Dynamic relationships between Unemployment, Income and Entrepreneurhsip in post apartheid South Africa : Is there a puzzle?

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Entrepreneurship is presently a point of considerable interest among academics, researchers, and policy-makers in both, developed and developing economies. In South Africa, the realities of low economic growth, increasing public debt, rising unemployment, and inequality act against public sector and public works programs, which cannot absorb the rising number of job-seekers that enter the labour market each year. Job opportunities come with economic growth expansions. Consequently, it is realized that vigorous entrepreneurship with inclusive economic growth and enterprise development are critical for job creation and boosting income (Luiz & Mariotti, 2011; Parsons, 2014; Herrington, Kew & Kew, 2015; Pauw, 2017).

Labour and capital on their own cannot generate high levels of output expansion, unless these inputs are harnessed together through the agency of entrepreneurship, in a suitable environment. Post-apartheid South Africa has experienced economic expansion since 1994, registering an average growth rate of 3.3 % between 1999 and 2003, 5% during the five years preceding 2008, and 2% between 2010 and 2016. Accompanying this growth, employment has

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increased by over 3.5m in the past two decades, output per person has risen by more than a quarter, and GDP per capita income has increased by about 30% over the same period (The Economist, 2017; SARB, 2017).

Unemployment in South Africa has also increased from 16% in 1994, to 27% in 2017 (SARB, 2017). If one takes the 'discouraged worker' effect (those who have looked for employment, been unable to find any, and given up hope), then unemployment was at an alarming 36%, and youth unemployment was even more worrisome at 54% in 2017 (SARB, 2017). According to Stats SA's latest report (2017), employment decreased by 48,000 in Q1 of 2017 from 9.692m (in the previous quarter) to 9.644m, resulting in more people being on state welfare (over 17m) than on the work payroll (SARB, 2017). South Africa does not have a thriving informal economy where the unemployed and jobless can take refuge. According to the OECD estimates, employment in the informal economy in South Africa is at 15% of the total, compared to about 50% in Brazil and India (The Economist, 2010). The focus is thus on social upliftment through state welfare redistributions to reduce poverty, and on stimulating entrepreneurship in both, the formal and informal sectors, in order to enhance income, output, and job creation.

According to South Africa's National Development Plan (NDP), for unemployment to fall to 14% by 2020, and 6% by 2030, the country needs an average annual GDP growth of 5.4%, and an expansion in small firm entrepreneurship. However, the economic growth rates registered during the Zuma Presidency years were below the NDP target. Economic growth slumped from an average of about 5% in the five year pre-Zuma period, to 1.5% during his term, barely keeping up with population growth (The Economist, 2018). This paper seeks to investigate whether there is an association between entrepreneurship, real per capita income growth, and unemployment. It examines whether there is a connecting or missing link in this three-variable puzzle in post-apartheid South Africa. The study covers the 1994–2014 period, and uses correlation, DOLS regression analysis, and Johansen co-integration tests. Entrepreneurship is proxied by total early stage entrepreneurial activity rate (TEA), and income is proxied by real GDP per capita.

This paper consists of four main parts. The next section briefly examines the literature and theoretical framework that links unemployment, income, and entrepreneurship in South Africa. The third section covers the methodology used in this study, and the fourth one presents a discussion of the results, followed by some entrepreneurship constraints and policy recommendations.

UNEMPLOYMENT, INCOME, AND ENTREPRENEURSHIP IN SOUTH AFRICA

South Africa has registered positive economic growth over the past twenty years since democracy in 1994. With the increase in economic growth, the level of income has consistently increased. As a result, real GDP per head has increased from R42,839 in 1994 to R56,469 in 2014 and R55,827 in 2016 (SARB, 2017). However, employment has lagged behind economic growth during the same period. In effect, the unemployment rate increased from 20% in 1994 to 25% in 2014, and to 27% in 2017, despite numerous strategies and policy interventions to curb the trend, including a youth wage subsidy and the establishment of a new ministry for small businesses.

As in many other countries, SMMEs are an important source of income and employment in South Africa. They constitute more than 40% of the country's overall GDP, employ 50% of all the labour, and are critical to poverty and unemployment reductions in the region (Parsons, 2014; Johnson, 2015; Kantor, 2017). Although South Africa is an efficiency-driven economy, similar to countries like Russia, Brazil, Mexico, and Thailand, it has a low level of TEA. This is the percentage of adult population between the ages of 18 and 64 who are in the process of starting a new business, or have already started a new business that has been operational for up to 3.5 years. South Africa's TEA grew from 9.4% in 2001 to 10.6% in 2013, but the figure dropped to 6.97% in 2014 (Herrington, Kew & Kew, 2015). This paints a rather dim picture of early stage entrepreneurship strength in South Africa, as the economy seems to have underperformed in recent years (Johnson, 2015; The Economist, 2017).

ENTREPRENEURSHIP, INCOME, AND ECONOMIC GROWTH: A THEORETICAL FRAMEWORK

It is an undisputed fact that entrepreneurship is critical in advancing innovation, economic growth, and development of nations (Parker, 2009; Shane, 2003). An entrepreneur scans the environment, identifies market gaps, initiates a new business, or expands an existing one, and in the process hires factors of production and other resources to produce goods and services (Chen & Thompson, 2016). The Schumpeterian entrepreneur is distinguished by his role as an innovator (Naude, 2008). Through a process of creative destruction, growth and development occurs, with new wealth created alongside the destruction of inefficient firms (Luiz, 2008; Mahadea and Younglesson, 2013).

The neoclassical growth theory of Solow (1956) stresses the contribution of capital and labour to long run economic growth. All other factors affecting growth, like

entrepreneurship, government policies, and institutions are lumped into a constant called the *Solow residual,* usually captured in a growth accounting equation, as presented below:

$$\%\Delta Y_t = \%\Delta A_t + \alpha\%\Delta K_t + (1-\alpha)\Delta L_t \qquad (1)$$

Here output (Y_t) is a function of technical progress A_t, or as indicated above, also known as the *Solow residual*, while K_t and L_t represent physical capital and labour, respectively. The marginal productivity of capital and labour are denoted by α and $1-\alpha$, respectively. Constant returns to scale is assumed, hence $0 \leq \alpha \leq 1$ Equation 1 is derived from the Cobb Douglas function ($Y_t = A_t K_t^{\alpha} L_t^{1-\alpha}$), in which technical progress is exogenously determined. The Solow residual may be explicitly derived from equation (1) as:

$$\%\Delta A = \%\Delta Y_t - [\alpha\%\Delta K_t + (1-\alpha)\%\Delta L_t] \qquad (2)$$

In equation (2), $\%\Delta Y_t$, $\%\Delta K_t$ and $\%\Delta L_t$ are observed in the economy. However, the Solow residual is not observed; it explains what remains in output growth after subtracting out the effects on growth caused by capital and labour inputs.

The endogenous model extended a Cobb Douglas function to include variables such as investment in human capital, research-and-development (knowledge), and innovation, as significant contributors (Romer, 1990; Aghion and Howitt, 1992 Mankiw, 2014). Wennekers and Thurik (1999) defined human capital as skilled and unskilled labour, and further subdivided skilled labour into professionals and entrepreneurs. Barro (1997, 2003) built on the endogenous growth model by deriving the following specification:

$$\Delta y_t = F(y_{t-1}, l_{t-1}, Z_t) \qquad (3)$$

Here, ΔY_t, the change in GDP per capita is treated as a function of initial GDP per capita *(y_{t-1})*; initial human capital per capita in log form *(l_{t-1})* and *Zt* comprise control and environmental factors, like level of education, government policies, corruption, political stability, and property rights.

In the current study, Barro's model (equation 3) is adapted to derive the following:

$$y_t = F(TEA_t, Uemp_t) \qquad (4)$$

Here GDP per capita (y_t) is a function of early stage entrepreneurship activity (TEA_t), and unemployment rate ($Uemp_t$). A narrow official definition of unemployment is used;

accordingly, individuals who took active steps in the past few weeks to find employment but were unsuccessful, are considered as unemployed. In the present study, the unemployment rate can be interpreted as an embodied term representing Barro's Z_t in equation 3, above. As an embodied indicator, the unemployment rate not only represents the high levels of individuals without employment, but also the inefficiencies and dysfunctionalities in the economy, that serve to maintain the unemployment at the observed levels (Parker, 2009; Blau, 1987). This study assumes a linear, long term relationship between the variables in equation 4, which is operationalized for statistical estimation as follows:

$$y_t = \alpha_0 + \alpha_1 TEA_t + \alpha_2 Unemp_t + \epsilon_t \qquad (5)$$

Here, as described above, represents total early-stage-entrepreneurial activity, represents the unemployment rate, and represents the independently distributed error term with a zero mean and constant variance.

RELATING ENTREPRENEURSHIP TO UNEMPLOYMENT

Individuals may venture into entrepreneurship by starting a business of their own in response to opportunities created by a vibrant economy (Urban, 2013; Naude, 2008). On the other hand, individuals may be 'pushed' into entrepreneurship by high levels of unemployment in an economy where there is limited state welfare support, and the prospects of securing formal employment are poor (Audretsh and Keilbach, 2005; Ghavidel et al., 2011).

From an economic perspective, one chooses entrepreneurship as an occupational route when expected profits and non-income benefits from self-employment are much higher than the wage-employment income (Hurst and Lusardi, 2004). With entrepreneurship, there is a flexible income but also high levels of risk. If the opportunity cost of self-employment is high in terms of sacrifice or forgone alternatives, for a serious risk-averter, entrepreneurship may not be a viable option. However, at times, in South Africa as in many developing countries, high unemployment drives many people to become self-employed, out of desperation to earn an income, the so-called 'refugee' effect, or 'necessity entrepreneurship'. Further, the low earnings from salaried employment are a strong incentive to opening small formal or informal businesses, where start-up costs and risks are low (Burton, Sorensen & Dobrev, 2016). Hence, following Plehn-Dujowich (2011) and Ghavidel et al., (2011) one may postulate the following relationship between entrepreneurship (TEA_t), income (y_t), and unemployment ($Uemp_t$):

$$TEA_t = \beta_0 + \beta_1 Uemp_t + \beta_2 y_t + \varepsilon_t \quad (6)$$

METHODOLOGY

This paper examines the links between unemployment and income-entrepreneurship in post-apartheid South Africa, by estimating equations 5 and 6, using Stock and Watson (1993) Dynamic Ordinary Least Squares (DOLS) regression, as well as correlation analysis. The DOLS approach was selected because of its robustness for small samples. Data on unemployment, economic growth, and real GDP income per head were obtained from the South African Reserve Bank (SARB) quarterly bulletins and the Labour Force Surveys. Data on TEA was obtained from Global Entrepreneurship Monitor (GEM) reports. Data was analysed using Eviews 9.5 and SPSS 22. Before the long run cointegrated relationships between the variables could be assessed, the variables underwent stationarity tests. All three variables were found to be I(1) in levels, and upon first differing they were rendered I(0).

Since data on TEA entrepreneurship in South Africa is available only since 2001, some extrapolation had to be done to estimate TEA for the 'missing' period 1994 to 2000. The study used a simple but robust trend technique to extrapolate the TEA series to 1994 to increase the sample size for the purpose of regressing reasonable long run relationships. The following trend regression was estimated using the 2001–2013 (13 observations)[1] TEA data:

$$E_t = 3.553846 + 0.246154\, Trend \quad (7)$$

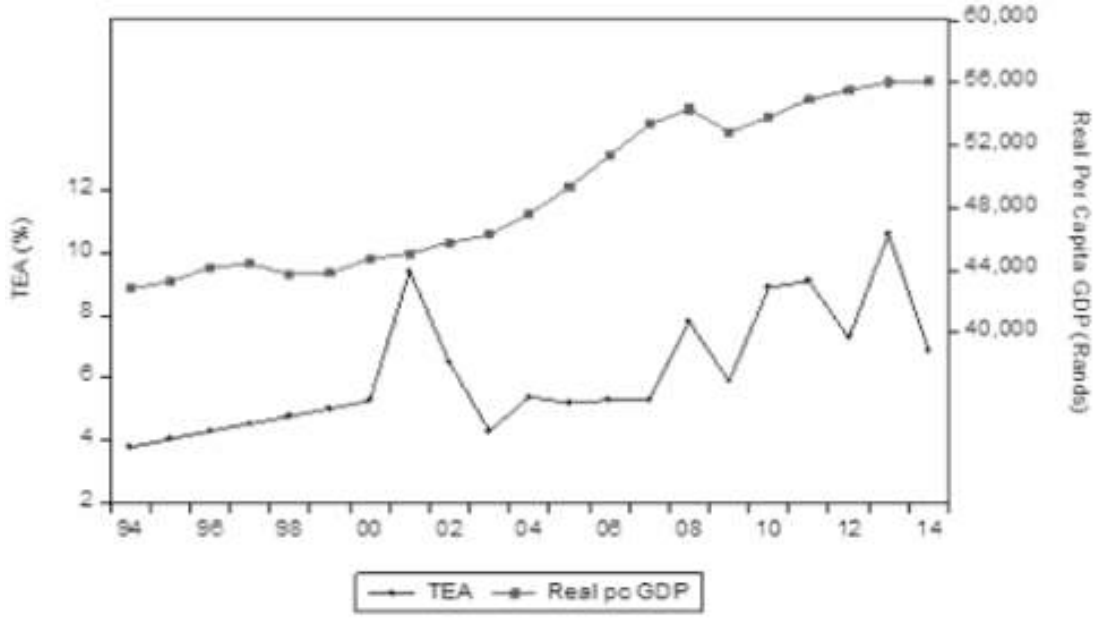
t statistic *(1.81)* *(1.82)*

As it can be noticed, both coefficients were statistically significant. The graph in Figure 1, below depicts the complete (1994–2014) TEA dataset used in this study, together with real per capita GDP. The first 7 data (1994–2000) points were generated using equation 7. Accordingly, TEA ranged from 4% to 5.3% during the period in question. These points are considered to be plausible, as the dawn of the democratic era unlocked business opportunities for all formerly disadvantaged individuals, and strengthened business confidence in the future of South Africa as a rainbow nation under the Mandela leadership.

PRESENTATION AND DISCUSSION OF RESULTS

ased on the actual and extrapolated GEM data, the graph below (Figure 1) shows that there has been a significant drop in the percentage of adult South Africans involved in starting a

business, in 2014. Moreover, the percentage of South African adults running established businesses (businesses older than 3.5 years) also slipped from 2.9% in 2013 to 2.68% in 2014. South Africa continues to perform below similar efficiency driven economies, where the average TEA rate is 14%, while that of established businesses is 4.5% (Herrington, Kew & Kew, 2015). On the positive side, real per capita income and entrepreneurship in South Africa have increased modestly, as reflected in Figure 1 below, where TEA rates are shown on the left axis and real per capita GDP (in Rand) on the right axis over time.



One can notice broad similarities in the co-movement of both variables over the 1994–2014 period. Real per capita GDP income and TEA showed an upward, and positive association, though not smooth, as a result of the benefits of economic growth. The correlation between entrepreneurship and income was significant ($r = 0.643$; $p = 0.01$). A rising income provides scope for enterprise development for both necessity and opportunistic entrepreneurship (Herrington, 2012; Kantor, 2017).

Unit Root Tests

To avoid the possibility of spurious regressions, unit roots tests (Table 1) were initially conducted to ensure that all variables entering the regression are integrated of the same order (i.e. I(1)), followed by estimating the long run relationship, and thereafter, testing for cointegration among the variables, which implies that a combination of such variables is I(0).

The following table reports the Augmented Dickey Fuller unit root tests, which confirm that all the series entering the regression were I(1):

Table 1: Unit Root Tests

Variable	Levels		First Difference	
	Tau Statistic	**Critical Value**	**Tau Statistic**	**Critical Value**
TEA	-4.06	-4.49 (1%)	-6.85	-2.69 (1%)
Real pc GDP	-2.27	-4.53 (1%)	-2.18	-1.96(5%)
Unemployment	-1.70	-4.50(1%)	-5.75	-4.53 (1%)

Notes: All bracketed percentages indicate significance levels of the critical statistic.
Trend and intercept were used to estimate the levels of Tau Statistic for TEA and Real per capita GDP series, while only intercept was used for estimating unemployment.

Since all the variables were integrated of the same order, entering them in the DOLS regression in their levels form was justified. The following subsection presents the results of the DOLS and Johansen regressions.

Cointegrating vector with per capita GDP as the dependent variable

Using DOLS technique, the study tried to assess to what extent TEA (the explanatory factor) affects real per capita GDP (dependent variable), while unemployment rate serves as a control variable. The regression results are presented in Table 2 below.

Table 2: DOLS Regression Real Per Capita GDP as the Dependent Variable

Dependent Variable: natural log real per capita GDP				
Variables	**Coefficient**	**Standard Error**	**t-Statistic**	**P – Value**
Constant	10.96	0.1565	70.08***	0.0000
TEA	0.048	0.0077	6.26***	0.0001
Unemployment Rate	-0.017	0.0062	-2.83**	0.0197
R squared = 0.91		Sum of squared residuals = 0.014		
Standard error of Regression = 0.0398		Long run variance =0.820		

*Notes: ***, ** and *, represents 1%, 5% and 10% significance levels.*
Adjusted sample was from 1996-to 2013 where 18 observations were included after adjustments.
Fixed lead and lag specification (lead = 1, lag = 1)
The long run variance estimate (Bartlett kernel, Newey-West fixed band width = 3000

The regression results (Table 2) show that a 1% rise in TEA leads to a 0.05% rise in yearly per capita GDP income. Contrastingly, a 1% rise in the unemployment rate causes per capita GDP to fall by 0.017%. As labour resources become economically inactive, the rise in unemployment adversely impacts the income growth potential of the economy. All the coefficients are significant, as noted by the t-statistics and p-values. Moreover, the goodness of fit of the model, as reflected by the R-squared, shows that 91% of the variation in per capita GDP is explained by unemployment and TEA.

The plausibility that the above regression results show long-run cointegration relationships is supported by the Johansen (1991), the Trace, and the Maximum Eigenvalue tests for cointegration, as presented in Tables 3.1 and 3.2 respectively.

Table 3.1 Trace Unrestricted Cointegration Rank Test

Sample (adjusted): 1996–2014. Included observations: 19 after adjustments Trend assumption: Linear deterministic trend. Series: Lreal per capita GDP, TEA, Unemployment Lags interval (in first differences): 1 to 1				
No. of CE(s)	**Eigenvalue**	**Statistic**	**Critical Value**	**Prob.****
None *	0.749134	37.55723	29.79707	0.0052
At most 1	**0.397191**	**11.28355**	**15.49471**	**0.1947**
At most 2	0.083970	1.666412	3.841466	0.1967
Trace test indicates 1 cointegrating equation(s) (CEs) at the 0.05 level. * denotes rejection of the hypothesis at the 0.05 level. **MacKinnon-Haug-Michelis (1999) p-values				

Table 3.2 Maximum Eigenvalue Unrestricted Cointegration Rank Test

No. of CE(s)	**Eigenvalue**	**Statistic**	**Critical Value**	**Prob.****
None *	0.749134	26.23094	21.13162	0.0086
At most 1	**0.409888**	**10.02143**	**14.26460**	**0.2383**
At most 2	0.083970	1.666142	3.841466	0.1967
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				

The Johansen cointegration tests (Tables 3.1 and 3.2) suggest that there is at most a single long run cointegrating vector for real per capita GDP, unemployment and total entrepreneurial activity, since the calculated trace (11.28 < 15.49) and maximum eigenvalue statistics (10.02 < 14.26) are less than their respective critical values at the 5% significance level.

Table 4: Johansen Long-run Cointegrating Vector

Normalised variable: natural log real per capita GDP			log likelihood = -10.5541	
Variables	**Coefficient**	**Standard Error**	**t-Statistic**	**P-Value**
Constant	-11.04	0.10225	-107.97***	< 0.01
TEA	0.056	0.0077	6.96***	< 0.01
Unemployment Rate	-0.024	0.00462	-5.22***	< 0.01

*Notes: ***, **, and *, represent 1%, 5%, and 10% significance levels.*
The adjusted sample was from 1996 to 2014, where 19 observations were included after adjustments.
The short-run adjustment equation is not presented since our interest lies solely in the long-run relationship.

It is to be noted that the Johansen estimates of the coefficients' long run relationship generate the same signs for the TEA and unemployment coefficients, but are slightly higher in magnitude than the DOLS estimates. Overall one may conclude that the elasticity of per capita GDP income with respect to TEA ranges between 0.048 (Table 2) to 0.056 (Table 4). Hence, a 1% increase in TEA results in a rise in real GDP per capita income, ranging between 0.05% and 0.06%. Further, the elasticity of per capita GDP income with respect to unemployment ranges between -0.017 (Table 2) to -0.024 (Table 4) Thus, a 1% rise in the unemployment rate causes a fall in GDP per capita income of about 0.02%.

Cointegrating vector with TEA as the dependent variable

In the second regression, the influence of unemployment and real per capita income (as explanatory variables) on entrepreneurship (as the outcome factor) was examined. The results are presented in Table 5.

Table 5: DOLS Regression: TEA as the Dependent Variable

Dependent Variable: TEA				
Variables	**Coefficient**	**Standard Error**	**t-Statistic**	**P – Value**
Constant	-205.24	0.1347	-6.08***	0.0002
Log per capita GDP	18.90	3.0836	6.13***	0.0002
Unemployment Rate	0.31	0.1347	2.33**	0.0448
R squared = 0.729		Sum of squared residuals = 17.94		
Standard error of Regression = 1.412		Long run variance = 0.823		

*Notes: ***, **, and *, represent 1%, 5%,and 10% significance levels.*
Adjusted sample was from 1996 to 2013 where 18 observations were included after adjustments.
Fixed lead and lag specification (lead = 1, lag = 1)
The long run variance estimate (Bartlett kernel, Newey-West fixed band width = 3000)

The findings indicate that a 1% rise in the unemployment rate results in a 0.31% rise in total early stage entrepreneurial activity (Table 5). The variable is significant (p=0.04; t=2.33). This seems to reflect a displacement 'refugee' effect bordering on 'push' entrepreneurship, as unemployment forces individuals to venture into entrepreneurship to earn income by necessity. In short, unemployment induces necessity entrepreneurship, and it prompts business formation among alert individuals.

The influence of real income on entrepreneurship is also found to be highly significant (p=0.0002, t=6.13). A 1% rise in per capita real GDP also causes a 0.19% rise in entrepreneurial activity. Opportunities for business arise with an expanding economy. More businesses start-up and expand when income is increasing, which in turn stimulate demand, reflecting scope for opportunity entrepreneurship. Moreover, the goodness of fit of the regression model shows that 73% of the variation in TEA is explained by real per capita GDP and unemployment.

Table 6.1 Trace Unrestricted Cointegration Rank Test

Sample (adjusted): 1996–2014. Included observations: 19 after adjustments Trend assumption: Linear deterministic trend. Series: TEA, Real per capita GDP, Unemployment Lags interval (in first differences): 1 to 1				
No. of CE(s)	**Eigenvalue**	**Statistic**	**Critical Value**	**Prob.****
None *	0.777978	46.22703	35.19275	0.0022
At most 1	**0.399651**	**17.63246**	**20.26184**	**0.1106**
At most 2	0.341493	7.937836	9.164546	0.0850
Trace test indicates 1 cointegrating equation(s) (CEs) at the 0.05 level. * denotes rejection of the hypothesis at the 0.05 level. **MacKinnon-Haug-Michelis (1999) p-values				

Table 6.2 Maximum Eigenvalue Unrestricted Cointegration Rank Test

No. of CE(s)	**Eigenvalue**	**Statistic**	**Critical Value**	**Prob.****
None *	0.777978	28.59456	22.29962	0.0058
At most 1	**0.399651**	**9.694627**	**15.89210**	**0.3630**
At most 2	0.341493	7.937836	9.164546	0.0850
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				

The Johansen cointegration tests (Tables 6.1 and 6.2) suggest that there is at most a single long run cointegrating vector for total entrepreneurial activity, real per capita GDP, and unemployment, since the calculated trace (17.63 < 20.26) and maximum eigenvalue statistics (9.69 < 15.89) are less than their respective critical values at the 5% significance level.

Table 7: Johansen Long-run Cointegrating Vector

Normalised variable: TEA			Log likelihood = -10.55401	
Variables	**Coefficient**	**Standard Error**	**t-Statistic**	**P-Value**
Constant	201.12	25.0979	25.12***	< 0.01
LGDP per Capita	18.19	2.24752	6.96***	< 0.01
Unemployment Rate	0.42	0.07610	-5.22***	< 0.01

*Notes: ***, **, and *, represent 1%, 5%, and 10% significance levels.*
The adjusted sample was from 1996–2014 where 19 observations were included after adjustments.
The short-run adjustment equation is not presented since our interest lies solely in the long-run relationship.

One can notice that the Johansen estimates of the coefficients' long run relationship generate the same signs for the TEA and Unemployment coefficients, but is slightly lower (18.19 as compared to 18.90, in Tables 5 and 7) and higher (0.42 as compared to 0.31, in Tables 5 and 7), respectively, compared to the DOLS estimate of the TEA and unemployment coefficients. Overall, one may conclude that the elasticity of TEA with respect to per capita real GDP income ranges between 18.90 and 18.19. A 1% increase in per capita GDP results in an increase in TEA ranging between 0.18% and 0.19%. On the other hand, the elasticity of TEA with respect to unemployment ranges between 0.31 to 0.42. This suggests that a 1% increase in the unemployment rate can result in a rise in total early-stage entrepreneurship activity ranging between 0.31% and 0.42%. This perhaps confirms the presence of a 'push' factor to entrepreneurship.

LIMITATIONS

This study has certain limitations. Data on South Africa GEM reports and TEA are available only from 2001. Due to the limited data availability, the study employed a small data set, and to augment the TEA series by one third, it used an extrapolation trend technique. The results are therefore to be treated with some caution. Further, small data sets prevent one from including other relevant control variables due to the loss of degrees of freedom, arising from more coefficients having to be estimated in a regression. Hence, the study was also constrained to use the 'catch-all' unemployment rate to capture all the control type variables suggested by Barro (1997, 2003). The DOLS approach is robust to small samples, while the Johansen approach performs best under large sample sizes, albeit it did generate some plausible good results.

CONSTRAINTS TO ENTREPRENEURSHIP

In South Africa, the government intends to reduce poverty, inequality, and unemployment, partly through affirmative enterprise promotion, in the spirit of broad-based black economic empowerment that supports previously disadvantaged individuals. However, forcing entrepreneurship on individuals who have no enterprise propensity or enterprise ability may constrain the entrepreneurial process and the delivery of an effective supply of entrepreneurship, upon which income, employment, and growth are dependent. At the individual level, contextual factors, such as culture, family upbringing, capital, and education, as well as natural talents, are important in influencing people to venture into self-employment and embark on entrepreneurship. Similarly, at the societal level, some cultures or ethnic groups, such as the Yoruba in Nigeria and Asians in China, India, and South Africa have a greater entrepreneurial proclivity than others. They respond differently to institutional, contextual, and environmental constraints or incentives. While the macroeconomic dynamics are important in generating employment and income growth, one has to also look at the environmental context in support of entrepreneurial activity and growth in real per capita GDP income (Casson, 2003).

A worrying concern is that the environmental conditions for business entrepreneurship are apparently not sufficiently favourable in the new South Africa. The GEM identifies nine 'Entrepreneurial Framework Conditions', ranging from the availability of finance and entrepreneurial education, to cultural and social norms that hinder or stimulate entrepreneurship within a country. About 50% of businesses that were discontinued in South Africa over the period 2006–2014 was due to problems of finance and insufficient profits (Herrington et al, 2015). In 2016, according to the GEM report, South Africa had a new firm ownership rate of 3.3%, established business ownership rate of 0.7%, and business discontinuance rate of 2.5%. This implied that the South African economy lost about 63% of business founded within a year. Surely, business discontinuance may not necessarily mean failure, but it does reflect something about the entrepreneurship environment. Indeed, according to the Ease of Doing Business ranking, as calculated by the World Bank in association with the International Bank for Reconstruction and Development (IBRD), South Africa has progressively dropped from 28th position in 2006 Ease of Doing Business ranking, to 36th in 2010, 41st in 2013, 69th in 2014, and 74th in 2016. This trend is not impressive, when compared with smaller economies, such as Mauritius or Botswana (Johnson, 2015).

Different GEM reports from 2009 to 2017 have consistently mentioned primary and secondary education, government programmes, and government regulations as major

constraints, impacting negatively on entrepreneurship in South Africa (Herrington, 2011; Xavier et al, 2012; Herrington et al, 2017). On the positive side, though, these GEM reports revealed that South Africa scores highly in other areas, such as physical and commercial infrastructure, and internal market dynamics. According to the World Economic Forum's Global Competiveness Report (GCR) 2014/15, South Africa ranked low on health and primary education (132 out of 144 countries), but was first in accounting and auditing standards. Cumbersome regulations and excessive inefficient bureaucracy, prohibitive labour laws, labour rigidity, high levels of corruption, and crime are other serious limitations to entrepreneurship development in South Africa. These add to cost of doing business. The 2014/15 GCR indicated that South Africa ranked 120th (out of 144 countries) for burden of government regulations, 104th for favouritism of government officials, 89th for wastefulness of government spending, 139th for flexibility of wages, 143rd for hiring and firing, and last i.e. 144th for cooperation in employer-labour relations. If entrepreneurs cannot fire non-performing labour partly because of inflexible legislation and prohibitive regulations, they do not hire so easily, thus aggravating the unemployment problem and reducing the attractiveness of entrepreneurship as a career option for aspiring entrepreneurs. Many growth-oriented entrepreneurs may choose to remain small, and limit their enterprise or employment growth, partly because of strict regulations and employment protection legislation.

The implications of poor education, skills shortages, and excessive regulations for new entrepreneurship development and for sustaining entrepreneurship are enormous, even though physical infrastructure and capital are available. It is thus no surprise that South Africa has a relatively low TEA rate among the BRICS countries; though, as indicated earlier, it is recognized as an efficiency-driven economy (Kelly, Singer, and Herrington, 2016). Promoting a conducive environment that supports an entrepreneurial ecosystem is critical for activating, enabling and stimulating entrepreneurship activity. South Africa, like other countries, desires productive entrepreneurship to generate higher levels of economic, employment, and income growth. Stimulating entrepreneurial activity and economic growth may require policy makers to intervene, to attune and address contextual constraints. As Douglas North (1990) argues, this may mean *changing the rules of the game* to support wealth creators and nurture the risk-taking, value-adding processes. As Kantor (2017: 268) puts it "It is the risk lovers, those initiate enterprises, those who start up businesses and succeed against all the odds in realising very high returns, who make a great difference to human condition. … They lead the way forward. Theirs is essential freedom to be nurtured

and protected", for enhancing entrepreneurial propensity and ability, critical for individual and national prosperity.

RECOMMENDATIONS AND CONCLUSION

A society that is supportive of an entrepreneurship culture and has good business regulatory environments is likely to have increasing entrepreneurial activity, and experience greater levels of economic growth and development. Legislations do not create busisnesses; it is the actions of entrepreneurs that create business ventures, generating income and employment. The findings have demonstrated plausible long run cointegrating relationships for real per capita GDP income, unemployment, and entrepreneurial activity (TEA) in South Africa. Hence, there is a connecting link between the variables. On the one hand, growth in income, usually resulting from economic growth, is found to be related positively to entrepreneurship. On the other hand, entrepreneurship is positively and significantly dependent on real changes in per capita GDP income, thus leading to a virtuous circle of one variable positively influencing the other over time, thereby strengthening and enriching the wellbeing of all stakeholders in the society. Unemployment must be interpreted as an embodied term accounting for all those latent socio-economic-political factors that keep the economy constrained on a low growth, high unemployment path. The findings point out that some jobseekers attempt to become self-employed through entrepreneurship, suggesting the presence of a necessity or push factor. In aggregate, high unemployment rates tend to force real GDP per capita income to remain on a low growth path.

While entrepreneurship is critical to employment and to augmenting economic growth and income, various factors constrain enterprise development in South Africa. These include lack of adequate finance, skills, competitiveness, labour market rigidities, and cumbersome regulations (Parsons, 2014; Lings, 2014; Herrington et al, 2017; Johnson, 2015). As Urban (2013:181) argues, the convergence of institutional risks, from crime, security, and corruption, along with a dysfunctional government, poses serious challenges to actual and potential entrepreneurs in the country. South Africa needs to attend to these constraints to create a more propitious business ecosystem environment that secures a higher rate of entrepreneurial and income development. Further, addressing macroeconomic variables, and developing critical institutions are necessary, though not sufficient, for higher entrepreneurship, employment, and growth.

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