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Does Human Capital Protect Workers against Exogenous Shocks? South Africa in the 2008 – 2009 Crisis

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AFRICAN DEVELOPMENT BANK GROUP

Does Human Capital Protect Workers against Exogenous Shocks? South Africa in the 2008 – 2009 Crisis

Working Paper No. 106

April 2010

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Office of the Chief Economist

Abstract

Ron Leung, Marco Stampini and Désiré Vencatachellum

The financial and economic crisis of 2008 and 2009 has taken its toll on the South African economy. The economy contracted for the first time since 1998, and entered recession during the fourth quarter of 2008. The GDP contraction was soon transmitted to the labor market. Between the second quarters of 2008 and 2009, employment fell by 3.8 percent. However, not all individuals were hit with the same intensity. Using labor force survey data unique in the African

context, we find that human capital provided a buffer against the shock. After controlling for observable characteristics, education and experience showed the potential to entirely offset the effect of the recession on the likelihood of employment. This has important policy implications, as it strengthens the case for strategic investments in human capital, and helps identifying the unskilled as those with the highest need for social safety net interventions during the recession.

Keywords: labor markets, South Africa, financial crisis, human capital, business cycle, emerging economies.

JEL Classification: J2, E3.

1. Introduction

Like the rest of Africa, South Africa has taken a heavy toll from the global financial and economic crisis of 2008 and 2009 (African Development Bank 2009). By the fourth quarter of 2008, the South African economy was in recession (Figure 1). This translated into adverse outcomes for the labor market which was already characterized by unemployment rates hovering around 25 percent.

We use unique Labor Force Survey (LFS) data covering a period spanning before and during the crisis to investigate the role of human capital, embodied in education and experience, as a buffer against external shocks. The contribution is novel in two respects. First, because of the unparalleled quality and frequency of the data, it quantifies the effects of the crisis for individual labor market participants in South Africa. To the best of our knowledge, we are the first to conduct this exercise. Second, by focusing on the crisis period, it deepens the understanding of South African labor market dynamics and transition over the business cycle.

Our results indicate that the crisis reduced the likelihood of being employed by 3.8 percent. 360,000 persons lost their jobs between the second quarters of 2008 and 2009, driving the working-age population employment rate down from 44.7 to 43 percent. At the same time, the unemployment rate recorded a slight and misleading increase from 23.1 to 23.6 percent, as about 349,000 individuals abandoned the labor force. After controlling for individual characteristics, education and experience both worked as an insurance mechanism, reducing the probability of losing a job by up to 100 percent. Finally, the large informal sector did not provide a buffer against the crisis.

The remainder of this paper is organized as follows. Section 2 describes the country's institutions and policies that may have affected the transmission of the crisis to the labor market. Section 3 presents data and methodology. The findings of the descriptive and multivariate analysis are in section 4, together with a discussion of their robustness. Section 5 concludes.

2. Labor Market Institutions and Policies

High unemployment is one of the main problems in post-Apartheid South Africa. Its persistence has been the focus of many studies.¹ The reported explanations include aspects of the historical legacy of Apartheid such as the lack of skills among a large proportion of the labor force and geographical obstacles to job search. Recent studies have examined the role of social and demographic shifts, with an increasing share of female and young workers in the labor force (Banjeree et al. 2006), the skill deficits of the unemployed (Pauw et al. 2006), and a variety of labor market rigidities such as high minimum wages and unionization (OECD 2008). However the level of unemployment understates the underperformance of the country's labor market as South Africa's participation rate is extremely low in comparison to other countries with similar levels of income per worker (Figure 2).

Under Apartheid, the black majority had limited education opportunities and was restricted in the choice of where to live. Blacks were largely confined to "homelands" and "townships" outside city centers, facing long commutes to work. During the post-Apartheid era, this has translated into large search costs and higher reservation wages. Only modest progress in alleviating the spatial allocation problem has been made under successive democratic governments as much of the new low cost housing was constructed in peripheral areas. As a result, many unskilled workers are unable to mix urban employment with informal agricultural activities (World Bank 2008).

Factors such as the growth in pension payments, unemployment insurance, minimum wages and employee protection laws are likely to play limited roles in explaining the persistence of high unemployment. For instance, the net overall impact of the expansion of the pension system to 12 million recipients is uncertain. While it could raise the reservation wage demanded by the non-employed, it can also alleviate liquidity constraints faced by the least skilled in their job search (Bertrand et al. 2003, Edmonds

¹ It should be noted that in 2000 the data for estimating the unemployment rate changed from the October Household Survey (OHS) to the LFS. Yu (2008) finds that the unemployment rates for 1994 to 1999 from the OHS were highly unstable. Borat and Oosthuizen (2008) also cite problems of data quality in interpreting labor market trends before the introduction of the LFS. The estimates of the unemployment rate show a large one-time increase during the switchover from the OHS to the LFS. Kingdon and Knight (2007) confirm these findings for different definitions of unemployment.

et al. 2005 and Posel et al. 2006). Other labor market rigidities have been found to be modest relative to those in OECD countries and comparable emerging economies. The OECD Employment Protection Legislation index rates South Africa's labor protection laws as less restrictive than almost all OECD countries (OECD 2008).

3. Data and Methodology

We use data from the South Africa Labor Force Survey (LFS), which collects information on respondents' demographic characteristics (e.g. age, gender, education) and labor market experience (e.g. employment status, hours of work). The LFS was conducted biannually (in March and September) between 2000 and 2007. Since the first quarter of 2008, the LFS has been conducted on a quarterly basis, and has stopped collecting information on wages.

In theory, the LFS is a rotating panel with one-fourth of the sample refreshed every quarter. However, a careful analysis of the data unveils that a larger share than expected of the sample was actually replaced each quarter, and that there was no overlapping between the samples of the third and fourth quarters of 2008. For these reasons, that are unreported and unexplained in the official documentation of the surveys (Statistics South Africa 2008), we use the LFS data as repeated cross sections. We exploit six rounds of data covering the period 2008:Q1 to 2009:Q3. The first three are before the crisis, the last three are during the crisis. We restrict the sample to working age individuals (aged 15-64).

The main variables for our analysis are those measuring employment. An individual is considered employed if she worked at least one hour during the week preceding the interview, or if she was absent from work because of personal, sick or maternity leave. Focusing on employment allows abstracting from the participation decision, and from the fact that inactivity comprises discouraged unemployment. We also look at the number of working hours in the main job during the reference week, to study the effect of the crisis on work intensity.

We first conduct a descriptive analysis of labor market outcomes, with focus on the level of education (with skills proxied by completed secondary schooling) and work

experience. The latter is defined as a respondent's age minus either the age at which she stopped going to school or a lower bound of 14 years. The underlying assumption is that child work does not allow accumulating skills.

To guard against spurious findings, we conduct two multivariate analyses of: (i) the likelihood of employment, and; (ii) the number of hours worked. Both models contain the same explanatory variables. We control for the respondents' skills as measured by two variables: (i) the number of years of schooling, and (ii) the number of years of experience. We also control for respondents' gender, racial group (black, white, colored or indian) and province of residence. All things being equal, it is well documented that whites have better labor market outcomes than blacks (Nimubona and Vencatachellum 2007). Similarly, some provinces (e.g. the Eastern Cape) are known to offer fewer job opportunities to labor market participants.

Both models include a variable accounting for the magnitude of the macroeconomic shock. We define the shock as the deviation of GDP growth (two-quarter moving average) from the long term trend of 3.2 percent over the period 1994-2009. We use linear detrending (Prescott and Kehoe 2007) rather than a band-pass or HP filter as such filters are known to produce spurious periodicity and business cycles. This problem is especially acute in emerging market economies whose high frequency shocks exhibit greater volatility and persistence than those of OECD economies². Applying the HP filter to the GDP growth yields a non-linear trend that declines sharply during the 2008–09 crises so that the shocks at business cycle frequencies are small. We follow the convention in the business cycle literature of including all available years in the estimation of the trend. Excluding 2008-09 from the estimation of the long run trend would not affect the nature of the results presented in the remainder of the paper.

The crisis variable is also interacted with education, experience, gender and racial group, to study how these individual characteristics affect the impact on employment.

² See for instance Canova (1998) on the sensitivity of business cycle facts to non-linear filters. On the cyclical properties of emerging market economies, see Agenor et al. (2000), Neumeyer and Perri (2005), and Aguiar and Gopinath (2007).

Finally, to control for seasonal factors, we include a dummy for quarter 1. Sample means of all variables are presented in Table 4.³

4. Findings

We first present the results of the descriptive analysis in section 4.1, and then proceed to report the estimates from the multivariate analysis in section 4.2. In Section 4.3, we discuss the robustness of our findings.

4.1 Descriptive Analysis

The South African economy officially entered recession in the fourth quarter of 2008. Annual real GDP growth slowed from its long-run trend rate of 3.2 percent between 1994 and 2009 to -1.9 percent. The economy further contracted by 6.6 and 3.0 percent in the first two quarters of 2009 respectively (Statistics South Africa, various statistical releases).

To avoid the effect of seasonality on our results, we compare the second quarters of 2008 (pre-crisis) and 2009 (during the crisis). During this period, the number of jobs for graduates grew by 47,000 units (from 6.418 million to 6.465 million). At the same time, the number of jobs for non-graduates decreased by 406,000 (from 7.311 million to 6.905 million; Table 1). The drop was mainly driven by the agricultural, mining, transportation, and by the wholesale and retail sectors. The only exception was the 'private households' sector, in which the number of jobs for non-graduates remained constant.

The growth in graduate employment is partly driven by the relative expansion of the skilled labor force. In fact, the employment rate contracted for both graduates and non-graduates, although relatively less for the former (Table 2). For the graduates, the

³ Availability of longitudinal data would allow studying labor market transitions (Pages and Stampini 2009). It would also allow controlling for job-related variables such as tenure and the type of contract in our regressions. Given that we rely on pooled cross-sectional data, we cannot perform these types of analysis.

employment rate decreased by 3.4 percent (from 63.3 to 61.1 percent);⁴ for the latter by 5.3 percent (from 35.6 to 33.7 percent).

At each level of skills, the drop in the employment rate was largest for the least experienced. Among graduates, it dropped by 9.5 percent for those with less than 5 years of experience, and by 3.4 percent for those with 10-19 years of experience. Similar results are found for the unskilled, with drops respectively by 10.8 percent and by 3 percent.

Finally, the crisis determined a 2 percent drop in the number of hours worked per week, with no significant difference between graduate and non-graduate workers (Table 3).

4.2 Multivariate Analysis

The results of the descriptive analysis are generally confirmed when other individual characteristics are accounted for in the multivariate analysis. The findings of the two regressions are broadly consistent, and we focus our discussion on the effects of the crisis on the likelihood of employment.

We find that the economic crisis has a statistically significant negative effect on both the likelihood of being employed and the number of hours worked (Table 4). For individuals with no education and less than 5 years of experience, each point of GDP growth below the long term trend translates in a drop in the probability of being employed by 0.7 percentage points (Table 4).

Human capital provides a strong and quantitatively significant insurance against the risk of job separation during the crisis. Education can significantly reduce the likelihood of losing one's job. For example, the likelihood of employment for an individual with less than five years of experience with no schooling drops by 12.3 percent at the bottom of the crisis,⁵ while the effect is 2.9 percent for an individual of equal experience with high school education (Table 5).

⁴ All percentage changes are calculated as final value divided by initial value, minus one.

⁵ After the multivariate analysis, all percentage changes are calculated as predicted likelihood of employment at the observed level of the crisis, divided by the predicted likelihood of employment with GDP growth at the long-term trend, minus one. All other variables but crisis, schooling and experience are set at the sample mean.

Similarly, experience greatly reduces the risk of job-loss. We find that the coefficients on the interaction between crisis and experience variables are large in magnitude and highly significant. For example, among those with secondary education, the likelihood of employment at the bottom of the crisis drops by 2.9 percent with less than five years of experience and by only 0.03 percent for those with 10 to 19 years of experience (Table 5).

A few more findings are worth noting. Although starting from poorer secular labor market outcomes, women's employment was relatively less affected by the crisis.

Race is a significant factor in determining the likelihood of employment and the number of hours worked. However, quite surprisingly we find that the coefficients on the interaction with the crisis variables are not statistically significant, suggesting that the likelihood of losing a job during the crisis is not affected by racial considerations.

4.3 Robustness of the results

A few caveats to the above results are worth discussing. First, it is important to consider that the government may have reacted to the crisis with job-creation policies that may have benefited skilled and unskilled workers differently. It could be argued that those measures, which are not accounted for in our models, could bias our estimates. We therefore investigate whether such policies were indeed enacted over the period of study.

In February 2009, the South African government mandated a task force to formulate a response to the crisis (Government of South Africa 2009). However, to the best of our knowledge, no anti-cyclical discretionary spending was approved by the third quarter of 2009. Rather, the government expedited spending in already existing programs and developed a framework for coordinating its policy response. The major fiscal policy response during the period of our analysis was the expansion of the ongoing Expanded Public Works Programme (EPWP, see Table 6). During the first three quarters of the crisis (2008:Q3 – 2009:Q1), the EPWP created 390,000 short term jobs, a 29 percent increase over the same period twelve months earlier (i.e. 2007:Q3 – 2008:Q1). During the same period, the focus on the youth grew slightly from 45 to 47 percent

(corresponding to a change from 136,000 to 185,000 jobs). The focus on the youth, who are typically less experienced, provides comfort that the direction of the bias is benign. In other words, controlling for an expansion in public work programs would not alter the sign of our coefficients, and would expand their magnitude.

A second potentially confounding factor of the impact of the crisis on labor market outcomes is the unionization of selected workers. About one third of South African workers are unionized, and union membership could theoretically provide protection against the risk of lay-off. Unfortunately, only the availability of longitudinal data would allow controlling for this factor (as well as for any other job-related variable) in our multivariate analysis. In addition, the Quarterly LFS 2008-09 does not collect information on unionization. It is however important to understand the effect of this unobserved characteristic on our estimates.

Using data from 2000-2007, we find that education and experience are positively correlated with unionization, and that conditional on employment six months earlier, union members are indeed less likely to lose their job.⁶ This holds also when controlling for the type of contract. On the other hand, we also find that some of the most unionized sectors were hit the hardest by the crisis. For example, in the extractive industry the rate of unionization is above the national average, and skilled and unskilled workers are equally unionized. Nonetheless, employment dropped by 8 percent between the second quarters of 2008 and 2009 (Table 1), and unionization did not seem to prevent the lay off of unskilled workers. This provides comfort that it is education and experience that drive our findings, rather than membership in a union.

As a third caveat, we recognize that the number of years of education may be a poor proxy for skills. This may be particularly relevant for South Africa given the legacy of apartheid, with wide disparities in the quality of schools, and with previously disadvantaged groups receiving education of lower quality. However, such issues should bias downwards the returns to education: if schooling were a poor predictor of productivity, employers would not condition their recruitment decision on such a

⁶ There is also evidence that union members have greater human capital than non-members. Michaud and Vencatachellum (2003) found that everything else being equal, union members earn higher wages than those who do not belong to a union.

variable, which in turn would not have any explanatory power for the two labor market outcomes of interest.

Finally, in our models the crisis is defined as a continuous variable measuring the distance from the long-term GDP growth trend estimated over the period 1994-2009. However, our results are robust to alternative choices of the period of estimation. We also considered an alternative specification in which the crisis was measured by a dummy variable which equals zero prior to the third quarter of 2008 and one afterwards, and found consistent results. We are therefore confident that our findings do not depend on the definition of the crisis variable.

5. Conclusions

The financial and economic crisis of 2008-2009 hit the South African economy mainly through lower demand for its exports and large portfolio outflows. The country officially entered recession in the last quarter of 2008. In this paper, we study how the crisis effects transmitted to the South African labor market, focusing on the hypothesis that human capital in form of education and professional experience provided an insurance mechanism against the shock.

Using labor force survey data unique for the African context, we find that the recession reduced the probability of employment by up to 12 percent for individuals with no schooling and limited work experience. For others, education and experience showed the potential to entirely offset this negative impact, providing a buffer against the shock. These findings have several possible theoretical explanations. First, skilled labor may be complementary to capital (Krusell et al. 2000), so that firms shed off unskilled labor first when demand for their outputs contracts. Second, the cost of matching the right worker with a certain job may be higher for skilled labor (Ljungqvist and Sargent 2007), so that firms may decide to retain the skilled as production drops.

On the other hand, some countervailing factors may reduce the magnitude of our results. First, non-graduates may find low-cost entry in the informal sector (Bernabè and Stampini 2009), while the graduates may try to avoid this option because associated with rapid deskilling. This does not seem to be the case in South Africa during the

financial crisis, as a decrease in the share of non-graduates in informal employment is observed. Second, the expansion of public works (also in the context of the forthcoming World Cup of football) may benefit the unskilled more than the skilled. Despite these factors, we find statistically significant results of considerable magnitude.

The results have two main policy implications. In a long-term perspective, they reinforce the strategic importance of promoting human capital development, through education and professional training both on-the-job and for the non-employed. In a short-term perspective, they suggest that the less educated and those with limited professional experience are hit hardest by the recession. They may therefore be the ones with the highest need for social safety nets to weather the storm and avoid falling into poverty traps.

Future work should focus on securing panel data for South Africa and for some other African economies, to formally explore the robustness of the findings presented in this paper. Longitudinal data would allow assessing the effects of the crisis on labor market transitions. Information on earnings, if available, would then complete the picture.

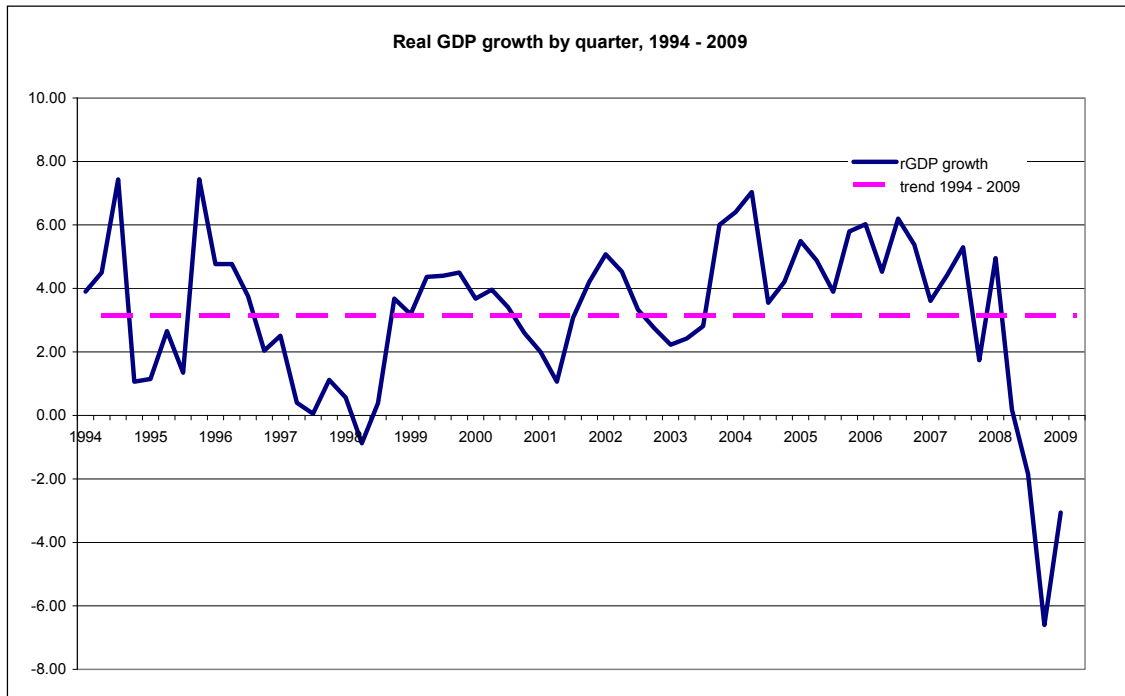
References

- African Development Bank. 2009. Impact of the Global Financial and Economic Crisis on Africa, *ECON working paper* no. 96.
- Agenor P.R., C.J. McDermott and E.S. Prasad. 2000. "Macroeconomic Fluctuations in Developing Countries: Some Stylized Facts", *World Bank Economic Review* 14(2):251-85.
- Aguiar M. and G. Gopinath. 2007. "Emerging Market Business Cycles: The Cycle Is the Trend", *Journal of Political Economy* 115(1):69–102.
- Banerjee A., S. Galiani, J. Levinshohn and I. Woolard. 2006. "Why has Unemployment Risen in the New South Africa?", Center for International Development at Harvard University, CED working paper no. 134.
- Bernabè S. and M. Stampini. 2009. "Labor Mobility during Transition: Evidence from Georgia", *The Economics of Transition* 17(2): 377-409
- Bertrand M., S. Mullainathan and D. Miller. 2003. "Public Policy and Extended Families: Evidence from Pensions in South Africa", *World Bank Economic Review* 17(1):27-50.

- Bhorat H. and M. Oosthuizen. 2008. "Employment shifts and the 'jobless growth' debate", in: A. Kraak and K. Press (eds.), *Human Resources Development Review 2008, Education, Employment and Skills in South Africa*.
- Canova F. 1998. "Detrending and Business Cycle Facts" *Journal of Monetary Economics* 41(3):475–512.
- Edmonds E., K. Mammen and D. Miller. 2005. "Rearranging the Family? Household Composition Responses to Large Pension Receipts", *Journal of Human Resources* 40(1):186-207.
- Government of South Africa. 2009. *Framework for South Africa's response to the international economic crisis* (<http://www.info.gov.za/view/DownloadFileAction?id=96381>).
- Kingdon G. and J. Knight. 2007. "Unemployment in South Africa, 1995-2003: Causes, Problems and Policies", *Journal of African Economies* 16(5):813-848.
- Krusell P., L.E. Ohanian, J.V. Rios-Rull and G.L. Violante. 2000. "Capital Skill Complementarity and Inequality: A Macroeconomic Analysis", *Econometrica* 68:1029–1053
- Ljungqvist L. and T. Sargent. 2007. "Understanding European Unemployment with Matching and Search-Island Models", *Journal of Monetary Economics* 54(8):2139-2178.
- Michaud P.C. and D. Vencatachellum. 2003. "Human Capital Externalities in South Africa". *Economic Development and Cultural Change* 51(3):603-628.
- Neumeyer P. and F. Perri. 2005. "Business cycles in emerging economies: the role of interest rates", *Journal of Monetary Economics* 52(2):345-380.
- Nimubona A.D. and D. Vencatachellum. 2007. "Intergenerational education mobility of black and white South Africans", *Journal of Population Economics* 20(1):149-182.
- OECD 2008, *Economic Assessment of South Africa*. OECD, Paris.
- Pages C. and M. Stampini. 2009. "No Education, No Good Jobs? Evidence on the relationship between Education and Labor Market Segmentation", *Journal of Comparative Economics* 37(3):387-401.
- Pauw K., H. Bhorat, S. Goga, L. Ncube, M. Oosthuizen and C. van der Westhuizen. 2006. "Graduate Unemployment in the Context of Skills Shortages, Education and Training: Findings from a Firm Survey", University of Cape Town, Development Policy Research Unit, DPRU Working Paper No. 06/114.
- Posel D., J.A. Fairburn and F. Lund. 2006. "Labour migration and households: A reconsideration of the effects of the social pension on labour supply in South Africa", *Economic Modelling* 23(5):836-853.
- Prescott E. and T. Kehoe (editors). 2007. *Great Depressions of the Twentieth Century*. Federal Reserve Bank of Minneapolis, Minneapolis.
- Statistics South Africa. Various years. *Quarterly Labour Force Survey, statistical release P0211*. Statistics South Africa, Pretoria

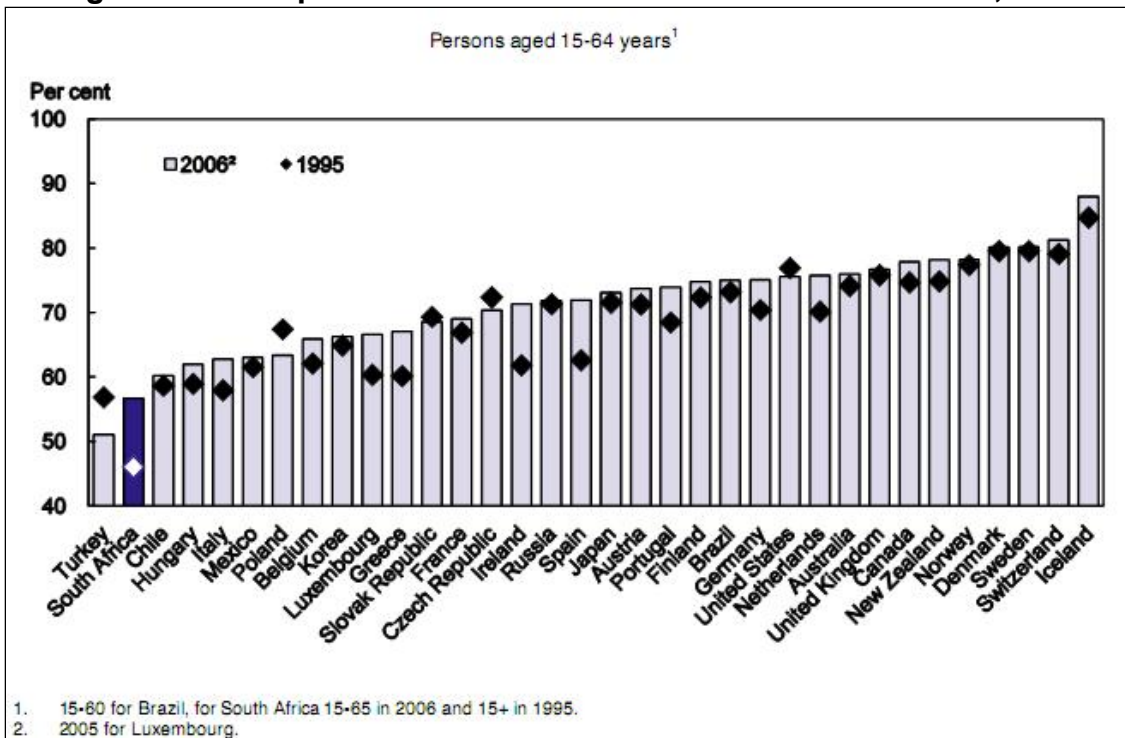
- Statistics South Africa. Various years. *Quarterly Labour Force Survey Questionnaire*. Statistics South Africa, Pretoria.
- Statistics South Africa. Various years. *Gross Domestic Product, statistical release P0441*. Statistics South Africa, Pretoria.
- Statistics South Africa, 2008, *Guide to the Quarterly Labour Force Survey, Report number: 02-11-01*. Statistics South Africa, Pretoria.
- South Africa Department of Public Works. Various years. *Expanded Public Works Programme: Quarterly Report*.
- World Bank. 2008. *In Search of Land and Housing in the New South Africa: the case of Ethebalethu*. World Bank, Washington D.C.
- Yu D. 2008. "The South African Labour Market: 1995 – 2006", University of Stellenbosch Working Paper no. 05/08.

Figure 1: Real GDP Growth by Quarter, 1994 to 2009



Source: Authors' elaborations based on Statistics South Africa statistical releases.

Figure 2. Participation Rate: South Africa vs. OECD Countries, 2006



Source: OECD 2008, Economic Assessment of South Africa

Table 1 – Employment by Industry, Graduates vs. Non-Graduates

Sector	2008:Q2			2009:Q2			% change (a)		
	Non-grads	Grads	Total	Non-grads	Grads	Total	Non-grads	Grads	Total
Agriculture	654.9	135.1	790.0	585.3	125.0	710.3	-10.6	-7.5	-10.1
Mining & quarrying	204.1	141.8	346.0	176.1	142.5	318.6	-13.8	0.5	-7.9
Manufacturing	1076.7	891.5	1968.2	1023.3	849.7	1873.0	-5.0	-4.7	-4.8
Electricity, gas & water supply	36.2	60.8	97.0	34.1	58.9	93.0	-5.8	-3.2	-4.2
Construction	815.1	323.2	1138.3	792.7	324.0	1116.6	-2.7	0.2	-1.9
Wholesale & retail trade	1720.3	1384.2	3104.5	1589.8	1371.7	2961.5	-7.6	-0.9	-4.6
Transport, storage & communication	409.7	364.5	774.2	369.5	357.4	726.9	-9.8	-2.0	-6.1
Financial, insurance, real estate	521.1	1166.3	1687.4	494.2	1215.5	1709.7	-5.2	4.2	1.3
Community, social & personal	816.6	1818.5	2635.1	782.7	1880.8	2663.5	-4.1	3.4	1.1
Private households	1056.0	128.6	1184.6	1055.4	138.6	1194.1	0.0	7.8	0.8
Other	0.6	3.4	4.1	1.6	0.6	2.2	-	-	-
Total	7311.3	6418.0	13729.3	6904.8	6464.7	13369.5	-5.6	0.7	-2.6

Source: Authors' elaborations based on Statistics South Africa Quarterly LFS.

Note: (a) = [(Employment in 2009:Q2)/(Employment in 2008:Q2)]-1.

Table 2 – Employment Rates by Experience, Graduates vs. Non-Graduates

Experience	2008:Q2			2009:Q2			% change (a)		
	Non-grads	Grads	Total	Non-grads	Grads	Total	Non-grads	Grads	Total
0-4	3.0	29.9	10.2	2.2	27.1	9.1	-27.7	-9.5	-10.8
5-9	24.0	54.4	37.3	20.7	49.8	33.4	-13.7	-8.4	-10.3
10-19	46.0	73.5	57.5	43.8	71.0	55.8	-4.8	-3.4	-3.0
20+	50.2	75.9	56.8	48.5	76.0	55.8	-3.4	0.1	-1.9
Total	35.6	63.3	44.7	33.7	61.1	43.0	-5.3	-3.4	-3.8

Source: Authors' elaborations based on Statistics South Africa Quarterly LFS.

Note: (a) = [(Employment rate in 2009:Q2)/(Employment rate in 2008:Q2)]-1.

Table 3 – Average Hours per Week, Graduates vs. Non-Graduates

	2008:Q2	2009:Q2	% Change (a)
Non-graduates	45.0	44.0	2.28
Graduates	44.2	43.3	2.11
Total	44.6	43.6	2.22

Source: Authors' elaborations based on Statistics South Africa Quarterly LFS.

Note: (a) = [(Number of hours in 2009:Q2)/(Number of hours in 2008:Q2)]-1.

Table 4 – Multivariate analysis of the determinants of employment

Dependent variable		Model (1) - Tobit			Model (2) – Probit		
		log(1+ number of hours worked)			Dummy: Employed		
Control variables	Sample mean	Coeff.		s.e.	dF/dx		s.e.
Crisis	3.77	-0.051 ***		0.011	-0.007 ***		0.001
<i>Human Capital</i>							
Years of schooling	9.63	0.218 ***		0.004	0.030 ***		0.000
Experience (5-9 yr) (omitted: 0-4)	0.16	3.367 ***		0.057	0.379 ***		0.006
Experience (10-19 yr)	0.26	4.968 ***		0.052	0.557 ***		0.005
Experience (>20 yr)	0.39	5.500 ***		0.050	0.616 ***		0.004
<i>Gender and race</i>							
Female	0.52	-1.267 ***		0.027	-0.168 ***		0.004
Colored (omitted: black)	0.10	0.489 ***		0.052	0.066 ***		0.008
Asian	0.03	0.411 ***		0.089	0.046 ***		0.013
White	0.10	0.683 ***		0.050	0.124 ***		0.009
<i>Interactions</i>							
Crisis*years of schooling		0.002 **		0.001	0.000 **		0.000
Crisis*experience(5-9 yr)		0.001		0.011	0.000		0.001
Crisis*experience (10-19 yr)		0.021 **		0.010	0.003 **		0.001
Crisis*experience (>20 yr)		0.021 **		0.009	0.003 **		0.001
Crisis*female		0.011 **		0.005	0.001 **		0.001
Crisis*colored		-0.004		0.008	-0.000		0.001
Crisis*asian		-0.017		0.016	-0.003		0.002
Crisis*white		0.010		0.009	0.002		0.001
<i>Province</i>							
Eastern Cape (omitted: West. Cape)	0.13	-0.988 ***		0.051	-0.124 ***		0.006
Northern Cape	0.02	-0.726 ***		0.058	-0.093 ***		0.007
Free State	0.06	-0.424 ***		0.053	-0.050 ***		0.007
Kwazulu Natal	0.20	-0.523 ***		0.048	-0.064 ***		0.007
North West	0.07	-0.726 ***		0.055	-0.095 ***		0.007
Gauteng	0.23	0.169 ***		0.043	0.019 ***		0.007
Mpumalanga	0.07	-0.292 ***		0.053	-0.034 ***		0.007
Limpopo	0.10	-1.172 ***		0.054	-0.137 ***		0.006
<i>Time</i>							
Quarter 1 (omitted: Quarter 2)	0.50	0.064 ***		0.012	0.007 ***		0.002
Constant		-5.433 ***		0.072			

Source: Authors' estimates based on Statistics South Africa Quarterly Labor Force Surveys. Number of observations: 230,406 for the 4 surveys corresponding to 2008:Q1, 2008:Q2, 2009:Q1 and 2009:Q2.

Notes: The dependent variables are in model (1) the logarithm of hours worked (plus 1) in the week prior to the survey, and in model (2) a dummy variable which equals 1 if the respondent was employed in the week prior to the survey and 0 otherwise. The estimators are the Tobit for Model (1) and the Probit for Model (2). *Crisis* is measured as the deviation of a two-quarter moving average of GDP growth from the 1994 to 2009 trend of 3.2 percent. The omitted categories are as follows: 0 to 4 years of experience, *Black* for racial group, *Western Cape* province, and the *second quarter*. Female is coded as 1 if the respondent is female and 0 otherwise. A * indicates that the

explanatory variable is significant at 10 percent, **significant at 5 percent, and ***significant at 1 percent. In Model (2) dF/dx denotes the marginal effect of the explanatory variable on the likelihood of being employed.

Table 5 – Predicted probability of employment (post-estimation)

Education and experience	Predicted likelihood of employment when growth is at the long-term trend level	Predicted likelihood of employment in 2009:Q2	% change (a)
0 years of schooling, 0-4 years of experience	36.24%	31.77%	-12.34%
0 years of schooling, 10-19 years of experience	88.41%	87.06%	-1.53%
8 years of schooling, 0-4 years of experience	61.23%	58.03%	-5.23%
12 years of schooling, 0-4 years of experience	72.71%	70.58%	-2.94%
12 years of schooling, 10-19 years of experience	98.43%	98.40%	-0.03%

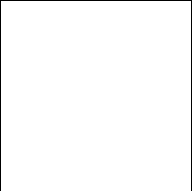
Source: Authors' post-estimation predictions.

Note: (a) = [(Predicted likelihood in 2009:Q2)/(Predicted likelihood in 2008:Q2)]-1.

Table 6 -- Expanded Public Works Programme, 2007:Q3 to 2009:Q1

	Expenditure, Including Professional Fees (million Rand)	Gross Number of Work opportunities Created				
			# Youth	# Women	% Youth	% Women
2009:Q1	8816.5	170478	88725	43577	0.522	0.256
2008:Q4	3923.5	101158	48470	46576	0.479	0.460
2008:Q3	4270.7	118341	47336	51937	0.400	0.439
2008:Q2	6192.3	180838	72335	97653	0.400	0.540
2008:Q1	4710.2	124735	59360	55470	0.478	0.447
2007:Q4	3749.5	99805	36928	41435	0.372	0.418
2007:Q3	2711.2	78235	41321	24776	0.528	0.317

Source: South Africa Department of Public Works Quarterly Reports of the EPWP.



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