able to work from home during the lockdown.

By highest level of education, we observe higher rates of receipt among those who are more highly educated. In April 2020, nearly two thirds of recipients had at least a completed secondary qualification, and this number shrank to approximately half of TERS recipients by March 2021. This observation may be indicative of a lack of awareness or application barriers amongst those with lower education levels. However, further investigation of this hypothesis lies beyond the scope of this paper; a more complete analysis of within-group TERS claims is necessary to understand whether this is the case. It should be noted, however, that those with lower education levels are also more likely to earn lower wages in general and thus be more vulnerable to the adverse effects of the COVID-19 pandemic recession. Thus, low uptake of the TERS amongst this group could raise concerns for policymakers regarding the optimal targeting of the programme.

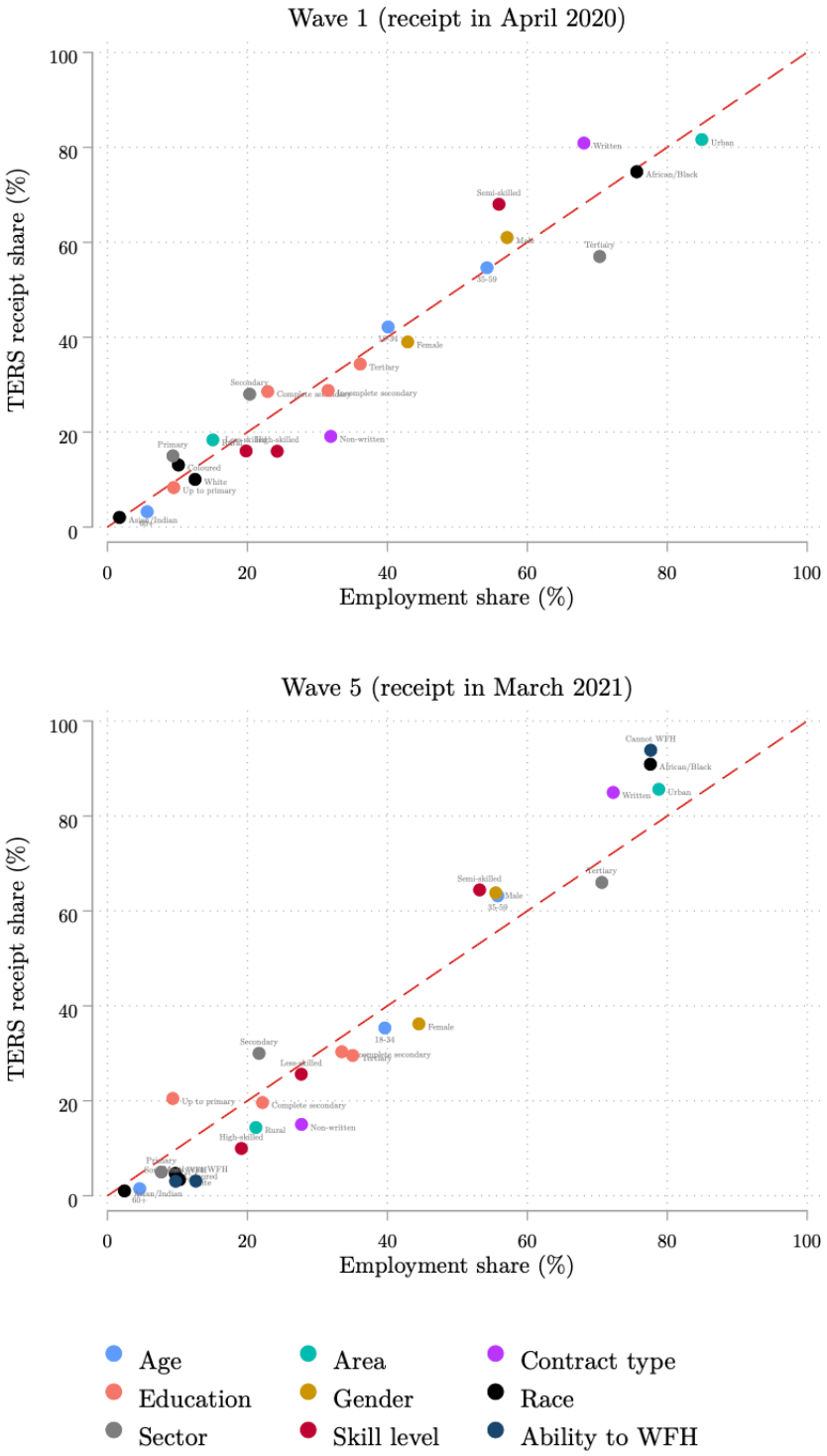
Between-group variation in TERS receipt may at least be partially explained by variation in between-group probabilities of employment. To this end, to investigate whether certain groups disproportionately benefited from TERS, in Figure 4 we present scatterplots of group-specific TERS receipt shares against the corresponding group-specific employment shares in April 2020 and March 2021.[22] Overall, we find that several groups of workers indeed disproportionately benefitted and that most who did continued to do so over time. For instance, in April 2020, workers with written contracts accounted for 81% of TERS recipients but only 68% of the employed. A similar gap exists in March 2021. Other workers who disproportionately benefited by this definition over time include men, the semi-skilled, and those working in the secondary sector. Those who did not disproportionately benefit in the beginning of the programme in April 2020 but did in March 2021 include African/Black workers,

[21] It should be noted, however, that on 25 July 2021, President Ramaphosa announced the expansion of the Employment Tax Incentive (ETI) programme to include any worker earning below R6 500 per month, and an increase in the incentive amount by up to R750 per month (Ramaphosa, 2021b). Previously, the ETI was capped at R1 000 per month in the first year of claiming, and R500 per month in the second year (SARS, 2021). In the past, the ETI has acted as a wage subsidy targeted to those employees under the age of 30 earning below R6 000 per month (SARS, 2021). As a result, the expansion of this policy and increase in the monthly claim amount is likely to have spillover effects in supporting some of the youth who have not been supported by the TERS programme.

[22] We consider these two periods for several reasons: (1) doing so allows for a comparison of the distribution of TERS benefits by group over time, (2) we do not have data on one group of interest in Wave 1 – those who can and cannot work from home, and (3) doing so allows for a comparison of TERS receipt in the initial period where every (UIF-contributing) worker was eligible, and in the extended period when eligibility was restricted to certain sectors. On (3) however, as previously discussed, it should be emphasized that the NIDS-CRAM data only contains information on when a worker received a TERS benefit but not for which period. Considering gaps in claims and payments, some recipients in March 2021 may therefore be receiving the benefit for either the initial or extended programme, but due to data limitations we are unable to identify the claim period.

those who reside in urban areas, are aged 35 – 59 years, and have low levels of education (up to primary). When considering workers who are unable to work from home, we find that these workers, too, disproportionately benefited in March 2021, representing 91% of TERS recipients but just 78% of the employed. For all waves for which data is available, this group persistently disproportionately benefited (see Figure A3).

Figure 4: Scatterplots of TERS receipt shares and employment shares, by group and wave

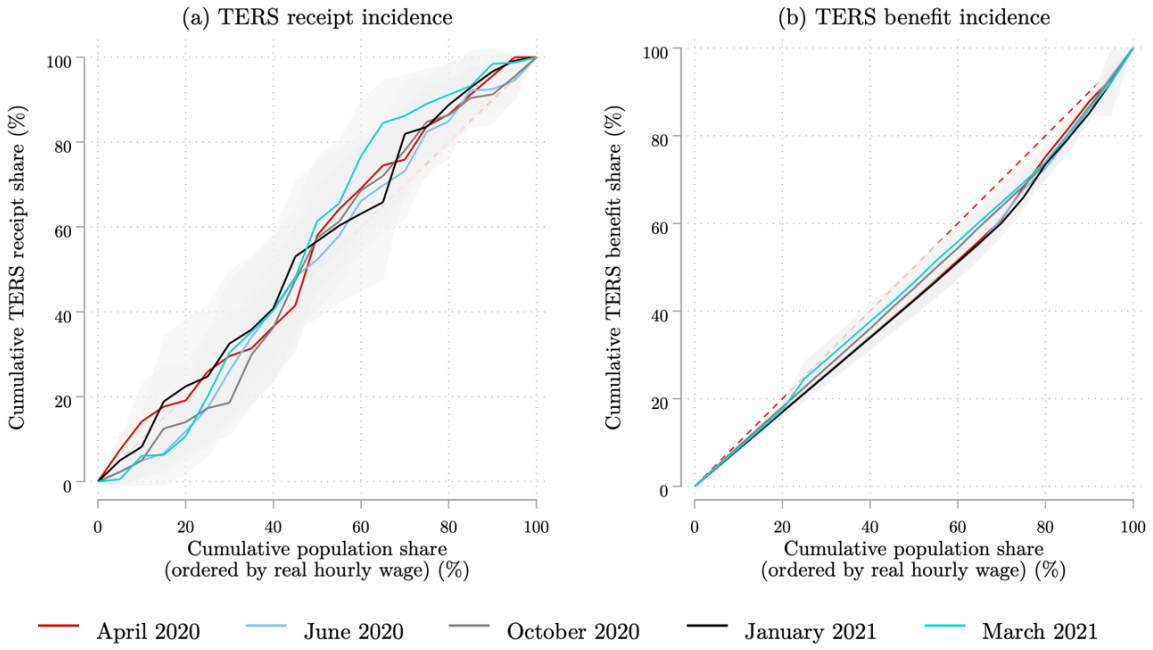


Authors' own calculations. Source: NIDS-CRAM Waves 1 and 5.
Note: [1] Estimates weighted using sampling weights after accounting for complex survey design. Variances have been scaled to account for strata with single observations. [2] Working from home data only available from Wave 2 onwards. Relevant question phrased as: "Are you able to work from home? If yes, some or most of the time?" [3] Skill level of individuals defined according to 1-digit occupation code: Managers and professionals classified as high-skilled; technicians, clerical staff, service and sales workers, skilled agricultural workers, craft and machine operators, and plant and machine operators classified as semi-skilled; and elementary occupations classified as less-skilled. [4] Sector data for Wave 1 imputed from Wave 2 responses and are defined according to 1-digit SIC code classification: Agriculture, hunting, fishing, mining and quarrying classified as primary; manufacturing, electricity and gas and construction classified as secondary; remainder classified as tertiary.

To examine TERS receipt across the wage distribution further, we estimate concentration curves as presented in Figure 5 which plot, for each wave, the cumulative share of TERS receipt or benefits against the cumulative share of workers, ordered by real hourly wages. Simply put, the estimates in panel (a) consider, for each wave, the concentration of TERS receipt across the wage distribution, and those in panel (b) consider, for each wave, but conditional on receipt, the distribution of TERS benefits across the wage distribution.[23] The figure suggests that TERS receipt over the period has been relatively distribution-neutral (that is, neither pro-poor nor pro-rich). Conditional on receiving TERS, however, the distribution of TERS benefits is marginally regressive in every period. This is arguably less likely due to higher-wage workers being more eligible or having greater access to the policy, but rather due to the design of the TERS benefit formula which, as discussed above, ensures benefits are higher in relative terms for lower-wage workers, despite being higher in absolute terms for higher-wage workers. To highlight this, Table 4 presents average TERS benefits relative to the average wage for each wage quintile.[24] We estimate that the average TERS recipient within the poorest 20% of workers received a monthly benefit of R3 500 per month, despite a pre-pandemic wage of just over R474 per month for the average worker within this quintile. In other words, the average TERS benefit among the poorest 20% of workers is nearly 7.4 times higher than the group's average pre-pandemic wage. This contrasts with a ratio of less than 0.60 for the richest 40% of workers.

[23] Considering the estimates in panel (b) rely on the imputed TERS benefits estimates, they are subject to the same caveats discussed earlier in the paper.
[24] We compare TERS benefit amounts to pre-pandemic (February 2020) wages here because, as outlined above, we make use of this data to estimate TERS benefit amounts.

Figure 5: Concentration curves of TERS receipt and benefits, April 2020 – March 2021



Authors' own calculations. Source: NIDS-CRAM Waves 1 to 5.
Notes: [1] Estimates weighted using computed bracket weights. [2] Wage data adjusted for outliers and selection into bracket responses and are expressed in real values (April 2021 Rands). [3] Weekly working hours for zero-hour workers replaced with mean weekly working hours within each period. [4] Shaded areas represent 95% confidence intervals.

Table 4: TERS benefits relative to wages across the wage distribution

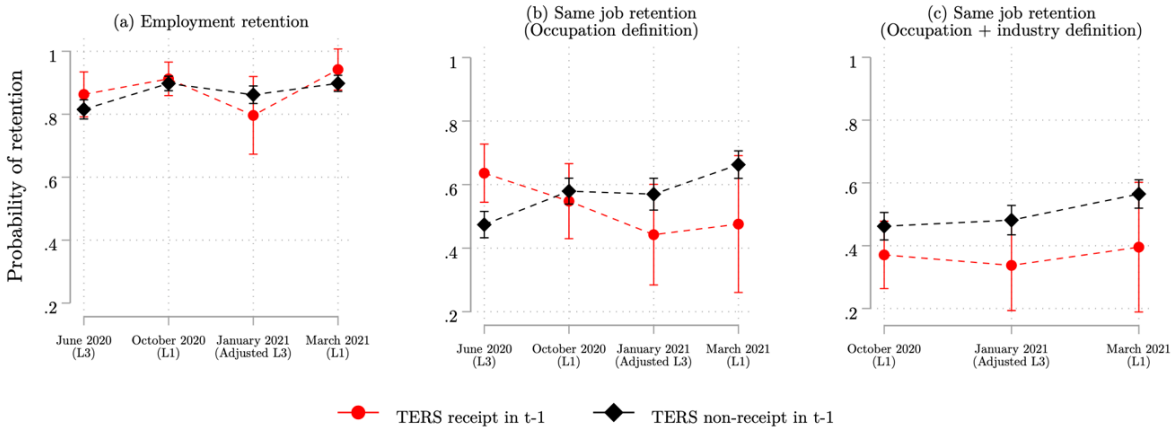
Pre-pandemic hourly wage quintile	Mean monthly pre-pandemic wage (Rands)	Mean monthly TERS benefit (Rands)	Benefit ratio
Poorest 20%	474.01 (36.64)	3 500.00 (0.00)	7.38
2	2100.46 (75.89)	3 500.00 (0.00)	1.67
3	3755.39 (121.46)	3 500.00 (0.00)	0.93
4	7129.79 (310.42)	4 142.36 (188.94)	0.58
Richest 20%	25716.64 (1650.34)	6 457.49 (119.36)	0.25

Authors' own calculations. Source: NIDS-CRAM Waves 1 to 5.
Notes: [1] Estimates weighted using computed bracket weights after accounting for complex survey design. [2] Wage data adjusted for outliers and selection into bracket responses and are expressed in real values (April 2021 Rands). [3] Weekly working hours for zero-hour workers replaced with mean weekly working hours within each period. [4] TERS benefit calculated using the UIF TERS benefit formula and NIDS-CRAM data on pre-pandemic (February 2020) wages. [5] Benefit ratio defined as the mean monthly TERS benefit as a proportion of the mean monthly pre-pandemic wage for a given quintile.

4.3. The relationship between receipt and job retention

A key question regarding the TERS programme is whether it assisted in supporting job retention during South Africa's lockdown. In this section, we conduct a multivariate analysis to investigate whether TERS receipt was in any way associated with individual-level job retention. In Figure 6 below, we plot job retention probabilities for both TERS recipients and non-TERS recipients. Specifically, we plot the probabilities of remaining employed in period t conditional on TERS receipt status in period $t-1$ for a sample of workers in period $t-1$ for each job retention definition outlined in Section 3.3. In a bivariate environment, the estimates suggest that there was no statistically significant difference in job retention probabilities for recipients and non-recipients, except in the case of same-job retention between April and June 2020 – the 'hard lockdown' period. However, these results may be driven by the characteristic differences between our samples of recipients and non-recipients. We therefore undertake a multivariate analysis combined with a PSM approach to estimate the association between TERS receipt and job retention more reliably.

Figure 6: Job retention probability by TERS receipt status and job retention definition, April 2020 – March 2021



Notes: [1] Estimates weighted using relevant balanced panel weights after accounting for complex survey design. [2] Figure displays estimates of employment probabilities in period t by TERS receipt among the employed in period t-1 by varied definitions of job retention. [3] Job retention definitions as follows: Employment retention is a binary variable equal to one for individuals employed in period t-1 and t and zero for individuals employed in t-1 but not t. Same job retention (occupation definition) is a binary variable equal to one for individuals employed in period t-1 and t and are also employed in the same main occupation in both periods, and zero for all other individuals (job-losers as well as those who remain employed but not in the same main occupation). Same job retention (occupation and industry definition) additionally requires individuals to be in the same main industry. [3] Capped spikes represent 95% confidence intervals.

Table 5 reports the results of our regression models as specified in equation (1), according to our three definitions of job retention. The top panel presents β estimates for employment retention, whereas the next two panels present estimates for same-job retention using the two different proxies outlined in Section 3.3. The bottom panel, which defines job retention along both industry and occupation lines, is preferable and is more likely to model true same-job retention. However, as discussed above, we can

only analyse the relationship during the initial hard lockdown along occupation lines. Later estimates across the two proxies for same-job retention are broadly similar, however, and as such, we believe that measuring same-job retention across purely occupational lines is still valuable.

We do not find any evidence of an association between TERS receipt and *general* employment retention. All estimates are close to zero and are statistically insignificant. However, when we consider *same-job* retention, we do estimate a statistically significant, positive relationship with TERS receipt, but only in the beginning of the national lockdown period. Specifically, according to our preferred model specification, we estimate that TERS receipt during lockdown level 5 in April 2020 was associated with an 18.1 percentage point increase in the probability of remaining employed in the same job two months later during lockdown level 3, relative to workers who had not received TERS benefits. The estimate is relatively precisely estimated (95% CI: 0.094 - 0.267) and is statistically significant at the 1% level. By June 2020, South Africa was emerging from the most stringent lockdown regulations and was officially placed on Level 3 restrictions as of 1 June 2020. As such, June 2020 marked one of the early stages of the staggered reopening of the South African economy. We observe that this TERS 'effect' dissipates across the remainder of the period. It is also important to however note that while we have attempted to measure same-job retention, due to data availability the variable used is a crude proxy at best. In this light, due to the high levels of job churn in the South African labour market, this estimate is more than likely overstated, particularly if individuals were to move horizontally into a similar job within the same industry.

Table 5: Linear probability model estimates of the relationship between TERS receipt and job retention

Dependent variable:	Employment retention											
Period t:	June 2020			October 2020			January 2021			March 2021		
TERS receipt (t-1)	0.046	0.033	0.035	0.008	-0.006	-0.006	-0.01	-0.033	-0.036	-0.007	-0.002	-0.002
	(0.039)	(0.030)	(0.029)	(0.031)	(0.028)	(0.028)	(0.050)	(0.052)	(0.052)	(0.051)	(0.052)	(0.052)
Controls?	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
Propensity score?	N	N	Y	N	N	Y	N	N	Y	N	N	Y
Constant	0.816***	0.759***	0.836***	0.897***	0.718***	0.559***	0.834***	0.918***	1.136***	0.894***	0.960***	0.960***
	(0.016)	(0.101)	(0.126)	(0.011)	(0.104)	(0.164)	(0.015)	(0.135)	(0.142)	(0.012)	(0.096)	(0.096)
Observations	1776	1570	1570	1556	1466	1466	1934	1798	1798	1830	1728	1728
R^2	0.002	0.073	0.074	0	0.068	0.07	0	0.053	0.057	0	0.035	0.035
Dependent variable:	Same job retention (occupation definition)											
TERS receipt (t-1)	0.162***	0.182***	0.181***	-0.031	-0.007	-0.007	-0.013	-0.039	-0.044	-0.144	-0.132	-0.138*
	(0.051)	(0.044)	(0.044)	(0.063)	(0.062)	(0.061)	(0.065)	(0.061)	(0.061)	(0.090)	(0.083)	(0.083)
Controls?	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
Propensity score?	N	N	Y	N	N	Y	N	N	Y	N	N	Y
Constant	0.475***	0.091	0.038	0.578***	0.326**	-0.134	0.548***	0.467***	0.765***	0.643***	0.764***	0.763***
	(0.022)	(0.170)	(0.216)	(0.020)	(0.155)	(0.257)	(0.023)	(0.142)	(0.197)	(0.018)	(0.144)	(0.143)
Observations	1775	1570	1570	1556	1466	1466	1934	1798	1798	1830	1728	1728
R^2	0.013	0.097	0.097	0.000	0.045	0.050	0.000	0.077	0.080	0.004	0.043	0.050
Dependent variable:	Same job retention (occupation + industry definition)											
TERS receipt (t-1)				-0.085	-0.047	-0.047	-0.071	-0.091	-0.093	-0.111	-0.096	-0.102
				(0.059)	(0.056)	(0.056)	(0.071)	(0.069)	(0.069)	(0.090)	(0.084)	(0.084)
Controls?				N	Y	Y	N	Y	Y	N	Y	Y
Propensity score?				N	N	Y	N	N	Y	N	N	Y
Constant				0.461***	0.404**	-0.028	0.461***	0.428***	0.586***	0.554***	0.498***	0.497***

Dependent variable:	Employment retention								
Period t:	June 2020	October 2020		January 2021			March 2021		
	(0.022)	(0.171)	(0.254)	(0.021)	(0.151)	(0.197)	(0.018)	(0.144)	(0.142)
Observations	1556	1466	1466	1934	1798	1798	1830	1728	1728
R^2	0.003	0.091	0.096	0.002	0.077	0.078	0.002	0.046	0.051

Authors' own calculations. Source: NIDS-CRAM Waves 1 to 5.

Notes: [1] Estimates weighted using sampling weights after accounting for complex survey design. [2] Robust standard errors presented in parentheses. [3] Significance levels as follows: * p<0.1, ** p<0.05, *** p<0.01. [4] Employment retention is a binary variable equal to one for individuals employed in period t-1 and t and zero for individuals employed in t-1 but not t. Same job retention (occupation definition) is a binary variable equal to one for individuals employed in period t-1 and t and are also employed in the same main occupation in both periods, and zero for all other individuals (job-losers as well as those who remain employed but not in the same main occupation). Same job retention (occupation and industry definition) additionally requires individuals to be in the same main industry. [5] Control variables are as follows: age, sex, racial population group, geographic area, province, highest level of education, and sector and skill level as per main industry and occupation of current or past job. [6] Propensity scores = the probability of being a TERS recipient, estimated using a logit model.

These results speak to the role of the TERS in providing assistance to firms that may have been limited in their operational scope through the 'hard lockdown'. It is particularly interesting to juxtapose the same-job retention finding against the insignificance of the TERS policy in assisting with general employment retention over the same period. If TERS recipients were significantly more likely to remain in the same job between April and June 2020, while they were no more likely to remain employed, this could speak to a flurry of non-recipient hires in the post-hard lockdown period.[25] In order to analyse the extent to which rehiring of workers in June 2020 could impact our estimate of interest, we recode those workers who remained employed but who changed occupation or industry to be missing in our job-retention variable. The results from this model are reported in Table A1. In this new model, which compares those who remained employed in their same job (along occupational lines) to those who transitioned out of employment, we find that the magnitude of the association between TERS receipt and job retention is substantially smaller. Now, TERS receipt in April 2020 is only associated with an 8.5 percentage point increase in the probability of a worker retaining their job in June 2020. This estimate is still statistically significant at the 5% level, however, and still speaks to the fact that the TERS programme may have been successful in helping workers retain their jobs during the 'hard lockdown' period.

5. Discussion and conclusion

South Africa's Temporary Employer-Employee Relief Scheme (TERS), introduced in April 2020, served as a core component of the government's economic policy response to the COVID-19 pandemic. As a wage subsidy-based job retention scheme, the policy's primary aim is the mitigation of job losses and has so far benefitted millions of workers since its inception. In this paper, we have sought to provide a quantitative, descriptive analysis of TERS receipt over the lockdown period using representative, longitudinal data, as well as a multivariate analysis of the relationship between TERS receipt and job retention.

We find that the TERS reached over 4 million workers at least once between April 2020 and March 2021, with receipt being highest during the most stringent lockdown levels – benefitting 1 in every 7 workers. We document significant heterogeneity in receipt; notably, workers who are either male, African/Black, reside in urban areas, semi-skilled, work in the tertiary sector, or have a written contract were most likely to report receipt. Encouragingly, receipt among several vulnerable workers increased over time – particularly lower-wage and less-skilled workers. An overwhelming majority of recipients (81% - 94%) were unable to work from home at all, suggesting that the policy was relatively successful

[25] Recall that Wave 2 outcomes for the NIDS-CRAM are reported for June 2020, which was after the South African economy had begun a staggered reopening by moving to lockdown level 3 on 1 June 2020. As a result, a number of individuals that had lost their jobs during the 'hard lockdown' could have found themselves rehired into new positions by the time they were surveyed in Wave 2.

in supporting establishments that were struggling to continue operations during the lockdown. We estimate the average monthly TERS benefit to be just above R4 000 – equivalent to the most recent median wage estimate – and show that benefits are higher in relative terms for lower-wage workers but higher in absolute terms for higher-wage workers.

By making use of multivariate regressions accompanied by a propensity score matching technique to account for observable differences between recipients and non-recipients, we find statistically significant evidence of a positive relationship between TERS receipt and job retention. Specifically, TERS receipt in April 2020 is associated with an 18.1 percentage point increase in the probability of remaining employed in the same job in June 2020. However, we find no such evidence for the remainder of the period, or for employment retention in general. A similar result, although more modest, is obtained when we account for workers who remained employed but changed jobs. Although not causal, our results suggest that the TERS may have indeed succeeded in its aim of minimizing job losses. However, these effects may have been limited to the most stringent period of the lockdown, and prior to the notable changes in the policy's eligibility criteria.

The TERS provided an important source of income relief for many vulnerable firms and workers in South Africa and our results suggest it may have indeed contributed to minimizing job loss during the pandemic. However, the policy's administrative inefficiencies pose a threat to its efficacy. Going forward, although support ought to be prioritised for sectors whose activity remains legally restricted, policymakers ought to consider how the administrative burden of targeting devices to identify the eligible, such as the use of industry codes – which may be outdated or missing – coupled with discrepancies between claim and payment periods may jeopardize the welfare of vulnerable workers by denying or delaying their support, ultimately threatening the recovery of the labour market in general.

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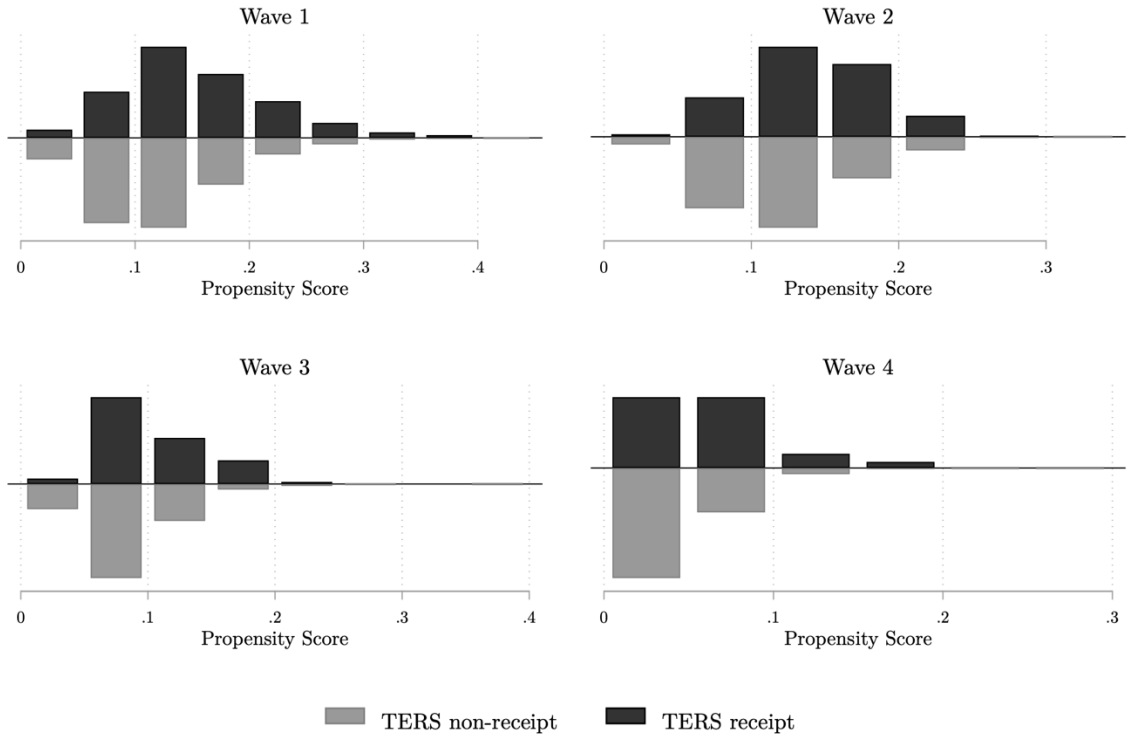
Appendix

Figure A1: Propensity score histograms by TERS receipt status and wave



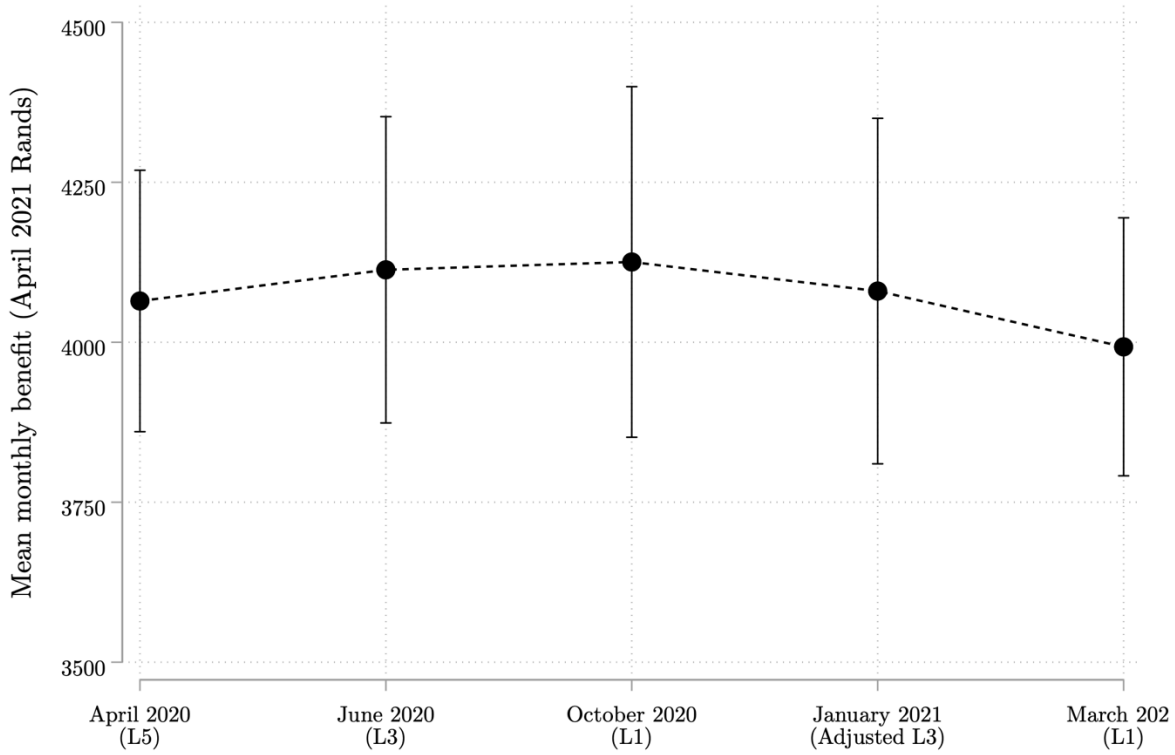
Authors' own calculations. Source: NIDS-CRAM Waves 1 to 4.
Notes: [1] Propensity scores = the probability of being a TERS recipient estimated using a logit model.

Note on TERS benefit estimates

As discussed in Section 4.1, we estimate rough magnitudes of TERS benefits by making use of pre-pandemic (February 2020) wage data in the survey and the UIF's TERS benefit formula. We note that our estimates could be biased to some extent for several reasons. Here we include a brief discussion on these reasons. First, we are only able to produce estimates for individuals who (i) were at least in Wave 1 of the panel so that February 2020 wage data could be used and (ii) reported both TERS receipt and February 2020 wage data. Second, it is possible that recall bias owing to reporting February 2020 wages at the time of the Wave 1 survey in May/June 2020 may exist, which could result in a degree of measurement error in our TERS benefit estimates. Third, wages in February 2020 may not be equivalent to wages declared in TERS applications. This wage discrepancy is specifically of concern due to the high levels of job churn that have been reported in the South African labour market during the pandemic, as well as due to the high likelihood of individuals taking pay cuts during the pandemic in order to avoid

large-scale company lay-offs.[26] We adjust our wave-specific estimates accordingly by re-weighting observations to address the use of February 2020 wages using an alternative bracket weight equal to the product of the wave-specific sampling weight and the probability of reporting an actual Rand response in February 2020 (as opposed to the wave-specific period). Lastly, it should also be noted that our estimates here are estimates of TERS benefits paid to workers, not the overall salary eventually paid to workers (which may include TERS benefits as employers were permitted to top-up the benefits provided to workers).

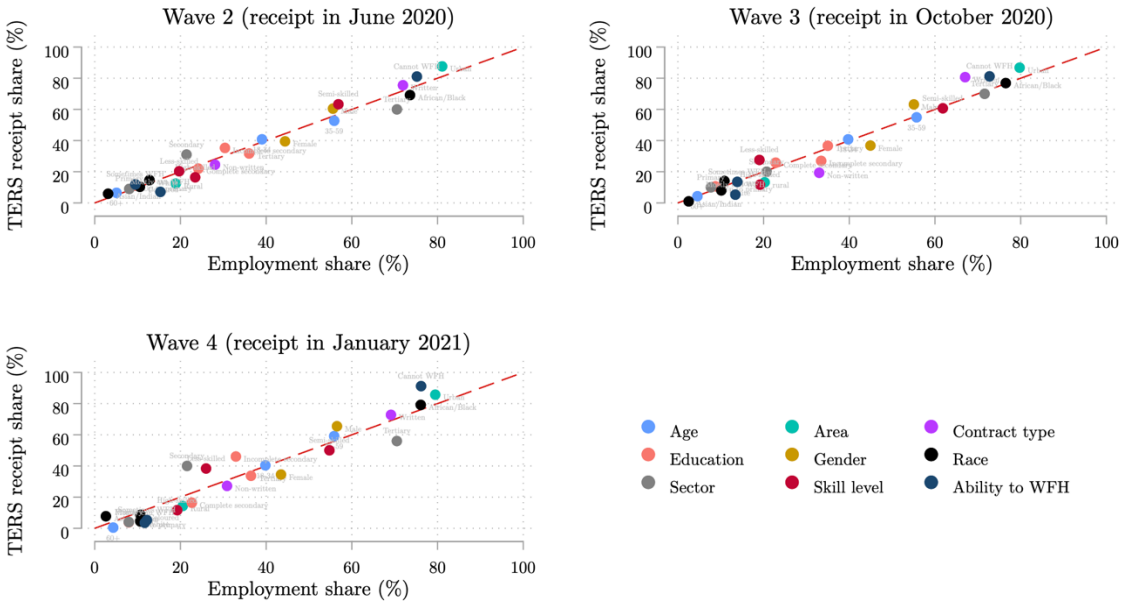
Figure A2: Mean real monthly TERS benefit amounts, April 2020 – March 2021



Authors' own calculations. Source: NIDS-CRAM Waves 1 to 5.
Notes: [1] Estimates weighted using bracket weights after accounting for complex survey design. [2] Benefits estimated by calculating the product of a recipient's pre-pandemic (February 2020) daily wage and their relevant Income Replacement Rate (IRR), accounting for an upper monthly wage limit of R17 712, a minimum and maximum monthly benefit of R3 500 and R6 730.56, and a minimum and maximum IRR of 38% and 60%. [3] Estimates expressed in April 2021 Rands and in monthly terms. [4] Variance scaled to handle strata with a single sampling unit due to small sample. [5] Capped spikes represent 95% confidence intervals.

[26] In an online survey of 2 688 individuals during April/May 2020, Statistics South Africa reports that approximately 21.3% of the sample reported decreased wages as a result of the pandemic. Although this study was not nationally representative, it serves to illustrate how businesses and institutions may have reacted to the pandemic.

Figure A3: Scatterplots of TERS receipt shares and employment shares, by group and wave



Authors' own calculations. Source: NIDS-CRAM Waves 2 to 4.
Note: [1] Estimates weighted using sampling weights after accounting for complex survey design. Variances have been scaled to account for strata with single observations. [2] Working from home data only available from Wave 2 onwards. Relevant question phrased as: "Are you able to work from home? If yes, some or most of the time?" [3] Skill level defined according to 1-digit occupation codes as follows: Managers and professionals classified as high-skilled; technicians, clerical staff, service and sales workers, skilled agricultural workers, craft and machine operators, and plant and machine operators classified as semi-skilled; and elementary occupations classified as less-skilled. [4] Sector defined according to 1-digit industry codes as follows: Agriculture, hunting, fishing, mining and quarrying classified as primary; manufacturing, electricity and gas and construction classified as secondary; remainder classified as tertiary.

Table A1: Linear probability model estimates of the relationship between TERS receipt and job retention, excluding job-movers

Dependent variable:	Same job retention (occupation definition)											
Period t:	June 2020			October 2020			January 2021			March 2021		
TERS receipt, t-1	0.101**	0.082**	0.085**	-0.019	-0.020	-0.020	-0.046	-0.057	-0.061	-0.042	-0.023	-0.025
	(0.051)	(0.040)	(0.039)	(0.061)	(0.048)	(0.047)	(0.086)	(0.081)	(0.077)	(0.086)	(0.086)	(0.085)
Controls?	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
Propensity score?	N	N	Y	N	N	Y	N	N	Y	N	N	Y
Constant	0.721***	0.514***	0.612***	0.817***	0.597***	0.357	0.735***	0.722***	1.104***	0.839***	0.869***	0.871***
	(0.022)	(0.154)	(0.174)	(0.019)	(0.145)	(0.255)	(0.023)	(0.178)	(0.165)	(0.017)	(0.138)	(0.138)
Observations	1 243	1 092	1 092	893	858	858	1 225	1 152	1 152	1 208	1 154	1 154
R^2	0.007	0.128	0.129	0.000	0.148	0.151	0.001	0.091	0.110	0.001	0.052	0.053

Authors' own calculations. Source: NIDS-CRAM Waves 1 to 5.

Notes: [1] Estimates weighted using sampling weights after accounting for complex survey design. [2] Robust standard errors presented in parentheses. [3] Significance levels as follows: * p<0.1, ** p<0.05, *** p<0.01. [4] Employment retention is a binary variable equal to one for individuals employed in period t-1 and t and zero for individuals employed in t-1 but not t. Same job retention (occupation definition) is a binary variable equal to one for individuals employed in period t-1 and t and are also employed in the same main occupation in both periods, and zero for all other individuals (job-losers as well as those who remain employed but not in the same main occupation). Same job retention (occupation and industry definition) additionally requires individuals to be in the same main industry. [5] Control variables are as follows: age, sex, racial population group, geographic area, province, highest level of education, and sector and skill level as per main industry and occupation of current or past job. [6] Propensity scores = the probability of being a TERS recipient, estimated using a logit model.

Development Policy Research Unit
University of Cape Town
Private Bag, Rondebosch 7701
Cape Town, South Africa
Tel: +27 21 650 5701
www.dpru.uct.ac.za