

## A CGE Simulation of a Flat Tax as a Possibility for Tax Reform in South Africa



Martin Perold  
Lorraine Greyling  
Lumengo Bonga-Bonga

University of Johannesburg

## Introduction



- South African tax reforms have typically concentrated on base broadening or changing the progressive rate scale (previous research)
- Simplifying the tax rate is also important as it reduces compliance and administration costs
- Flat tax = single flat rate on all personal income above an exemption level (Keen, Kim and Varsano, 2006)

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## Arguments for and against a Flat Tax



- For: Economic growth through incentives to save and increases in the labour supply (Hall and Rabushka, 1995; Forbes, 2005)
- Simpler tax returns (“back of a postcard” – Hall and Rabushka, 1995)
- Several countries have adopted it successfully, leading to economic growth (Keen, Kim and Varsano, 2006)
- Against: Equity concerns – progressive system taxes those who can most afford it and is redistributive in nature.

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## CGE Modelling Technique



- Two models of the South African economy – current, progressive system and hypothetical flat tax system (revenue neutral) on all personal income (no exemptions)
- Compares the effects of a given economic shock to the two models
- CGE model based on that developed by Thurlow and Van Seventer (2002), adapted from a standard model developed by Lofgren *et al* (2001) and IFPRI

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## CGE Modelling Technique



- 2003 Social Accounting Matrix (Quantec)
- All prices in the model are relative to a chosen *numéraire*, in this case the CPI – this makes the model purely real
- Elasticities in the model are obtained from the CGE model of Thurlow and Van Seventer (2001)
- Flat tax rate is constructed by dividing total income tax paid by households by total income of households
- Assumes full employment of skilled and semi-skilled labour as well as capital; partial unemployment of unskilled labour

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## Counterfactual situation



- 10% cut in the VAT rate from 14% to 12.6%
- Compare the effect of this shock for the two tax systems
- This could achieve goals of ASGISA – reduction of poverty as consumers are left with more disposable income or increase savings rate and investment
- Raise the demand for goods, leading to increased production
- If VAT is regressive, a reduction in the VAT rate counters the predicted equity effects of a flat tax

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## Areas of interest



Area of interest	Indicator for measurement	Predicted direction of change: Progressive tax	Predicted direction of change: Flat tax
Equality	Gini coefficient	Decrease	Increase
Economic growth	Change in GDP	Small increase	Large increase
Savings	Marginal propensity to save (MPS)	Small increase	Large increase
Investment share of total absorption	Investment share of GDE	Small increase	Large increase
Incentive to work	Change in labour supply (unskilled)	Small increase	Large increase

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## Results: Equity



Table 2: Comparison of Gini Coefficients of the Two Tax Systems (benchmark economy Gini coefficient = 0.609)

Indicator	Progressive tax	Flat tax
Gini coefficient	0.608	0.611
Percentage change in Gini coefficient	-0.117%	0.345%

Source: GAMS Software Simulation Output

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## Results: Economic growth



Table 3: Comparison of Changes in GDP of the Two Tax Systems

Indicator	Base	Progressive level	% change (A)	Flat level	% change (B)	Difference (B - A)
Gross domestic expenditure	1230.999	1231.616	0.050%	1233.744	0.223%	0.173%
Private consumption	786.316	786.933	0.078%	789.061	0.349%	0.271%
Government consumption	239.053	239.053	0%	239.053	0%	0%
Exports	339.826	340.027	0.059%	340.932	0.325%	0.266%
Imports	-319.357	-319.558	0.063%	-320.463	0.346%	0.283%
GDP at market prices	1251.468	1252.085	0.049%	1254.213	0.219%	0.17%
GDP at factor cost	1111.066	1111.366	0.027%	1112.417	0.122%	0.095%

Source: GAMS Software Simulation Output

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## Results: Savings



Table 4: Comparison of the Marginal Propensity to Save for the Two Tax Systems

Indicator	% change (progressive)	% change (flat)
Enterprises	0.164	21.637
Households	0.164	21.637

Source: GAMS Software Simulation Output

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## Results: Investment share of absorption



Table 5: Comparison of investment share of absorption of the Two Tax Systems

Indicator	Progressive tax (A)	Flat tax (B)	Difference (B - A)
Change in investment share of absorption (%)	0.618%	1.382%	0.764%

Source: GAMS Software Simulation Output

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## Results: Incentive to work



Table 6: Comparison of Changes in Labour Supply of the Two Tax Systems

Indicator	Progressive tax (A)	Flat tax (B)	Difference (B - A)
Change in unskilled labour supply (%)	0.524%	2.468%	1.944%

Source: GAMS Software Simulation Output

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## Final scorecard



Objective	Progressive tax	Flat tax
Equity	✓	×
Effect on economic growth	×	✓
Effect on savings	×	✓
Effect on labour supply	×	✓
Effect investment share of absorption	×	✓
<b>Total score</b>	<b>1</b>	<b>4</b>

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## Conclusion



- Flat tax has an edge over the progressive system
- Not redistributive in nature – important weakness given our history
- In times of global recession, perhaps the government should put growth before redistribution
- Possibilities for further research – flat tax with an exemption level, different counterfactual situations
- Flat tax is likely to have the effects predicted by economic theory

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