



THE RELATIONSHIP BETWEEN CORPORATE SOCIAL RESPONSIBILITY AND TAX AGGRESSIVENESS FOR LARGE COMPANIES ON THE JSE

Journal:	<i>Meditari Accountancy Research</i>
Manuscript ID	MEDAR-02-2016-0032.R1
Manuscript Type:	Research Paper
Keywords:	ESG, tax aggression, South Africa, Corporate social responsibility, csr

SCHOLARONE™
Manuscripts

THE RELATIONSHIP BETWEEN TAX AGGRESSIVENESS AND CORPORATE SOCIAL RESPONSIBILITY FOR LARGE COMPANIES ON THE JSE

Structured abstract

Purpose: This study investigates the relationship between tax aggressiveness and corporate social responsibility (CSR) in the context of large multinational listed companies in South Africa.

Design/methodology/approach: This relationship is tested on a sample of 48 of the largest companies by market capitalisation on the Johannesburg Stock Exchange (JSE) for the period 2005 to 2014. Data is from Bloomberg. The statistical procedures applied include: Pearson correlation analysis, tests for Granger causality and multiple linear regression analysis with fixed effects.

Findings: A statistically significant negative relationship is found between the level of CSR activity and tax aggressiveness across the companies sampled. Thus, more socially responsible companies are less tax aggressive. However, a statistically significant positive relationship was found between the level of CSR activity and tax aggressiveness within individual companies. Thus, as individual companies become more socially responsible they also become more tax aggressive.

Social implications: These findings suggest that companies do not regard the payment of tax as part of their social responsibility and optimise for profitability by creating tax aggressive business structures, yet optimise for company image by engaging in CSR activity. This highlights the need to include fair tax payment as a relevant consideration in the view of good corporate citizenship in South Africa.

Originality/value: This paper adds to the literature by analysing a unique sample of large companies in the African, developing market, context. Additionally, the relationship between CSR and tax aggressiveness within individual companies over time is analysed providing a unique perspective since the existing literature focused only on the relationship across companies.

Keywords

ESG, tax aggressiveness, South Africa, corporate social responsibility, CSR

1. Introduction

Companies like to present themselves as being good corporate citizens that work for the betterment of society, but to what extent do they walk the talk when their profitability is on the line? This paper analyses the relationship between tax aggressiveness and corporate social responsibility (CSR) in South Africa.

CSR has been broadly defined since the 1950s, when Heald (1957) theorised that management in companies should become more conscious of the effects that their company has on society for the sake of financial benefit and for the benefit of society. The concept was contested by the likes of Friedman (1970) who took justification from agency theory, asserting that companies should act solely for the purposes of shareholder value maximisation. However, since then, the stakeholder theory (Freeman, 1984) has become a widely accepted view of CSR where companies are expected, by various stakeholders, to recognise and play their part in ensuring a healthy society (Sethi, 1975; Carroll, 1979; Lantos, 2001).

The Institute of Directors in Southern Africa (2009) have defined corporate citizenship synonymously with the stakeholder theory of CSR suggesting that companies have certain obligations towards the economy, society and the natural environment in which they operate. This is because they are recognised as citizens within the country in which they are incorporated, and therefore have both rights and duties like any other citizen. In defining the liberal view on corporate citizenship, Matten and Crane (2005), suggest that companies should not hinder government's ability to provide for the citizens in the country. One way in which companies can be unhelpful towards government is through tax aggressiveness.

Tax aggressiveness is defined by Braithwaite (2005:16) as "a scheme or arrangement put in place with the dominant purpose of avoiding tax". Dowling (2013) suggests that tax payments by corporates are a clear way to measure CSR. This is contrasted by most companies not incorporating their tax paying behaviour in their CSR agendas (Jenkins & Newell, 2013). The inclusion of tax paying behaviour in the definition of CSR implies that tax aggressiveness is considered to be socially irresponsible. This then begs the question: *What is the relationship between tax aggressiveness and the CSR activity of large companies listed on the JSE?*

This paper determines this relationship by analysing data from a sample of 48 of the largest companies on the JSE, by market capitalisation, for the period 2005 to 2014 using Pearson correlation analysis, tests for Granger causality and fixed effects and multiple linear regression analysis. Two measures of effective tax rate (ETR) are used as proxies for tax aggressiveness and CSR disclosure, as measured by the Bloomberg environment, social and governance (ESG) score, is used as proxy for CSR activity.

When considering the effects *across* companies (between-company), a statistically significant negative relationship was found between the level of CSR activity and tax aggressiveness. Thus, companies that are more socially responsible are less tax aggressive. When considering the effects *within* companies (intra-company), a statistically significant positive relationship was found between the level of CSR activity and tax aggressiveness. Thus, as companies become more socially responsible, they become more tax aggressive, suggesting that companies do not consider tax payment as part of their social responsibility. These results reflect shareholder primacy behaviour of companies on the JSE where the company aims to maximise shareholders' returns through the use of both CSR activities and aggressive tax planning structures (Friedman, 1970). This presents a concern in a developing country setting where loss of revenue (from corporate tax avoidance) significantly constrains economic growth and development (Cobham, 2005).

This paper contributes to present research in two key areas. Firstly, this paper uses a more appropriate sample than the one used in prior research (Lanis & Richardson, 2012A; Hoi, Wu &

Zhang, 2013), in that it uses a smaller sample of the largest companies on the Johannesburg Stock Exchange. These large companies are mostly multinational corporations that have more opportunity and ability to engage in aggressive tax planning, often with subsidiaries in other countries. This sample is drawn from an exchange in a *developing* market, as opposed to most of the prior research that was conducted in *developed* markets. This difference is noteworthy as developing markets, especially in African countries, are deprived of much needed tax revenue as a result of corporate tax aggressiveness (Cobham, 2005). Secondly, this paper analyses the relationship between CSR and tax aggressiveness both *within* (intra-company) and *across* companies (between-company) in the sample. Previous literature (Lanis & Richardson, 2012A; Hoi *et al.*, 2013; Khan, Yousaf, Khan & Yasir 2014; Laguir, Stagliano & Elbaz, 2015) has tested the relationship *across* companies and not *within* companies. This paper confirms the between-company relationship found in prior literature, that companies that are more socially responsible are less tax aggressive, and adds to this literature by considering the intra-company relationship between CSR and tax aggressiveness over time. The findings should be of interest to: the legislature, as tax aggressiveness affects tax revenues; the public, as they may be misled by companies that present themselves as good corporate citizens yet aggressively avoid taxes; and the King Committee on Corporate Governance, as tax behaviour may be an area that should be explicitly included in an assessment of a company's responsibility as a corporate citizen.

The next section will present the literature review, explaining past literature on CSR, corporate citizenship and tax aggressiveness. The literature review concludes with examples of corporate tax aggressiveness, comment on the international regulatory clampdown on tax aggressiveness and the research question. The paper then proceeds to describe the sample selection, the variables included in the analysis as well as the specification of the regression models. The results are then presented and this is followed by an analysis of these results. A conclusion is made with an explanation of the limitations of this paper, followed by a summary of opportunities for further research.

2. Literature review

2.1. Corporate social responsibility

CSR was broadly defined in its earlier years of research and has become more detailed over time. Heald (1957) initially argued that management should be conscious of its social responsibility for the purpose of good economic performance as well as for the good of society. Davis (1960) contested that social responsibility is an individual obligation. He argued that the more power and influence a businessman has, the more obliged he is to be socially responsible. The CSR definition progressed towards it being an individual company's decision rather than the responsibility of all companies or individuals themselves. This decision is based on the company's specific characteristics and how it interacts with society (Heald, 1970). At this point there was still a broad agreement about what CSR was. Sethi (1975) tried narrowing it down by defining "social obligation," "social responsibility" and "social responsiveness" separately. This highlighted the difference between a company's social obligations and the volunteering of social actions in addition to its obligations. These obligations were aimed at the prevention of social problems.

Friedman (1970) argued that businesses should act in a way that solely maximises shareholder value in accordance with agency theory (Jensen & Meckling, 1976), which created a further debate around the definition of CSR. Carroll (1979) then tried to narrow down the CSR definition even further and concluded that CSR reflects the expectations that society has of a company according to economic, legal, ethical, and discretionary factors.

Later, the focus shifted from defining CSR and testing for its significance became more prominent (Carroll, 1999). Waddock and Graves (1997) found a significant relationship between CSR activity and financial performance and concluded that companies with poor financial performance were less likely to spend money on CSR activities as they had less additional resources to spend on what some

1 companies may see as 'over and above' expenses. This was reaffirmed recently when Wu and Shen
2 (2013) found a positive relationship between CSR and various financial performance measures such
3 as return on assets, return on equity, net interest income, and non-interest income.
4

5 Carroll (1999) then identified that three of the most common topics under the CSR umbrella that are
6 researched are corporate social performance, business ethics and the stakeholder theory. This
7 revealed the direction in which research of this topic was going. In the early 2000s, Lantos (2001)
8 argued that the debate around CSR occurs because of a lack of understanding of ethical, altruistic
9 and strategic CSR. He concluded that ethical CSR is the minimum requirement; altruistic CSR is not
10 within the scope of a company's responsibility; and strategic CSR is financially beneficial to
11 companies. Later Glavas and Piderit (2009) argued that because there is no set definition for CSR,
12 too many companies might be seen as being socially responsible when they probably should not be
13 seen as such.
14

15
16 In recent times, organisations such as the Institute of Directors of Southern Africa (2009) have
17 defined aspects of CSR in their definition of corporate citizenship incorporating the economy,
18 society and the natural environment into its definition.
19

20 21 *2.2. Corporate citizenship*

22
23 Since companies are incorporated as juristic persons and can act as such, they are viewed as citizens
24 of the country where they are incorporated. They have rights and duties like any other citizen. In
25 South Africa the leading doctrines on corporate citizenship and governance, endorsed by the
26 Companies Act and the JSE, are the King reports. The King III Report defines good corporate
27 citizenship as an ethical relationship of responsibility between a business and the society in which it
28 operates: "As a responsible corporate citizen, the company should protect, enhance and invest in the
29 wellbeing of the economy, society and the natural environment" (Institute of Directors in Southern
30 Africa, 2009:42).
31

32
33 Corporate citizenship has become a topic of great interest in the research environment. There appears
34 to be a mismatch of intention when it comes to the interpretation of good corporate citizenship. This
35 mismatch is clear in the shift towards strategic CSR where the objective is to maximise the benefit of
36 CSR to the company rather than just engage in CSR for the betterment of society (Porter and
37 Kramer, 2006).
38

39
40 Matten and Crane (2005) have grappled with the definition of corporate citizenship, insisting that the
41 concept has been misrepresented in business literature. They describe three views of corporate
42 citizenship. The first is the "limited view" where corporate citizenship is seen in terms of charitable
43 donations and other forms of community action, driven by self-interest and more of a discretionary
44 activity and beyond what can be expected of business. This view is consistent with that of Porter and
45 Kramer (2006).
46

47
48 The second, the "equivalent view," defines corporate citizenship in a similar way to CSR.
49 Companies are required to meet the economic, legal, ethical and discretionary responsibilities
50 imposed on them by their stakeholders. According to this view, corporate citizenship functions as a
51 new way of presenting existing concepts and there is no focus on what it means to be a citizen.
52

53
54 For the third and final view proposed by Matten and Crane (2005), it is first explained that the state
55 is a pivotal actor within the "liberal view" of citizenship. It protects civil rights of people, provides
56 social rights and also constitutes the main area within which political rights are exercised and
57 decisions are made. Thus it would appear that citizenship is linked to a particular territory, governed
58 by a sovereign state. Matten and Crane (2005) suggest that states are failing to be the sole guarantor
59 of these three rights areas (civil, political and social) due to globalisation and the rapid change in
60 societal structure as economies are becoming increasingly interwoven. This results in the severance

of social, political and economic interaction from national territories. It is becoming more difficult for regulation to keep up with the societal change that comes with globalisation and for this reason Matten and Cane (2005) suggest that corporate citizenship implies that companies must step in where governmental actors fail to fulfil their citizenship obligations. Thus, corporations have a role in administering the rights of the citizens of the countries in which they operate.

The “liberal view” is different from the first two as it places an obligation on companies to uphold the rights and political framework of the countries in which they operate, implying that companies must not hinder a government’s ability to meet its obligations. By hindering a government’s abilities, companies are indirectly not meeting their corporate citizenship role to administer the rights of citizens in the countries in which they operate. One instance where companies hinder governments’ ability to provide for the rights of their citizens is through tax aggressiveness, as this puts a strain on a country’s fiscal resources.

Given the complexity, and often ambiguity, of measuring CSR and corporate citizenship, it would be useful to find a measure that is easily gauged and fundamental to a company’s citizenship behaviour. The most convincing monetary metric for this is to assess a company’s tax-paying behaviour (Dowling, 2013). However, according to Jenkins and Newell (2013), most companies make no mention of their tax-paying behaviour as part of their corporate responsibility or their corporate citizenship agendas. This is partly because companies’ CSR agendas are being shaped by the pressures placed on them by various parties who exclude tax paying behaviour from their main environmental and social interests and concerns (Dowling, 2013; Jenkins & Newell, 2013). This is attributed to the complexity of tax systems and a lack of awareness of the negative effects of tax aggressive behaviour.

2.3. Tax aggressiveness

At this point it is necessary to distinguish between tax aggressiveness and tax evasion. Tax evasion is the illegal activity of not paying tax when it is clearly stipulated in the legislation that tax is due. Tax aggressiveness as defined by Braithwaite (2005:16) as: “a scheme or arrangement put in place with the dominant purpose of avoiding tax.” Tax aggressive companies exploit ‘tax loopholes’ to reduce their tax bill for the benefit of their shareholders at the government’s, and therefore also at society’s, expense.

Corporate tax aggressiveness is best understood in the context of a country's tax leakages. Cobham (2005) describes five primary sources of taxation leakages from a country, two of which are considered as tax aggressiveness: corporate profit-shifting and tax competition. Corporate profit shifting involves companies artificially pricing goods and services and selling them to offshore companies in the same group, recognising artificially generated expenses for the company in the high tax rate country and income for the company in the low tax rate country. Tax competition occurs when multinational corporations (MNCs) threaten to avoid operating in high tax countries, putting pressure on the country to lower the corporate tax rate applicable to that particular MNC. Developing and least developed countries (LDCs) are particularly vulnerable to tax aggressiveness as they do not have the resources to recover and investigate profit shifting and are reliant on MNCs for much of the employment of their labour force.

The King III Report does not explicitly deal with tax aggressiveness (The Institute of Directors in Souther Africa, 2009), and so companies that appear to be good corporate citizens according to the King III Report definition may indeed not be, according to Matten and Crane’s (2005) liberal view of corporate citizenship. If companies engage in tax aggressive practices and these practices are deemed significantly to hinder a government’s ability to provide for the rights of its citizens, these companies may in fact be bad corporate citizens. In accordance with legitimacy theory these companies may intend only to appear socially responsible due to the social pressure on them to do so, so that they may remain legitimate in the public’s eyes (O’Donovan, 2002).

1
2 All stakeholders of corporations need to take note of their corporation's taxpaying behaviour. Many
3 companies find no contradiction between claiming to be socially responsible while at the same time
4 being tax aggressive. Jenkins and Newell (2013) find that this is even the case for companies that
5 identify themselves as leaders on CSR matters. The question must be asked as to why companies
6 find this not to be contradictory.
7

8 Companies have the following arguments for tax aggressive behaviour:

- 9 • It is up to a company to manage its affairs in a way that minimises its taxes as long as the
10 company remains in line with the letter of the law; it is under no obligation to pay more than
11 this (Jenkins & Newell, 2013).
- 12 • Tax aggressiveness lowers the costs that the company pays and thus increases shareholders
13 value (Dowling, 2013). In accordance with agency theory, a company must act to maximise
14 shareholder value through its decision-making (Friedman, 1970; Jensen & Meckling, 1976).
15 Rego (2003) finds that lower effective tax rates correspond to higher valuations. This is due to
16 companies having greater capacity to invest in projects that increase their value.
- 17 • Companies place little "trust and confidence in the tax system and the government" (Dowling,
18 2013:181) and elect rather to contribute to society by investing in those CSR activities that they
19 deem to be beneficial.
20
21
22

23 The following reasons are provided for the inclusion of corporate tax aggressiveness as a measure of
24 corporate citizenship:

- 25 • A company has a responsibility to contribute as a taxpayer for the activities it conducts in a
26 country as it is a citizen in the country in which it operates (Jenkins & Newell, 2013).
- 27 • In accordance with the stakeholder theory, government is an important stakeholder as are
28 shareholders, employees and customers (Freeman, 1984). Governments are as entitled to the
29 tax rate on the operations in their countries as shareholders are to their profits, employees are to
30 their wages and customers to their goods and services (Jenkins & Newell, 2013).
- 31 • Government supplies companies with an environment that facilitates their operations within the
32 country. This includes basic services, social and physical infrastructure, an educated labour
33 force, and a legal system (Jenkins & Newell, 2013; Christensen & Murphy, 2004). Therefore,
34 since the company benefits from this environment, it should pay its fair share of taxes as
35 required by the government.
- 36 • MNCs that are tax aggressive are able to pay a lower effective tax rate than smaller, domestic
37 competitors. These companies are actively able to avoid taxes because they have more
38 resources to take advantage of tax havens and are usually big enough to lobby against
39 governments to reduce the tax rate. Paying this lower tax rate infringes on fair competition and
40 gives MNCs an unfair advantage over smaller domestic companies (Christensen & Murphy,
41 2004).
- 42 • Tax aggressiveness creates distortions in the market. Someone has to pay in order to keep
43 public services afloat. Companies failing to pay the tax on their operations within a country
44 ultimately shift the tax burden to other (often financially worse off) individuals and companies,
45 thus increasing income disparities within a country (Christensen & Murphy, 2004). Avoiding
46 tax is therefore transferring money from the government (and indirectly from society) and to
47 shareholders (Dowling, 2013).
- 48 • By not paying the full tax bill due, through tax aggressiveness, companies are dodging their
49 responsibility as corporate citizens and disempowering government by reducing tax revenues.
50 Governments can now not meet their responsibility and provide for their people's citizenship
51 needs (Matten & Crane, 2005).
52
53
54
55
56

57 The core of the debate between the arguments for and against tax aggressiveness is whether the value
58 of the tax avoided is owed to shareholders of a company or other stakeholders including the
59 government (and in turn, society). It is a company's financial responsibility, in accordance with
60

1 agency theory and shareholder primacy, to pay the avoided taxes to their shareholders (Jensen &
2 Meckling, 1976; Dowling, 2013). It is a company's social responsibility, in accordance with
3 stakeholder theory, to pay the avoided taxes to the government (Freeman, 1984; Dowling, 2013).
4

5 Christensen and Murphy (2004) argue that avoiding tax encourages companies to be free-riders in
6 the economy, being able to benefit from the advantages of operating in the country and refusing to
7 pay the costs that come with it. In the long-term, tax aggressiveness inevitably is to the detriment of
8 shareholders because of its negative effect on long-term sustainability of the company and the
9 society in which the company operates (Christensen & Murphy, 2004). Sustainability is a key part of
10 corporate citizenship and good governance, in accordance with the King III report (IODSA,
11 2009:10): "The concept of corporate citizenship which flows from the fact that the company is a
12 person and should operate in a sustainable manner. Sustainability considerations are rooted in the
13 South African Constitution which is the basic social contract that South Africans have entered into.
14 The Constitution imposes responsibilities upon individuals and juristic persons for the realisation of
15 the most fundamental rights."
16

17 18 19 2.4. *International regulatory clampdown on tax aggressiveness*

20 Tax aggressiveness, particularly extremely aggressive tax management by multinational
21 corporations, has been an explicit concern for regulators worldwide of late. One particularly extreme
22 example is tax aggressiveness in the United Kingdom (UK) by Starbucks that paid no corporate tax
23 in 2012, despite UK sales of £398 million (BBC News, 2012). Following much public outcry and
24 inquisition into these activities Starbucks has been pressured into being less tax aggressive (Titcomb,
25 2014). The UK has subsequently introduced a tax on profits diverted overseas to curb tax aggressive
26 behaviour by MNCs (Lunden, 2015).
27
28

29 Various international coalitions like the OECD and G20 have come together to cooperate and put
30 measures in place to quell tax aggressiveness through international information sharing on
31 individuals and corporations and international measures that target tax base erosion and profit
32 sharing strategies employed to avoid taxes. Presently, in South Africa, the Davis Committee, chaired
33 by Judge Dennis Davis, is compiling recommendations related to South Africa's tax framework and
34 their report will deal explicitly with tax aggressiveness (Steyn, 2014).
35
36

37 38 2.5. *Research question*

39 This paper aims to determine whether companies consider paying fair taxes to be part of their
40 obligation as corporate citizens or whether such payments are considered to be beyond their
41 obligation to be socially responsible. This determination is made by analysing the relationship
42 between tax aggressiveness and CSR activity. The research question is therefore: *What is the*
43 *relationship between tax aggressiveness and CSR of large companies on the JSE?* This is an area that
44 has been touched on only sparingly in past research (Lanis & Richardson, 2012A:87) and this paper
45 is in response to the call for research in this area by Sikka (2010).
46
47

48 This paper contributes to a growing body of similar research in the area of tax aggressiveness and
49 CSR. Two of the most influential papers in this area include research conducted in Australia by
50 Lanis and Richardson (2012A) and the United States of America by Hoi *et al.* (2013) on the
51 between-company relationship between tax aggressiveness and CSR. Lanis and Richardson
52 conducted a regression analysis on 2008/2009 data of a cross-section of 408 publicly listed
53 Australian corporations; they found a negative and statistically significant relationship between the
54 level of corporate tax aggressiveness, as measured by the effective tax rate, and the extent of CSR
55 disclosure. This indicates that Australian companies that present themselves as socially responsible
56 are not tax aggressive (Lanis & Richardson, 2012A:88). The latter research by Hoi *et al.* (2013)
57 draws largely the same conclusion that companies with irresponsible CSR activities are more
58 aggressive at avoiding taxes in the United States.
59
60

1 Other research on the same relationship, conducted by Khan *et al.* (2014), finds a negative
2 relationship between tax aggressiveness and CSR practices in Pakistan where companies that have
3 no or little CSR practices tend to be more tax aggressive. Research by Laguir *et al.* (2015) finds tax
4 aggressiveness to be related to different CSR dimensions in different ways. They find that the greater
5 a company's social activity the lower the level of corporate tax aggressiveness. Overall the research
6 tends to be consistent with the view that companies involved in more CSR activities tend to be less
7 tax aggressive.
8

9
10 It is important that this research be conducted in South Africa, which is a developing nation and thus
11 suffers from relatively low tax revenues; those revenues are intended to redress past inequalities and
12 to build the infrastructure required in the country for continued growth and development (Cobham,
13 2005). This research will determine whether it is necessary to focus on tax aggressiveness as a
14 corporate citizenship issue in South Africa, perhaps through an amendment of the King Code. It is
15 estimated that tax aggressiveness by individuals and companies cost South Africa R300 billion per
16 year and South Africa ranks fifth highest in the world in tax leakages through tax aggressive business
17 practices (Steyn, 2014).
18

19 A negative relationship between tax aggressiveness and CSR ratings would be expected given that
20 Africa is renowned for its communal focus and culture (*Ubuntu*). South Africa's history provides a
21 unique need for corporations to step up and serve as corporate partners for redress.
22
23

24 3. Data and methods

25 3.1. Sample description

26
27
28 South Africa was chosen to be the entry point of this study of the relationship between tax
29 aggressiveness and CSR in Africa. The significance of having Africa as a focal point is its
30 developing status where tax legislation is not as strictly and efficiently enforced and therefore makes
31 these countries vulnerable to tax avoidance (Cobham, 2005). Cobham (2005) found that "rich"
32 countries are usually able to obtain between 12% and 18% of GDP as direct tax while developing
33 countries are only able to obtain between 2% and 6% of GDP as direct tax. This shortfall is
34 intensified by the need for revenue in these developing countries in order for governments to carry
35 out their obligations to improve the infrastructure, the social landscapes and natural environments.
36 South Africa (represented by the Johannesburg Stock Exchange) has the most sophisticated market
37 and legal systems of any African country (Jefferis & Smith, 2005) and its companies, guided by
38 comprehensive corporate governance criteria in the King Reports (KPMG, 2014), have to deal with
39 more stringent financial and integrated reporting criteria than companies in other African countries.
40 This study opted to analyse companies listed in South Africa because of the availability of data and
41 focus on social responsibility in the country.
42
43
44

45 Representing the South African market, this paper has chosen 50 of the largest companies on the
46 Johannesburg Stock Exchange by market capitalisation, including those in the JSE top 40 at 2
47 October 2015 (Sharenet, 2015). This paper focuses on analysing larger companies because the
48 managers of these larger companies have more discretion over matters of tax structure (including
49 transfer pricing) and CSR activity than in the case of smaller companies that are limited by size and
50 resources.
51

52
53 The research question was empirically tested using panel data collected from the Bloomberg terminal
54 for the period 2005 to 2014. For the purposes of this study three of the top 50 companies on the JSE
55 have been excluded:

- 56 • RMB holdings as it is a holding company that only holds shares in FirstRand Ltd, a company
57 already included in the dataset,
- 58 • Reinet due to the lack of data on their Bloomberg ESG score, and
- 59 • South32 due to the lack of data on their Bloomberg ESG score.
60

1 The final sample consisted of 47 companies with 465 company-year observations of varying detail.
2 Financial and foreign companies were not excluded from the dataset as in the case of studies by
3 Lanis and Richardson (2012A:91) and Gupta and Newberry (1997). Financial companies are
4 included because the panel characteristics of the collected data allow the luxury of isolating company
5 and sector specific influences when analysing effects *within* companies (intra-company effects).
6 Foreign companies are included because most of the largest companies on the JSE have vast foreign
7 operations regardless of whether they are locally incorporated or not. Thus, those with aggressive tax
8 management practices will have lower tax rates overall regardless of which country they are
9 incorporated in. Relative tax aggressiveness will still be captured by viewing a company's tax rate
10 relative to its peers on the JSE when considering the relationship between tax aggressiveness and
11 CSR activity *across* companies (between-company). A company's country of origin will not affect
12 the intra-company relationship analysis.
13

14 3.2. *Dependent variable*

15
16
17 The dependent variable in the empirical analysis is effective tax rate (ETR), chosen as an inverse
18 proxy for tax aggressiveness, where a higher ETR indicates lower tax aggressiveness and vice versa.
19 ETR is considered to be an effective inverse proxy for tax aggressiveness for various reasons. Firstly,
20 there is a body of empirical research that has found that ETR captures a company's tax
21 aggressiveness. Slemrod (2004) finds that ETR is an important factor in driving the overall
22 objectives of a company's tax departments. Robinson, Sikes and Weaver (2010) find that companies
23 that view their tax departments as profit centres and actively manage their taxes have lower ETRs, on
24 average; this finding is similar to findings by Armstrong, Blouin and Larcker (2012). Secondly, ETR
25 has been widely used as a proxy for tax aggressiveness in previous academic studies, including those
26 used to compare tax aggressiveness to CSR (Lanis & Richardson, 2012A; Hoi *et al.*, 2013; Laguir *et*
27 *al.*, 2015).
28
29

30
31 ETR is affected by tax aggressiveness in at least two ways. Firstly, companies could choose to
32 maintain lower ETRs by maintaining temporary and permanent book tax difference between
33 accounting and tax profits (Rego, 2003). Secondly, corporations can use foreign subsidiaries to
34 transfer profits to countries with lower tax rates (Rego, 2003).
35

36
37 Two ETR measures have been used in this analysis: accounting effective tax rate (AETR), defined at
38 the tax expense divided by the accounting income before tax; and cash effective tax rate (CETR)
39 defined as the cash paid for taxes divided by accounting income before tax. CETR has some
40 advantages over AETR as it focuses on tax actually paid whereas the accounting tax measure takes
41 into account items such as deferred tax.
42

43 3.3. *Independent variable*

44
45 The independent variable in the analysis is CSR activity. Information that companies disclose on
46 their environmental, social and governance (ESG) activities is used as a proxy for CSR activity. The
47 specific measure used is the Bloomberg ESG disclosure score which has been used in prior CSR
48 research, such as in the work of Mio, Venturelli and Leopizzi (2015). The Bloomberg ESG score is a
49 proprietary rating between 0 (no disclosure) and 100 (complete disclosure) that Bloomberg gives to a
50 company based on the extent of its ESG disclosure. Bloomberg takes into account all reports released
51 by a company when compiling their scores, including the annual reports and additional sustainability
52 reports (Bloomberg, 2015). This rating is converted into a percentage measure by dividing the scores
53 by 100.
54

55
56 It would be reasonable for a company engaging in more socially responsible activities to have a
57 greater level of CSR disclosure as this allows the company to realise the gains from CSR activity by
58 disclosing this activity to the public. Companies that engage in negative CSR activities that are
59 hidden from the public eye are likely to disclose less about their ESG activity.
60

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

There has been mixed support for this premise in research with several studies such as Bowman and Haire (1976) and Ingram and Frazier (1980) suggesting that environmental disclosure is a good indicator of environmental performance. In contrast, other studies such as one by Cho, Roberts and Patten (2010), suggest that environmental disclosure is used as a legitimising tool for companies to offset the effect of negative performance. This view by Cho, Roberts and Patten is consistent with the legitimacy theory that states that companies use CSR disclosure to retain legitimacy in the public's eyes, especially when the company's legitimacy is at threat because of actions that the public disapproves of (O'Donovan, 2002).

More recent research has confirmed the positive relationship between environmental performance and environmental disclosure. Clarkson, Li, Richardson and Vasvari (2008) find a positive association between the level of discretionary environmental disclosures and the environmental performance of 191 US companies in the most polluting industries. This suggests a positive association between CSR disclosure and performance.

As far as the authors of the paper are aware there is no evidence that the use of CSR disclosure is a poor measure for CSR performance in South Africa. The South African King III Report requires companies' audit committees to verify all sustainability related information reported in the companies' integrated reports (IODSA, 2009). This coupled with evidence that the assurance of CSR disclosure in South Africa is growing (Ackers & Eccles, 2009) suggests that, at least, the quality of sustainability information reported is high.

Two terms relating to CSR disclosure have been considered in the intra-company regression model. The first of these is disclosures for the present year and the second is a measure for disclosures of the previous year (lagged). Because tax planning is an intricate process and requires generation and alteration of tax planning structures, a lagged effect of CSR measures on tax planning is anticipated, with this lagged variable capturing this relationship should it exist.

3.4. Control variables

The four control variables used in this study are profitability, leverage, size and market-to-book ratio. These control variables have been included to account for theoretical justification and empirical evidence suggesting that these variables have a significant effect on ETR (Kim & Limpaphayom, 1998; Gupta & Newberry, 1997; Adhikari, Derashid & Zhang, 2006; Lanis & Richardson, 2007). Return on assets, measured as pre-tax income divided by total assets, has been included as a profitability measure. Profitability has been shown by Kim and Limpaphayom (1998) significantly and positively to affect ETR. Theoretically a lower ETR would imply a higher ROA, *ceteris paribus*. Leverage, measured as long-term debt divided by total assets, is likely to affect ETR as companies employ debt as a means of optimising their capital structure to exploit the interest tax shield (Modigliani & Miller, 1958). Gupta and Newberry (1997) and Adhikari *et al.* (2006) find a significant negative relationship between leverage and ETR. Size, measured as the natural log of market capitalisation, is included as a control to account for the size effect on ETR. Companies that are larger tend to have more resources and thus pay less taxes, as they may have the ability to employ dedicated tax management divisions within their own businesses (Gupta & Newberry, 1997). Lanis and Richardson (2007) find that company size has a significant effect on ETRs, with smaller companies paying higher rates than larger companies. Market-to-book ratio, as the ratio of a company's market value to book value of its equity, has been included in the analysis as a company's growth status is likely to affect its tax payments. This could have a positive or negative effect on a company's ETR. Growing companies are likely to have greater new capital acquisitions, thus more tax deductions for capital assets and relatively lower ETRs. Companies that are experiencing a period of stability may be able to manage their sales flows more effectively, potentially through international transfer pricing mechanisms. Kim and Limpaphayom (1998) find that the relationship

between ETR and market-to-book ratio is variable between countries and time periods and moves from being significant and positive to significant and negative.

As control variables in addition to those four described above, dummy variables have been assigned to companies to account for different sectors' effect on ETR, since different sectors have different tax rules and allowances (World Bank, 2015). Each company has been assigned either to the retail, industrial, financial or resources sector. These sector dummy variables are only used in the between-company regression models that do not apply fixed effects. The application of fixed effects in the intra-company models account for such time invariant characteristics (de Jager, 2008).

In contrast to the approach of Lanis and Richardson (2012A:91), no governance control variables have been included in the analysis because of the unique listing requirements of the JSE companies that require companies to apply the King III Code on corporate governance. Governance scores of all companies are likely to be high and very similar as companies are required to report various governance facts as specified by the King III code. Governance control variables are thus likely to be independent of ETR. Governance disclosure is also included as a consideration in the Bloomberg ESG disclosure score; therefore, such governance considerations are already accounted for and any inclusion of further measures could lead to double counting.

3.5. Data preparation

In order to prepare the data for analysis a 5% winsorisation was applied to ROA and both ETR measures: this resulted in 23 observations being altered per variable. Winsorisation has been applied to account for extreme outliers that are present in the ROA and ETR variables. Prior literature has accounted for such outliers in tax measures by truncating the measure to between zero and one (Lanis & Richardson, 2012A:96; Laguir *et al.*, 2015).

3.6. Regression procedure

The regression procedure followed in this study aims to test both between- and intra-company relationships between ETR and CSR. Previous studies on this topic such as those by Lanis and Richardson (2012A), Wu and Shen (2013) and Laguir *et al.* (2015) have all tested the between-company relationship between ETR and CSR by making use of a cross-sectional regression model. In a manner consistent with these studies, the between-company effect of CSR on ETR will be tested using a multiple linear regression model on a cross-section of the averaged variable values between 2005 and 2014.

In accordance the suggestion by de Jager (2008), on allowing for heterogeneity between companies by using panel data, a fixed effects regression has been applied on the panel data to test the intra-company effect of CSR disclosure on ETR. This application of fixed effects regression allows the relationship between CSR disclosure and tax aggressiveness to be studied in more detail given that the effects of time invariant data are removed.

3.7. Regression models

To examine the relationship between CSR and ETR the following base regression models are used:

Model 1 (cross-sectional model)

$$AETR_i = \beta_1 CSROVERALL_i + \beta_2 ROA_i + \beta_3 LEVERAGE_i + \beta_4 MTB_i + \beta_5 RETAIL_i + \beta_6 INDUSTRIAL_i + \beta_7 FINANCIALS_i + \beta_8 RESOURCES_i + \varepsilon_i$$

Model 2 (cross-sectional model)

$$CETR_i = \beta_1 CSROVERALL_i + \beta_2 ROA_i + \beta_3 LEVERAGE_i + \beta_4 MTB_i + \beta_5 RETAIL_i + \beta_6 INDUSTRIAL_i + \beta_7 FINANCIALS_i + \beta_8 RESOURCES_i + \varepsilon_i$$

Model 3 (fixed effects model)

$$AETR_{i,t} = C + \beta_1 CSROVERALL_{i,t} + \beta_2 CSROVERALL_{i,t-1} + \beta_3 ROA_{i,t} + \beta_4 LEVERAGE_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 MTB_{i,t} + \alpha_i + \varepsilon_{i,t}$$

Model 4 (fixed effects model)

$$CETR_{i,t} = C + \beta_1 CSROVERALL_{i,t} + \beta_2 CSROVERALL_{i,t-1} + \beta_3 ROA_{i,t} + \beta_4 LEVERAGE_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 MTB_{i,t} + \alpha_i + \varepsilon_{i,t}$$

Where:

i: Refers to the company in question. t: Refers to the time period in question. C: Represents the shared constant among companies. AETR: Represents accounting ETR. CETR: Represents cash ETR. CSROVERALL: Represents overall Bloomberg ESG disclosure ratio. ROA: Represents the Return on Assets ratio. LEVERAGE: Represents the long-term debt over total assets ratio. SIZE: Represents the natural log of market capitalisation. MTB: Represents the Market-to-Book ratio. RETAIL_i, INDUSTRIALS_i, FINANCIALS_i, RESOURCES_i: Dummy variables classifying companies into sectors. α_i : Represents the intercept term of each company (fixed effect regression). ε : Represents the error term.

In the above four models, size has been included in models 3 and 4 (fixed effects models), but has been excluded from models 1 and 2 (cross-sectional models). In previous studies it has been found that size is highly correlated with overall CSR disclosure (Lanis & Richardson, 2012A:99), which poses the potential problem of multicollinearity. This problem is further confirmed by the insignificant coefficient of both size and overall CSR disclosure when both size and overall CSR disclosure are included in model 2. Size has thus been dropped from both models 1 and 2 to account for this problem of multicollinearity and to ensure consistency. Due to the relatively larger sample size in the fixed effects regression models this is not such a problem, therefore size has been kept in these models (models 3 and 4). A summary table for the dependent variable, independent variable and control variables is available in table 10 in the appendix.

4. Results

4.1. Descriptive statistics

The descriptive statistics for the original, unwinsorised data are provided in table 5 in the appendix. Table 1 details the descriptive statistics of all the variables collected for the companies in the sample during the period 2005 to 2014, using the dataset with 5% winsorisation on ROA and tax rate measures.

Table 1: Descriptive statistics for data after 5% winsorisation

	AETR	CETR	CSROVERALL	ROA	LEVERAGE	SIZE	MTB
Mean	0.262	0.246	0.369	0.098	0.140	4.692	3.285
Median	0.284	0.266	0.378	0.090	0.103	4.654	2.443
Maximum	0.667	0.813	0.645	0.344	0.611	6.262	33.069
Minimum	-0.112	-0.268	0.099	-0.046	0.000	3.030	-23.112
Std. Dev.	0.135	0.181	0.135	0.088	0.138	0.583	3.293
Skewness	-0.215	0.113	-0.089	0.930	1.205	0.144	1.992
Kurtosis	5.138	5.461	2.320	3.757	3.980	3.046	32.047
Jarque-Bera Probability	92.166	118.339	7.031	76.968	129.674	1.578	16046.240
	0.000	0.000	0.030	0.000	0.000	0.454	0.000
Sum	121.752	114.389	126.121	44.834	64.410	2102.009	1471.716
Sum Sq. Dev.	8.446	15.245	6.210	3.527	8.743	152.142	4846.121
Observations	465	465	342	458	460	448	448

Data Source: Bloomberg

AETR: Represents accounting ETR ratio. CETR: Represents cash ETR ratio. CSROVERALL: Represents overall Bloomberg ESG disclosure ratio. ROA: Represents the Return on Assets ratio. LEVERAGE: Represents the long-term debt over total assets. SIZE: Represents the natural log of market capitalisation. MTB: Represents the market-to-book ratio.

The winsorisation of the data results in a reduction in the mean of the values as expected, by approximately 1-2% in each instance. Accounting effective tax rate (AETR) has a mean (median) of 26.20% (28.40%) with 465 observations. This is encouraging if one considers that the median AETR is above the South African company's tax rate of 28% with 465 observations. Cash effective tax rate (CETR) has a mean (median) of 24.60% (26.60%). CETR's mean and median are overall below the South African company's tax rate of 28%, implying (by this measure) that overall, companies are tax aggressive. Nine companies were classified as RETAIL, seventeen companies were classified as INDUSTRIALS, fifteen companies were classified as FINANCIALS and seven companies were classified as RESOURCES. The analysis going forward will use the winsorised dataset.

4.2. Correlation results

Table 2: Correlation results

Variable	AETR	CETR	CSROVERALL	ROA	LEVERAGE	SIZE	MTB
AETR	1.000						
CETR	0.618***	1.000					
CSROVERALL	0.119**	0.097*	1.000				
ROA	0.046	0.012	-0.015	1.000			
LEVERAGE	-0.188***	-0.015	0.07	-0.204***	1.000		
SIZE	0.001	0.064	0.510***	-0.051	0.151***	1.000	
MTB	0.228***	0.077	0.015044	0.475***	-0.138***	0.001	1.000

*Significant at the 10% level, **Significant at the 5% level, ***Significant at the 1% level

Data Source: Bloomberg

AETR: Represents accounting ETR ratio. CETR: Represents cash ETR ratio. CSROVERALL: Represents overall Bloomberg ESG disclosure ratio. ROA: Represents the Return on Assets ratio. LEVERAGE: Represents the long-term debt over total assets ratio. SIZE: Represents the natural log of market capitalisation. MTB: Represents the market-to-

book ratio.

The Pearson pairwise correlation results are presented in table 2. These correlation results are of the full, pooled, cross-sectional dataset from 2005 to 2014 and do not take into account the panel characteristics of the data (observations that cross between cross-sections are allowed simply to overlap). Considering the dependent and independent variable and its constituents, the correlations show that there is a small significant ($p < 0.05$) positive correlation of 0.119 between accounting effective tax rate (AETR) and overall ESG disclosure score. There is also a small significant positive correlation ($p < 0.10$) of 0.097 between cash effective tax rate (CETR) and ESG disclosure score. These results suggest that the higher the level of a company's overall ESG disclosure score the greater a company's ETR will be.

When considering the correlation between the tax measures and control variables, a significant negative correlation is found ($p < 0.01$) between long-term debt over total assets (LEVERAGE) and AETR and a significant positive correlation ($p < 0.01$) between market-to-book ratio (MTB) and AETR. All the control variables are significantly ($p < 0.01$) correlated to each other, except for MTB and LEVERAGE and return on assets (ROA) and the natural log of market capitalisation (SIZE). ROA is negatively correlated with MTB and LEVERAGE. LEVERAGE is positively correlated with SIZE and negatively correlated with MTB. The most correlated control variables are MTB and ROA.

4.3. Tests for Granger causality

Prior research suggests that a company's attitude towards CSR causes a change in its tax activity (Watson, 2015). A test for Granger causality was conducted to evaluate whether movements in lagged CSR activity affect tax figures and vice versa. The results for the tests are given in table 3.

It is found at the 5% significance level that overall ESG disclosure score Granger causes AETR, with this result repeated with the CETR measure. These results have taken into account the panel characteristics of the data (observations that cross between cross-sections are not allowed simply to overlap) and the findings confirm evidence from prior studies that CSR activity affects a company's tax behaviour.

Table 3: Tests for Granger causality

Null Hypothesis:	F-Statistic	P-Value
CSROVERALL does not Granger Cause AETR	4.3559	0.0139
AETR does not Granger Cause CSROVERALL	0.08868	0.9152
CSROVERALL does not Granger Cause CETR	5.86801	0.0033
CETR does not Granger Cause CSROVERALL	0.88063	0.4159

Data Source: Bloomberg

AETR: Represents accounting ETR ratio. CETR: Represents cash ETR ratio. CSROVERALL: Represents overall Bloomberg ESG disclosure ratio.

4.4 Fixed effects regression statistical procedures

For both models 3 and 4, the test for significant fixed effects (see tables 6 and 7 in the appendix) reveals significant cross-sectional (company level) effects at the 1% significance level. This finding indicates that company level factors exist, that must be held constant when conducting estimations. Period effects are not significant at the 5% level and are thus not held constant when conducting the fixed effects regression analysis.

The results for the Wald test for group wise heteroscedasticity, for models 3 and 4, are presented in table 8 in the appendix. The results show evidence of heteroscedasticity in the residuals of both

1 models at the 1% significance level. The presence of heteroscedasticity can be confirmed by
2 observing the residuals plots, figure 1 and figure 2 in the appendix, for models 3 and 4. White cross-
3 section standard-errors and covariance are applied to models 3 and 4 to account for this
4 heteroscedasticity in the estimation of the regression parameters.
5

6 The Durbin-Watson test results, presented in table 9 in the appendix, indicate slight autocorrelation
7 among residuals in both models 3 and 4. As noted by Wooldridge (2001), in the presence of
8 heteroscedasticity or autocorrelation, a generalised method of moment's procedure of estimating
9 regression parameters is more efficient for estimation. In order to account further for the presence of
10 heteroscedasticity and any autocorrelation in the errors in the model, cross-section weighting has
11 been applied to models 3 and 4, weighting companies that better fit the model as more important for
12 estimation than those that do not fit the model as well.
13

14 *4.5 Regression parameters*

15
16 Table 4 details the results of the regression procedures on models 1 to 4.
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Table 4: Between- and intra-company regression results

Between-company effects			Intra-company effects		
Model	1	2	Model	3	4
Dependent Variable(across)	AETR	CETR	Dependent Variable(across)	AETR	CETR
CSROVERALL _i	0.185** (2.358)	0.234** (2.121)	C	0.369*** (11.404)	0.566*** (4.864)
ROA _i	-0.349* (-1.791)	-0.365* (-2.01)	CSROVERALL _{i,t}	0.022 (0.877)	-0.002 (-0.041)
LEVERAGE _i	-0.298*** (-2.896)	-0.159 (-1.154)	CSROVERALL _{i,t-1}	-0.067** (-2.460)	-0.072*** (-3.106)
MTB _i	0.017*** (2.936)	0.009 (1.333)	ROA _{i,t}	-0.158*** (-2.616)	-0.227*** (-3.806)
RETAIL _i	0.216*** (5.008)	0.247*** (4.363)	LEVERAGE _{i,t}	-0.084*** (-2.844)	0.377*** (11.484)
INDUSTRIALS _i	0.257*** (5.973)	0.242*** (4.671)	SIZE _{i,t}	-0.015 (-1.609)	-0.07*** (-2.765)
FINANCIALS _i	0.171*** (4.674)	0.109 (1.515)	MTB _{i,t}	0.002 (1.130)	0.001 (0.919)
RESOURCES _i	0.201*** (2.996)	0.161** (2.254)			
R-squared	0.495	0.363	R-squared	0.955	0.907
R-squared Adjusted	0.405	0.248	R-squared Adjusted	0.946	0.887
White Standard Errors	Yes	Yes	Cross-Section Fixed Effects	Yes	Yes
			Period Fixed Effects	No	No
			White Cross Section	Yes	Yes
			Cross-Section Weights	Yes	Yes

*Significant at the 10% level, **Significant at the 5% level, ***Significant at the 1% level

Data source: Bloomberg

i: Refers to the company in question. t: Refers to the time period in question. C: Represents the shared constant among companies. AETR: Represents accounting ETR as a ratio. CETR: Represents cash ETR as a ratio. CSROVERALL: Represents overall Bloomberg ESG disclosure ratio. ROA: Represents the Return on Assets ratio. LEVERAGE: Represents the long-term debt over total assets ratio. SIZE: Represents the natural log of market capitalisation. MTB: Represents the market-to-book ratio. RETAIL_i, INDUSTRIALS_i, FINANCIALS_i, RESOURCES_i; Dummy variables classifying companies into sectors.

4.5.1. AETR: Model 1

The results obtained from model 1 appear in Table 4. Model 1 is the cross-section regression model, depicting the between-company relationship, applied on accounting effective tax rate (AETR) with white robust standard errors applied. With an R-squared of 0.495 and adjusted R-squared 0.405, the model has a reasonably good fit.

The regression coefficient on overall ESG disclosure is found to be positive and significantly associated with AETR, at the 5% significance level. Overall ESG disclosure has a regression coefficient of 0.185, which is economically significant as it implies that a 1% increase in ESG disclosure will result in a 0.185% increase in AETR, *ceteris paribus*.

All the control variables have also been found to have a significant effect on AETR. Return on assets (ROA) has a significant effect on AETR at the 10% significance level. Long-term debt over total assets (LEVERAGE), market-to-book ratio (MTB) and all the sector dummies have significant regression coefficients at the 1% significance level. ROA and LEVERAGE both have negative coefficients that are economically significant. MTB has a positive coefficient that is only marginal and is thus not economically significant.

The sector dummies all have positive coefficients, with companies in the financial sector paying the least tax relative to all the other sectors and companies in the industrial sector paying the greatest tax relative to all other sectors.

4.5.2. CETR: Model 2

The results obtained from model 2 appear in Table 4. Model 2 is the cross-section regression model, depicting the between-company relationship, applied on cash effective tax rate (CETR) with white robust standard errors applied. With an R-squared of 0.363 and adjusted R-squared 0.248, the model does not fit as well as the other models estimated.

It is found that the regression coefficient of overall ESG disclosure is positive and significantly associated with CETR, at the 5% significance level, confirming the result obtained, applied on AETR. Overall ESG disclosure has a regression coefficient of 0.234, which is economically significant as it implies that a 1% increase in CSR disclosure will result in a 0.234% increase in CETR, *ceteris paribus*. This confirms the above-mentioned result that companies with higher relative CSR activity will be less tax aggressive.

Only four control variables have been found to have a significant effect on CETR. Return on assets (ROA) has a significant effect on CETR at the 10% significance level. The dummy variables for the retail (RETAIL) and industrial (INDUSTRIALS) sectors have a significant effect on CETR at the 1% significance level. The dummy variable for the resources sector (RESOURCES) has a significant effect on CETR at the 5% significance level.

As in the case of AETR, the sector dummies all have positive coefficients, with companies in the financial (FINANCIALS) sector paying the least tax relative to all the other sectors. In the case of CETR, companies in the retail sector pay the greatest tax relative to all other sectors.

ROA and long-term debt over total assets (LEVERAGE) both have negative coefficients that are economically significant. Market-to-book (MTB) ratio has a positive coefficient that is only marginal and is not economically significant.

4.5.3. AETR: Model 3

The results obtained from model 3 appear in Table 4. Model 3 is the fixed effects regression model, depicting the intra-company relationship, applied on accounting effective tax rate (AETR). Cross-section weights and robust standard errors have been applied when estimating these regression coefficients. With an R-squared of 0.955 and adjusted R-squared of 0.946 the model has an overall good fit, which is to be expected given that cross-section weighting has been applied. The model's F-statistic is also significant at the 1% significance level indicating that the overall model is significant.

There are three variables that have a statistically significant effect on AETR at the 5% significance level: lagged overall ESG disclosure ($CSROVERALL_{i,t-1}$), return on assets ($ROA_{i,t}$) and long-term debt over total assets ($LEVERAGE_{i,t}$). $CSROVERALL_{i,t-1}$, $ROA_{i,t}$ and $LEVERAGE_{i,t}$ have a negative effect on AETR. The coefficient on $CSROVERALL_{i,t-1}$ is -0.067. This is economically significant as a 1% increase in ESG disclosure in period t on average causes a 0.067% decrease in

1 AETR in period $t+1$. This indicates that companies with higher CSR activity in a particular period
2 are, generally speaking, more tax aggressive in the following period.

3
4 Current year ESG disclosure is positively related to AETR, but this is not significantly different from
5 nil.

6 7 4.5.4. CETR: Model 4

8
9 The results obtained from model 4 appear in Table 4. Model 4 is the fixed effects regression model,
10 depicting the intra-company relationship, applied on cash effective tax rate (CETR). Cross-section
11 weights and robust standard errors have been applied when estimating these regression coefficients.
12 With an R-squared of 0.90 and adjusted R-squared of 0.88 the model has a good overall fit, which is
13 to be expected given that cross-section weighting has been applied. The model's F-statistic is also
14 significant at the 1% significance level indicating that at least some variables in the model are
15 significant.

16
17
18 Four variables have a statistically significant effect on CETR at the 1% significance level. These are
19 lagged overall ESG disclosure ($CSROVERALL_{i,t-1}$), return on assets ($ROA_{i,t}$) and long-term debt
20 over total assets ($LEVERAGE_{i,t}$) and the natural log of market capitalisation ($SIZE_{i,t}$). The
21 coefficient on $CSROVERALL_{i,t-1}$ is -0.072: this is economically significant as a 1% increase in ESG
22 disclosure in period t on average causes a 0.072% decrease in CETR in period $t+1$. This suggests
23 that companies with higher CSR activity in a particular period are more tax aggressive generally
24 speaking, in the following period. $ROA_{i,t}$ and $SIZE_{i,t}$ have a negative effect on CETR.
25 $LEVERAGE_{i,t}$ has a positive effect on CETR.

26
27
28 Current year ESG disclosure is positively related to CETR, but this is not significantly different from
29 nil.

30 31 5. Discussion

32
33 In this study it is found that there is a positive and significant correlation between overall ESG
34 disclosure and effective tax rate (ETR) both in the case of cash ETR (CETR) and accounting ETR
35 (AETR). This gives reason to believe that companies that are more socially responsible, by engaging
36 in more socially responsible activity, are less tax aggressive.

37
38
39 The tests for Granger causality indicate that overall ESG disclosure Granger causes AETR, with
40 these results repeated with CETR. This indicates that a movement in CSR activity precedes a
41 movement in cash and accounting ETRs. To investigate this relationship further the intra-company
42 relationship (*within* companies), that includes a lagged ESG disclosure term, is analysed later.

43
44
45 Upon considering the between-company effects (*across* companies), a positive relation is found
46 between tax aggressiveness and ESG disclosure and this is both economically and statistically
47 significant. This confirms the finding in the correlation table. Model 1 shows that an increase in ESG
48 disclosure by 1% will on average increase AETR by 0.185%. Model 2 displays an even stronger
49 relationship with the same move in ESG disclosure resulting in a 0.234% increase in CETR. This
50 finding shows that companies that are more socially responsible are less tax aggressive (tend to pay
51 higher taxes) relative to companies that are less socially responsible. This result confirms the
52 findings in prior literature that more socially responsible companies are less tax aggressive (Lanis &
53 Richardson, 2012A; Laguir *et al.*, 2015; Hoi *et al.*, 2013).

54
55
56 These results appear to be consistent with the expectations laid out prior to this study. It is expected
57 that more socially responsible companies in South Africa should be less tax aggressive given the
58 strong corporate governance culture in South Africa and the need for redress in the country. This
59 result seems to suggest that large companies in South Africa consider fair tax payment as a part of
60

1 their social responsibility, subscribing to Matten and Cane's (2005) liberal view on corporate
2 citizenship, in terms of which, companies should not prevent government from meeting its
3 obligations. However, this only reveals a company's tax paying behaviour relative to other
4 companies on the stock exchange but does not show changes in their tax paying behaviour. This
5 change reveals the company's intent and attitude toward fair tax payment. Thus, to interrogate South
6 African companies' attitudes further, concerning the relationship between social responsibility and
7 tax aggressiveness in a given company, the intra-company relationship is observed.
8

9
10 Contrasting results are found when considering the intra-company effects of CSR on tax
11 aggressiveness. In the fixed effects models, a statistically significant negative relationship is found
12 between lagged ESG disclosure and ETR. In the case of CETR, it was found that for every 1%
13 increase in ESG disclosure, the ETR of the following year decreases by 0.072%. This might seem
14 small, but when a company's CSR score as measured by the Bloomberg ESG score increases by
15 10%, the tax paid will on average decrease by 0.72%. A 0.72% decrease in the tax rate of a company
16 translates into millions of Rand in the case of these companies, which usually have large income
17 before tax figures. This negative relationship is consistent when looking at both AETR and CETR.
18

19
20 These results indicate that while companies involved in more CSR activity will generally be less tax
21 aggressive, an incremental increase in CSR activity results in an incremental increase in tax
22 aggressiveness in the following year. This incremental increase, considering intra-company effects,
23 indicates that South African companies do not consider their tax behaviour to be a part of their social
24 responsibility. This result is contrary to the expectations of companies subscribing to Matten and
25 Cane's (2005) liberal view on social responsibility, suggesting that companies optimise for their
26 image using CSR behaviour and optimise for profit by being tax aggressive. This finding is in
27 contrast to the suggestions of prior literature to the effect that companies consider tax payment as a
28 part of their CSR obligation (Lanis & Richardson, 2012A; Laguir *et al.*, 2015).
29

30
31 The positive intra-company relationship between tax aggressiveness and CSR activity could also
32 indicate that South African companies follow the shareholder primacy view on CSR when it comes
33 to tax payments; according to that view, a company's top priority is to maximise returns to its
34 shareholders (Friedman, 1970). By optimising for both CSR image and profit, companies are able to
35 market themselves as socially responsible (thus appealing to a wider range of socially conscious
36 investors, customers and suppliers) and maximise their profits through reducing their tax burden over
37 time. Both these actions add value to shareholders through an improved corporate image and reduced
38 costs. The focus here is that companies that are more motivated by profit are more likely to report
39 CSR activities better, as well as practice tax aggressiveness.
40

41 **6. Opportunities for further research**

42
43 There are multiple opportunities for further research that can build on this study. The first of these
44 arises from observation of the information presented in table 11 in the appendix: this details the
45 ETRs and overall ESG scores of the sample companies by sector. Here, the companies that are the
46 most tax aggressive in their respective sectors can be identified; companies with lower tax rates tend
47 to be more tax aggressive. These companies with the lowest tax rates present good candidates for
48 further case-study research, especially if these tax rates are low relative to their ESG scores.
49 Secondly, this study identifies a novel manner to study the relationship between tax and CSR in the
50 analysis of the relationship *within* companies. There is an opportunity for the *within* company
51 relationship to be studied with the same sample companies used in prior research such as the studies
52 conducted by Lanis and Richardson (2012A), Laguir *et al.* (2015) and Hoi *et al.* (2015). This will
53 determine whether this paper's *within* company findings are consistent internationally. Thirdly, due
54 to making use of proxies for tax aggressiveness and CSR activity mentioned above, there is an
55 opportunity to test the above findings with other proxies.
56
57
58
59
60

7. Conclusion

The paper began with a review of past literature on CSR and corporate citizenship. After describing tax aggressiveness, the paper presented a case for tax aggression to be included in both the definition of CSR as well as corporate citizenship. It did this in the context of South Africa's developing country status and the country's present focus on corporate citizenship through the King Reports on Corporate Governance. The research question is therefore: *What is the relationship between tax aggressiveness and the CSR activity of large companies on the JSE?* The paper presented past literature on this topic conducted outside of South Africa where it found that more socially responsible companies were less tax aggressive.

This paper proceeded to test the relationship between effective tax rate and ESG disclosure *across* companies (between) and *within* (intra) companies with a sample of 47 of the top companies by market capitalisation on the Johannesburg Stock Exchange (JSE). In the case of the between-company effects, CSR activity was found to be negatively related to tax aggressiveness. Thus, when comparing companies to each other, those that are more involved in CSR activities are better tax-paying corporate citizens. A positive intra-company relationship was found between ESG disclosure and tax aggressiveness, contrary to the between-company findings. Therefore, as companies invest in more CSR activities over time, they are likely during this same time to pay less tax, hence becoming more tax aggressive. This intra-company relationship reveals that companies in South Africa take a shareholder primacy view when considering their tax liability and social responsibility. They act to maximise returns to shareholders by improving their social appearance through increased CSR activities and minimising costs through tax efficiency.

This study contributes to present research by analysing a more appropriate sample of larger companies in the developing market context, including corporations that can exercise discretion over both their tax liability and CSR activity by virtue of their size. This paper is an entry point of empirical analysis into the relationship between CSR and tax behaviour in South Africa. The results are found to be significant and valuable for a range of stakeholders in the South African context, including the King Committee and members of the public. This paper expands on prior literature by analysing the intra-company relationship between CSR activity and tax aggressiveness; that prior literature focused only on analysing the between-company relationship. Analysing the intra-company relationship makes it possible to make inferences on company level behaviour.

8. Limitations

Because most prior literature describes studies conducted in developed markets, the intra-company contradictory findings could well be an indication of the developing country status of South Africa. The companies in these developed markets are under more public scrutiny with regard to tax aggressiveness; this is because of the sophistication of the investors and customers in developed markets as well as stricter and better enforced tax regulation when compared to developing markets (IMF, 2015). Companies in developed markets that prioritise their CSR statuses therefore take tax aggressiveness into consideration. In South Africa, it would seem that companies do not consider not being tax aggressive as part of their social responsibility.

Another potential limitation to this study is that the JSE is unique in its structure given that it is an exchange dominated by a few large companies with a very high concentration (Raubenheimer, 20010). This could mean that the findings are a mere artefact of the uniqueness of the JSE. Thirdly, this study only considers listed companies in South Africa because of the availability of data; information on large unlisted corporations operating in South Africa is not readily available. Fourthly, the effective tax rate (measuring tax aggressiveness) is calculated using financial statement data because company tax submissions are private and not released to the public. Plesko (2003) finds that tax measures calculated based on accounting data are significantly different from actual relative

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

tax figures. Last, CSR disclosure, as measured by the Bloomberg ESG disclosure score, was used as a proxy for CSR activity in this study. Perhaps the choice of proxy unduly influenced the results.

Meditari Accountancy Research

References

- 1
2
3 Ackers, B. and Eccles, N.S. (2015), "Mandatory corporate social responsibility assurance practices.
4 The case of King III in South Africa", *Accounting, Auditing and Accountability Journal*, Vol.
5 28, No. 4, pp. 515-550.
- 6 Adhikari, A., Derashid, C. and Zhang, H. (2006), "Public policy, political connections, and effective
7 tax rates: Longitudinal evidence from Malaysia", *Journal of Accounting and Public Policy*, Vol.
8 25, No. 5, pp. 574-595.
- 9
10 Armstrong, C.S., Blouin, J.L. and Larcker, D.F. (2012), "The incentives for tax planning", *Journal of*
11 *Accounting and Economics*, vol. 53, no. 1, pp. 391-411.
- 12 BBC News, (2012). "Starbucks, Google and Amazon grilled over UK tax avoidance (BBC News
13 Coverage)", available at: https://www.youtube.com/watch?v=VcZF_DxQ5cU (accessed: 4 April
14 2015).
- 15 Bowman, E.H. and Haire, M. (1976), "Social impact disclosure and corporate annual reports",
16 *Accounting, Organizations and Society*, Vol. 1, No. 1, pp. 11-21.
- 17 Braithwaite, J. (2005), *Market in vice, markets in virtue*, Oxford University Press, Sydney, Australia.
- 18 Carroll, A.B. (1979), "A three-dimensional conceptual model of corporate performance", *Academy of*
19 *Management Review*, Vol. 4, No. 4, pp. 497-505.
- 20 Carroll, A.B. (1999), "Corporate social responsibility evolution of a definitional construct", *Business*
21 *& Society*, Vol. 38, No. 3, pp. 268-295.
- 22 Cho, C.H., Roberts, R.W. and Patten, D.M. (2010), "The language of US corporate environmental
23 disclosure", *Accounting, Organizations and Society*, Vol. 35, No. 4, pp. 431-443.
- 24 Christensen, J. and Murphy, R. (2004), "The social irresponsibility of corporate tax avoidance:
25 taking CSR to the bottom line", *Development*, Vol. 47, No. 3, pp 37-44.
- 26 Clarkson, P.M., Li, Y., Richardson, G.D. and Vasvari, F.P. (2008), "Revisiting the relation between
27 environmental performance and environmental disclosure: An empirical analysis", *Accounting,*
28 *Organizations and Society*, Vol. 33, No. 4, pp. 303-327.
- 29 Cobham, A. (2005), "Tax evasion, tax avoidance and development finance", working paper [129],
30 University of Oxford, Oxford, September 2005.
- 31 Davis, K. (1960), "Can business afford to ignore social responsibilities?", *California Management*
32 *Review*, Vol. 2, No. 3, pp. 70-76.
- 33 De Jager, P. (2008), "Panel data techniques and accounting research", *Meditari Accountancy*
34 *Research*, Vol. 16, No. 2, pp. 53-68.
- 35 Dowling, G. (2013), "The curious case of corporate tax avoidance: Is it socially irresponsible?",
36 *Journal of Business Ethics*, Vol. 124, No. 1, pp. 173-184.
- 37 Freeman, R.E. (1984), *Strategic management: a stakeholder approach*, Pitman, Boston,
38 Massachusetts.
- 39 Friedman, M. (1970), "The social responsibility of business is to increase its profits", *New York*
40 *Times Magazine*, Vol. 13, pp. 32-33.
- 41 Glavas, A. and Piderit, S.K. (2009), "How does doing good matter?", *Journal of Corporate*
42 *Citizenship*, Vol. 2009, No. 36, pp. 51-70.
- 43 Gupta, S. and Newberry, K. (1997), "Determinants of the variability in corporate effective tax rates:
44 Evidence from longitudinal data", *Journal of Accounting and Public Policy*, Vol. 16, No. 1, pp.
45 1-34.
- 46 Heald, M. (1957), "Management's responsibility to society: The growth of an idea", *The Business*
47 *History Review*, Vol. 31, No. 4, pp. 375-384.
- 48 Heald, M. (1970), *The social responsibilities of business: company and community 1900-1960*,
49 Transaction Publishers, New Jersey.
- 50
51
52
53
54
55 Hoi, C.K., Wu, Q. and Zhang, H. (2013), "Is corporate social responsibility (CSR) associated with
56 tax avoidance? Evidence from irresponsible CSR activities", *The Accounting Review*, Vol. 88,
57 No. 6, pp. 2025-2059.
- 58 Ingram, R.W. and Frazier, K.B. (1980), "Environmental performance and corporate disclosure",
59 *Journal of Accounting Research*, Vol. 18, No. 2, pp. 614-622.
- 60

- 1 International Monetary Fund (2015), "Current challenges in revenue mobilization: Improving tax
2 compliance", available at: <https://www.imf.org/external/np/pp/eng/2015/020215a.pdf> (accessed
3 11 October 2015).
- 4 Jefferis, K. and Smith, G. (2005), "The changing efficiency of African stock markets", *South African*
5 *Journal of Economics*, Vol. 73, No. 1, pp. 54-67.
- 6 Jenkins, R. and Newell, P. (2013), "CSR, tax and development", *Third World Quarterly*, Vol. 34,
7 No. 3, pp. 378-396.
- 8 Jensen, M.C. and Meckling, W.H. (1976), "Theory of the firm: Managerial behavior, agency costs
9 and ownership structure", *Journal of Financial Economics*, Vol. 3, No. 4, pp. 305-360.
- 10 Johannesburg Stock Exchange (2015), "The JSE socially responsible investment (SRI) index",
11 available at: [https://www.jse.co.za/services/market-data/indices/socially-responsible-](https://www.jse.co.za/services/market-data/indices/socially-responsible-investment-index)
12 [investment-index](https://www.jse.co.za/services/market-data/indices/socially-responsible-investment-index) (accessed 15 April 2015).
- 13 Khan, M., Yousaf, Z., Khan, Z.A. and Yasir, D.M. (2014), "Analysis of the relationship between
14 CSR and tax avoidance: An evidence from Pakistan", *The International Journal of Business &*
15 *Management*, Vol. 2, No. 7, pp. 53-57.
- 16 KPMG, (2014), "WEG voted South Africa no 1 for auditing and reporting standards", available at:
17 <http://www.sablog.kpmg.co.za/2014/09/wef-voted-south-africa-1-auditing-reporting-standards/>
18 (accessed 3 October 2015).
- 19 Kim, K.A. and Limpaphayom, P. (1998), "Taxes and firm size in Pacific-Basin emerging
20 economies", *Journal of International Accounting, Auditing and Taxation*, Vol. 7, No. 1, pp. 47-
21 68.
- 22 Laguir, I., Stagliano, R. and Elbaz, J. (2015), "Does corporate social responsibility affect corporate
23 tax aggressiveness?", *Journal of Cleaner Production*, Vol. 107, pp. 662-675.
- 24 Lanis, R. and Richardson, G. (2007), "Determinants of the variability in corporate effective tax rates
25 and tax reform: Evidence from Australia", *Journal of Accounting and Public Policy*, Vol. 26,
26 No. 6, pp. 689-704.
- 27 Lanis, R. and Richardson, G. (2012A), "Corporate social responsibility and tax aggressiveness: An
28 empirical analysis", *Journal of Accounting and Public Policy*, Vol. 31, No. 1, pp. 86-108.
- 29 Lanis, R. and Richardson, G. (2012B), "Corporate social responsibility and tax aggressiveness: A
30 test of legitimacy theory", *Accounting, Auditing and Accountability Journal*, Vol. 26, No. 1, pp.
31 75-100.
- 32 Lantos, G.P. (2001), "The boundaries of strategic corporate social responsibility", *Journal of*
33 *Consumer Marketing*, Vol. 18, No. 7, pp. 595-632.
- 34 Lunden, I. (2015), "UK chancellor says 'Google tax' on diverted profits will come into effect next
35 month", available at: <http://techcrunch.com/2015/03/18/budget-google-tax/> (accessed 4 April
36 2015).
- 37 Matten, D. and Crane, A. (2005), "Corporate citizenship: toward an extended theoretical
38 conceptualization", *Academy of Management Review*, Vol. 30, No. 1, pp. 166-179.
- 39 Mio, C., Venturelli, A., and Leopizzi, R. (2015), "Management by objectives and corporate social
40 responsibility disclosure: First results from Italy", *Accounting, Auditing and Accountability*
41 *Journal*, Vol. 28, No. 3, pp. 325-364.
- 42 Modigliani, F. and Miller, M.H. (1958), "The cost of capital, corporation finance and the theory of
43 investment", *The American Economic Review*, Vol. 48, No. 3, pp. 261-297.
- 44 O'Donovan, G. (2002), "Environmental disclosures in the annual report: Extending the applicability
45 and predictive power of legitimacy theory", *Accounting, Auditing and Accountability Journal*,
46 Vol. 15, No. 3, pp. 344-371.
- 47 Plesko, G. (2003), "An evaluation of alternative measures of corporate tax rates", *Journal of*
48 *Accounting and Economics*, Vol. 35, No. 2, pp. 201-226.
- 49 Porter, M.E. and Kramer, M.R. (2006), "The link between competitive advantage and corporate
50 social responsibility", *Harvard Business Review*, Vol. 84, No. 12, pp. 78-92.
- 51 Raubenheimer, H. (2010), "Concentration in the South African equity market and its implied
52 restrictions on the long only equity fund manager's opportunity set", *South African Journal of*
53 *Business Management*, Vol. 41, No. 4, pp. 1-10.

- 1 Rego, S.O. (2003), "Tax-avoidance activities of US multinational corporations", *Contemporary*
2 *Accounting Research*, Vol. 20, No. 4, pp. 805-833.
- 3 Robinson, J.R., Sikes, S.A. and Weaver, C.D. (2010), "Performance measurement of corporate tax
4 departments", *The Accounting Review*, Vol. 85, No. 3, pp. 1035-1064.
- 5 Sethi, S.P. (1975), "Dimensions of corporate social performance: An analytical framework",
6 *California Management Review*, Vol. 17, No. 3, pp. 58-64.
- 7 Sharenet, (2015), "Top 100 Companies by market capital: 2015/10/02", available at:
8 <http://www.sharenet.co.za/index.phtml?content=/free/topco.phtml> (accessed on 3 October
9 2015).
- 10 Sikka, P. (2010), "Smoke and mirrors: corporate social responsibility and tax avoidance",
11 *Accounting Forum*, Vol. 34, No. 3-4, pp.153-168.
- 12 Slemrod, J. (2004), "The economics of corporate tax selfishness", working paper [10858], National
13 Bureau of Economic Research, Cambridge, October 2004.
- 14 Steyn, L. (2014), "Clampdown on tax avoidance", available at:
15 <http://mg.co.za/article/2014-11-20-clampdown-on-tax-avoidance> (accessed 4 April 2015).
- 16 The Institute of Directors in Southern Africa, (2009), "The King code of corporate governance for
17 South Africa", available at: <http://african.ipapercms.dk/IOD/KINGIII/kingiiireport/> (accessed 4
18 April 2015).
- 19 Titcomb, J. (2014), "Starbucks to pay corporations tax on profits in the UK after HQ move",
20 available at:
21 [http://www.telegraph.co.uk/finance/newsbysector/retailandconsumer/10769497/Starbucks-to-
22 pay-corporation-tax-on-profits-in-the-UK-after-HQ-move.html](http://www.telegraph.co.uk/finance/newsbysector/retailandconsumer/10769497/Starbucks-to-pay-corporation-tax-on-profits-in-the-UK-after-HQ-move.html) (accessed 4 April 2015).
- 23 Waddock, S.A. and Graves, S.B. (1997), "The corporate social performance-financial performance
24 link", *Strategic Management Journal*, Vol. 18, No. 4, pp. 303-319.
- 25 Watson, L. (2015), "Corporate social responsibility, tax avoidance, and earnings performance",
26 *Journal of the American Taxation Association*, Vol. 37, No. 2, pp. 1-21.
- 27 Wooldridge, J.M. (2001), "Applications of generalized method of moments estimation", *Journal of*
28 *Economic Perspectives*, Vol. 15, No. 4, pp. 87-100.
- 29 World Bank. (2015), "South Africa country-level fiscal policy notes", available at:
30 [http://www.taxcom.org.za/docs/Sector%20Study%20of%20Effective%20Tax%20Burden%20in
31 %20South%20Africa%20-%20Part%201%20-%20June%202015.pdf](http://www.taxcom.org.za/docs/Sector%20Study%20of%20Effective%20Tax%20Burden%20in%20South%20Africa%20-%20Part%201%20-%20June%202015.pdf) (accessed 3 October
32 2015).
- 33 Wu, M. & Shen, C. (2013), "Corporate social responsibility in the banking industry: Motives and
34 financial performance", *Journal of Banking and Finance*, Vol. 37, No. 9, pp. 3529-3547.
- 35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Appendix

Table 5: Descriptive statistics for original dataset before winzorisatoin

	CETR	AETR	CSROVERALL	ROA	LEVERAGE	SIZE	MTB
Mean	0.269	0.260	0.369	0.099	0.140	4.692	3.285
Median	0.266	0.284	0.378	0.090	0.103	4.654	2.443
Maximum	7.333	3.236	0.645	0.872	0.611	6.262	33.069
Minimum	-1.708	-1.847	0.099	-0.294	0.000	3.030	-23.112
Std. Dev.	0.482	0.282	0.135	0.108	0.138	0.583	3.293
Skewness	10.261	0.994	-0.089	1.622	1.205	0.144	1.992
Kurtosis	143.984	42.906	2.320	11.649	3.980	3.046	32.047
Jarque-Bera Probability	393264.90	30930.80	7.03	1628.29	129.67	1.58	16046.24
	0.000	0.000	0.030	0.000	0.000	0.454	0.000
Sum	125.121	120.925	126.121	45.335	64.410	2102.009	1471.716
Sum Sq. Dev.	107.999	36.811	6.210	5.284	8.743	152.142	4846.121
Observations	465	465	342	458	460	448	448

Data Source: Bloomberg

AETR: Represents accounting ETR as a ratio. CETR: Represents cash ETR as a ratio. CSROVERALL: Represents overall Bloomberg ESG disclosure ratio. ROA: Represents the Return on Assets ratio. LEVERAGE: Represents the long-term debt over total assets ratio. SIZE: Represents the natural log of market capitalisation. MTB: Represents the market-to-book ratio.

Table 5 details the descriptive statistics of all the variables collected for the companies in the sample during the period 2005 to 2014, using the original dataset before winsorisation.

Table 6: AETR fixed effects test

Redundant Fixed Effects Tests

Equation: Untitled

Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	3.827	(46,269)	0.000
Cross-section Chi-square	166.134	46	0.000
Period F	0.754	(9,269)	0.659
Period Chi-square	8.226	9	0.512
Cross-Section/Period F	3.494	(55,269)	0.000
Cross-Section/Period Chi-square	177.869	55	0.000

Table 6 details the fixed effects diagnostics for Model 3, the fixed effects model with AETR as its dependent variable. Cross-section fixed effects are significant at the 1% significance level, indicating that there is time invariant data affecting the relationship between the dependent, independent and control variables. Period fixed effects are not statistically significant. Thus fitting model 3 taking cross-section fixed effects into account is statistically valid and provides for a better fit model.

Table 7: CETR fixed effects test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	4.878	(46,225)	0.000
Cross-section Chi-square	197.860	46	0.000
Period F	0.362	(8,225)	0.940
Period Chi-square	3.658	8	0.887
Cross-Section/Period F	4.382	(54,225)	0.000
Cross-Section/Period Chi-square	205.534	54	0.000

Table 7 details the fixed effects diagnostics for Model 4, the fixed effects model with CETR as its dependent variable. As with Model 3, cross-section fixed effects are significant at the 1% significance level, indicating that there is time invariant data affecting the relationship between the dependent, independent and control variables. Period fixed effects are not statistically significant. Thus fitting model 4 taking cross-section fixed effects into account is statistically valid and provides for a better fit model.

Table 8: Modified Wald test for groupwise heteroscedasticity

Fixed effects accounted for

H0: $\sigma(i)^2 = \sigma^2$ for all i

Model 3	Model 4
AETR	CETR
chi2 (47) = 9.2e+31	chi2 (47) = 1.5e+33
Prob>chi2 = 0.0000	Prob>chi2= 0.0000

The results for the Wald test for group wise heteroscedasticity for models 3 and 4, are detailed in table 8. These results provide evidence of heteroscedasticity among residuals of both models at the 1% significance level. Observing the residuals plots figure 1 and figure 2 for models 3 and 4, the presence of heteroscedasticity can be confirmed. In order to account for this heteroscedasticity in the estimation of the regression parameters, white cross-section standard-errors and covariance are applied to models 3 and 4.

Table 9: Durbin-Watson statistics for models 3 & 4*Durbin-Watson statistic*

Model 3 (AETR) 2.659252

Model 4 (CETR) 2.192424

The Durbin-Watson test in table 9 indicates slight autocorrelation among residuals in both models 3 and 4. To account further for the presence of heteroscedasticity and any autocorrelation in the errors in the model, cross-section weighting is applied to the models 3 and 4, weighting companies that fit the model relatively well as being more important for estimation than those that do not fit the model as well. As noted by Wooldridge (2001), in the presence of heteroscedasticity or autocorrelation, a generalised method of moment's procedure of estimating regression parameters is more efficient for estimation.

Table 10: Model variables, descriptions and supporting papers

Variables	Description	Papers that find significant relationships with ETR
AETR_{i,t}	Accounting Effective Tax Rate: Tax Expense/Profit before tax	Hoi <i>et al.</i> (2013) Lanis and Richardson (2012) Laguir <i>et al.</i> (2015)
CETR_{i,t}	Cash Effective Tax Rate: Cash paid for taxes/Profit before tax	
CSROVERALL_{i,t}	Overall Bloomberg ESG disclosure score for company i in year t	
CSROVERALL_{i,t-1}	Overall Bloomberg ESG disclosure score for company i in year t-1	
ROA_{i,t}	Return on Assets for company i in year t.	Kim and Limpaphayom (1998)
LEVERAGE_{i,t}	Long-term debt over total assets for company i in year t	Gupta and Newberry (1997) Adhikari <i>et al.</i> (2006)
SIZE_{i,t}	Natural log of market capitalisation for company i in year t	Lanis and Richardson (2007) Gupta and Newberry (1997)
MTB_{i,t}	Market-to-book value for company i in year t	Kim and Limpaphayom (1998)
RETAIL_i	Dummy variable representing whether a company is a retail company.	
INDUSTRIALS_i	Dummy variable representing whether a company is an industrial company.	
FINANCIALS_i	Dummy variable representing whether a company is a financial company.	
RESOURCES_i	Dummy variable representing whether a company is a resources company.	

Table 11: Table of effective tax rates and ESG disclosure scores by sector

	Average values for the period 2005 to 2014		
	Accounting ETR	Cash ETR	Overall Bloomberg ESG disclosure score
RESOURCES			
BHP Billiton PLC	0.31	0.31	60.54
Glencore Ltd	0.09	0.15	41.82
Anglo American PLC	0.33	0.32	45.21
Anglo American Platinum Ltd	0.24	0.22	49.11
Kumba Iron Ore Ltd	0.30	0.22	51.24
Impala Platinum Holdings Ltd	0.30	0.27	49.71
AngloGold Ashanti Ltd	0.28	0.18	47.25
FINANCIALS			
FirstRand Ltd	0.25	0.26	35.23
Old Mutual PLC	0.31	0.38	33.48
Standard Bank Group Ltd	0.28	0.30	44.02
Barclays Africa Group Ltd	0.28	0.31	36.06
Remgro Ltd	0.06	0.05	30.52
Nedbank Group Ltd	0.24	0.24	51.17
Sanlam Ltd	0.27	0.29	36.90
Intu Properties PLC	0.00	0.06	41.42
Investec Ltd	0.22	0.19	41.60
Rand Merchant Insurance Holdings Ltd	0.17	0.18	15.94
Capital & Counties Properties PLC	0.05	-0.03	22.15
Growthpoint Properties Ltd	0.22	0.22	21.44
Discovery Ltd	0.32	0.18	36.34
Capitec Ltd	0.30	-0.20	26.14
Brait SE Ltd	0.08	0.04	11.51
INDUSTRIALS			
British American Tobacco PLC	0.28	0.28	50.83
SABMiller PLC	0.28	0.25	39.67
MTN Group Ltd	0.31	0.26	28.77
Sasol Ltd	0.33	0.29	55.83
Compagnie Financiere Richemont SA	0.14	0.14	33.37
Vodacom Group Ltd	0.37	0.37	35.89
Naspers Ltd	0.28	0.30	20.51
Bidvest Group Ltd	0.28	0.27	35.29
Mondi Ltd	0.41	0.29	45.41
Tiger Brands Ltd	0.28	0.32	28.05
Telkom Ltd	0.29	0.34	41.46
Aspen Pharmacare Holdings Ltd	0.26	0.22	39.83
Life Healthcare Group Holdings Ltd	0.30	0.29	11.16
Imperial Holdings Ltd	0.30	0.32	41.37
Netcare Ltd	0.15	0.32	22.37
Mediclinic International Ltd	0.28	0.25	30.17
Distell Ltd	0.31	0.30	17.44

	Average values for the period 2005 to 2014		
	Accounting ETR	Cash ETR	Overall Bloomberg ESG disclosure score
RETAIL			
Shoprite Holdings Ltd	0.34	0.32	28.23
Steinhoff International Holdings Ltd	0.12	0.12	30.53
Woolworths Holdings Ltd	0.30	0.31	50.31
Truworths Ltd	0.31	0.32	35.68
Pick n Pay Ltd	0.34	0.36	34.72
Foschini Ltd	0.32	0.34	41.15
Spar Ltd	0.31	0.31	12.92
Mr Price Group Ltd	0.30	0.31	31.90

**Tables arranged in descending order by average market capitalisation for the period 2005 to 2014

Figure 1: AETR residual plot for fixed effects regression

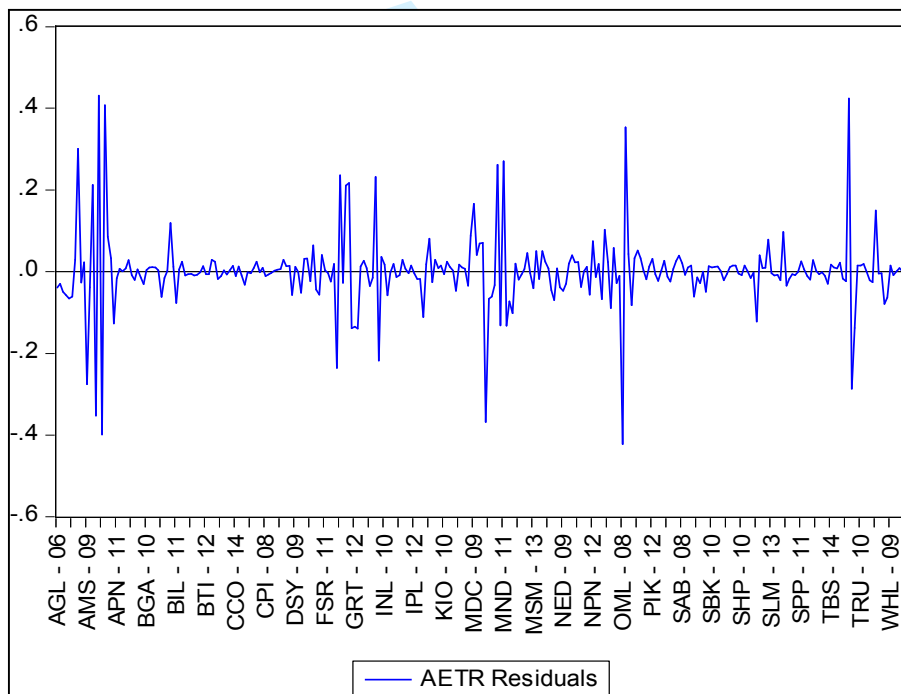


Figure 2: CETR residual plot for fixed effects regression

