

2000 Annual Forum

at Glenburn Lodge, Muldersdrift

Are Wage Adjustments an Effective Mechanism for Poverty Alleviation?: Some Simulations for Domestic and Farm Workers

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Introduction

A key component of labour market policy debate in South Africa, has been around the role of wages in either hindering employment creation, or conversely as a tool for reducing poverty and acting as a catalyst for aggregate demand growth. This debate has come to the fore more recently with the Department of Labour's recent call for public submissions and public comment on the issue of minimum wages and conditions of employment for domestic and farm workers. An analysis of the first of these two issues, namely wages, will place into sharp focus the stringent trade-offs faced by the Department of Labour in this part of the workforce.

This paper therefore attempts a very basic simulation exercise to test some of these hypotheses concerning the functioning and response behaviour of the labour market. In trying to focus on the poor in the labour market, the study chooses three unskilled labour categories, with the emphasis being on the two most indigent groups amongst the employed, namely domestic workers and farm workers. It is amongst these two groups, that the trade-offs between poverty reduction and employment losses are most starkly evident.

Employment and Wage Descriptors

The analysis in this paper is based on the October Household Survey of 1995 (OHS95), which sampled about 30 000 households, drawn from 10 selected households in each of 3 000 clusters. It represents the second such survey undertaken by the government statistical agency – Statistics South Africa. At the time of writing, the latest available household survey was that for 1997. However, both the 1996 and 1997 surveys did not survey respondents for actual wages earned, and in fact reports wages in pre-determined categories. For the purposes of accurate simulation results therefore, this data is too inaccurate. Hence, the OHS95, which does report actual wages earned, was utilised for the purposes of this paper.

Before undertaking the two simulation exercises, it is necessary to provide a brief overview of the labour market for these three occupations, namely drivers, domestic workers and farm workers. The driver¹ occupation was chosen because while they also represented labourers, their employment, wages and conditions of service can be said to be more secure and of a higher quality than that for domestic and farm workers. In this respect, the category offers and important contrast in terms of the nature of employment and poverty responses to wage adjustments amongst unskilled workers.

It is clear from Table 1, that the largest of the three occupations is farm workers, with close to 1 million workers. Note that this is over 50% down from the 1970 employment figure, when the agriculture sector had a workforce of about 2.5 million (Bhorat,1999). It is interesting that the two most marginalised occupations amongst

¹Drivers here include Motor-Cycle drivers; car, taxi and van drivers; bus and tram drivers; heavy truck and lorry drivers.

the employed, constitute about 17% of all employment in the economy. The racial distributions indicate a disproportionate share of African workers in all three occupations. Note that while African workers constitute only 62% of total employment, they are clearly over-represented in these low skilled jobs and occupations. This is mirrored for example, in the case of white workers who, while representing 22% of national employment form a negligible portion of either of the three occupations. In short, the employment figures by race reflect the strong race-skills cleavage in the South African labour market.

The gender data, powerfully illustrate the strong gender-specific roles attached to certain forms of employment. Hence, while drivers are overwhelmingly male, domestic workers are predominantly female. In the case of farm labourers, the number of women is larger, yet it still remains a male occupation. In terms of national trends, 38% of all the employed are women. This would suggest that there is an over-representation of women in domestic services, and an under-representation of female workers amongst farm labourers and drivers.

Category	Drivers	Domestic Workers	Farm Workers
Race			
African	361 105	619 150	754 813
Share	82.83	88.03	79.86
Coloured	31 958	81 674	186 654
Share	7.33	11.61	19.75
Asian	14 128	450	98
Share	3.24	0.06	0.01
White	28 782	2049	3608
Share	6.60	0.29	0.38
Total	435 973	703 323	945 173
Share	100.00	100.00	100.00
Gender			
Male	424 229	22 363	734 374
Share	97.31	3.18	77.70
Female	11 744	680 960	210 799
Share	2.69	96.82	22.30
Location			
Rural	156 104	409 170	882 387
Share	35.81	58.18	93.36
Urban	279 869	294 153	62 786
Share	64.19	41.82	6.64

 Table 1: Basic Employment Statistics: Drivers, Farm and Domestic Workers (OHS,1995)

The location data illustrate that while most drivers are urban-based, a fairly significant share do in fact work and reside in rural areas. Interestingly, the majority of domestic workers are based in rural areas. While the national trends are mimicked in the case of drivers, the location distribution for the other two occupations, reveal a disproportionate share of these workers are in rural areas. The location distribution for domestic and farm workers therefore, reflect their concentration in areas of the economy that are poor job generators and where jobs are available they are paid poorly with very low levels of employment security.

Figure 1 below presents the distribution of the three occupations according to education levels. It is immediately clear that the distribution for drivers is distinct from that of domestics or farm labourers. While the majority of drivers possess incomplete secondary qualification, most farm and domestic workers have only primary education, with over a quarter of the former having no education.



The national distribution of employment by education, shows that 22.2% of all workers have primary education. In other words, while the distribution for drivers matches the national trends more closely, the corresponding figure for domestics and farm workers is yet another cut displaying their vulnerability in the labour market. The national figure for a matric is 22.7%, indicating that while at least 12% of drivers have this qualification, it is well below the national mean. Again though, the other two occupations fall well short of the average.

The upshot of the above is that while drivers, domestics and farm workers are all nominally classified as labourers, it is evident that the latter two groups reveal employment patterns that suggest they may be a distinct, and particularly marginalised group, within the broad band of workers categorised as unskilled. Nowhere is this fact more true than when examining the wage data for the three occupations. Table 2 below presents this evidence, by looking at the median and mean wages for the three jobs.

Occupation	Driver	Domestic Worker	Farm Worker
Median	1300	333.5	407.5
Mean	1517.7	407.0	466.7

Table 2: Median and Mean Wages by Occupation, (OHS,1995)

As previous evidence has shown (Bhorat & Leibbrandt, 1999), the lowest earners in the labour market are domestic workers, with a median wage of R333.5 per month. Farm workers earn just over R400 per month. In contrast drivers earn a median that it is 3 times higher than farm labourers and close to 4 times above that of domestics. The national median wage is R1400, which is marginally above that of drivers, but substantially more than the other two occupations. In addition, the earnings data by race indicate that African and Coloured earnings are again between 2.5 and 3 times higher than that for domestics and farm workers. To put into perspective how low these earnings are: domestic workers earn a third of what the average miner earns, and fourteen times less than the average skilled professional. Extremely low wages lead to the familiar outcome of individuals having a job, yet living in deep poverty. In terms then of a parallel labourer category, the latter occupations are very low earners, and in terms of national trends domestics and farm labourers must be considered as a special category of particularly disadvantaged employees. In this respect, the histograms below vividly present this picture of extreme vulnerability amongst domestics and farm workers².



Figure3: Histograms by occupation (OHS95)

The histograms make it visually very clear that the overwhelming majority of domestics and farm workers are stacked at the lowest end of the earnings distribution. Conversely, the distribution of drivers' earnings are far more evenly spread. The importance of this distributional data will become clear in the simulations below,

Farmworkers

² Occupation 832 refers to drivers, 910 to domestic workers and 921 to farm labourers.

given that through the use of survey data we will be able to change the earnings of each individual in the sample, and hence affect the distribution in its entirety. This would imply that increases in the wages of individuals, and the impact that it has on their poverty status, will depend significantly on where in the distribution they lie. In addition, the overall income distribution pattern will also influence the net outcome from the simulated earnings increases.

Poverty and Employment Effects from Wage Adjustments

Given the high levels of indigence noted above, it is useful to determine whether certain categories of labour market interventions, may have a tangible impact on the vulnerability of the affected workers. Specifically, it may be useful to undertake a thought experiment, wherein the wages of the three occupations are increased, and to then examine the impact it has on poverty levels amongst the three categories. In addition though, it is clear that these wage adjustments will have disemployment effects. Therefore the second, and discrete, component of the analysis of is to ascertain the employment effects of the same wage rate increases.

This simulation exercise suffers from at least three drawbacks. Firstly it only accounts for the first-round poverty effects of a rise in the wages of individuals. It is in essence, a very confined comparative static exercise. Hence, the possible additional poverty-reducing impacts that may arise from additional resources provided to individuals is not accounted for. Secondly, and in relation to the first drawback is that no indirect effects of a wage hike are accounted for. These effects operate in particular on the demand-side where higher wages, change the total cost structures of firms and employers, and this in turn may affect productive activity and income generation elsewhere in the economy. Finally, the simulation operates only at the individual-level and does not reflect on the impact on household poverty.

Poverty Impact Simulations

The table below orients one concerning the incidence of poverty amongst the three occupations. The table presents two poverty lines: R293 per month and R650 per month. The line of R293 per month corresponds to a single adult equivalent income used in deriving 1995 household poverty lines. There can be very little contention that this is indeed a low labour market income. The fact that R293 per month is lower than any of the median incomes noted above certainly illustrates this point. The second poverty line of R650 is more closely derived at the household level, than the R293 figure. In this case, R650 represents the wage required to the household poverty line, given the mean number of employed and unemployed individuals in a household. In this way, one gets to a more accurate and realistic picture, of the earnings capability of each dwelling.

All the same, as the table below shows both poverty lines yield high levels of indigence. At the lower poverty line, over a quarter of farm workers and close to 40% of domestics are poor. By contrast, 2.1% of all drivers earn below R293 per month. The degree of vulnerability amongst domestics and farm workers is illustrated by the fact that at this poverty line, the national headcount index is 7.25%.

Poverty Line	Driver	Domestic Worker	Farm Worker
R293 per month			
Number	9235	267 439	251 628
Percentage	2.12	38.03	26.62
R650 per month			
Number	52 658	564 667	762 011
Percentage	12.08	80.29	80.62

Table 3: Baseline Poverty Levels, By Occupation (OHS95 & author's own calculations)

Utilising the higher, and more realistic, poverty line results in significant increases in the headcount index. Hence, over 80% of the two vulnerable occupations live in poverty at this line, compared to just over 10% of drivers. Note that the measures for domestics and farm workers converge, given the similarity in income distributions of the two occupations. The national measure, at this poverty line, is 25% and even for the African employed, the index is 33%. This suggests that relative to parallel national measures of poverty these two occupations experience the greatest identifiable degree of vulnerability in the South African workforce.

We now go on to examine the simulated impact on poverty levels amongst these three occupations, of specific wage adjustments. In particular we look at the poverty outcomes from wage increases respectively of 5%, 10%, 50% and 100% to each of the individuals in the sample. Note that given the use of survey data, we are able to apply the simulated increase to each individual in the distribution. Table 4 below provides the results for a 5% and 10% increase in the wage rate respectively. The table indicates very clearly that the poverty impact from the wage adjustments would, at best, be modest.

Occupation	Drivers	Domestic Worker	Farm Worker
	5 % Increa	ase in Wage	
No. in Poverty	50 896	555 708	742 700
% in Poverty	11.67	79.01	78.58
Reduction in	1762	8959	19 311
Poverty (No.)			
% Reduction in	3.89	1.59	2.53
Poverty			
	10 % Incre	ease in Wage	
No. in Poverty	43 125	532 290	715 119
% in Poverty	9.89	75.68	75.66
Reduction in	9533	32 377	46 892
Poverty (No.)			
% Reduction in	18.13	5.74	6.15
Poverty			

Table 4: Poverty Effect of 5% and 10% Increase in Wages, based on R650 poverty line(OHS95 & author's own calculations)

Hence, the 5% rise in wages would shift only 19 000 farm workers and about 9 000 domestics out of poverty. This constitutes a reduction of poverty in the range of 1.5% to 2.5%. Noticeably, the figures for drivers are higher, suggesting of course that the wage adjustment would have a more tangible effect on their poverty status. Should

the wage of each individual in the two marginalised occupations increase by 10%, the results remain equally unspectacular. Here, the percentage reduction in poverty would be just over 5% for the two groups. Hence a wage hike to the value of inflation for the same year, would have a relatively insignificant impact on the poverty status of domestics and farm workers. Note however, that the impact on drivers is very significant. Here it is evident that poverty measures are highly responsive to the wage change. Specifically, the 10% wage rise has a more than 10% reduction in poverty levels amongst drivers. This suggests that most of the poor drivers are in fact stacked disproportionately quite close to the poverty line. A sufficient wage adjustment then, would ensure a significant fall in poverty incidence.

Continuing with the wage simulations, it is possible to think of a much higher set of wage adjustments, in order to get a comprehensive sense of the elasticity of poverty with respect to wage adjustments. Table 5 below therefore provides the poverty results for a 50% and 100% wage change. In terms of the former, the results show a tangible reduction in poverty with over 200 000 farm workers and close to 120 000 domestics being taken out of poverty. It is interesting that the results for poor drivers, are still higher, although not as sensitive a response is encountered as with the 10% wage change.

Occupation	Drivers	Domestic Worker	Farm Worker		
	50 % Increase in Wage				
No. in Poverty	30 337	447 041	535 478		
% in Poverty	6.96	63.56	56.65		
Reduction in	22 321	117 626	226 533		
Poverty (No.)					
% Reduction in	-42.38	-20.84	-29.73		
Poverty					
	100 % Incre	ease in Wage			
No. in Poverty	14 718	312 663	323 971		
% in Poverty	3.38	44.46	34.28		
Reduction in	37 940	252 004	438 040		
Poverty (No.)					
% Reduction in	-72.02	-44.63	-57.48		
Poverty					

 Table 5: Poverty Effect of 50% and 100% Increase in Wages, based on R650 poverty line (OHS95 & author's own calculations)

In turn, the 100% wage increase case shows that close to half and over a third of farm workers and domestics would be pulled above the poverty line. Note though, that the number in poverty for each occupation is still over 300 000. Hence for domestics and farm workers, there is still an insensitive poverty reduction response to the wage adjustment. A doubling of each individual's wage in the two distributions therefore, would elicit a 45% and 57% poverty incidence fall for domestics and farm labourers respectively. While the sensitivity to the wage hike is greater for drivers, with poverty falling by 72%, the response does not still fully compensate for the wage adjustment.

It should be evident from the above that in general poverty measures are inelastic with respect to changes in wage of each person in the sample. Figure 3 below graphically

presents the data from Tables 4 & 5. The figure maps the changes in wages to the outcome in poverty levels, for each of the three occupations. These are in turn benchmarked against a 'neutral' outcome graph, which basically plots a 5% wage change as resulting in a 5% reduction in poverty and so on. In other words, this function would present the equivalent of a unit elastic poverty response to wage changes. It should therefore be evident from the graph that the poverty response, with the exception of the 10% case for drivers, to wage changes has been inelastic. In other words, the equal changes in wages, do not result in equivalent alterations in incidence of poverty. Put differently, poverty measures are highly insensitive to very large wage adjustments for drivers, domestics and farm labourers. In particular, Figure 3 shows that the responsiveness of poverty levels amongst the latter two occupations is particularly low with respect to wage adjustments.



Figure 3: Neutral and non-Neutral Impacts of Wage Changes on Poverty

The results reflect on the nature of the income distribution, with respect to the poverty line, of domestics and farm labourers. The fact that most of these workers are earning and working *well below* rather than simply close to the poverty line, means that even huge, and highly unrealistic, wage adjustments will do very little to eradicate poverty amongst these workers. The extreme degree of vulnerability and indigence of these workers ensures this outcome under most conceivable wage scenarios. This result of course means that the wage mechanism has limited use as an instrument of poverty reduction: that even if all other factors were held constant, increasing the wage rate of targeted workers will do very little to significantly erode the incidence of poverty amongst the most vulnerable employees.

Employment Impact Simulations

The above has shown that poverty levels are inelastic with respect to wage adjustments, meaning that the price of labour cannot be utilised as a poverty alleviation tool. However, the obvious immediate impact of such a wage adjustment would the negative impact on employment levels. In this section then, I briefly examine the short-run employment effects of the wage adjustments, based on elasticities calculated for the South African economy by the World Bank (Fallon & Lucas, 1998). Fallon & Lucas (1998) calculated elasticities for all formal sectors of the economy barring Agriculture, covering Black employees. The estimates they derived are provided in the Appendix. The aggregate elasticities for the period 1961-1993 were an average long-run wage elasticity of -0.71 and an average short-run (impact) elasticity of -0.156. The former, -0.71, is probably the most widely quoted figure and has been corroborated by other evidence (Bowles & Heintz, 1996). Noticeably, other more recent studies have yielded different, and in come cases, lower wage elasticities (Fields, Leibbrandt & Wakeford, 1999).

While the World Bank study does provide elasticity measures by sector, the noncoverage of Agriculture and the fact that drivers are not easily attached to any given sector, it was thought best to assign the aggregate elasticities to each of the occupations in the simulations. Hence, for each wage simulation undertaken, the assumption is of a short-run elasticity of -0.156, and a long-run estimate of -0.71.

Table 6 below presents the employment effects from a 5% and 10% wage adjustment. The short-run here refers to a period of up to one year. While the long-run results are not presented here, they clearly would yield larger disemployment effects, given the higher value elasticity. The long-run results are presented in the appendix below. The results suggest that with a 5% wage hike, over 5 000 and more than 7 000 domestics and farm labourers would lose their jobs. Collectively, the 5% wage increase would amount to 16 000 lost jobs.

Race	Drivers	Domestic Workers	Farm
			Workers
Total	435 973	703 323	945 173
	5 % Inc	rease in Wage	
Short-run	-0.78	-0.78	-0.78
elasticity			
Short-run	-3401	-5486	-7372
empl. Loss			
New short-run	432 572	697 837	937 801
empl. Level			
	10 % Inc	crease in Wage	
Short-run	-1.56	-1.56	-1.56
elasticity			
Short-run	-6801	-10 972	-14 745
empl. Loss			
New short-run	429 172	692 351	930 428
empl. Level			

 Table 6: Employment Effects from 5% and 10% Wage Increases (OHS95 & author's own calculations)

With the 10% wage simulations, the results are simply doubled, given the elasticity of -1.56. Hence a 10% wage adjustment translates into job losses in excess of 32 000

individuals. It is of course difficult, using this framework, to assess the simultaneous impact on poverty and employment from the wage changes, However, what the two discrete experiments suggest is that, should there be a wage adjustment contemplated for specific occupations such as the one above, then combined with the modest poverty reduction effects, there will be fairly worrying job losses.

The results for the 50% and 100% wage increases provide below, serve only to reinforce this point. Hence it is evident that by giving workers 50% more than they previously earned would see the job attrition rate increasing to over 160 000 jobs. A comparison can be made here: that while the 50% wage hike meant that over 360 000 employees in the three occupations no longer lived in poverty, it also meant that the net number of workers in the occupations fell by close to half this number.

 Table 7: Employment Effects from 50% and 100% Wage Increases (OHS95 & author's own calculations)

Race	Drivers	Domestic Workers	Farm Workers	
Total	435 973	703 323	945 173	
	50 % In	crease in Wage		
Short-run	-7.8	-7.8	-7.8	
elasticity				
Short-run	-34 006	-54 859	-73 723	
empl. Loss				
New short-run	401 967	648 464	871 450	
empl. Level				
	100 % Increase in Wage			
Short-run	-15.6	-15.6	-15.6	
elasticity				
Short-run	-68 012	-109 718	-147 447	
empl. Loss				
New short-run	367 961	593 605	797 726	
empl. Level				

The figures for the 100% hike reveal that while the numbers in poverty fell by over 700 000, in the process some 325 000 jobs would have been sacrificed. Thus while excessive wage gains would be necessary to achieve modest poverty reduction gains, these gains are further eroded through the resulting disemployment effects. It is therefore important to keep in mind that there are of course multiplier effects from the job losses, at the household level. So while individuals may be losing jobs, the impact is transmitted at the household level, where both adults and children are impacted on.

Ultimately then, the trade-off between poverty reduction on the one hand and the risk of employment loss is a severe one that derives from any wage adjustment plan. The Department of Labour's stated intention to call for public submissions on a minimum wage for domestic and farm workers is an indication of the consideration being given to a wage adjustment package for these workers. The crisp point made here is that employment losses will be significant and will of course increase monotonically with any given wage hike contemplated by the Department.

Conclusion

The above has shown firstly that both domestic and farm workers are the most vulnerable cohort of employees in the South African labour market. The comparison with a third labourer category, that of drivers, only served to reinforce this fact. In this light the Department of Labour is considering a minimum wage policy for these two indigent groups. The paper traced out some of the possible effects of pursuing such a wage policy. Essentially the trade-offs revolve around the poverty reduction effects compared with the disemployment impacts from the wage adjustments.

The results showed firstly that a wage policy pursued to reduce indigence amongst the target occupations will have a relatively small impact on poverty levels. Specifically, poverty incidence was shown to be relatively inelastic with respect to wage changes. It took very large, and in policy terms highly unlikely, wage adjustments to ensure a tangible poverty reduction impact. Secondly, it was evident that the results displayed the fact that most poor domestics and farm labourers were in fact quite far below the poverty line rather than earning just below R650 per month. Thirdly the employment-wage results show that the Department's policy would run the serious risk of significant short-run employment losses to accompany the poverty-reducing outcomes.

The wage, it would seem, has a limited role to play in eradicating poverty amongst these two groups of workers. In essence, the analysis suggests that poverty eradication amongst domestic and farm workers cannot take place solely through a minimum wage policy. This is not the problem of minimum wage legislation *per se*, but rather the very high incidence of poverty found amongst domestic and farm workers. Ultimately, if the Department of Labour were considering a minimum wage policy directed at reducing poverty levels amongst these workers, it would not serve the purpose of significant poverty alleviation amongst its target population. This is true, it must be remembered, irrespective of what employment losses may occur from the minimum wage as well.

Should the Department of Labour opt for a modest minimum wage, the poverty reduction consequences would of course be minimal and so too would the disemployment effects. The Department would implicitly then be issuing a 'moral signal' to employers – that improved wages for these workers are to be striven for. Such a wage would set a first-step benchmark for good wage practice amongst employers. Indeed, such an initial minimum wage may set a positive trend, and see employers gradually increase the wages paid to these workers. Ultimately, given the above figures, this option may be the best and most optimal available to the Department.

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Appendix

The following four set of histograms represent the graphic results from the wage simulations, where totpay5 is the 5% increase, totpay1 the 10%, totpy50 the 50% rise and totpy100, the doubling of the wage.







totpay1 Histograms by occupation



Histograms by occupation

Race	Drivers	Domestic Workers	Farm	
			Workers	
Total	435 973	703 323	945 173	
	5% W	age Increase		
Long-run	-3.55	-3.55	-3.55	
elasticity				
Long-run	-15 455	-24 933	-33 506	
empl. Loss				
New long-run	420 518	678 390	911 667	
empl. Level				
	10% Wage Increase			
Long-run	-7.09	-7.09	-7.09	
elasticity				
Long-run	-30 910	-49 866	-67 013	
empl. Loss				
New long-run	405 063	653 457	878 160	
empl. Level				

Long-Run Employment Effects from 5% and 10% Wage Change

Long-Run Employment Effects from 50% and 100% Wage Change

Race	Drivers	Domestic Workers	Farm
			Workers
Total	435 973	703 323	945 173
	50% W	Vage Increase	
Long-run	-35.45	-35.45	-35.45
elasticity			
Long-run	-154 552	-249 328	-335 064
empl. Loss			
New long-run	281 421	453 995	610 109
empl. Level			
	100% V	Vage Increase	
Long-run	-70.9	-70.9	-70.9
elasticity			
Long-run	-309 105	-498 656	-670 128
empl. Loss			
New long-run	126 868	204 667	275 045
empl. Level			

Long-Run and Short-Run Wage Elasticities for Black Formal Sector Employees (Fallon & Lucas, 1998)

Sector	Long-Run	Short-Run
Beverages	-0.184	-0.095
Tobacco	-0.057	-0.018
Textiles	-0.984	-0.346
Wearing Apparel	-2.508	-0.709
Wood Products	-0.196	-0.603
Furniture	-0.364	-0.139
Chemicals	-1.166	-0.344
Rubber and Plastic	-0.243	-0.153
Non-met Minerals	-2.929	-0.451
Basic Metals	-0.758	-0.166
Fabricated Metals	-0.466	-0.175
Non-Electr. Mach.	-0.632	-0.408
Transport Equipment	-0.440	-0.201
Mining	-0.146	-0.118
Construction	-0.554	-0.360
Services	-0.948	-0.147
Weighted Mean	-0.709	-0.156