Taxing the rich at higher rates in South Africa?

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A B S T R A C T

Long-run data on changes in the share of top income earners in South Africa shows that the incomes of the top income groups have become less concentrated for most of the twentieth century, but have become more skewed in the last decade. Compared to a selection of developing and developed countries, the tax burden is already at a high level, which constrains further exploitation of the tax system for revenue purposes. The purpose of this study is to consider the implications of taxing the rich in South Africa more heavily to address large (taxable) income inequality. It is estimated that a 10 per cent increase in the top marginal tax rate would result in taxable income ranging from gains of approximately R2 billion to losses of R340 million. Although these results are tentative, they show that taxing the rich at higher rates may not produce the revenue windfall expected. The efficiency loss associated with an increase of one Rand in revenues is estimated at between R0.39 and R3.16. An alternative to taxing the rich at higher marginal tax rates could be reducing tax expenditures that are disproportionately utilised by the rich and taxing the process whereby the rich become rich.

Key words: taxable income, taxing the rich, top income shares, inverted Pareto-Lorenz coefficients, elasticity of taxable income, marginal excess burden, tax expenditures

Introduction

The appropriate rates of income tax for rich households and individuals have become a popular policy issue in the last two decades. The debate was raised in October 1997 at a conference held in Ann Arbor by the Office of Tax Policy Research of

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the University of Michigan Business School entitled, '"Does Atlas Shrug?" The Economic Consequences of Taxing the Rich' (see Slemrod 2000). Recently the debate was further invigorated by a *New York Times* article in which billionaire investor Warren Buffett alleged that the super-rich do not pay enough taxes (Timeslive 2010). US president Barack Obama is also calling for "millionaires and billionaires" to "pay their fair share", and the new French president is arguing for a 75% tax rate on household incomes above $1.3 million (*Economist* 2012a, 2012b). The call for a "millionaire surcharge", as proposed by Democratic Senate leader Harry Reid, led Dalmia (2011) to remark that, "For Democrats, millionaires are the new Gypsies – a minority whom it is perfectly acceptable to persecute because its wealth is ill-gotten, not the product of hard work." In the United Kingdom (UK), it was announced in 2008 that a 45 per cent tax on incomes above £150 000 would take effect in 2011, but this rate was increased to 50 per cent and the date brought forward to April 2010 (Brewer, Browne & Johnson 2012: 181).

Interest in the taxation of the rich is not just about the popularity of the rates debate. Tanzi (2004: 540) notes that since high-income earners generally benefit most from globalisation, the personal income tax system is ideally suited to capture revenue from these income groups for redistributive purposes. Atkinson (2007: 19–25) concludes that considering the command the rich have over resources and people (power) as well as the recent global rise in inequality at the top makes the study of the income distribution at the top important rather than just sensationalist.

Top income earners may account for a small percentage of the population but a large share of total income and taxes paid. It is obvious that the rich are important to economic development for that is where the concentration of money is as well as wealth, net savings and talent (see Slemrod 1998: 6–7; Matthews 2011: 18–23). A progressive income tax system taxes success and may discourage entrepreneurial entry and innovation (see Gentry & Hubbard 2004). The very rich receive relatively more compensation in the form of cash, bonuses, share options and capital income than other income groups, which makes them more responsive to demand conditions and the business cycle. It also enables them to shift the form in which they receive income in the short run (see Goolsbee 1998). The savings behaviour of the rich and very rich is very different from the rest of the population and cannot be explained by models relying only on wealth accumulation aimed at future consumption or for their heirs. Wealth accumulation may be intrinsically desirable (Carroll 1998). The hours of work of high-income taxpayers are sometimes assumed to be more responsive to high marginal tax rates. The evidence is inconclusive, but suggests that high-income taxpayers (in particular men) may be more involved in tax planning in response to marginal tax rates (see Moffitt & Wilhelm 1998; Meghir & Phillips 2010; Gruber & Saez 2002).

Who are the rich? For the purposes of this study, the group with the top 1 per cent income share is denoted as 'the rich' and the top 0.1 per cent as 'the very rich'. Further classification is of semantic value, but the top 0.01 could be called 'the super-rich'. The income measure used is also relevant. In this study the gross income share of the top 1 per cent and the 'taxable' income share of the top 1 per cent will be used. It should be noted that being part of the top 1 per cent does not necessarily mean being rich (see Atkinson, Piketty & Saez 2011: 52). Relative income levels differ between countries, and there are also huge differences within the top 1 per cent.

South Africa is characterised by large income and taxable income inequality. In 2010 the taxable income share of the top 10 per cent was 47 per cent; that of the top 1 per cent of taxpayers was approximately 18 per cent (calculated from National Treasury & SARS 2011: A.2.1.1). Although the focus of this study is the top 1 per cent, the income composition of the top 10 per cent can be indicative of their characteristics. According to the Income and Expenditure Survey of StatsSA (2008: Table 3.8), the upper-income decile earns most of their income from salaries and wages (66.9 per cent). Income from capital is in the order of 1.6 per cent but, as expected, when compared to other income groups constitutes the highest share (double the next-highest share earned by decile 8. The upper-income group also earns the most from self-employment and business income. Using three different data sets, Leibbrandt, Woolard, Finn and Argent (2010: Table A.3.5) showed that the share of capital income of the top decile was 4.42 in 1993, 5.51 in 2000 and 11.0 per cent in 2008. This clearly indicates a rising share.

Public debt levels in South Africa are low compared to other countries affected by the global financial meltdown, and fortunately finding additional sources to decrease high debt levels is not a major objective for the fiscal authorities. However, the tax authorities are nevertheless faced with ever-increasing economic, social and political demands requiring higher public expenditures. To meet these redistributional and development needs, existing tax sources will have to be used more efficiently and equitably. Avenues for new or alternative tax sources also need to be explored. One option to change the distribution at the top and to obtain revenue for redistributive purposes is to tax the rich more.

Because of the economic importance of the rich, it is imperative to study how sensitive their behaviour is to changes in income and what the implications are for public policy and taxation in particular. However, it is first necessary to know what has happened to top incomes. Long-run data on changes in the high-income group's share of total incomes recently became available for a large number of countries including South Africa. The results from these data series will be discussed in the section on the distribution of top incomes. The question is how much scope there

is for additional tax revenue by changing the tax contribution of this group. This question is approached in two steps. Consideration is first given to the overall level of the tax burden and the share of personal income tax in particular. This is done in the section on tax revenue levels and composition. As described in the section on redistribution from the rich, the next step is to determine the potential for higher tax revenue by taxing the rich at higher marginal rates. Taxing the rich will have efficiency implications, however, which are also addressed in this section. The alternatives to taxing the rich at higher marginal tax rates are briefly reviewed in the section on alternatives to taxing the rich at higher rates.

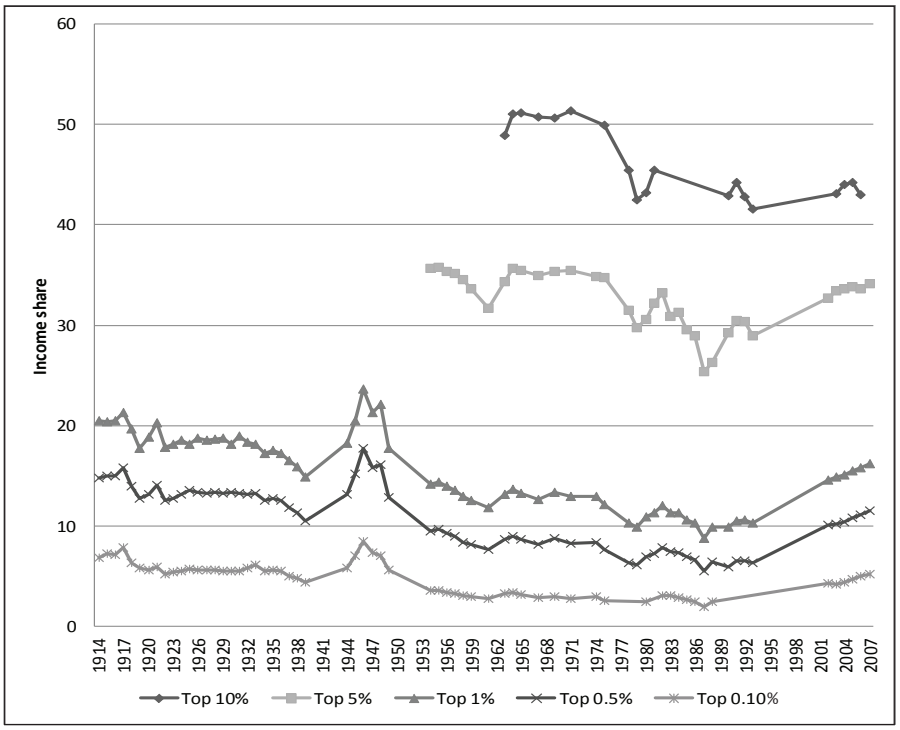
The distribution of top incomes

The study of top incomes of Continental European and English-Speaking Countries during the twentieth century has been the aim of a project that culminated in a first volume edited by Atkinson and Piketty (2007). A second volume dealt with top incomes from a global perspective (Atkinson & Piketty 2010). These studies provide a data series and technical information for a number of countries that make comparisons possible (although the data sets are not fully homogeneous across countries). Instead of using household survey data, tabulated tax data are used to estimate top income shares by using Pareto interpolations and control totals for population and income – see Atkinson and Piketty (2007: 26–34) and Atkinson et al. (2011: 12–40) for a discussion of measurement issues and possible limitations. The data from these studies are also captured and integrated in the World Top Incomes Database compiled and maintained by the Paris School of Economics (Alvaredo, Atkinson, Piketty & Saez 2012). Using the same methodology, Alvaredo and Atkinson (2010) published a discussion paper under the auspices of the Centre for Economic Policy Research (CEPR) entitled 'Colonial rule, Apartheid and natural resources: top incomes in South Africa, 1903–2007'. Three data sets are estimated for South Africa covering top income shares for a period of more than 100 years.

Alvaredo and Atkinson (2010: 14) summarise their evidence on the top incomes in South Africa as follows:

- Incomes are highly unequally distributed. In 2005 the share of the top 10 per cent in gross income was in excess of 44 per cent, that of the top 5 per cent over a third and that of the top 1 per cent above 15 per cent (see Figure 1).
- There has been a fall in top income shares over much of the twentieth century, with the exception of an upward spike during the years of the Great Depression and the Second World War (see Figure 1).

- There is an upward trend in top income shares in the present century (2002–2007). Note that the data for this period are not entirely comparable with previous periods since capital gains have been included in the later series. The impact of capital gains on the top 1 per cent is often significant and may be observed as an increase in inequality (see Atkinson et al. 2011: 35–36).
- Incomes within the top groups have become less concentrated in the twentieth century. This is evident from the inverted Pareto-Lorenz coefficients – the share of the top 0.1 per cent within the share of the top 1 per cent (see Alvaredo & Atkinson 2010: Table A.5B and A.5C). Higher coefficients imply more inequality (or concentration) of income within the distribution. The coefficients were around 2.09 in 1914, 1.66 in 1954 and 1.52 in 1993. From 2002 to 2007, concentration increased from 1.88 to 2.01 (see Figure 2).



Notes: a. Data for 1914–1939 exclude dividend income.
b. Data for 1944–2007 include dividend income.
c. Tax statistics for the years 1994–2001 are not available.
Sources: Alvaredo & Atkinson (2010: Table A.5A); Alvaredo, Atkinson, Piketty & Saez (2012)

Figure 1: Top income shares in South Africa (1914–2007)

Table 1: Top 1 per cent income share in Argentina, Australia, India, Indonesia, Mauritius, New Zealand and South Africa (1980–2007)

	Argentina	Australia	India	Indonesia	Mauritius	New Zealand	South Africa
1980		4.79	4.78		6.72	5.65	10.89
1981		4.61	4.39		6.25	5.5	11.35
1982		4.67	4.51	7.17	5.8	5.49	12
1983		4.68	6.46		5.39	5.68	11.34
1984		4.75	6.39		4.99	5.6	11.3
1985		5.02	8.24		4.97	5.51	10.64
1986		5.39	8.64		4.95	4.88	10.35
1987		6.67	8.12	7.99	4.92	5.48	8.78
1988		8.41	8.52		4.23	5.35	9.88
1989		6.43	8.19		4.76	6.59	
1990		6.34	7.42	8.05	4.93	8.21	9.85
1991		6.41	7.12		5.01	7.96	10.54
1992		6.55	6.96			8.4	10.56
1993		6.96	8.53	9.1	4.54	8.76	10.27
1994		7.13	8.09		4.69	9	
1995		7.23	8.67		4.62	8.98	
1996		7.24	8.72	9.69	4.52	8.92	
1997	12.39	7.81	10.7		4.5	9.16	
1998	12.57	7.84	8.95	12.42	4.75	10.21	
1999	13.53	8.84	8.95	13.65		13.77	
2000	14.34	9.03		13.82		8.34	
2001	12.91	8.31		15.52	4.85	8.72	
2002	15.53	8.79		10.47	3.9	8.78	14.58
2003	16.85	9.18		9.76	5.13	9.33	14.84
2004	16.75	8.89		8.46	5.28	9.93	15.05
2005		9.12			4.98	9.48	15.5
2006		10.06			6.05	8.89	15.77
2007		9.84			6.68	8.54	16.25

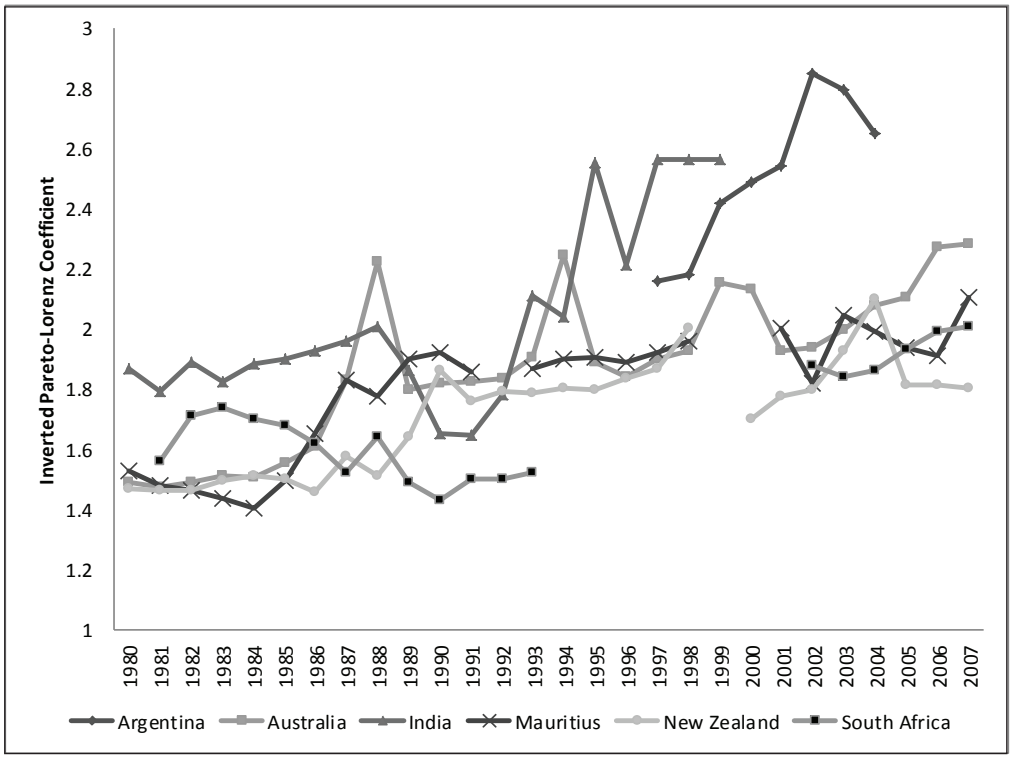
Source: Alvaredo et al. (2012)

In an attempt to explain the evolution of top income shares in South Africa, Alvaredo and Atkinson (2010) compare South Africa to Australia, Canada, New Zealand (former Anglo-Saxon colonies and natural resource-rich countries), the United Kingdom and the United States (USA). This enables them to conclude that the top shares in South Africa did fall up to 1980, but not at a faster rate than in the other dominions, and today South Africa ranks with the most unequal Anglo-Saxon countries. Alvaredo et al. (2012) compiled data series for other developing countries such as India, Argentina, Mauritius and Indonesia, but the series are incomplete for the full period. It appears that top real income shares in these countries also declined until the early 1980s. In the last two decades, Argentina, India, Mauritius and South Africa experienced a growing trend in top income shares (see Table 1). Again the high top income share in South Africa compared to these countries is noticeable, with only Argentina exceeding the South African share between 2000 and 2004.

It has already been mentioned that incomes within the top groups have become less concentrated in the twentieth century. However, when the distribution within the top 1 per cent since 1980 is viewed, the inverted Pareto-Lorenz coefficients (calculated from the shares of the top 0.1 and 1 per cent) show that in all the countries there is growing concentration. Compared to this selection of countries, the concentration within the top 1 per cent of income in South Africa does not rank particularly high. For example, in 2004 the coefficient for South Africa was 1.86 compared to values of 2.65, 2.10 and 2.00 for Argentina, New Zealand and Mauritius respectively.

Using income tax data for the period 1956 to 1987, Alvaredo and Atkinson (2010) were also able to examine the racial composition of the top income groups in South Africa. Their conclusion that there was little change in the degree of white dominance does not come as a surprise (whites constituted 96.7 per cent of the top 1 per cent in 1987). Unfortunately income tax data on a racial basis are not available for later periods, but it is noticeable that when South Africa is compared to Australia and New Zealand, the share of the top 5 per cent of the white population was 11.3 per cent in 1985 compared to 15.6 per cent in Australia and 16.7 per cent in New Zealand (Alvaredo & Atkinson 2010: 17).

The highly skewed distribution is confirmed by income expenditure survey data for 2005/06 (see StatsSA 2008). The top 10 per cent of households account for 51 per cent of total household income. The white population accounted for 72.7 per cent of total household income in decile 10. A comparison of changes in the mean real income per capita according to deciles reveals above-average increases in deciles 1, 2, 3 and 10 between 2000 and 2005/06. Using national survey data, Leibbrandt et al. (2010) also show that income inequality actually increased between 1993 and 2008.



Notes: Coefficients are estimated from the top 0.1 per cent share within the top 1 per cent share.

Sources: Alvaredo et al. (2012); Alvaredo & Atkinson (2010: Tables A.5B and A.5C)

Figure 2: Inverted Pareto-Lorenz coefficient in Argentina, Australia, India, Mauritius, New Zealand and South Africa (1980–2007)

At the same time, rising inequality within the black group is observed (see Leibbrandt et al. 2010: 10; Van der Berg & Louw 2003). As to why the racial composition of the top 10 per cent is changing, one can only speculate. Factors that may explain why the share of the black population is on the rise are black economic empowerment, white emigration, employment equity and the pay premium that black professionals attract.

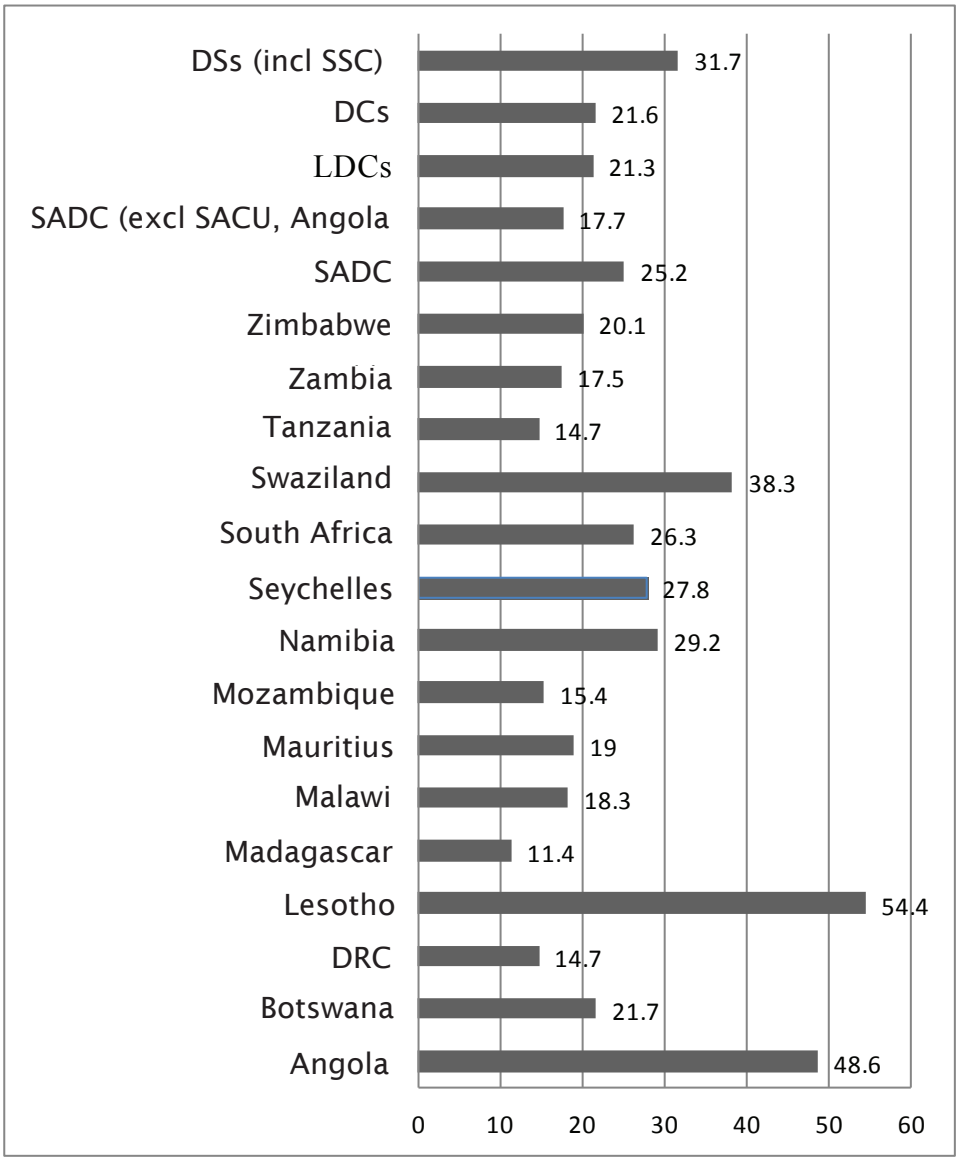
Tax revenue levels and composition

The imperative to reduce income inequalities and poverty levels in South Africa requires not less but more (and more effective) public expenditure and probably higher tax levels if economic growth does not accelerate over the medium to longer terms.

Tax levels and the composition of taxes invariably differ between countries because their public choice history, development stage, size of the tax base and sometimes endowment (for example, natural resources) vary greatly. There are nonetheless patterns that emerge, and simple inter-country comparisons enable benchmarks to be set for tax reform and policy options. The scope for additional tax revenue can be put in context by first comparing the total tax burden in South Africa to that of comparable countries. Next the structure or composition of the tax system can be considered to determine the relative importance and potential of personal income tax as a revenue source.

Figure 3 shows the average level of tax revenue of central government as a percentage of GDP for 2007 for a selected group of countries.[1] South Africa (SA) is a member of the Southern African Development Community (SADC) and the Southern African Customs Union (SACU). The average tax burden of SADC countries is 25.2 per cent of GDP. Oil revenue in Angola is the main source of tax revenue, contributing 41.2 per cent to GDP; other taxes add only 7.4 per cent. In the SACU grouping, the tax revenues of some of the partner countries are disproportionately high when SACU payments are included in their total tax revenue. In the case of Lesotho and Swaziland, for example, SACU payments constitute 35.0 per cent and 25.3 per cent of their respective GDPs. If SACU and Angola are excluded from the SADC sample, tax revenue amounts to only 17.7 per cent of GDP. The level of taxation in South Africa (26.3 per cent of GDP) is thus much higher than that of its SADC partners. When the tax burden of a more diverse group of 13 developing countries (least developed countries – LDCs) (21.3 per cent of GDP) is compared to the overall tax burden in South Africa, a similar picture emerges – South Africa exhibits a higher tax burden than most of the sample of developing countries.

When South Africa is compared to a selected group of 13 developed countries (DCs), their unweighted average tax burden (excluding social security contributions) of 21.6 per cent of GDP is again less than that of South Africa. However, once social security contributions (SSC) are factored in, the South African tax level is much lower than the DC average of 31.7 per cent of GDP. It could be argued, however, that only the SSC contributed by employers should be included in the tax burden. The share contributed by individuals could be regarded as a form of private retirement provision. In South Africa, retirement contributions are at present voluntary and therefore not comparable to SSC. If mandatory social security contributions that are under consideration by government are to be introduced in future years, it would certainly have implications for the total tax burden and the scope for taxing the rich more heavily.



Notes: a. Sample of 13 LDCs (Bolivia, Chile, Costa Rica, Paraguay, Egypt, Mauritius, Morocco, Seychelles, Thailand, Bulgaria, Czech Republic, Hungary and Poland)
b. Sample of 13 DCs (USA, Canada, UK, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Australia and New Zealand)

Sources: Compiled from IMF (2008, 2010)

Figure 3: Tax revenue (central government) as a percentage of GDP (2007)

A cross-country comparison of tax systems indicates that there are vast differences in the composition of tax revenues between countries. Again, as each country's tax system has been shaped over time by many forces, care should be exercised not to base tax reforms on international comparisons alone. Nevertheless, interesting patterns do emerge when countries are grouped together according to their level of economic development.

Table 2: Share of major taxes in total tax revenue (general government) (2007)

Tax type	Developing countries[a]	Developed countries[b]	South Africa
1 Taxes on income, profits and capital gains	30.2	51.8	54.7
1.1 Payable by individuals	12.8	35.7	27.9
1.2 Payable by corporations and other enterprises	17.8	15.4	26.9
2 Taxes on payroll and workforce	0.4	1.5	1.0
3 Taxes on property	5.7	8.1	5.5
4 Taxes on goods and services	52.5	37.1	34.3
4.1 General taxes (e.g. value-added taxes)	34.1	23.0	24.8
4.2 Excises	14.7	7.9	8.3
5 Taxes on international trade and transactions	10.9	0.6	4.3
Total tax revenue (excluding social security contributions)	100.0	100.0	100.0
Sum of personal income tax and social security contributions as % of total tax revenue (including social security contributions)	24.7	51.9	29.3

Notes: a. Sample of 13 LDCs (four in Latin America, four in Africa, one in Asia and four in Eastern Europe)
b. Sample of 13 DCs
Percentages are unweighted averages.

Source: Compiled from IMF (2008)

From Table 2 it can be observed that taxes on income, profits and capital gains constitute the most important sources of tax revenue in DCs (51.8 per cent), whereas taxes on goods and services are the major sources of revenue in developing countries (52.5 per cent). In developed countries, income tax on individuals (35.7 per cent) is more than double the share of income tax on companies (15.4 per cent). In developing countries, company tax is an easier source to exploit than personal income tax, and consequently the share of company tax far exceeds that of tax payable by individuals. Trade taxes are insignificant sources of tax revenue in developed countries (0.6 per cent) compared to developing countries (10.9 per cent).

When South Africa's tax composition is compared to the sample of DCs and LDCs, the most striking observation is that in most respects the South African structure is similar to that of DCs. The South African personal income share generally exceeds that of DCs (in eight out of the 13 countries). However, once social security contributions are included in total tax revenue, the sample of DCs, without exception, have higher income tax shares payable by individuals. It should be recognised that social security contributions are negligible in South Africa, since most individuals provide for old age through voluntary private retirement schemes. Furthermore, South Africa has a large non-contributory, means-tested old-age grant system that caters for lower-income elderly people. Regarding corporate tax, South Africa is in a different league. Company tax is a significant source – only Norway has a higher share – and makes a contribution equal to that of personal income tax.

Compared to the sample of 13 developing countries, South Africa's share of personal income tax equalled that of Hungary and exceeded that of the remaining 12 countries. When social security contributions are added to tax revenue, a slightly different picture emerges. Five LDCs have personal income tax plus social security contributions as a percentage of total revenue that exceed levels in South Africa. Four of these countries are from central and eastern Europe (Bulgaria, Czech Republic, Poland and Hungary) and this deviation is to some extent explained by their centrally planned past. In respect of company tax, South Africa again differs from the developing country sample with its high share – only Thailand and Egypt had company tax shares exceeding that of South Africa.

In an earlier study, Steenekamp (2007) compared South Africa's revenue performance to that of a number of other developing economies. A representative tax system approach was used to compile a tax effort index. The results for the financial years 2000/01 to 2004/05 indicate that the South African revenue authorities are exploiting the available tax sources very well and outperform comparable countries. When different tax classes are considered, it appears that South Africa uses personal income taxes and corporate income tax intensively. In comparative terms, the total tax burden appears to be too high. The implications for tax policy are lower personal income taxation and corporate taxation (Steenekamp 2007: 14).

Redistribution from the rich

Income inequality and taxation

One of the reasons for the global increase in the income share of the top 1 per cent over the last decade is declining top marginal tax rates. In line with international

trends, in South Africa marginal tax rates applicable to the rich were similarly reduced in steps from a high of 75.5 per cent in 1948 to the current level of 40 per cent. Using a microsimulation model, Van Heerden and Schoeman (2010: 13) confirm that taxpayers at the higher end of the income tax scale benefited more from tax reforms in recent years. At the same time, the redistributive effect of the budgetary process (for example, increased social spending and higher user charges) must be acknowledged. However, the empirical evidence on progressivity and the impact of taxation in particular on redistribution in South Africa since 1994 is not very encouraging (see Nyamongo & Schoeman 2007, Van der Berg 2009; StatsSA 2008). Steenekamp (2012) employs three measures to determine how adjustments to the personal income tax rate and thresholds affected progressivity. It is concluded that between 1997 and 2000, personal income tax first became less progressive and then increased marginally in progressivity between 2000 and 2009 (Steenekamp 2012). This begs the question of whether targeting the rich would have the desired outcome for redistributive tax policy.

Responsiveness of the very rich to tax changes

Taxes (and changes in tax rates) affect economic behaviour. Responses also differ within different income groups. For example, using evidence from US tax data, share analysis shows that the reported incomes of the top 1 percentile are responsive to marginal tax rates, whereas those of the next 9 percentiles are not over the short run or long run (Saez, Slemrod & Giertz 2012: 19). The ways in which rich individuals react to higher tax rates are numerous and include (Brewer et al. 2012: 183; Feldstein 2008, Keen, Kim & Varsano 2008): working fewer hours, reducing work effort, retiring earlier from paid work, choosing a lower-paying career, change the mix between cash wages and fringe benefits, shifting compensation between corporate and personal income, evasion and emigrating. All these behavioural responses are important, because they impact on tax revenue and economic efficiency (the deadweight loss). In principle, the elasticity of taxable income (ETI) can capture all of these responses.

Estimating the revenue and efficiency implications of changes in the marginal tax rate paid by the top 1 per cent will be done in a stepped approach. First the basic model and its limitations are presented, followed by a description of the data. Thereafter the possible consequences for revenue, the excess burden and the Pareto efficient tax rate level are presented.

The model

The conceptual framework for the basic model is described in Saez (2004: 11–15) and Saez et al. (2012: 5–10) and succinctly summarised in Giertz (2009: 115–117). It is assumed that incomes above a given tax threshold (y^x) face a constant effective marginal tax rate (t) and the number of taxpayers in the top bracket (N). It is further assumed that the average income (y^m) reported in the top bracket depends only on the marginal net-of-tax rate (1-t), that is, the share of income retained. Behavioural responses to marginal tax changes are modelled on the basic labour supply model. For tax policy purposes, it is necessary to consider the full impact of tax changes on the amount of income generated. There are many ways in which high-income individuals will respond to higher rates including working fewer hours, less work effort, emigration or choosing another career (see Brewer et al. 2012: 183). The response is generally studied using the elasticity of taxable income (ETI) concept.

The ETI concept is central in the analysis to estimate the impact of changes in marginal tax rates. It measures the responsiveness of top reported incomes (as a share of all reported incomes) with respect to the net-of-tax rate (defined as 1 minus the marginal tax rate). If the coefficient is not small, then the implications for tax revenues and economic efficiency would be significant. The elasticity (e) is defined as:

$$e = \frac{1-t}{y^m} \cdot \frac{\partial y^m}{\partial(1-t)} \tag{1}$$

The higher the coefficient e, the more responsive tax earnings are to the net-of-tax rate. If government increases t by a small amount, it will have two effects on tax revenue: a mechanical effect (dM) and a behavioural effect (dB). The mechanical effect shows the increase in tax revenue due to the higher tax rate on income and is defined as:

$$dM = N\,(y^m - y^x\,\bar{y})\,dt \tag{2}$$

The behavioural effect reduces tax revenue of the top N taxpayers by:

$$dB = -N \cdot e \cdot y^m \cdot \frac{t}{1-t}\,dt \tag{3}$$

By combining the two effects, the total change in tax revenue is:

$$dR = dM + dB$$

or

$$dR = N\,dt\,(y^m - y^x\,\bar{y}) \cdot \left[1 - e \cdot \frac{y^m}{y^m - y^x\,\bar{y}} \cdot \frac{t}{1-t}\right] \tag{4}$$

The ratio $\left(\frac{y^m}{y^m - y^x \overline{y}}\right)$ can be denoted by a (also referred to as the Pareto parameter) and a ≥ 1. In the case of the top income tax bracket (y^x), empirical estimates indicate that income (within a given year) is approximately Pareto distributed and that the coefficient is fairly stable and greater or equal to 1 (Brewer & Brown: 2009: 9; Saez 2004: 12; Saez et al. 2012: 7). The a parameter also measures the 'thinness' of the top tail of the income distribution. The thicker the tail of the distribution, the larger y^m is relative to y^x and the smaller is a. Equation 4 can thus be simplified as:

$$dR = dM \left[1 - \frac{t}{1-t} \cdot e \cdot a\right] \tag{5}$$

The expression in square brackets shows the fraction of tax revenue lost through behavioural responses but is also equal to the marginal excess burden (deadweight loss) created by the tax increase (Saez 2004: 13). The marginal excess burden (or extra utility lost over and above the revenue collected) can be expressed as:

$$-\frac{dB}{dR} = \frac{e \cdot a \cdot t}{(1-t) - (e \cdot a \cdot t)} \tag{6}$$

Finally, the marginal tax rate that maximises overall tax revenues (sometimes called the Laffer bound tax rate) can be obtained from Equation 5. The revenue-maximising rate (t^*) for the top bracket is:

$$t^* = \frac{1}{1 + a \cdot e} \tag{7}$$

If the top rate is set higher than t^*, it would be inefficient, since a reduction of the rate would not only increase the utility of the high-income taxpayers with income above the threshold but also government revenue. Saez (2004: 14) remarks in a footnote that if a government has a strong redistributive taste and does not value the marginal consumption of the rich, the Laffer rate becomes the optimal rate. This is considered to be the upper bound to the top marginal tax rate, and government should not exceed this rate. If government has less of a redistributive taste, the rate lies between 0 and 1.

The basic model and its focus on the elasticity coefficient have limitations, and it can be shown that the reduction in reported income is not only due to reduced labour supply, a more generous use of fringe benefits or tax evasion. Saez et al. (2012: 10–18) and Giertz (2009: 105–111) discuss a number of other parameters that should be estimated and also identify issues that complicate estimation. Some of the issues include the extent to which the reported income changes are due to income shifting (from personal income tax to corporate income tax), timing responses (deferred compensation or future legalisation of capital gains), long-run responses (in the

case of capital income) and other fiscal externalities such as the consequences of these income changes for consumption taxes. Moreover, the elasticity of taxable income not only depends on the preferences of taxpayers but how broadly the tax base is defined (that is, the tax structure). The more tax deductions, the higher the elasticity coefficient. It should also be noted that the responses of taxpayers to marginal tax changes may be difficult to estimate, because certain conditions may be present that lead them to perceive their tax schedule inaccurately. Liebman and Zeckhauser (2004) refer to this as 'schmeduling' and list nine conditions (2004: 6–8), including the complexity of the tax schedule, which makes it difficult for taxpayers to determine their marginal tax rate. Schmeduling leads to 'ironing', 'spotlighting' and 'ostriching'. Ironing, for example, implies that taxpayers perceive the average tax rate as the marginal tax rate, and the welfare implications are that the excess burden from higher marginal tax rates is diminished somewhat and the revenue increase is greater. Saez (2004: 7) also notes that only large or salient tax changes will generate behaviour responses. This is, of course, in contrast with marginal analysis, which supposes small tax price changes and underlies much of the modelling work done here (see New Zealand Treasury 2009: 3). Saez et al. (2012: 6) also note that because the ETI depends on the tax system and individual behaviour, elasticity estimates may not apply to a hypothetical large tax change.

The data

Behavioural responses for different income groups and individuals could probably best be analysed using microsimulation models, but since micro-tax data for South Africa are confidential, use is made here of published tax data by income group contained in Tax Statistics 2011 (National Treasury & SARS 2011). The aim, however, is to make only a first attempt at illustrating the revenue responses and efficiency consequences of changes in the marginal tax rate as it applies to the top income tax group (the rich). Some confidence in this approach stems from the work done by Giertz (2009) to analyse tax increases (tax cuts that expired after 2010) in the USA for the higher income group. However, a number of qualifications are needed (see Giertz 2009: 117–121).

It is firstly assumed that the change in the statutory marginal tax rate is the same as the change in the effective marginal tax rate. The latter is the more appropriate concept to use and differs from the statutory rate because of exemptions, lower rates on capital gains, interest income, dividends and social security contributions by employers (if this part can be considered as a compulsory cost). In addition, the many other indirect taxes such as VAT, excise taxes and user charges could be added,

indicating that the effective marginal tax rate on the top 1 per cent of income earners is much higher than the current maximum statutory rate of 40 per cent, which is applied here as the base rate. Adding the VAT rate would increase the effective tax rate to 47.4 per cent [(0.40 + 0.14)/1.14], affect the tax revenue government would receive and have efficiency consequences (as will be discussed). It is also assumed that the marginal tax rate is constant for incomes in the top bracket.

Secondly, the amount of taxable income and the income tax bracket that applies to the top 1 per cent of income tax earners and the tax year need to be determined. One option is simply to find the applicable income tax bracket by calculating the cumulative shares of the number of taxpayers. Using this method, the approximate top 1 per cent of taxpayers (100 000 taxpayers) in 2010 would earn taxable income starting at R750 000. It should be realised that taxable income would differ from the broader income definition used in the income inequality studies mentioned in the earlier section on the distribution of top incomes. To the extent that taxable income falls short of gross income, the tax shares would be understated. For example, the average income of the top 1 per cent measured using household income data started at approximately R400 000 in 2007 (477 000 individuals) and at R560 000 in 2011 (480 000 individuals) (BMR 2011). Since tabulated taxable income data are only available until 2010, this year is used in the estimations in Table 3.

Lastly, the elasticity of taxable income (ETI) is required. As mentioned, the ETI measures the responsiveness of reported taxable income to changes in the net-of-tax rate. This is an important parameter, and its size impacts on tax revenue and efficiency – a small ETI has large policy implications and vice versa. Needless to say, the coefficients would differ between countries and over time. Empirical evidence from the UK and USA show that there is large variation in estimates (see Giertz 2009: 111–115 for a summary of recent estimates). According to Giertz (2009: 111), the first studies reported high estimates (between 1 and 3), whereas more recent estimates are closer to 0.4 but still range between 0 and 1. Saez (2004: Table 3) estimates elasticities of the top 1 per cent with respect to net-of-tax rates ranging from 1.58 to 0.61 (when time trends are included). Saez et al. (2012) conclude that there are no truly convincing estimates of long-run elasticity, and that the best estimates range between 0.12 and 0.40. Using a macro-approach to measuring long-term effects Piketty, Saez and Stantcheva (2011: 4) obtained an overall elasticity of 0.5 composed of three elasticities at the top income share. Using the so-called 'difference-in-differences' methodology and time-series data, Brewer, Saez and Shephard (2010: 110) estimated the ETI of the richest 1 per cent in the UK at 0.46, which means that a 1 per cent reduction in the net-of-tax rate would lead to a 0.46 per cent reduction in taxable income. Claus, Creedy and Teng (2010) estimated elasticities for New Zealand and found rates

between 0.40 and 1.0 in 1999 (before an increase in the marginal tax rate from 33 per cent to 39 per cent tax was announced) and rates between 1.3 and 2.3 in 2000 (before the tax increase was introduced in 2000). Elasticities for the top percentile were higher than those for the top decile, confirming results from other studies that higher income earners are more responsive to marginal tax rate changes than lower income earners. Claus et al. (2010: 15) also found that men are more responsive than women to tax rate changes.

In the absence of an elasticity of taxable income estimate for South Africa and because tax policy results are so sensitive to different estimates, an average value taken from studies of other countries would not suffice. Given the smallness of the tax base, the mobility of high-income earners and the various options that the very rich have to shift income in South Africa, a relatively high ETI is expected. In addition, there is empirical evidence that ETIs tend to be higher for the very rich. Because of the uncertainty, the results for an ETI of 0.20, 0.40 and a much higher ETI of 0.80 are used to investigate the revenue and efficiency implications of a marginal tax increase for the top 1 per cent. Two marginal tax rate increases are considered: an increase from 40 per cent to 44 per cent (a rise of 10 per cent) and a similar 10 per cent increase assuming an increase in the VAT-inclusive effective marginal tax rate from 47.4 per cent to 52.1 per cent.

Revenue and efficiency effects of taxing the very rich at higher marginal tax rates

At the outset, it must be recognised that the results obtained are very sensitive to the parameters used. The two key terms are the Pareto (a) parameter and the elasticity coefficient (e). The latter has already been dealt with earlier in this article. The a parameter is calculated in the model for taxpayers (approximately 100 000) with income above the top tax threshold (R750 000), with an average income of approximately R1.4 million. A coefficient of 2.11 is estimated. This value is comparable to an estimate of 1.8 for the UK (Brewer & Browne 2009: 10), 1.6 for New Zealand (New Zealand Treasury 2009: 3) and 1.5 for the USA (Saez et al. 2012: 7). As already mentioned, the higher the coefficient, the 'thinner' the top end of the distribution. If the UK value is used, for example, the behavioural response to a tax change would be smaller; the marginal excess burden would be less and the efficient top tax rate higher.

Table 3 provides revenue and efficiency estimates if the marginal tax rates of very rich taxpayers are increased by 10 per cent. Three values of the ETI are used. For these different ETIs, the behavioural response to an increase of the marginal tax

rate from 40 per cent to 44 per cent would wipe out 28, 56 and 113 per cent of the mechanical revenue gain. That would correspond to tax revenue changes ranging from gains of approximately R2.0 billion to losses of R340 million. An ETI of 0.4 or higher is probably more realistic. Such an ETI would correspond to the estimates by Brewer et al. (2010) and Piketty et al. (2011) for the UK and USA, as discussed in a previous section. A 10 per cent increase in the marginal tax rate would then result in additional tax revenue of only R1.2 billion. The values for the deadweight loss that arises from the tax increase are also shown in Table 3. The marginal excess burden or efficiency loss associated with an increase of one Rand in revenues can be obtained using Equation 6. At an ETI of 0.4, the 10 per cent tax increase results in a marginal excess burden of R1.29 (society is worse off by this amount for each extra Rand of tax revenue raised).

The cost to society is that much more dramatic when the effective marginal tax rate is not 40.0 per cent but 47.4 per cent (the VAT-inclusive rate) (see Jacob, Niemann & Weiss 2008 for a more comprehensive measure of effective tax rates). It is expected that when reported personal taxable income declines, it must have consequences for consumption taxes and should therefore be included in the tax rate used for welfare estimations. A 10 per cent increase in the higher effective marginal tax rate results not only in comparatively less tax revenue (approximately R270 million against the R1.2 billion calculated above) but also in an excess burden of R3.16 for each R1.00 raised if the ETI is 0.4.

It will be noticed that for an ETI of 0.8, no values for the marginal excess burden are recorded. The reason is that the marginal tax rate lies above the revenue-maximising rate. The Laffer bound rate, which maximises overall tax revenues from the very rich, can be obtained using Equation 7. This rate decreases with higher elasticity coefficients. Therefore for marginal tax rates higher than 37 per cent in the case of an ETI of 0.8, the marginal excess burden ratio would not be relevant.

Much more theoretical and rigorous empirical work is required to determine the appropriate marginal tax rate level, but a few pointers could serve to give some direction for debate. The level of marginal tax rates would firstly depend on the elasticity of taxable income. According to the Laffer bound rates calculated above, the efficient marginal tax rate for South Africa ranges between 37 and 70 per cent. In more general (theoretical and empirical) terms and based on earlier optimal income tax literature and some very specific assumptions about the social welfare function to be maximised, Mirrlees (1971) concluded that the optimal income tax structure is approximately linear with marginal tax rates between 20 and 30 per cent. The findings of Seade (1977) and Sadka (1976) are more extreme and proved that marginal tax rates at the highest level of income should be "precisely zero" (quoted

Table 3: Revenue and efficiency consequences of increasing the marginal tax rate of the top 1 per cent of taxpayers by 10 per cent for South Africa (2010)

	Elasticity of taxable income (ETI)		
	0.2	0.4	0.8
Mechanical response (Rm)	2 712	2 712	2 712
Behavioural response (Rm)	-763	-1 526	3 052
Change in tax revenue (Rm)	1 949	1 187	-339
Laffer bound tax rate (%)	0.70	0.54	0.37
Marginal excess burden (cents per Rand of revenue) if: EMTR increases from 40.0 to 44.0 per cent EMTR increases from 47.4 to 52.0 per cent	 0.39 0.61	 1.29 3.16	 N/A N/A

Note: EMTR = effective marginal tax rate; N/A = not applicable
Source: Calculated from National Treasury & SARS (2011)

in Slemrod 1998: 13–22). Slemrod (1998: 17) remarks that the latter result should not be taken too seriously as a practical guide but "(i)t highlights the possibility that a utilitarian social objective function, even one that places a large weight on the welfare of the poor, is not necessarily maximised through high marginal tax rates on the rich".

The disproportionate share of capital income earned by the rich must also be factored in when the appropriate level of marginal tax rate at the top incomes is analysed. By distinguishing between capital income (interest, dividends, capital gains and profits from personal businesses) and labour income (for example, wages and salaries), the supporters of the dual income tax regime propose a single proportional rate for capital income set equal to the lowest income tax rate (the first income tax bracket) on personal (wage) income. Labour income is subject to a progressive rate structure and provides for tax deductions and exemptions to achieve equity objectives. Overall the taxation of labour income is therefore higher than on capital income (see Bird & Zolt 2010; Boadway 2005). In contrast, Matthews (2011: 29) argues that because tax expenditures and reliefs for capital income benefit the rich disproportionately, these should be scaled down if the motive is to raise more revenue from the top income recipients.

A final note on marginal tax rates and income inequality is associated with a report by Ayres and Edlin (2011) that recently appeared in the *New York Times*. They refer to an eminent American jurist, Louis D. Brandeis, who argued in the early twentieth century that at some point the concentration of economic power could

undermine the democratic requisites of dispersed political power. In Brandeis's time, huge disparities between the rich and poor led to violent labour unrest and a reform movement. Ayres and Edlin (2011) believe that the tipping point beyond which income inequality should not be tolerated further can be measured by the ratio of the average income of the nation's richest 1 per cent to the median household income. Once the Brandeis ratio exceeds 36 times the after-tax income of this income group (the approximate level of income inequality that alarmed Brandeis in his time), an automatic extra tax on the rich should kick in. In this manner, inequality is taxed; "Billionaires could double their current income without the tax kicking in – as long as the median income also doubles. The sky is the limit for the rich as long as the 'rising tide lifts all boats'". This gives the rich (insofar as they are job creators) the incentive to make sure that wealth trickles down.

Using the Bureau of Market Research income and expenditure database (BMR 2010, 2011) and adjusting for inflation, the Brandeis ratio for South Africa was approximately 11 in 2011 – the average income of the top 1 per cent was 11 times that of the median household income. If it is assumed that this is the tipping point, a new tax bracket for the highest 1 per cent of income would be created and a marginal income tax rate could be calculated to reduce the after-tax ratio to 11.

Alternatives to taxing the rich at higher rates

The estimated changes in tax revenue in Table 3 refer to the impact of higher marginal tax rates on taxable income. Depending on the values of the elasticity and Pareto parameters, the behavioural response of the rich might wipe out any revenue gain from a tax increase and might even result in a decrease in revenue. Matthews (2011: 28–32) suggests a number of alternatives to increasing marginal tax rates, including reducing tax expenditures, reducing tax relief for capital gains, taxing only capital income above a 'normal' rate of return, or aligning tax rates applicable to different types of income (interest, capital gains and dividends) to reduce arbitrage (tax shifting) opportunities. These options would apply to income receipts, but could be extended to taxing wealth and capital transfers, property taxes and consumption (luxury goods and services). The wealth, property and consumption alternatives, however, need further analysis and cannot be addressed in this study. Suffice it to say that government's recent introduction of *ad valorem* taxes on aircraft, helicopters, motorboats and sailboats may be indicative of a change in attitude regarding the taxation of luxury goods (National Treasury 2012: 58).

The calculations in Table 3 refer to taxable income. Once actual revenue collections are considered, the revenue outcomes from marginal tax increases might be even

more disappointing. A percentage of 91.6 of assessed taxpayers (with taxable income greater than R750 000) generated R50.4 billion in revenue on taxable income of R143.0 billion in 2010, that is, at an effective average rate of 35.2 per cent. One option to increase the average tax rate without affecting the marginal tax rate would be to reduce tax expenditures utilised by the rich (untaxed fringe benefits, exempt interest and dividends, medical and retirement deductions and rebates). The rich (taxable) income group utilised fringe benefits and deductions to the tune of approximately R12.5 billion in 2010. In Table 4, a selected group of tax expenditures used by the rich have been identified. Glaring examples of the disproportionate claiming of fringe benefits and deductions are the acquisition of assets below actual value and commission-related expenses. Thus by clamping down on tax expenditures or capping the amounts that can be claimed, the taxable income base can be broadened further.

Table 4: Selected tax expenditures utilised by the income group with taxable income greater than R750 000 (2010)

	No. in taxable group	Assessed amount (Rm)	Portion of taxable group (%)	Share of total assessed amount (%)
Fringe benefits – acquisition of asset at less than the actual value	32 473	1 687	2.15	13.58
Deductions – current pension fund contributions	36 207	1 743	1.55	3.92
Deductions – current retirement annuity fund contributions	56 703	2 318	1.67	8.24
Deductions – other expenses related to commission income	7 036	922	2.26	13.53

Source: Calculated from National Treasury & SARS (2011)

Areas where the rich are favoured in particular are the tax treatment of capital gains, share options and dividend income. As large holders of assets, the rich, very rich and super-rich earn proportionally more from these sources of income. Approximately 50 per cent of the allowance for share options were exercised by the 5.7 per cent of taxpayers who recorded taxable income above R750 000 in 2010. This could be indicative of the extent to which rich executives and professionals use this form of compensation as a loophole.

A somewhat different approach focuses on the process of income and wealth generation. The debate is then invariably about the economic virtues of the rich (the

positive externalities they create such as savings, investment, support for cultural activities, risk-taking and innovation) and the importance of fairness in the process of income generation (see Slemrod 1998). In respect of the savings behaviour of the rich, Dynan, Skinner and Zeldes (2000: 32) observed that there is still much to be learned but are convinced that the rich do indeed save more. On the issue of fairness, Nozick (1974) argues that if 'things' are obtained in a just manner, there is no justification for redistribution. 'Things' refers to capital and property which the rich, of course, hold in abundance. There is considerable variation in perspectives on the role of the rich in economic development, including the views of Max Weber and his followers ('the Protestant work ethic') and those of social Darwinists ('survival of the richest'). It is beyond the scope of this study to discuss these views, but there is certainly much disagreement – see for example De Long (1989) on the relationship between a strong (Protestant or cultural) work ethic and the role of the rich entrepreneurial class to accumulate. Also recognising the importance of processes or institutions, Miron (2011), in his response to Warren Buffet's assertion that the super-rich do not pay enough taxes, calls for a review of the rules and policies that favour the better off (for example, favouritism, political connections, and restrictive examinations and other barriers to entry into the professions that artificially restrict the supply of these services).

It is apparent that National Treasury is acutely aware of the alternatives to higher marginal tax rates. In the 2012 Budget Review (National Treasury 2012: 50–52, 187), a number of reforms were introduced or announced that have the effect of broadening the personal income tax base and taxing capital income more fairly, including the conversion of medical expenses to tax credits, increases in effective capital gains tax rates, the implementation of a dividend withholding tax, the capping of annual deductions for retirement contributions and the review of the various types of employee share schemes.

Conclusion

The distribution of aggregate income in South Africa is skew, and inequality did not improve between 1993 and 2008. In concert with other Anglo-Saxon countries and developing countries, the incomes of the top income groups have become less concentrated for most of the twentieth century. However, when the distribution within the top 1 per cent since 1980 is viewed, the inverted Pareto-Lorenz coefficients show that in all the countries there is growing concentration. In comparison with this selection of countries, concentration within the top 1 per cent of income in South Africa does not rank particularly high. There was nevertheless an increase in the

share of the top 1 per cent in the last decade. Globally this led to concern and calls for higher taxes on this group.

To get some understanding of the constraints of using taxes to change the distribution of income in South Africa, a simple inter-country comparison shows that the average tax burden (excluding social security contributions) of 21.6 per cent of GDP is higher than in a selected group of developed and developing countries. Also the share of personal income tax (excluding SSC) generally exceeds that of DCs and LDCs. Further exploiting the tax system for revenue and distributional purposes might well establish South Africa as a high tax country, with detrimental consequences for growth and stability (in that taxpayer tolerance would be tested). Taxpayers' discomfort with higher tax rates to finance pro-poor policies is aptly illustrated by Seekings (2005), who shows that support for redistribution is far from unconditional. It is, however, not just the levels and composition of taxes that matter for redistribution purposes. Unfortunately, the empirical evidence on the overall impact of taxation on reducing inequality in South Africa is not very encouraging. Moreover, there is evidence that the tax effort in respect of personal income tax is already at a high level compared to other developing countries. This indeed calls into question the prospects for targeting personal income taxation and the rich.

Taxing the rich leads to behavioural responses that impact on revenue and economic efficiency. Using different elasticity of taxable income (ETI) coefficients, it was estimated that a 10 per cent increase in the top marginal tax rate would result in taxable income ranging from a gain of approximately R2 billion to losses of R340 million. Although these results are tentative, they show that taxing the rich at higher rates may not produce the revenue windfall expected. The marginal excess burden increases from R0.39 to R3.16, depending on the ETI and effective marginal tax rate, which also raises doubts regarding the economic efficiency of increasing tax rates. If government has a strong redistributive taste and does not value the marginal consumption of the rich, it can be concluded that the rich should indeed pay more tax but that marginal tax rates should not go up (*Economist* 2012a). There are also alternatives to raising marginal tax rates such as reducing tax expenditures that are disproportionately utilised by the rich and taxing the process whereby the rich become rich. The implication in this case may well be to stop squeezing the rich (*Economist* 2012b) and instead soak the rich (Dalmia 2011) by inter alia reducing marginal tax rates on capital income. This could be a step closer to a dual income tax system.

Finally, a brief incursion was made into measuring the tipping point beyond which income inequality will not be tolerated further (the Brandeis ratio). What the appropriate ratio for South Africa is or should be, and whether it is practical and feasible to implement such a cap on high-income earners, are moot points. However,

the stage must surely be reached where huge and rising income inequalities will threaten democracy. This view would not be too far removed from that of Meltzer and Richard (1981), who argued that once the income of the median voter lies below the average income, there would be pressure for redistribution. The Brandeis ratio could then, in principle, be employed to check further deviation of the average from the mean, but always cognisant of the positive and negative incentive effects and other behavioural responses if the rich are taxed at higher rates.

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Endnotes

1 Tax revenue data are for central government only since such data are not available for the general government for all SADC countries.

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