

# **Should inflation targeting be abolished in pursuit of employment creation? An empirical analysis of the relationship between inflation and employment in South Africa.**

*Draft paper submitted for ESSA 2011 Conference, University of Stellenbosch, 5-7 September 2011.*

Cobus Vermeulen<sup>1</sup>

## **Abstract**

It was recently publicly contended that overly strict application of inflation targeting stifles employment growth in South Africa. This paper investigates the direct relationship between inflation and employment in South Africa. It is an extension of existing Philips Curve-type models and aims to determine whether a positive relationship exists or if there is, in fact, a trade-off between inflation and employment creation. Using both VAR and VEC models with employment, inflation and economic growth as endogenous variables, the long run trends as well as short run dynamics are highlighted. The analysis reaffirms earlier evidence of a negative long-run relationship between inflation and employment, and no significant relationship in the short run. The implication is that the current relatively low and constant inflation, attributed to the inflation targeting regime, is actually conducive to employment creation.

JEL codes: E24, E52, E63

Keywords: inflation, employment, Phillips Curve, vector autoregression (VAR), vector error correction (VEC)

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<sup>1</sup> Department of Economics, Unisa. vermejc@unisa.ac.za

# 1. Introduction

In recent months, the South African Reserve Bank (SARB) has come under fire in the media for their supposedly overly conservative approach to monetary policy, specifically inflation targeting. The SARB is, however, known to pursue flexible inflation targeting (SARB 2002), not focussing exclusively on inflation but also on other macroeconomic variables such as economic growth and unemployment. Some economists and unions have argued that, to keep inflation within the targeted range of 3-6%, the SARB sets too high repo rates, preventing the South African economy from growing at its full potential and subsequently undermining job creation. There have been calls for the inflation targeting framework to be reviewed – even scrapped – and for government to rather adopt “employment targeting” instead of inflation targeting monetary policy (IOL 2011). It was further argued that “[a]n inflation-based macroeconomic framework constrains fiscal policy from being aggressive enough to address backlogs in social and economic infrastructure and to create jobs” (COSATU 2010: 76). In short, the argument is that the current inflation targeting monetary policy regime constrains growth and consequently stifles employment creation and contributing to high levels of unemployment. It should be mentioned, however, that, while this was an interesting and sometimes heated debate in the popular press it was still merely a debate, although it did prompt the author to investigate whether this would in fact be a feasible strategy to improve the employment outlook in South Africa.

This idea of a trade-off between inflation and unemployment was born out of findings by A.W Phillips (1958). Phillips established a negative relationship between money wage changes and unemployment in the British economy over the period 1861–1957. His graph of inflation plotted against unemployment famously became known as the “Phillips Curve”. Academics and government officials alike started to believe in a permanent and stable trade-off between inflation and unemployment, and that this relationship could be exploited in favour of employment creation.

On the other hand, there are those who believe that the current South African monetary policy regime is appropriate, as low and stable inflation is a precondition for sustainable long-term economic growth and thus employment creation, and that inflation targeting has had important benefits for the countries that have adopted it (Bernanke, Laubach, Mishkin & Posen 1999; SARB 2002). There are also fears that overly expansionary monetary policy – while it could boost economic growth and subsequently employment creation in the short run – could cause higher inflation, which will have adverse effects in the long run, essentially destroying the progress made in the first place. Furthermore, the Phillips Curve relationship has broken down for most countries since the stagflation of the 1970s, which saw high levels of both inflation and unemployment (Zhu 2005).

It is clear that there are two contrasting points of view regarding the application of monetary policy in South Africa and its effect on employment creation. Both of these positions have merit. Unemployment in South Africa is widespread, with the official unemployment rate<sup>2</sup> hovering around 25-30% for most of the past 20 years. At the same time, annual inflation has fallen from a high of 15.3% in 1991 to consistent single-digit figures since 1993. Price stability of this kind is believed to foster a stable macroeconomic environment, leading to improved productive investment opportunities, capital inflows and stable and sustainable long-term economic growth. However, recent healthy economic growth has unfortunately done little to improve the bleak unemployment outlook. In fact, while the South African economy has grown at an annual average of 2.8% per year since 1990, the unemployment rate has more or less stayed the same. Over the same period, the actual number of people employed has grown by only 1.6% per year, just over half the growth of real GDP.

Looking at these numbers, one might get the impression that low and stable inflation does play a part in helping the economy grow. At the same time, however, it does not appear that this economic growth is translated into satisfactory employment growth. This paper investigates the linkages between inflation, economic growth and employment, and, specifically, whether inflation has had a significant impact on employment creation in South Africa over the past 40 years. It does not analyse the relationship between inflation and unemployment as per the

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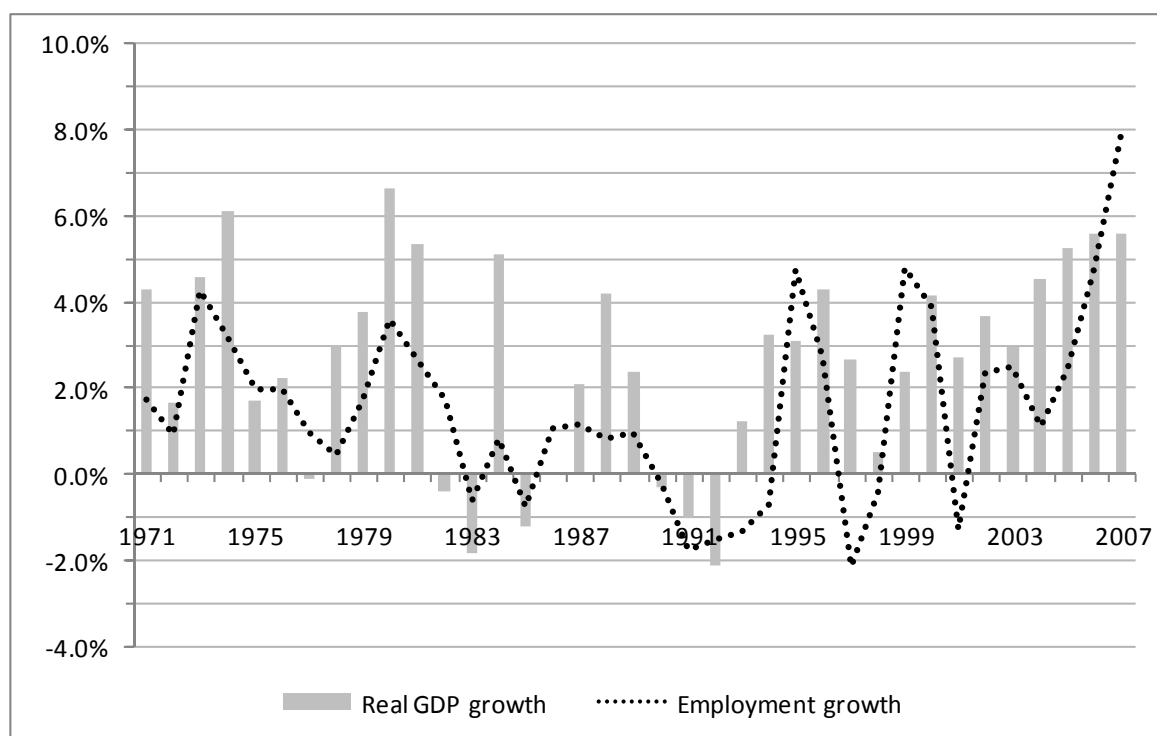
<sup>2</sup> The number of unemployed expressed as a fraction of the labour force.

traditional Phillips Curve literature, but focuses directly on the relationship between inflation and employment (actual number of jobs in the economy). Furthermore, even though the traditional Phillips Curve relationship has been shown to have broken down, the fact that prominent public figures still seem to perceive it as valid warrants further investigation. It builds on previous research (Vermeulen 2011), in which this relationship was analysed using the Engle-Granger error-correction methodology and presents an alternative evaluation mechanism in the form of a vector autoregression (VAR). The remainder of this paper is structured as follows: Section 2 provides a high-level analysis of the data, as well as a brief overview of the findings from the previous study. Section 3 is dedicated to the VAR and VEC models, including its merits and demerits, the model specification and the estimation results. Section 4 concludes.

## 2. Data<sup>3</sup> and previous research

Necessitated by the unavailability of reliable unemployment data, specifically during the period 1950-1985, economic growth was generally used as a proxy for unemployment to test the Phillips Curve hypothesis in South Africa. This is based on the theoretical premise that higher economic growth should lead to a comparable reduction in unemployment. However, as was discussed earlier, it is conceivable that an increase in output might not lead to a comparable increase in employment (or decrease in unemployment), and as such economic growth is perhaps an inaccurate (even misleading) approximation of employment creation in this context. Figure 1 indicates that, while employment and economic growth generally trend together over time, there is a quite inconsistent relationship between the two series.

**Figure 1:** Real GDP growth vs. employment growth



**Source:** Own calculations from data obtained from the SARB online time series facility and Hodge (2009).

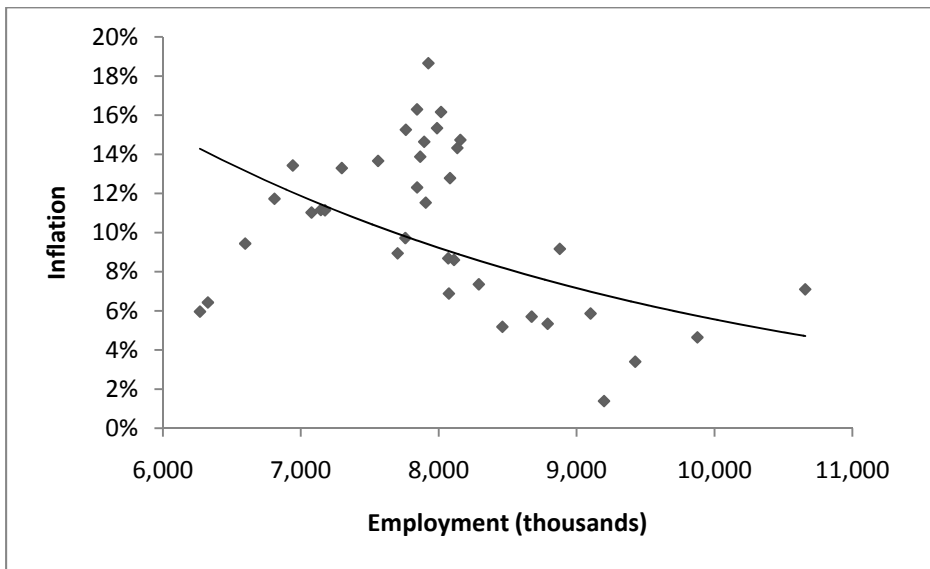
In 1995, for example, employment growth exceeded economic growth by about almost two percentage points. In 1997 the economy grew by 2.8% whereas employment contracted by 2.0%, while in 2000 both the economy and employment grew by around 4.0%. This inconsistency is further substantiated by the difference between the rates of economic growth (2.8%) and employment growth (1.6%) from 1990-2007 alluded to earlier.

<sup>3</sup> All data with the exception of the employment series were obtained from various editions of the South African Reserve Bank (SARB) Quarterly Bulletin and extracted from the SARB's online database. The employment series was obtained from Hodge (2009). The annual data spans the period 1970-2007.

The South African literature<sup>4</sup> found strong evidence of a trade-off between inflation and economic growth. This is also consistent with the international experience. However, due to the unpredictable pass-through from economic growth to employment this does not really provide a great deal of insight into the relationship between inflation and employment. The novelty of this paper therefore lies in the direct analysis of the relationship between inflation and employment creation, thereby avoiding the inconsistencies in South African unemployment data and the variable pass-through from economic growth to employment creation.

Shifting the focus from the unemployment rate to employment (actual number of people employed), it appears that there is a negative relationship between inflation and employment in the long run. Figure 2 plots inflation against employment with a fitted logarithmic regression line.

**Figure 2:** Scatterplot of inflation and employment



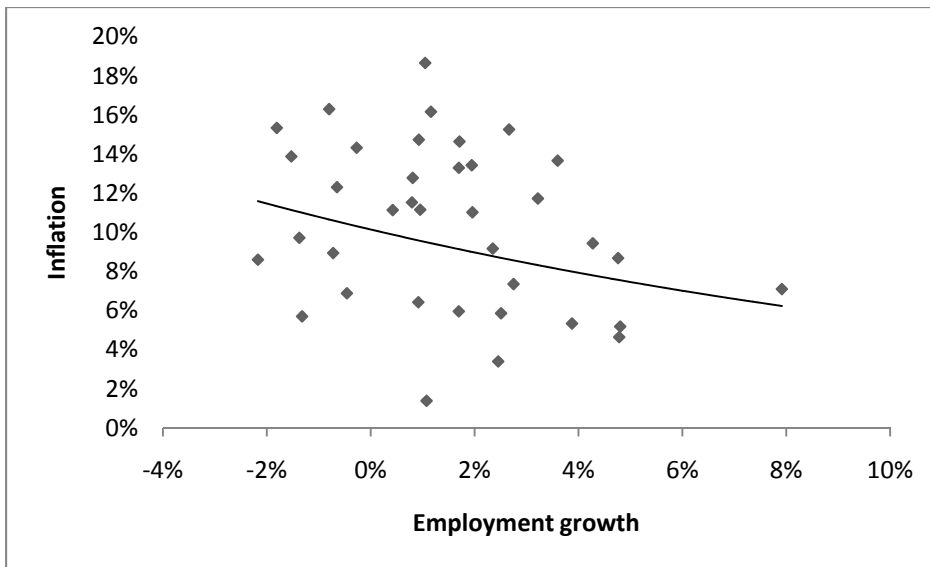
**Source:** Own calculations from data obtained from the SARB online time series facility and Hodge (2009).

The correlation coefficient of -0.38 indicates that there is a moderate negative relationship (in the long run) between inflation and the number of people employed. Higher levels of employment coincide with lower levels of inflation. This is consistent with the theory of economic growth leading to employment growth, and the negative relationship between inflation and growth in South Africa confirmed by previous studies. Note that this is *not* a representation of the Phillips Curve even though it looks similar. Here employment is plotted on the horizontal axis, and not *unemployment* as per the original Phillips Curve literature. This already suggests that there might not be a trade-off between inflation and unemployment.

To further substantiate this point, the relationship between inflation and employment *growth* is illustrated in Figure 3. The correlation coefficient of -0.31 indicates that there is still evidence of a moderate negative relationship, albeit weaker than the previous.

**Figure 3:** Scatterplot of inflation and employment growth

<sup>4</sup> See Vermeulen (2011) for a summary of the South African literature.



**Source:** Own calculations from data obtained from the SARB online time series facility and Hodge (2009).

This preliminary data analysis suggests that the argument posed in the introduction might not be entirely valid. Employment creation is said to be stifled by overly strict inflation targeting, but it appears that higher inflation is associated with lower employment and employment growth. Could this then mean that allowing higher inflation by way of expansionary monetary policy might not necessarily boost long run employment growth, but actually slow it down?

Vermeulen (2011) analysed the relationship between inflation and employment using the Engle-Granger error correction approach. A statistically significant negative relationship was found between inflation and employment in the long run. In the short run, a positive – albeit insignificant – relationship was established. The rest of this paper is devoted to analysing this same relationship using a different econometric approach.

### 3. VAR and VEC models

A standard vector autoregression is an econometric model which captures the evolution and interdependencies between multiple time series. It is a strictly atheoretical model in which no a priori relationships between the variables are stipulated, and which only investigates the pure statistical relationship(s) between the variables. All the variables in a VAR are treated symmetrically by including for each variable an equation explaining its evolution based on its own lags and the lags of all the other variables in the model, that is, each variable is explained by its own past values and all (current and past) values of all other variables in the system.

The atheoretical property of a VAR might appear unacceptable to some scholars. However, therein lies a great advantage also. In cases where the relationship(s) between two or more variables appear murky, a VAR is a very strong tool as it does not impose a structural relationship which might be incorrect. Such imposed structures in macroeconomic models are also often highly subjective and has been criticized by Sims (1981). Sims further argued that if there is true simultaneity among certain variables they should all be treated on an equal footing. In the South African case determinants of employment remain obscure in the light of different schools of thought and practical observations: Is employment creation driven from the consumer (demand) side or the production (supply) side? To what extent does economic growth translate into employment growth? Is our unemployment a deep-rooted structural problem? In the light of such uncertainties, a VAR provides a very handy tool to “clinically” investigate the relationships between employment, economic growth and inflation. While it will not necessarily provide the answer to the fundamental question of what exhaustive list of factors actually drive employment, it will shed important light on the crucial relationship between employment and inflation which is the focus of this study.

The basic VAR will only examine the structural relationship between employment, GDP growth and inflation. As a result the VAR will consist of three equations, one for each of these endogenous variables. The appropriate lag length will be determined on the basis of the Akaike and Schwarz information criteria, but for now the lag length remains unknown. For the purpose of illustration the system will be modelled as a VAR(2) process.

The VAR(2) system takes the form

$$E_t = a_{11}E_{t-1} + a_{12}Y_{t-1} + a_{13}\pi_{t-1} + b_{11}E_{t-2} + b_{12}Y_{t-2} + b_{13}\pi_{t-2} + c_1 + \varepsilon_{1,t}$$

$$Y_t = a_{21}E_{t-1} + a_{22}Y_{t-1} + a_{23}\pi_{t-1} + b_{21}E_{t-2} + b_{22}Y_{t-2} + b_{23}\pi_{t-2} + c_2 + \varepsilon_{2,t}$$

$$\pi_t = a_{31}E_{t-1} + a_{32}Y_{t-1} + a_{33}\pi_{t-1} + b_{31}E_{t-2} + b_{32}Y_{t-2} + b_{33}\pi_{t-2} + c_3 + \varepsilon_{3,t}$$

where  $E$  = employment,  $Y$  = real GDP growth and  $\pi$  = inflation

The system can also be written in matrix notation

$$\begin{bmatrix} E_t \\ Y_t \\ \pi_t \end{bmatrix} = A \begin{bmatrix} E_{t-1} \\ Y_{t-1} \\ \pi_{t-1} \end{bmatrix} + B \begin{bmatrix} E_{t-2} \\ Y_{t-2} \\ \pi_{t-2} \end{bmatrix} + \begin{bmatrix} c_1 \\ c_2 \\ c_3 \end{bmatrix} + \begin{bmatrix} \varepsilon_{1,t} \\ \varepsilon_{2,t} \\ \varepsilon_{3,t} \end{bmatrix}$$

where

$$A = \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix} \text{ and } B = \begin{bmatrix} b_{11} & b_{12} & b_{13} \\ b_{21} & b_{22} & b_{23} \\ b_{31} & b_{32} & b_{33} \end{bmatrix}$$

As a first step, the above three variables need to be tested for stationarity. This is done by way of the Augmented Dicky-Fuller (ADF) test in which the variables are tested for unit roots. The null hypothesis of non-stationarity (or at least one unit root) is evaluated against the ADF test statistic. Table 1 shows the results. (Employment and output is in natural log form.)

**Table 1:** Testing for stationarity

Variable	ADF test statistic	ADF critical value	Order of integration
$E$	0.27	-3.62	I(1)
$\Delta E$	-3.09	-2.94 <sup>†</sup>	I(0)
$Y$	0.63	-3.62	I(1)
$\Delta Y$	-3.89	-3.63	I(0)
$\pi$	-1.69	-3.63	I(1)
$\Delta \pi$	-5.44	-3.64	I(0)

For all three of the variables in levels the ADF test statistic is bigger than the critical value. As a result the null of non-stationarity cannot be rejected. However, all the first differences of the variables are shown to have no unit root, and as a result are stationary, implying that the series in levels are I(1). All the results hold at the 1% level of significance, with the exception of  $\Delta E$  which is evaluated at a 5% level of significance.

The fact that the three variables under consideration are all shown to be non-stationary implies that a standard VAR would not be possible. There are thus two options: (1) Estimate the standard VAR in first differences. All these series are stationary and therefore the standard OLS estimation would be appropriate. This should give an appropriate view of the short run dynamics, although valuable information about the long run will be lost. (2) Extend the VAR to a VEC (vector error correction), a restricted VAR which has cointegration restrictions built into the specification. The VEC restricts the long run behaviour of the endogenous variables to converge to their cointegrating relationships.

### 3.1. Dynamic VAR

A VAR can only be estimated with stationary variables. The unit root tests detailed in Table 1 have shown that the first differences of employment, economic growth and inflation are all stationary. The VAR in first differences takes the form

$$\Delta E_t = a_{11}\Delta E_{t-1} + a_{12}\Delta Y_{t-1} + a_{13}\Delta\pi_{t-1} + b_{11}\Delta E_{t-2} + b_{12}\Delta Y_{t-2} + b_{13}\Delta\pi_{t-2} + c_1 + \varepsilon_{1,t}$$

$$\Delta Y_t = a_{21}\Delta E_{t-1} + a_{22}\Delta Y_{t-1} + a_{23}\Delta\pi_{t-1} + b_{21}\Delta E_{t-2} + b_{22}\Delta Y_{t-2} + b_{23}\Delta\pi_{t-2} + c_2 + \varepsilon_{2,t}$$

$$\Delta\pi_t = a_{31}\Delta E_{t-1} + a_{32}\Delta Y_{t-1} + a_{33}\Delta\pi_{t-1} + b_{31}\Delta E_{t-2} + b_{32}\Delta Y_{t-2} + b_{33}\Delta\pi_{t-2} + c_3 + \varepsilon_{3,t}$$

Different lag lengths were tested, but the smallest Schwarz and Akiake information criteria were obtained using two lags, hence the VAR(2) process. The VAR estimates appear in Table 2.

**Table 2:** VAR model output

Vector Autoregression Estimates

Date: 08/11/11 Time: 17:33

Sample (adjusted): 1974 2007

Included observations: 34 after adjustments

Standard errors in ( ) & t-statistics in [ ]

	D(LN_EMPLOY)	D(LN_RGDP)	D(INFL)
D(LN_EMPLOY(-1))	0.220452 (0.21035) [ 1.04803]	0.398524 (0.26777) [ 1.48829]	-0.137133 (0.22600) [-0.60678]
D(LN_EMPLOY(-2))	-0.746982 (0.21441) [-3.48396]	-0.146193 (0.27294) [-0.53563]	0.408870 (0.23036) [ 1.77493]
D(LN_RGDP(-1))	0.347451 (0.18344) [ 1.89412]	0.263748 (0.23351) [ 1.12947]	0.451924 (0.19708) [ 2.29305]
D(LN_RGDP(-2))	0.488727 (0.19320) [ 2.52964]	-0.080511 (0.24594) [-0.32736]	-0.333359 (0.20757) [-1.60598]
D(INFL(-1))	-0.040171 (0.15624) [-0.25712]	-0.152097 (0.19889) [-0.76473]	0.242796 (0.16786) [ 1.44641]
D(INFL(-2))	0.048990 (0.14936) [ 0.32800]	-0.036370 (0.19013) [-0.19129]	-0.312576 (0.16047) [-1.94787]
C	-6.40E-05 (0.00528) [-0.01212]	0.016934 (0.00672) [ 2.52162]	-0.007165 (0.00567) [-1.26413]



R-squared	0.475753	0.254876	0.409045
Adj. R-squared	0.359254	0.089293	0.277721
Sum sq. resid	0.008426	0.013655	0.009727
S.E. equation	0.017666	0.022489	0.018980
F-statistic	4.083745	1.539265	3.114790
Log likelihood	92.90295	84.69636	90.46307
Akaike AIC	-5.053115	-4.570374	-4.909593
Schwarz SC	-4.738864	-4.256124	-4.595342
Mean dependent	0.014109	0.025161	-0.000640
S.D. dependent	0.022070	0.023565	0.022333
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Determinant resid covariance (dof adj.)	2.85E-11		
Determinant resid covariance	1.43E-11		
Log likelihood	279.7965		
Akaike information criterion	-15.22332		
Schwarz criterion	-14.28057		

While several of the lagged variables are not individually significant the F-statistic is high enough to support the joint significance of all the variables. The variable of interest – inflation – appears to have a negative impact on employment at one lag, but a positive impact at two lags. However, neither of the inflation variables is statistically significant, leading to the conclusion that inflation does not influence employment in the short run. This is in contrast to traditional Phillips curve theory and the international experience (Taylor 1998), which suggests that higher inflation would allow lower unemployment (or conversely higher employment) in the short run.

### 3.2. VEC

A VEC can only be estimated if there exists at least one cointegrating relationship between the endogenous variable. The next step would therefore be to test if and how many cointegrating relationship(s) exist between employment, economic growth and inflation using Johansen's cointegration test. Table 3 presents the output of the Johansen cointegration test which was run assuming an intercept but no trend in the cointegrating equation.

**Table 3:** Johansen's cointegration test

#### Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.602680	42.37958	29.79707	0.0011
At most 1	0.329177	12.84318	15.49471	0.1207
At most 2	0.002097	0.067164	3.841466	0.7955

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

#### Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.602680	29.53640	21.13162	0.0026
At most 1	0.329177	12.77602	14.26460	0.0848
At most 2	0.002097	0.067164	3.841466	0.7955

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

Both the trace and maximum eigenvalue tests indicate that one cointegrating equation is present. When the trace and max-eigen statistics are evaluated against the critical value, the null of no cointegration is rejected, while the null cannot be rejected for one cointegrating equation. The presence of the cointegrating equation indicates that a VEC can now be estimated. The VEC is basically a restricted VAR, designed for use with non-stationary series that are known to be cointegrated. The VEC estimation is shown in Table 4.

**Table 4:** VEC estimates

Vector Error Correction Estimates

Date: 08/11/11 Time: 16:39

Sample (adjusted): 1974 2005

Included observations: 32 after adjustments

Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1		
LN_EMPLOY(-1)	1.000000		
LN_RGDP(-1)	-0.593151 (0.03119) [-19.0148]		
INFL(-1)	-1.045526 (0.16442) [-6.35869]		
C	-7.542162		
Error Correction:	D(LN_EMPLOY)	D(LN_RGDP)	D(INFL)
CointEq1	0.395238 (0.14252) [ 2.77320]	0.443976 (0.21515) [ 2.06355]	0.447305 (0.17280) [ 2.58857]
D(LN_EMPLOY(-1))	-0.201089 (0.20876) [-0.96325]	-0.025124 (0.31515) [-0.07972]	-0.554991 (0.25311) [-2.19266]
D(LN_EMPLOY(-2))	-1.031072 (0.21278) [-4.84573]	-0.488572 (0.32122) [-1.52101]	0.031751 (0.25799) [ 0.12307]
D(LN_RGDP(-1))	0.359384 (0.14920) [ 2.40882]	0.301933 (0.22523) [ 1.34056]	0.507899 (0.18089) [ 2.80774]
D(LN_RGDP(-2))	0.585709 (0.16924) [ 3.46090]	0.065628 (0.25548) [ 0.25688]	-0.156086 (0.20519) [-0.76069]
D(INFL(-1))	0.057413 (0.13196) [ 0.43507]	-0.053143 (0.19921) [-0.26676]	0.381710 (0.16000) [ 2.38572]
D(INFL(-2))	0.193590 (0.13857) [ 1.39710]	0.184330 (0.20918) [ 0.88119]	-0.204870 (0.16801) [-1.21943]
C	0.004265 (0.00435) [ 0.98060]	0.020795 (0.00657) [ 3.16737]	-0.003376 (0.00527) [-0.64019]

R-squared	0.561224	0.341694	0.550661
Adj. R-squared	0.433247	0.149689	0.419603
Sum sq. resids	0.004770	0.010872	0.007013
S.E. equation	0.014099	0.021284	0.017094
F-statistic	4.385371	1.779605	4.201677
Log likelihood	95.57073	82.39122	89.40602
Akaike AIC	-5.473170	-4.649451	-5.087876
Schwarz SC	-5.106736	-4.283017	-4.721442
Mean dependent	0.011149	0.023336	-0.001836
S.D. dependent	0.018727	0.023081	0.022438
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Determinant resid covariance (dof adj.)	1.58E-11		
Determinant resid covariance	6.65E-12		
Log likelihood	275.5574		
Akaike information criterion	-15.53484		
Schwarz criterion	-14.29812		
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While not all of the coefficients are individually statistically significant, the F-statistic is high enough to confirm the joint significance of all variables in the model. The adjusted R2 of 0.43 is sufficient, although it could indicate the omission of certain exogenous variables. Of particular interest is the employment equation in the second column. Looking only at the second part of the output (from "Error Correction" onwards) it appears that economic growth and inflation both have a positive impact on employment, while lagged employment appears to have a negative impact on itself. This, however, does not take into account the effect of the cointegrating equation. The cointegrating equation can also be interpreted as the long-run equilibrium relationship between the variables under consideration. The lagged differences included in the model output can be interpreted as an indication of the short-run dynamics in the relationship. To calculate the complete impact of economic growth and inflation on employment it is necessary to add the coefficients of those series to the coefficients from the cointegrating equation and this is illustrated below. Note that this is only applicable to the first lag of the variables and the significance of the coefficients is disregarded.

For employment (lagged once) this yields the following:

$$\beta_0 = 0.395 * (1.000) - 0.201 = 0.194$$

For economic growth (lagged once) this yields the following:

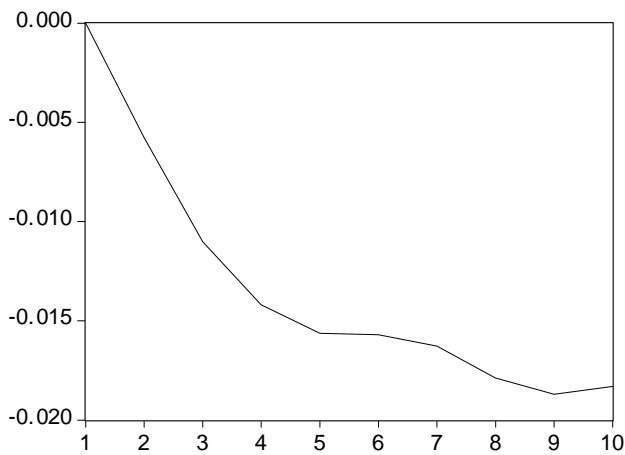
$$\beta_1 = 0.395 * (-0.593) + 0.359 = 0.125$$

For inflation (lagged once) this yields the following:

$$\beta_2 = 0.395 * (-1.046) + 0.057 = -0.356$$

So what then is the effect of inflation on employment creation? It is evident from the model that, while employment is boosted by economic growth, inflation has a significant negative effect on employment. In fact, the only statistically significant impact of inflation on employment occurs in the cointegrating equation which is negative at -1.046. This negative relationship is further emphasised by the impulse response function in Figure 4, which traces the effect of a one standard deviation increase in inflation on employment over 10 periods.

**Figure 4:** Response of employment to innovation in inflation



The increase in inflation causes a sharp reduction in employment over the next 5 years, after which the reduction becomes less pronounced.

While a positive relationship is established between employment and economic growth in both the long and short run, the main variable of interest – inflation – is shown to have a negative effect on the level of employment in the long run, while it has no significant impact in the short run as established by the dynamic VAR. This negative long run relationship was to be expected. Several studies have established a negative relationship between inflation and economic growth and since employment is argued to be determined largely by economic growth, a slowdown in growth attributed to high inflation could be expected to lead to a slowdown in employment growth. Furthermore, the graphical analysis of the relationship (Figures 2 and 3 above) also indicated a negative relationship between the two variables. Of interest is the highly insignificant relationship between inflation growth and employment growth in the short run. Because the first difference of inflation was used due to the non-stationary nature of the inflation data, this relationship should however be interpreted with care. The first difference of the inflation rate can be interpreted as a measure of the change in the inflation rate (or the growth in inflation). As such, the results show an insignificant relationship between employment growth and the *change* in inflation. This might indicate then that, although employment and inflation are negatively related in the long run, employment growth is not sensitive to movements in the inflation rate in the short run.

These results contradict the contention that inflation targeting should be relaxed to improve employment in South Africa. It is evident that – in the South African context – a higher inflation rate harms employment growth in the long run. There is also no statistical evidence of a positive short-run relationship between inflation and employment. However, this finding of no significant positive short run relationship is contrary to international experience (Taylor 1998) and could be investigated further. But whatever the case may be in the short run, it seems that inflation has an adverse effect on employment in the long run, and that allowing higher inflation will not solve our employment problems.

## 4. Conclusion

This study investigated the linkages between inflation, economic growth and employment. The specific aim was to establish whether there is evidence of a significant relationship between inflation and employment in response to speculative accusations levelled against the SARB's inflation targeting monetary policy framework. It is publicly contended that the SARB is acting overly strict on fears of inflation outside the target range of 3-6%. They are said to be maintaining excessively tight monetary policy and that this policy prevents the economy from growing at a quick enough pace to bring about a sufficient reduction in unemployment. This study drew on earlier research in the South African literature on the relationship between inflation, economic growth and employment and added to these by directly investigating the link between inflation and employment in South Africa. Using both a dynamic VAR and a long-run VEC, a significant negative long-run relationship was found between inflation and employment, while there was no evidence of any relationship in the short run. The results support earlier findings of a long-run trade-off between inflation and economic growth, which is likely to cause a similar trade-off between inflation and employment.

The results obtained suggest that the accusations levelled at the SARB are unfounded and patently flawed. Higher employment cannot be achieved in South Africa by tolerating a higher level of inflation – in fact, higher inflation will have an adverse effect on employment creation. The major driver of employment creation was shown to be economic growth. However, statistical analysis also indicated that there could be some variables missing in the simple model. This is consistent with the findings of some studies that South African unemployment is a structural problem, and not entirely driven by aggregate demand. As such, the South African economy cannot be expected to “grow” itself out of unemployment through measures aimed at stimulating aggregate demand. Further research to address the supply side constraints to employment creation is recommended.

The unemployment problem is a real issue in South Africa. It can, however, not be resolved by allowing inflation to increase. Sound macroeconomic policies, including an institutional commitment to price stability, will form the bedrock of employment growth in the years to come.

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