Modeling In‡ation in South Africa: A Multivariate Cointegration Analysis

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ABSTRACT: We employ an expectations augmented Phillips curve framework to investigate the link between in‡ation, unit labor costs, the output gap, the real exchange rate and in‡ation expectations. Using multivariate cointegration techniques, we …nd robust evidence for mark-up behavior of output prices over unit labor costs. Most importantly, we …nd that the mark-up in the South African economy is much higher than in the U.S. For South Africa we …nd a markup of about 30 percent; three times a high as the 10 percent markup found for the U.S.
KEYWORDS: imperfect competition, wage-setting, price-setting, in‡ation, markup, cointegration
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1   Introduction

The performance of the U.S. economy during the latter part of the 1990s exceeded even optimistic forecasts. From 1996 through 1999, non-farm business sector productivity grew by about 2.5 percent per year on average. In the ten years previous to this period, from 1986 to 1995, it had increased at an average rate of only 1.4 percent per year. The late 1990s period coincided with a spell of accelerated progress in computer technology and with a widening adoption of the internet by businesses and consumers. U.S. real output growth exceeded 3.5 percent per year from 1996 through 1999, while at the same time, in‡ation pressures remained rather subdued, with the personal consumption expenditures price index only increasing about 1.7 percent per year, on average. This set of events is sometimes collectively called the 'new economy'.

One of the reasons why in‡ation in the U.S. remained relatively subdued was the unexpected jump in productivity. Higher productivity kept down unit labor costs, which in turn helped keep down in‡ation. So, the new economy has highlighted the importance of the cost-push dimension of the in‡ation process.

Recently, Ghali (1999) analyzed the relevance of wage growth for the U.S. in‡ation process. Using Johansen multivariate cointegration techniques, he …nds robust evidence for the cost-push view of the US in‡ation process. More speci…c, prices are marked up over productivity-adjusted labor costs and are also a¤ected by demand and supply shocks. His main …ndings are that the markup in the U.S is relatively low, and that monetary policy can pro…t from labor costs data in predicting future rates of in‡ation.

There are potentially high returns to examining key economic relationships against the background of contrasting labor and product market systems. In particular, an important question is to what extent these …ndings carry over to less competitive environments - such as often found in emerging markets.

This paper applies the Ghali model to the South African economy - not unrepresentative of an emerging market economy. More speci…c, we employ an expectations augmented Phillips curve framework to investigate the link between in‡ation, unit labor costs, the output gap, the real exchange rate and in‡ation expectations. We …nd robust evidence for mark-up behavior of output prices over unit labor costs, which in turn are driven by in‡ation expectations. Most importantly, we …nd that the mark-up in the South

African economy is much higher than in the U.S. For South Africa we ...nd a mark-up of about 30 percent; three times a high as the 10 percent markup Ghali ...nds for the U.S.

The remainder of this paper is organized as follows. Section 2 presents the theoretical framework. In Section 3 we present the data and econometric methodology. Estimation results can be found in Section 4. Section 5 concludes.

2   The Theoretical Framework

In this investigation we employ an expectations augmented Phillips curve model as formulated by Ghali (1999)[1] in order to investigate the nature of the link between prices, unit labour cost, de...ned both for the non-agricultural labour force, and the economy as a whole, the output gap, open economy supply shocks, and price expectations.

2.1   An Open Economy Supply Side Model

The model we employ is speci...ed on the basis of a framework which enables an expectations augmented Phillips curve model in three variables to be derived. The starting point is given by the following series of long run relationships:

$$p_t = \text{\textregistered}_0 + \text{\textregistered}_1 (w_t \text{ i } q_t) + \text{\textregistered}_2 y_t + \text{\textregistered}_3 S_t + \text{"}_{1t} \qquad (1)$$

$$(w_t \text{ i } q_t) = \text{\textasciimacron}_0 + \text{\textasciimacron}_1 p_t^e + \text{\textasciimacron}_2 y_t + \text{\textasciimacron}_3 S_t + \text{"}_{2t} \qquad (2)$$

where p_t denotes the price level (given by the GDP de‡ator), $(w_t \text{ i } q_t)$ unit labour cost with w_t denoting nominal wage rates and q_t labour productivity, y_t denotes the output gap as an indication of demand shocks, S_t denotes the real exchange rate (as proxy for supply shocks), and p_t^e price expectations. Thus in equation 1 we have a depiction of the mark-up behaviour of output prices over productivity adjusted labour costs, after demand and supply shocks have been controlled for. Productivity adjusted unit labour costs in turn are driven by price expectations, as well as demand and supply shocks.

A number of alternative hypotheses can be advanced on the formation of price expectations, including adaptive expectations $p_t^e = \sum_{j=1}^{m} \text{\textcent}_j p_{t_i j}$ say, or

[1] Following the earlier literature given by Gordon (1982, 1985) and Stockton and Glassman (1987).

rational expectations $p_t^e = E_{t-1}[p_{t-j} \ j - {t-1}]$. Given the context to which the present model is to be applied, the relatively inflexible South African labour market, we introduce a further alternative based on the Hodrick-Prescott filter, in terms of which we have $p_t^e = \min_{p_1^a \cdots p_n^a} \left(\sum_{t=1}^{n} (p_t - p_t^e)^2 + \sum_{t=1}^{n-1} \left[\Delta^2 p_{t+1}^2 \right] \right)$.

The advantage of the third alterative, is that price expectations come to incorporate information concerning both the level and the rate of change of prices. Moreover, the filter has the advantage of allowing a relatively severe smoothing of the price series, thereby allowing us to capture the inflexibility of the South African labour market which prevents rapid updating of price expectations.

The model is an open economy model. The impact of international prices on the domestic economy is via the real exchange rate in the model (S_t). The real exchange rate (and hence changes in foreign prices and the nominal exchange rate) impacts on the price of capital and intermediate goods employed in the production of domestic output, and hence on the prices of domestic output.

The model specified by equations 1 and 2 then allows us to obtain the dynamics implied by the Phillips curve relationship in terms of a standard error correction model, given by:

$$\Delta p_t = h_0 + \sum_{i=1}^{l} h_{1i} \Delta (w - q)_{t-i} + \sum_{j=1}^{n} h_{2j} \Delta p_{t-j} \tag{3}$$

$$+ \sum_{r=1}^{d} h_{3r} \Delta S_{t-r} + \phi_1 ECM_{1;t-1} + \varepsilon_{1t}$$

$$\Delta (w - q)_t = k_0 + \sum_{i=1}^{l} k_{1i} \Delta p_{t-i}^e + \sum_{j=1}^{n} k_{2j} \Delta p_{t-i} \tag{4}$$

$$+ \sum_{r=1}^{d} k_{3r} \Delta S_{t-r} + \phi_2 ECM_{2;t-1} + \varepsilon_{2t}$$

where $ECM_{1;t-1}$ denotes the deviation of actual prices from equilibrium prices implied by equation 1, and $ECM_{2;t-1}$ denotes the deviation of actual unit labour cost from equilibrium unit labour cost implied by equation 2.

3 Econometric Methodology and Data

3.1 The Data

All data series were collected formulated over the 1960-99 sample period. In estimation we employ the following data series:

- ² For prices, the GDP de‡ator, constructed on the SARB published nominal and real GDP data series; Figure 1 illustrates.[2] The price variable is denoted by LNP.

- ² For unit labour cost, we employ the published SARB unit labour cost series;[3] Figure 2 illustrates. The unit labour cost variable is denoted by LNWY.

- ² The output gap was computed as the di¤erence between the real GDP series published by the SARB, and the real output series Hodrick-Prescott ...lter;[4] Figure 3 illustrates. The output gap variable is denoted by YGAP.

- ² We proxy for the supply shock by the real exchange rate of the South African economy. Since the SARB does not publish a real exchange

[2]We note that the SARB has recently published an updated GDP series, revising GDP upwards. The revised GDP ...gures create signi...cant di¢ culties for purposes of estimation, however. The nominal GDP ...gures appear to have been revised only until 1993, while the real GDP ...gures have been revised through 1960. Hence, employing the revised GDP ...gures in order to compute the GDP de‡ator would introduce an errors in variables problem. Instead, we employ the unrevised GDP estimates. While these variables may introduce an undercount for the GDP ...gures, at least they do so consistently, allowing for a more reliable GDP de‡ator to be computed.

[3]Unit: Index 1990=100, current prices. [Source: SARB Quarterly Bulletin: 99q1 (S-132)]

[4]The Hodrick-Prescott ...lter represents a smoothing of a time series, such that the smoothed time series, denoted $y^{\texttt{¤}}$, is obtained from:

$$y^{\texttt{¤}} = \min_{y_1^{\texttt{¤}}\cdots y_n^{\texttt{¤}}} \left(\sum_{t=1}^{\texttt{X}} (y_t \texttt{ i } y_t^{\texttt{¤}})^2 + {}_{\texttt{,}} \sum_{t=1}^{\texttt{X}^{1}} {}^{\texttt{i}} \texttt{¢}^2 y_{t+1}^2 \texttt{¢} \right)$$

where ¸ denotes a smoothing parameter. For quarterly data the conventional smoothing parameter is set at 1600. We follow the convention in the analysis that follows. Thus $\hat{y}_t = (y_t \texttt{ i } y_t^{\texttt{¤}})$.

rate variable over the full 1960-99 sample period, we compute a real exchange rate. Since:

$$P_t^c = {}^1{}_t P_t^\pi E_t + (1 - {}^1{}_t) P_t \tag{5}$$

where P_t^c denotes consumer prices, ${}^1{}_t$ import penetration,[5] P_t^π foreign prices,[6] E_t the nominal Rand-Dollar exchange rate, and P_t the domestic price level, it is possible to solve for the real e¤ective exchange rate as:

$$\tilde{A}_t = \frac{P_t^\pi E_t}{P_t} = \frac{1}{{}^1{}_t} \left[\frac{P_t^c}{P_t} - \left(1 + {}^1{}_t\right) \right] \tag{6}$$

Thus S_t is given by the computed $\tilde{A}_t$ variable, such that an increase in $\tilde{A}_t$ indicates a relative increase in the competitiveness of domestic output; Figure 4 illustrates the computed variable. The supple shock variable is denoted by LNREX.

² We computed three alternative measures of price expectations. Figure 5 illustrates by virtue of the implied in‡ation rates obtained from the alternative price expectations models employed. The INFLATE1 is that based on the Hodrick-Prescott ...lter and shows the most severe smoothing. INFLATE2 and INFLATE3 re‡ect an adaptive and rational expectations structure respectively. Both show greater variability than INFLATE1, and as expected INFLATE3 leads both of the alternative in‡ationary expectations. While the remainder of our discussion will be conducted in terms of the price expectations based on the Hodrick-Prescott ...lter, we also estimated our model on the basis of the alternative expectations-forming mechanisms. Parameters of the long run equilibrium relationships are not sensitive to the alternative formations of price-expectations, and only the VAR structure is a¤ected. The price expectations variable will be denoted by LNPHAT. The two structural breaks are denoted by DU1 (early 1970's) and DU2 (early 1990's).

[5] For ${}^1{}_t$ we employed Imports of Goods and Nonfactor Services as a proportion of Expenditure on Gross Domestic Product, at constant 1990 prices. Both series are published by the SARB.

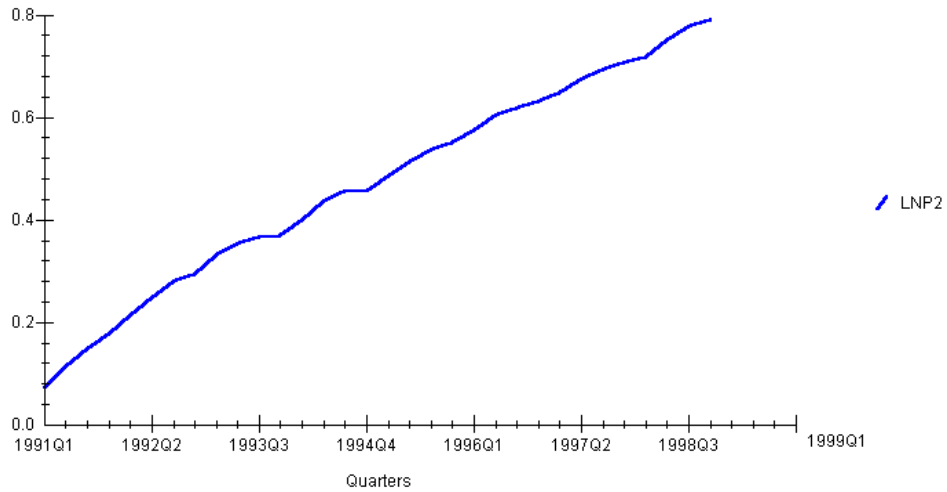[6] Given by the USA GDP de‡ator.
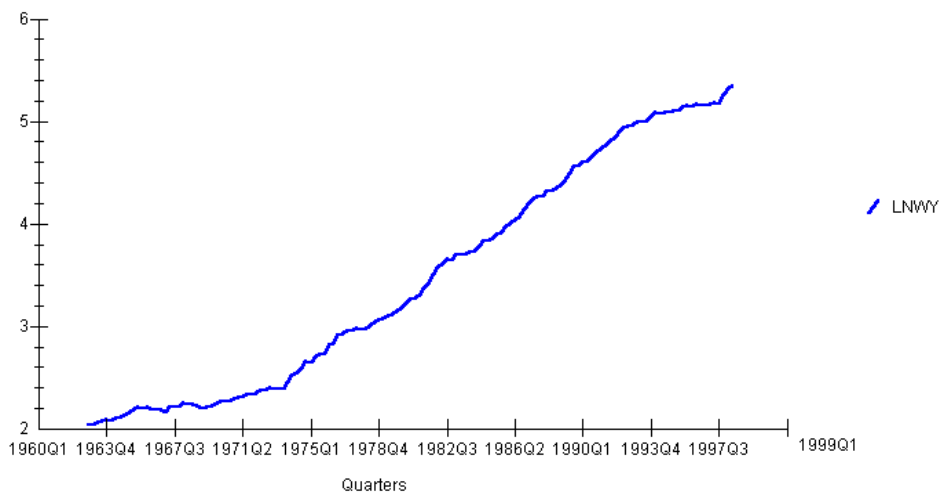
Figure 1: The GDP Deflator

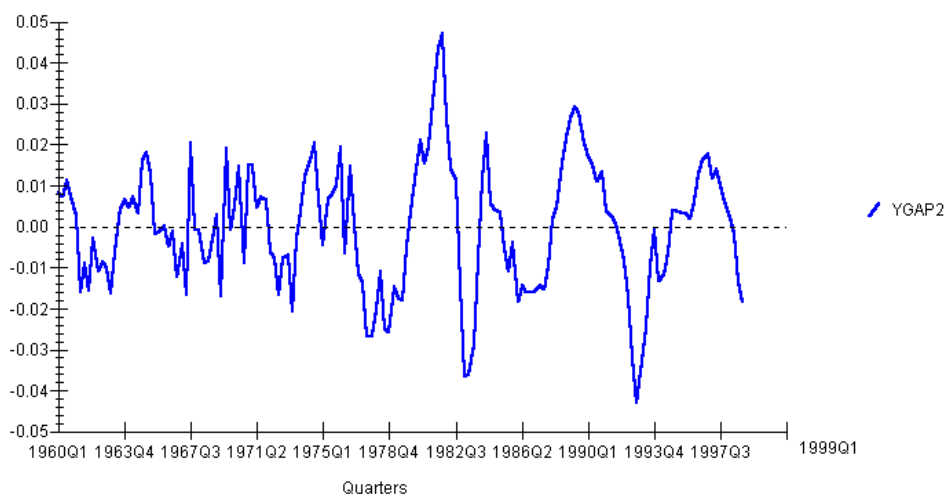Figure 2: Productivity Adjusted Unit Labour Cost
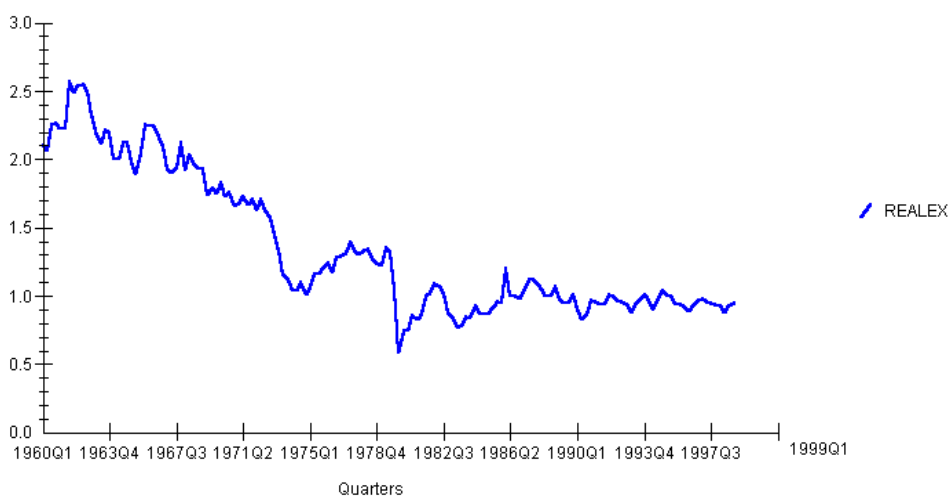
Figure 3: Output Gap

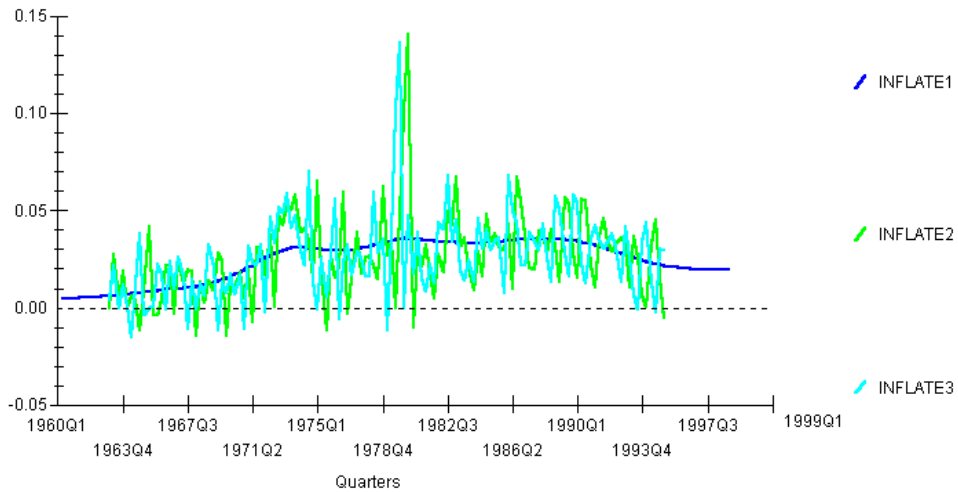Figure 4: Real Exchange Rate: proxy for supply shocks

Figure 5: Three Measures of In‡ationary Expectations

3.2   Econometric Methodology

The expectations of two long run relationships in our data suggests the appropriateness of a VECM estimation framework. We employ that of Johansen.

Johansen[7] techniques of estimation are now standard, so that the discussion here can be brief. We employ a vector error-correction (VECM) framework, for which in the case of a set of k variables, we may have cointegrating relationships denoted r, such that $0 \cdot r \cdot k_i 1$. This gives us a k-dimensional VAR:

$$z_t = A_1 z_{t_i 1} + ::: + A_m z_{t_i m} + {}^1 + \pm_t \tag{7}$$

where m denotes lag length, and $\pm$ a Gaussian error term. While in general z_t may contain $I(0)$ elements, given our bivariate association, as long as nonstationary variables are present we are exclusively restricted to $I(1)$ elements. Reparametrization provides the VECM speci...cation:

$$\mathfrak{C} z_t = \sum_{i=1}^{\mathbf{X}^1} {}_{i\;i} \mathfrak{C} z_{t_i\;i} + {}_{|}z_{t_i\;k+1} + {}^1 + \pm_t \tag{8}$$

[7] See Johansen (1988) and Johansen and Juselius (1990, 1992).

The existence of r cointegrating relationships amounts to the hypothesis that:

$$H_1(r) : \Pi = \alpha\beta' \tag{9}$$

where Π is $p \times p$, and α, β are $p \times r$ matrices of full rank. $H_1(r)$ is thus the hypothesis of reduced rank of Π. Where $r > 1$, issues of identi…cation arise[8]. In our case this may arise as soon as both equations 1 and 2 are present in our data. In this case we expect $r = 2$, and for the long run parameters:

$$\Pi z_{t_i k+1} = \begin{bmatrix} \alpha_{11} & \alpha_{12} \\ \alpha_{21} & \alpha_{22} \\ \alpha_{31} & \alpha_{32} \\ \alpha_{41} & \alpha_{42} \end{bmatrix} \begin{bmatrix} \beta_{11} & \beta_{12} & \beta_{13} & \beta_{14} \\ \beta_{21} & \beta_{22} & \beta_{23} & \beta_{24} \end{bmatrix} \begin{bmatrix} p \\ w_i q \\ p^e \\ S \end{bmatrix}_{t_i k+1} \tag{10}$$

Cointegrating relationships are provided by $\varepsilon_i = \beta_{i1}p + \beta_{i2}(w_i q) + \beta_{i3}p^e + \beta_{i4}S$, with the α_{ij} providing the error correction terms. In the absence of a priori theory problems of identi…cation attach to equation 10, since any linear combination of ε_i will themselves be stationary and hence cointegrated. Exact identi…cation requires r^2 restrictions, for the expectation that $r = 2$ thus 4. On the basis of the theoretical discussion we specify:

$$\Pi z_{t_i k+1} = \begin{bmatrix} \alpha_{11} & \alpha_{12} \\ \alpha_{21} & \alpha_{22} \\ \alpha_{31} & \alpha_{32} \\ \alpha_{41} & \alpha_{42} \end{bmatrix} \begin{bmatrix} 1 & \beta_{12} & 0 & \beta_{14} \\ 0 & 1 & \beta_{23} & \beta_{24} \end{bmatrix} \begin{bmatrix} p \\ w_i q \\ p^e \\ S \end{bmatrix}_{t_i k+1} \tag{11}$$

Our concern is to establish both that $r = 2$, and in the nature of the β_{12} and β_{23} parameters.

4 Estimation Results and Evaluation

4.1 Univariate Time Series Characteristics of the Data

The univariate time series characteristics of the data is reported in Table 1. Statistics are augmented Dickey-Fullers.

All variables are $\sim I(1)$, except the output gap variable which is $\sim I(0)$. While such time series characteristics conform to prior theoretical expectations, the univariate time series structure of the output gap variable will

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[8] See Wickens (1996), Johansen and Juselius (1990, 1992), Pesaran and Shin (1995a, 1995b), Pesaran, Shin and Smith (1996).

	$\gg$ I (0)	$\gg$ I (1)
p_t	.50	-3.15¤
$(w_t \text{ ¡ } q_t)$	1.23	-4.46¤
$\not{b}_t$	-5.34¤	
S_t	-2.17	-8.63¤
p_t^e	.58	-5.44¤

Table 1: Augmented Dickey-Fuller Test Statistics

therefore require a zero restriction on $\circledR_2$ and $\bar{\ }_2$ in the long run equilibrium relationships. The output gap will only be able to enter our models directly in the dynamics. We also note that the price expectations variable while $\gg$ I (1), is also subject to two structural breaks. The ...rst occurs in 1970Q1which represents a permanent increase in in‡ationary expectations, the second in 1990Q1 which represents a permanent decrease in in‡ationary expectations (see Figure 5 once again).[9] Since these two time points are associated with the upward pressure on prices that emerged in the early 1970's, and the downward pressure on prices associated with the disin‡ationary policy stance of the SARB since the early 1990's, we suggest that the structural breaks are meaningful in the South African context.

4.2   Estimation Results

Two cointegrating relationships are present in our data. Figure 2 reports both the maximal eigenvalue and trace statistics for the rank of the ¦ matrix, con...rming r = 2.

Estimates of the $\bar{\ }$-matrix under the just-identifying restrictions speci...ed in equation 11 imply the following long run relationships:

$$p_t = 1{:}31\,(w_t \text{ ¡ } q_t) + 0{:}23S_t \qquad (12)$$
$$(w_t \text{ ¡ } q_t) = 0{:}86p_t^e + 0{:}02S_t \qquad (13)$$

These results are not only consistent with the theoretical priors outlined in the discussion of equations 1 and 2, but carry strong practical insight into the mechanisms driving prices in the South African economy.

[9] The I (1) test statistic thus represents a Perron (1994) additive outlier rather than an augmented Dickey-Fuller test statistic. There is also weak evidence of a further break in 1980Q3.

Null	Alternative	Eigenvalue Statistic	95%Critical Value	Trace Statistic	95%Critical Value
r = 0	r = 1	106:70*	27:40	146:10*	48:88
r 5 1	r = 2	27:01*	21:12	39:40*	31:54
r 5 2	r = 3	10:97	14:88	12:39	17:86
r 5 3	r = 4	1:43	8:07	1:43	8:07

Table 2: Cointegration Based on Maximal Eigenvalue of the Stochastic Matrix: * denotes statistical signi...cance; 139 observations 1963q4-98q2; VAR order =4; list of variables included in cointegrating vector: LNP, LNWY, LNPHAT, LNREX; list of I(0) variables included in VAR: YGAP, DU1, DU2; List of eigenvalues is descending order: 0.53589, 0.17659, 0.010208,

First, we note that the coe¢cient on $(w_t \ _{\text{\i}} \ q_t)$ in equation 12 of 1:31, implies the existence of a mark-up of output prices over unit labour cost in production. Second, we note that the impact of the supply shock on both the price and unit labour cost variables is relatively small, implying a 0:23% increase in the domestic price level in response to a 1% increase in the real exchange rate, and only a 0:02% increase in unit labour cost. Third, we note that the impact of price expectations on unit labour cost introduces a feedback mechanism between prices and unit labour cost, though an increase in in‡ationary expectations generates a less than proportional increase in unit labour cost (note the 0:86 coe¢cient on the price expectations variable in the unit labour cost equation).[10] The important point in the current context is

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[10]We note that the current open economy model is not the only one available. An alternative approach might be to sugest that the open economy context could exercise its impact directly on the price expectations of wage earners, via the consumer price index, obviating the need of the supply shock variables. This would provide us with:

$$p_t \quad = \quad \circledR_0 + \circledR_1 \, (w_t \ _{\text{\i}} \ q_t) + \circledR_2 \not{p}_t + "_{1t}$$
$$(w_t \ _{\text{\i}} \ q_t) \quad = \quad {}^{-}_0 + {}^{-}_1 p^e_t + {}^{-}_2 \not{p}_t + "_{2t}$$

where p_t is now de...ned as the aggregate domestic price (GDP de‡ator), and p^e_t as the expected price of the consumption bundle of wage earners (CPI). We estimated this alternative open economy speci...cation, with very little change in our long run coe¢cients. We found $\circledR_1 = 1{:}27$ (in place of 1:31), and ${}^{-}_1 = 0{:}94$ (in place of 0:86). Thus a 1% increase in price expectations would translate into a 1:18% increase in actual aggregate domestic prices. The similarity of the two sets of results not only establishes a striking robustness of the results, but can be explained by the close relationship between the CPI and GDP de-‡ator series for South Africa. In the discussion that remains we use the speci...cation based

that changes in price expectations on the part of labour generate a more than proportionate impact on the actual price level: a 1% increase in price expectations leads to a 1.13% increase in actual prices.

This is important in the policy context of introducing inflation targets aimed at reducing price expectations. In particular, note that if inflation targets are successful in reducing price expectations, policy makers may be able to reduce pressure on the actual price level more than proportionately. The preceding discussion of the feedback mechanism clarifies the point.

However, we note also that the preceding analysis presupposes that price expectations are capable of being changed. Given that the South African labour market is relatively inflexible, it will become doubly important to focus the impact of inflation targeting on affecting the ruling price expectations in the labour market. The preceding analysis suggests that should this prove successful, the impact on actual prices will be substantial.

The dynamics of the error correction models for p_t and for $(w_t - q_t)$ follow in 3. In both, the output gap variable now appears as an I (0) component, and we include two dummies, DU1 and DU2 for the 1970Q1 and 1990Q2 structural breaks noted in connection with the price expectations variable. We note that for both error correction models the error correction terms confirm the presence of the two equilibrium relationships (since the coefficients on the error correction terms are both < 0).

The evidence illustrates two important conclusions. First, simulations indicate that the dynamics of the system stabilizes with 12 quarters in an inflation band of $2 - 3\%$.[11] Second, the inflation rate adjusts more rapidly than do unit labour costs, since the dynamics of unit labour costs consistently lags that of inflation. This is consistent not only with the estimation results reported above, but also with the suggestion presented frequently in the preceding analysis that labour markets adjust relatively sluggishly to price changes, since the variable relevant to the determination of unit labour costs are price expectations that are backward-looking, and hence do not allow wage rates to adjust rapidly enough.

on the GDP deflator, since the time runs for which a consistent GDP deflator series is available is greater than that available for the CPI, and since the GDP-based specification is explicit about the impact of real exchange rate shocks on the price level. Nevertheless, we also employ the close relationship between the GDP deflator and the CPI in order to provide CPI forecasts below.

[11] Note that inflation stabilizes above unit labour costs due to the presence of a mark-up of output prices over unit labour cost.

	Δ_{LNP}	Δ_{LNWY}
$\Delta_{LNP(-1)}$	-0.03 (0.12)	0.13 (0.12)
$\Delta_{LNP(-2)}$	-0.05 (0.11)	0.24 (0.12)
$\Delta_{LNP(-3)}$	-0.12 (0.11)	0.22 (0.11)
$\Delta_{LNWY(-1)}$	0.08 (0.08)	0.11 (0.09)
$\Delta_{LNWY(-2)}$	-0.11 (0.08)	0.27 (0.09)
$\Delta_{LNWY(-3)}$	0.01 (0.09)	0.17 (0.09)
$\Delta_{LNPHAT(-1)}$	-131.57 (40.43)	36.67 (42.77)
$\Delta_{LNPHAT(-2)}$	235.65 (80.61)	-124.85 (85.27)
$\Delta_{LNPHAT(-3)}$	-104.46 (40.97)	86.45 (43.34)
$\Delta_{LNREX(-1)}$	-0.02 (0.03)	-0.06 (0.03)
$\Delta_{LNREX(-2)}$	0.002 (0.03)	-0.04 (0.03)
$\Delta_{LNREX(-3)}$	-0.02 (0.03)	-0.002 (0.03)
DU1	0.02 (0.01)	0.01 (0.01)
DU2	-0.01 (0.01)	-0.004 (0.01)
YGAP	-0.29 (0.12)	0.35 (0.12)
CONST	-0.89 (0.25)	-1.03 (0.27)
ECM1(-1) $[\alpha_{11}]$	-0.21 (.06)	-0.28 (0.07)
ECM2(-1) $[\alpha_{12}]$	-0.45 (.15)	-0.74 (0.15)
R^2	.41	.42
$\overline{R}^2$	.33	.34
F-stat	F(17,121)=4.97 {.00}	F(17,121)=5.23 {.00}
DW	2.08	2.00
SE of Regression	0.19	0.02
Mean of Dependent Variable	0.03	0.02
SD of Dependent Variable	0.02	0.03
Residual Sum of Squares	0.05	0.05
Akaike	343.13	335.32
Schwarz Bayesian	316.72	308.90
Equation Log-Likelyhood	361.13	353.32
Serial Correlation $\gg \chi^2(4)$	8.40 {.08}	3.19 {.53}
RESET $\gg \chi^2(1)$	0.01 {.91}	3.56 {.06}
Normality $\gg \chi^2(2)$	86.69 {.00}	0.003 {.99}
Heteroscedasticity $\gg \chi^2(1)$	1.70 {.19}	3.95 {.05}

Table 3: Error Correction Representation; 139 observations used in estimation over the 1963q4 to 1998q2 period; (.) denotes standard errors, [.] denotes t-value, . denotes probability; ECM denotes error correction term obtained from the long run relationship.

5   Conclusion

This paper has provided robust evidence for the cost-push view of the inflation process in South Africa. We find that prices are set as a markup over productivity-adjusted labor costs. Thus, earlier work on the expectation-augmented Phillips curve model of inflation by Ghali (1999), is also relevant for South Africa.

One key difference between the US and South African environments, is the degree of competition in labor and product markets. This follows from the fact that the markup in South Africa - at about 30 percent - is much higher than the 10 percent markup found by Ghali for the U.S.

This has important policy implications for the South African disinflation process, where the South African Reserve Bank (SARB) is supposed to reduce the inflation rate from its current level of about 8 percent, to between 3 and 6 percent in 2002. For inflation reduction to be successful, it has to go hand in hand with deregulation and fostering competition.

This policy advice appears to be consistent with U.S. evidence, for the higher 'speed limit' (relatively low interest rates and inflation) associated with the recent US 'new economy' expansion were to a large extent made possible by favorable supply- side developments (productivity growth).

Recommended policy measures therefore include fostering competition and reducing the role of administrative prices (price controls). If policymakers make progress in these areas, disinflation will be less costly, because there will be less of a burden placed on monetary policy. Also, by focusing on the root causes of inflation, the task of the central bank is a more manageable one. In fact, it would substantially increase its chances of hitting its inflation target.

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