Impact of reduction in corporate income tax on the South African economy: A CGE analysis

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Abstract. The aim of this study is to evaluate the effects of the drop in the Corporate Income Tax (CIT) from the current rate of 28% to 27% on the South African economy. The CGE model is considered appropriate to perform this research paper. This model is considered as the suitable model to evaluate the effects of change in CIT due to its usage over the years by the researchers and academics. One simulation is taken into consideration to evaluate the effects of the reduction in the CIT. The macroeconomic and investment closures were considered to observe the effects of the shock within the economy. In the closure, capital stock is allowed to change. Apart from the capital stock, the unskilled labour force is also allowed to change. The setting up of the CIT to 1% reduction results in a slight increase in the GDP, consumption, export and government revenue. Due to the fact that tax collection depends on the type of policy, economy and compliance revenue accomplishment, it was anticipated that private consumption should heighten as the CIT drop by 1%. In this respect, the improvement in the economy-wide productivity indicates that output has a significant impact on employment. The GDP increases slightly by 0.02164% which point out that the expansionary economy coupled with augmented export demand raises the demand for factors of production. CIT and tax assessment data constitutes the originality of this study, as acquiring reliable data on the CIT continues to be a non-trivial task in South Africa.

Keywords. Corporate income tax (CIT); South African Revenue Service (SARS); CGE model.

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1. Introduction

In June 2021 the finance ministers of the G7 decided to set the global corporation tax to a minimum of 15%. Since then there has been a lot of debates regarding this proposition due to its repercussions on the rest of the world and South Africa in particular. The most targeted companies are the world's biggest firms wherever they operate across the world. They can be taxed more than 10% margin if they have no less than 20% of their profits in that specific jurisdictions where they sale (OECD, 2022).

The implementation of this proposal seems to be challenged by the involvement of other countries such as the G20 with the inclusion of China and India. Beside, opposition could occur from countries like Ireland, member of the European Union countries which has been using a flat rate of 12.5% CIT for the purpose of attracting foreign investments.

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Consequently, under developed countries could as well manifest some opposition to the deal. Furthermore, the Organisation for Economic Co-operation and Development (OECD) will certainly propose new regulations before the application of the minimum CIT rate.

According to the Economic magazine (2021), the rich G7 countries indicative of 40% of world GDP could benefit more than 60% of the corporate tax revenue collected from the proposed smallest tax rate of 15%.

The harmonisation of the proposed new CIT rate will definitely take time as it will involve several governments. Over the years, there has been worldwide legal code favouring multinational firms by lowering their tax rate through the establishment of their bases across various countries. One of the solutions could be the establishment of an independent worldwide tax organisation to administer the putting into practice all the regulations inherent to the minimum CIT of 15%. This could be the right time to set in place an international tax court which will stimulate worldwide cooperation between countries (Álvarez-Martínez, *et al.*, 2021).

In South Africa CIT is levied annually on all registered firms which generate profits. Those firms are classified as private or public companies, close corporations and collective investment organisations. Nonetheless, over the years, South Africa has signed specific agreement with several African countries for holding company opportunity into the African continent. This agreement relates to double taxation arrangements for the purpose of exempting certain categories of income such as royalties and dividends from paying taxes. Consequently, South Africa uses a tax system where any resident of the country is taxed on its worldwide earning. In this respect, specific tax rate is applied on income earned from a foreign land. Similarly, non-resident is taxed on the basis of the source of income generated specifically from South Africa. A firm is however considered as resident when it is established and managed according to the law of South Africa (National Treasury, 2020).

While the world is concerned about the global reduction in CIT rate, South Africa has rather decided to reduce the CIT from 28% to 27%. Therefore, a new Unit within the organisation (SARS) has been established for the purpose of improving the level of compliance amongst the taxpayers with the highest income category groups. The work performed by this Unit has been successful within a short period of time due to the quality of investigation carried out on all high income earners. Besides, best practices have been taken into consideration while the world is watching these developments with concern. Against this backdrop, this article seeks to assess the impact of a reduction of the CIT rate from the 28% to 27% on the South African economy. Section 2 go through literature assessment, Section 3 look at the CIT in South Africa, Section 4 revises the methodology, Section 5 evaluates the empirical information and the final Section summarises the study.

2. Literature review

2.1. General issue

Based on the G7 proposals, the OECD proposed a stocktaking on the international tax history and strict revision to the structure of the worldwide tax system. Less taxes have been collected from a number of multinational firms trading mostly in the technology field outside their country of residence. In fact, the main purpose is that those big firms pay tax in the operating jurisdictions where their profit is made before paying the proposed lowest possible tax rate of 15% (OECD, 2021).

The effectiveness of the implementation of the worldwide minimum tax rate will depend on certain rules set in place which should be approved by the majority of concerned countries. The largest economies are heading toward discouraging multinational firms from transferring earnings - and tax revenues - to developing countries in spite of where their revenues are generated.

South Africa was classified number 60 out of 140 nations regarding the worldwide competitiveness on CIT in 2018. The total amount of CIT collected constitutes the most important source of income for the government to fulfil its mandate to reduce poverty in the country (World Economic Forum, 2021).

Tax collections is the function of policy, economic and compliance revenue performance. Consequently this has been challenging in numerous developing countries due mostly to mal administration at all level of spheres of government. The COVID-19 pandemic has adversely affected all aspects of social life including the global economic climate. The pandemic erupted at a time when South Africa was already in a weak fiscal position. Many countries across the world are facing a challenge to review their tax rates as a result of the covid19 resulting in the adoption of short-term revision to their tax systems.

Indeed, the sound system of tax rate stimulates not only tax compliance but also economic development. As a result, countries with advantageous competitive tax systems perform successfully as long as the competitive index is concerned. A competitive tax rate is the key factor which sustains the minimal tax rates at its lowest level (World Bank, 2021).

Tax revenues of most countries across the world with no exception of sub-Saharan Africa contributed only a minimum of 17% to their Gross Domestic Product (GDP) in 2018. Nonetheless, when comparing with European countries, OECD countries specifically increased on average by approximately 35% of GDP in tax incomes during the same period. In the case of South Africa, the tax to GDP share of the past 10 years has been on average 25%, representing the highest tax to GDP in the African continent on average (OECD, 2018).

According to the International Tax Competitiveness Index Rankings, Estonia was classified as the most top tax rate in the OECD due to its 20% tax rate on CIT imposed specifically on allocated earnings. Besides, the country uses a fixed 20% tax applied exclusively on personal income tax

with the exclusion of the personal dividend earning. Finally, the property tax is imposed on the value of the land and not on the actual value of the property (OECD, 2021).

In the case of South Africa, two decades ago, the government widened the tax base of CIT by applying specific tax on foreign dividends, rentals and multinational firms. When comparing with other countries, South Africa adopted a CIT rate of 28% for the past 18 years. This has impacted negatively on the comparative advantages because of the drop in the investment from the trade partners. To attract the investment, South Africa is compelled to reduce the CIT rate like other countries such as India, England and the United States which have decreased their CIT rates lower than 28% (National Treasury, 2020).

In 2021, the international average legislative CIT rate assessed amongst the 177 countries is approximately 23.85%. Nonetheless when measured by GDP, the international average legislative rate is 25.85%, while 24.61% in Europe, 28.16% in Africa, 21.47 in EU27, 23.51% in OECD countries and 24% in the G7. Ireland reduced its CIT rate to 12.5% since 2003 while Hungary lowered its CIT rate from 19 to 9% in 2017 (OECD, 2021).

Countries with the highest CIT rate worldwide include Comoros (50%), Puerto Rico (37.5%), and Suriname (36%) while the lowest are composed of Turkmenistan (8%), Uzbekistan (7.5%), and Barbados (5.5%). Below table provides a comparison of CIT rate modifications effected after the effect of the COVID-19 pandemic (IMF, 2020).

Table 1. *Corporate Tax Rates by Country*

State	2010	2019	2020
Australia	30	30	30
Belgium	33.99	29.58	25
Botswana	25	22	22
Canada	29.4	26.62	26.47
China	25	25	25
France	32.02	34.43	34.43
Germany	30.18	29.9	29.9
Greece	24	24	24
India	33.99	30	22
Italy	31.4	27.81	27.81
Japan	39.54	29.74	29.74
Korea	24.2	27.5	27.5
Lesotho	25	25	25
Namibia	35	32	32
Netherlands	25.5	25	25
New Zealand	30	28	28
Portugal	26.5	31.5	31.5
South Africa	34.55	28	28
Spain	30	25	25
Swaziland	30	27.5	27.5
United Kingdom	28	19	19
United States	39.21	25.89	25.77

Source: Tax Foundation (WTO, 2020)

Table 1 indicates that ten countries around the world revised their constitutional CIT rates in 2020 due mostly to the Coronavirus outbreak. Nine of these countries have reduced their tax rates ranging from 1% to 5.3%. The tenth country – Micronesia in South America, has increased its tax rates with the introduction of a progressive CIT system with a maximum rate of 30% in 2020. This was amidst the Covid-19 pandemic faced by countries around the world (WTO, 2020).

According to OECD (2009), theoretically the processing of excess credits seems easy but in reality it requires detailed information before paying refund due mostly to level of integrity of taxpayer.

2.2. Overview of the South African CIT

South Africa signed more than 100 double taxation agreements across the world especially with African countries for the purpose of attracting investment by exempting or reducing taxes on earnings such as dividends, interests and royalties (National Treasury, 2020).

In South Africa, although residence-based tax system is used, the National Treasury has taken the lead in 2021 and reduced the corporate income tax rate from 28.0% to 27.0%. Although this should only be with effect from 1 April 2022, it has aligned South Africa with other countries (SARS, 2021).

The following tax rates are applied not for the large firms but for the small business corporations employing less than 5 persons with turnover of less than 20 million South African rand (SARS, 2021):
- ➢ 0% on the first R83 100 of taxable earning.
- ➢ 3% on taxable earning of less than R1 000 000
- ➢ 7% on taxable earning more than R83 100 but not greater R365 000.
- ➢ 21% on taxable earning more than R365 000 but less than R550 000.
- ➢ 28% on taxable earning greater than R550 000.
- ➢ 45% on taxable profit for trusts

South African government has appointed a specific service provider to collect a large amount of its CIT from foreign companies which are operating in the country. The registration for the payment of the business taxes can be done through internet or assistance from an agent of SARS.

Commonly in South Africa, the kind of corporations entitled to CIT payment are composed of co-operatives, corporate bodies, small business and close corporations, private and public companies, share block firms, club investment schemes and inactive firms.

The individual who qualifies as a self-employed is required to register for tax and be able to submit a PIT instead of a business tax return. Nevertheless, more than one individuals can partner to work together with the exception that tax will be applied to each individual on the profit received (SARS, 2021).

With the progress made in technologies, several choices have been given to the taxpayers to use for tax payments of any amount of less than R500000. Those options include e-filing, online Banking and cash deposit

at the banks. Table 2 below depicts the provisional tax payments for the period between 2017 and 2020.

Table 2. *Provisional tax payments by provisional period by tax year between 2017 and 2020*

Period R million Tax year	1st Provisional period	Percentage change	2nd Provisional period	Percentage change	3rd Provisional period	Percentage change	Total
2017	85 860	4.5%	119 251	5.1%	6 033	1.8%	211 145
2018	91 319	6.4%	121 610	2.0%	4 904	-18.7%	217 833
2019	97 092	6.3%	118 343	-2.7%	4 908	0.1%	220 342
2020	84 624	-12.8%	113 093	-4.4%	6 630	35.1%	204 347
Percentage total							
2017	40.7%		56.5%		2.9%		100.0%
2018	41.9%		55.8%		2.3%		100.0%
2019	44.1%		53.7%		2.2%		100.0%
2020	41.4%		55.3%		3.2%		100.0%

Source: SARS (2021)

Table 2 captures the amounts obtained from the 1st, 2nd and 3rd provisional tax payments according to the Fourth Schedule of the Income Tax Act, paragraph 19(3). Taxpayer is recommended to pay 80% of its tax during the 2nd provisional period. For instance, during the 3rd provisional period we observe that R6.6 billion (3.2%) of tax was paid in 2020 when compared with R6 billion (2.9%) in 2017 (SARS, 2021). Table 3 depicts the number of registered companies between 2017 and 2020.

Table 3. *Number of registered companies between 2017 and 2020*

| Date	Registered	Percentage growth in register	Tax year	Expected to submit returns	Assessed	Percentage assessed
31-Mar-18	3 202 007	-14.2%	2017	1 014 418	979 783	96.6%
31-Mar-19	2 020 759	-36.9%	2018	939 781	894 796	95.2%
31-Mar-20	2 548 975	26.1%	2019	832 996	812 306	97.5%
31-Mar-21	3 112 509	22.1%	2020	821 999	704 136	85.7%

Source: SARS (2021)

Table 3 indicates that the percentage growth of registered companies increased to 22.1% in 2020 from -14.2% in 2017. This is due mainly to the tax awareness organised by SARS by making difficult to non-compliant taxpayers to pursuing with their businesses. Table 4 depicts the number of tax assessed companies in 2019.

Table 4. *Number of registered companies by taxable income and tax assessed in 2019*

| Taxable income group	Number of taxpayers	Taxable income (R million)	Tax assessed (R million)	Average tax rate
Loss	224 844	-1 286 259	498	N/A
R nil	392 168	–	2 654	N/A
R1 to R1 million	159 477	31 613	6 460	20.4%
R1 million to R100 million	35 047	242 499	67 627	27.9%
R100 million +	770	472 276	128 562	27.2%
Total	812 306	746 387	205 801	27.6%

Table 4 indicates that the average tax rate of tax assessed companies in 2019 was set to 20.4% for taxable income varying between R1 and R1 million with a total number of taxpayers of 159477. Nonetheless, only 770 taxpayers with taxable income of more than R100 million were taxed with an average tax rate of 27.2%. Figure 1 depicts the distribution of taxpayers by industries and taxable income group in 2019.
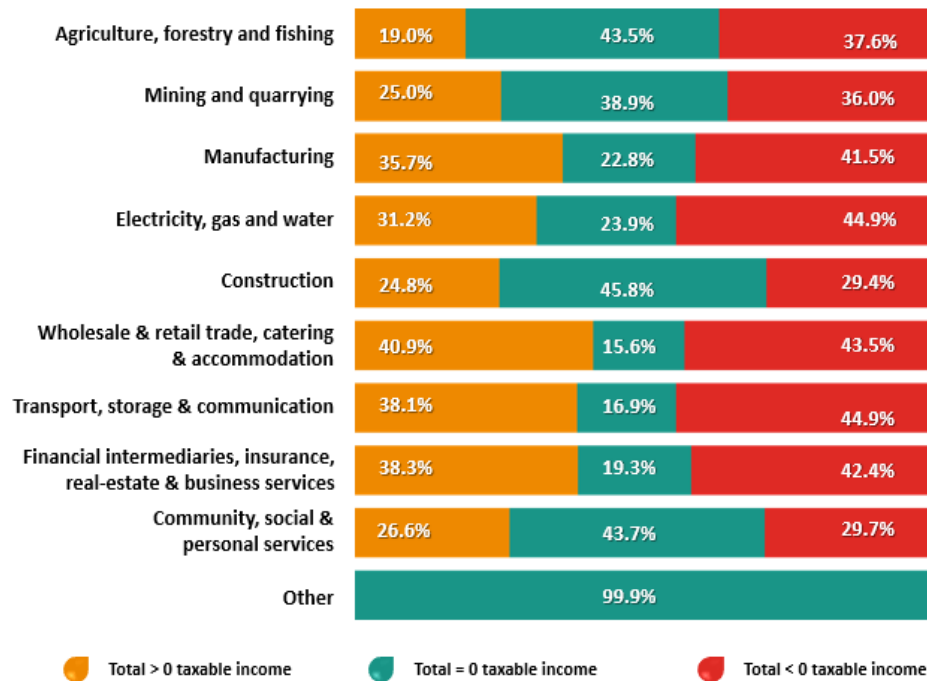
Figure 1. *Distribution of taxpayers by industries and taxable income group in 2019*
Source: SARS (2019)

Figure 1 depicts that the total number of taxpayers with greater than zero taxable income were identified in wholesale and retail trade, catering and accommodation sector (40.9%), followed by financial intermediate, insurance, real-estate and business services sector (38.3%) and transport, storage and communication sector (38.1%). Similarly, the total number of taxpayers with less than zero taxable income included electricity, gas and water sector (44.9%), transport, storage and communication sector (44.9%), and wholesale and retail trade, catering and accommodation sector (43.5%). Figure 2 depicts the number of companies with tax assessed by industries in 2019.
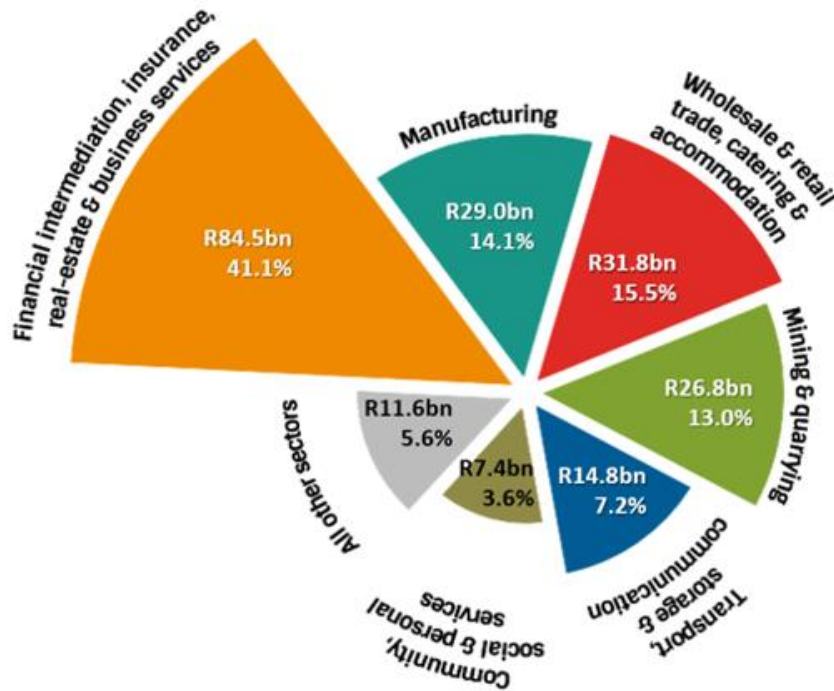
Figure 2. *Tax assessed for companies by industries in 2019*
Source: SARS (2019)

Figure 2 indicates that the largest assessed economic activities includes financial intermediation, insurance, real-estate and business services (41.1%) followed by wholesale and retail trade, catering and accommodation (15.5%) and manufacturing (14.1%).

**Table 5.** *Taxable income of companies and tax assessed by age group between 2010 and 2019*

Tax year	2010				2019				
Age Group	Number of taxpayers	Taxable income	Tax assessed	Average tax rate	Age Group	Number of taxpayers	Taxable income	Tax assessed	Average tax rate
		(R million)					(R million)		
Total < 0 taxable income									
0 - 4	48 682	-73 304	4	0.0%	10 - 14	57 373	-267 123	227	-0.1%
5 - 9	33 767	-71 834	150	-0.2%	15 -19	33 054	-176 956	19	0.0%
10 -14	22 239	-66 885	9	0.0%	20 -24	22 386	-281 495	8	0.0%
15 - 19	8 709	-20 121	163	-0.8%	25 - 29	9 102	-78 065	12	0.0%
20 - 24	4 898	-8 291	0	0.0%	30 - 34	5 275	-18 641	2	0.0%
25 - 29	1 766	-5 486	3	-0.1%	35 - 39	1 943	-10 548	-	0.0%
30 - 34	5 005	-62 170	496	-0.8%	40 - 44	5 176	-141 365	129	-0.1%
> 35	441	-11 338	51	-0.4%	> 45	491	-19 561	219	-1.1%
Total	**125 507**	**-319 429**	**877**			**134 800**	**-993 755**	**615**	
Total = 0 taxable income									
0 - 4	87 502	-	1	0.0%	10 - 14	68 464	-	40	0.0%
5 -9	17 846	-	0	0.0%	15 -19	19 692	-	721	0.0%
10 -14	8 160	-	0	0.0%	20 -24	9 946	-	1	0.0%
15 - 19	3 685	-	-	0.0%	25 - 29	4 230	-	0	0.0%
20 - 24	2 428	-	-	0.0%	30 - 34	2 654	-	1	0.0%
25 - 29	1 514	-	0	0.0%	35 - 39	1 429	-	0	0.0%
30 - 34	2 143	-	0	0.0%	40 - 44	2 663	-	1 857	0.0%
> 35	238	-	0	0.0%	> 45	244	-	57	0.0%
Total	**123 516**	**-**	**2**			**109 322**	**-**	**2 678**	
Total > 0 taxable income									
0 - 4	36 027	38 785	10 686	27.6%	10 - 14	46 374	105 670	29 019	27.5%
5 -9	29 892	75 528	21 389	28.3%	15 -19	28 759	121 398	32 752	27.0%
10 -14	22 924	62 632	17 641	28.2%	20 -24	20 991	103 263	28 593	27.7%
15 - 19	10 121	64 067	18 030	28.1%	25 - 29	9 183	65 852	18 005	27.3%
20 - 24	6 421	27 537	7 743	28.1%	30 - 34	5 818	32 241	8 901	27.6%
25 - 29	2 421	21 635	6 074	28.1%	35 - 39	2 329	21 217	5 737	27.0%
30 - 34	7 179	102 266	28 683	28.0%	40 - 44	6 488	175 557	48 209	27.5%
> 35	621	12 512	3 539	28.3%	> 45	565	35 953	9 459	26.3%
Total	**115 606**	**404 962**	**113 786**			**120 507**	**661 150**	**180 675**	
Grand Total	**364 629**	**85 533**	**114 665**			**364 629**	**-332 605**	**183 968**	

Source: SARS (2019)

J.L. Erero, TER, 9(3), 2022, p.140-161.

Table 5 indicates that the total number of taxpayers with less than zero taxable income increased from 125 507 in 2010 to 134 800 in 2019. During that period only 877 taxpayers were assessed in 2010 compared to 615 in 2019. The same trend was observed for the taxpayers with greater zero taxable income where their number increased from 115606 in 2010 to 120507 in 2019 with a slight growth rate of 4.2%. Figure 3 includes the number of taxpayers with assessed losses by tax year between 2013 and 2019.
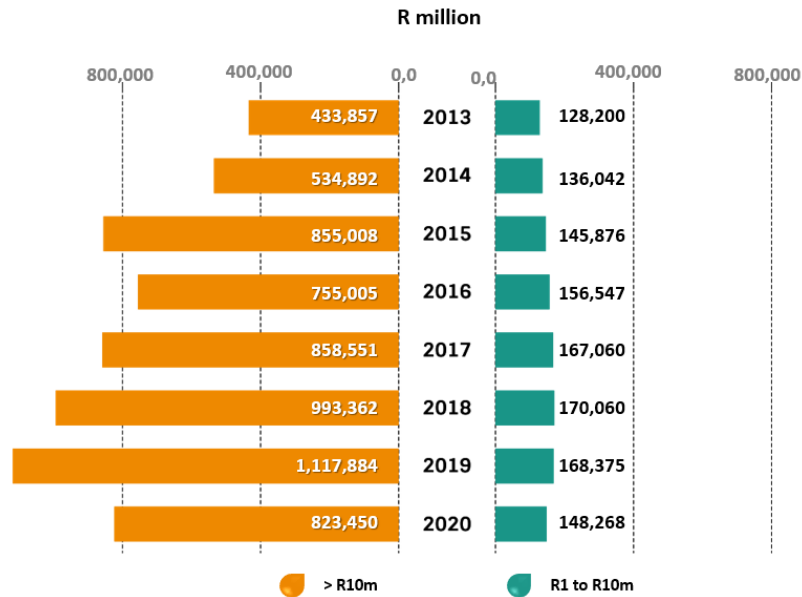
Figure 3. *Amount of assessed losses for companies by tax year between 2013 and 2020*
Source: SARS (2020)

Usually the losses are due to the economic environment that the firms are operating in. Figure 3 depicts that the highest value of assessed losses occurred in 2019 and 2018 with 1117884 and 993362 million, respectively.
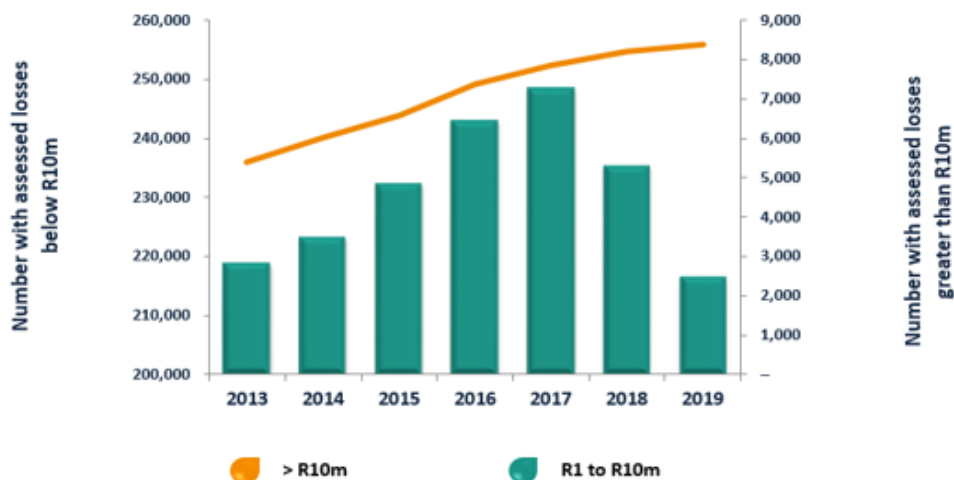
Figure 4. *Total companies including assessed losses by tax year between 2013 and 2019*
Source: SARS (2019)

Overall, Figures 3 and 4 indicate that the number of companies with assessed losses less than R10 billion increased constantly between 2013 and 2017 before declining from 2017 to 2019 with a substantial decrease due probably to the improvement in the turnover of the companies over the years. Nonetheless, the value of assessed losses greater than R10 billion increased steadily between 2013 and 2019 with an average growth rate of 13%.

Regarding the Small Business Corporations (SBCs) firms, there are certain conditions required to be eligible for paying tax. The following conditions are:

➢ The gross profit should be less than R20 million;
➢ The number of shareholders should be restricted in the firm; and
➢ Honest declaration by the taxpayer during the submission of the annual tax return because there is specific advantage for the SBCs to be taxed using progressive taxation instead of the constant marginal tax rate of 28%. The small business corporation's tax rates between 2017 and 2020 are depicted in Table 6.

Table 6. *Small business corporations (SBC) tax rates between 2017 and 2020*

Tax year Rand	2017	SBC rate for 2017	2020	SBC rate for 2020	Percentage increase in top bracket
Taxable income brackets	0 – 75 000	0%	0 – 79 000	0%	5.3%
	75 001 – 365 000	7%	79 001 – 365 000	7%	–
	365 001 – 550 000	21%	365 001 – 550 000	21%	–
	550 001 – and over	28%	550 001 – and over	28%	–

Source: SARS (2020)

Table 6 indicates for instance that small business corporations with taxable income brackets between R0 and R75000 improved by 5.3% in 2017 and 2020, respectively. There is another provision for SBCs to claim for reimbursement for any machinery or plant used during the process of production. The percentage of rate applied to any depreciable assets vary between 20 and 50%.

Previously, SARS used to tax the small business corporations by imposing two separate tax year rates. For instance in 2019, there was possibility to choose between the tax rate applied during the fiscal year 2018/19 or 2019/20. In this respect, the years of assessment will be between 1 January 2019 and 31 March 2019 for the fiscal year 2018/19 and between 1 April 2019 and 31 December 2019 for the fiscal year 2019/20. Table 7 shows the number of SBC taxpayers and the tax assessed by taxable income group.

Table 7. *The taxable income and tax assessed for small business firms between 2017 and 2020*

Tax year	2017			2018			2019			2020		
Taxable income group	Number of taxpayers	Taxable income (R million)	Tax assessed (R million)	Number of taxpayers	Taxable income (R million)	Tax assessed (R million)	Number of taxpayers	Taxable income (R million)	Tax assessed (R million)	Number of taxpayers	Taxable income (R million)	Tax assessed (R million)
A: < -25 000 000	14	-762	–	21	-3 107	–	21	-1 188	–	33	-118 933	–
B: -10 000 001 to -25 000 000	98	-1 416	–	108	-1 628	–	151	-2 156	–	149	-2 033	–
C: -5 000 001 to -10 000 000	354	-2 375	–	411	-2 794	–	458	-3 113	–	421	-2 850	–
D: -1 000 001 to -5 000 000	5 650	-10 491	0	6 156	-11 671	–	6 623	-12 818	–	6 069	-11 832	–
E: -100 001 to -1 000 000	28 201	-10 165	0	29 425	-10 623	0	29 202	-10 697	0	24 171	-8 942	0
F: -1 to -100 000	25 692	-897	0	26 582	-922	0	24 834	-883	0	19 323	-699	0
G: = 0	32 727	–	0	30 330	–	1	9 795	–	0	2 292	–	0
H: 1 to 100 000	47 801	1 972	5	51 551	2 126	5	49 876	2 090	4	38 803	1 647	3
I: 100 001 to 250 000	15 411	2 502	94	16 007	2 592	96	16 092	2 601	94	13 631	2 194	78
J: 250 001 to 500 000	11 564	4 119	267	11 960	4 273	277	11 551	4 120	265	9 798	3 491	223
K: 500 001 to 750 000	4 672	2 800	342	4 788	2 865	349	4 667	2 809	344	3 915	2 358	289
L: 750 001 to 1 000 000	2 124	1 843	313	2 133	1 855	316	1 965	1 705	289	1 752	1 519	258
M: 1 000 001 to 2 500 000	3 014	4 523	978	2 935	4 416	955	2 856	4 304	930	2 448	3 670	792
N: 2 500 001 to 5 000 000	636	2 121	531	641	1 987	530	592	1 987	496	527	1 741	435
O: 5 000 001 +	149	1 158	290	122	854	227	135	998	263	129	973	260
Total	**178 107**		**2 822**	**183 170**		**2 757**	**158 818**		**2 686**	**123 461**		**2 339**
Total < 0 taxable income	60 009	-26 107	0	62 703	-30 745	0	61 289	-30 854	0	50 166	-145 290	0
Total = 0 taxable income	32 727	–	0	30 330	–	1	9 795	–	0	2 292	–	0
Total > 0 taxable income	85 371	21 038	2 822	90 137	21 100	2 757	87 734	20 613	2 686	71 003	17 593	2 339
Total	**178 107**		**2 822**	**183 170**		**2 757**	**158 818**		**2 686**	**123 461**		**2 339**
Percentage												
Total < 0 taxable income	33.7%			34.2%			38.6%			40.6%		
Total = 0 taxable income	18.4%			16.6%			6.2%			1.9%		
Total > 0 taxable income	47.9%			49.2%			55.2%			57.5%		
Total	**100.0%**			**100.0%**			**100.0%**			**100.0%**		

Source: SARS (2021)

There are bad and good season for some firms as they perform. Table 7 depicts that the percentage of total taxable income greater than zero improved from 47.9% in 2017 to 57.5% in 2020. This slight improvement is due mostly to the high level of compliance from taxpayers. Table 8 introduces the provisional tax payments by sector for the fiscal years between 2016/17 and 2020/21.

Table 8. *The provisional tax payments by sector between 2016/17 and 2020/21 for all companies*

Fiscal year Sector (R million)	2016/17	2017/18	2018/19	2019/20	2020/21
Agencies and other services[1]	6 139	6 260	6 457	6 436	6 727
Agriculture, forestry and fishing	4 837	6 167	5 500	4 550	4 763
Bricks, ceramic, glass, cement and similar products	985	945	867	817	654
Catering and accommodation	1 700	1 747	2 146	1 635	602
Chemicals and chemical, rubber and plastic products	4 236	4 148	4 130	4 088	4 183
Clothing and footwear	1 449	1 640	1 888	1 259	960
Coal and petroleum products	3 482	4 021	2 716	1 593	944
Construction	10 787	5 380	4 276	3 758	3 403
Educational services	570	670	756	791	816
Electricity, gas and water	2 716	2 384	2 415	2 254	2 832
Financing, insurance, real estate and business services	61 365	74 582	76 895	70 320	62 808
Food, drink and tobacco	9 996	9 936	8 129	8 391	5 960
Leather, leather goods and fur (excl. footwear & clothing)	113	59	84	85	70
Long term insurance	11 491	8 864	8 205	13 205	6 930
Machinery and related items	4 250	4 268	4 391	4 327	4 398
Medical, dental and other health and veterinary services	4 613	4 331	4 576	4 562	3 356
Metal (including metal products)	4 056	4 492	3 794	2 762	3 578
Mining and quarrying	16 020	21 860	24 257	27 159	42 719
Other manufacturing industries	3 260	3 185	3 625	3 779	2 737
Paper, printing and publishing	2 667	2 776	2 392	1 759	1 166
Personal and household services	321	325	346	392	412
Recreation and cultural services	1 460	1 625	1 629	1 551	620
Research and scientific institutes	339	267	388	261	290
Retail trade	12 508	12 422	14 118	12 523	13 631
Scientific, optical and similar equipment	529	580	545	523	510
Social and related community services	28	35	39	38	33
Specialised repair services	402	277	263	256	216
Textiles	331	353	350	274	263
Transport equipment	449	301	356	414	438
Transport, storage and communications	15 391	15 969	15 797	15 536	15 434
Vehicles, parts and accessories	6 835	6 205	6 798	7 380	5 360
Wholesale trade	7 924	8 604	8 850	8 823	8 807
Wood, wood products and furniture	452	399	414	409	453
Other[2]	3 059	3 533	3 447	5 534	2 648
Total	**204 762**	**218 613**	**220 839**	**217 444**	**208 723**

Source: SARS (2021)

Table 8 points out that the highest provisional tax payments by sector occurred in 2018/19 and declined constantly till 2019/20. This is due mostly to the global financial downturn and latest pandemic that affected negatively the economy. Table 9 introduces the companies with a positive taxable income for the period between 2017 and 2020.

Table 9. *The taxable income and tax assessed by taxable income category between 2017 and 2020 for all companies*

Tax year	2017 [100.2% assessed tax as % of provisional tax]			2018 [95.0% assessed tax as % of provisional tax]			2019 [93.4% assessed tax as % of provisional tax]			2020 [61.3% assessed tax as % of provisional tax]		
Taxable income group Percentage of total	Number of taxpayers	Taxable income	Tax assessed	Number of taxpayers	Taxable income	Tax assessed	Number of taxpayers	Taxable income	Tax assessed	Number of taxpayers	Taxable income	Tax assessed
I: 1 to 100 000	43.1%	0.5%	0.2%	42.7%	0.4%	0.2%	42.1%	0.4%	0.2%	42.8%	0.6%	0.3%
J: 100 001 to 250 000	16.2%	0.7%	0.5%	16.3%	0.7%	0.5%	16.5%	0.7%	0.5%	16.9%	1.1%	0.7%
K: 250 001 to 500 000	12.7%	1.3%	0.9%	12.7%	1.3%	0.9%	12.7%	1.2%	0.8%	12.8%	1.8%	1.2%
L: 500 001 to 750 000	6.3%	1.1%	0.9%	6.3%	1.1%	0.9%	6.5%	1.0%	0.9%	6.4%	1.5%	1.2%
M: 750 001 to 1 000 000	3.9%	1.0%	0.9%	3.9%	1.0%	0.9%	3.9%	0.9%	0.8%	3.9%	1.3%	1.2%
N: 1 000 001 to 2 500 000	8.3%	3.7%	3.8%	8.4%	3.7%	3.7%	8.5%	3.5%	3.5%	8.4%	5.1%	5.1%
O: 2 500 001 to 5 000 000	3.9%	3.9%	4.0%	4.0%	3.9%	4.0%	4.0%	3.7%	3.8%	3.8%	5.2%	5.3%
P: 5 000 001 to 7 500 000	1.6%	2.7%	2.8%	1.6%	2.7%	2.8%	1.7%	2.7%	2.8%	1.5%	3.6%	3.7%
Q: 7 500 001 to 10 000 000	0.9%	2.2%	2.3%	0.9%	2.1%	2.2%	0.9%	2.0%	2.1%	0.8%	2.7%	2.8%
R: 10 000 001 to 25 000 000	1.7%	7.4%	7.6%	1.8%	7.7%	7.9%	1.8%	7.3%	7.5%	1.6%	9.2%	9.5%
S: 25 000 001 to 50 000 000	0.6%	6.3%	6.4%	0.7%	6.6%	6.7%	0.7%	6.4%	6.6%	0.5%	7.2%	7.4%
T: 50 000 001 to 75 000 000	0.2%	3.8%	3.9%	0.2%	3.6%	3.7%	0.2%	3.8%	3.9%	0.2%	4.1%	4.2%
U: 75 000 001 to 100 000 000	0.1%	3.0%	3.1%	0.1%	2.9%	3.0%	0.1%	3.0%	3.1%	0.1%	2.8%	2.9%
V: 100 000 001 to 200 000 000	0.2%	6.1%	6.2%	0.2%	6.8%	7.0%	0.2%	7.3%	7.5%	0.1%	7.1%	7.3%
W: 200 000 001 +	0.2%	56.3%	56.5%	0.2%	55.5%	55.6%	0.2%	56.0%	55.9%	0.1%	46.7%	47.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: SARS (2021)

Positive taxable income reflects good performance of the companies. Table 9 depicts that the number of companies with positive taxable income decreased from 0.2% in 2019 to 0.1% in 2020. This marginal drop is due to Covid-19 which paralysed the activities of most firms. Table 10 introduces the taxable income and tax assessed by sector for the period between 2017 and 2020 for all the companies.

Table 10. *The taxable income and tax assessed by sector between 2017 and 2020*

Tax year	2017 [100.2% assessed tax as % of provisional tax]			2018 [95.0% assessed tax as % of provisional tax]			2019 [93.4% assessed tax as % of provisional tax]			2020 [61.3% assessed tax as % of provisional tax]		
Sector	Number of taxpayers	Taxable income (R million)	Tax assessed (R million)	Number of taxpayers	Taxable income (R million)	Tax assessed (R million)	Number of taxpayers	Taxable income (R million)	Tax assessed (R million)	Number of taxpayers	Taxable income (R million)	Tax assessed (R million)
Agencies and other services[1]	62 456	-16 743	7 224	57 974	-21 057	7 030	51 484	-21 994	6 879	45 239	-6 494	5 382
Agriculture, forestry and fishing	28 843	-41 883	4 880	29 746	-41 886	5 725	37 870	-49 177	4 636	38 572	-42 289	3 420
Bricks, ceramic, glass, cement and similar products	3 220	-8 115	902	3 008	-9 039	836	3 063	-10 994	834	2 691	-4 016	557
Catering and accommodation	26 560	-13 587	2 798	25 348	-18 053	1 819	23 652	-16 850	1 917	20 805	-11 051	1 179
Chemicals and chemical, rubber and plastic products	5 633	-2 382	3 607	5 741	-3 413	3 675	6 477	-3 830	3 467	5 790	-2 515	2 190
Clothing and footwear	5 961	1 893	1 820	5 569	-224	1 177	5 193	-59	1 338	4 452	-169	939
Coal and petroleum products	1 589	-11 448	2 821	1 505	8 206	2 856	1 610	1 252	1 349	1 528	636	704
Construction	79 221	-51 244	6 337	74 343	-65 431	5 449	72 446	-86 506	4 563	69 917	-31 478	3 115
Educational services	9 385	-1 520	771	9 267	-1 859	764	8 896	-2 779	790	7 845	-6 524	437
Electricity, gas and water	4 405	-108 225	2 324	4 173	-180 740	2 362	3 816	-231 487	2 336	3 194	-203 665	2 127
Financing, insurance, real estate and business servic	169 169	76 100	68 056	162 885	35 967	61 181	154 685	35 937	64 986	137 925	5 013	44 015
Food, drink and tobacco	10 789	6 049	9 396	10 129	239	8 666	9 847	-201	7 966	8 466	-4 902	3 185
Leather, leather goods and fur (excl. footw ear & clot	813	-60	58	818	67	89	857	-137	95	675	-120	28
Long term insurance	74	5 487	12 794	73	22 018	14 123	70	19 034	12 407	30	-4 507	2 777
Machinery and related items	9 552	572	4 312	9 408	-1 604	4 027	9 481	-1 924	3 889	10 243	-202	2 574
Medical, dental and other health and veterinary servic	11 213	7 456	4 434	11 020	6 389	4 508	10 781	3 153	4 540	10 684	296	3 335
Metal (including metal products)	7 869	-21 418	4 229	7 550	-19 405	3 850	7 573	-31 865	2 700	6 951	-5 191	2 485
Mining and quarrying	4 340	-14 272	20 144	4 229	-26 173	22 400	4 989	-8 122	26 784	4 391	-23 058	9 180
Other manufacturing industries	8 180	-14 927	3 646	7 556	-13 829	4 066	6 392	-17 180	3 755	5 195	-10 937	2 003
Paper, printing and publishing	6 751	1 650	2 829	6 553	-718	2 398	6 689	-2 030	1 977	6 064	-4 191	766
Personal and household services	13 238	-1 945	391	12 660	-1 981	397	11 473	-1 752	447	9 965	-117 074	369
Recreation and cultural services	8 715	-4 598	1 744	8 445	-8 139	1 432	8 130	-8 542	1 458	7 267	-6 524	995
Research and scientific institutes	1 504	-981	367	1 447	-1 211	277	1 503	-1 466	254	1 376	-1 362	155
Retail trade	40 299	13 196	12 021	38 218	17 184	14 387	34 789	4 006	12 897	30 325	18 265	10 813
Scientific, optical and similar equipment	1 694	-164	510	1 663	-319	457	1 691	-162	468	1 585	-554	294
Social and related community services	27 101	-2 252	107	26 034	-1 810	118	23 710	-1 655	131	14 310	-850	86
Specialised repair services	7 131	-1 045	305	6 667	-1 201	286	6 174	-1 577	272	5 491	-1 674	242
Textiles	2 505	-2 827	362	2 520	-3 043	339	2 620	-2 990	304	2 430	-2 159	216
Transport equipment	2 555	-1 588	425	2 423	-3 135	353	2 565	-2 712	448	2 328	-2 392	286
Transport, storage and communications	22 790	-65 178	15 738	21 840	-83 905	16 357	20 481	-110 074	14 761	18 019	-50 954	11 939
Vehicles, parts and accessories	11 280	4 369	6 562	10 781	187	5 971	10 323	5 072	7 335	9 332	-3 201	2 980
Wholesale trade	20 052	14 669	9 258	19 488	12 043	9 141	20 047	9 051	9 382	19 318	3 450	6 241
Wood, wood products and furniture	4 193	-1 922	412	3 926	-1 855	413	3 702	-1 065	400	3 161	-1 242	260
Other[2]	360 703	-3 513	43	301 789	-455	22	238 227	-248	35	188 572	-205	10
Total	979 783		211 626	894 796		206 952	812 306		205 801	704 136		125 284

Source: SARS (2020)

Table 10 depicts that most sectors underperformed over the years due mostly to the global financial downturn and the latest global pandemic

which affected negatively all the sectors. Table 11 introduces the average tax rate by taxable income group for the period between 2010 and 2019.

Table 11. *The average tax rate for the assessed companies by taxable income category between 2010 and 2019*

Taxable Income Group	Average tax rate (%) - per tax year									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
A: < -10 000 000	-0.3%	-0.3%	-0.6%	-0.2%	-0.3%	-0.3%	-0.5%	-0.4%	-0.1%	-0.1%
B: -5 000 001 to -10 000 000	0.0%	0.0%	-0.1%	0.0%	0.0%	0.0%	-0.4%	-0.2%	0.0%	0.0%
C: -1 000 001 to -5 000 000	0.0%	0.0%	-0.3%	0.0%	0.0%	0.0%	0.0%	-0.3%	-0.2%	0.0%
D: -500 001 to -1 000 000	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	-0.1%	-0.1%	-0.1%	-0.1%
E: -250 001 to -500 000	0.0%	-0.1%	0.0%	0.0%	0.0%	-0.1%	-0.5%	-0.1%	-0.2%	0.0%
F: -100 001 to -250 000	0.0%	0.0%	0.0%	-0.1%	0.0%	-10.3%	-0.2%	-0.1%	0.0%	-0.1%
G: -1 to -100 000	0.0%	-0.1%	-0.1%	-1.7%	-0.2%	-0.3%	-0.5%	-0.1%	-0.1%	-2.7%
H: =0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
I: 1 to 100 000	17.7%	17.2%	16.8%	16.9%	18.3%	17.5%	16.9%	18.8%	18.5%	17.4%
J: 100 001 to 250 000	21.2%	20.9%	20.8%	20.1%	20.0%	20.2%	19.7%	19.8%	19.8%	19.7%
K: 250 001 to 500 000	23.0%	22.4%	22.2%	20.8%	20.8%	20.4%	20.5%	21.2%	21.6%	20.2%
L: 500 001 to 750 000	26.1%	26.1%	25.9%	25.0%	23.8%	23.8%	23.5%	23.4%	23.4%	23.3%
M: 750 001 to 1 000 000	27.0%	26.9%	27.1%	26.5%	25.8%	25.7%	25.7%	25.7%	25.7%	25.7%
N: 1 000 001 to 2 500 000	28.2%	28.1%	28.2%	28.1%	28.0%	28.1%	28.4%	28.3%	28.5%	27.6%
O: 2 500 001 to 5 000 000	28.7%	28.5%	28.5%	28.5%	28.6%	28.6%	28.9%	28.7%	28.5%	28.8%
P: 5 000 001 to 7 500 000	28.4%	28.6%	28.4%	28.6%	28.6%	28.9%	29.1%	29.9%	29.2%	28.3%
Q: 7 500 001 to 10 000 000	28.4%	28.4%	28.5%	28.6%	28.6%	28.8%	28.7%	29.0%	28.4%	28.1%
R: 10 000 001 to 25 000 000	28.4%	28.4%	28.4%	28.3%	28.6%	28.5%	28.5%	28.5%	28.8%	28.1%
S: 25 000 001 to 50 000 000	28.3%	28.4%	28.1%	28.5%	29.0%	28.7%	28.1%	28.6%	28.3%	28.1%
T: 50 000 001 to 75 000 000	28.5%	28.3%	28.4%	28.2%	28.7%	28.2%	28.4%	28.2%	28.0%	27.9%
U: 75 000 001 to 100 000 000	28.6%	28.8%	28.5%	28.0%	27.8%	28.3%	27.9%	28.5%	27.8%	28.5%
V: 100 000 001 to 200 000 000	28.5%	28.4%	28.3%	28.3%	28.5%	28.6%	28.4%	28.3%	27.9%	28.0%
W: >200 000 001	28.2%	28.4%	28.3%	28.2%	28.3%	28.4%	27.8%	27.8%	27.5%	27.1%

Source: SARS (2019)

Table 11 depicts that the average tax rate by taxable income group has been modified constantly over the years with a variation of 28.2% in 2010 to 27.1% in 2019. This variation was necessary for the purpose of stimulating the economy.

3. Methodology

The modelling setting considered in this research paper is a Computable General Equilibrium (CGE) model that take into consideration all the types of taxes in South African. This model is the most efficient model when analysing the effects of any shock within the economy. CGE model has provided distinctive insights into the working of economies and on the possible effects of macroeconomic policies. To this end, CGE model denotes a substantial improvement in economic analysis. The corporate and personal income taxes are included and other indirect taxes such as activity tax, customs duties and value added tax are also incorporated in the model. We used CGE to conduct our analysis of the effect of change in the CIT as proposed by the National Treasury to back a general minimum tax for all the companies in South Africa. Consequently, the CIT in South Africa is a flat rate of 28% across all firms. In general, this is to some extent lower than the average CIT rate for Africa, which is 28.45%, and higher than the world-wide average of 24.18%. Nonetheless, a specific tax rate of 45% is set for the Trusts in South Africa. In view to assess the impact of this change, we need to reduce the CIT rate from the 28% to 27%.

The database of this CGE model is based on a Social Accounting Matrix (SAM) for the year 2010. Usually the SAM reflects the actual structure of the economy by incorporating all the agents in the database. It also includes both "activities" and "commodities" which are the entities that deliver most of goods and services. They are distinguished due mostly to the fact that an activity generates usually more than one category of commodity. In the same

way, commodities are generated by more than one category of activity. Generally, the amount generated in the activity accounts are determined in producer prices.

The SAM includes 48 activities, 85 commodities and 4 labour groups composed of primary, middle, secondary and tertiary educated labour. Consequently, the household sector is subdivided into 14 income categories. There are more government closures, to allow for other taxes composed of carbon tax to be incorporated as well into the economy while allowing the government revenue to be unbiased.

CIT is levied on any consistent income based on the type of companies and Personal Income Tax (PIT) depending on each income category. Some critical kinds of accounts comprised in the SAM are described below:

4.1. Production and consumption accounts

In the database of the model, the production accounts capture all the goods and services rendered during the process of production while the consumption accounts involve all the institutions composed of several economic agents such as government, households, and private companies. The complex accounting matrix call for the household income to correspond with the household expenditure. Although the consumption is limited to budget constraint according to Stone-Geary utility function, the demand for every income group is estimated through Linear Expenditure System (LES) as mathematically represented in equation 3.1 (Erero, 2021).

$$P_j * H_{jh} = P_j * \gamma_{jh} + \beta_{jh} * ((1 - S_h - td_h) * Y_h - \sum_{jt} P_j' * \gamma_{jh}) \qquad (3.1)$$

Where P symbolises the market price of every single good, H symbolises the consumption of good j by household h, Y symbolises the entire household earnings, γ symbolises the lowest possible required consumption level, β symbolises the marginal budget share, S symbolises the marginal savings and td symbolises the direct tax rates.

4.2. Investment and government demand

In the model, government is one of the important agents in the economy which derives its income from various kind of taxes. They are composed of PIT, CIT, VAT and import tariffs. Equation 3.2 captures the summation of direct (td_h) and indirect taxes (ts_j) and transfers to government (st_g) (Erero, 2021).

$$\sum_h td_h * Y_h + \sum_j ts_j * P_j * Q_j + \sum st_g = \sum_j P_j * G * g_j + \sum_h st_h + B \qquad (3.2)$$

Government income is utilised to procure goods g_j and leverage social transfers st_h. One portion of the funds is reserved for savings, which is symbolises by B. Government expenditure takes into consideration the base-year quantities g and the exogenous adjustment factor symbolises by G.

4.3. Factor and product market equilibrium

Household is used as factor of production, while at the same time it supplies labor and capital. The equilibrium between factor and production equilibrium is represented in the equation 3.3 below:

$$LS = ls * \left(\frac{W}{w}\right)^{\wedge \varepsilon} = \sum_j L_j \tag{3.3}$$

Where LS symbolises the total labour supply, W symbolises the wage, w symbolises the base-year wage, ls symbolises the base-year labour supply and ε symbolises the wage supply elasticity. The equilibrium is reached when the entire labour supply LS is proportional to the summation of entire sector labour demands L (Benjasak, Chonlakan, & Keshab, 2019).

4.4. Investment and capital accumulation

The main contributors of entire savings are government, households and foreign industry. In summary, industry-level capital stocks K are measured endogenously from the initial investment. In this respect, the quantity of new capital symbolises by N is derived from the value of actual investment and the capital price symbolises by PK. Latest capital is apportioned to industries after imposing a depreciation rate υ and a capital distribution factor SK.

$$N_t = \sum\nolimits_j (P_{jt} \bullet I_t \bullet i_j) \bullet PK_t^{-1} \tag{3.4}$$

$$\bar{K}_{jt+1} = \bar{K}_{jt} \bullet (1-\upsilon) + SK_{jt} \bullet N_t \tag{3.5}$$

$$SK_{jt} = SP_{jt} + SP_{jt} \bullet \left[(SR_{jt} - AR_t)/(AR_t)\right] \tag{3.6}$$

Where SP symbolises industry's actual time share in total capital stocks, SR symbolises industry's revenue rate, and AR symbolise the average revenue rate. Industries with exceeding-average revenue rates are given higher share of funds to invest than their share in the current capital stocks (Erero, 2021).

4.5. Income

As indicated earlier, the CIT is the amount of revenue generated by various firms. The revenue paid to the government emanated from the profits made by firms during a financial year. Indeed CIT constitutes one of the largest contributors of the government's income besides PIT and VAT. The systematic representative of the government revenue is written in the equation 3.7:

$$GR = TARIFF + VAT + HHTAX - EXPSUB \tag{3.7}$$

Where TARIFF represents import tariffs, VAT is the value added tax, HHTAX is the household tax and EXPSUB denotes the export subsidies (Erero, 2021).

4.6. Closures and shock

The shock applied in this study consists of a reduction in the CIT from the current flat rate of 28% to 27%. Macroeconomic closures are applied before performing the simulations. Closures consist of specifying the important variables as dependent or independent in the CGE model. We preferred a savings that drive the investment which is more realistic in South Africa while the government spending is steady fractions of absorption in the model. In addition, the savings of government are elastic while tax rates are unvarying. We assume that both the exchange rate and foreign savings are elastic. Unemployment has been a big challenge in South Africa, therefore employment with primary and secondary education level are assumed unemployed. Nonetheless, the provision of employment with tertiary education level will be set to be exclusively employed and elastic. Foreign exchange prices of imports are obviously exogenous while population is maintained fix. It must be noted that there are several other exogenous variables in the model which are not presented in this closure. The percentage changes obtained from the simulation results will be interpreted accordingly with view to assess the impact of the shock in the economy.

5. Shock findings

5.1. Effects of the shock on the macroeconomic variables

The results of important macroeconomic variables are incorporated in Table 12. One policy simulation was put on to evaluate the effect of reducing the CIT. In this simulation we reduced the CIT rate from the current flat rate of 28% to 27% which reflect a decrease of 1%. In the investment closure, we preferred a savings that drive the investment which is more realistic in South Africa while the government spending is continuous fractions of absorption in the model. In addition, the savings of government are elastic while tax rates are inflexible. Savings rate make up the crucial variable that attracts the change in tax rates. We assume that both the exchange rate and foreign savings are elastic. Unemployment has been a big challenge in South Africa, therefore employment with primary and secondary education level are assumed unemployed. Nonetheless, the provision of employment with tertiary education level is set to be exclusively employed and elastic.

Table 12. *Macroeconomic variables*

Variables	Description	Base (2010 R million)	sim1 (1%)
ABSORP	Absorption	2687	0.02045
PRVCON	Private consumption	1570	0.01266
FIXINV	Investment	516	0.05244
DSTOCK	Stock	-3	0
GOVCON	Government consumption	604	0
EXPORTS	Exports	645	0.02042
IMPORTS	Imports	-669	0.02128
GDPMP	GDP (Market Prices)	2663	0.02164
NETITAX	Net indirect tax	285	0.02221
EXRXY	Exchange rates	1	0.00001
YGX	Government income	697	0.05418

Source: simulation result from the CGE model

Table 12 indicates that the simulation results are calculated in percentage change and considered for comparison with the baseline data which characterises the business as usual state of affairs. At the macroeconomic level, the impact of reducing the CIT policy resulted in a slight increase in the GDP of 0.002164%. This represents a gain of real Gross Domestic Product of approximately 234 billion Rand. GDP is subject to other variables such as investment and consumption, which similarly are positively influenced by this shock. Besides the rises in capital and labour, real GDP growth is also generated from technical advancement or productivity improvements. As a result of the relatively moderated growth in capital and labour during the shock period, private consumption increased while stimulating both exports and imports to rise by 0.022047% and 0.02128% respectively. The rise in exports can also be justified because of the increase in domestic demand that augmented the domestic prices. Hence, the producers are subsequently persuaded to improve exports based on the Constant Elasticity of Transformation (CET) function. In this respect, the rise in exports stimulated the minute appreciation of the real exchange rate to expand the exports which increased slightly by 0.00001%. The aggregate expenditure component without a doubt proves that an increase in private consumption and exports point out to an increase in GDP. Understanding the features of the CIT is crucial for understanding the economy-wide effect of the shock. The net indirect tax increased marginally when the CIT rate is reduced. This increases the government revenue. Table 13 includes the simulation results for the GINI coefficient.

Table 13. *GINI Coefficient*

	Base (2010 R billion)	Sim 1 (1%)
GINI	0.61990	0.62075

Source: simulation result from the CGE model

Table 13 depicts that in the country the gap between the poor and rich has been widening constantly due mostly to endless increase in unemployment rate. The GINI coefficient is considered as an important indicator for the purpose of assessing the level of income inequality within the labour categories in South Africa. When considering the welfare implications due to the reduction in the CIT, the simulation results shows a slight increase in income inequality. While the CIT rate is reduced by 1%, the GINI coefficient is observed to rise to 0.62075 from 0.6199 in the baseline scenario. The proportion of the subdivision income ratio between the poor and rich household groups could be the main raison for the increase in income inequality. In fact the income ratio of the poorest 50 to 20% of income groups rises more to a large extent than the income subdivision ratio of the richest 90 to 50%. In spite of this policy simulation which reduces the CIT rate, the tax system produces a small increase in the collection of the revenue as depicted in Table 14.

Table 14. *Government income*

	Base (2010 R billion)	sim1 (1%)
Government revenue	697	0.04313

Source: simulation result from the CGE model

Table 14 indicates that the reduction in the CIT rate from 28% to 27% generated a profit of 0.04313% in the government revenue. Total government tax revenues increased consistently following the slight increase in net indirect tax because of the policy implementation.

Table 15. *Employment*

Variables	Description	Base (2010 R billion)	Sim 1 (1%)
flab-p	Factor labor primary education	76.87	0.00154
flab-m	Factor labor medium education	208.09	0.00114
flab-s	Factor labor secondary education	386.54	0
flab-t	Factor labor tertiary education	540.84	0
fcap	Factor capital	5828.29	0.0874

Source: simulation result from the CGE model

Table 15 includes the factor labor by income categories. We considered a well-adjusted closure because of to the sharp level of unemployment in South Africa, where labor is in changeable supply at static actual remunerations for the unskilled labour but the skilled labour is stable by convenience. The improvement in factor labor implies an improvement in labour in the manufacturing system. More often the improvement in capital stock will result in higher production and as well higher demand for labor that should influence positively the level of living for all income categories. Even so, the model results indicates that labour demand improves marginally in factor income when the CIT rate is reduced from 28% to 27%. In general, the reduction in CIT rate has positive impact on all factor labor during the simulation shock. Table 16 contains the simulation results for the household consumption.

Table 16. *Household consumption*

Household	Base (2010 R billion)	sim1 (1%)
POOR	272.6	-0.03065
hhd-0	27.1	-0.02421
hhd-1	47.1	-0.02637
hhd-2	56.8	-0.02923
hhd-3	64.9	-0.03311
hhd-4	76.7	-0.03431
NPOOR	1270.8	0.03412
hhd-5	88.5	0.03400
hhd-6	106.3	0.03412
hhd-7	147.7	0.03432
hhd-8	278.6	0.03615
HHD-9	649.9	0.03331
hhd-9-1	81.4	0.03712
hhd-9-21	94.5	0.03733
hhd-9-22	113.7	0.03722
hhd-9-23	137.0	0.03213
hhd-9-24	223.4	0.02811
ALLHHD	1543.4	0.03321

Source: simulation result from the CGE model

Table 16 indicates that the effect of reducing the CIT rate from 28% to 27% seems to be negative for the low income categories. The main reason could be that smaller firms which employ most of unskilled labor will not be capable to counter balance the market size and capitals used by bigger firms. South Africa can use CIT as an instrument to improve the level of investments. Non poor household benefited the most as the change occurred in the CIT rate.

Table 17. *Effect of the shock on the sector*

Sectors	Base (2010 R billion)	Sim1 (1%)
Agriculture	2	1.0286
Mining	10	0.0264
Manufacturing	14	2.0805
Other industries	6	0.0186
Private services	48	1.0343
Public Services	19	0.0105

Source: Simulation results from the CGE model

Table 17 includes the simulation results of the change in the CIT rate on the key specific sectors. The impact of the reduction in the CIT seems to be positive across all the sectors of the economy. Sectors which benefited the most included manufacturing, followed by private services and agriculture. The positive effect on manufacturing is due to the largest size of the industry.

6. Policy implications

Tax collection is the function of policy, economic and compliance revenue performance. Several under-developed nations encounter defies when generating revenue from local productions. Besides the case of reel tax evading, other defies consist of insignificant tax base, ineffectual governance, less investment, substantial informal sector, and huge unemployment rate. The COVID-19 pandemic has adversely affected all aspects of social life including the global economic climate. The pandemic erupted at a time when South Africa was already in a weak fiscal position.

However, the system of a country's tax rate determines the level of its economic development. Tax compliance is reached soon a reliable tax rate system is established for the government to collect maximum revenue. Furthermore, in view to attract investment, the tax rate should be competitive. Many countries across the world are facing a challenge to review their tax rates as a result of the covid19 resulting in the adoption of provisional revision of the tax structures. Although valuable, tax competition seems to be a reel challenge for the government revenue. As soon as a particular country levies superior taxes than a nearby country, big corporations will move absolutely to the country with less tax rate. In this respect, South Africa with efficient competitive tax systems will attract more businesses which will stimulate economic growth.

7. Model of best practice

The proposition of G7 to set the global CIT to 15% has provoked apprehension for several nations that depend on the CIT reduction to sustain their investment strategies. In this respect, the Ireland's government has welcomed the idea by declaring that the treaty may possibly have "a very meaningful effect" on CIT policy in Ireland. In fact, the current CIT rate of 12.5% has stimulated the government to draw several US multinational firms and the tax authority service of Ireland has made it "one of the most attractive global investment locations". To attract FDI, several nations are opening their markets. Then again because of the international business participants they are compelled to adjust the rates of the CIT and investment protocols. Consequently, the competition has become tense for various nations to be able to draw investors. South Africa will rather follow the example of Ireland although its willingness to reduce the CIT from 28% to 27% is highly appreciated.

8. Conclusion

The rationale behind this paper was to assess the impact of the drop in the CIT from the current rate of 28% to 27% on the South African economy. The CGE model was considered appropriate to perform the policy simulation for this research paper. The model was considered the suitable model to evaluate the effects of change in CIT due to its usage over the years by the researchers and academics. One simulation was taken into consideration to evaluate the effects of the reduction in the CIT. The macroeconomic and investment closures were considered to observe the effects of the shock within the economy. In the closure, capital stock was allowed to change. Apart from the capital stock, the unskilled labour force was also allowed to change. The setting up of the CIT to 1% reduction resulted in a slight increase in the GDP, consumption, export and government revenue. The improvement in the government revenue implies a gain that could be brought into play for reorganisation and poverty alleviation. While the standard of living of high-income households improve, the low income households depicted reduction in the consumption due probably to the reduction in the social services by the government.

In summary, this research paper has accomplished three fundamental contributions:

- Firstly, it evaluated the effects of the drop in the CIT from the current rate of 28% to 27% on the South African economy.
- Secondly, it considered appropriate CGE model to perform the policy simulation inherent to the purpose of this paper. The model was considered the suitable model due to its usage over the years by the researchers and academics. Enhancement to the database of the model was done when introducing the component of the CIT in the model.
- Thirdly, it make available a practicable economic instrument for assessing a challenging policy question facing a government. As a result, any policy procedures that set sights on economic growth, jobs creation and

reallocation of revenue can weigh up a slight decrease and not a huge decrease in CIT targeting small businesses specifically. Evaluating the trade-offs between a CIT and other taxes remains a topic worthy of future research.

References

Álvarez-Martínez, M.T., Barrios, S., d'Andria, D., Gesualdo, M., Nicodème, G., & Pycroft, J. (2021). How large is the corporate tax base erosion and profit shifting? A general equilibrium approach. *Economic Systems Research*, (2021), 1-32. doi. 10.1080/09535314.2020.1865882

Benjasak, C., and Bhattarai, K. (2019). General equilibrium impacts of VAT and corporate income tax in Thailand. *International Advances in Economic Research*, 25(3), 263-276. doi. 10.1007/s11294-019-09742-7

Economic Magazine. (2021). World Economic. [Retrieved from].

Erero, J.L. (2021). Contribution of VAT to economic growth: A dynamic CGE analysis. *Journal of Economics & Management*, 43, 26-55. doi. 10.22367/jem.2021.43.02

IMF. 2020. Capacity development. [Retrieved from].

National Treasury. (2020). Budget Review, South Africa. [Retrieved from].

OECD. (2009). Tax Database. [Retrieved from].

OECD. (2018). Tax Database. [Retrieved from].

OECD. (2020). Tax Database. [Retrieved from].

OECD. (2021). Tax Database. [Retrieved from].

OECD. (2022). Tax Database. [Retrieved from].

SARS. (2018). *South African tax statistics* (national publication). Pretoria, South Africa: Author. [Retrieved from].

SARS. (2019). *South African tax statistics* (national publication). [Retrieved from].

SARS. (2020). *South African tax statistics* (national publication). [Retrieved from].

SARS. (2021). *South African tax statistics* (national publication). [Retrieved from].

World Bank. (2021). World Bank Development Indicators. [Retrieved from].

World Trade Organisation. (2020). World trade outlook. [Retrieved from].