

Lediga, Collen

**Working Paper**

## The impact of internet penetration on corporate income tax filing in South Africa

Ruhr Economic Papers, No. 861

**Provided in Cooperation with:**

RWI – Leibniz-Institut für Wirtschaftsforschung, Essen

*Suggested Citation:* Lediga, Collen (2020) : The impact of internet penetration on corporate income tax filing in South Africa, Ruhr Economic Papers, No. 861, ISBN 978-3-86788-998-8, RWI - Leibniz-Institut für Wirtschaftsforschung, Essen, <https://doi.org/10.4419/86788998>

This Version is available at:

<http://hdl.handle.net/10419/222664>

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Collen Lediga

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# Imprint

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## Ruhr Economic Papers

Published by

RWI – Leibniz-Institut für Wirtschaftsforschung  
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## Ruhr Economic Papers #861

Responsible Editor: Thomas Bauer

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ISSN 1864-4872 (online) – ISBN 978-3-86788-998-8

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## **Bibliografische Informationen der Deutschen Nationalbibliothek**

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The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie;  
detailed bibliographic data are available on the Internet at <http://dnb.dnb.de>

RWI is funded by the Federal Government and the federal state of North Rhine-Westphalia.

<http://dx.doi.org/10.4419/86788998>

ISSN 1864-4872 (online)

ISBN 978-3-86788-998-8

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Collen Lediga<sup>1</sup>

# The Impact of Internet Penetration on Corporate Income Tax Filing in South African

## Abstract

*Tax administrations around the world have introduced e-filing of tax returns due to its potential to improve tax return filing compliance. The introduction of this service for businesses in South Africa has not yielded the expected results. Drawing on tax administrative data on tax return filing and population census data, the study aims at determining whether internet access in the country, could have contributed to the less impact of the introduced administrative intervention. Accounting for specific characteristics of the areas in the country, and geoclassification (urban or rural area), we find that an increase in the fraction of household areas with internet access by 10 percentage points, raises the fraction of businesses that do submit a tax return by 1.86 percentage points. The results of the analysis highlights that the impact of the introduction of e-filing services for tax returns submission, is dependent on the internet coverage of the area.*

*JEL-Code: H2, H7*

*Keywords: Corporate taxation; e-filing; less developed countries; tax administration*

*July 2020*

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# 1 Introduction

Corporate income tax contributes a substantial amount of tax revenue in developing countries in comparison to developed countries. According to a study that analysed tax structures in developing countries, it accounts for 42.3% , thus making it the second largest source of tax revenue after consumption and production taxes, which accounts for 51.2% (Gordon and Li, 2009). The study further finds that corporate income tax is much more important in developing countries, as it accounts for 19.3% of the income tax compared to only 9.7% in developed countries. A number of academic literature also attribute corporate income tax, to be the substantial large share of government revenue losses in developing countries (see.e.g. Spanjers and Salomon (2017); Flows (2015); Cobham (2018); Kar (2013)).

The case of South Africa is particularly surprising, the country as one of the developing countries, and regarded as one of the largest economy in Africa, its corporate income tax contribution to income tax revenue for over a decade, has remained far less than personal income tax (South African Revenue Service, 2013). Annual reports from the country's tax administration, merit the possible link between corporate tax noncompliance and low revenue share of corporate income tax. The reports shows the contribution of corporate income tax to total revenue to be declining from 24% in the year 2007 to 19.8% in 2013 (South African Revenue Service, 2013). The trends in declining corporate income tax also indicate that corporate income tax return filing has remained very low, with more than 50% of companies that are required to submit their corporate income tax returns failing to do so (South African Revenue Service, 2013).

In light of the low share of corporate income tax revenues collected in South Africa compared to other developing countries, and the apparent magnitude of companies failing to submit their tax returns, there is a need to assess what might be a contributory factor to the low corporate tax return filing, that might be impacting on low revenues raised. Drivers of tax compliance such as tax literacy, enforcement, societal attitude, and technological efficiency have been to explored in recent studies. Most of these studies (see e.g. Alm et al. (2012); Pickhardt and Prinz (2014)), which use survey questionnaires, find a correlation between these factors and tax filing compliance.

This study sets out to examine whether internet penetration in the country could be a contributory factor to the experienced low tax return filing compliance. The study analyse tax administrative data on corporate tax return filing from the South African Revenue Service (SARS), to study corporate filing compliance. The data used includes company tax register, population census data and the corporate income tax returns filing data from SARS.

In South Africa, a number of studies found that the country's tax administration has successfully implemented various initiatives, that address drivers of tax compliance, and have reduced the administrative burden of paying tax, particularly the costs for corporate taxpayers (Smulders and Naidoo, 2013; Bornman and Stack, 2015; Jankeepsad et al., 2016). These initiatives have resulted in improved efficiency of the tax administration, growth in revenue collection, simplified taxpayer services for tax registration, filing of returns, declaration and payment. Despite the advancements in many areas of tax administration, there remain very little improvements regarding taxpayers meeting their legal obligation to file their tax returns, especially with regard to corporate tax returns.

Reasons for failing to file tax return might be due to a number of factors. Alm and McClellan (2012) analysis of data from a wide range of countries over several years, finds that a firm's tax morale to impact on firm's tax compliance. A tax compliance model developed by Allingham and Sandmo (1972) also indicated that taxpayers evade when they think they are unlikely to get caught or punished, how risk averse they are, and the nature of the punishment. Drawing from other studies on factors influencing tax compliance, Lignier and Evans (2012) finds high tax compliance costs to negatively impact on tax compliance. In the case of South Africa, a survey study by Smulders and Naidoo (2013) which also differentiated tax compliance activities from core accounting activities, found tax and financial accounting costs to impact on tax compliance. This study draws on findings from Coolidge and Yilmaz (2014), which found some evidence on how e-filing lowers compliance costs, and we should see an increase in submission rates of tax returns.

E-filing in South Africa was introduced in 2001 by SARS. Initially the service was introduced for Value Added Tax (VAT), Pay-As-You-Earn (PAYE) and provisional income tax returns. In 2012, SARS extended its service channel by introducing the eFiling Mobisite, a website for mobile devices and the e-filing MobiApp available to users of the e-filing service with Apple and Android mobile devices. Using this channel, taxpayers can submit tax returns without visiting a branch office; make payments to SARS without visiting a bank from their personal computers or mobile devices.

Despite the provision of the e-filing system through channels with access to the internet (website or via a mobile application), taxpayers still visit a branch to file tax returns. Though some returns are being filled electronically, most are filed at the SARS branch office (South African Revenue Service, 2016). This raises the question of whether the low e-filing might be affected by the large size of taxpayers in the country lacking internet access. This raised the question of whether the low internet penetration in the country could be affecting the use of the e-filing service.



The 2011 South African national population census (see Table 1) indicated that only 35.2% of households in the country have access to internet and 64.8% do not have access to internet.

Findings from the Worldwideworks (2017) study on internet penetration in South Africa, indicated that there still exists a huge difference in internet access in South Africa, which it labels as the digital divide, and which stretches across all sectors of society in the country. The study reveals that the digital divide exists between major metros and non-metro areas, and between different cities and provinces.

Given the low internet penetration in the country, and the low level of filing compliance, this paper explores whether the existing digital divide in South Africa might be impacting on corporate tax return filing compliance. The study takes advantage of the available administrative tax data, that includes tax returns filing data and registration records of the whole population of companies in South Africa. This large sample provides a rich and reliable data base to determine the impact of internet penetration on corporate tax return filing in South Africa. To account for potential issues related to the heterogeneity between regions in other dimensions, that may correlate with internet penetration and business tax return submission rates, our empirical approach will draw on socio-economic information for South African regions, drawn from the last South African population census which was conducted in 2011. The census information used in this study is at the municipality-level and we obtained information on 231<sup>1</sup> municipalities in South Africa.

The rest of the analysis unfolds as follows. Section 2 provides an overview of literature. Section 3 present a quick snapshot of internet evolution in South Africa. Section 4 describes the data and methodology, and provides a discussion of the results, with the conclusion of the paper contained in section 5.

## 2 Literature and Theoretical Considerations

In this section we discuss current literature that has given rise to this study, and the theoretical consideration that has influenced the framing of the study.

### 2.1 Tax Compliance

Tax compliance has been defined as reporting of tax liability to the relevant authority in compliance with applicable tax laws, regulation and court (Jackson and Milliron,

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<sup>1</sup>The total number of municipalities have since grown to 278, and thus the number is based on the 2011 number of municipalities.

1986). It has also been defined as a process in which taxpayers file all the required tax returns, by declaring all income accurately and paying the exact tax liability, using applicable tax laws and regulation (Palil and Mustapha, 2011a). Drawing from the working terms in tax administration, tax compliance can be more practically defined as, a process in which a taxpayer within the legally stipulated timeframe has registered as a taxpayer, has filed their liable tax returns, has accurately declared all their income, and has fully paid the amount of tax due. Therefore, tax compliance can be broken down into registration, filing, declarations, and payments. In this study, we will focus on taxpayers' compliance with their obligation to file a tax return.

Revenue administrations are mandated to ensure tax compliance by overseeing the right amount of tax is paid, by the right taxpayer at the right time. To deliver on its mandate, tax agencies require registered taxpayers to file their tax returns as a basis for assessing their tax liability. As shown in section 3.4, a large number of registered companies fail to submit their tax returns, and thus their tax liability cannot be assessed. The tax administration requires the tax return to capture it, conduct a risk assessment and determine the tax liability. This makes filing of tax return an essential prerequisite for the other two pillars of compliance, namely declaration and payment.

Fischer et al. (1992); Jackson and Milliron (1986); Chan et al. (2000) and others discuss determinants of tax compliance, stressing the importance of the demography of taxpayers, non-compliance opportunity, attitude and perceptions, and tax system/structures. The model incorporates demographic variables, age, and gender. It also includes non-compliance opportunity variables e.g. education, occupation, income level and income source. It further adds attitudes and perceptions, e.g. taxpayer's moral reasoning, and attitude and perception towards the tax system. Finally, it incorporates tax system structures, e.g. tax rate, detection probability, tax system complexity, contact with tax authority, and sanctions. The Fischer et al. (1992) model has influenced later such as Palil and Mustapha (2011b) and Alabede et al. (2011).

Various studies suggest that the behaviour of taxpayers is influenced by factors such as the likelihood of exposure for non-compliance by revenue administration, accompanying penalties for non compliance, or the compliance cost in comparison to the benefits of non-compliance (Becker, 1968; Allingham and Sandmo, 1972; Torgler, 2003). Findings from these studies indicate that non-tax compliance will be likely low when probabilities of being exposed, penalties and audit probability are high. Lediga et al. (2018) use SARS corporate income tax returns, audits, and the country's commercial register of corporate taxation and find that audit probability positively affects tax compliance.

## **2.2 Internet Penetration and Tax Compliance**

A study conducted in two of the big cities in South Africa (Pretoria and Durban), found that internet connectivity played an instrumental role as a facilitating condition for acceptance of e-services offered to enable and simplify tax compliance (Jankeeparsad et al., 2016). Similarly, Fu et al. (2006) in collaboration with the Taiwan National Tax Agency, using a nation-wide questionnaire based survey, was able to determine a link between internet access and tax filing compliance. This study found that e-services introduced with the aim of improving tax compliance, may have their coverage of the population restricted by internet access. However, the link between internet penetration and the different dimension of tax compliance, especially filing compliance as a prerequisite for declaration and payment, which is the focus of this paper, has not yet been established.

## **3 Institutional Background and Data**

### **3.1 Tax Administration Modernisation Programme**

SARS implemented various modernisation initiatives over the years. The modernisation programme was launched in the 2007/08 financial year and the focus of the first phase was to improve income tax assessments. Significant improvements were made and this resulted in 34% of returns being processed within 48 hours. The taxpayers' registration process was also enhanced and taxpayers were no longer required to provide paper-based documentation in support of their registration (South African Revenue Service, 2008).

Payment processing was converted from manual to electronic processing and this resulted in quicker processing times (88.4% payments processed in 1 day) and increased use of e-filing, faster assessments, increased payment collections and allowed for refunds to be processed faster (South African Revenue Service, 2010). In 2013, the modernisation programme extended the e-filing service to mobile platforms through its introduction of e-filing MobiApp and e-filing Mobisite (South African Revenue Service, 2013). Taxpayers could register, file and make payments on the e-filing mobile application from their Apple<sup>TM</sup> and Android<sup>TM</sup>, and could access the SARS mobile website from their web-enabled mobile devices to perform the same functions. Furthermore, the Help-You-eFile service was introduced to provide taxpayers with instant and online guidance on the use of e-filing and to resolve any queries that may arise during the submission of returns (South African Revenue Service, 2013).

## 3.2 Tax Return Filing in South Africa

Electronic tax systems for income taxpayers were introduced to facilitate tax registrations, tax return filing and payment of tax liabilities. This capability was offered to taxpayers through interactive online portals. Registration functionality allows taxpayers to register for tax and acquire a tax reference number and provides the tax agency with a mechanism to collect basic taxpayer identifying information such as names, addresses and legal entity type.

SARS introduced e-filing in 2001. VAT, PAYE and corporate income tax returns (known as provisional income tax returns), and payments could be submitted to SARS electronically through appointed third party providers. By 2007, all categories of income taxpayers (VAT, PAYE, Income Tax, Provisional Income Tax, Skills Development Levy, Unemployment Insurance Fund, Secondary Tax on Companies, Transfer Duty and Stamp Duty) could file tax returns and make payment in respect of these taxes via eFiling on their computers or at a SARS branch (South African Revenue Service, 2007).

## 3.3 Corporate Income Tax in South Africa

SARS began overhauling its Corporate Income Tax (CIT) processes and systems in 2011. The modernisation programme used many of the enhancements applied to the administration of Personal Income Tax (PIT) and Value Added Tax (VAT) to raise the efficiency of processing CIT. A key component of the CIT modernisation was the alignment of CIT enforcement audits to an automated VAT and PIT processes. Integrated risk management systems automatically identify 'high risk' CIT returns and enable SARS to review or investigate such cases. Additional features of the CIT modernisation include:

- Simplified 'dynamic' electronic forms for income tax returns for companies;
- Registration forms that ensure verification of company demographics;
- Integrated risk management facilities that automatically identify 'high risk' returns;
- Requests for returns are sent using the electronic e-filing service instead of the postal service; and
- Forwarding of financial statements, with taxpayer approval, to the Companies and Intellectual Property Commission (CIPC).

### **3.4 Corporate Tax Return Filing Compliance**

In the 2016 tax years, CIT filing compliance stood at 39.59% (South African Revenue Service, 2017); 39.59% in 2017 tax year (South African Revenue Service, 2018) and 40.97% in the 2018 tax year (South African Revenue Service, 2019). This indicates that since 2007 where filing compliance was 54.6% as depicted in Table 3 below, CIT filing in South Africa declined to less than 50%. The filing compliance number declines further, when for each tax year, we account for whether a tax return was filed within the legally required time. Accounting for submission of corporate tax returns within the stipulated legal time, lowers tax return filing compliance since 2009 to less than 20%.

While e-filing has been successfully introduced in South Africa, 46.1% of registered taxpayers who file their tax returns still visit a branch to submit their tax returns under the assistance of a SARS official (South African Revenue Service, 2018). To assess overall filing compliance, it is, therefore, not sufficient to consider e-filing only. Accordingly, unlike the existing body of research that looks at how internet access affects the acceptance of tax e-filing service, this paper considers tax filing compliance in general and does not differentiate between e-filing and manual filing.

### **3.5 Tax Return Data**

Our analysis uses administrative tax data, which includes corporate income tax returns data and administrative records on tax registrations from the South African tax office. This type of data has previously only been available in Nordic countries, the United States, United Kingdom, Canada, and some other European countries. Our body of data covers all corporate tax returns submitted to the tax administration in South Africa. The tax return data includes demographic information of registered taxpayers such as business location capturing the municipality as well as tax compliance information. The data also captures the number of businesses registered for tax in our year of study. We will use this data to identify the fraction of taxpayers that are registered with SARS for business tax purposes and comply with their obligation to submit a tax return for municipalities in South Africa in the tax year 2010/2011.

### **3.6 2011 South African National Census**

We use data from the South Africa 2011 population census conducted by the national statistical service of South Africa (Statistics South Africa, Stats SA). Approximately 20 million questionnaires were distributed during the 21-day period and 15 million were

completed. The census covered a total population of 51,770,560, an area of 1,220,813 square kilometres (471,359 sq mi) and 14,450,161 households. The census covered all the 9 provinces in South Africa and all the 231<sup>2</sup> municipalities.

Overall, the census found that South Africa's population increased by approximately seven million people, to 51,770,560 between 2001 and 2011. Split by gender, 26,582,769 are female and 25,188,791 male, while segmented according to race, 41,000,938 (79.2%) are black, 5,586,838 (9.6%) are white, 4,615,401 are coloured, and 1,286,930 are Indian or Asian.

The census revealed that up to 64.8% of households in the country had no access to the internet in 2011. In relation to those households that had access to the internet, Stats SA pointed out that internet was accessed mainly through mobile phones (16.3%), but also from home (8.6%), from elsewhere (5.6%), and from work (4.7%). See Figure 1.

## 4 Empirical Analysis

Table 4 presents descriptive statistics for our sample. The observational units are South African municipalities in 2011. In the analysis, 231 municipalities are included. The average tax return submission rate of businesses in these municipalities in the tax year 2010/2011 is 34.95% and was constructed based on information on firm registrations with SARS in 2011 and business tax return submissions with SARS for the tax year 2010/11. The rest of the data stems from the South African Census in 2011.

Table 5 contains the results from ordinary least squares regressions. The dependent variable is the fraction of firms that were registered with SARS in the tax year 2010/2011 and that submitted a tax return for that tax year.

In Specification (1), this variable is regressed on the fraction of households that have internet in that municipality according to the 2011 South African Census. The regression output depicts the coefficient estimate and the standard error in parentheses. The coefficient estimate is positive and statistically significant at the 5% level ( $p$ -value:0.028), suggesting that higher internet penetration – as spelled out in the theoretical considerations above – is associated with higher levels of tax compliance as measured by return submission rates.

Quantitatively, the coefficient estimate suggests that an increase in the fraction of households with internet access by 10 percentage points raises the fraction of businesses that do submit a tax return by 1.86 percentage points (which corresponds to an increase

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<sup>2</sup>Few municipalities were absorbed by the Tshwane municipality.

by about 5.3% evaluated at the sample mean of the fraction of businesses which do submit returns (see descriptive statistics table (34.95%)).

Specification (2) includes a full set of fixed effects for South African provinces to account for the fact that province-specific characteristics might drive internet penetration as well as tax compliance rates, and province dummies are included. The coefficient estimate for the internet penetration variable remains positive and statistically significant at the 5% level.

Specifications (3) and (4) include control variables for the number of population and the number of population per square meters, which capture the degree of urbanization in an area, as well as the fraction of female inhabitants and the ethnical composition (fraction of black Africans and Asian inhabitants), and province dummies are included. Again, this leaves the qualitative and quantitative estimate for the internet penetration share unaltered.

Specification (5) presents a placebo test and, additionally to the internet penetration variable, augments the specification by a regressor for the fraction of households with a radio, and province dummies are included. We would not expect that this has a causal effect on firms' tax compliance. In line with that notion the coefficient estimate for the radio fraction variable is not statistically different from zero. Specification (6), furthermore, includes a regressor for the fraction of households with a cellphone, and province dummies are included. Again, the coefficient estimate for that variable is not significantly different from zero. This reflects that the presented study looks at tax return submission rates in 2011 before SARS introduced the option to do tax return filing via smartphones.

## 5 Summary and Conclusion

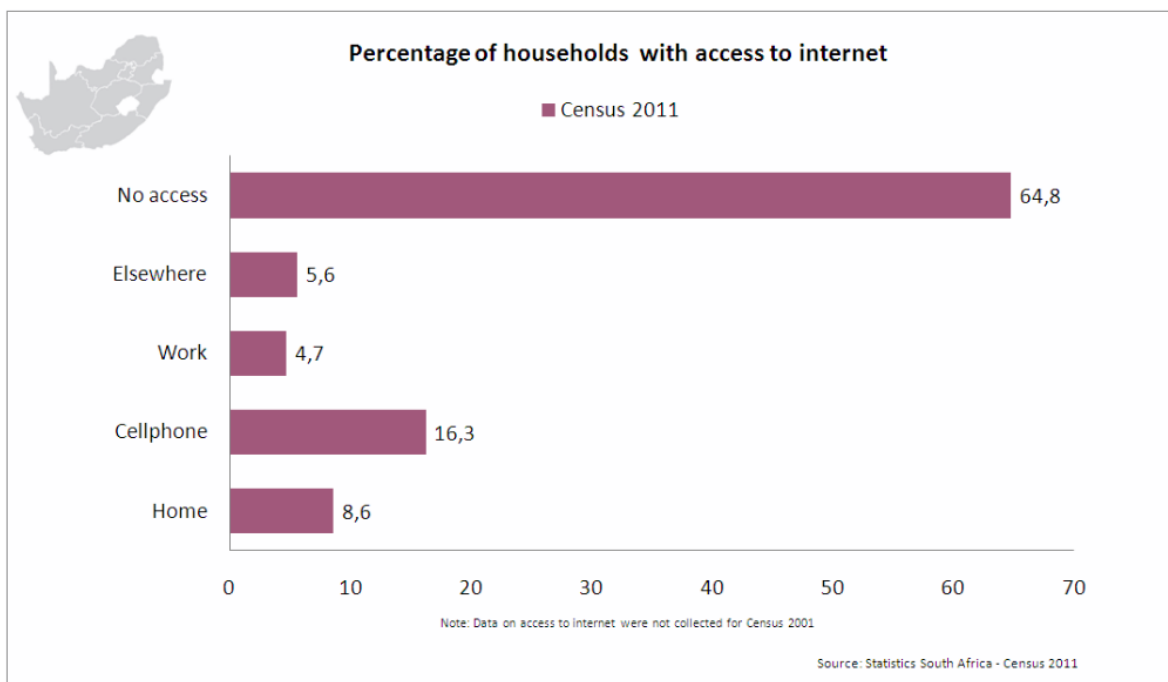
This study explored how corporate tax compliance in the form of filing of tax returns in South Africa might be influenced by the country's internet penetration. This was carried out by combining information from corporate tax returns filled by all companies required to file their returns, and corporate tax register in the tax year 2010/2011 and the 2011 national population census. Findings from academic literature show high tax compliance costs for companies to contribute to non-tax compliance. Measures like the introduction of e-filing has been introduced to reduce the costs and burden of tax compliance, by enabling taxpayers to register for tax, submit their tax returns and make payment from home. With a sizeable number of taxpayers still visiting the tax office to file their tax return, the study explored if internet connectivity, regarded as one of the facilitating conditions for adoption of e-filing, might influence filing of tax

returns by companies.

Looking at the fraction of households with internet access in all municipalities in South Africa, the study finds internet penetration to impact on the level of tax compliance, as measured by return submission rates. An increase in the fraction of households with internet access by 10 percentage points raises the fraction of businesses that submit a tax return by 1.86 percentage points. Accounting for the specific characteristics of the provinces, demographic variables such as gender, geo-classification (urban or rural area). As indicated in a number of studies, internet access is an important factor in increasing tax compliance and government should work on improving internet access, as the introduction of e-services without internet access limits the coverage and the extend of the impacts of the introduced e-service.

## 6 Figures and Tables

Figure 1: Percentage of households with access to internet



Source: StatisticsSA (2012b)



Table 2: Distribution of households by access to internet and province (number)

Internet access	Province									
	WC	EC	NC	FS	KZN	NW	GP	MP	LP	SA
From home	26 9494	83 721	16 620	48 770	190 284	47124	483 024	55 373	44 777	1 239 187
From cell phone	251 790	215 842	44 054	136 771	449 991	157 408	697 068	194 199	209 797	2 356 921
From work	96 546	47 730	10 471	27 538	87 080	34 472	307 511	35 771	31 124	678 242
From elsewhere	96 030	59 450	7 047	43 553	125 164	40 268	327 675	52 644	59 462	811 295
No access to internet	920 141	1 280 642	223 213	566 684	1 686 911	782 741	2 093 743	737 502	1 072 941	9 364 518
Total	1 634 000	1 687 385	301 405	823 316	2 539 429	1 062 015	3 909 022	1 075 488	1 418 102	14 450 161

Altogether 35.2% of the households have access to internet and 64.8% do not have access to internet.

Source: StatisticsSA (2012a)

Table 3: CIT Total Filing

Number tax year	Registered <sup>3</sup>	Percentage growth in register	Liable to submit returns <sup>4</sup>	Filed returns	Percentage filed
2007	1,584,002	30.0%	1,042,162	569,425	54.6%
2008	1,834,009	15.8%	1,321,190	587,740	44.5%
2009	1,878,856	2.4%	1,496,587	561,967	37.5%
2010	2,078,182	10.6%	1,678,883	470,153	28.0%

Source: 2011 South African Tax Statistics

Table 4: Descriptive Statistics

	Obs	Mean	Std.Dev	Min	Max
returns	231	0.3494533	0.0997292	0.5863454	0.1572117
Share_internet	231	0.2620522	0.0774241	0.1253461	0.4926552
Share_radio	231	0.6445817	0.0773859	0.4629986	0.7867327
Share_cellphone	231	0.425898	0.3697786	0.0159038	0.9217305
ln_pop_per_sq_km	231	3.389225	1.588726	-0.5108256	7.332814
female_%	231	51.5042	2.271687	45.29	55.77
pop_blackafrican_%	231	0.7543013	0.3018294	0.0416	0.9966
pop_indianorasian_%	231	0.0084935	0.0191795	0.0008	0.1332

Table 5: Ordinary Least Square Analysis

	(1)	(2)	(3)	(4)	(5)	(6)
share_internet	0.1862** (0.0842)	0.1747** (0.0807)	0.4305*** (0.0760)	0.2303*** (0.0863)	0.2856*** (0.0978)	0.2550** (0.1087)
share_radio					-0.0908 (0.0759)	-0.1105 (0.0818)
share_cellphone						0.0884 (0.1358)
2.p		-0.0028 (0.0221)	-0.0357* (0.0197)	-0.0196 (0.0197)	-0.0106 (0.0210)	-0.0082 (0.0214)
3.p		-0.0607** (0.0303)	-0.0316 (0.0267)	-0.0422 (0.0270)	-0.0390 (0.0271)	-0.0458 (0.0291)
4.p		-0.0663*** (0.0175)	-0.0560*** (0.0161)	-0.0575*** (0.0164)	-0.0568*** (0.0164)	-0.1239 (0.1044)
5.p		-0.0785*** (0.0202)	-0.0688*** (0.0176)	-0.0555*** (0.0175)	-0.0562*** (0.0175)	-0.1274 (0.1107)
6.p		-0.0822*** (0.0237)	-0.0877*** (0.0206)	-0.0777*** (0.0204)	-0.0726*** (0.0208)	-0.0753*** (0.0213)
7.p		-0.0404* (0.0221)	-0.0410** (0.0193)	-0.0411** (0.0198)	-0.0375* (0.0201)	-0.0349* (0.0205)
8.p		0.0739*** (0.0200)	-0.0062 (0.0200)	-0.0324 (0.0209)	-0.0345 (0.0210)	-0.0325 (0.0212)
9.p		0.0996*** (0.0220)	0.0603*** (0.0196)	0.0270 (0.0264)	0.0284 (0.0264)	-0.0239 (0.0845)
ln_pop_per_sq_km			-0.0214*** (0.0071)	-0.0138* (0.0076)	-0.0144* (0.0076)	-0.0147* (0.0077)
female_%				-0.0040 (0.0028)	-0.0029 (0.0029)	-0.0028 (0.0029)
pop_blackafrican_%				-0.0780** (0.0364)	-0.0789** (0.0364)	-0.0643 (0.0428)
pop_indianorasian_%				0.8696*** (0.2781)	0.8804*** (0.2780)	0.9157*** (0.2836)
Constant	0.3006*** (0.0230)	0.3197*** (0.0209)	0.5613*** (0.0860)	0.8606*** (0.1564)	0.8596*** (0.1563)	0.8585*** (0.1565)
Observations	231	231	231	231	231	231
R-squared	0.0209	0.4095	0.5598	0.6065	0.6091	0.6099
Adjusted R-squared	0.0166	0.385	0.538	0.581	0.582	0.581

Standard errors in parentheses \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

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