THE NEWLY UNEMPLOYED AND THE UIF TAKE-UP RATE IN THE SOUTH AFRICAN LABOUR MARKET

HAROON BHORAT
DAVID TSENG

DPRU WORKING PAPER 12/147
JULY 2012

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HAROON BHORAT

Development Policy Research Unit

haroon.bhorat@uct.ac.za

DAVID TSENG

Development Policy Research Unit

david.tseng@uct.ac.za

Working Paper 12/147

ISBN 978-1-920055-88-2

July 2012

ABSTRACT

This paper investigates the take-up rate or claim-waiting rate of the unemployed under the South African Unemployment Insurance Fund (UIF) system. The goal is to identify disincentive effects that income replacement rates (IRR) and accumulated credits may have on the claimant's behaviour in terms of their claim waiting period rate (or how quickly they apply for UIF benefits). Utilizing nonparametric and semi-parametric estimation techniques, we find that there is little evidence, if any, for job disincentives or moral hazard problems. More specifically, the majority of claimants that are quickest to claim the UIF benefits are those who have worked continuously for at least four years and accumulated the maximum allowable amount of credits.

We also note that claimants' claim-waiting periods are indifferent with regard to levels of income replacements yet extremely sensitive to the amount of credits accumulated. Ultimately, the recipients of the UIF benefits do not depend heavily on the replacement incomes and prefer waiting longer for employment opportunities to arise as opposed to exhausting their accumulated credits. The semi-parametric Cox's Proportional Hazard (PH) model confirms that there is a positive relationship between the claimant's accumulation of credits and the associated take-up rate of the UIF.

JEL Codes: J01; J08; J18; J64; J65

Keywords: Cox proportional hazards model, Claim-waiting period, Unemployment Insurance Fund (UIF), Income Replacement Rates (IRR), Semi-parametric models, unemployment benefits, Survival Analysis, claiming incentives, moral hazard.

Acknowledgements

The research, from which this paper emanates, was commissioned by the Africa Growth Initiative (AGI), at the Brookings Institution.

CONTENTS

1. INTRODUCTION

Unemployment Insurance (UI) is a financial compensation mechanism, offering qualified workers a subsistent income replacement in case of income loss due to unemployment shocks, and is prevalent in many countries around the world. It forms part of the wider spectrum of welfare policies, and operates by pooling the unemployment risk of employees. UI helps to smooth the consumption patterns of recipients and their dependents if they become unemployed. More importantly, the UI system's goal is to improve the transition process of employees from unemployment to employment.

Although UI programs are aimed at empowering employees to search for new jobs and provides them with protection against consumption shocks in case of job losses, the system imposes costs as well. By raising the reservation wages of unemployed, the UI system introduces the potential loss of worker's willingness to work and increases wage pressures for the employers. Solutions to solve these disincentive effects involve up scaling monitoring and disciplining efforts, as well as imposing more stringent requirements in order to qualify for benefits. However, solutions such as benefit sanctions and work criteria put even more cost pressures on both employees and employers. On occasion, positive measures to promote job-search and skills development like retraining and up-skilling programs for the unemployed have also been tried, thus attempting to prevent the possibility of moral hazard problems from occurring (Vodopivec 2004).

In trying to determine the extent of moral hazard problems in the behavioural context, traditionally, researchers would focus on the duration of unemployment spells and the subsequent employment destinations after the spells. This paper, however, adopts a new approach, in that instead of examining the duration of claiming the UI benefits, it focuses on what we term, the claim-waiting period[1] hazard rate or take-up rate[2]. More specifically, the paper considers the take-up rate of the unemployed, or the time taken for the unemployed who are eligible for UIF benefits to claim these benefits. Put differently, the paper attempts to describe and understand the determinants of the waiting period of people who are just out of work, prior to their formal application for unemployment benefits. This waiting period is the first critical stage of individual's post-employment decisions as they choose whether to re-enter the job market or to stay on insurance benefits. It contains the important information about the behaviour of the recently unemployed. By analysing the length of this period, we shed light on the extent of the moral hazard problem through outcomes such as sporadic employment episodes, low number of accumulated credits and so on.

Since this paper is the first known attempt in South Africa tackling the behaviour of the unemployed with regard to UI, Section 2 provides a detailed literature and empirical review of the UI's influence on the unemployed. In Section 3, we narrow the focus on the local Unemployment Insurance Fund (UIF) system and the new-claimants data, which forms the backbone of this study. Sections 4 and 5 present detailed, descriptive, and econometric overviews of the take-up rate of the claimants. Section 6 concludes.

2. LITERATURE OVERVIEW

The most common argument against the establishment of unemployment insurance is the resource constraint argument. It argues that insurance benefits will raise the post-unemployment reservation wage (Burgess & Kingston, (1976), Hoelen (1977), and Barron & Mellow (1979)), thereby prolonging the duration of unemployment and deepening the level of structural unemployment in the economy. It has also alternatively argued however that unemployment insurance has a positive impact on the decisions of the unemployed. For example, unemployment benefits could improve the transition process by shifting and smoothening the budget constraint of the individual, giving that agent more time and resources to look for better future employment opportunities. In turn, workers who are eligible for unemployment insurance in the event of unemployment have a stronger bargaining position, thus facilitating a more successful and optimal job-matching process.

[1] The claim-waiting period is defined as the time taken by workers who are out of job to apply for unemployment insurance at the labour centres.

[2] The terms 'take-up' rate and 'claim-waiting period hazard rate' shall be used interchangeably throughout the paper, as both terms essentially are referring to the same transition period of the unemployed applying to claim UIF benefits (see Section 4 for detail).

Unfortunately, evidence to support the benefits of unemployment insurance is weak, and dependent on individual countries' labour markets and unemployment insurance policies. The literature identifies the moral hazard problem (through substitution) as the most important negative impact of the UI system. It potentially depresses job search intensity, has an impact on the quality of labour inputs, and may result in loss of human capital or skills. The moral hazard problem may also cause rising wage pressures for employers and an increase in voluntary unemployment (see Classen (1977), Blau & Robins (1986), Kiefer & Neumann (1985), and Addison & Blackburn (2000)). Policy-makers are thus challenged with creating an unemployment insurance system that best handles the financial constraints and moral hazard implications of the UI system, in a bid to settle on a system which improves worker's welfare.

Mortenson (1977) was the first to seriously model the impact of an unemployment insurance program on job-search and other outcomes of unemployment. By utilizing the dynamic search model technique, Mortenson acknowledges that UI's impact on the labour supply is theoretically ambiguous due to a wide spectrum of parameters in UI schemes, which determine the individual's eligibility and consequently, the person's response to the scheme. This includes variations in replacement ratios, tax exemptions and the relative costs of unemployment on both the workers as well as their employers (Feldsten (1978) and Topel (1983)). In 1997, Hopenhayn & Nicolini designed an optimal unemployment insurance system by solving a repeated principal agent problem, involving risk-averse agents and a risk-neutral principal. They found that if principals have limited foresight on the agents' search efforts, then the optimal long-term contract must consist of a replacement ratio, which decreases over the period of unemployment. This is to ensure positive job-search incentives for employees.

Hasen & Imrohoroglu (1992) and Acemoglu & Shimer (1998), by incorporating the element of risk-aversion into the tractable general equilibrium model of job search, show that an increase in employees' risk-aversion reduces wages, unemployment and investment. Despite this, they also note that UI has a reverse effect generated by the moral hazard, as the insured workers become more risk-loving and susceptible to higher unemployment risks due to seeking high-wage jobs. Hence, given a market with risk-adverse participants, a moderate UI benefit program can not only reduce uncertainty of the claimants through risk sharing but also increase aggregate output. Holmlund (1997) investigates the nature of this market imperfection relative to the appropriate design of UI policies. He finds that if workers can self-insure through saving and borrowing, the case then for a (generous) public UI is not worth considering. Engen & Gruber (1995) find that when households are faced with higher levels of uncertainty in terms of income, they will begin to hold more assets than otherwise.

Empirically, the evidence for either a resource or substitution effect is mixed: Ehrenberg & Oaxaca (1976) with much specification difficulty find no significant unemployment spell duration impacts in their analysis of National Longitudinal Sample (NLS) in the United States. Moff & Nicholson in 1982, successfully found a significant, positive correlation between the length of the unemployment spell and the amount of UI benefits by using a job search model, and conceded that measurement error and specification problems are significant in altering the results of this analysis. Cross-country regressions, like those of Layard, Nickell and Jackman (1991), also found that amount of benefits has a strong, positive effect on long-term averages of national unemployment rates. In their treatment of different benefit breakdowns, they also found that the level of spending relative to GDP does not reflect the true picture of the benefit received by the individual recipient. Put differently, depending on an individual country's population size, one may have a high-spending ratio but not a generous social security program - alluding to the fact that the true impact of any UI system depends on the climate of the labour market as well as the design of the UI program.

Concerning the income smoothening effect of UI systems, Gruber (1994) in a panel study finds a small but significant role for UI in consumption smoothing during periods of joblessness. He found that the poor in general are less capable of smoothening transitory income shocks relative to permanent income, as they have extremely low and limited savings. As a result, they exhibit excess sensitivity of consumption to cash-in-hand. Gruber then studied the individual behaviour during the weeks before benefits lapse and found that the probability of leaving unemployment rises dramatically just before the expiration of the benefits. In other words, employees are more sensitive to claiming rights than to benefit amounts. In the difference-in-difference study of the same year, he found that when employees' rights of claiming the UI are extended, the probability of an unemployment spell ending

becomes substantially higher. This suggests that overly generous UI systems could have a serious moral hazard cost attached to them, in subsidizing unproductive leisure and creating job disincentives. Chetty (2008) confirms this finding in a later study.

In developing countries, Cunningham (1997) examines the impact of Brazil's new unemployment insurance program on job transitions. The results suggest that the probability of workers remaining in the formal sector does not significantly increase with their eligibility for benefits. Using the Danish micro data, Lentz (2007) successfully developed a U-shaped relationship between unemployment duration and the income level of the worker and proved that the curvature of the utility of an individual's consumption functions (i.e. risk-aversion) is crucial in determining which effect dominates the outcome. Van Ours & Vodopivec (2006) in a difference-in-difference investigation; find that shortening the duration of benefits does not affect the quality of post-unemployment jobs under the Slovenian Insurance Scheme. Nor were there any changes in wage levels before or after the system reform. Krueger & Mueller (2009) note that workers who expect to be recalled by their former employers have considerably less incentive to search for a job than the average unemployed workers do. They also find that job search is inversely related to the level of generosity prescribed in terms of the unemployment benefits.

3. A BRIEF OVERVIEW OF THE UNEMPLOYMENT INSURANCE SYSTEM IN SOUTH AFRICA

The Unemployment Insurance Fund (UIF) is an integral part of the South African welfare system, and is designed to serve as a safety net for workers in the formal, non-institutional sectors in South Africa. South Africa has one of the highest unemployment rates in the world, standing at roughly 23%, thereby strengthening the case for implementing an unemployment insurance system in South Africa. According to the Unemployment Insurance Act of 2002, all qualified employers and employees are required to contribute on a monthly basis to the risk-sharing fund[3]. In exchange, the contributor or the dependent (in case of a contributor's death) earns a weekly credit, which entitles them to claim unemployment insurance benefits. In addition, the reason for claiming the UIF must be involuntary, and may include illness, maternity and so on. Voluntary unemployment due to resignation and disciplinary dismissals disqualify employees from claiming UIF benefits.

When compared to other unemployment insurance systems around the world, the UIF system in South Africa is arguably fairly stringent and does not provide generous benefits. Firstly, the system provides benefits exclusively to workers who have worked for no less than 24 hours per month. The credit system of the benefits is determined by the time worked by employees – employees receive one credit (day) for every six days on the job, and the accumulated credits may not exceed 238 days. Put differently, an employee who has been continuously working for more than four years is still limited to roughly only one-year's amount of credits for replacement benefits. Secondly, the 'raw' income replacement rate (IRR) is low compared to international standards[4]. It ranges from 38-60% in a convex fashion, and is inversely related to the contributor's income level. Furthermore, the benefit level is invariant to the duration of the unemployment spell.

Due to the stringent requirements and restrictions of the UIF system, it has ensured that it is purely contributor-funded and has adequate cash reserves. Hence, as a welfare system, the UIF system is unique in comparison to other social welfare systems in South Africa in that it operates without any government subsidies (National Treasury, Budget Review 2011). In the latest fiscal year ending 31st March 2010, the fund paid out R4 536 million in benefits with 628 595 approved claims. At the end of March 2010, there were about 4.2 million unemployed individuals in South Africa (QLFS 2010 1st Quarter, StatSA), meaning that in the financial year ending March 2010, less than 15% of the unemployed received unemployment benefits. Some may argue that this is the result of factors such as a large informal sector, and the lack of administrative capacity on part of the UIF, as in most developing countries. However, unlike other developing nations, South Africa has a small informal sector, and in addition, the UIF was able to approve nearly 97% (779 604 out of 801 110) of all new claims in the latest financial year. Hence, the observed low number of claim-applicants is readily attributed to the fact that the majority of the unemployed are workers who have either a long history of

[3] See Chapter 1: Section III of the Unemployment Insurance Act, Application of the Act for details of the qualified applicants.
[4] IRR in Slovenia is 80% and 65% in Czech Republic etc. These raw rates exclude any specific conditions of the claiming period.

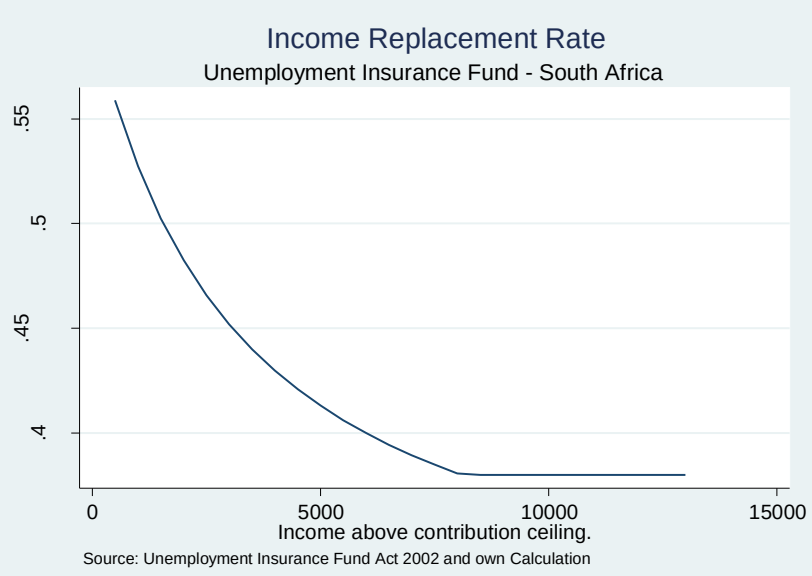
unemployment (with exhausted credits) or no prior employment history (and therefore accumulated credits) at all.

Progressivity in the Income Replacement Rates

As noted above, the manner in which the UIF determines income replacement rates is rather unique compared to unemployment insurance systems in other economies around the world. In countries such as Slovenia and Chile, income replacement rates are generally designed so that they are variant to the duration of unemployment, but proportional to income (Vodopivec (2008)). These income replacement systems are thus intentionally designed to promote incentives for workers to return to productive employment, as well as to prevent workers from becoming reliant on the insurance benefits, thus hindering job search. The IRR in the South African case however is determined in the opposite manner: It is progressive in income and invariant to the duration of unemployment spell. In addition, while the claim period in many countries is set to a specific period, in South Africa the claim period is determined by the number of credit-days earned through prior employment states.

Figure 1 below clearly shows the inverse relationship between the IRR and income in South Africa, thus ensuring that the replacement rates are progressive in structure. Put differently, the IRRs for those with higher incomes are lower than for those with lower incomes. Unemployed persons can claim at the calculated IRR rate for up to a maximum of 238 credits, depending on the number of days worked and thus the number of credits they have accumulated. For example, an employee who has continuously worked for more than 4 years, earning about R10 000 per month will be eligible for 38% constant replacement rate for as long as 14 months. In other words, a claimant will earn the same benefit for the period of eligibility, with the only limiting factor being the time period the claimant can claim for, and this is dependent on the number of credits accumulated by time worked prior to unemployment.

Figure 1: UIF Income Replacement Rate by Deductible Incomes



In contrast, unemployed individuals in many developing countries can claim income replacement benefits for a pre-determined period of time (regardless of employment histories) at a much higher income replacement rate. In these countries, after some time, the IRR drops in various degrees to create incentives for the unemployed to search for a job quickly. The UIF system in South Africa thus, in its calculation of the IRR, seems to be devoid of efforts to create incentives for workers to search for work, through for example, instead offering a lower IRR as the number of days of receiving benefits progresses.

These distinctions between South Africa and other countries' unemployment insurance systems are fundamental in understanding the true impact UI has on the behaviour of the unemployed as they transit unemployment to other employment destinations. For one, it is clear that UI has no apparent incentive to induce workers to engage in greater search behaviour during the period of

unemployment. Secondly, the UIF's IRR is aggressively progressive with regard to income, so ensuring that the system provides (relatively) more support to more vulnerable workers.

4. A DESCRIPTIVE OVERVIEW OF NEW CLAIMANTS

Data Description and Methodological Approach

The dataset used in this paper is the first of its kind made available in South Africa. It includes information on all new claimants between April and August 2009. During this period, there were a total of 348 311 new UIF claims, 80% (or 275 586) of which were related to unemployment specific benefits due to the onset of the financial crisis. We dwell mainly on the 275 586 unemployment-related insurance claims for the remainder of the analysis. Whilst there can be no doubt that this data period is very short, we would argue that the data and the subsequent analysis remains immensely useful for three reasons. Firstly, this is the first study, since 1994, on the raw micro-data of the UIF for South Africa and as such even a basic overview of claimants is useful. Secondly, there is no reason to believe that a longer time series would necessarily negate or devalue the results found here. Finally, we would argue that data and analysis on the IRR, claimants' characteristics and of course the claim-waiting period - is immensely useful in and of itself.

For new UI claimants, the dataset contains personal information, as well as two crucial date variables that form the core of the claim waiting period analysis in this section. These variables are the termination date of employment and the application date for UIF benefits: The termination date variable records the date on which claimants were terminated from employment (u_{it}), While the application date variable notes the date on which a claimant applied to claim UIF benefits (ub_{it}) for instance, at a government Labour Centre. Essentially, one could think of these dates as points where individuals transit from one state to the next: The termination date indicates the point at which an individual transits from state of employment to unemployment (without UIF benefits). The application date is the point at which the unemployed individual transits from the state of being unemployed without UIF benefits to the state of finally applying for the benefits. We define this period – the time between the termination date and the application date – as the claim-waiting period (τ_i), measured in units of days where:

$$\tau_i = (ub_t - u_t)_i$$

Using this claim-waiting period τ_i as our variable of interest, we are able to analyse the behaviour of the recently unemployed. Essentially, we are looking at how employees respond to the period during which they do not receive benefits while unemployed. If we rank the claim-waiting period τ_i by time and take the proportions, we can determine the take-up rate or the claim-waiting rate of unemployment insurance over the period λ_i. The data from the UIF, which we illustrate below, will indicate heterogeneity in claim waiting periods amongst those individuals who lose their jobs, and are registered with the UIF. This heterogeneity, in one respect is reflective of differing observable and unobservable individual characteristics. In particular, we would expect for example on average, household wealth, skill levels relative to labour demand needs and savings - to vary positively with the claim-waiting period. Individuals who have savings, are better skilled or indeed have higher household wealth (inclusive of secondary wage earners within the household) – should be more likely to wait longer before registering their unemployment status with the UIF, in order to claim benefits. Hence, one can think of the claim-waiting rate, λ_i as being determined jointly by the following:

$$\lambda_i = f(X_i, H_i, E_i, S_i)$$

Where apart from individual characteristics X_i, take-up rates should vary positively with household wealth H_i, skills E_i and Savings S_i (so $\lambda' > 0 \; for \; \frac{d\lambda}{dH}; \frac{d\lambda}{dE}; \frac{d\lambda}{dS}$).

We note that according to the UIF Act, employees must make claims within six months after they have stopped working. We therefore, expect a convergence in the take-up rate of the UIF since all claimants are required to apply for UIF at or before six months. This convergence in the take-up rate of the UIF has a profound impact on our semi-parametric estimates of the covariates, which will be discussed in further detail in Section V where we survey the properties of non-parametric estimations

of the claim-waiting period λ_i. But regardless of the convergence, the claim-waiting rate is still $0 < \lambda_i < 1$ for all applicants.

New UI Claims by Individual Characteristics

Table 1 below presents a basic descriptive overview of new claims by gender and age group during the period April to August 2009. During this period a total of 275 586 new claims were made, with the average growth rate in new claims for the period standing at 34%. The results thus suggest that the recession in South Africa in 2009 may have had a significant impact on the number of people accessing unemployment insurance benefits between April and August 2009, given official[5] unemployment decreased by 6%in the year before (Quarterly Labour Force Survey (QLFS) 2008:Q2-3).

Males made almost double the number of new claims compared to females: almost 66% of the new claims made were by male claimants compared with 34% for females (a ratio of 2:1). Comparing this ratio to male:female employment ratios in the Quarterly Labour Force Survey (QLFS) 2009:Q1 (7:6) it is clear that new UI claimants were disproportionally male.

Considering the average growth rate of new claims, we find that growth in female claimants (42%) outstripped growth in male claimants (30%), in the period. Thus, while new claimants in the period were predominantly male, the growth in claims by females was higher than for males. Importantly though, the number of new male and female claimants rose significantly from 26 thousand and 13 thousand in April 2009 to 34 thousand and 19 thousand in August 2009. It is clear then that the recession had a significant impact on both the number of males and females accessing unemployment insurance in the period.

Table 1: Number of New Claimants by Gender and Age Cohort: April – August 2009

	April	May	Jun	Jul	Aug	Cumulative Total	% change Apr-Aug	% of total new claims
Gender								
Female	13 267	18 882	19 419	22 807	18 899	93 274	42.45	33.86
Male	26 450	37 327	38 422	45 686	34 427	182 312	30.16	66.14
Age Cohort								
15 to 24	3 752	5 189	5 274	6 471	5 388	26 074	43.60	9.47
25 to 34	14 229	19 858	20 104	24 492	18 804	97 487	32.15	35.39
35 to 44	10 294	14 679	15 214	17 757	13 860	71 804	34.64	26.05
45 to 54	6 561	9 818	10 259	11 658	9 331	47 627	42.22	17.25
55 to 65	4 881	6 665	6 990	8 115	5 943	32 594	21.76	11.84
Total	39 717	56 209	57 841	68 493	53 326	275 586	34.26	100.00

Source: Unemployment Insurance Fund 2009

By age, individuals between the age of 25 and 34 experienced the highest number of total new claims (97 487) followed by those aged 35 to 44 (71 804) and 45 to 54 (47 627). This result could suggest that younger workers (25 to 34) were more likely to lose their jobs during the economic downturn in 2009. Older workers with more experience are generally viewed as more productive than younger workers and are therefore less likely to be dismissed. These new-claim results by age-cohort are broadly consistent with QLFS data, which also shows a marked increase in youth unemployment rates during the recession, relative to older age cohorts (See QLFS 2009: Quarter 4).

[5] Narrow definition of unemployment.

Table 2: Number of New Claimants by Termination Reason: April – August 2009

Reason	April	May	Jun	Jul	Aug	Total	% change Apr-Aug	Share of total new claims
Bus. Close	1 075	1 550	2 069	2 471	1 776	8 941	65.21	3.20
Cont.expired	15 513	21 694	22 025	26 235	20 910	106 377	34.79	38.65
Dismissed	8 907	12 084	12 243	15 326	12 017	60 577	34.92	22.00
Insolvency	741	2 464	2 083	1 562	1 097	7 947	48.04	2.84
Retrenched	11 167	15 407	16 070	19 209	15 009	76 862	34.40	27.90
Other	2 312	3 009	3 346	3 690	2 517	14 874	8.87	5.41
Total	39 715	56 208	57 836	68 493	53 326	275 578	34.30	100.00

Source: Unemployment Insurance Fund 2009

Table 2 above shows that during the five month period between April and August 2009, of the 275 586 new claims that were specifically for unemployment benefits, 39 percent of these new unemployment-related claims (106 377) were due to expired contracts, followed by retrenchments at 27.89 percent (76 862 new claims) and dismissals at 21.98 percent (60 577 new claims).

Unsurprisingly then, during the height of the financial crisis, business closures and insolvencies as reasons for claiming unemployment benefits had one of the highest average growth rates in number of new claims, albeit from exceptionally low bases. From the above table, the evidence points to the fact that, in the main, the typical unemployment insurance claimant over this period under review was a young, male worker. In addition, the results show that of all new claimants in this period, 6.5 out of 10 had either been retrenched or their contract had ended.

5. CLAIM WAITING PERIODS AND THE UNEMPLOYED

Noting that we consider the claim-waiting period τ_i, to be measured as the difference in the period between when the jobs is lost u_{it} and the individual's arrival at the UIF office ub_{it}, we provide below an overview of some of the unemployed individual's characteristics and their variance across τ_i.

The Claim Waiting Period (τ_i) by Gender, Age and Replacement Rate

Every employee in the country who recently became unemployed and wants to claim UI benefits must go through the process of being assessed by a UIF claims officer, to ensure eligibility of the employee for receipt of insurance benefits. Voluntary resignation and dismissal due to disciplinary punishments disqualify employees from claiming UI. In this section, a shorter claim-waiting period should signal that the claimant is in need of immediate income relief in order to smooth their consumption schedules. This will however vary across individuals.

Table 3 below presents the average claim-waiting period by gender and age. The first striking feature is that male claimants in general have a shorter waiting period than females before they claim, and this is true across all age groups.

Table 3: Mean Claim-Waiting Period by Gender and Age Group

	Female		Male	
	Waiting period	Share of female new claims	Waiting period	Share of male new claims
15-24	43.2	17.70%	38	10.40%
25-34	59.3	31.40%	41.3	38.90%
35-44	27.5	22.90%	25.4	24.30%
45-54	36.8	9.30%	25.7	12.50%
55-65	27.2	18.70%	29.5	13.90%
Total	41.1	100.00%	33.6	100.00%

Source: Unemployment Insurance Fund 2009
Note: Waiting period measured in days

This is perhaps due to the fact that in many households males are the primary income earners, thus forcing them to apply for insurance benefits earlier in order to help them supplement their income and swiftly re-enter the labour market.

From the results above, one could say that the claimants take on average, just more than a month before claiming the UI benefits, which suggests that UI claimants in South Africa are on average able to supplement their lost income for only a month, while searching for jobs. Interestingly, the waiting period for claiming UI benefits seems to decline from young to older age groups: While claimants between the ages of 25 and 34 have the longest waiting period of around 60 days, seniors between the age of 55 and 65 have the shortest waiting periods (just 27 days for females and 30 days for males). A likely explanation for shorter waiting periods among the oldest age cohort is the fact that these individuals are most likely preparing for retirement, in which case there is no need to accumulate credits and engage in job search.

These results thus suggest that younger workers (between 15 and 34 years of age) may either be supplementing their income in some way, or may have other reasons for taking longer than older workers to claim UIF benefits. Indeed, it is possible, for instance, that younger workers may be more driven than older workers to find a job and may thus immediately attempt to re-enter the labour market rather than rely on their insurance credits. Whatever the reason for the time taken to apply for UIF benefits, these results do suggest that there is little sign of credible moral hazard problems in so far as younger age groups are concerned, since these workers take much longer than a month before becoming dependent on the UI system, to supplement their income once they have lost their jobs.

Table 4 below presents the proportion of new claimants as well as lengths of employees' claim waiting periods by income replacement (or benefit) amounts. The benefit amounts are disaggregated into quartiles while the accumulated credits are sorted into years for which employees worked. Almost 61% of claimants in the fourth quartile of benefits (high-income bracket of approximately more than R12 000 per month) have accumulated near maximum claiming-credits or have worked for more than four years. In contrast, claimants in the first quartile (lowest benefit amounts) have, for the most part, worked for short periods and are therefore claiming with few benefit credits. This result suggests, as expected, that high-income workers have longer employment episodes than low-income workers and therefore have more credits for claiming UI benefits.

In terms of the claim-waiting period τ_i, low-income earners (1st quartile benefit amount) with a long employment history (worked for more than four years) wait for 48 days – or more than double the length of waiting time of high-income earners (4th quartile benefit amounts) – with an equally long employment history. This then suggests that low-income earners (with associated low benefit amounts) are not incentivized to claim UI benefits more quickly than high-income earners, despite the fact that the IRR is progressive in income. Put differently, it appears then that the benefit amount of R739.77 per month could be simply too low to incentivize the more vulnerable amongst the recently unemployed to quickly apply for benefits[6].

For high-income earners on the other hand, the replacement amount of R3209.05 seems to incentivize the claimants, particularly those with longer work histories: Claimants with more than four years of work history prior to unemployment on average claim within just three weeks or 21 days, while workers with three to four years of work history claim within 27 days.

[6] Indeed, it could also mean that the high-income earners do not have sufficient additional wealth, which induces them to claim early.

Table 4: Claim Waiting Period by Replacement amount and Employment spell quartiles

Length of Employment spell	Benefit or Replacement Amounts per credit by Quartile								Normalised gap in waiting-period
	1st (R 739.77)		2nd (R 1094.76)		3rd (R 1649.46)		4th (R 3209.05)		
	Waiting period	%total new claims	Waiting period	%total new claims	Waiting period	%total new claims	Waiting period	%total new claims	
< 1 year	43	6.80%	37	9.30%	58	6.20%	42	2.30%	-0.02
1 - 2 years	33	6.90%	48	6.50%	40	2.80%	42	1.50%	0.21
2 – 3 years	28	3.10%	25	3.20%	27	3.60%	54	2.80%	0.48
3 – 4 years	23	2.40%	38	1.40%	40	5.90%	27	2.90%	0.15
> 4 years	48	6.30%	24	4.10%	33	6.80%	21	15.20%	-1.29

Source: Unemployment Insurance Fund 2009
Note: Waiting period measured in days.

Looking more closely at those with less than two years of work history across all the quartiles of benefit amounts shows that these individuals generally claim after more than five weeks since termination. Those in the third quartile with less than one year of work history, wait even longer (for an average of eight weeks) prior to claiming unemployment benefits. This suggests that the amount of credits accumulated is important in determining how long unemployed people wait prior to claiming UIF benefits. In turn, those with longer work histories (2 years or more), tend to apply for unemployment benefits more quickly. The exception to this is those with more than four years of work history in the lowest quartile of benefits. For this cohort, the benefit amount itself may be just too low to incentivize this cohort to apply more quickly.

In summary, the results suggest that the time taken to apply for benefits is dependent on both the amount of credits accumulated as well as the benefit amount. In particular, although IRRs are progressive in income, those in the lowest quartile of benefits do not apply for benefits more quickly – benefit amounts appear to be just too low for those in the lowest quartiles. On the other hand, high-income employees with high associated income replacement and short employment episodes are apparently incentivized to claim UIF benefits more quickly. Once high-income employees accumulate sufficient credits though, they resort to claiming UI in the shortest timeframe compared to any other groups.

The Claim Waiting Period and Unemployment History – A Non-Parametric Approach

The basic approach to nonparametric analysis is estimating the shape of the survival – or for the purpose of this paper, the claim-waiting rate – using the Kaplan-Meier survival estimate. Essentially, we are estimating the probabilistic function of remaining in a state of unemployment and not applying for the UI benefits at time t. It is worth noting that in the conventional Survival model, the claim-waiting function λ_i here is referred to as the survival function: $S(t) = 1- \int h(t)\partial t$, or if in discrete time: $S_t = \Pi(1-h_t)$ for all t from starting time until the time of transition.

However, the same logic can be applied to analyse the period between ub_t and u_t, except here the hazard rate (h_t) becomes the take-up rate (θ_t), and the Survival function (S_t) becomes the claim-waiting rate function λ_i. So basically, the conventional terminologies used for Survival analysis: the 'survival' and the 'hazard rate' functions on either employment or unemployment spells are substituted by the "claim-waiting rate" function and 'take-up rate' functions respectively, to reflect that it is the precisely the time taken by the recently unemployed to apply for UI benefits that we are interested in.

The estimates presented here are separated into male and female groups as well as by sub-groups. As mentioned earlier, due to the fact that the unemployed must claim benefits within six months of becoming unemployed to ensure that their entitlements to UI do not lapse, the survival rate for claimants will tend to converge at or before roughly 180 days. Figure A1 attached in the appendix shows that female claimants with a history of claiming UI benefits have a significantly lower rate of failure than females without. Male claimants, on the other hand, interestingly show the opposite result: Males with a history of claiming UI have a higher rate of failure than males without a history. The gap between the survival functions among females with and without a history is also noticeably wider than it is between the male claimants although males in general have a higher rate of failure than females.

The distinctive difference between the gaps suggests that claimants by gender have decidedly different claiming-rates given prior history of claiming from the UIF. We speculate once again that this may be due to males' responsibilities as primary income earners in traditional households. However, with limited information on claimants' household dependents and other household characteristics in the data, we cannot confirm this hypothesis.

In terms of results by location of claimants, Figure A2 in the appendix shows the survival functions of claimants in metropolitan areas versus claimants in non-metropolitan areas. For both males and females, the survival functions for claimants in metropolitan and non-metropolitan areas are quite similar in (roughly) the one-month period following unemployment.

After a period of roughly one month however, claimants in non-metropolitan areas have a higher take-up rate than claimants in metropolitan areas. This may be due to the fact that claimants in non-metropolitan areas find it harder to supplement incomes compared to those in metropolitan areas. An alternative explanation may be that potential claimants in metropolitan areas feel that there is a greater likelihood of finding jobs compared to their counterparts in non-metropolitan or rural areas, with the result that they are less anxious to seek UI benefits. By gender, the survival functions show that the gap between claimants in urban and rural areas is wider for females than for males. The Log-rank test (attached in the appendix) suggests that there is a significant spatial difference between waiting periods for both males and females.

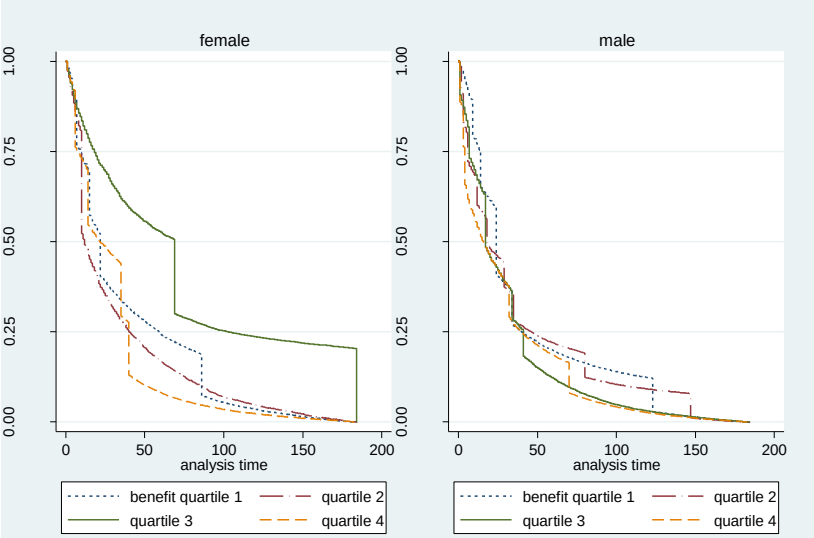
The Claim Waiting Period and Benefit Values

From the data analysis earlier, we identified two main hypothetical sources of incentives that may lead to moral hazard problems under the UI system. The first source of moral hazard is the benefit amount of the UI claim. The intuition is that excessively generous benefit amounts may incentivize claimants to become reliant on UIF benefits, and therefore render them less willing to find work. One would observe this moral hazard problem if the differences in survival rates across quartiles of benefit amounts are significant, and more specifically, if higher benefit amounts are associated with lower survival rates. This would then suggest that higher benefit amounts create disincentives for claimants in terms of how long they remain in unemployment. The second potential source of moral hazard is the number of days for which claimants can claim UI. In cases where claimants have a large number of credit days, claimants may be incentivized to remain in unemployment and exhaust their credits, where possible. In turn, those with few accumulated credits would perhaps have more sporadic employment episodes and lower claim-waiting rates. In summary, we are interested in analysing survival rates of claim-waiting periods keeping in mind incentive effects associated with benefit amounts and credit days. Indeed, the ideal design for the UI policy is to have as little influence as possible on people's claiming behaviour while providing a cushion to the unemployed so they can supplement incomes and search for employment. In terms of our analysis, we would therefore like to analyse claim-waiting rate functions by sub-groups, in particular, by income replacement amounts and accumulated credits.

Figure 3 below presents the survival functions by quartiles of replacement (or benefit) amounts. Firstly, it appears from the graph that for the male cohort there are no significant differences in the rates of failure of male claimants based on their benefit quartiles. More specifically, the survival functions for males by benefit quartiles are not distinctly separate and parallel to each other (particularly prior to roughly 35 days), thus suggesting that benefit amounts are relatively insignificant in determining the take-up rate of claimants applying for UI benefits.

Female claimants, on the other hand, have more differentiated survival functions with regard to benefit amounts. Interestingly though, female claimants in the lowest quartile of benefit amounts do not have the highest failure rate, suggesting that there is little indication of a moral hazard problem. Finally, as mentioned above, due to the six-month period for eligibility of claiming benefits post-employment, the survival functions converge at roughly 184 days.

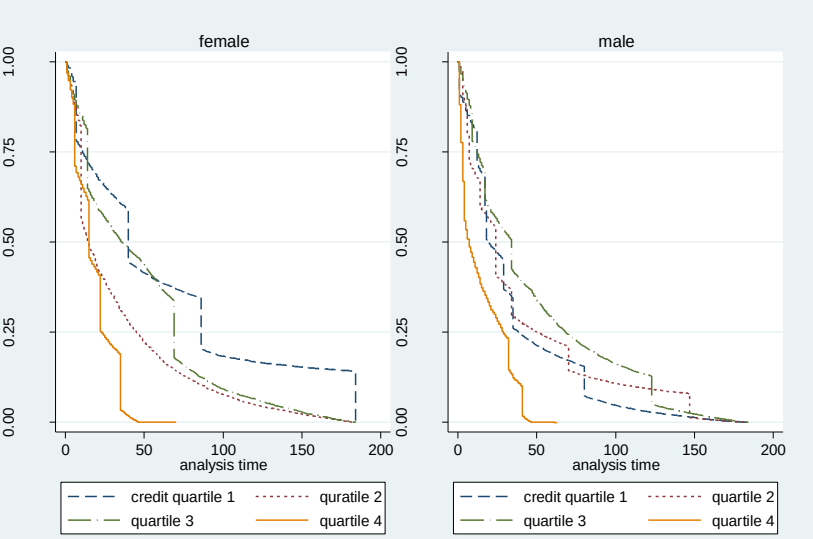
Figure 3: Claim-Waiting Period (λ_i) Estimates by Benefit Amount



Source: Unemployment Insurance Fund New Claimants April-August 2009

Figure 4 below presents survival estimates by accumulated credits. We expect that the group of claimants that are most likely and quickest to claim UIF benefits are those with the largest accumulated credit days. The data bears this out – both female and male claimants in the fourth quartile of accumulated credit days all claim within one month or two months at the maximum. Put differently, those who have been working for four years or more are quickest to claim UIF benefits.

Figure 4: Claim-waiting Period (λ_i) Estimates by Accumulated Credit



Source: Unemployment Insurance Fund New Claimants April-August 2009

In summary, there is therefore no evidence of moral hazard problems as far as benefits amounts are concerned, but those with larger 'stocks' of accumulated credit days claim UI much more quickly than those with very few accumulated days. This latter result then suggests that it is much more worthwhile for those who have become unemployed after a long employment spell to claim UI quickly rather than those with short employment spells. This result may, for instance, suggest that those with long employment spells may have larger and more long-term financial commitments and are therefore driven to seek a cushion to their unemployment more quickly.

Determinants of the Claim-Waiting Hazard rate (θ_i): A multivariate Analysis

The model we use to analyse the probability of claiming UI is the Cox's proportional hazard (PH) model. It is a maximum partial-likelihood model, which means that it specifies only a functional form for the influence of covariates but leaves the shape of the claim-waiting rate as unspecified as possible. In essence, Cox's regression model may be considered a nonparametric or semi-parametric method.

While few assumptions are required for the shape of the underlying hazard function, the model does require two properties. First, the Cox's model assumes a time-only based model and secondly, it predicts a multiplicative log-linear, functional relationship between the underlying hazard function and the covariates. These assumptions together are also referred to as the "proportionality assumption". Again, it must be noted that we measure here the summed proportion of the duration between U_i and Ub_i as a representative of the "escape rate", although this is of course not a standard approach in the unemployment insurance literature.

It assumes that the hazard rate is consistent throughout time with the given covariates. Put differently, it assumes that the gap between hazard functions is solely attributable to variations in the covariates. Indeed, the severity of violation of this assumption has a direct relationship with the biases of the parameter estimates. As discussed earlier during the overview of the data, there is a serious concern about the violation of this fundamental assumption, as the legislature requires that all claimants apply for a claim within six months before the entitlement lapses. As a result, regardless of covariate attributes, the survival functions will converge at or before the analysis time of 184 days (approximately 3 months). Hence, while there is no concern for right-censored data in the sample (due to the certain failure within six months), there is the violation of a key assumption of proportionality. This means that the parameter estimates will be free of censored data bias, but vulnerable to proportionality bias. The estimates will only be applicable within the analysis time of six months and statistically unreliable as well as legally meaningless after this period. Ultimately, the problem with this proportionality assumption is that the effects of the covariates are over-estimated and exaggerated over time.

Despite the violation of the proportionality assumption, semi-parametric Cox's proportional hazard model is still preferred to the normal, logistic regression for two key reasons. Firstly, logistic regression is only suitable under time-stationary conditions and we are interested in the magnitude and direction of the effects of observed covariates, controlling for time-dependence. Secondly, we have no clear idea about the functional shape of time-dependence; therefore, it seems logical to adopt a semi-parametric specification rather than a parametric one (Blossfeld et al. (2007)).

Econometric Approach and Results

The central question in our econometric estimation is to estimate the impact of relevant factors on the unemployed applying for UI benefit at different rates. In other words, what affects the probability of the event of applying for UIF benefits at time t (the claim waiting hazard rate $\theta(t|x)$ conditional on a system of covariates X and unobserved characteristics, u. Cox's proportional hazard model can fully be formally written as:

$$\theta(t|x) = \Omega(t)\exp((X, H, E, S)'B + u)$$

where X contains the system of covariates used to describe the survival function θ or the resultant hazard function, B is the vector of parameters associating the system of covariates and the probability of claiming function or the claim-waiting hazard function. Ω represents the baseline claim-waiting hazard rate function in terms of time. Put simply, Cox's Proportional Hazard model is assuming a time-only base model $\Omega(t)$ called the baseline hazard on which the function of covariates builds in order to estimate the hazard function of waiting $\theta(t|x)$. The baseline hazard is the rate for the respective individual to claim the UIF when all independent variable values are equal to zero. When all covariates are equal to zero, the hazard or the probability ratio provides the odds of an event occurring faster or slower given pure time. The standardized parameter coefficients of the covariates are a measure of the relative importance of the covariate to the take-up function, while controlling for time. In other words, it is measuring relative risk and not absolute risk.

To identify the behavioural patterns of individuals during post-employment, but prior to applying for UIF benefits, we set the event of "failure" in the study as the instant at which claimants arrive at the local labour centres and apply for UI benefits. In other words, our dependent variable is the probability of the unemployed resorting to claiming the UIF.

If the covariate's coefficient is negative, it means that the higher the covariate, the lower the probability of claiming (or the lower the take-up rate). In turn, a positive coefficient means that the greater the covariate, the greater the claiming probability (or higher the claim-waiting rate rate). Given the legally inferred six month maximum claim-waiting period, we model the hazard function for those six months when individuals have been unemployed and living without unemployment benefits, and when they eventually apply to claim UIF.

We may expect employees with high wages and, therefore, high benefit amounts, to have higher hazard rates than employees with low wages and therefore low benefit amounts. In the main, however, given our descriptive data above, we do not expect the benefit amount to exert a significant influence on a claimant in terms of seeking UI benefits. We anticipate claimants to accumulate claiming credits, as opposed to exhausting them. In other words, most claimants would rather work than be unemployed, suggesting that the UIF system is devoid of moral hazard problems.

Table 5 below presents the parametric results using Cox's proportional hazard model with time-dependent covariates. The time-dependent covariates are all significant suggesting that there is an unmistakable violation of the proportionality assumption required for duration analysis. Due to this violation, we will not reflect on the quantitative values of the coefficients as they are biased. However, we will interpret the signs for the variables that can help describe the claim-waiting hazard rate of the unemployed. The covariates in the model consist of the following continuous variables: claimants' age; replacement values per credits and available credits to claim. The model also contains the following discrete or dummy variables: A history of claiming the UI; reasons for claiming the UI; location dummy for whether claimant resides in a metropolitan area, and finally the education variable for if the claimant is a high school certificate holder or a formal degree holder.

Table 5: Male and Female Take-up Rate Equations

	Female				Male			
VARIABLES	**F1**	**F2**	**F3**	**F4**	**M1**	**M2**	**M3**	**M4**
Benefit amount	-0.000***	-0.000***		-0.000***	0.000***	0.000***		0.000***
Available credits	-0.002***		0.003***	0.001***	0.005***		0.005***	0.005***
Claim history	-0.862***	-0.585***	-0.813***	-0.819***	1.601***	1.423***	1.126***	1.608***
Dismissal	-0.548***	-0.519***		-0.419***	-0.008	0.048		-0.001
Contract Expired	0.268***	0.033*		0.387***	0.647***	0.672***		0.644***
Dismissed	0.476***	0.433***		0.687***	0.444***	0.626***		0.456***
Insolvency	0.594***	0.570***		0.837***	0.740***	0.975***		0.751***
Retired	0.982***	0.963***		1.394***	0.907***	1.094***		0.873***
Staff Reduction	1.488***	1.419***		1.774***	1.433***	1.717***		1.451***
Severance Package	1.655***	1.635***		2.009***	1.292***	1.645***		1.308***
Urban	0.715***	0.764***		0.696***	0.495***	0.497***		0.493***
Certificate	-0.636***	-0.582***		-0.606***	-0.221***	-0.310***		-0.213***
Degree	-1.210***	-1.001***		-0.952***	-0.694***	-0.916***		-0.678***
Age	0.008***	-0.008***	0.013***	0.003***	-0.015***	-0.015***	-0.009***	-0.023***
Age*benefit amount		0.000***		0.000***		0.000***		0.000***
Age*avail. credits			-0.000***	-0.000***			0.000***	-0.000*
Observations	**87,691**	**87,691**	**87,691**	**87,691**	**189,498**	**189,498**	**189,504**	**189,498**

Source: Unemployment Insurance Fund 2009
Notes: *** p<0.01, ** p<0.05, * p<0.1

Results in Table 5 indicate that female claimants have a higher claim waiting period or take-up rate period as their age goes up, controlling for all other covariates. The male claimants, on the other hand, are exactly the opposite: The claim-waiting hazard rate decreases as their age increases, ceteris paribus. Put differently, older male claimants are more reluctant to claim than older females, possibly indicating differences in family responsibilities between the sexes. It is unfortunate that, in this data set, there is no information about claimants' household characteristics to explain a claimant's response time to claim.

The covariate benefit value suggests that there is a significant difference, but miniscule amount of impact, of the benefit amount on the claim-waiting hazard rate of the UIF for both female and male claimants. This suggests that the incentive effect created by the replacement amount on the claimant's claim-waiting hazard rate, if any, is negligible. The negative coefficient (for females) suggests that the higher the benefit amount, as well as its functional independent variable (income), the less likelihood of claiming early in the period. Therefore, the evidence suggests that the UIF is not an overly generous benefit system, and does not increase individuals' claiming-rates, but rather depresses claiming-rates for those with high incomes. Put simply, when controlling for a range of factors, agents with higher wages would prefer work to claiming benefits.

Relative to the impact of available credits on θ_i, the coefficient is positive for both females and males, suggesting that the hazard rate is higher as workers' accumulated credits increase, ceteris paribus. In other words, people tend to claim only when they have accumulated sufficient credits, as workers try to avoid sporadic employment episodes, and they would rather remain in employment than be out of a job. These findings together are an early suggestion that there may be no apparent sign of moral hazard in people's behaviour towards claiming the UIF as far as the two main sources of work disincentive is concerned: the claiming credit and replacement amounts.

The dummy variables (history and city variables) confirm the nonparametric estimates earlier. The coefficient for the dummy variable 'history' is negative for female and positive for male. In other words, female claimants with a history of claiming UI benefit before have a greater waiting period and are slower to claim than females without a claim history. Male claimants, on the other hand, are the opposite: Male claimants with a history of claiming the UI benefit have a higher tendency of claiming than males that did not have histories. The city dummy variable indicates that claimants of both sexes are equality affected by the locational significance of where they made the claims. If claimants were residing in metropolitan areas, then they have a higher claiming speed than those do not reside in the metropolitan cities. However, this finding appears to negate the nonparametric estimate observed earlier.

The education dummy variables indicate a very interesting pattern of behaviour for the claimants to claim UIF. Individuals with a higher qualification have the lowest probability to claim benefits and have the longest waiting period than those without higher education. If a female individual without education who passed secondary schooling has the hazard rate of one, then a degree holder would have only an absolute claim-waiting hazard rate[7] of 0.386 and an individual with a secondary certificate will suffer a hazard rate of 0.545. The educational gap between males is slightly more moderate than between females. If a male individual without education who passed secondary schooling has the hazard rate of one, then a degree holder would have the hazard rate of 0.507 and an individual with a secondary certificate will suffer a hazard rate of 0.808. This may be the result of two factors: First, the employment probability for the degree and certificate holders is high relative to the non-holders. They are, therefore, reluctant to claim since they are expecting to be re-employed soon in any case. Secondly, due to higher income levels for these skilled claimants, they possess a much more even and well-protected consumption pattern than the unskilled or the poor. Hence, the need and the probability of claiming the UI for the educated is relatively lower than for the unskilled.

Given the above evidence on the behavioural tendency of the new-claimants (or the recently unemployed), we can effectively improve the targeting mechanism of other welfare policies to one that is aimed at those who are desperately in need of welfare assistance. In particular, the conventional wage subsidy mechanism could for example be improved to be more allocatively efficient by incorporating the claim-waiting period as a determinant into the decision rule on the condition of re-employment through the UIF. In this manner, not only will the individual heterogeneity, which affects workers' reservation wage levels, be taken into account, but it could potentially minimize the likelihood of job losses in the economy.

[7] One can easily extrapolate the absolute hazard rate from relative hazard ratios by taking the exponents of the covariate coefficients.

6. CONCLUSION

This paper examined the claim-waiting rate of the unemployed under the South African unemployment insurance fund system. The South African Unemployment Insurance model is rather unique relative to unemployment insurance systems around the world in that it is progressive in income and yet invariant to time. The only time-dependent factor in the UIF is a work requirement, which translates into claiming credits for the claimant. The study estimated the determinants of the take-up rate (on the basis of available evidence) of the claimants by using both nonparametric and semi-parametric statistics.

Our initial results on this restrictive dataset suggest that there were neither credible signs nor support for the idea that UIF is creating work disincentives among workers, as well as any kind of moral hazard problems that may affect the sustainability of the fund. Claimants do not rush to exhaust their accumulated credits and appear to be indifferent to the income replacement amount. Instead, workers with the highest take-up rate are those who have continuously worked for a substantially long period (longer than four years). In addition, the take-up rate is positively associated with the quantum of accumulated credits, which suggests that claimants would rather stay in employment instead of becoming recipients of the UIF benefits.

Our results also reveal that higher education degree holders have the least motivation to claim UI for perhaps two reasons. First, the employment probabilities for the degree holders are higher relative to non-degree holders. Second, claimants with degrees also have higher income levels prior to being unemployed, so they possess deeper household safety nets than claimants who are unskilled or poor. Hence, the need and the risk of claiming the UI are much lower for the skilled workers than the unskilled.

Ultimately though, the above paper has shed some, hopefully, illuminating light on the behavioural responses of claimants to the UI benefits offered to them in South Africa. The results suggest that whilst the UI system in South Africa remains solvent and does not induce moral hazard problems – some possible tweaking of incentives and behavioural responses at the margins could be tested.

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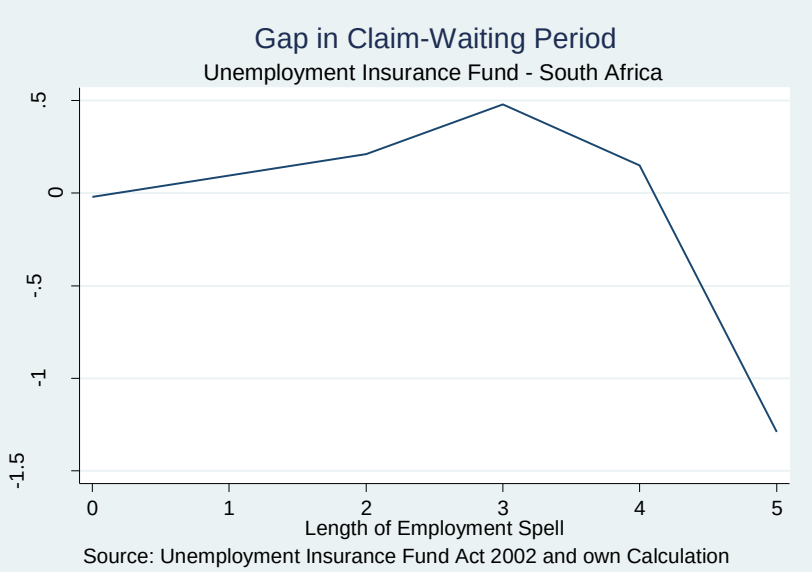
APPENDIX

Figure A 1: Gap in Claim-waiting Period by Replacement Rate and Employment Spell



Note: Waiting period measured in days.

Figure A 2: Take-up rate Estimates by Unemployment History

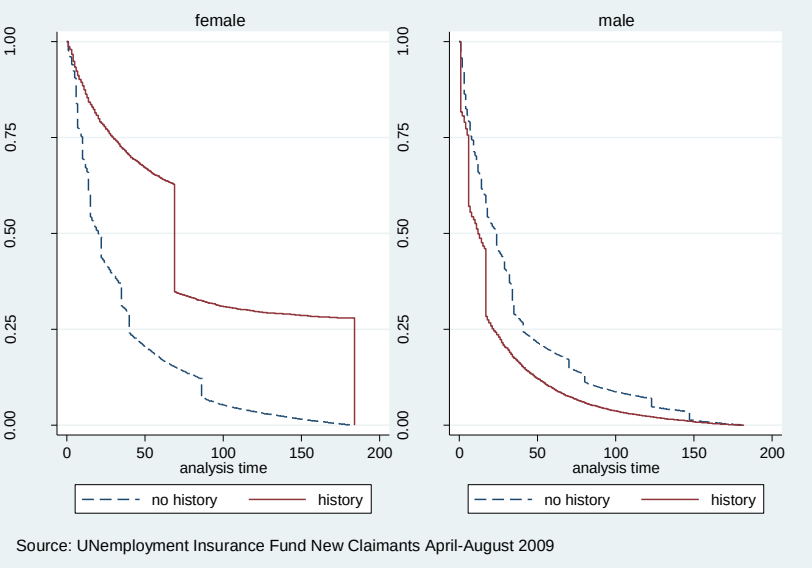
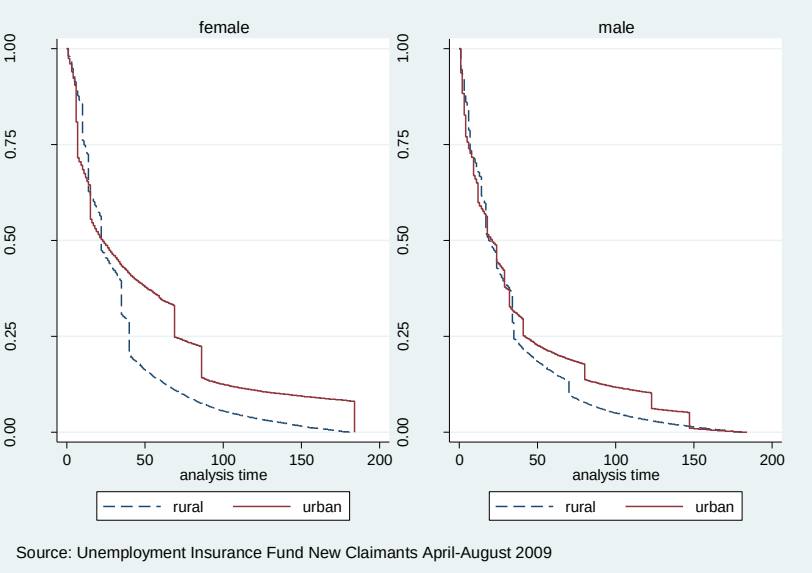


Figure A2: Take-up rate estimates by Location



Source: Unemployment Insurance Fund New Claimants April-August 2009

Table AT1: Log-Rank tests results for all covariates

	Female		Male	
History of claiming				
	Observed	Expected	Observed	Expected
No History	74655	61860.8	167867	174915
History	13036	25830.2	21637	14588.8
	chi2(1)	11811.1	chi2(1)	3947.78
	Pr>chi2	0	Pr>chi2	0
Urban/Non-Urban				
Non-Urban	42786	35715.1	100436	94499
Urban	44905	51975.9	89068	95005
	chi2(1)	2739.71	chi2(1)	816.81
	Pr>chi2	0	Pr>chi2	0
Benefit Amount Quartile				
1st	21925	16595.4	48732	64144.8
2nd	22706	22155.9	46017	41144
3rd	21137	32865.4	47376	45609.6
4th	21923	16074.3	47373	38599.7
	chi2(3)	9881.49	chi2(3)	7109.12
	Pr>chi2	0	Pr>chi2	0
Accumulated Credits Quartile				
1st	25013	37560	47620	48947.9
2nd	18922	15622.7	49690	55699.8
3rd	24593	26675.3	45407	59044.2
4th	19163	7833.03	46787	25812.1
	chi2(3)	26022.7	chi2(3)	23369.8
	Pr>chi2	0	Pr>chi2	0

	Female		Male	
Province				
Eastern Cape	8022	9999.83	19251	22922.7
Free State	1919	1847.07	8414	8416.46
Gauteng North	6526	5679.52	13611	29788.2
Gauteng South	11313	7346.65	40699	33547.4
Kwazulu Natal	17571	10690.3	39993	30500.6
Limpopo	2607	2363.52	9881	10821.6
Mpumalanga	10018	7861.66	11733	9650.3
North West	2154	2274.15	17952	12736.1
Northern Cape	1553	1623.28	2958	3243.33
Western Cape	26008	38005	25012	27877.5
	chi2(9)	13431.8	chi2(9)	19901.8
	Pr>chi2	0	Pr>chi2	0
Reason of Termination				
Business Closed	5770	3970.99	2121	2365.43
Constructive Dismissal	84	96.76	99	138.72
Contract Expired	37568	49548.7	68201	66334.4
Dismissed	19627	17681.1	43689	53878.6
Insolvency/Liquidation	1372	1208.17	3374	3462.71
Retired	6447	4798.11	5382	4876.65
Retrenched/Staff Reduction	16597	10260	66147	58071.7
Voluntary Severance Package	226	127.21	491	375.87
	chi2(7)	9800.32	chi2(7)	3521.77
	Pr>chi2	0	Pr>chi2	0
Continuous variables				
_t	Coef.	P>z	[95% Conf.	Interval]
age	0.01398	0	0.01346	0.01451
Benefit Amount	9.59E-05	0	8.96E-05	0.0001
Available Credits	0.00393	0	0.00385	0.00402

Development Policy Research Unit
University of Cape Town
Private Bag
Rondebosch 7701
Cape Town
South Africa

Tel: +27 21 650 5705
Fax: +27 21 650 5711

www.dpru.uct.ac.za