ERSA Research Brief

March 2014

Recurrent Property Rates – The Search for a Fair Tax Conducive to Economic Growth[1]

David Garber, PhD
Economic Research Southern Africa (ERSA)

The conflict between the need to attend to acute poverty in the present and the need to invest in longer-term poverty-reducing economic growth is a primary feature of the South African public policy landscape. Economic growth rates, while not alarmingly low (3.4% on average, annually, between 2000 and 2012, 1% from 2007-2012), have also not been sufficiently high or reflective of the type of growth needed to fuel job creation. On income, the economy's classification as an upper-middle income country, based simply on a GNI per capita measure, obscures the extent to which it is structured into two nearly distinct and large sub-economies – one resembling that of a high income country, the other among the poorest in the world.

Furthermore, with South Africa's tax burden already high – at 26.1%, it is among the 10% highest figures internationally – the financing of increasingly costly redistributive and growth programs is less likely to be achieved through rate increases in taxes on current income or consumption. Recognizing the need to identify alternative financing vehicles, the Minister of Finance established the Davis Tax Committee to, in large part, explore the implications of changes to the tax structure on growth, poverty, and income distribution.[2]

This first in a series of policy notes on tax topics focuses on the recurrent property tax -- how its use, in combination with changes in other tax levers, may interact with economic growth and poverty outcomes. In particular the use of a tax on "excess property" (which conceptually may be extended to non-productive assets, in general) is found to be an effective tool for generating public revenue, is expected to induce a shift of such assets into growth-promoting activities, has little impact on future economic behaviour, and is generally non-regressive. The policy note accompanies a more detailed working paper, available by the author upon request.

1. Recurrent Property Tax – Efficient, Effective, Unpopular

Taxes are inefficient in as much as they result in sub-optimal decision making by altering the price signals that, in a well-functioning market, reflect underlying consumer and producer preferences. Generally speaking the more a tax alters future economic behaviour, the more distortionary it is.

At the same time taxes are essential to the operations of a functioning state. Revenues are required for undertaking programs deemed in the public interest. The relevant question to consider is, thus, not on the existence of taxes, but on the mix of tax streams that minimizes costs in terms of economic growth and, especially in the South African case, does the least or no damage to the economically vulnerable.

The recurrent property tax has properties that make it both an effective generator of public revenue and relatively benign to economic growth. The reasons centre on the immobility of the factor being

[1] This policy note accompanies a seminar presentation held at the South African National Treasury on 6 March, 2014. It forms part of a larger piece of ongoing work on tax policy whose results are intended for release through a set of working papers and articles.
[2] http://www.taxcom.org.za/

taxed and the tax's relatively small impact on future economic behaviour.

Evasion of a recurrent property tax, primary due to the immobility of its target, is relatively difficult. The transparency of such a tax, along with the lower rate of evasion, makes it an effective tool for generating public revenue. These characteristics also make it unpopular among the public, likely a primary reason for the low property tax burdens found across multiple countries (Heady et al. 2009, Norregaard 2013).

Taxing an immobile base is particularly attractive in an increasingly global economy. Globalization has obliged nations to engage in tax competition on vehicles that target a mobile base such as labor and capital. Thus, corporate taxes, for example, have become a less reliable source of public revenue around the world, than in the past (Glenday 2008, Norregaard).

Taxing accumulated land on a recurrent basis importantly targets the outcome of past decisions, thus having only a muted impact on future land transaction decisions and on the market for real estate. To understand this more clearly, upon announcement of a tax policy, the new or increased tax becomes at least partially capitalized in property values3. With full capitalization, only the current owner absorbs the cost -- the loss in property value equal to the discounted value of future tax payments.

The recurrent property tax has also been used to discourage land hoarding and speculation. According to Norregaard, this was a primary reason behind Namibia's recent implementation of a national land tax that supplemented an already existing urban land tax.

In contrast to the RPT, personal income taxes (PIT) negatively impact growth through at least a few channels. PIT reduces the marginal incentive to work as well as the incentive to invest in education and training. The resulting decrease in net income implies a reduction in savings and thus in the domestic availability of investment financing. Corporate income taxes (CIT) work similarly, acting as a disincentive to undertake prospective income-generating investment. CIT is particularly harmful to economic growth, targeting those entities most able to undertake riskier large-scale projects.

Taxes on consumer purchases, particularly when not applied to all goods equally, subsequently change relative factor returns across production activities, leading to a less-than-optimal production structure. Taxes on the transfer of property, also an indirect tax, may hinder property allocation to its best use and create incentives among buyer and seller to under-report values (further distorting information required in a well-functioning housing market) (Heady et al., Norregaard).

Numerous pieces in the literature confirm the relatively better growth performance of the recurrent property tax. Among the more recent Acosta-Ormaechea, Santiago, and Jiae Yoo (2012), in a cross-country econometric analysis, find that shifting the tax structure away from income tax and towards consumption and recurrent property tax is associated with a higher economic growth rate. They show that a 1% shift from income tax exclusively into RPT yields a .10 percentage point increase in long-term economic growth.

There has been very little work on tax issues that can be found in the South African fiscal policy literature, and even less on asset-related taxes. Among these McDonald and Punt (2004) build a CGE model to explore the welfare impacts of a rural land (recurrent) tax in the Western Cape. They highlight that the outcome of the tax highly depend on the use of the revenue. Among a series of experiment results, they find that introducing an RPT, and using the windfall to reduce sales tax rates, would benefit all household categories except for rural while landowners.

As far as the author is aware, there has been no recent work focusing on the RPT in South Africa outside of McDonald and Punt. The work that this note summarizes addresses this void.

[3] Capitalisation refers here to the internalization of expected future tax payments into current property values.

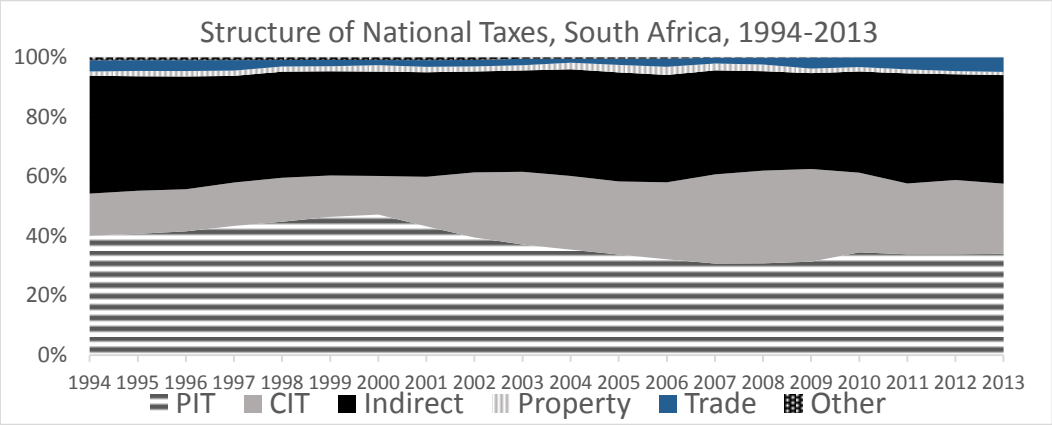
2. The Tax Landscape

While a nation's tax structure may not be an obvious primary vehicle for the promotion of economic growth, it is safe to claim that certain tax structures are more conducive to growth than others. In addition the choice of a particular tax structure, by dictating which members of society will be contributing to the state coffers, directly impacts poverty and income distribution indicators. An assessment of the tax structure is thus relevant to the challenges currently facing policy makers.

2.1 Tax Structure and Burden

The evolution of tax structure in post-Apartheid South Africa may be viewed in at least 2 major phases – 1994-2000 and thereafter, perhaps with the post-recession (2008) period as a further distinction. As seen in figure 1, during the first phase, public revenue at the national level relied increasingly on personal income taxes (PIT) (reaching 47.2% of total tax revenue in fiscal year 2000) at the expense of the role of indirect taxes. From 2000 onwards the relative role of the PIT took a notable decline, balanced by a significantly increased role for company-related taxes. Most recently (fiscal years, 2009-2012), however, the role of indirect taxes has expanded, seemingly at the expense of that of company income tax collections.

Figure 1: Structure of Tax Collections, 1994-2013



South Africa's tax burden (national tax-to-GDP ratio) is high, the rate in 2011 (26.1%) within the top 10% internationally. This reality may pose a challenge to successfully proposing any net increase in tax rates across the economy.

Recurrent property taxes are collected by municipal government as per the Municipality Property Rates Act of 2004. The author's analysis of data from the Annual Financial Survey of Municipalities (Statistics South Africa), in combination with national-level tax data, shows recurrent tax collections representing 4.3% of economy-wide tax collections in 2012, 1.1% of that year's GDP.

Norregaard provides recurrent property tax figures across OECD and non-OECD countries. South Africa's recurrent property tax-to-GDP ratio of 1.1% is higher than those of most non-OECD countries (except for Russia) included in the paper, but significantly lower than those in several OECD countries (Canada at 3.0%, France at 2.5%, Israel at 2.3%, Japan at 2.1%, New Zealand at 2.1%, the UK at 3.4%, and the US at 3.1%). As a share of all tax collections, the recurrent property tax share ranges from .3% (Luxembourg) to 16.8% (United States) in the OECD countries, .1% (Croatia) to 6.7% (Singapore) for non-OECD countries. In sum South Africa's recurrent property tax burden is currently neither particularly high, nor low.

2.2 Tax Rates

South Africa's flat corporate income tax rate of 28% is not particularly high, nor is the tax burden on corporations as measured by all taxes levied on the corporation as a percentage of commercial profits. In fact, according to the 2014 World Bank Doing Business (WBDB) report data, South Africa's corporate tax burden of 30.1% is the lowest among countries assessed for this work and falls in the

lower third of all countries globally. [4]

As for personal income taxes South Africa's top-bracket rate of 40% is high, but not alarmingly so. The entry-level tax rate in South Africa is 18%, abruptly jumping to 25% in the next bracket. Among the countries assessed in this work, only the UK applies a higher tax rate to the bottom bracket (20%). However it remains difficult to compare PIT systems without examining income thresholds and exemptions, a task beyond the scope of this paper.

On consumption taxes South Africa's VAT rate of 14% is not particularly high. Of the set of countries examined here, only Nigeria and the United States apply lower rates, while other countries apply rates of between 15% (New Zealand) and 21% (Argentina). Furthermore South Africa applies zero-ratings to multiple products considered basic essentials to the poor.

Given the decentralized nature of property rate setting, it is challenging to obtain a comprehensive picture of average rates in South Africa without the availability of a centralized listing. One may begin to explore rates in South Africa in looking at those in the metropolitan municipalities.

Among the metropolitan municipalities one finds a wide range of annual rates between .5457% of a residential property's value (in Mangaung) to 1.354% in Tshwane, with a simple average of .8033% (see table 1). Most municipalities apply higher rates to vacant land, ranging among the metropolitan municipalities between 1.18% (Cape Town) to 6.014% (Tshwane), with a simple average of 3.303%.5 A simple comparison of rates, however, is insufficient to draw firm conclusions as different municipalities apply various exemptions and rebates. For example the Tshwane municipality is unique in providing a 30% rebate on the taxable value of a property, bringing the effective rate of taxation much lower than the official rate.

It is nearly as difficult to obtain comparative data on average recurrent property rates around the world. The Lincoln Institute of Land Policy (on behalf of the Minnesota Taxpayers Association), as one example, has calculated the average effective residential property tax rate for a median value home among the 50 most populated U.S. cities as 1.385% in 2010. In this context the average rate among the metropolitan municipalities in South Africa does not appear to be particularly high.

Table 1: Property Rates: Sample, Metropolitan Municipalities

Municipal Property Rates, Metropolitan		
	residential	vacant
Joberg	0.5868	2.3472
Buffalo City	0.8225	2.4674
Cape Town	0.59	1.18
Tshwane	1.354	6.014
Ekhuruleni	0.74	4
eThekwini	0.976	4.674
Mangaung	0.5457	
Nelson Mandela	0.8121	2.4362
average	0.8033875	3.302686

3. The Model and Data

3.1 Model Description and Its Treatment of Land

The work employs a fairly standard dynamic recursive CGE model, while slightly innovating in its introduction of a recurring property tax.[6] Land is modelled as both an input to production and as a consumption good. Only the primary innovations of this model are presented here – a more complete description may be found in an accompanying working paper available upon request.

[4] South Africa was compared to Kenya, Mexico, Brazil, Nigeria, Morocco, Argentina, Turkey, New Zealand, the United States, and the United Kingdom.

[5] Differential rate information was not easily available for Mangaung municipality.

[6] The term, recursive dynamic, is often confused with a genuine dynamic model. In the former agents base their decisions on the outcome of the previous period's decisions. In the latter, significantly more demanding to program, agents are fully forward-looking in their decision-making. The vast majority of non-static CGE models are of the recursive type.

The model assumes that households are endowed with an amount of land either held as a consumption good or released to the input market from which they subsequently derive factor income. Households derive utility simply from holding land, rather than making productive use of it in releasing it to the factor market.

Households maximize an LES utility function in choosing an optimal consumption bundle which includes landholding (equation 1). The price of landholding has two components – the market price of the land input, endogenously determined, and the additional tax set by the government. All other consumer (pre-tax) prices are determined endogenously.

Equation 1: The Utility of Idle Landholding

$$U = U(\boldsymbol{C}, LH),$$
$$\boldsymbol{C} = consumption\ vector, LH = landholding$$

The reader may find it useful to note the parallel between this landholding-land input choice specification and that of the standard leisure-labour model. Just as the consumer chooses leisure at the expense of forfeited wages, he also chooses to hold land at the expense of the income he would earn from it. The tax to be introduced on landholding would be analogous to taxing leisure.

Households derive income from factor ownership, remittances, unemployment benefits, and other government transfers. A fixed share of post-tax income is saved, another fixed share transferred as remittances, while the remainder is spent on consumables, including the cost of landholding.

The government collects taxes on personal income, sales, factor use, imports (tariffs), and landholding. It also earns income from factor ownership and transfers from the rest of the world (foreign assistance, for example). Government income is used on household transfers, savings, transfers to the rest of the world (foreign aid given), current consumption, and factor use.
The level of total investment is equal to the sum of household, government, and foreign savings plus depreciation of sector-specific and government capital. The structure of investment demand is then determined via a Cobb-Douglass specification.7

The model is made recursive dynamic through the specification of sector-specific capital accumulation. Capital accumulation for a given firm depends on the expected rate of return for the following period, which is determined by the rate of return in the current period. The amount of capital used by relevant agents in any given period is equal to the quantity of the previous period, minus depreciation, plus newly accumulated capital.

3.2 The Data

The most current comprehensive Social Accounting Matrix for South Africa is the 2009 release by Statistics South Africa (SSA) based on 2005 data. A more recent SAM is scheduled to soon be released.

As a SAM is not constructed with a particular model in mind, the CGE researcher is obliged to reshape the SAM (and, often the model itself) so that the SAM structure fits the model. The redefinition and aggregation of many of the SAM accounts was achieved in referring to the SAM's underlying data sources (for example, as found in the Final Supply and Use Tables and the Income and Expenditure Survey).

The SSA SAM contains 27 industries. For this exercise they were aggregated into 3 activities accounts – primary, secondary, and tertiary sectors.

At the centre of this work is a concern for welfare distribution across households. The SAM used in this exercise aggregates the 12 expenditure-based household groups of the SSA SAM into six. The six are grouped to reflect the dual nature of the socio-economic context – three of the groups represent the non-poor, three the poor.

[7] As in the majority of CGE models, this one does not account for flows from, to, or among financial institutions. While at present the model is not intended to explore the financial sector dynamics, subsequent work would benefit from its inclusion.

The SSA SAM, as in most SAMs, neglects land as a distinct factor account, instead combining land with all capital. The land-focused model here requires a distinct land factor account, the construction of which requires the derivation of all land-related value flows in the economy (for example, the distribution of returns across sectors and households). Following Punt et al. (2006), it was assumed that all land returns are accounted for by the primary sector.

It is outside the scope of this paper to further dissect the aggregate SAM used here. The resulting SAM is included in the appendix for the interested reader.

4. Policy Experiments

There are two sets of experiments highlighted in this brief. The first set aims to compare the economic and welfare impacts across tax types. To achieve this the experiment assumes a fixed percentage increase in government revenue (a revenue target), increasing the rate of each tax type individually to achieve the objective. The second set of experiments assumes an increase in the reliance on property rates in a revenue-neutral setting. The experiments then examine different uses of the property tax windfall – a reduction in the rates of income tax, of sales tax, and of labor tax.

Crucially, the model does not account for any change in public expenditure behaviour – the increased government revenue is spent according to the same decision rules as in the base period. This allows for the results to be interpreted as those caused exclusively by tax changes.

As the model continues to undergo refinement (particularly regarding the estimation of a small set of elasticity parameters, the optimal organization of SAM accounts, and an accurate accounting of non-productive assets in the economy) the reader is advised to focus on the directional and relative changes in the variables rather than on absolute size of the figures. At the same time, the model's data being directly derived from the Statistics South Africa SAM, the simulations credibly illustrate the outcomes of policy shocks in an economy substantially similar to South Africa. Continued work on the model will produce more precise numerical estimates.

4.1 Experiment Set 1: Achieving a public revenue target through the increase of a tax rate

The experiment compares the impacts of the rate increase in each of three tax categories required to achieve a public revenue target 1% above current levels in one trial, 5% in a second trial. The additional revenue is generated by either an increase in the tax rate on idle landholding, an increase in the income tax rate on the wealthiest category of households, or an increase in the income tax across all non-poor household categories. The policy is introduced in the 5th period of the 20-period simulation. Results are shown for the 10th period, with changes to the results over the remaining periods being minimal.

Table 2 presents the results from the first set of experiments. The property tax performs best among the three on GDP, output, and trade indicators in both the 1% and 5% trials. The tax on idle landholding induces a new supply of land to the factor market, reducing the cost of production (particularly for the land-intensive primary sector), allowing for an increase in overall output. As one might expect output shifts slightly out of the 2 sectors not employing land and into the primary sector that does. The increase in the value of primary sector net exports is greater than the decrease in that of the other two sectors, contributing to a net decrease in the trade deficit.

The property tax also performs best on the utility of poor households and unemployment in the 1% trial, but not in the 5% trial in which the income tax on the wealthiest performs better. This is explained in combination by the greater effectiveness of the income tax to generate the revenue target and the subsequently greater increase in public sector hiring.

The scheme in which the income tax is increased only for the wealthiest group performs best in terms of its effectiveness in generating the revenue target, the utility outcome of the non-poor (except for the taxed group), and the utility of the poor and unemployment (primarily through public sector employment). It is the more effective in meeting the revenue target because the resulting decrease in

disposable income of the taxed household group induces it to dispose of some of its idle landholding which, in turn, earns it additional taxable gross income. In contrast the introduction of (or increase in) a landholding tax induces a disposal of landholding, reducing the intended tax base (although part of it is also recovered through increased taxable income).

Table 2: Simulation Results: Increasing Government Revenue

Results, Experiment 1, Deviation from Baseline, Period 10						
Trial:	1% increase in revenue			5% increase in revenue		
	property	richest	nonpoor	property	richest	nonpoor
GDP, real	**-0.01%**	-0.07%	-0.06%	**-0.01%**	-0.33%	-0.29%
Effectiveness						
% of target	78.8%	**87.2%**	64.4%	62.9%	**88.7%**	64.4%
Utility, Poor						
P1	**0.30%**	0.26%	0.18%	1.25%	**1.33%**	0.90%
P2	**0.22%**	0.19%	0.14%	0.92%	**1.00%**	0.69%
P3	**0.17%**	0.16%	0.12%	0.71%	**0.85%**	0.60%
Utility, Nonpoor						
NP1	-0.65%	**0.17%**	-0.35%	-2.73%	**0.91%**	-1.78%
NP2	-0.26%	**0.11%**	-0.46%	-1.09%	**0.58%**	-2.29%
NP3	-1.53%	-3.24%	-0.32%	-6.32%	-16.73%	-1.63%
Unemployment	**-1.36%**	-1.25%	-0.88%	-5.52%	**-6.38%**	-4.41%
Price Index	-0.14%	-0.12%	-0.09%	-0.55%	-0.63%	-0.44%
Output						
Primary	**0.82%**	0.18%	0.01%	**3.57%**	0.93%	0.07%
Secondary	-0.18%	-0.12%	-0.08%	-0.74%	-0.61%	-0.38%
Tertiary	-0.10%	-0.08%	-0.05%	-0.39%	-0.39%	-0.26%
Trade Deficit	**-4.43%**	-3.02%	-1.92%	**-18.77%**	-15.58%	-9.64%

The cost of increasing or introducing an idle land tax to generate additional revenue is borne primarily through decreased utility levels of the non-poor households (those who are assumed to hold such land). There is also a certain amount of "tax leakage" as the intended tax base shrinks due to the tax. The cost of increasing the income tax rate on the wealthiest group is paid through a relatively larger decrease in GDP, due primarily to the taxed group's decrease in consumption and savings. However it generates the additional revenue quite effectively. The outcome of the third tax option, an increase in the income tax rate on all non-poor households, follows a pattern similar to a tax on the wealthiest household group, but without the advantages or disadvantages of the latter.

4.2 Experiment Set 2: Increasing property rates in a revenue-neutral setting

The experiment examines revenue-neutral changes in the tax structure that entail an increase in the RPT rate, at either 20% or 50%, with a corresponding decrease in the rate of one of three tax types. Either the property tax windfall is used to decrease the income tax rate for all households, the sales tax rate on all commodities, or taxes related to labor use.

Results from this set of experiments are shown in table 3. Using the windfall to reduce taxes on labor use outperforms the other 2 possibilities on several fronts. It results in the greatest increase in GDP over the baseline. This follows from the decrease in the cost of production, leading to greater output across all sectors. This scenario is also best for the poor – the reduction in unemployment is greatest as is the subsequent increase in real incomes and utility levels. The least wealthy category of non-poor households also benefits most from this scenario, likely due to it initially being affected by unemployment unlike the other non-poor household categories. Finally, due to an increase in export competitiveness, the scenario leads to the largest reduction in the trade deficit.

Using the windfall to decrease income taxes has some advantages. It is the option that would be most

Table 3: Simulation Results – Best Use of Property Tax Windfall

Results, Experiment 2, Deviation from Baseline, Period 10						
Trial:	property tax 20%			property tax 50%		
tax reduction:	sales	income	labor	sales	income	labor
GDP, real	0.05%	0.02%	**0.08%**	0.12%	0.05%	**0.19%**
Effectiveness						
% from zero	**0.03%**	-0.01%	-0.03%	**0.07%**	-0.05%	-0.10%
Utility, Poor						
P1	0.19%	0.02%	**0.29%**	0.47%	0.05%	**0.72%**
P2	0.15%	0.01%	**0.22%**	0.38%	0.03%	**0.56%**
P3	0.14%	0.16%	**0.20%**	0.35%	0.39%	**0.49%**
Utility, Nonpoor						
NP1	-0.13%	-0.11%	**-0.09%**	-0.31%	-0.25%	**-0.20%**
NP2	-0.01%	**0.05%**	0.02%	-0.02%	**0.12%**	0.05%
NP3	-0.41%	**-0.38%**	-0.39%	-1.01%	**-0.92%**	-0.95%
Unemployment	-0.67%	-0.07%	**-1.32%**	-1.64%	-0.15%	**-3.28%**
Price Index	-0.07%	-0.01%	-0.13%	-0.16%	-0.02%	-0.33%
Output						
Primary	0.27%	0.26%	**0.27%**	0.66%	0.63%	**0.67%**
Secondary	-0.02%	-0.02%	**0.00%**	-0.06%	-0.05%	**0.01%**
Tertiary	-0.02%	-0.01%	**0.06%**	-0.05%	-0.03%	**0.15%**
Trade Deficit	-0.27%	-0.60%	**-0.91%**	-0.61%	-1.42%	**-2.19%**

preferred by the wealthiest 2 household groups – a share of the increased property tax is being returned as a decrease in income taxes. However the option does nothing directly to improve the status of the poorest 2 household categories – as they pay no income tax, they wouldn't benefit from an income tax cut.

Other than in its effectiveness to maintain revenue neutrality, the outcome of the sales tax scenario never emerges as the best performer on any one indicator. This being said it is a close second-best in its impact on the utility level of poor households.

In sum the use of a property tax windfall to decrease in the tax on labor is shown to perform best on most indicators. It reduces the cost of production, leading to increased output, increased exports, reduced unemployment, and an increase in the utility level of poor households.

5. Conclusion

This policy brief has presented a discussion on the economics of the recurrent property tax, particularly with regard to its impact on economic growth, incomes of the poor, and income distribution. It proposes that such a tax qualifies as least distortive for at least two reasons – its imposition has only muted impacts on future property investment behaviour, and it induces a shift of a non-productive consumption good to a more productive use in the factor markets.

A basic CGE model is presented, matched to a restructured SAM for South Africa, and used in two sets of experiments. One set compares outcomes of using different tax vehicles to raise public revenue and the other compares uses of a tax windfall that follows an increase in the RPT.

The simulations confirm that using property rates to increase government revenue has the least damaging impact on GDP growth, output, and trade, compared with raising income taxes on various non-poor groups. It also improves the welfare of the poor and reduces unemployment, although at higher revenue targets, an income tax rate increase on the wealthiest household group leads to a slightly larger increase in poor household utility and employment if public hiring also increases

proportionally.

It is also shown that using a property tax windfall to reduce tax rates on labour use leads to the most favourable outcome among the three tax reductions tested on a number of dimensions – GDP growth, output, the utility of all but the two wealthiest household groups, employment, and trade. This result is due in large part to the decrease in production costs following the tax reduction, a subsequent decrease in consumer prices, and an increase in export competitiveness. Using the windfall to lower sales taxes is second-best with respect to some of these indicators – GDP growth, the utility level of the poorest two household groups, and employment. A reduction in income taxes positively impacts a number of indicators but leaves both the unemployment level and poor household welfare nearly unchanged.

The model currently does not represent changes to public expenditure policy following an increase in revenue, nor does it represent the spillover effects that human capital formation would have on production. One advantage here is that, because expenditure policy is not explored, the outcome of the simulations may be interpreted as arising solely from changes in tax policy. This being said, an important extension would be to fully incorporate public investment decisions and their resulting impacts on innovation and factor supply into the model.

6. References

Acosta-Ormaechea, Santiago and Jiae Yoo. "Tax Composition and Growth: A Broad Cross-Country Perspective." IMF Working Paper No. WP/12/257 (2012).

Glenday, Graham. 2008. "South African Tax Performance: Some Perspectives and International Comparisons." (paper presented at Tax Symposium, 2008, National Treasury of South Africa, Pretoria, March 17-18, 2008).

Heady, Christopher, et al. "Tax Policy for Economic Recovery and Growth." University of Kent Economics School Discussion Paper No. KDPE 0925 (2009).

McDonald, Scott and Cecilia Punt. 2004. "Some Welfare Implications of a Land Tax on the Western Cape." South African Journal of Economics. 72.4 (2004): 808-833.

Minnesota Taxpayers Association. 50-State Property Tax Comparison Study. St. Paul, Minnesota. 2011.

Norregaard, John. "Taxing Immovable Property: Revenue Potential and Implementation Challenges." IMF Working Paper No. WP/13/129 (2013).

Punt, Cecelia, et al. "The Impact of Property Rates on Agricultural Land, Focusing on Kwazulu-Natal." Provide Project Working Paper No. 2.6 (2006).

Statistics South Africa. Income and Expenditure of Households 2010/2011. Statistical Release 0100. Pretoria, South Africa: Statistics South Africa, 2012.

---. Final Social Accounting Matrix, 2005 (Updated Version). Report No. 04-03-02. Pretoria, South Africa. November, 2010.

---. Income and Expenditure of Households 2005/2006. Statistical Release 0100. Pretoria, South Africa: Statistics South Africa, 2008.

---. Final Supply and Use Tables, 2005. By Pali Lahohla. Report No. 04-04-01. Pretoria, South Africa: Statistics South Africa, 2005.

World Bank. World Bank Doing Business 2014: Understanding Regulations for Small and Medium Size Enterprises. Washington, DC: World Bank, 2013.

Appendix, Table: Aggregate Social Accounting Matrix, South Africa (reorganization of SAM 2005, Statistics South Africa)

	Activities			Commodities			Factors			Households						Govt	Invest	World	
	a_sec1	a_sec2	a_sec3	c_sec1	c_sec2	c_sec3	K	L	N	P1	P2	P3	NP1	NP2	NP3	G	I	W	Total
a_sec1	0.00	0.00	0.00	280.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	280.34
a_sec2	0.00	0.00	0.00	0.00	1138.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1138.51
a_sec3	0.00	0.00	0.00	0.00	0.00	1562.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1562.47
c_sec1	6.33	176.83	2.05	0.00	0.00	0.00	0.00	0.00	0.00	8.08	12.31	10.91	2.25	9.41	2.35	1.20	2.24	132.9	366.83
c_sec2	68.78	514.52	212.52	0.00	0.00	0.00	0.00	0.00	0.00	51.65	96.90	111.15	37.65	188.02	47.01	31.88	267.65	189.17	1816.90
c_sec3	55.51	215.16	475.80	23.34	295.18	-279.69	0.00	0.00	0.00	20.47	44.63	76.54	34.22	203.10	50.78	81.59	12.24	68.96	1377.83
K	55.85	44.71	374.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.95	0.00	24.88	573.05
L	54.06	143.67	334.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	167.20	0.00	3.90	702.93
N	39.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.26	0.00	0.77	42.07
P1	0.00	0.00	0.00	0.00	0.00	0.00	23.08	33.44	1.89	0.00	0.00	0.00	0.00	0.00	0.00	23.98	0.00	0.17	82.56
P2	0.00	0.00	0.00	0.00	0.00	0.00	44.16	64.10	3.61	0.00	0.00	0.00	0.00	0.00	0.00	45.93	0.00	0.33	158.13
P3	0.00	0.00	0.00	0.00	0.00	0.00	106.08	153.94	8.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80	269.49
NP1	0.00	0.00	0.00	0.00	0.00	0.00	39.63	57.48	3.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	100.65
NP2	0.00	0.00	0.00	0.00	0.00	0.00	213.15	309.88	17.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.60	542.04
NP3	0.00	0.00	0.00	0.00	0.00	0.00	53.29	77.47	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	135.51
G	1.60	1.71	22.19	8.59	88.80	45.63	40.93	0.00	1.27	0.00	0.00	60.19	22.48	121.07	30.26	3.01	0.00	0.94	448.67
I	-0.83	41.91	141.15	0.00	0.00	0.00	0.00	0.00	0.00	2.36	4.29	10.37	3.93	19.77	4.94	-0.26	0.00	54.59	282.22
W	0.00	0.00	0.00	54.56	294.41	49.42	52.73	6.62	1.63	0.00	0.00	0.33	0.12	0.67	0.17	18.93	0.09	0.00	479.68
Total	280.34	1138.51	1562.47	366.83	1816.90	1377.83	573.05	702.93	42.07	82.56	158.13	269.49	100.65	542.04	135.51	448.67	282.22	479.68	
	All values in R Billion																		