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Employment Intensity of Economic Growth in the Free State Province (1996-2009)

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Presentation Layout



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- **Rationale & Outline**
- **Responsiveness of employment to economic growth for the period 1996 to 2009**
- **Growth Elasticity of Employment Measures**
- **Overview of Literature**
- **Empirical Results**
- **Conclusion & Policy Recommendations**



1. RATIONALE & OUTLINE

Rationale



- There is a need for provinces to customize national policies (e.g. GDS; IPAP2; NGP)
- This requires researched and evidence-based inputs into the policy-making process;
- National policies benefit from a surplus of data, which makes research a bit easier at that level;
- On the contrary, provincial policies, priorities and action plans are hamstrung by the dearth of data, with the result that scholars have not paid sufficient attention to provincial and local government issues, despite the enormous challenges facing these tiers of government;
- The absence of data need not be a reason to limit analysis to national issues, but an opportunity to find ways to apply analysis to provinces;
- Input into the development of the GDS & Employment Strategy.

Outline

- Set out as follows:
 - *Qualitative comparative overview of this relationship at national and provincial level;*
 - *Review of current broad measures in place to evaluate the relationship between economic growth and employment;*
 - *Review of empirical evidence at international and national level;*
 - *Application of measures of employment intensity of growth to Free State's data for the period 1996 and 2009;*
 - *Estimation of the province's 2020 jobs and GDP growth targets; and*
 - *Evidence-based elements key to an employment strategy for the Free State province.*



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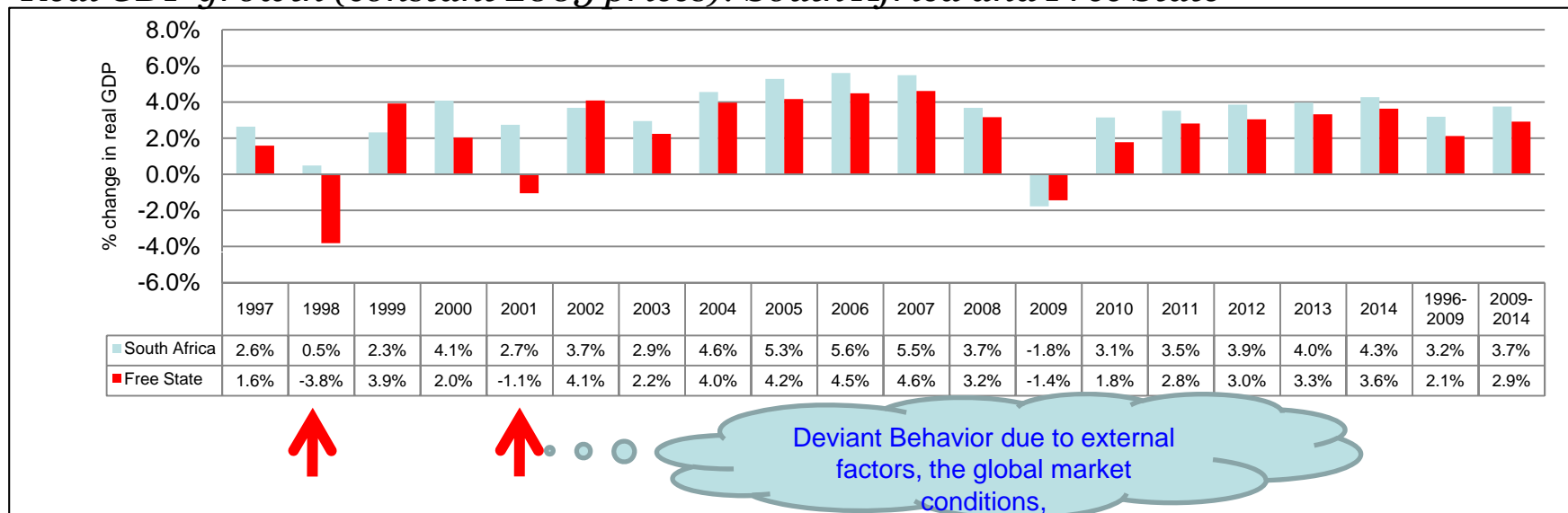
2. RESPONSIVENESS OF EMPLOYMENT TO ECONOMIC GROWTH

On average, economic growth has been phenomenal...



- Accelerating growth and expanding employment opportunities are the goals of economic policy. Provision of productive employment for the continuing increase in the labour force is an integral part of the objective of inclusive growth (Rangarajan, 2006:1)

Real GDP growth (constant 2005 prices): South Africa and Free State



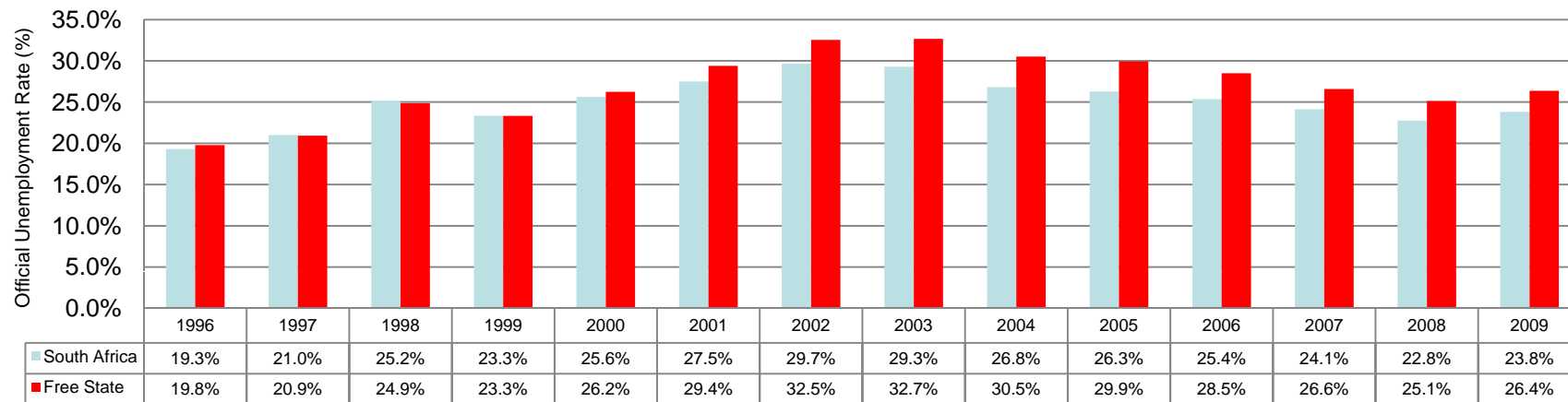
- On average, growth has been phenomenal, but.....

Unemployment remains stubbornly high....



- Unemployment is said to have jumped from around 13% in 1994 to around 30% by end of decade (Banerjee, Galiani, Levinsohn, McLaren, and Woolard (2008:2))

Unemployment Rate (Official): South Africa and Free State



- High levels of unemployment in the midst of positive output growth resulted in the notion of 'jobless growth' and arguments, directly and indirectly, for a 'new growth path' (COSATU, 2009; Turok, 2009; etc.)



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3. MEASUREMENTS

Growth Elasticity of Employment: Simple Measure



- Defined as the % change in the number of employed persons in an economy or region associated with a % change in economic output, measured by gross domestic product;
- $$\varepsilon_i = [(E_{ii} - E_{io}) / E_{io}] / [(Y_{ii} - Y_{io}) / Y_{io}] \quad (1)$$
- Simple, but grossly inadequate....shortcomings include:
 - Failure to properly account for the many other factors affecting employment growth, e.g. demographics, labour force, participation rates, wages;
 - Says nothing about the actual extent of job creation (1% GDP growth and 1% increase same as 10% GDP growth rate and 10% increase in employment); and
 - Says nothing about the quality of new jobs created.
- These notwithstanding, simple elasticity:
 - Measures the sensitivity of employment growth to the GDP growth (Rangarajan, Padma and Seema, 2007: 61);
 - Is commonly used to track sectoral potential for generating employment and in forecasting future growth in employment; and
 - As an indicator of the employment intensity of economic growth, provides the principal link in the growth-poverty nexus (Khan, 2007: 14).

Growth Elasticity of Employment: Regression Approach



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- At the very basic level, this model regresses changes in employment on economic growth, E_i :

- $$E_i = \alpha + \beta_1 Y_i + \mu_i \quad (2)$$

where β_1 is the estimated simple growth elasticity of employment.

- Equation (2) can and is often modified to accommodate additional explanatory variables (Kapsos, 2005; Hussain, Siddiqi and Iqbal, 2010; Bhorat, n.d.);
- Modification of the basic equation translates to estimation of partial elasticities;
- Paper uses both techniques, though the first technique is used to estimate 2020 jobs and GDP targets for the province due to limitations imposed by data.



4. LITERATURE OVERVIEW

Worldwide, decline in employment intensity of growth linked to structural change....



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- Slight decline in the rate of GDP growth coupled with a reduction in the employment intensity of growth (Döpke, 2001:1);
- Demographically, Kapsos (2005) show that:
 - *Youth cohort (aged 15-24) has experienced low and stagnant employment elasticities;*
 - *Youth employment elasticity of 0.06 + average annual growth rate in the world's youth LF of 0.5% between 2003 and 2015, means global GDP growth of 10% is required just to generate enough jobs to maintain constant youth unemployment;*
 - *female employment elasticities have exceeded male elasticities in each of the three periods, possible explanations include:*
 - *convergence, or "catching up", in terms of women's labour force participation relative to men's;*
 - *greater relative responsiveness of female employment to both economic growth and economic contraction;*
 - *women may tend to be engaged in lower-wage and lower-productivity (i.e. lower quality) jobs;*
 - *Sex-based segregation of occupations, whereby women may tend to work in more labour-intensive sectors than men.*
- Sectorally, the elasticity of services employment to GDP was nearly three times as large as the corresponding figure for agriculture and manufacturing, suggesting evidence of structural change, as employment is being generated in the service sector at a considerably faster rate than in the other sectors.

Employment intensity of growth still an issue among BICS....



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- Over the past decades, the main challenge of the BCISs has been to increase employment rapidly enough to cope with the growth in the labour force (Arnal and Förster, 2010);
- The ILO's estimates of growth elasticity of employment:
 - 0.7 in Brazil
 - 0.6 in South Africa
 - 0.3 in India
 - 0.1 in China
- This also confirms the differences in the growth pattern of the BICSs, with China and India's low employment elasticity pointing to important structural changes and productivity growth.
- In contrast, in Brazil and South Africa economic growth since the late 1990s has favoured bringing more people into employment instead of redistributing the existing employment between sectors and favouring rapid economic structural change, as has been the case in China, and to a lesser extent in India;

Studies on SA emphasise shift of analysis from demand to supply-side



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- Renewed focus on the issues of unemployment (e.g. Borat, n.d.; Marinkov and Geldenhuys, 2007; Biyase & Bonga-Bonga, 2007; Burger and Von Fintel: 2009; Mahadea & Simson: 2010; OECD, 2010);
- Biyase & Bonga-Bonga (2007:3) interestingly finds relationship between growth and employment 'paradoxical';
- Borat (n.d: 19) argues that South Africa's unemployment crisis cannot and should not be readily ascribed to an output performance which is not sufficiently job-generating, instead the surge in labour force participation rates....;
- Banerjee, et al (2008) found that the supply of labour increased after the fall of apartheid, in particular due to an unprecedented influx of African women into the labour market;
- Burger and Von Fintel (2009: 2) argue post-apartheid school enrolment policies had the unintended consequence of pushing young (predominantly black) individuals into the labour market without the relevant skills, rather than continuing training that is required for eventual absorption into the workplace.
- In general, there is sufficient consensus that South Africa's unemployment is structural, and that whilst the notion of 'jobless growth' may appear fashionable and 'politically correct', it is empirically not valid !

Emergency of strong arguments for labour market reforms...



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- Mahadea and Simson (2010: 398-399) observe that economic growth absorbs some labour, but structural factors mitigate against complete labour absorptions.
 - *They find that various new labour laws have imposed rigidities on the labour market, and many employers, burdened by a multitude of labour regulations, switch to capital-intensive methods.*
 - *Also argue that those that receive grants from government may view paid employment and social grants as substitutes at the margin.*
- Acknowledgement that the post-1994 analysis of the relationship between economic growth and employment has been marred by data challenges. (Biyase & Bonga-Bonga, 2007: 4; Bhorat, n.d: 13).
- Having found that the bulk of the unemployment in South Africa post-1994 is structural rather than transitional, Banerjee, et al (2008:20), contend that the **South African labor market appears to be very near the steady state so it is unlikely that the unemployment rate will fall without a policy intervention or an external shock.**
- This conclusion is far reaching. Is the pursuit of high levels of economic growth the necessary policy intervention? **Or, based on the diagnosis of the prevalence of structural unemployment, is the pursuit of economic growth misplaced? Is the New Growth Path the anticipated intervention?**



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5. EMPIRICAL TESTS

Data & Methodology



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- **Annual time series data from Global Insight (2010) for the period 1996-2009;**
- **Number of Observations = 13**
- **7 variables**
 - Population Growth
 - Labour Force Growth
 - GDP Growth (constant 2005 prices)
 - Employment Growth
 - Unemployment growth (official definition)
 - Average Labour Productivity Growth
 - Labour Remuneration Growth (market prices)
- **2 broad methods**
 - Regression
 - 3 equations
 - Basic + 2 labour-supply modifications
 - Simple elasticity
 - Total
 - Sectoral

Data challenges huge, but we can't throw our hands up in the air....



- Evidence of structural breaks (underpinned by 3 national & provincial elections and 3 global events, i.e. 1998-Asian crisis; September 11th; 2008 Global recession), exact points could not be determined;
- Literature limits tests to sample of a minimum of 50 observations (Marinkov and Geldenhuys, 2007; Perron, 2005; Antoshin, Berg and Souto, 2008; Conniffe and Kelly, 2011);
- Simple mid-way break confirm that the performance for the period 2003 to 2009 is indeed different to the performance between 1996 to 2002 for all the variables;

Years	Average_96-02	Average_03-09	Average_96-09
Pop Growth	0.91%	0.20%	0.53%
GDP Growth	1.36%	3.01%	2.25%
Employment Growth	0.43%	1.33%	0.92%
Unemployment Growth	13.66%	-3.26%	4.55%
Labour Force Growth	3.64%	-0.13%	1.61%
Labour Productivity Growth	1.44%	-0.26%	0.52%
Labour Remuneration Growth	8.35%	9.95%	9.22%
Simple Growth Elasticity of Employment	0.65	1.16	0.82
Simple Growth Elasticity of Unemployment	-1.84	-0.37	2.02

- The limitation with this approach is failure to recognize the impact of the post-break scenario on the future of the variables in question, thus resulting in forecasting errors and unreliability of the model in general.

Summary of descriptive statistics



Column1	POP_GROWTH	GDP_GROWTH	EMPLOY_GROWTH	UNEMPL_GROWTH	LF_GROWTH	LPROD_GROWTH	L_REM_GROWTH
Mean	0.0053	0.0225	0.0092	0.0455	0.0161	0.0052	0.0921
Median	0.0055	0.0327	0.0144	-0.0022	0.0088	0.0169	0.0957
Maximum	0.0121	0.0459	0.0587	0.3536	0.0596	0.0686	0.1567
Minimum	-0.0016	-0.0355	-0.0477	-0.0806	-0.0430	-0.0649	0.0000
Std. Dev.	0.0043	0.0258	0.0334	0.1266	0.0306	0.0396	0.0471
Skewness	-0.0066	-1.0847	-0.3179	1.0381	-0.4930	-0.4212	-0.4080
Kurtosis	1.8790	2.9571	1.9773	3.5401	2.4507	2.2322	2.3044
Jarque-Bera	0.6807	2.5504	0.7855	2.4928	0.6900	0.7037	0.6227
Probability	0.7115	0.2794	0.6752	0.2875	0.7082	0.7034	0.7325
Sum	0.0687	0.2922	0.1191	0.5912	0.2091	0.0680	1.1979
Sum Sq. Dev.	0.0002	0.0080	0.0134	0.1922	0.0112	0.0188	0.0266
Observations	13.0000	13.0000	13.0000	13.0000	13.0000	13.0000	13.0000

ADF and KPSS confirm stationarity of variables at level....



Variables		ADF		KPSS	
		Intercept	Inter-Trend	Intercept	Inter-Trend
Employ_growth	Test stat	-2.9757*	-2.7347	0.1082***	0.1076***
	1%	-4.1220	-4.9923	0.739	0.216
	5%	-3.1449	-3.8753	0.463	0.146
	10%	-2.7140	-3.3883	0.347	0.119
GDP_growth	Test-stat	-2.9050*	1.1231	0.2425***	0.137388
	1%	-4.1220	-5.2954	0.7390	0.2160
	5%	-3.1450	-4.0082	0.4630	0.1460
	10%	-2.7138	-3.4608	0.3470	0.1190
LF_growth	Test-stat	-1.8850	-3.9309**	0.4612	0.0741***
	1%	-4.1220	-4.99228	0.739	0.2160
	5%	-3.1450	-3.8753	0.463	0.1460
	10%	-2.7138	-3.38833	0.347	0.1190
LFPR_growth	Test-stat	-2.4570	-3.9158**	0.4639	0.0745***
	1%	-4.1220	-4.9930	0.7390	0.2160
	5%	-3.1450	-3.8753	0.4630	0.1460
	10%	-2.7138	-3.3883	0.3470	0.1190
Pop_growth	Test-stat	-0.2907	-2.3822	0.5506	0.0902***
	1%	-4.2001	-5.2954	0.7390	0.2160
	5%	-3.1754	-4.0082	0.4630	0.1460
	10%	-2.7290	-3.4608	0.3470	0.1190

- These variable's error terms are normally distributed and with the null hypothesis of normality, the study fails to reject the null hypothesis;
- The Augmented Dickey-Fuller (ADF) test and Kwiatkowski, Phillip Schmidt Shin (KPSS) test was applied to all variables to detect if these variables were stationary or non-stationary. Our variables proved to be stationary; therefore, the regression is estimated at level and without the risk of a spurious regression.

Growth Elasticity of Employment

Regression Approach: Result 1 - coefficient varies between 0.70 and 0.94



- $$\text{Employ_growth}_t = 0.70\text{gdp_growth}_t + \varepsilon_t \quad (1)$$

(2.1214) $[R^2 = 0.29]$

(significant at 10% level of significance)

- Making transition from demand-driven to labour supply determinants, ...

- $$\text{Employ_growth}_t = -0.02 + 0.84\text{gdp_growth}_t + 0.53\text{lf_growth} + \varepsilon_t \quad (2)$$

(-1.6560) (2.8669) (2.1380) $[R^2 = 0.51]$

(coefficients are significant at 5% and 10% significance level)

- $$\text{Employ_growth}_t = -0.02 + 0.94\text{gdp_growth}_t + 0.48\text{lf_growth} - 0.32\text{prod_growth} + \varepsilon_t \quad (3)$$

(-1.84) (3.55) (2.17) (-1.93) $[R^2 = 0.66]$

(significant at 1% level of significance, an improvement in both economic and statistical terms)

- Population growth, labour force participation rates, labour remuneration growth, unemployment growth rate were found to be statistically insignificant, suggesting that these variables do not explain employment in the Free State.
- Secondly, given the size of our sample size, study limited to a maximum of 3 variables, since the more explanatory variables in a model, the smaller the degrees of freedom.

Growth Elasticity of Employment

Simple Measure: Result 2 - coefficient averages 0.82, similar to Borat's findings



Years	Population Growth	GDP Growth	Employment Growth	Unemployment Growth	Labour Force Growth	Labour Productivity Growth	Labour Remuneration Growth	Simple Growth Elasticity of Employment
1997	1.21%	1.60%	1.37%	13.01%	3.71%	2.29%	10.29%	0.86
1998	1.09%	-3.55%	-2.30%	35.36%	5.96%	-4.06%	2.76%	0.65
1999	0.95%	4.27%	5.87%	-4.06%	3.09%	3.41%	9.57%	1.37
2000	0.83%	2.30%	2.51%	12.83%	5.20%	3.22%	6.36%	1.09
2001	0.74%	-0.91%	-0.79%	14.64%	3.53%	-0.14%	7.39%	0.87
2002	0.64%	4.47%	-4.07%	10.16%	0.34%	3.90%	13.74%	-0.91
2003	0.55%	2.32%	1.44%	-0.22%	0.88%	-1.21%	8.43%	0.62
2004	0.42%	3.87%	-1.43%	-6.78%	-3.23%	6.86%	11.15%	-0.37
2005	0.32%	4.04%	2.15%	8.10%	4.08%	3.03%	6.00%	0.53
2006	0.21%	4.07%	3.23%	-4.96%	0.47%	-0.25%	14.49%	0.79
2007	0.07%	4.59%	4.13%	-7.89%	0.31%	-6.49%	13.94%	0.90
2008	0.00%	3.27%	4.57%	-8.06%	0.87%	-5.45%	15.67%	1.40
2009	-0.16%	-1.12%	-4.77%	-3.01%	-4.30%	1.69%	0.00%	4.27
Average	0.53%	2.25%	0.92%	4.55%	1.61%	0.52%	9.22%	0.82

Data Diagnostics.....(2)



- There is no denying that the growth of employment has lagged behind the output growth;
- First, it confirms, in line with findings from national studies, that whilst the notion of 'jobless growth' might sound fashionable and politically correct, it is empirically an invalid claim.
 - *To the contrary, a 1% increase in economic growth in the province results in a 0.8% increase in employment (similar to finding by Bhorat (n.d: 18) of 0.8 for South Africa between 1995 and 2005 ;*
 - *On average, the province's labour force grew by 1.6%, compared to an average growth of 0.5% in the population.*
 - *Not even growth in the population can explain the surge in the labour force.*
 - *Provincial population grew by 188 thousand people, the labour force by 175 thousand people, whilst employment grew by 75 thousand people.*
 - *What is clearly happening in the Free State is an increased tendency for people in the younger age group leaving school and thereby accelerating their entry into the labour force.*
- Secondly, the observed relationship appears to have grown in strength since 2005, hence the 2008 recession resulted in massive jobs losses, i.e. 35,000 jobs losses. Labour productivity growth in FS has averaged 0.52% between 1996 and 2009, and has been falling in 3 of the last 4 years.
 - *At 7.39% and 5.73%, Mining and Trade respectively recorded the highest labour productivity growth rates, followed by moderate rates of 3.55% and 2.09% for Manufacturing and Agriculture.*
 - *By contrast, Trade and Community services, the very same sectors that have recorded the highest employment growth rates of 5.58% and 4.31%, had negative labour productivity growth rates of 2.18% and 1.57%, respectively.*
 - *On the other hand, labour remuneration rose by an average of 9.22 % during the same period, with the highest average increases recorded for Mining (11.94%), Finance (11.14%), Agriculture (9.98%), Community services (9.32%) and Trade (8.43 %).*

Growth Elasticity of Employment

Simple Measure: Result 3 - Mining & Trade have highest coefficient, but....



Years	Agriculture	Mining	Manufacturing	Electricity	Construction	Trade	Transport	Finance	Community	Total
1997	-0.13	3.46	-1.27	0.10	1.01	8.35	0.08	1.70	-20.43	0.86
1998	0.01	1.90	-3.27	0.16	0.40	27.27	-1.42	4.23	2.61	0.65
1999	0.02	5.70	1.01	0.00	2.00	3.52	-0.33	0.77	3.27	1.37
2000	-0.02	0.89	0.00	-0.15	0.52	2.91	-0.11	-1.50	3.21	1.09
2001	-0.55	1.15	0.14	0.18	-0.08	0.12	-2.42	0.17	-1.64	0.87
2002	-4.79	-0.43	-3.05	-0.29	1.30	-4.19	-0.81	0.56	2.44	-0.91
2003	0.62	0.70	3.83	-1.60	0.73	1.33	-2.74	-0.82	1.35	0.62
2004	-15.17	-2.92	0.27	0.25	1.83	0.12	0.94	-0.28	0.01	-0.37
2005	-0.87	-2.58	0.01	0.97	3.39	3.91	0.84	1.01	0.76	0.53
2006	0.17	0.76	0.41	1.40	0.25	1.73	-0.38	0.42	0.70	0.79
2007	2.85	-2.57	-0.03	1.43	0.13	-0.97	-0.18	0.53	1.53	0.90
2008	-0.10	0.65	0.08	-3.09	-0.28	6.07	3.71	1.70	1.66	1.40
2009	3.45	2.15	0.29	8.48	-0.88	3.11	-17.20	4.99	0.45	4.27
Average	-1.44	3.82	-0.35	0.06	0.69	2.44	-0.34	0.83	1.65	0.82



Elasticities to be interpreted against the background of structural realities, high elasticity matters not if base is small....



		Agriculture	Mining	Manufacturing	Electricity	Construction	Trade	Transport	Finance	Community services
Contribution to GDP	1996	5.34%	15.89%	12.29%	3.27%	1.90%	11.36%	7.46%	14.95%	27.54%
	2009	3.69%	8.50%	12.66%	3.00%	2.19%	11.36%	9.28%	20.42%	28.90%
	Average	4.35%	11.77%	13.45%	3.12%	1.81%	11.70%	8.70%	17.26%	27.83%
Share of Employment	1996	16.79%	18.92%	8.46%	0.67%	4.05%	11.15%	5.13%	4.06%	16.61%
	2009	12.85%	5.10%	6.68%	0.61%	4.78%	18.80%	3.75%	5.96%	25.58%
	Average	15.59%	9.44%	7.47%	0.64%	4.63%	17.55%	4.23%	4.82%	21.48%

- Still labour intensive, but base has been eroded!
- Growth in base not matched by jobs, does it suggest more reliance on technology and capital?
- Right intensity, small base!
- Right base, right intensity, but how decent are jobs?
- Growth in base not matched by jobs, does it suggest more reliance on technology and capital?
- Right base, right intensity...government employer of choice?

Growth Elasticity of Employment

Simple Measure: Result 4 – FS needs 4.3% growth to absorb new entrants and reduce unemployment by 50%!



- Assumptions: Average annual LF growth 1.61% & simple growth employment elasticity of 0.8.

	2009 Figures	Variables	Employment	Labour Force	Unemployment	Unemployment Rate	2020 Estimates			
		2009 LF Growth Cumulative	697,692	955,835	258,143	27,01%	Total Employment	Cumulative Employment Growth Rate	Cumulative GDP_R Growth Rates	Average GDP_R Growth Rates
Estimate Options	Employment Target estimates	Employment Target estimates (per annum)	Labour Force	Unemployment	Resultant Unemployment Rate					
2020 Estimates	Job Opportunities 'Business-as-usual' option	195,354	17,760	1,153,024	259,978	22.55%	893,046	28.00%	34.15%	2.90%
	Employment Growth based on Labour Force Growth	143,934	13,084	1,153,024	311,398	27,01%	841,626	21%	25%	2.29%
	Employment Growth based on Labour Force Growth + Reduction of current unemployment by 50%	273,006	24,819	1,153,024	182,326	13.50%	970,698	39%	48%	4.34%
	NGP Desktop Job Creation targets estimates 2020_Population Share (5.7%)	285,000	25,909	1,153,024	170,332	14.77%	982,692	41%	50%	4.53%
	NGP Desktop Job Creation targets estimates 2020_GDP Share (5%)	250,000	22,727	1,153,024	205,332	17.81%	947,692	36%	44%	3.97%



6. POLICY RECOMMENDATIONS

Conclusion & Policy Recommendations



- Employment growth has lagged behind economic growth, something that has become a concern to many countries of the world, thus attracting interested from scholars and policy makers;
- Free State has not escaped this phenomenon, both the simple and modeled growth elasticities of employment confirm growth in the provincial economy between 1996 and 2009 has indeed resulted in employment;
- However, labour supply factors such as substantial growth in the labour force as well as increases in labour force participation rates have dwarfed the gains of economic growth on employment;
- Consequently, **halving unemployment in the midst of a growing labour force in the province requires a minimum average growth of 4.3% in the economy for the next eleven years up to 2020**
 - **Is it possible?**
 - *Trickle-down;*
 - *New growth path;*
- This is only possible if the province could, amongst others:
 - *Accelerate economic growth – need for a ‘Big Push’;*
 - *Put special emphasis on more labour intensive sectors and induce a faster growth thereof;*
 - *Improve the skill of the province’s work force;*
 - *Identify innovative solutions to improve the functioning of the labour market; and*
 - *Break some structural rigidities.*

Elements of
an
Employment
Strategy



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Thank You

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