University of Pretoria
Department of Economics Working Paper Series

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Working Paper: 2016-11
February 2016

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IMPACT OF ACTIVITY TAX IN THE PROPERTY-OWNING AND SUBLETTING OF FIXED PROPERTY SECTORS ON THE SOUTH AFRICAN ECONOMY: A CGE ANALYSIS

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Abstract

This paper analyses the economy-wide impact of an increase in property tax in South Africa by disaggregating the real property sector into two subcomponents, namely the property-owning and subletting of fixed property sectors. Use is made of the Computable General Equilibrium model for this end. The results of the simulation show that increasing taxation in the property sector reduces demand for all types of labour in South Africa. Moreover, the results of the simulations show that a tax increase in the property sector reduces economic activity in the country and offsets a possible increase in government revenue. This paper suggests that the South African government should be cautious about resorting to an increase in tax in the property sector to raise its revenue.

1. Introduction

The need to mobilise domestic resources and maximise government revenue has been increasingly advocated in a number of African countries in order to compensate for the scarcity of external assistance triggered by the recent global financial crisis. Particularly, African countries are in dire need to increase government revenue to finance their development agendas and to reduce their budget deficits, in order to curb their dependence on external financing and aid. While the need to expand government revenue, particularly tax revenue, requires broadening the tax base to improve revenue collection, countries that have diversified their tax bases often have no option other than to increase the tax rate on existing taxable items and products in order to increase their tax revenues. Choosing to expand tax revenue by increasing tax rates may be

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counterproductive and, in some macroeconomic conditions, the decision to increase tax rates could even backfire against the fiscal authority, and may result in political and socio-economic pandemonium. Besides, the theoretical foundations of the Laffer curve show that caution should be exercised when resorting to a tax increase to increase government revenue, as the positive relationship between the tax rate and government revenue can only be achieved within a specific threshold of the tax rate. Thus, it is important for fiscal authorities to weight carefully any decision to increase tax rates and to choose cautiously the kind of taxes to raise that will not harm the economy. It is in this context that a number of authors suggest that real property tax be targeted as a stable source of revenue at the local and municipal levels in both developed and developing economies (Bird and Slack, 2002; Mou, 1996). These authors indicate that property tax is a good local tax in the sense that real property, such as land and buildings, cannot easily be moved out of a tax jurisdiction, unlike a number of taxable items and products that are easily impermanent.

It is important to note that a real property tax is imposed by the governing authority of the jurisdiction in which the property is situated. However, the national government regulates how the property tax is charged and how the tax is collected. The real property tax is levied on owners of immovable property, namely land and improvements to the land or buildings. The types of property tax vary among countries and provinces (World Bank, 2013). An existing property is usually taxed based on its standard categorization. Categorization is the clustering of properties based on a similar function. According to the South African Revenue Service (2008), tax on property is assessed according to the value (*ad valorem*) of the property, and the government expects an evaluation of the financial value of each property in accordance with the property tax system.

While the property sector accounts for a small contribution to the gross domestic product (GDP) of a number of African countries, the sector is not negligible in South Africa. According to the South African Property Owners Association (SAPOA, 2013), the South African property sector has grown significantly in importance, and was worth R4.9 trillion in 2012, representing 8% of gross domestic product (GDP). A study conducted by the Property Sector Charter Council (PSCC) indicates that 1% of the land in South Africa is urban and residential, approximately 73% is natural pasture, no more than 12% is agricultural and the remaining land includes nature conservations and reserves (PSCC, 2013). The study also indicates that approximately two-thirds of the property owned in the country is residential, and is worth

R3 trillion, while commercial property represents a total value of around R780 billion. Unused land reserved for development is estimated at R520 billion, and state-owned property, as well as national, provincial and local government property represents a total value of approximately R570 billion. Moreover, retail property represents the largest value of the commercial property sectors in the country, at R340 billion, followed by office properties, at R228 billion, and industrial properties, at R187 billion.

A number of studies that have endeavoured to assess the economic impact of property tax focus on the partial equilibrium methodology. Very few studies make use of the computable general equilibrium (CGE) methodology when assessing the impacts of property tax. The CGE approach is well suited to analyse the impacts of property tax, given its economy-wide focus and its ability to identify the winners and losers of a given policy. The majority of CGE studies deals with the regional impact of property tax in the US. For example, Julia-Wise et al. (2002) evaluate the impact of a 50% property tax reduction on Idaho's economy, by employing a two-sector traded and non-traded CGE model. The results of the study show that a property tax reduction improves the overall economy of Idaho by increasing total employment, factor income and household income. Choi and Sjoquist (2015) assess the effect of switching from a capital property tax to a land value tax in Atlanta and Georgia. The authors consider cases in which housing capital is not completely mobile between states and allows for labour-leisure choice. The results of the study show that switching from the benchmark property tax to a land value tax lowers the overall price level, including the wage rate and the price of housing services.

Waters et al. (1997) make use of a state-level CGE model to investigate economic adjustment to a property tax limitation in Oregon. The authors find that total output and income increase under the limitation, with high-income households benefitting the most. Nonetheless, tax revenues and spending decrease significantly with the implementation of a property tax limitation policy.

To the best of our knowledge, there is no study that deals with the economy-wide impacts of a real property tax in Africa in general and South Africa in particular. This study is the first to apply the computable general equilibrium approach in assessing the impacts of an increase in real property tax in the South African economy. Moreover, most studies that assess the economy-wide effects of real property taxes make use of an aggregate account for the real property sector. This paper departs from that practice by disaggregating the real property sector into three different sub-accounts, namely property-owning, subletting of fixed property and other activities

of estate agencies. Thus, the paper opts to assess the impact of an increase in property tax in the property-owning and subletting fixed property categories of real estate property in South Africa. Simulations are conducted to assess the economy-wide effects of a 5% tax increase in the property-owning and subletting of fixed property sectors of real estate property in South Africa. The amount of 5% corresponds with the inflation target range adopted by the South African Reserve Bank (SARB). The results of the simulation undertaken by this paper allow, among other things, an assessment of whether the two sectors of real estate property are complementary or substitute. For example, the paper provides an understanding as to whether a tax increase in one of the property sectors will affect the two sectors differently. The finding of this study will inform fiscal authority in South Africa on the appropriateness of increasing taxation in each of these subcomponents of real estate property. The remainder of the paper is divided as follows: section 2 discusses the methodology used in the paper, section 3 presents the results of the simulations conducted and section 4 concludes the paper.

2. Methodology

2.1 Model description

We use a Computable General Equilibrium (CGE) modelling approach to analyse the impact of activity tax in the property owning and subletting of fixed property sectors in an economy-wide framework for South Africa. The modelling framework is a static CGE model that was originally developed by Lofgren et al. (2001) using the General Algebraic Modelling System (GAMS). The parameters of the CGE equations were calibrated to observed data from a social accounting matrix (SAM) for the year 2010. SAM is a prevalent structure for depicting CGE databases (Horridge, 1993). Some of its particularities are that each row or column of the SAM matches to a specific agent, activity, or account, while each cell in the SAM displays the value of a certain operation. Row totals indicate total income to each account, which should match the equivalent column totals reflecting the total of expenditure and savings of each account.

The main data sources utilised to construct the 2010 SAM originated from the supply and use tables produced by Statistics South Africa (Stats SA), macroeconomic data from the South Africa Reserve Bank (SARB) and the Quarterly Labour Force Survey (QLFS). The supply and use tables were used to determine the linkages and interactions between sectors, while the QLFS data supplied information pertaining to employment categories and average wages for various

labour categories and sectors. We also used the Income and Expenditure Survey data to model the household factor income distribution and consumption behaviour.

The 2010 SAM includes 14 households, 48 activities and 85 commodities. Employment or labour was allocated according to education level. We identified four labour categories, comprising primary educated (Grades 1-7), middle educated (Grades 8-10), secondary educated (Grades 11-12) and tertiary educated. The household sector was disaggregated according to income into deciles, with the top decile being further split into five categories. Furthermore, we opted for a particular macroeconomic government closure because of the reinjection of the new carbon tax into the economy, placing government revenue unbiased. Nonetheless, for the purpose of this study, we split the real estate sector into three sectors, comprising (1) property-owning, (2) subletting of fixed property and (3) other activities of real estate, which increased our 2010 SAM to 50 activities and 87 commodities.

Household consumption expenditure indicates that expenditure on goods and services is based on income after savings, tax and transfers to other domestic non-government institutions (INSDNG). In the original model, this is introduced as follows:

$$EH_h = \left(1 - \sum_{i=INSDNG} shii_{i,h}\right)(1 - MPS_h)(1 - TINS_h)YI_h, \quad (1)$$

where $shii_{i,h}$ are the shares of net income transferred from households to other domestic non-government institutions, MPS_i is the savings rate for INSDNG, $TINS_i$ is the direct tax rate for domestic non-government institutions, and YI_i, their income. In fact the total income of households is proportional to the revenue received from the sales of production factors and transfers from government. In this case transfers represent social welfare.

Production factors flow from households to producers. The labour and capital retained by households constitute the supply of production factors (Alton et al., 2012). The total labour supply, *LS,* is established by upward-sloping supply curves that depend on the current wage, *W*, the base-year wage, *w*, base-year labour supply, *ls*, and wage supply elasticity, *ε*. Equilibrium is reached when the total labour supply, *LS,* amounts to the sum of all sector labour demands, *L*:

$$LS = ls \bullet (W / w)^{\varepsilon} = \sum_j L_j \quad (2)$$

In contrast, labour is mobile across industries, while capital is sector-specific. Both factor demand, *K,* and the rental rate, *r,* are fixed, while the distortion term, Z, (which shows variation

in the rental rate, *r,* for a sector such as property-owning) adjusts to equate capital demand and supply in each sector. Intermediate demand in the model is determined using Leontief technology functions. The fixed input-output coefficients, $io_{jj'}$ indicate the quantity of goods *j'* sourced to generate one unit of good *j*. The producer price, *PA*, is the sum of factor and intermediate payments per unit of output (Arndt et al., 2011).

$$PA_j \bullet A_j = W \bullet L_j + r \bullet Z_j \bullet \bar{K}_j + \sum_j P_j io_{jj'} \quad (3)$$

Government revenue is considered to be a special institution in the model, because it comprises various taxes, such as import tariffs, income tax, company tax, and indirect tax. Nonetheless, its expenditure consists of government expenditure on commodities, transfers and government savings.

Concerning savings and investment, the model entails investment to be proportional to total savings. In this respect, total savings include savings by households, the government and the foreign sector.

2.2 Closures

The CGE model can be used to study a given situation in the economy when it is compared to the "policy" situation in which a shock, such as a decrease or increase in activity taxes in the property-owning sector is applied. Answers are reported in variations from the initial condition, and should be inferred as the difference between the conditions following the shock. The CGE model is remarkably suitable for acquiring the allocative effects of policy changes.

According to Horridge (1993), the number of variables and equations in the CGE model is essential from the theoretical description of the CGE model. Usually, the researcher must select which variables will be considered endogenously within the model, and which variables will be considered exogenously. The number of exogenous variables must be selected so that the economic setting in which the policy shock is tested best reflects the true economic setting to which the policy shock pertains. In the context of modelling methodology, the assumptions with reference to exogenous and endogenous variables are known as 'model closure'.

Suitable closure needs to be established to evaluate the impact of the activity tax rate in the property-owning sector on the South African economy. Various closures can be applied for diverse objectives. There is no unique ordinary or appropriate closure. In fact, the behaviour of

the model is dependent on the applicable macroeconomic conditions and factor closures selected.

In this paper we assume a balanced closure for investment and government expenditure in which their absorption shares remain constant, that there are flexible government savings, and that there is a flexible exchange rate with fixed foreign savings. Bearing in mind the challenging labour market in South Africa, we assume that primary educated labour is unemployed and mobile, while tertiary educated labour is fully employed. Furthermore, we assume that middle and secondary educated labour is semi-employed with upward sloping supply curves, allowing for an increase in supply and wages.

We take into account only the impact of the change in the tax system, and not the related spending of the additional funds amassed. Changes in revenue are assumed to add to or reduce the government budget balance, while all other tax rates, including effective direct tax rates, remained constant when we shocked the activity tax rate of the property-owning and subletting of fixed property sectors.

3 Simulation results

Two scenarios were performed to evaluate the impacts of the increase in activity tax on the property property-owning and subletting of fixed property sectors in an economy-wide framework for South Africa. In the first scenario, we increased the activity tax rate of the property-owning sector by 5%, and in the second, we increased the activity tax rate in the subletting of fixed property sector by the same amount. As indicated above, we considered a steady investment closure in which investment as a share of absorption remained constant.

The results of evaluating the impact of the shock are considered as percentage changes between the values in the baseline simulation and the policy simulation for each scenario. Table 1 presents the results of the two simulations on government revenues. The results indicate an increase in activity tax revenues received by the government. The percentage increase is higher for the property-owning than the subletting of fixed property sectors. This shows the importance of property ownership in the South African economy. However, the results of the simulations reported in Table 1 show a decrease in revenue received by the government from direct tax and transfers received from the factors of production. This result should imply that the two sectors are negatively impacted by the increase in taxation

with regard to demand for labour and return on investment.

Table 1: Government income

Description	Base (2010 R billion)	Property-owning sim 1 (+5%)	Subletting of fixed property sim 2 (+5%)
Direct revenue excluding dividend tax	396	-0.04227	-0.04213
Activity tax revenues	38	0.11894	0.08207
Transfers received from factors	52	-0.00338	-0.00230

Table 2 confirms these results, showing that a decrease in demand for labour is observed for all of its categories. For example, the demand for labour with tertiary education decreases by 0.13% when tax in the property-owning sector increases by 5%, and it decreases by 0.029% when taxation in the subletting of fixed property sector increases by the same percentage. Capital stock decreases by 0.33% when taxation in the property-owning sector increases by 5%, and by 0.23% when taxation in the subletting of fix property sector increases by the same amount.

Table 2: Factor income

Variable	Description	Base (2010 R billion)	Property-owning sim 1 (+5%)	Subletting of fixed property sim 2 (+5%)
flab-p	Labour with primary school education (grades 1-7)	77	-0.15588	-0.19413
flab-m	Labour with middle school education (grades 8-11)	208	-0.48112	-0.17313
flab-s	Labour with secondary school education (grade 12)	382	-0.17916	-0.05156
flab-t	Labour with tertiary education (certificates, diplomas or degrees)	532	-0.13374	-0.02990
fcap	Capital	1174	-0.33798	-0.22994

Source: Simulation results from the CGE model

An increase in property tax not only negatively affects demand for the factor of production, but it also has a negative impact on low-income households' consumption. However, as reported in Table 3, high-income households are insulated from the increase in taxation in the property sectors. It is important to note that the decrease in direct revenue reported in Table 1 is certainly due to the decrease in the demand for labour and income from households, translated by the decrease in consumption.

Table 3: Household consumption

Variable	Description	Base (2010 R billion)	Property-owning sim 1 (+5%)	Subletting of fixed property sim 2 (+5%)
hhd-0	Decile 1	27	-0.34340	-0.58781
hhd-1	Decile 2	46	-0.36845	-0.59201
hhd-2	Decile 3	56	-0.40577	-0.61801
hhd-3	Decile 4	64	-0.44394	-0.63152
hhd-4	Decile 5	76	-0.46412	-0.65943
hhd-5	Decile 6	88	-0.47452	-0.67934
hhd-6	Decile 7	107	-0.00153	-0.23683
hhd-7	Decile 8	150	-0.06432	-0.27609
hhd-8	Decile 9	287	-0.05962	-0.27075
hhd-91	Percentile 90-92	84	-0.07363	-0.28316
hhd-92	Percentile 92-94	98	0.27447	-0.00606
hhd-93	Percentile 94-96	117	0.35753	0.06187
hhd-94	Percentile 96-98	142	1.02749	0.59323
hhd-95	Percentile 98-100	229	1.76717	1.17862

The rationale behind the decrease in consumption of low-income households is that the increase in taxation in the property sectors, which translates mostly into an increase in rentals, affects their disposable income, especially the allocation of their disposable income for consumption. However, high-income households who own properties may increase their capital gains due to the increase in taxation in the property sectors. The increase in capital gains should justify the increase in consumption for the high-income households. As reported in Table 3, the highest-income households benefitted the most from the increase in taxation in the property sectors.

With regard to the sectoral contribution to GDP, Table 4 shows that the property and related sectors are negatively affected by the increase in taxation in the property sector.

Table 4: Sectoral contribution to GDP

Variable	Description	Base (2010 R billion)	Property-owning sim 1 (+5%)	Subletting of fixed property sim 2 (+5%)
aagri	Agriculture	2.09	-0.003282	-0.003387
acoal	Coal mining	2.25	0.000209	-0.000387
aomin	Other mining	8.02	0.007659	0.001375
afood	Food processing	2.19	-0.006390	-0.006196
abtob	Beverages & tobacco	1.07	-0.000671	-0.000472
atext	Textiles	0.15	-0.000167	-0.000150
awood	Wood products	0.35	-0.000087	-0.000114
avehe	Vehicles & parts	0.95	0.001712	0.001623
aoman	Other manufacturing	0.72	-0.000057	-0.000191
acons	Construction	3.62	-0.000169	0.000034
atrad	Wholesale & retail trade	10.59	-0.003132	-0.001248
atran	Transport	6.03	-0.002830	-0.003214
afsrv	Financial services	7.31	0.006093	0.006725
aprop	Property-owning	1.45	-0.005061	-0.004787
asubl	Subletting of fixed property	1.54	-0.004754	-0.004497
aotha	Other activities of estate agencies	1.68	0.004358	0.004122
abusi	Other business activities	4.51	0.000261	0.000452
agovn	Government	16.71	0.000066	0.000160
aeduc	Education	1.05	-0.000472	-0.000133

While it is evident that the contribution to GDP by the property-owning and subletting of fixed property sectors decreases by 0.005% and 0.0047% respectively, government's contribution to GDP increases, albeit by a small amount. The contribution to GDP by sectors such as construction and wood products decreased due to their links to the property sector. The results reported in Table 4 show that financial services' contribution to GDP increased by 0.0060%, with the increase in taxation in the property-owning sector, and by 0.0067% with the increase in taxation in the subletting of fixed property sector. This increase should be explained by the increase in the savings of high-income households who benefitted from capital gains and increased rentals triggered by the increase in taxation in the property-owning and subletting of fixed property sectors respectively. Finally, Table 5 presents the values of GDP after the two simulations. GDP at market prices as well as GDP at factor cost decrease after the increase in taxation in the property sectors. This indicates that increasing taxation in the property sector dwindles the level of economic activity in South Africa. The only beneficiaries of this policy seem to be the government, which benefitted from revenue collected, and high-income households, which possibly gained from capital gains and rental income.

Table 5: Impact of property taxation on gross domestic product

Description	Base (2010 R billion)	Property-owning sim 1 (+5%)	Subletting of fixed property sim 2 (+5%)
GDP at market prices	2659	-0.05076	-0.01359
Indirect taxes	287	0.08371	-0.01969
GDP at factor cost	2372	-0.06647	-0.01278

It is important to note that the results of the two simulations show that the two sectors are closely substituted in that the increase in taxation in one sector affected the activities of the other sectors, as is mainly indicated by the results reported in Table 4. In addition taxation in each of the property sectors, namely the property-owning and subletting of fixed property sectors, affect equally different macroeconomic variables. The results of the simulations show that increasing property taxation in South Africa may be counterproductive with regard to economic activities. The South African government needs to be cautious in pursuing policies that resort to increasing tax for the sake of increasing government revenue.

4 Conclusion and suggestion for further research

This paper endeavoures to assess the general equilibrium effect of an increase in taxation in the property sector of the South African economy. The property sector was divided into three sub-sectors, namely the property-owning, subletting of fixed property and other activities of estate agencies sectors from the 2010 SAM. Our CGE model was empirically calibrated to the structure of South African economy. The CGE model was used to assess the general equilibrium impact of an increase in taxation in the property-owning and subletting of fixed property sectors. The results of the simulation show that increasing taxation in the property sector reduces the demand for all types of labour in South Africa. Moreover, the results of the simulations show that a tax increase in the property sector reduces economic activities in the country and offsets a possible increase in government revenue. In addition taxation in each of the property sectors, namely the property-owning and subletting of fixed property sectors, equally affects different macroeconomic variables. The paper suggests that the South African government should be cautious about resorting to a tax increase in the property sector to raise its revenue.

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