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National Health Insurance: the most appropriate method of financing it

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Terry Tu

Research Report

National Health Insurance:

The most appropriate method of financing it.

A research report Submitted by Terry Tu in partial fulfilment of the

Master of Commerce degree

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Ethics Number: CACCN/1041

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Declaration

I, Terry Tu, declare that this research report is my own unaided work. It is submitted in partial fulfilment of the requirements for the degree of Master of Commerce in the field of Accountancy at the University of the Witwatersrand, Johannesburg. All sources that I have used or referred to, have been indicated and acknowledged as such by means of complete references. It has not been submitted before for any other degree or examination at any other institution.

Terry Tu: _____

Date: _____

Abstract

This research paper seeks to answer the question, “How should National Health Insurance (NHI) be funded using the current tax system in South Africa to achieve the best outcome for all citizens within its population?” The study was done as there is ample literature available on NHI funding due to NHI being a fairly new topic within South Africa. This research aims to contribute in making a decision on the most appropriate method of financing the NHI in South Africa once the system is incorporated.

In order to answer the question, 91 respondents working as tax academics, tax practitioners and economists were surveyed. The respondents were contacted via email and an electronic questionnaire was completed online. The data was subjected to various statistical analysis methods including, factor analysis, Kruskal-Wallis tests and Cluster analysis.

The results revealed that the respondents were of the opinion that an increase in VAT would be the most appropriate method of financing NHI. The analysis also revealed that reason the respondents felt this way as an increase in VAT was perceived as justifiable, fair and efficient. The research also showed that all the respondents surveyed were opposed to an increase of taxes on individuals or an introduction of payroll taxes.

Finally, the paper investigated whether or not the funds should be ring fenced specifically for NHI or added to the general fiscus for budgetary allocation. It was the opinion of the respondents that the funds should be specifically ring fenced for NHI. The research suggested that the respondents were of this opinion due to the fact that ring-fencing the funds would create more accountability

over the funds and that if the funds were ring fenced this would not subject them to political infighting during the budgetary process.

The paper was limited due to the low response rate and the respondents mainly coming from a tax background as opposed to an economics background. The paper also only examined qualitative factors that may have influenced the funding method and no quantitative data was used.

Key Words:

Hypothecation of funds, National Health Insurance, Progressive tax, Regressive tax

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1) Introduction

1.1) Introduction

Enshrined in the Constitution of the Republic of South Africa (the Constitution), lies section 27. Section 27 of the Constitution clearly states that every South African is entitled to have access to healthcare and that the State has an obligation to ensure the right is achieved with the resources available.

In its current form, the healthcare system in South Africa is in a lamentable state, the gap between public and private health care, with regards to affordability and quality of service remains a great concern. This is largely due to the lack of financing available to them and the lack of funds available to improve public health systems (Meyer, 2010).

The Government has identified this issue and is in the process of introducing a much needed healthcare reform being, the introduction of a proposed NHI system. This system will seek to provide health cover for all South Africans. The objective of NHI is to ensure everyone has access to appropriate, efficient and quality healthcare (Government of South Africa, 2011). A NHI pilot project was launched in April 2012. The entire NHI system is expected to be phased in over the next fourteen years. The pilot project covered eleven different districts with at least one in every province. These pilot areas focused on districts that had high levels of healthcare related under service. The Department of Health allocated R150 million of its own budget to fund the pilot. The pilot project aims to ascertain if the new NHI system will be sustainable and will also provide a useful indicator of what the costs will be (Matsoso & Fryatt, 2013).

To understand how the NHI system should be financed one first needs to understand how NHI intends on operating. NHI will provide finance for healthcare. NHI will not be involved in the day to day running of hospitals and clinics. The NHI fund will enter into contracts with hospitals, clinics and general practitioners to deliver health care services free of charge to all citizens and legal residents. NHI will not provide cover for patients to see specialists unless they have been properly referred from a primary healthcare facility (Department of Health, 2011a).

NHI seeks to create fairness in how healthcare resources are distributed amongst citizens. It also seeks to allow all South Africans to access healthcare when they need it (Department of Health, 2011a). It is estimated that South Africa spent R227 billion on health care in 2010. This staggering amount is equivalent to 8.5% of Gross Domestic Product (GDP) for that year (2010). Of the R227 billion spent on healthcare in 2010 an estimated R90 billion was spent on medical scheme contributions (Government of South Africa, 2011). South Africa has an estimated population of over fifty million people (Statistics South Africa, 2011) and there are approximately 8,3 million people that are members and beneficiaries of medical schemes in South Africa (Council for Medical Schemes, 2011). These statistics show that only a minority of South Africans amounting to 16.6% of the population are covered by medical schemes and these members constitute approximately 39.6% of the total healthcare spending in South Africa. NHI will help to distribute these funds more efficiently and equitably to achieve 100% coverage of the population (Government of South Africa, 2011).

In 2012 Government estimated that it would need an additional R145 billion to finance NHI. This amount was expected to grow to R214 billion in 2020 and R255 billion in 2025 (Government of South Africa, 2011).[1] The R145 billion was in addition to an original R1 billion allocated to start the NHI pilot project in 2012 as well as the R426 million allocated to

[1] In real 2010 terms.

rebuilding five academic hospitals (National Treasury, 2012). The funds will be used to upgrade healthcare facilities and obtain services of skilled medical practitioners. Eventually, these funds will be used to pay for health services used by the population of South Africa. The question that remains is, where will these funds come from?

The study made use of a literature review to develop a questionnaire which was distributed to knowledgeable parties. The researcher then concluded on the responses using various methods of statistical analysis in order to obtain useful insights as to why the respondents selected the answers that they had.

1.2) Purpose of the study

The purpose of the study was to obtain data from knowledgeable parties on the best method of financing the proposed National Health Insurance (NHI), which is expected to be implemented fully by 2025/6 (Matsoso & Fryatt, 2013). This research aims to make a contribution in making a decision on the most appropriate method of financing the NHI in South Africa once the system is incorporated.

The researcher made use of a literature review in order to evaluate the methods proposed by government and to suggest possible alternatives to these methods for the financing of NHI. The literature review was used in order to develop a questionnaire to which a Likert scale was applied. This questionnaire was utilised in order to obtain the opinion of industry experts with regards to the proposed financing methods.

Once the survey was completed it was determined that in the view of the respondents an increase in Value added tax would be the most acceptable method of financing the NHI and would be likely to raise the funds necessary for the implementation and operation of the proposed NHI.

1.3) Relevance of the study

It is with certainty that NHI will be implemented and will operate in the proposed manner. The main concern is, how would the NHI system be funded? Government has been adamant that NHI would be funded using the current tax system and that the South African Revenue Service (SARS) would collect these funds. Government had previously suggested that this would be done through either an increase in Value Added Tax (VAT), a payroll tax on employers, a surcharge on the taxable income of individuals or some combination of those three methods (National Treasury, 2012).

Government should consider all people affected by the suggested financing methods as they have serious repercussions on differing aspects of everyday life for ordinary South Africans, an increase in VAT for instance, could affect the decision to buy certain products as they may now be unaffordable. Furthermore, Government should pay due consideration towards the economic climate that these financing methods are introduced in. Many South Africans live in poverty and would not be able to afford steep increases in VAT or other regressive taxes that may affect the poor. Other factors that should be considered, for example, is that South Africa is in a recovery phase following a recession and the surcharge on taxable income of individuals may increase the burden on the already thin taxpayer base and a payroll tax may lead to increases in salary costs which in turn would lead to lower productivity (Byl, 2011).

There is no single NHI model that is universally applicable, and the healthcare model applied in each country depends on the history and circumstances of the healthcare system (McLea, 2011).

This is particularly true in the South African context as South Africans face a unique economic and socio political environment which increases the need to find a unique solution that will benefit the entire population. Factors that influence the South African proposed NHI model are the large income gap between the wealthy and the poor, the low tax base of approximately five million taxpayers, which amounts to only 10% of the population, (National Treasury, 2013), the high level of poverty and the high level of diseases such as acquired immuno deficiency syndrome (AIDS) and tuberculosis (WHO, 2014).

Therefore, it is important that a study be done on how a NHI system should be funded without leading to a significant negative impact on the majority of the population. A balance needs to be achieved of what is affordable and coverage of all South Africans. In order to propose an appropriate funding method the research evaluated the South African Goverment's proposal to fund NHI using the current South African tax system. Certain methods used by international countries that have established NHI or similar systems were also considered.

1.4) Research Questions

The main research question was: "How should NHI be funded using the current tax system in South Africa to achieve the best outcome for all citizens within its population?"

In order to address the main question the following sub questions needed to be answered. Firstly, should the tax to fund the NHI system be a progressive or regressive tax? Secondly, should the NHI fund apply the concept of pooling of funds or should the hypothecation of funds collected by the tax specifically for healthcare be implemented? The final question was: What method should Government implement in order to collect the funds that are required?

1.5) Delimitations

The scope of this research was limited to an analysis of the advantages and disadvantages of a regressive and progressive tax system. Detailed calculations and economic models were excluded as this would only be relevant if the objective were to understand the economics of the two models.

It was not considered within the scope to provide detailed calculations and estimates with regards to the implementation of each revenue collection model due to the large number of variables, high levels of uncertainty surrounding these variables and insufficient information regarding these inputs. Therefore, a theoretical and qualitative approach was applied to determine which method should be adopted.

A brief review of financing methods used in foreign countries took place in order to assist in formulating the questionnaire, focusing on a review of the Ghanaian National Health Insurance Scheme (NHIS) as the population of Ghana is largely impoverished which is similar to a large portion of the South African population. The international models such as, the Australian Medicare system, were also considered. An analysis of recommendations and commentary from a NHI conference hosted by the South African Department of Health was done. This NHI conference included a host of foreign countries who carry out NHI systems in their respective countries. The scope of the study excluded a detailed analysis on various foreign systems, however, advantages and disadvantages of certain foreign systems such as the American Patient Protection and Affordable Care Act Bill number H.R. 3590, 2010 (Affordable Care Act) were considered.

1.6) Assumptions

Based on the nature of the respondents' occupations, the researcher assumed that surveyed respondents had adequate knowledge of taxation and a basic understanding of economics in order to provide useful insights into the issue of how NHI should be funded.

2) Literature Review

The Purpose of the literature review was to develop the statements used in the questionnaire. The statement numbers included in brackets were used to link the statements to the corresponding questions in the questionnaire. The literature review included a review of draft legislation, publications, articles from reputable websites, government publications as well as relevant journals. Certain publications that formed part of the literature review were published very long ago however the references were still found to be relevant and therefore included.

2.1) The South African Tax system

There are two main types of taxes, progressive taxes and regressive taxes. A progressive tax is a tax that takes a larger percentage from high income earners than from low income earners (Perold, Greyling, Bonga-Bonga, 2008; Internal Revenue Service, 2012). Regressive tax - A regressive tax is a tax which takes proportionately a larger share from low income earners than it does from high income earners (Encyclopaedia Britannica, 2012; Internal Revenue Service, 2012). Any tax implemented will be either progressive or regressive in nature. A Literature review was performed in order to identify factors which may influence the decision of the respondents in determining why the respondents were inclined to select a progressive or regressive tax. The challenge for any tax system is the trade-off between equity, efficiency and growth (Bird & Zolt, 2003).

2.1.1) Arguments in favour of a Progressive Tax

One of the arguments for a progressive tax is that of the benefit theory. The benefit theory states that a person should pay tax in proportion to the benefits they receive from the Government. According to the latest research on income conducted by Statistics South Africa, only ten percent of South Africans earn more than R12 000 a month (Statistics South Africa, 2010). In the context of this research, the wealthy will be considered anyone who earns falls within this category. It is

argued that a wealthy person receives more benefits from the Government in the form of protection of their assets as they stand to lose more if the State does not protect them compared to what a poor person would lose (Statement 3.1)[2]. Furthermore, a wealthy person may need more infrastructures within a country to grow those profits. By virtue of the wealthy receiving more benefits and needing more infrastructure, it is shown that a progressive tax should be used as a wealthy person benefits more from Government services and therefore, it is justified that they pay more tax (Perold *et al*, 2008; Hobbes, 1651). Certain publications that formed part of the literature review were published very long ago however the references were still found to be relevant and therefore included.

The second argument for a progressive tax is based on the grounds of stability. The argument is based on the fact that a progressive tax is more likely to minimise effects of events such as recession (Statement 3.3). The effects of a recession are minimised as when a recession hits a taxpayer, that taxpayer will simply be shifted to a lower tax bracket and would therefore pay less tax. This will allow the taxpayer to maintain more income. The opposite effect will happen if the economy shifts into a boom phase where the taxpayer may earn more and therefore be shifted into a higher tax bracket, thus, paying more tax. A progressive tax therefore automatically stabilises the economy and therefore a progressive tax should be implemented (Statement 3.9) (Perold *et al*, 2008; Blum & Kalven, 1953).

The third argument for a progressive tax is that of sacrifice. This argument is derived from the thought that taxes represent a sacrifice from taxpayers; therefore the State should ensure that the sacrifice made by each taxpayer is as small as possible relative to income of the taxpayer. If one rand is paid to the Government in the form of taxes by a poor person, this represents a larger sacrifice for the poor man than if one rand was paid by a rich man (Statement 3.4). Therefore this

[2] Statement numbers link literature to where the statement has been included in the questionnaire in Annexure 1.

supports the idea of a progressive tax being less of a sacrifice for each taxpayer (Perold *et al*, 2008).

The last argument presented for a progressive tax is that of equality. This argument is based on the premise that economic differences need to be redressed by transferring wealth from the rich to the poor. Marx and Engels (1848) argue that progressive tax is most effective in transferring wealth from the rich to the poor (Statement 3.5). This argument seems the most compelling for a scenario such as South Africa, given the effects of apartheid and the vast majority of the population living in poverty (Perold *et al*, 2008).

2.1.2) Arguments against a Progressive Tax

As stated above one of the theories for a progressive tax is that of the benefit theory. It is argued that the benefit theory does not apply to progressive tax as most people benefit equally from services provided by the State. Furthermore, the argument may even be said to promote regressive taxation as, for example, the poor would not be able to afford private healthcare services and would make more use of the healthcare provided by the State which is the case in South Africa. The benefit theory would therefore mean that as the poor benefit the most from services from the State, the poor should pay more tax (Perold *et al*, 2008; Mill, 1852).

A counter argument to the sacrifice theory is that the sacrifice theory is based on the assumption that the marginal utility of each rand decreases as more rands are earned. If a person does not "enjoy" a rand any less when that person earns more rands, then it can be said that they will not be sacrificing any less than an impoverished person when paying a rand of tax (Perold *et al*, 2008; Fagan, 1938).

The main argument against the equality theory is that it is based on the premise of fairness. Traditionally, tax scholars have defined fairness in terms of horizontal and vertical equity. Horizontal equity requires those in similar circumstances to pay the same amount of taxes. Vertical equity requires appropriate differences among taxpayers in different economic circumstances (Bird & Zolt, 2003). The equality theory would appear to be unfair as it punishes some people for working harder and for saving more than others (Statement 3.7). This may create a disincentive as it may not be worth it to work harder and save more if more tax will be paid which diminishes their disposable income (Perold *et al*, 2008; Mill, 1852).

2.1.3) Arguments for a Regressive Tax

The argument available in support of a regressive tax is that of the benefit theory. In South Africa, the poor benefit the most from Government. This is due to the fact that the poor are provided with free education, whereas, wealthy people will often opt for private education or government education that still requires fees. The poor also benefit from free basic healthcare, whereas, the wealthy often opt for private healthcare or seek healthcare from specialists abroad. Other benefits received from the State include free housing, social grants and State pensions provided to the poor, whereas, the wealthy generally will not qualify to receive these benefits (Perold *et al*, 2008). As seen above, generally, the poor do benefit the most from services provided by the State. Hence, it is logical from the benefit theory that the poor should pay more tax (Statement 3.2).

2.1.4) Arguments against a Regressive Tax

The argument that the poor receive the most benefits and should therefore pay more tax is a logical argument. However, this is countered by the fact that the poor only receive these benefits as they cannot afford to pay for them themselves. If they are taxed more then they will need more benefits as they will have less income to obtain these services (Statement 3.8) (Perold *et al*, 2008).

Most of these services are essential to ensure that the basic human rights contained in Chapter 2 of the Constitution are not infringed. To charge people who cannot afford the services, mentioned in the paragraph above, in the form of higher taxation, would in effect prevent them from obtaining those services and hence, indirectly infringe on their basic human rights.

The last argument is that of apartheid. As apartheid is generally accepted as a major cause of poverty in South Africa, based on the equality theory a regressive tax, would not help redistribute wealth amongst citizens (Statement 3.6). It would in fact take more wealth away from the poor. If wealth is not redistributed the effects of apartheid may never be addressed (Perold *et al*, 2008).

2.1.5) Collection of Revenue using the South African Tax System

The Government has proposed three methods of revenue collection via the tax system. These methods are an increase in VAT, Payroll tax and an increasing tax on individuals (National Treasury, 2012). However, alternate methods of collection should also be considered. Alternate methods may include an increase in sin taxes or an excise duty on unhealthy foods. These methods will each be discussed below, including a discussion of whether each method is progressive or regressive. (Krugel, 2011)

Increasing VAT

One of the revenue collection methods suggested by Government is an increase in VAT. Economist, Dawie Roodt, estimates that to fund NHI the VAT rate of 14% would need to be increased by at least 3% (Bhengu, 2011). Calculations by KPMG suggest that revenue collected from VAT would need to increase by 6% taking the total VAT rate to approximately 14.8% to achieve the additional funding needed (Byl, 2011). As it can be seen, there is a considerable amount of subjectivity involved in determining a fixed number to increase the rate by and as such

the decision as to whether this should be accepted has been based predominantly on qualitative factors rather than the quantitative figures in this paper.

The National Treasury's chief director of economic and tax policy, Cecil Morden, argued that a higher VAT rate may be justified on the grounds that the VAT system is very efficient and this would increase the revenue collected without placing too large of an administrative burden on SARS (Statement 4.2). He also stated that the worldwide average rate of VAT is 16.4%. South Africa's rate of 14% is relatively low in comparison to the worldwide average rate of 16.4% (Statement 4.1). Therefore, an increase to 14.8% does seem reasonable compared to global standards (McLea, 2011).

Other factors to consider before implementing an increase in VAT are the ease of administration and potential revenue of implementing an increase in VAT (Krugel, 2011). According to budget highlights released by National Treasury for the 2012 year, VAT contributed approximately 25.4% of total tax revenue collected. This shows that the potential revenue from an increase in VAT may substantially increase the amount of revenue collected as it already represents a large proportion of total revenue and a small change could change this owing to the large tax base (Statement 4.6). This further indicates that it may be a viable option (National Treasury, 2012). It was noted in a published article by The South African Institute of Tax practitioners, that many economists believed that an increase in VAT is the fairest method of financing NHI (Watson, 2012). This is due to the fact that everyone will pay VAT (Statement 4.8). This means that even the poor will pay a small portion of the tax (Parker, 2012).

Before implementing an increase in VAT, the repercussions of doing this should be analysed. One of the repercussions is that an increase in VAT would lead to an increase in prices of food and

other products (Statement 4.3). Due to the socio economic composition of South Africa's population an increase in prices may make many goods unaffordable to the poorer population and this should be considered (McLea 2011; Krugel, 2011). Standard Bank Chief Economist, Goolam Ballim, also noted that increasing VAT would depress economic growth (Barry, 2015). This is due to the fact that an increase in VAT means that the tax will be borne by the final consumer (Statement 4.9). Goods and services will become more expensive and the net result will be a large negative impact on private consumption which is a large driver of the South African economy. This decreased consumption could also lead to suppliers of goods and services to cut the workforce (Statement 4.7) (Parker, 2012).

Another challenge that presents itself with an increase in VAT is trade union opposition. Patrick Craven, a spokesperson for the Congress of South African Trade Unions (Cosatu) stated that trade unions will consistently oppose an increase in VAT as they consider it to be very regressive in nature (Statement 4.4). This is a necessary consideration as in the South African landscape trade unions are considered to be very powerful organisations (McLea 2011).

VAT is considered regressive in nature as an increase in prices due to VAT affects the poor more because proportionately to their income, they will be paying more tax than the wealthy. However, much of the regressivity in VAT is removed due to the fact that many of the necessities required by the poor are zero rated or exempt, meaning no VAT is collected on these items (Statement 4.5) (Krugel, 2011).

Payroll Tax on Employees

Government has suggested a payroll tax on employees to fund NHI (Budget speech, 2012). It is estimated that if a payroll tax on individuals is implemented the amount of revenue to be collected from the payroll tax would need to be increased by 5% to fund NHI (Byl, 2011).

Challenges in collecting revenue from a payroll tax include unemployment. According to Statistics South Africa the unemployment rate in 2012 was 25.2% (Statement 4.23). Therefore, it is questionable as to whether or not a payroll tax on employees will be feasible as the potential revenue to be collected appears to be low. Furthermore, the tax base of individuals stands only at approximately five million people (National Treasury, 2012). This is a very small base considering the population stands at 54 million people (Statistics South Africa, 2014). It appears highly unlikely that these five million people will be able to fund the more than 42 million people who are expected to be dependent on public healthcare (Statement 4.24). The introduction of a payroll tax will not result in a new tax base, the payroll tax would merely squeeze more out of an already thin tax base (Statement 4.30) (Bhengu, 2011).

Further challenges listed in the guidelines presented by the United States Agency for International development (USAID) include indications that a payroll tax may lead to workers leaving the formal sector to avoid the payroll taxes (Statement 4.25). Leaving the formal sector may have a negative impact on the economy overall affecting productivity which in turn may affect the amount of corporate taxes collected (Statement 4.31). However, there are also some advantages to implementing a payroll tax namely, the tax is generally considered to be progressive and there is usually support from the general population (Bethesda, 2010).

Another key issue with implementing a payroll tax in relation to South Africa is that most workers are typically employed in agriculture, mining and small, informal enterprises (Statement 4.35). As they are seldom paid a regular, fixed wage, their earnings fluctuate, and many are paid in cash, "off the books." The base for an income tax is therefore hard to calculate (Tanzi & Zee, 2001). A payroll tax is generally considered to be more difficult and costly to administer (Statement 4.26) (Byl, 2011; Bethesda, 2010). Due to increasing globalisation the introduction of high payroll taxes could also result in the workforce leaving to lower taxed jurisdictions (Statement 4.34). Globalisation will also have a twofold effect, if costs of labour are too high due to increased wage demands, the result could be decreased foreign direct investment (Statement 4.27) (Bird & Zolt, 2003). Payroll tax is also seen as a progressive tax. The progressivity is determined because income taxes are based on sliding scales in South Africa therefore the more a taxpayer earns, the more tax will be paid on income (Statement 4.28) (Byl, 2011).

Increasing Tax on Individuals

The last option proposed by Government is increasing tax on individuals. There are many ways in which Government may achieve this. Two methods already implemented by Government included an increase of the capital gains inclusion rate from 25% to 33.33% which began in the 2013 year of assessment and the implementation of dividends tax which was introduced at 15% being 5% higher than the original proposed rate of 10% (National Treasury, 2012). It was also noted that in the 2012/2013 tax year, personal income taxes contributed the largest amount of tax revenue at 34% of all tax revenues (Statement 4.32) (National Treasury, 2013).

Generally increasing tax burden on taxpaying individuals' results in less disposable income due to the increased amounts of tax needing to be paid. This in turn leads to lower levels of saving which results in a lower level of investment. This has a twofold effect on the economy. Firstly, as individuals will have less disposable income less spending will take place affecting tax revenues

that are collected from businesses and so forth. Secondly, due to the decreased amount of investment it will result in less economic growth which would mean that even though costs of funding NHI would escalate due to inflation the amount of revenue collected from additional taxes may remain stagnant or grow at a slower pace (Statement 4.33 & 4.36) (Urbach, 2011).

The progressivity or regressivity of increasing the tax on individuals depends largely on the type of increase implemented. For instance, increasing the capital gains inclusion rate is seen as a regressive tax as capital gains tax is largely seen as a tax on the wealthy as most of the poor are excluded due to exclusions, such as, the primary residence exclusions as well as personal use assets exclusions and annual exclusions in terms of the Eighth Schedule to the Income Tax Act No 58 of 1962 (COSATU, 2001). One of the arguments for progressive taxation is that a progressive tax is able to reduce inequalities through its redistributive characteristics and thus an increase in income tax appears to be justified on the grounds that it will help with income redistribution (Statement 4.29) (Perold *et al*, 2008).

Increase in Sin taxes

An alternative or additional collection method that Government may implement or consider to implement is an increase in sin taxes. Sin taxes in South Africa generally come in the form of an excise duty on tobacco and alcohol products. It is estimated that revenue from sin taxes would need to increase by approximately 46% in order to collect an additional R10.4 billion. This would translate into an increase of R4.47 per box of 20 cigarettes; R0.80 for a 750ml bottle of unfortified wine; R1.47 for a 750ml bottle of fortified wine and a bottle of spirits would increase by R12.82 per bottle (Byl, 2011).

These increases represent fairly exorbitant increases. However, it is argued that increasing the tax on these products would discourage consumption and therefore improve the health of the population. The improved health of the population would in turn, decrease the costs of NHI (Statement 4.10). The argument of decreasing health costs can be supported by studies done by the World Health Organisation (WHO). Research conducted by the WHO indicated that tobacco products were responsible for three million deaths a year in the 1990's (WHO, 1996). The increased costs of healthcare due to alcohol abuse come in the form of substance abuse treatment, increased use of emergency services due to alcohol induced trauma and mental health care due to alcohol related psychiatric problems (Statement 4.11) (Mauser & Van Steele, 1994; Xie, 1999). A further healthcare issue resulting from alcohol abuse includes transport related deaths. For instance, in South Africa during the year 2000, 48% of national transport related deaths had a blood alcohol level above the legal limit (Burrows *et al*, 2001).

A further argument for an increase in sin taxes is that, instead of using the revenues to fund NHI itself, the revenues could alternatively be used to fund programmes at reducing the social burden of alcohol misuse. This may reduce the costs of NHI as it may result in a reduced amount of alcohol related healthcare issues (Parry, Myers & Thiede, 2003).

Other arguments for the increased sin taxes, is that the Government is an active participant in trying to control tobacco consumption. This is evident in various smoking legislation introduced in recent years. According to the Medical Research Council and the National Council Against Smoking, numerous international studies show that excise induced price increases are the most effective tobacco control measure while simultaneously it also helps increase revenues (Van Walbeek, 2003).

The increase of sin taxes on tobacco and alcohol products also has negative aspects. It is argued that significantly increasing the excise duty will lead to increased cigarette smuggling (Statement 4.12). If cigarettes were to be smuggled this would firstly negate the health benefits as people would not quit smoking or smoke less, they would merely purchase the cheaper smuggled substitutes. Secondly, this would lead to a large portion of the cigarette industry being untaxed as smugglers would be unlikely to report income due to the illegal nature of smuggling. Research also suggests that should the taxes be implemented this could in fact decrease revenue collected. The basis for this argument is that as consumption of alcohol and tobacco products would decrease and this in turn would decrease revenue of tobacco and alcohol companies resulting in less corporate taxes being collected (Statement 4.13). The decreased consumption may even lead to retrenchments of workforce further decreasing tax revenues in the form of employees' taxes (Statement 4.14) (Van Walbeek, 2003; Krugel, 2011; Parry *et al*, 2003).

There are also arguments against an increase in sin taxes on alcohol products, the most relevant being that an excise duty on alcohol fails to distinguish between heavy drinkers and moderate drinkers. It is argued that the high medical costs relating to alcohol is a result of alcohol abuse mainly by heavy drinkers and not the moderate drinkers (Statement 4.15). An increase of excise duties will affect all drinkers and not only the ones that contribute to the increased health costs (Parry *et al*, 2003).

With regards to the regressivity or progressivity of an excise duty, excise duties are generally regarded as regressive in nature. This is due to the amount being a fixed amount and therefore, a R1 increase would affect the poor proportionately more than it would affect the rich. As discussed earlier, a progressive tax is preferred as regressive taxes have detrimental effects on the poor. However, studies have shown that in South Africa an increase in prices of cigarettes and alcohol products generally lead to a larger reduction in consumption by the poor than the rich. This means

that the poor are not affected by the increased taxes due to lower consumption and in effect removing much of the regressivity of the tax (Van Walbeek 2003; Parry *et al*, 2003).

Excise Duty on Unhealthy Foods

South Africa currently does not have an excise duty in place on unhealthy foods. If South Africa was to introduce a completely new tax then it would need to determine whether this would be feasible. According to SARS, the main objective of an excise duty is to obtain revenue for treasury, therefore, the key characteristics of the item that they wish to exercise the tax on needs to have daily volumes, be fast moving and consist of a non-essential product. This makes unhealthy foods such as, fast foods or sugary soft drinks, a very good candidate for an excise duty. Fast foods and sugary drinks generally have daily volumes and are fast moving. Furthermore, fast foods and sugary drinks are not considered essential products due to the relative high costs compared to basic food stuffs (SARS, 2012).

A secondary objective of an excise duty stated by SARS is to influence consumer behaviour. Government generally manipulates excise duties to correct harmful behaviour. Examples of excise duties used to correct health and environmental issues include for example: Tobacco excise duties and environmental levies on plastic bags as well as electricity generated from non-renewable resources. This further supports the case of an excise duty on unhealthy foods and sugary drinks as the harmful health effects of the foods may be lowered by lower consumption and thereby decreasing the costs of NHI (SARS, 2012).

A study conducted on taxing unhealthy foods was conducted by researchers at the University of Oxford. The study found that the introduction of a tax on unhealthy foods was effective in reducing

consumption of the unhealthy foods as well as improving the health of the population (Statement 4.17) (Mytton, Clarke & Rayner, 2012).

According to statistics provided by the WHO, South Africa has an obesity rate of 23.2% amongst males. This is a fairly high amount compared to the regional average of 5.3%. What is particularly worrying is that there is also an obesity rate of 42.8% amongst South African females. This is in comparison to the regional average of 11.1%. This is an issue in terms of NHI funding because health issues associated with obesity, which can be costly to NHI, include: cardio vascular diseases, diabetes, osteoarthritis and certain cancers (WHO, 2012). Introducing a tax on unhealthy foods may help combat these issues by decreasing consumption. The benefits of an excise duty on unhealthy foods include reduced costs for NHI due to a healthier population as well as additional revenue generated for the fiscus (Statement 4.16). The negative impacts of the excise duty are very similar to those on any other excise duties. Some of these factors that should be considered include loss of jobs and tax revenue from corporations due to lower levels of demand as well as inflationary effects as food prices rising may lead to other costs escalating in line with these (Statement 4.18, 4.19 and 4.20) (Van Walbeek, 2003).

Another suitable unhealthy food that could be subject to an excise duty is sugar sweetened beverages. Research shows that consumption of these sugary beverages leads to weight gain in both children and adults and a reduction in consumption of these drinks would lead to a decrease in obesity and related diseases. A recent study also shows that 7% of all deaths in South Africa were attributable to excess body weight. The study also suggests that a 20% tax on sugar sweetened beverages in South Africa is predicted to reduce obesity by 3.8% in adult males and 2.4% in adult females. The younger age groups were the largest consumers of sugar sweetened beverages and would stand to benefit the most form the tax (Manyema, Veerman, Chola, Tugenhaft, Sartorius, Labadarious & Hofman, 2014).

Being an excise duty, the tax would be regressive in nature. This would be as a result of the poor paying proportionately more than what the rich would pay. However, the regressivity is reduced, to some extent, by the fact that fast foods are considered luxury goods and the poor could easily exclude themselves from paying the tax by decreasing consumption (Van Walbeek 2003; Parry *et al*, 2003). It is also noted that the poor are disproportionately affected by obesity and have less access to healthcare and less income available to seek healthcare. The tax would potentially reduce the health inequities (Manyema *et al*, 2014).

2.1.6) Hypothecation versus pooling

In deciding how NHI should be funded using the tax system, Government needs to decide whether the funds should be hypothecated specifically for NHI and healthcare or whether Government should apply pooling of funds. Pooling of funds is when funds are placed into the general fiscus for allocation to the relevant department (National Treasury, 2012). Hypothecation means the funds will be earmarked or ring fenced for a specific area of expenditure (Mossialos, Dixon, Figueras & Kutzin, 2002; Doetinchem, 2010).

Arguments for Hypothecation

There are many arguments in support of hypothecation of tax revenues. One of these arguments being that of accountability and trust. Generally when taxes are paid, the public do not know what the taxes will be used to fund. If a portion of taxes is specifically earmarked for healthcare the public will know what the funds are being utilized for and this will create some sort of accountability on the part of Government (Statement 5.2) (Doetinchem, 2010).

Some supporters of hypothecation base their arguments on transparency. Taxes that are collected for general fiscus and not hypothecated are subject to political decisions. For instance, a politician may include in his election speech that he will increase spending on healthcare and subsequently to his election healthcare spending may increase dramatically, however, if a different politician does not feel that healthcare is high on the agenda and is subsequently elected he may decrease funds available to healthcare. If taxes are hypothecated they will not be subject to this political infighting and NHI will have a constant stream of revenue (Statement 5.3). In summary the transparency argument states that hypothecation introduces rigidity into the budgetary process. Revenue would be determined by the taxes and not by policy decisions (Mossialos, Dixon, Figueras & Kutzin, 2002; Doetinchem, 2010; Parry *et al*, 2003).

Hypothecation may also help reduce opposition to the imposition of the tax as it is more visible by the public. The argument of public support is largely dependent on whether NHI is perceived to deserve the funds or not. Studies across various countries have shown that healthcare generally has been seen by the public to merit its own earmarked tax due to the necessity of healthcare services (Statement 5.4) (Mossialos *et al*, 2002; Doetinchem, 2010).

The last argument for hypothecation of tax revenue is that ministries generally approve of hypothecation as it is seen as protecting their resources. This helps to bypass the budgetary system implemented by various ministries of finance and helps reduce the amount of lobbying required by the healthcare departments (Statement 5.5) (Mossialos *et al*, 2002; Doetinchem, 2010).

Arguments against Hypothecation

Arguments against hypothecation also need to be discussed to ensure that the right decision is made. One of the arguments is that ministries of finance rarely endorse hypothecation as it undermines their mandate to allocate budgets as they see appropriate. It builds a sort of exemption from review into the tax system as the revenues from the tax to be introduced is exempted from scrutiny and potential cuts (Doetinchem, 2010).

Other factors to consider, specifically for NHI, is that hypothecation of taxes may result in inappropriate funding levels (Statement 5.6). The logic behind this is that hypothecation is linked to spending, not on the requirements of the services, but on unrelated macroeconomic factors. Applying this to NHI, it would mean that instead of deciding how much funding NHI needs in relation to health needs of the population, the funding will be decided by how much revenue the tax is able to raise (Doetinchem, 2010).

It has also been argued that hypothecation ties the hands of the Government. Government is forced to spend the amounts specifically on healthcare and this may negatively impact their ability to allocate resources to where they may be needed in different economic situations (Statement 5.7). A further consideration is that if taxes are hypothecated it does not allow trade-offs between health care and other areas of public expenditure, whereas, the general fiscus is flexible in these areas (Mossialos *et al*, 2002; Doetinchem, 2010).

The final argument against hypothecation is that it limits funding for NHI to a specific source whereas if general revenues are used then funding may be obtained from a broader base as opposed to a single source of revenue (Statement 5.8 and 5.9) (Mossialos *et al*, 2002).

2.2) International Models

In determining how South Africa should fund its NHI system, Government should look to what has been done in various international communities and how they can learn from the mistakes of others. In particular, this section will seek to understand various international models that have been successful, are in the process of being implemented or have aspects that the South African NHI can learn from. Examples of such systems include guidelines by The United States Agency for International Development (USAID), the American Affordable Care Act, Ghana's National Health Insurance Scheme (NHIS) and Australia's medicare system. These systems were chosen as they represent a broad range of countries operating in differing economic circumstances.

2.2.1) The Ghanaian Model

Research by the WHO had indicated that out of pocket payments were the least efficient and most inequitable means of financing healthcare (WHO 2000; Xu, 2003). Ghana therefore, decided to implement what it calls, the National Health Insurance Scheme. The NHIS in Ghana was introduced by the National Health Insurance Act of 2003 (Act 650). The aim of the Ghanaian system was to achieve coverage for all citizens in their country (Liang, 2011).

The NHIS is funded via a 2.5% National Health Insurance Levy (NHIL) on selected goods and services, a 2.5% Social Security and National Insurance Trust (SSNIT) from the formal sector, premiums from the informal sector and Government budget allocations. Ghana also decided to establish a national health insurance fund. This national health insurance fund pays for services used by members as well as investing surplus funds to help sustain the costs of maintaining the fund. Statistics have shown that the NHIL accounted for between 61.5% and 61% of total income of the fund in 2008 and 2009 respectively, whereas, formal sector contributions made up 16.9% and 15.6% and the informal sector premiums only made up 5% and 3.8% of all national health

insurance fund income. From the above statistics, it can be seen that the most effective method of collection in Ghana was by far the NHIL (Liang 2011, Modern Ghana, 2012).

One of the key issues Ghana noted in their system is the lack of adequate Information Technology (IT) capacity to handle the volumes of claims. South Africa can address the issue, the lack of adequate IT capacity, by factoring it in when deciding on how to fund the NHI system to ensure enough funds are generated to offer competitive salaries and acquire the skills needed to operate the system efficiently (Department of Health, 2011a).

As Ghana and South Africa are both considered developing economies (International Monetary Fund, 2014), perhaps a similar levy may be successful in funding South Africa's own NHI system. Collection methods discussed that are similar to the Ghanaian levy are the excise duties on alcohol, tobacco and unhealthy foods. As the Ghanaian levy went directly into Ghana's NHIS fund it can be said that Ghana also used hypothecation of revenues to fund their model.

2.2.2) Outlines by USAID & Affordable Care Act

USAID has set aside steps in which they feel a financing model can be pro poor. This is particularly relevant to the South African landscape as most of the population lives in poverty (Bethesda, 2010).

In terms of revenue generation, the steps indicated by USAID include the levying of progressive general taxes without consumption taxes on basic food stuffs. They also include levying of progressive earmarked taxes for health on luxury goods, exemption of poor from user fees, levying

fees based on income, subsidizing of premiums and soliciting external donor funds (Bethesda, 2010).

Revenue generation methods previously discussed that may meet most of the requirements of the USAID guidelines are the excise duties on tobacco, alcohol and unhealthy foods as well as an increase in VAT, assuming that all zero rated and exempt items as listed in the provisions of s 11 and 12 of the Value-Added Tax Act No 89 of 1991 (the VAT Act) stay the same way for the foreseeable future. The USAID guidelines also explicitly state that hypothecation of revenues should be applied (Bethesda, 2010).

The Affordable Care Act is an American health care reform that is similar to South Africa's proposed NHI system as the Affordable Care Act also aims to achieve coverage of more individuals. Arguments made before the introduction of the American system for the Affordable Care Act included the fact that it would result in a more productive workforce which in turn would be better for the American economy (Dhat, 2013). It is estimated that the Affordable Care Act will cost $1 trillion (Feldstein, 2009). This is substantially higher than the amount needed to fund the South African NHI as the Affordable Care Act will cover far more people and operate at a far higher scale than the South African NHI, as such, the Affordable Care Act system requires far more funding.

The American system, the Affordable Care Act, is funded by a variety of taxes. The Affordable Care Act is funded through, a 3.8% surtax on investment income, 0.9% surtax on Medicare taxes, a 10% tax on indoor tanning services, a penalty tax on people who do not buy health insurance and a 40% tax on health insurance policies that cost more than $10200 amongst other increases (Align America, 2013; Blodget, 2012). The use of various taxes could also be applied by South

Africa to alleviate the pressure of focusing on a single tax form to fund NHI by rather using various tax forms.

It is also important to consider that an alternative to the method used by the United States of America was proposed whilst the Affordable Care Act was being debated. One of the alternative methods of financing included the removal of a medical deduction that was granted to Americans. It was estimated that this could generate up to $1 trillion dollars in additional revenue over a five year period (Feldstein, 2009). South Africa could consider implementing similar measures when attempting to fund NHI.

One of the significant differences between South Africa and the United States of America is that in the United States of America there is no VAT or any indirect tax system similar to the South African VAT system. This is significant as South Africa plans to use VAT as a possible method of financing NHI. In the United States of America there is a sales tax in place which does not form part of the federal Government but rather is levied per state. The sales tax rate ranges per state from 0% in Montana all the way up to 12% in Alaska (Feldstein, 2009).

2.2.3) Australian Medicare system.

The Australian Medicare system (Medicare) was introduced in 1975. The intentions of this system were to achieve healthcare that was simple, fair and affordable. The Medicare system is funded 70.7% by the Government of Australia, 7.5% by private sources and 16.8% from out of pocket payments by the users. In terms of the Australian Government financing, Medicare is financed 82% from general taxation and 18% from Medicare levy and contributions based on income. Professor Gavin Mooney, of the Sydney School of Public Health, also indicated that the major flaw in Australia's system is that they still require end user payments and when deciding on a method to

implement, South Africa should keep patient payments to a minimum (Department of Health, 2011b).

To simplify the above figures, 75.6% or just over three quarters of Australia's general taxes are funded from income taxes. Of these, individual's income tax comprises 52.3%, corporate tax 19.5% and other income taxes 3.8% respectively. The Medicare levy is levied at a rate of 1.5% of taxable income above certain thresholds. Australia's Government introduced the thresholds to ensure that low income households were exempted from paying the levy (Li, 2006).

Applying these factors to the collection methods proposed earlier in the research, would mean that South Africa would opt for increasing tax on individuals. This can be done by introducing the levy on taxable income. What is also particularly attractive from that perspective is that there are thresholds to exempt the poorer population from paying the taxes emphasising the progressive nature of the levy. South Africa could also allocate funds from the general budget as Australia does, however, this does not increase the revenue generation capacity. It merely substitutes from one source to the other and the question becomes what aspect can South Africa afford to spend less on? It is also clear from the Australian model that Australia uses a combination of hypothecation and funding from general fiscus and this may be a measure South Africa may seek to implement. According to the Australian Bureau of Statistics the official unemployment rate for Australia was 6% in June 2015 whereas in comparison to Statistics South Africa the unemployment rate stood at 25% for the 2nd quarter of 2015 (Statistics South Africa, 2015; Australian Bureau of Statistics, 2015). Therefore, it is questionable whether the methods of Australia may be comparable to South Africa due to the differing compositions of the populations in terms of incomes earned and unemployment rates and this may be an interesting topic for future research.

From the analysis of the four international systems certain similarities can be established. The first being, all systems are somewhat funded using the various tax systems of those countries and the second being that all systems are funded through a combination of taxes, not only a specific tax.

3) Research Methodology

3.1) Methodology Description

The research methodology adopted was exploratory interpretive research as it dealt with the opinions of respondents which were aggregated. Exploratory research is research conducted for a problem that has not been clearly defined. It often occurs before we know enough to make conceptual distinctions or posit an explanatory relationship (Shields, 2013). Interpretive research is guided by the researcher's desire to understand, and therefore interpret, the social reality (Given, 2008). This method was best suited as the goal of the research was to obtain and explore knowledgeable individuals' opinions on what the best financing methods were and to identify the factors that influenced the decision. The method used also consisted of a normative study focusing on a literature review of relevant draft legislation, journals and publications and articles published on selected reputable websites. A questionnaire was developed from information obtained through the literature review and once properly constructed the questionnaire was used to gather new data and opinions on methods to fund the proposed NHI. The questionnaire can be found in Annexure 1.

The theory of the best financing method was based on the raw data collected and analysed. The data was analysed firstly by using descriptive statistics. Descriptive statistics attempt to quantitatively describe the main features of a collection of information (Mann, 1995). Descriptive statistics were used to determine the mean scores on the Likert scale of which financing method was most appropriate, effective and equitable. These descriptive statistics helped obtain a summary of what the majority of the surveyed respondents felt was the most appropriate method of financing NHI. The second way in which the data was analysed was through a factor analysis. Factor analysis is a statistical method used to describe variability among observed, correlated variables in terms of a potentially lower number of unobserved variables called factors. For example, it is possible that variations in four observed variables mainly reflect the variations in two

unobserved variables. A series of questions were posed relating to various financing methods of NHI and respondents were asked to rate the statements using a Likert scale. Each statement related to an advantage or a disadvantage of a financing method. A factor analysis was then performed in order to reduce the number of factors that influenced the financing method agreed upon by respondents. Factor analysis was considered an appropriate tool as it is a powerful tool commonly used in determining correlations in variables. This method was based on insights obtained from Creswell (2009) and Fowler (2002). Other analytical tools that helped interpret the data included tabulation, histograms, a Kruskal-Wallis test and cluster analysis.

3.2) Responses to the Questionnaire

The population included 91 respondents made up of tax practitioners, tax academics and economists. The purposive population was appropriate due to the complex nature of the issue as it is unlikely that the general public would have the relevant knowledge required for the purposes of the study. The original population included 140 Tax academics contacted via email across the tax departments in various South African Universities, 300 Tax professionals contacted via email across tax divisions of accounting firms, large corporations as well as members of the South African Institute of Tax practitioners. The population also included 150 Economists contacted via email working at various accounting firms, economics houses and Universities.

Tax practitioners and tax academics had been chosen due to their knowledge of tax and the fact they are kept up to date with developments in the tax field combined with an understanding of the South African economy expected from professionals working in the field. Economists had been chosen as they were the ones who most likely would have considered the effects of various funding mechanisms, proposed to fund the NHI system, on the South African economy or would be able to apply their minds in order to consider the effects or potential effects on the economy.

3.3) Procedure for data collection

Tools used to collect the relevant data included the use of a questionnaire. The questionnaire was self-developed based on possible factors identified in the literature review that could influence the respondents' decision as to what the best financing method may be. The questionnaire was subject to comments from the Masters of Commerce research committee at The University of the Witwatersrand. This questionnaire was circulated amongst knowledgeable professionals. The questionnaire was first pilot tested amongst ten tax and economics lecturers and associate lecturers at the University of the Witwatersrand to ascertain whether the designed questions would generate the required data. The questionnaire also went through the University of the Witwatersrand's ethics clearance process before being circulated. Permission to distribute the questionnaire to respondents was also sought and measures to ensure confidentiality of personal details were also in place. The questionnaire consisted of close ended structured questions. The questionnaire made use of a four point Likert scale to measure certain aspects. A four point Likert scale was used in order to ensure that the respondents did not always select an indifferent option. A Likert scale was an appropriate measure as it assisted the researcher in measuring the intensity of a respondent's opinion on certain aspects of an NHI financing method (Leedy, 2010).

The researcher also made use of Google Drive, an online questionnaire creator to distribute the questionnaire. Google Drive, an online questionnaire creator, was used to distribute a web based questionnaire page with a unique link which respondents were able to access and respond on. The link was circulated to relevant firms via a contact person within certain financial institutions, tax divisions of accounting firms, economics firms and universities who then circulated it amongst the relevant staff members within those firms and universities. The researcher was in direct e-mail and telephonic contact, with the contact persons in obtaining the email address lists. The link was sent electronically via e-mail and the researchers personal e-mail address was made available to respondents who had trouble answering any of the questions. The responses from the questionnaire were then captured into relevant spreadsheets.

3.4) Quality of research

All data used was obtained from unrelated third parties. All responses were documented and stored to ensure that they were readily available in a situation where data would need verification. Data was investigated using non-parametric Spearman's rho correlation coefficient[3].Inspection of the correlation matrices confirmed the presence of a number of coefficients of 0.3 and above. Additionally, the Kaiser-Meyer-Olkin value was compared to the recommended minimum value of 0.6 (Kaiser, 1970, 1974) and the Bartlett's Test of Sphericity (Bartlett, 1954) was assessed and reached statistical significance, supporting the factorability of the correlation matrix. The Cronbach's alpha coefficients were also calculated for each of the components identified form the factor analyses and when compared to the minimum required, they were deemed acceptable due to the exploratory nature of the research. Cronbach's alpha measures internal consistency and in this particular research it measured how closely each set of statements were related in comprising the new factor.

Questionnaires were first subject to a pilot test to determine whether the questions that were asked would generate the required data that was needed to complete the study. The questionnaire also went through the University of the Witwatersrand, School of Accountancy, MCom Research committee comment process. The panel provided insightful commentary which assisted in improving the questionnaire.

3.5) Limitations of the study

Due to the fact that NHI has not yet been implemented, there is limited literature available in accredited journals on the South African proposed NHI system; therefore the literature review is largely based on draft legislation, expert insights and Government publications.

[3] Refer to defined terms for definitions of statistical terminology

The research will not provide detailed quantitative figures as it is largely based on a qualitative study and this may be an area for future research. The sample may not reflect the entire industry consensus as the rate of response has been low amongst certain occupation groups but should provide a reflection of knowledgeable individuals' perceptions.

4) Presentation & Discussion of Results

4.1) Introduction

This section describes the results of the research. A general overview of the scores provided by the respondents, reflecting their opinions on the various financing methods is outlined. The scores for each part are summarized in tables showcasing the mean scores for each question as well as the percentage of the population that selected each option. This section also offers a detailed discussion on and explanation of the results. An extensive qualitative discussion for each of the questions is provided. The discussion will include the descriptive values presented in the relevant tables to clarify and simplify the understanding of the results. The descriptive statistics were used to determine a general overview as to whether or not the respondents agreed with the statements as introduced by the literature review. The descriptive statistics were particularly useful in addressing the research question surrounding the collection method.

4.2) Respondents

As previously stated, the sample consisted of a purposeful selection of respondents consisting of tax practitioners, tax academics and economists. The composition of the 91 surveys returned included 40 tax practitioners (44%), 33 academics (36.2%) and 18 economists (19.8%) were provided in Figure 1 provided below. All questionnaires were correctly completed. No ethical issues were raised during the course of data collection and no concerns regarding the accuracy of the questionnaire were noted.

Figure 1: Survey respondents by occupation

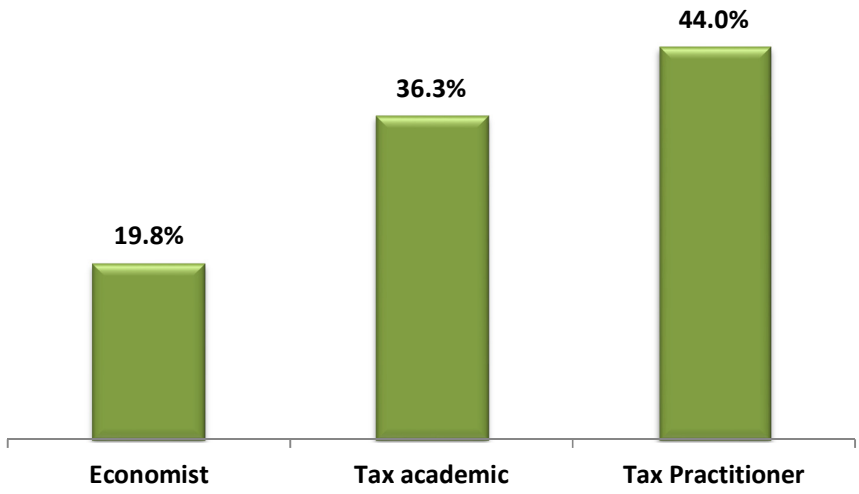


Figure 1 above shows how the respondents were distributed across the differing occupations. Tax practitioners responded the most followed by tax academics and lastly the economists.

4.3) Effectiveness of financing methods, presentation and discussion of results

The effectiveness of a tax can be considered as the ability of a Government to collect a tax at the lowest cost possible (Vitek & Pubal, 2002). The effectiveness of six different types of tax increases were assessed using a Likert scale ranging from one to four, with four being highly effective and one being highly ineffective. The respondents' selections relating to the effectiveness of taxes were summarised in Table 1 below.

Table 1: Effectiveness Responses treated as categorical variables

	Highly Ineffective	Ineffective	Effective	Highly Effective	Total
Increasing VAT	6	6	30	49	91
	6.60%	6.60%	33.00%	53.80%	100.00%
Payroll tax on employees	12	20	38	21	91
	13.20%	22.00%	41.80%	23.10%	100.00%
Increasing "sin" taxes	6	13	56	16	91
	6.60%	14.30%	61.50%	17.60%	100.00%
Excise duty on unhealthy foods	11	28	41	11	91
	12.10%	30.80%	45.10%	12.10%	100.00%
Increasing tax on individuals	20	35	31	5	91
	22.00%	38.50%	34.10%	5.50%	100.00%
Some combination of the above	4	10	59	18	91
	4.40%	11.00%	64.80%	19.80%	100.00%

The data from Table 1 shows that respondents perceive *increasing VAT* as highly effective with the largest proportion at 53.8% of the respondents, selecting the option as highly effective. The second largest proportion was *introducing a payroll tax* which was considerably smaller with only 23.1% of the respondents rating it as highly effective. *Increasing tax on individuals* was rated the least effective method as the largest proportion of respondents, at 38.5%, rating this method as ineffective as well as highly ineffective at34.1%. Therefore, based on the frequency of selections the most effective means of financing NHI would be through the use of VAT and the least effective will be through increasing tax on individuals.

The cumulative frequency of highly effective and effective selections can also be analysed in order to help determine the most effective method of financing NHI. At a cumulative frequency of 86.8%, *increasing VAT* is rated as the most effective means of financing NHI. *A combination of taxes* is the next best option with 85.6% of respondents perceiving it to be both effective and highly effective. It is also worth noting as per Table 3 below, that of the various combinations of taxes available, the

most common selection for financing NHI was an increase in VAT and a payroll tax. This is in line with both VAT and a payroll tax having the highest frequency of highly effective ratings by the respondents. The least effective, by cumulative frequency of ineffective and highly ineffective scores, once again shows us that increasing tax on individuals is the worst option in terms of effectiveness. 60.5% of the respondents believe that increasing tax on individuals is ineffective.

Table 2 below shows the mean scores achieved and standard deviation of responses. It shows that, based on the respondents selections, increasing VAT was the most effective method of financing NHI.

Table 2: Effectiveness responses treated as scale variables

	Mean	N	Std. Deviation
Increasing VAT	3.34	91	0.872
Payroll tax on employees	2.75	91	0.961
Increasing "sin" taxes	2.9	91	0.761
Excise duty on unhealthy foods	2.57	91	0.858
Increasing tax on individuals	2.23	91	0.857
Some combination of the above	3	91	0.699

Figure 2: Ranking of Effectiveness by mean scores

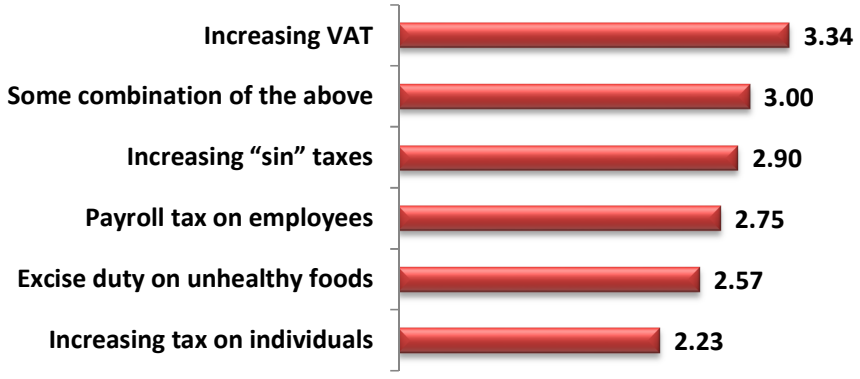


Figure 2 above (Derived from Table 2), shows the effectiveness of the different collection methods ranked from highest to lowest based on mean. The effectiveness was rated on a scale of one (highly ineffective) to four (highly effective) giving us a middle value of 2.5. The excise duty on unhealthy foods had a mean rating of 2.57, indicating that as a group, the respondents were undecided about the effectiveness of this financing option. A mean rating of 2.23 for increasing tax on individuals indicated that the respondents rated the option as ineffective on average as a method of financing NHI. The mean values further confirm that increasing VAT would be the most effective method of financing NHI with the highest mean score of 3.34.

From the scores obtained in Figure 2 it is implied that *increasing VAT* would be the best means of financing NHI and result in the Government being able to collect the required funds at the lowest cost possible. It is also implied that *increasing tax on individuals* would be the least effective method in financing NHI. The literature review conducted in Section 2 suggested that VAT would be effective as the administrative costs associated with collecting the taxes would be minimal when compared to other means. The literature review also suggested that increasing individuals' taxes would be ineffective due to the small tax base as well as the effect it would have on disposable income. Factors influencing the respondents' decision to select VAT as the most effective means of financing and to select increasing individuals tax as the least effective means will be considered in our factor analysis contained in Section 5

Table 3:Selected combinations for effectiveness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Payroll & Sin Tax	5	5.5	5.7	5.7
	Payroll & Unhealthy Tax	3	3.3	3.4	9.2
	Sin Tax & Individuals Tax	2	2.2	2.3	11.5
	Sin Tax & Unhealthy Tax	11	12.1	12.6	24.1
	Unhealthy Tax & Individuals Tax	2	2.2	2.3	26.4
	VAT & Individuals Tax	6	6.6	6.9	33.3
	VAT & Payroll	33	36.3	37.9	71.3
	VAT & Sin Tax	21	23.1	24.1	95.4
	VAT & Unhealthy	4	4.4	4.6	100
	Total	87	95.6	100	
Missing		4	4.4		
Total		91	100		

Table 3 above shows the frequency and frequency as a percentage of which combinations of taxes were rated when selecting the option “some combination of the above”. Four respondents failed to specify a combination.

4.4) Equitableness of financing methods, presentation and discussion of results

The American Institute of Certified Public Accountants (AICPA) suggest that an equitable tax system contains two main principles. The first principle is horizontal equity. Horizontal equity means that taxpayers, who are similarly situated, pay the same amount of taxes. The second principle of an equitable tax system is vertical equity, which requires that those who have more

income (or property) pay more in taxes because they are in a better position to do so (AICPA, 2010).

The equitableness of six different types of tax increases were assessed using a Likert scale ranging from one to four, with four being highly equitable and one being highly inequitable. The respondents' selections relating to the equitableness of taxes are summarised in Table 4 below.

Table 4: Equitableness responses treated as categorical variables

	Highly Inequitable	Inequitable	Equitable	Highly Equitable	Total
Increasing VAT	14	11	28	38	91
	15.40%	12.10%	30.80%	41.80%	100.00%
Payroll tax on employees	26	29	28	8	91
	28.60%	31.90%	30.80%	8.80%	100.00%
Increasing "sin" taxes	5	18	46	22	91
	5.50%	19.80%	50.50%	24.20%	100.00%
Excise duty on unhealthy foods	12	23	38	18	91
	13.20%	25.30%	41.80%	19.80%	100.00%
Increasing tax on individuals	32	34	23	2	91
	35.20%	37.40%	25.30%	2.20%	100.00%
Some combination of the above	7	18	55	11	91
	7.70%	19.80%	60.40%	12.10%	100.00%

Per analysis of the data contained in Table 4 above, we can establish that *increasing VAT* was rated highly equitable by the largest number of respondents with a frequency of 41.8%. The second most equitable method was an *increase in Sin taxes* with 24.2% of the respondents rating it as highly equitable. *Increasing tax on individuals* was rated as the most inequitable means of financing with the highest number of respondents believing raising taxes on individuals is highly inequitable (32.5%), as well as, the highest number of respondents believing raising taxes on individuals is inequitable (37.5%).

Table 5 below shows the mean scores and standard deviation of responses. The mean scores indicate that based on the respondents selections, *increasing VAT* is the most equitable means of financing NHI with the highest score of 2.99.

Table 5: Equitableness responses treated as scale variables

	Mean	N	Std. Deviation
Increasing VAT	2.99	91	1.08
Payroll tax on employees	2.2	91	0.957
Increasing "sin" taxes	2.93	91	0.814
Excise duty on unhealthy foods	2.68	91	0.941
Increasing tax on individuals	1.95	91	0.835
Some combination of the above	2.77	91	0.761

Figure 3 below (Derived from Table 5), shows the equitableness of the various collection methods ranked from highest to lowest based on mean. Equitableness was rated on a scale of 1 (highly inequitable) to 4 (highly equitable) with a middle value of 2.5. Scores of below 2.5 indicate that as a group the respondents rated a *payroll tax on employees* and an *increase in tax on individuals* as inequitable on average. The mean also confirms that in the expert's opinion, as a group, *increasing VAT* was the most equitable method of financing NHI with a score of 2.99.

Figure 3: Ranking of equitableness by mean score

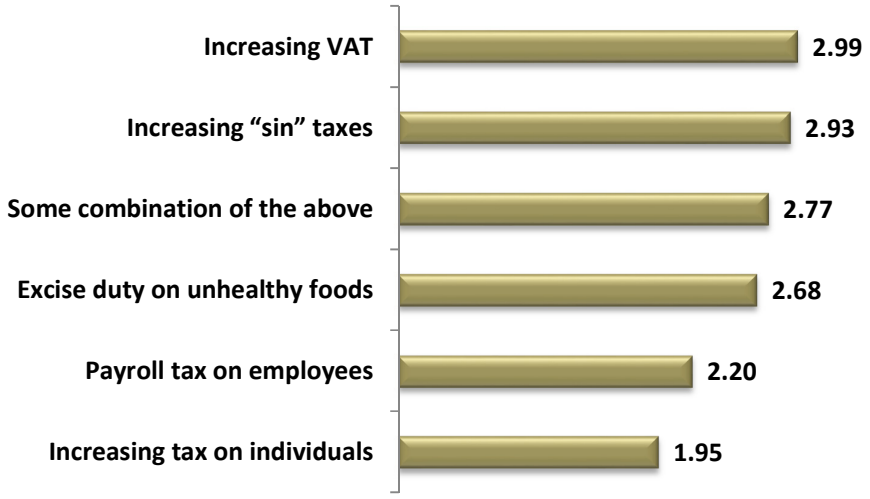


Table 6 below shows the frequency and the frequency as a percentage of which combinations of taxes were rated when selecting the option *some combination of the above*. Four respondents failed to specify a combination.

Table 6: Selected combinations for equitableness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Payroll & Individual Tax	3	3.3	3.4	3.4
	Payroll & Sin Tax	2	2.2	2.3	5.7
	Payroll & Unhealthy Tax	3	3.3	3.4	9.2
	Sin Tax & Individuals Tax	3	3.3	3.4	12.6
	Sin Tax & Unhealthy Tax	17	18.7	19.5	32.2
	Unhealthy Tax & Individuals Tax	2	2.2	2.3	34.5
	VAT & Individuals Tax	5	5.5	5.7	40.2
	VAT & Payroll	24	26.4	27.6	67.8
	VAT & Sin Tax	22	24.2	25.3	93.1
	VAT & Unhealthy	6	6.6	6.9	100
	Total	87	95.6	100	
Missing		4	4.4		
Total		91	100		

An analysis of the cumulative frequency of the equitable and highly equitable selections, per Table 4, reveals that the most equitable funding method selected by the respondents would be an *increase in sin taxes* with 74.7% of respondents selecting either effective or highly effective for this option. The second most equitable option would be *increasing VAT* with 72.6% of respondents selecting effective or highly effective for this option. According to the respondents surveyed, a *combination of taxes* was the third most equitable by frequency with a cumulative frequency of 72.5% and the most selected combination, per Table 6, being VAT and payroll taxes. The least equitable option by frequency is *increasing tax on individuals* with 72.6% of the respondents rating *increasing tax on individuals* either inequitable or highly inequitable.

From the results above it becomes evident that *increasing VAT* is the most equitable method of financing NHI as it has the highest frequency of highly equitable responses as well as the highest mean. *Increasing tax on individuals* is the least equitable means of financing NHI as it has the lowest mean and frequency. These findings imply that *increasing VAT* is both horizontally and vertically equitable. Some of the factors from the literature review contained in Section 2, established that VAT was a regressive tax in nature. However, much of the regressivity of the VAT system was removed due to zero rating and exemption of certain supplies. This is in line with horizontal equity as all taxpayers in the same situation will pay the same rate. This is also in line with vertical equity as people with more income will be subject to more tax through the consumption of more goods. Factors influencing the respondents' decision to select *increasing VAT* as the most equitable means of financing and to select *increasing individuals' tax* as the least equitable means will be considered in our factor analysis in Section 5.

4.5) Progressive Vs Regressive taxes, discussion and presentation of results

Per the literature review contained in Section 2, there were many factors which affected the decision to implement a progressive or regressive tax. The questionnaire presented nine key statements that would influence the decision to implement a regressive or progressive tax. The respondents were then asked to rate the intensity in which they agreed or disagreed with the statements on a scale of one (strongly disagree) to four (strongly agree). Mean scores above the midpoint of 2.5, indicated that the respondents, as a group, agreed with the statement. Scores below 2.5 indicated that the respondents, as a group, disagreed with the statements. The respondents' selections relating to progressive and regressive taxes are summarised in Table 7 below.

Table 7: Selections relating to progressive and regressive taxes

		Strongly Disagree	Disagree	Agree	Strongly Agree	Total
3.1	Wealthy people should pay more taxes as they stand to lose more if the state does not protect their assets.	14 15.40%	36 39.60%	32 35.20%	9 9.90%	91 100.00%
3.2	Poor people should pay more taxes as they receive more benefits from the Government than wealthy people	24 26.40%	49 53.80%	13 14.30%	5 5.50%	91 100.00%
3.3	Progressive taxes are more stable in times of recession, when a recession hits people will earn less and be shifted into a lower bracket.	4 4.40%	25 27.50%	53 58.20%	9 9.90%	91 100.00%
3.4	Each person should sacrifice proportionately what they can afford.	5 5.50%	18 19.80%	48 52.70%	20 22.00%	91 100.00%
3.5	Progressive taxes are a necessary tool in transferring wealth from the rich to the poor.	10 11.00%	22 24.20%	47 51.60%	12 13.20%	91 100.00%
3.6	A regressive tax is unlikely to improve income redistribution	7 7.70%	14 15.40%	52 57.10%	18 19.80%	91 100.00%
3.7	Taxing a person more for working harder and earning more income is unfair.	7 7.70%	23 25.30%	33 36.30%	28 30.80%	91 100.00%
3.8	If the poor pay more taxes, then a result of this would be that the poor would require more government services.	10 11.00%	18 19.80%	45 49.50%	18 19.80%	91 100.00%
3.9	A progressive tax should be implemented.	9 9.90%	15 16.50%	59 64.80%	8 8.80%	91 100.00%

Table 8 shows the mean and standard deviation of responses. The mean scores will be used to interpret whether or not the respondents, as a whole, agreed or disagreed with the statements.

Table 8: Mean scores for progressive and regressive statements

		Mean	N	Std. Deviation
3.1	Wealthy people should pay more taxes as they stand to lose more if the state does not protect their assets.	2.4	91	0.868
3.2	Poor people should pay more taxes as they receive more benefits from the Government than wealthy people	1.99	91	0.796
3.3	Progressive taxes are more stable in times of recession, when a recession hits people will earn less and be shifted into a lower bracket.	2.74	91	0.697
3.4	Each person should sacrifice proportionately what they can afford.	2.91	91	0.798
3.5	Progressive taxes are a necessary tool in transferring wealth from the rich to the poor.	2.67	91	0.844
3.6	A regressive tax is unlikely to improve income redistribution	2.89	91	0.809
3.7	Taxing a person more for working harder and earning more income is unfair.	2.9	91	0.932
3.8	If the poor pay more taxes, then a result of this would be that the poor would require more government services.	2.78	91	0.892
3.9	A progressive tax should be implemented.	2.73	91	0.761

From Table 8 above, it became evident that the respondents only disagreed with two statements, being “3.1) Wealthy people should pay more taxes as they stand to lose more if the state does not protect their assets” and “3.2) Poor people should pay more taxes as they receive more benefits from the Government than wealthy people.” Disagreeing with statement 3.2 in particular indicates that in the opinion of the respondents, a regressive tax should not be implemented as this will result in the poor paying proportionately more taxes.

By agreeing with statements 3.3 to 3.9, per Table 8 above, the respondents indicated that a progressive tax should be implemented. By agreeing with statements 3.3, 3.4, 3.5 and 3.8, the respondents have implied that the decision to implement a progressive tax is influenced largely by

the fact that progressive taxes are perceived to be more stable in times of recession, each person should sacrifice proportionally what they can afford, progressive taxes are necessary for transferring wealth from the rich to the poor and if the poor paid more taxes the result would only be that the poor would require more assistance from the Government. This is in line with the literature review. The major downside of a progressive tax is that the respondents felt that it was unfair to tax people more for working harder and earning more income. This is in line with the findings in Section 4.4 suggesting that *increasing taxes on individuals* and a *payroll tax on employees* would be the most inequitable means of financing NHI.

Statement 3.9, in particular, states that a progressive tax should be implemented. 73.6% of the respondents either agreed or strongly agreed with statement 3.9 further indicating that a progressive tax should be implemented. These results are contrary to the findings in section 5.2 and 5.3 that suggested an *increase in VAT* should be implemented as VAT is a regressive tax. The contradiction can be explained by the literature review conducted in Section 2 which stated that even though VAT, as a tax is regressive in nature, much of the regressivity is removed due to exemptions and zero rating of certain goods and services.

4.6) Collection Methods

Respondents were asked to indicate the extent to which they agree with a set of thirty six statements about factors affecting proposed taxes. This was done by using a Likert scale of one to four with one, being strongly disagree and four, being strongly agree. Due to the large number of factors in the question, the results have been summarised into factors affecting progressive collection methods and factors affecting regressive collection methods, this split was not done in the actual questionnaire to avoid influencing the respondents' decisions. The respondents' selections relating to regressive collection methods are summarised in Table 50 (Annexure 4). Table 9 illustrates the mean and standard deviation of regressive responses. The respondent's

selections relating to progressive collection methods were summarised in Table 51 (Annexure 4). Table 10 illustrates the mean and standard deviations of these responses.

As identified in Section 2, Government has proposed three methods of revenue collection via the tax system. These methods are an Increase in VAT, Payroll tax and increasing tax on individuals. Alternate methods were also considered in the study which included an increase in sin taxes or an excise duty on unhealthy foods. The questionnaire presented thirty six statements that would influence the decision to implement differing collection methods and asked the respondents to rate the intensity of which they agreed or disagreed with the statements on a scale of one (strongly disagree) to four (strongly agree). Mean scores above the midpoint of 2.5 indicated that the respondents, as a group, agreed with the statements. Scores below 2.5 indicated that the respondents, as a group, disagreed with the statements. Due to the large number of statements, the discussion on these statements is separated into two parts, the first being regressive collection methods and the second being progressive collection methods.

4.6.1) Results regressive Collection methods

For a summary of selections each respondent made please refer to Table 50, Annexure 5. Table 9 below shows the mean scores achieved for each regressive collection method. These scores can be used to determine whether the group of respondents, as a whole, agreed or disagreed with the statements. From Table 9, it was evident that the respondents as a whole disagreed with statements 4.7 “Increasing VAT will result in lower consumption of goods and services which in turn would lead to labour cuts” and 4.9 “Increasing VAT will ultimately be unfavourable as the final burden is borne by consumers” with mean scores of 2.35 and 2.43 Disagreeing with the statements indicated that, in the opinion of the respondents, increasing VAT would not lead to decreased consumption of products and in turn, labour cuts. It also indicated that the respondents did not believe that increasing VAT would be unfavourable, even if the final burden would fall upon the consumer. The results suggested that although the literature suggests that these factors are

disadvantages to increasing VAT, the respondents were of the opinion that the factors may not be applicable in a South African context.

Table 9: Regressive method mean scores

		Mean	N	Std. Deviation
4.1	An increase in the VAT rate in South Africa is justifiable as the current rate of 14% is below the international average of 16.4%	2.62	91	0.904
4.2	VAT is fairly easy for SARS to administer and is an efficient method of collecting taxes.	3.27	91	0.7
4.3	Increasing VAT will inevitably lead to an increase in food prices.	3.23	91	0.747
4.4	Trade unions carry strong political clout, an increase in VAT will result in stiff union opposition.	3.36	91	0.675
4.5	An increase in VAT will not have much effect on the poor as most necessities are zero rated or exempt.	2.53	91	0.899
4.6	VAT is the most efficient means of financing NHI as it is the fastest growing source of tax revenue.	2.8	91	0.846
4.7	Increasing VAT will result in lower consumption of goods and services which in turn would lead to labour cuts.	2.35	91	0.673
4.8	Increasing VAT it the most fair method of financing NHI as the entire population pays VAT.	3.02	91	0.869
4.9	Increasing VAT will ultimately be unfavorable as the final burden is borne by consumers	2.43	91	0.845
4.10	Increasing sin taxes will discourage consumption of the products and in turn improve the health of the population.	2.48	91	0.848
4.11	Alcohol related healthcare issues will represent a huge cost for NHI.	2.84	91	0.703
4.12	If Sin taxes are increased, this will result in increased smuggling of illegal cigarettes.	3.1	91	0.651
4.13	The effects of increased sin taxes will be negated by the loss of corporate taxes due to decreased consumption.	2.33	91	0.633
4.14	Decreased consumption due to increased sin taxes could lead to job cuts in the industry and as a result lead to decreased employees tax.	2.41	91	0.666
4.15	High medical costs of alcoholism only relate to heavy drinkers. Not occasional drinkers.	2.85	91	0.648
4.16	If people eat less unhealthy foods, this would decrease the costs needed to fund NHI as healthcare costs will decrease.	2.84	91	0.671

4.17	A tax on unhealthy foods will result in decreased consumption of unhealthy foods.	2.55	91	0.778
4.18	A tax on unhealthy foods will increase inflation.	2.51	91	0.621
4.19	Decreased consumption of unhealthy foods will lead to job cuts and in turn less employees tax	2.37	91	0.59
4.20	The loss in corporate taxes due to decreased consumption of unhealthy foods will outweigh the amount of taxes generated from a tax on unhealthy foods.	2.34	91	0.636
4.21	Implementing a tax on unhealthy foods will be ineffective as the legislative process is likely to take a long time.	2.69	91	0.71
4.22	Consumption taxes (VAT, Excise duty, sin taxes) are the most appropriate means of financing NHI as the more you consume the more you pay.	2.99	91	0.782

Furthermore, the mean score of 2.33, in Table 9, indicated that the respondents' disagreed with statement 4.13 "The effects of increased sin taxes will be negated by the loss of corporate taxes due to decreased consumption" and showed that the respondents, as a group, did not believe that the additional taxes raised by increasing sin taxes would be offset by a decrease in corporate taxes due to the decrease in consumption of the products on which sin taxes were levied.

The mean score of 2.41 in Table 9 indicated that the respondents' also disagreed with statement 4.14 "Decreased consumption due to increased sin taxes could lead to job cuts in the industry and as a result lead to decreased employees tax" and showed that the respondents also did not believe that increasing sin tax would lead to job cuts in the industries affected due to decreased consumption and thereby decreasing employees tax. This indicated that although the literature suggests these factors affect the decision to increase sin taxes, the respondents were of the opinion that the statements may not be applicable in a South African context.

The results captured in Table 9 also suggested that respondents did not agree with Statement 4.20 "The loss in corporate taxes due to decreased consumption of unhealthy foods will outweigh the amount of taxes generated from a tax on unhealthy foods" which only achieved a mean score of

2.34. The statement suggested that the loss in tax revenue due to decreased consumption of unhealthy foods would outweigh the increase in tax revenues from a tax on unhealthy foods.

From the analysis of the statements that respondents disagreed with, it is evident that there is a trend where the respondents are of the opinion that if a consumption tax is introduced or raised (increasing VAT, sin taxes or introducing a tax on unhealthy foods) the decrease in consumption of the goods or services that these taxes are levied on will not result in a major shortfall of corporate taxes collected from the entities that sell the products which these taxes are levied on. It is also apparent that the respondents do not believe that if there was an increase in consumption taxes, there would be job cuts due to the decreased consumption of the products in which the taxes are levied on.

The following statements, from Table 9, all had mean scores greater than 2.5 indicating that the respondents as a whole agreed with the statements. These statements represented factors that affect the decision to increase VAT. Statements 4.1 "An increase in the VAT rate in South Africa is justifiable as the current rate of 14% is below the international average of 16.4%", 4.2 "VAT is fairly easy for SARS to administer and is an efficient method of collecting taxes", 4.5 "An increase in VAT will not have much effect on the poor as most necessities are zero rated or exempt", 4.6 "VAT is the most efficient means of financing NHI as it is the fastest growing source of tax revenue", and 4.8 "Increasing VAT it the most fair method of financing NHI as the entire population pays VAT" were all advantages of using VAT as the financing source for NHI. The decision of the respondents to rate VAT as the most efficient means of funding NHI can be attributed to the fact that VAT is easy to administer and thus the costs associated with collecting VAT is lower. The respondents also believed that the fact that VAT is the fastest growing source of tax revenue is testament to the efficiency of the system. The respondents' decision that increasing VAT would be the most equitable means of funding NHI could be attributable to the fact that the respondents agreed that

the increase in VAT would not have major effects on the poor as most necessities were zero rated or exempt. The respondents' opinion that VAT was most equitable may be due to the fact that the respondents agreed with the statement, "VAT was equitable due to the entire population being subject to VAT". The respondents also agreed with statement 4.22 "Consumption taxes (VAT, Excise duty, sin taxes) are the most appropriate means of financing NHI as the more you consume the more you pay", this suggests that the consumption taxes were the best method of financing NHI as the more one consumed, the more taxes one would be likely to pay. This is in line with VAT being rated as the most equitable and most efficient method of funding in the previous sections.

The questionnaire also confirmed that statements 4.4 "Trade unions carry strong political clout, an increase in VAT will result in stiff union opposition" and 4.3 "Increasing VAT will inevitably lead to an increase in food prices" were applicable in a South African context and that if VAT were to increase there would be stiff opposition from local trade unions and an increase in VAT could have inflationary effects on food prices.

Statements 4.11 "Alcohol related healthcare issues will represent a huge cost for NHI" and 4.12 "If sin taxes are increased, this will result in increased smuggling of illegal cigarettes" represented statements which the respondents agreed with. These statements all dealt with increasing sin taxes as a method of funding NHI. Statement 4.11 stated that alcohol related healthcare issues would represent a considerable cost for NHI. These statements are particularly relevant, as based on the literature review, these statements imply that, should sin taxes be increased it could not only raise tax revenues but also decrease the amount of funding needed for NHI. The respondents believe that an increase in sin taxes would lead to increased smuggling of illegal cigarettes. This is evident by the respondents' agreement with statement 4.12. This may be a reason for the respondents selecting an increase in VAT as opposed to an increase in sin taxes as the most efficient and equitable method of funding NHI. The literature review indicated that should you levy

a sin tax on, for example cigarettes, the smuggling of illegal cigarettes would increase and the use of illegal cigarettes would result in a serious downside to the health of individuals as it could increase the medical costs resulting from complications of smoking illegal cigarettes and thus increase the costs needed to sustain the NHI system.

The respondents agreed with statements 4.16 "If people eat less unhealthy foods, this would decrease the costs needed to fund NHI as healthcare costs will decrease" and 4.17 "A tax on unhealthy foods will result in decreased consumption of unhealthy foods", indicating a tax on unhealthy foods would help decrease consumption and in turn help decrease the costs of NHI due to a healthier population. However, they also agreed with statements 4.21 "Implementing a tax on unhealthy foods will be ineffective as the legislative process is likely to take a long time" indicating that the introduction of a tax on unhealthy food would not be the most viable method as the implementation of an unhealthy tax could take an extended period to implement due to the legislative process.

4.6.2) Results progressive collection methods

Table 10 below summarizes the results of the selections relating to progressive collection methods. The statements were also ranked on a scale of one (strongly disagree) to four (strongly agree) with a mean score of 2.5. Therefore, scores above 2.5 reflect that the respondents, as a whole, agreed with the statement. Scores below 2.5 reflect that the respondents disagreed with the statement.

Table 10: Progressive selection mean scores

		Mean	N	Std. Deviation
4.23	Unemployment is a major factor when implementing payroll taxes.	2.91	91	0.839
4.24	The estimated 6 million individual taxpayers will generate enough additional tax revenue to fund the expected 40 million NHI users' needs.	1.58	91	0.716
4.25	If there is an increase in payroll taxes, the result will be workers leaving the formal sector to avoid paying the taxes.	2.33	91	0.761
4.26	Payroll taxes are costly and difficult to administer.	2.44	91	0.748
4.27	Increase in payroll taxes will result in demand for higher wages; this in turn will decrease foreign direct investment.	2.96	91	0.648
4.28	Increasing payroll tax will help balance the regressive impact of consumption taxes.	2.24	91	0.672
4.29	Income taxes have been successful in redistributing wealth, making it appropriate for funding NHI.	2.11	91	0.722
4.30	Increasing payroll taxes will not result in a wider tax base but merely squeeze more out of an already thin tax payer base.	3.36	91	0.707
4.31	Increasing tax on individuals will result in less disposable income which would lead to decreased spending and decreased corporate taxes.	3.24	91	0.603
4.32	Personal income taxes are the most efficient as they are already the largest contributor towards tax revenue.	2.16	91	0.793
4.33	Increasing tax on individuals would lead to decreased investment. This in turn would lead to higher inflation which would increase costs of funding NHI.	2.74	91	0.743
4.34	Due to globalization, increasing taxes on individuals could result in relocation of individuals to lower taxed jurisdictions.	2.93	91	0.742
4.35	Most of the workforce in South Africa are employed in the informal sector and remain untaxed, thus increasing payroll taxes will not be viable.	2.93	91	0.757
4.36	Increasing tax on individuals will not result in a material amount of additional revenue.	2.65	91	0.766

From Table 10 above, it was evident that the respondents disagreed with statements 4.24 "The estimated 6 million individual taxpayers will generate enough additional tax revenue to fund the expected 40 million NHI users' needs", 4.25 "If there is an increase in payroll taxes, the result will be workers leaving the formal sector to avoid paying the taxes", 4.26 "Payroll taxes are costly and difficult to administer", 4.28 "Increasing payroll tax will help balance the regressive impact of consumption taxes", 4.29 "Income taxes have been successful in redistributing wealth, making it appropriate for funding NHI" and 4.32 "Personal income taxes are the most efficient as they are

already the largest contributor towards tax revenue". These statements all dealt with increases in payroll taxes and increasing tax on individuals. The survey results indicated that the respondents as a group felt that if a payroll tax was introduced or tax on individuals was increased, it would not be sufficient to fund NHI as the tax base was estimated to be only 6 million taxpayers. This could be a major factor as to why the respondents believed increasing VAT would be the most effective method of financing NHI. The results of Table 10 also indicated that the respondents did not believe that introducing a payroll tax would balance the regressive nature of consumption taxes currently in place. The respondents were of the opinion that, contrary to the literature, a payroll tax would not result in the employees leaving the formal job market and seeking other forms of employment. Contrary to the literature review, the respondents believed payroll taxes in South Africa were not difficult to administer and this would not affect implementing a payroll tax as a collection method. The respondents did not believe that income taxes had been successful in redistributing wealth from the rich to the poor. The respondents also did not believe that personal income taxes were the most efficient even though they were the largest contributor to tax revenue. This is in line with increasing taxes on individuals being the lowest ranked in terms of efficiency.

Statements 4.23 "Unemployment is a major factor when implementing payroll taxes", 4.27 Increase in payroll taxes will result in demand for higher wages; this in turn will decrease foreign direct investment", 4.30 "Increasing payroll taxes will not result in a wider tax base but merely squeeze more out of an already thin tax payer base" and 4.35 "Most of the workforce in South Africa are employed in the informal sector and remain untaxed, thus increasing payroll taxes will not be viable" also dealt with the effects of introducing a payroll tax.

Per Table 10, the statements listed above yielded mean scores of 2.91, 2.96, 3.36 and 2.93, indicating that as a group the respondents agreed with the statements. Agreement with the above statements indicated that the respondents felt that if payroll taxes were introduced, unemployment would be a major factor influencing the tax; there would be a greater demand for higher wages,

which could result in increased strike activity and; introducing payroll taxes would not result in a wider tax base but merely squeeze more out of an already thin tax base. In addition, the findings also indicated the respondents believe that as a large portion of the population is employed in the informal sector, implementing payroll taxes would not be viable because the informal sector remains untaxed. These findings are in line with results discussed in the previous sections where payroll taxes have been rated as one of the least equitable means of funding NHI.

Statements 4.31 "Increasing tax on individuals will result in less disposable income which would lead to decreased spending and decreased corporate taxes", 4.33 "Increasing tax on individuals would lead to decreased investment. This in turn would lead to higher inflation which would increase costs of funding NHI", 4.34 "Due to globalization, increasing taxes on individuals could result in relocation of individuals to lower taxed jurisdictions" and 4.36 "Increasing tax on individuals will not result in a material amount of additional revenue" all related to increasing tax on individuals. Per Table 10, the statements yielded mean scores of 3.24, 2.74, 2.93 and 2.65. These mean scores indicated the respondents as a group agreed with the statements. From the agreement with these statements it can be concluded that, in the opinion of the respondents, increasing taxes on individuals would result in less disposable income which in turn would lead to decreased corporate taxes. It can also be concluded that the respondents were of the opinion that if individuals' taxes were to be increased, this would lead to decreased investment which in turn would lead to higher inflation and increased costs of a NHI system. The survey results also suggest that as with corporations moving to lower taxed jurisdictions, the same would apply for individuals due to the effect of globalization. Finally, the survey results indicated the respondents were of the opinion that increasing a tax on individuals would not result in a material amount of additional tax revenue. These reasons support the conclusion reached in section 4.3.2 which indicated that increasing tax on individuals would be the least effective method of financing NHI.

4.7) Hypothecation of funds

Per the literature review contained in Section 2, there were many factors which affected the decision to ring fence funds for the NHI system or to release the additional funds into the budgetary process. The questionnaire presented nine key statements that would influence the decision to ring fence funds and asked the respondents to rate the intensity of which they agreed or disagreed with the statements on a scale of one (strongly disagree) to four (Strongly agree). The mean scores are contained in Table 11 below. Mean scores above the midpoint of 2.5 indicate the respondents, as a group, agreed with the statements. Scores below 2.5 indicated that the respondents, as a group, disagreed with the statements.

Table 11: Ring-fencing mean scores

		Mean	N	Std. Deviation
5.1	Revenues collected should be ring fenced.	3.21	91	0.782
5.2	If funds are earmarked specifically for NHI this will create more accountability over these funds.	3.32	91	0.697
5.3	If funds are earmarked specifically for NHI, this will not subject them to political infighting. Revenue for NHI will be determined by taxes collected and not ruling party policy decisions.	2.96	91	0.953
5.4	Earmarking funds for NHI will reduce the opposition of implementing new taxes as people will be able to see where the funds are being used.	2.91	91	0.839
5.5	Earmarking fund will build an exemption from review from the finance ministry as it will not be subject to budget cuts.	2.73	91	0.831
5.6	Earmarking funds for NHI will result in inappropriate funding levels.	2.32	91	0.744
5.7	Earmarking funds may negatively impact Government's ability to allocate resources to where they may be needed in different economic situations.	2.49	91	0.808
5.8	Earmarking funds limits funding for NHI to specific sources	2.73	91	0.668
5.9	If the budgetary process is used then funding may be obtained from a broader base as opposed to a single source of revenue	2.91	91	0.509

Table 11 summarised the mean scores of responses with regards to the statements related to the ring-fencing of funds. Of the statements presented, the respondents only disagreed with statement 5.6 “Earmarking funds for NHI will result in incorrect funding levels”. Statement 5.6 was identified as an item that would prohibit the ring-fencing of the funds in the Section 2.1.6 of the literature review. The respondents’ disagreement with the statement implied that the respondents believed

that, even if funds from the new or additional taxes are ring fenced specifically for NHI, the required level of funding will be achieved. The earmarking of taxes would result in correct funding levels and thus, incorrect funding levels is not a limiting factor in the implementation of ring-fencing the funds.

Statement 5.7 "Earmarking funds may negatively impact Government's ability to allocate resources to where they may be needed in different economic situations" yielded a mean score of 2.49 as seen in Table 11. This indicates that respondents were unsure of whether earmarking funds specifically for NHI would negatively impact Government's ability to allocate resources where they may be needed in different economic situations.

Statement 5.1 "Revenues collected should be ring fenced" suggested funds should be ring fenced specifically for the NHI system. This yielded a mean score of 3.21 indicating that the respondents, as a group, agreed that the funds collected from the new or additional tax should be ring fenced. Table 58, Annexure 5 showed that 84.7% of the respondents agreed or strongly agreed with the statement. This meant that in the opinion of the respondents ring-fencing should be applied to the additional funds collected.

Per Table 11, Statement 5.2 "If funds are earmarked specifically for NHI this will create more accountability over these funds" and 5.4 "Earmarking funds for NHI will reduce the opposition of implementing new taxes as people will be able to see where the funds are being used" received mean scores of 3.32 and 2.91 respectively, this indicated respondents believed earmarking funds specifically for NHI would create more accountability over the funds and people would be less opposed to the implementation of new or higher taxes as they would know what the funds are specifically used for. Per the literature review in Section 2.1.6 it is evident that accountability is

created as the public can ascertain what the funds are being specifically used for. The respondents' opinion therefore supports the findings in the literature review.

Statement 5.3 "If funds are earmarked specifically for NHI, this will not subject them to political infighting, revenue for NHI will be determined by taxes collected and not ruling party policy decisions" received a mean score of 2.96 per Table 11. This score indicated the respondents agreed that specifically ring-fencing funds for NHI would ensure that the funds are not subject to political infighting as the funds would be determined by the additional taxes collected and not ruling party decisions. Additionally Table 11 also indicated, Statement 5.5 "Earmarking fund will build an exemption from review from the finance ministry as it will not be subject to budget cuts", received a mean score of 2.73, which implies that the earmarking of funds will build an exemption from review from the finance ministry indicating it will not be subject to budget cuts.

The respondents also confirmed that although in their opinion ring-fencing should be used, it was not a flawless method. Table 11 also indicated that the respondents agreed with statements 5.8 "Earmarking funds limits funding for NHI to specific sources" and 5.9 "If the budgetary process is used then funding may be obtained from a broader base as opposed to a single source of revenue" implying that in the opinion of the group as a whole, ring-fencing funds would limit funding for NHI to specific sources and that if the funds were obtained through the budgetary process the funding would be obtained from a broader base. If Government were to implement a combination of taxes, this would eliminate the disadvantages to ring-fencing funds. This would be in line with the findings in section 4.3.1 which suggested that the second most effective means after increasing VAT would be a combination of methods.

4.8) Conclusions

Based on the results discussed above, it became evident that the respondents felt that VAT should be used to fund the NHI system as VAT was seen as the most effective and Equitable means of funding NHI. The descriptive statistics also revealed various reasons as to why the respondents felt progressive or regressive taxes should be used and why they thought funds should be hypothecated or not. Further statistical analysis is provided in Section 5 in order to provide greater insights as to why the respondents answered in the manner they did.

5) Presentation & discussion of statistical analyses

5.1) Introduction

This section seeks to build on the results contained in Section 4 by using advanced statistical techniques needed to analyse the results further. The previous section indicated that in the opinion of the respondents VAT was the most equitable and effective method of financing NHI, that a progressive tax should be used to finance NHI and that the additional funds collected should be ring fenced specifically for NHI. A factor analysis was performed over question three "progressive vs regressive taxes", question four "collection methods" and question five "Ring-fencing of funds" of the survey (included in Annexure 1) in order to group the data in an attempt to reduce the number of factors and rebrand them into factors that influenced the respondents' opinion in reaching these conclusions. A Factor analysis is a statistical method used to describe variability among observed, correlated variables in terms of a potentially lower number of unobserved variables called factors. Factor analysis attempts to reduce various reasons into one more insightful reason (Creswell, 2009; Fowler, 2002). The factor analysis was performed to obtain greater insights as to why the respondents answered the way they did in each of the research sub-questions. The factor analysis grouped statements together and were analysed to form new statements based on the composition of the group. The factor analysis revealed commonality between statements to ensure the grouping was correct, the method for conducting the factor analysis was through the use of Principle Component Analysis (PCA) using the SPSS 22 statistical software analysis tool.

A Kruskal-Wallis test was also performed to determine whether the occupation groups differed significantly with respect to the identified factors the Kruskal-Wallis test is useful in determining whether the opinions of occupation groups differ due to the nature of their experience in different fields (Field, 2005). The Kruskal-Wallis test was used as the respondents were not equally spread

across occupation groups and the test would provide further insight as to how the respondents' opinions may differ due to the nature of their occupation.

Finally, a cluster analysis was performed in order to determine whether there were certain groupings of respondents based on the responses provided and whether certain occupation types fell within the newly identified groupings. Cluster analysis is a multivariate, exploratory technique designed to reveal natural groupings that may exist in the data themselves (Hair, Black, Babin & Anderson, 2010). A cluster analysis was a useful tool in providing insights as it grouped the respondents into groups based on their responses provided. The cluster analysis allowed the researcher to identify certain groups of respondents based on the manner in which the respondents answered the questions

5.2) Statistical analysis results Question 3 - Progressive or regressive taxes

Section 5.2 seeks to summarise the results of the statistical tests performed on Question 3 of the questionnaire. Question 3 of the questionnaire was designed to address the research sub-question "should the tax to fund the NHI system be a progressive or regressive tax".

The research variables of interest, surrounding respondents' perceptions on whether a progressive or regressive tax should be implemented, included nine statements representing different aspects of progressive and regressive taxes. Prior to performing PCA the suitability of the data for factor analysis was assessed. The relationships among the nine variables, that were measured on a scale of one to four to indicate the extent to which the respondents agreed with the statements presented to them, were investigated using non-parametric Spearman's rho correlation coefficient. Spearman's rho is used to measure the strength of association between two variables. It helps to assess how well the relationship between two variables can be described. (Lehman, 2005). Preliminary analyses revealed deviations from normality. Inspection of the correlation matrix

(Annexure 2, Table 29) confirmed the presence of a number of coefficients of 0.3 and above. Additionally, the Kaiser-Meyer-Olkin value, a measure of sampling adequacy, was 0.635, exceeding the recommended minimum value of 0.6 (Kaiser, 1970, 1974). The Kaiser-Meyer-Okin test is used in order to establish whether or not there is some degree of colinearity among the variables (in our case statements). This is a necessary test to ensure that the variables can be subject to a factor analysis (Kaiser, 1970, 1974).

Bartlett's test of Sphericity is used in factor analysis to determine whether the correlations between the variables, examined simultaneously, do not differ significantly from zero. The Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance, $p<.001$, supporting the factorability of the correlation matrix.

Table 12 below displayed that the PCA using the nine items revealed the presence of four factors with Eigenvalues exceeding one. Only items with Eigenvalues exceeding one can be considered factors in the PCA analysis. The Scree plot (Figure 17, Annexure 2) however, indicated a solution of five components. A scree plot visually assesses which components or factors explain most of the variability in the data (Field, 2005). Allowing the solution to consider five factors resulted in statement 3.4 loading on one factor all by itself.

Table 12, indicated that the PCA using nine items revealed the presence of only four factors with Eigenvalues exceeding one. The Scree plot (Annexure 2, Figure 17) indicated the presence of five factors, cumulatively explaining 80.078% of the variance in the data. Using Cattell's (1966) Scree test, it was decided to retain these five factors for further investigation.

Table 12: Total variance explained by exploratory factor analysis*

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.539	28.206	28.206	1.715	19.053	19.053
2	1.588	17.639	45.845	1.450	16.107	35.160
3	1.215	13.503	59.348	1.383	15.366	50.526
4	1.011	11.231	70.580	1.375	15.277	65.803
5	.855	9.498	80.078	1.285	14.275	80.078
6	.556	6.181	86.259			
7	.459	5.103	91.362			
8	.441	4.899	96.260			
9	.337	3.740	100.000			

*Extraction Method: Principal Component Analysis.

To aid in the interpretation and scientific utility of these five factors, Varimax rotation was performed. Varimax rotation is used to simplify the expression of a particular sub-space in terms of just a few major items each (Filed, 2005). Orthogonal rotation was chosen as the analytical procedures were better developed than those of Oblique rotation. Orthogonal and Oblique rotations are procedures in which the factors are rotated in an attempt to achieve simple structure. Varimax rotation was specifically chosen as it results in a clearer separation of factors (Hair et al., 2006). A simple structure simplifies the task of interpreting the factors and experts in the factor analysis field believe attaining a simple structure is essential to any factor analysis (Brown, 2009). The rotated solution revealed the presence of a simple structure (Thurstone, 1947), with each of the five factors showing a number of strong loadings. Loadings less than 0.44 were excluded from the solution (Annexure 2, Table 30).

Each of the extracted factors, except factor five with a single loading, demonstrated an internal consistency that was lower than the generally accepted minimum as illustrated by the Cronbach's Alpha coefficients listed in Table 13 below. The generally agreed upon lower limit for Cronbach's Alpha is 0.70, although it may decrease to 0.60 in exploratory research (Hair et al., 2006). As the research is exploratory in nature, these values were deemed to be acceptable. The subscales for

the extracted components can be obtained by calculating the mean of the items loading on each of the subscales. This would result in five latent factors being calculated and named. Table 13 below displays the five identified factors as well as the corresponding Cronbach's Aplha. Factor 1 has been renamed; Sympathy lies with non-poor. Factor 2 has been renamed; the wealthy should support the poor. Factor 3 has been renamed; Stability of progressive taxes. Factor 4 has been renamed; Pro progressive tax due to income redistribution effects. Finally, Factor 5 has been renamed; Progressive taxes are perceived as equitable. The descriptive statistics for the five renamed components have been included in Annexure 2, Table 31.

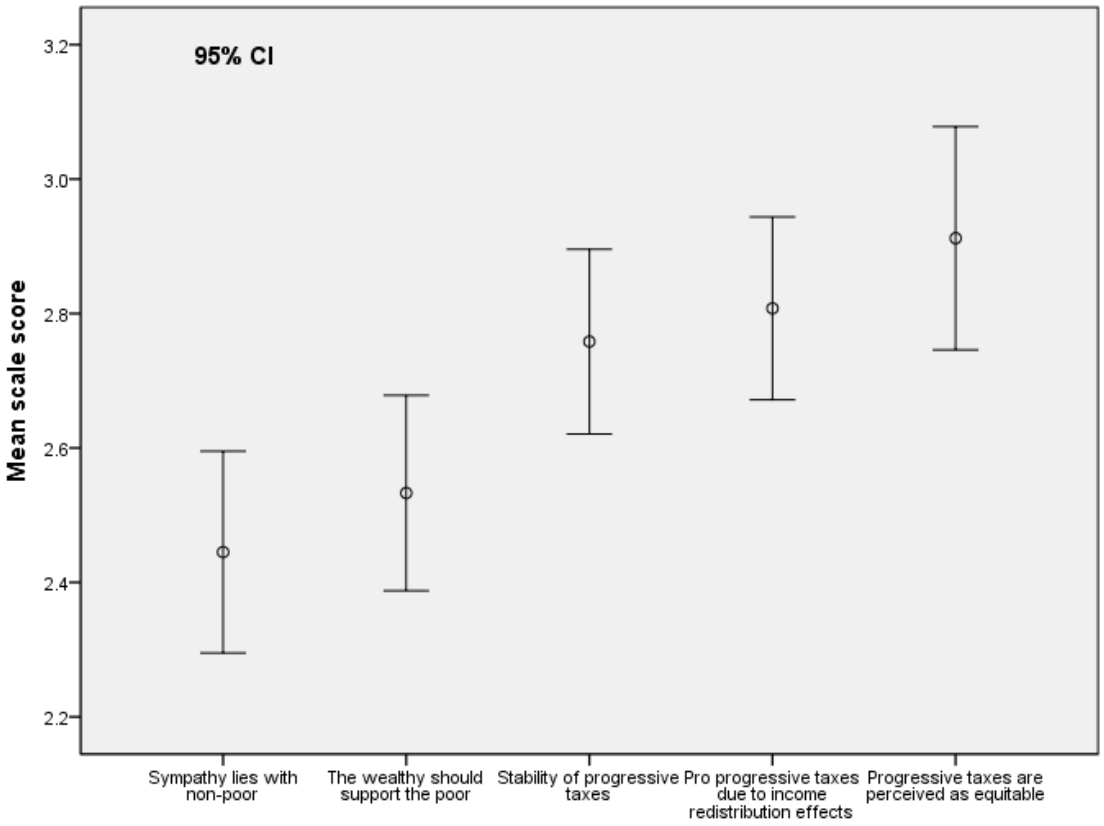
Table 13: Reliability statistics for the five extracted factors

Subscale	Description	No of Items	Cronbach's Alpha
F1	Sympathy lies with non-poor	2	0.554
F2	The wealthy should support the poor	2	0.498
F3	Stability of progressive taxes	2	0.529
F4	Pro progressive tax due to income redistribution effects	2	0.554
F5	Progressive taxes are perceived as equitable	1	N/A
Overall	**All dimensions**	**9**	**0.423**

The analyses performed revealed that the respondents did not sympathise with the non-wealthy, this factor achieved a mean score of 2.445, indicating it was not a factor influencing the respondents' decision in Section 4.5 which determined that a progressive tax would be the most appropriate means of funding NHI. Factor 2 received a mean score of 2.533. As the scale ranged from one to four, with a midpoint of 2.5, this indicated that the respondents were unsure of whether or not, in the implementation of a tax to fund NHI, the wealthy should support the poor. The respondents agreed with Factor 3, with a mean score of 2.758, indicating that the respondents believed that progressive taxes were fairly stable. The results also indicated that the respondents were relatively pro progressive taxes as regressive taxes were unlikely to result in income

redistribution, with this factor receiving a score of 2.807. Finally, Factor 5 received a score of 2.912 indicating that the respondents believed that progressive taxes were more equitable as people should pay proportionately what they could afford. A comparison of the mean scores across the five renamed factors has been included in figure 4 below.

Figure 4: Comparison of mean scores

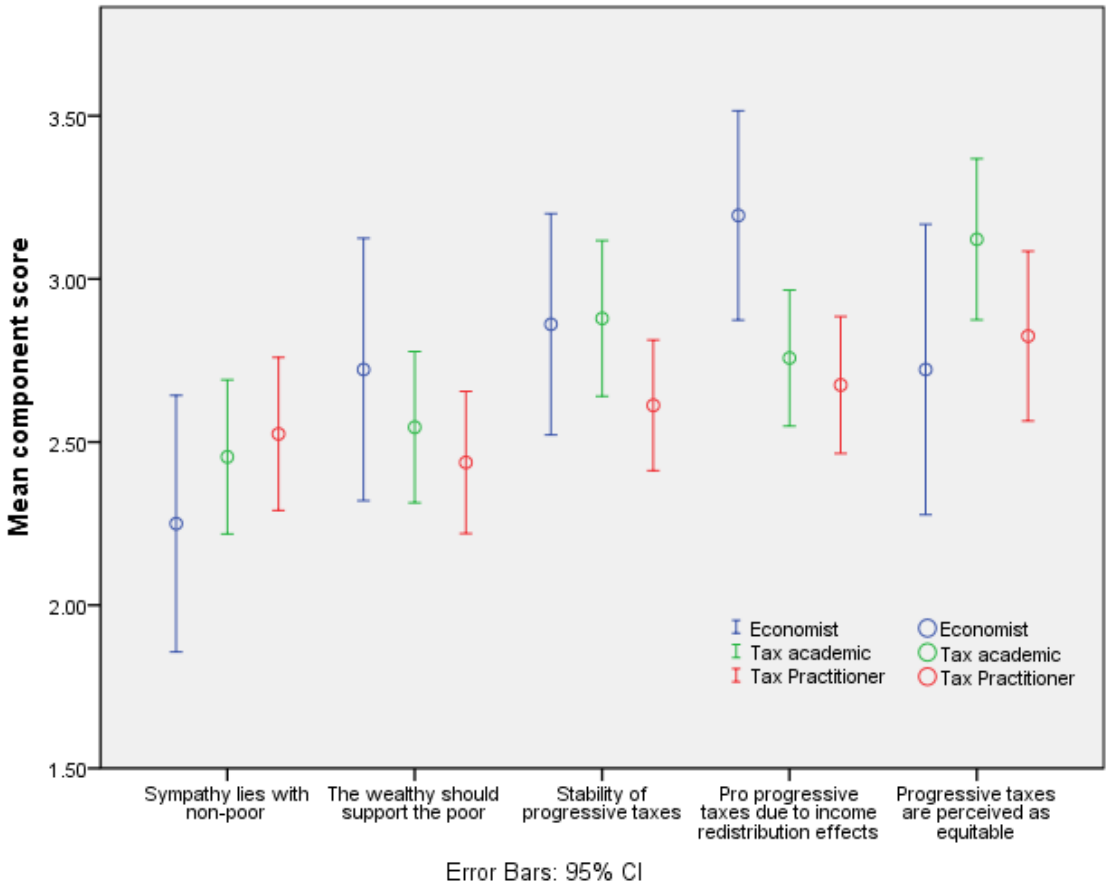


To determine whether the different occupation groups differed significantly with respect to their opinions on any of the five factors identified, a non-parametric Kruskal-Wallis test was used to test the null hypotheses specifying that there is no effect of occupation on the factors. A non-parametric Kruskal-Wallis test was used to determine whether the occupation groups differed significantly with respect to the identified factors, as the data was not normally distributed (Field, 2005). The results are listed in Annexure 2, Table 32 and Table 33.

Figure 5 below, compares the mean scores for each of the 5 factors based on occupation. The Kruskal-Wallis analysis of variance revealed that, at the 1% level of significance, the extent to

which the respondents are of the opinion that the tax to fund the NHI System should be progressive varied significantly across occupation types, $\chi 2(2) = 9.580$, $p < .01$. More specifically, the extent to which economists believe that the tax must be progressive is significantly higher than the extent to which tax practitioners feel that the tax must be progressive. Of the five factors, economists scored the highest on being for progressive tax due to income redistribution effects and the lowest on having sympathy with the non-poor. Tax academics scored the highest on perceiving progressive taxes to be equitable and the lowest on having sympathy with the non-poor. Tax practitioners scored the highest on perceiving progressive taxes to be equitable and the lowest on believing that the wealthy should support the poor.

Figure 5: Comparison of mean scores across occupation type



The final tool to analyse the data was a cluster analysis. The cluster analysis was used to establish whether there were patterns among the respondents regarding the extent to which the respondents supported the five factors. Three different groups were distinguished as a result of the cluster

analysis. The group means for each factor falling within the three different clusters, along with the total mean scores for the group of respondents as a whole, are listed in Table 14 below.

Table 14: Final cluster centres

	Cluster Number of Case			
	1	2	3	Total
Q3 Sympathy lies with non-poor	2.4149	1.7632	3.0200	2.4451
Q3 The wealthy should support the poor	2.6596	3.1842	1.8000	2.5330
Q3 Stability of progressive taxes	2.8085	3.0263	2.4600	2.7582
Q3 Pro progressive taxes due to Income redistribution effects	3.0532	3.0000	2.2000	2.8077
Q3 progressive taxes are perceived as equitable	3.3617	2.4211	2.4400	2.9121

Figure 6: Final cluster analysis

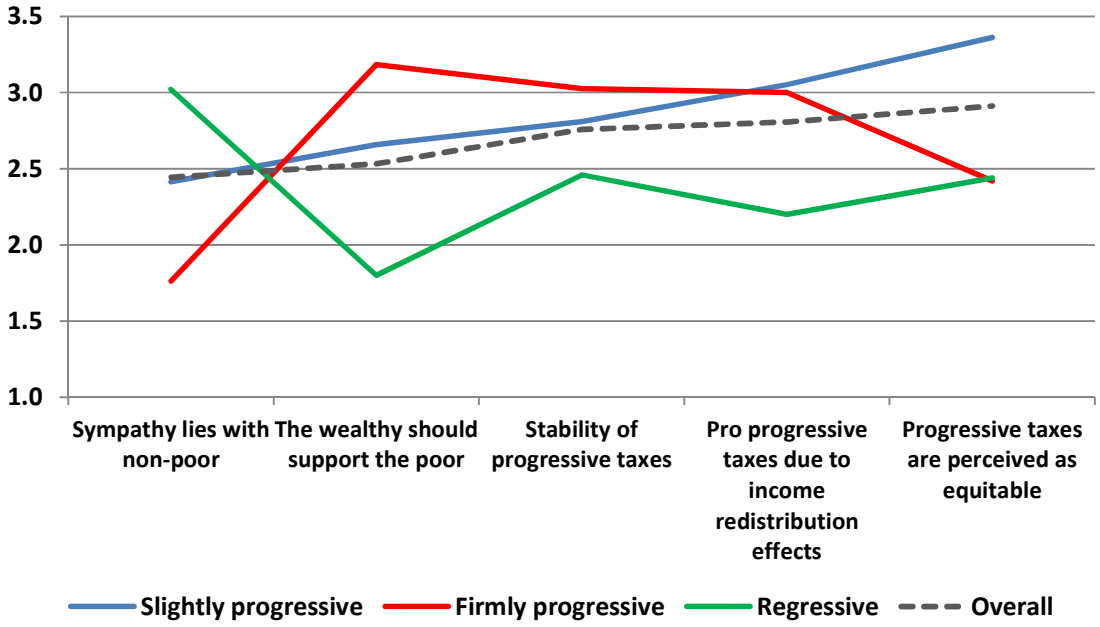


Figure 6 above, shows the mean scores achieved by each cluster for each factor. The dotted line shows the mean scores for the group of respondents as a whole. Figure 6 aids in our interpretation as to whether or not each cluster agreed with the factors identified.

On average, the respondents as a single group (overall) rated all aspects at the middle value of the scale (2.5) or higher with perceiving progressive taxes as equitable being the highest and having sympathy with the non-poor being the lowest.

The Slightly progressive group (Cluster 1 as per table 14) tended to follow the overall average pattern but at a higher level for all factors except having sympathy with the non-poor. The Slightly progressive group deviated somewhat from this average trend by being more inclined towards supporting a progressive tax and even more to perceiving progressive taxes as equitable. Thus, these respondents exhibit an opinion that a progressive tax should be used as they lean towards preferring a progressive tax and even more towards an opinion that everyone should contribute proportionately with what they can afford.

The Firmly progressive group (Cluster 2 as per table 14) tended to score above the overall average and even had a mean score below the middle value of the scale on having sympathy with the non-poor. The Firmly progressive group scored the highest on Factor 2, believing that the wealthy should support the poor. Thus, this group of respondents seem to support the implementation of a progressive tax.

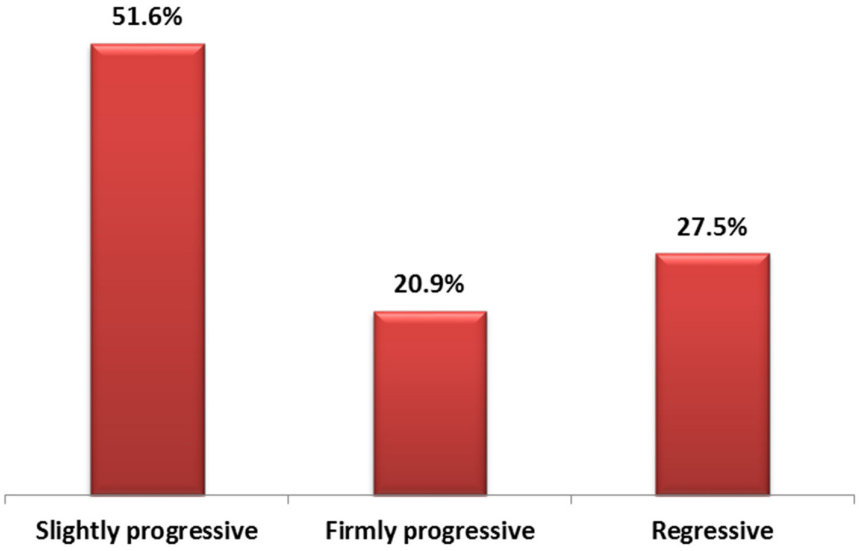
The Regressive group (Cluster 3 as per table 14) tended to score below the overall average, and in fact below the middle value of the scale, for all factors except for Factor 1, having sympathy with the non-poor, for which the score was considerably above the overall average. The Regressive group scored considerably below the middle value of the scale on Factor 2, believing that the wealthy should support the poor. Thus, these respondents seem to be inclined to support a regressive tax.

The three clusters identified above, differed considerably with regards to, having sympathy with the non-poor. The Slightly progressive group (cluster 1) effectively had a score equal to the middle of the scale, the Firmly progressive group scored significantly below the middle value of the scale and the Regressive group scoring significantly above the middle value. The Firmly progressive group

scoring significantly below the middle value of the scale, indicating they do not sympathise with the non-poor is in line with the nature of a progressive tax, as the more you earn the more you pay. The Regressive group scoring above the middle value of the scale, indicating that they sympathise with the non-poor, is in line with a regressive tax, as everyone should pay the same amount of taxes. The inverse interaction can be observed regarding the wealthy having to support the poor with the Slightly progressive group scoring marginally above the middle value of the scale and the Firmly progressive group scoring significantly above the scale. The Firmly progressive and Slightly progressive groups are expected to agree with the wealthy supporting the poor as the nature of a progressive tax is paying more as you earn more which results in the wealthy supporting the poor. The Regressive group scoring significantly below the middle value is in line with the nature of a regressive tax as a regressive tax requires everyone paying the same amount without anyone having to support another person.

The Slightly progressive group scored well above the middle value on perceiving progressive taxes to be equitable while both the Firmly progressive group and the Regressive group are in correspondence with regard to progressive taxes being equitable and about the type of tax that should be used. A breakdown of the respondents in each cluster is contained in Table 35, Annexure 3. Figure 7 below shows the percentage of respondents that fell within each cluster. From Figure 7, it is evident that 72.5% of the respondents fall within the Slightly progressive and Firmly progressive clusters, further evidencing that a progressive tax should be implemented.

Figure 7: Percentage of respondents in each cluster



5.3) Statistical analysis results Question 4 regressive methods

Section 5.3 seeks to summarise the statistical results relating to regressive collection methods in contained in Question 4 of the questionnaire. Question 4 of the questionnaire seeks to address the research sub-question "What method should Government implement in order to collect the funds that are required".

The research variables of interest, regarding respondents' perceptions on regressive methods of collecting tax to fund NHI, included twenty two statements (statements 4.1 to 4.22) representing different perceptions of regressive methods of tax collection. Prior to performing PCA, the suitability of the data for factor analysis was assessed. The relationships among the 22 variables, that were measured on a scale of one to four to indicate the extent to which the respondents agreed with the statements presented to them, was investigated using non-parametric Spearman's rho correlation coefficient. Preliminary analyses revealed deviations from normality. Inspection of the correlation matrix, (Annexure 3, Table 36), confirmed the presence of a number of coefficients

of 0.3 and above. Additionally, the Kaiser-Meyer-Olkin value was 0.684, exceeding the recommended minimum value of 0.6 (Kaiser, 1970, 1974) and the Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance, $p<.001$, supporting the factorability of the correlation matrix.

The initial PCA solution using the twenty two statements (statement 4.1 to 4.22) revealed the presence of eight factors with Eigenvalues exceeding one. However, five (4.2. 4.7, 4.9, 4.15, 4.21 as indicated on Annexure 3, table 36) of the twenty two statements were excluded from the final PCA solution because it resulted in the solution explaining more of the variance in the data. Two more items (4.11, 4.12) were also excluded from the final solution because they resulted in a component with low internal consistency and could not be interpreted as a tax collection method on a higher level. These items can be considered components on their own. When items are considered factors of their own it means that the items do not load onto any of the factors or do not share enough variation with any of the other items to form part of a composite latent factor.

Table 15, below, indicates that PCA using the remaining 15 items revealed the presence of five components with Eigenvalues exceeding one. The Scree plot (Annexure 3, Figure 18) also indicated the presence of five components, cumulatively explaining 70.140% of the variance in the data. Using Cattell's (1966) Scree test, it was decided to retain these five factors for further investigation.

Table 15: Total Variance Explained by Exploratory Factor Analysis - Regressive taxes

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.429	22.859	22.859	3.139	20.925	20.925
2	2.704	18.028	40.888	2.338	15.585	36.510
3	1.833	12.222	53.110	1.937	12.912	49.422
4	1.420	9.463	62.573	1.585	10.567	59.990
5	1.135	7.567	70.140	1.523	10.150	70.140
6	.760	5.065	75.205			
7	.682	4.545	79.750			
8	.539	3.592	83.343			
9	.519	3.461	86.804			
10	.498	3.318	90.122			
11	.431	2.873	92.996			
12	.331	2.205	95.200			
13	.288	1.920	97.120			
14	.250	1.666	98.786			
15	.182	1.214	100.000			

Extraction Method: Principal Component Analysis.

To aid in the interpretation and scientific utility of these five factors, Varimax rotation was performed. Orthogonal rotation was chosen as the analytical procedures are better developed than those of Oblique rotation. Varimax rotation was specifically chosen as it resulted in a clearer separation of factors (Hair et al., 2006, p126). The rotated solution revealed the presence of a simple structure (Thurstone, 1947), with each of the five factors showing a number of strong loadings. Loadings less than 0.5 were excluded from the solution (Annexure 3, Table 38). The categorization of the remaining 15 original statements into the relevant factors can be seen in Annexure 3, Table 38.

Each of the extracted factors demonstrated an internal consistency above 0.6 as illustrated by the Cronbach's Alpha coefficients listed in Table 16 below. The generally agreed upon lower limit for Cronbach's Alpha is 0.70, although it may decrease to 0.60 in exploratory research (Hair et al., 2006, p137). Some of these Cronbach's Alpha coefficients are lower than the generally accepted minimum of 0.7. However, since the research is exploratory in nature, a lower value of 0.6 were deemed acceptable.

Table 16: Reliability statistics for the five extracted factors - regressive taxes

Subscale	Description	No of Items	Cronbach's Alpha
F1	Increasing VAT is justifiable, fair and efficient	5	0.852
F2	Increasing sin tax/taxes on unhealthy foods will lead to lower tax revenue due to job cuts and decreased consumption.	3	0.820
F3	Increasing sin taxes/tax on unhealthy foods will result in a healthier population and that in turn will incur less healthcare costs.	3	0.680
F4	Increasing VAT will lead to increased food prices and that in turn can lead to political opposition.	2	0.618
F5	Increasing sin tax/taxes on unhealthy foods will lead to inflation increase and lower government revenue due to loss of corporate tax.	2	0.602
Overall	**All dimensions**	**15**	**0.646**

The subscales for the extracted components can be obtained by calculating the mean of the items loading on each of the subscales. This would result in five latent factors being calculated and named. Per Table 16 above, Factor 1 was renamed; Increasing VAT is justifiable, fair and efficient. Factor 2 was renamed; increasing sin tax or taxes on unhealthy foods will lead to lower tax revenue due to job cuts and decreased consumption. Factor 3 was renamed; increasing sin taxes or tax on unhealthy foods will result in a healthier population and that in turn will incur less healthcare costs. Factor 4 was renamed; Increasing VAT will lead to increased food prices and that in turn can lead to political opposition. Finally, Factor 5 was renamed; increasing sin tax or taxes on unhealthy foods will lead to inflation increases and lower government revenue due to loss of corporate tax. The descriptive statistics for these five factors can be found in Annexure 3, Table 39.

To determine whether the different occupation groups differed significantly with respect to any of the five latent factors, a Kruskal-Wallis test (non-parametric because data is not normally distributed) was used to test the null hypotheses specifying that there is no effect of occupation on the factors. The results are presented in Annexure 3, Table 40 and Table 41. The Kruskal-Wallis

analysis of variance revealed that none of the regressive collection factors were significantly influenced by the respondents' occupation. The factor mean scores across occupation have been summarized in Table 17 below.

Table 17: Mean scores per occupation

	Most appropriate description of your occupation			
	Economist	Tax Academic	Tax Practitioner	Total
Q4_Regr Increasing VAT is justifiable, fair and efficient	2.5444	2.9091	2.8050	2.7912
Q4_Regr increasing sin tax or taxes on unhealthy foods will lead to lower tax revenue due to job cuts and decreased consumption	2.4259	2.4444	2.2833	2.3700
Q4_Regr Increasing sin taxes/tax on unhealthy foods will result in a healthier population and that in turn will incur less healthcare costs	2.5556	2.6061	2.6667	2.6227
Q4_Regr Increasing VAT will lead to increased food prices and that in turn can lead to political opposition	3.3889	3.3333	3.2250	3.2967
Q4_Regr Increasing sin tax/taxes on unhealthy foods will lead to inflation increase and lower government revenue due to loss of corporate tax	2.3611	2.5303	2.3625	2.4231

From the results in Table 17 above it is clear that all of the occupation groups scored the highest on "increasing VAT will lead to increased food prices and that in turn can lead to political opposition", meaning that all respondents have strong perceptions about this particular disadvantage of increasing VAT. Economists scored the lowest on "Increasing sin tax/taxes on unhealthy foods will lead to inflation increase and lower government revenue due to loss of corporate tax", meaning that the economists were less worried about this being a disadvantage of increasing sin taxes. Tax academics and tax practitioners were the least worried about the danger of increasing sin tax or taxes on unhealthy foods leading to lower tax revenue due to job cuts and decreased consumption.

In order to determine whether there were patterns among the respondents regarding the extent to which they support the five factors, the five factor items were subjected to cluster analysis. Three

different groups were distinguished from the responses on regressive methods and the group means for each factor within the different clusters are listed in Table 18. Table 18 shows the mean scores for each factor, split across the three newly identified clusters.

Table 18: Regressive Factors Final Cluster Centres

	Cluster Number of Case			
	1	2	3	Total
Q4_Regr, Increasing VAT is justifiable, fair and efficient	2.1030	3.1024	3.3765	2.7912
Q4_Regr increasing sin tax or taxes on unhealthy foods will lead to lower tax revenue due to job cuts and decreased consumption	2.3737	2.5528	1.9216	2.3700
Q4_Regr Increasing sin taxes/tax on unhealthy foods will result in a healthier population and that in turn will incur less healthcare costs	2.4141	2.7317	2.7647	2.6227
Q4_Regr Increasing VAT will lead to increased food prices and that in turn can lead to political opposition	3.5152	3.0000	3.5882	3.2967
Q4_Regr Increasing sin tax/taxes on unhealthy foods will lead to inflation increase and lower government revenue due to loss of corporate tax	2.2879	2.7561	1.8824	2.4231

Figure 8: Graphical representation of Cluster scores

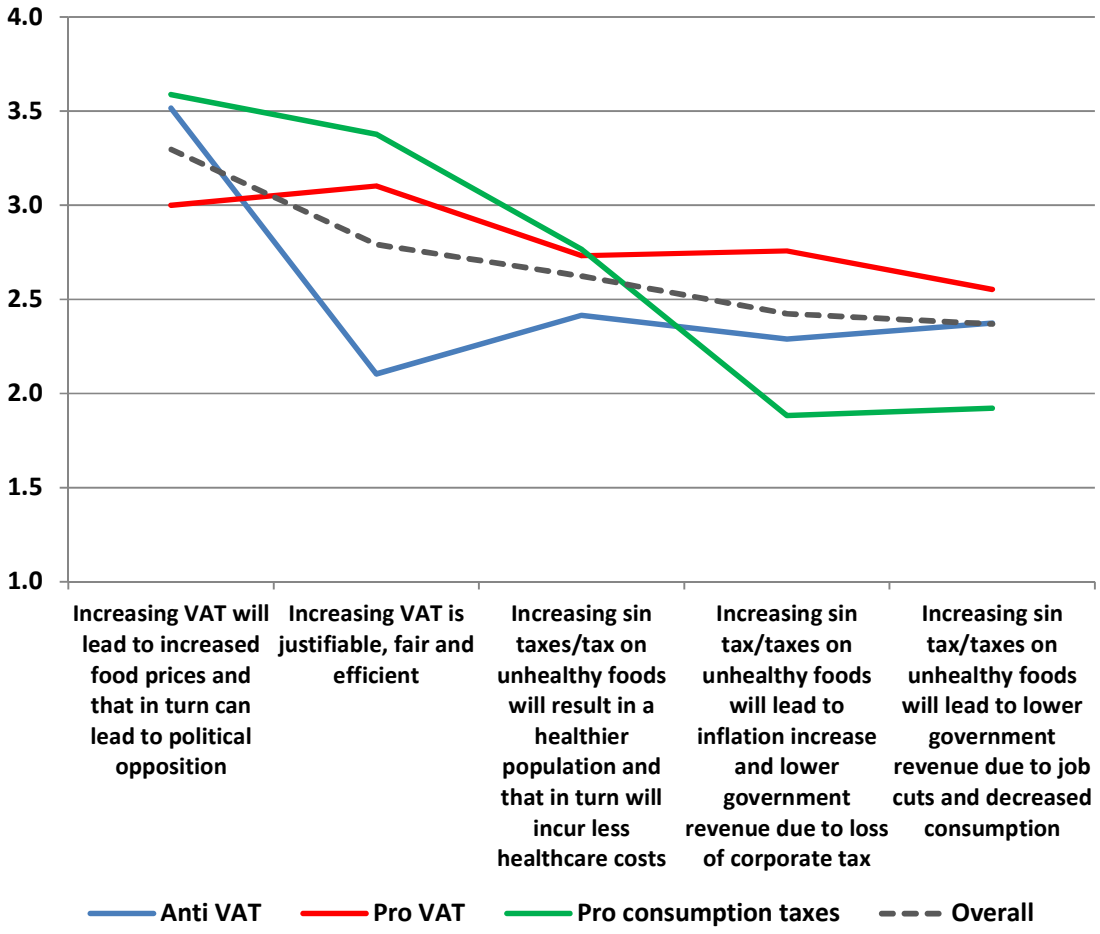


Figure 8 above, graphically represents the mean scores achieved by each cluster for each factor. The dotted line shows the mean scores for the group of respondents as a whole. Figure 8 aids in our interpretation as to whether or not each cluster agreed with the factors identified.

On average, the respondents, as a single group (overall), rated the different factors either above the middle value of the scale (2.5) or slightly lower. The respondents agreed that “Increasing VAT will lead to increased food prices and that in turn can lead to political opposition” and it had the highest rating while “Increasing sin tax/taxes on unhealthy foods will lead to lower tax revenue due to job cuts and decreased consumption” had the lowest rating.

The Anti VAT group (Cluster 1 in Table 18) tended to score below the overall average and even below the middle value of the scale on all factors except for a relatively high score for “Increasing VAT will lead to increased food prices and that in turn can lead to political opposition”. The Anti VAT group also scored the lowest for “Increasing VAT is justifiable, fair and efficient”. Thus, the group of respondents seem to be against the increase of VAT because they believed that “Increasing VAT will lead to increased food prices and that in turn can lead to political opposition”. The group also did not agree with the disadvantages of increases in sin taxes or taxes on unhealthy foods.

The Pro VAT group (Cluster 2 in Table 18) tended to follow the overall average pattern but at a higher level for all factors except “Increasing VAT will lead to increased food prices and that in turn can lead to political opposition“. This indicated that although the group felt this was a disadvantage of increasing VAT, they did not feel as strongly about the disadvantage as the remainder of the respondents. The Pro VAT group deviated somewhat from this average trend by being more inclined toward “Increasing VAT is justifiable, fair and efficient” and “Increasing sin tax/taxes on unhealthy foods will lead to inflation increase and lower government revenue due to loss of corporate tax”. Thus, these respondents exhibited an average opinion about how taxes to fund the NHI should be collected but lean towards preferring “Increasing VAT is justifiable, fair and efficient”.

The Pro Consumption taxes group (Cluster 3 in Table 18) tended to score relatively high on “Increasing VAT will lead to increased food prices and that in turn can lead to political opposition” and “Increasing VAT is justifiable, fair and efficient”. The group also scored lower than the average trend for the disadvantages of sin taxes and unhealthy taxes. Thus, these respondents appeared to be inclined to support an increase in VAT although they were concerned about the effect it will

have on the people and the reaction of the unions. They also did not believe that taxing of unhealthy foods or increasing sin taxes could have a detrimental effect on the state coffers, indicating they would not oppose consumption taxes in general.

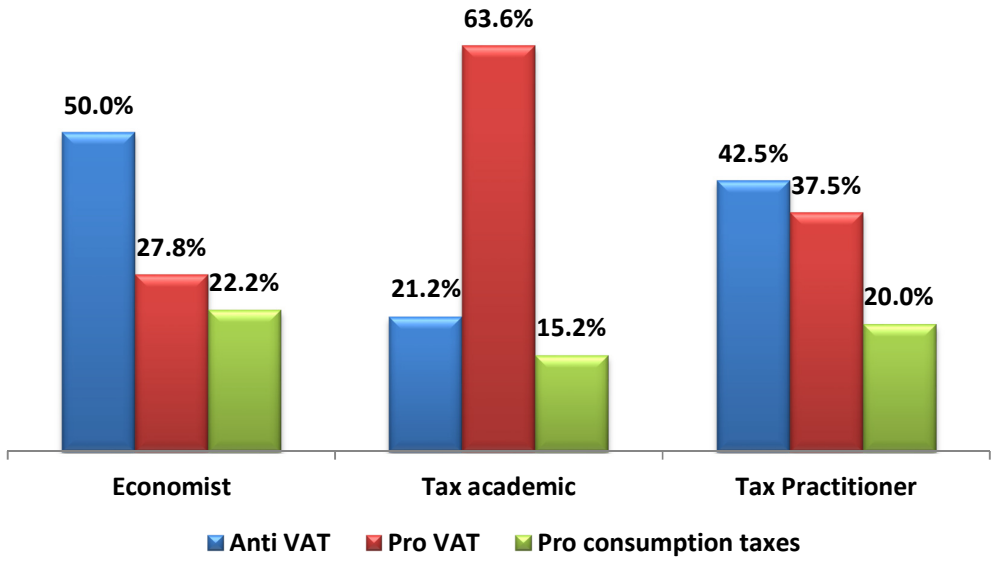
The three groups differed considerably regarding the increase of VAT, with cluster 1 not supporting it and clusters 2 and 3 supporting it. Cluster 3 demonstrated the strongest support for increasing VAT. As per Figure 8, the three groups also differed about whether “Increasing sin tax/taxes on unhealthy foods will lead to inflation increases and lower government revenue due to loss of corporate tax”. Cluster 3 was the least concerned about it, Cluster 1’s concern was just below the middle value of the scale and Cluster 2 demonstrated the highest concern about the particular factor. Figure 8 also shows that the three groups were reasonably in agreement about “Increasing sin taxes/tax on unhealthy foods will result in a healthier population and that in turn will incur less healthcare costs” with all of them having a score in the vicinity of the middle value of the scale. From Table 19 below, it is evident that the majority of respondents fell within the Pro VAT cluster, at 45.1% of the total population. 63.8% of the respondents fell within Cluster 2 and Cluster 3. This indicates that the majority of the respondents believed increasing VAT or increasing consumption taxes were the best options of funding NHI.

Per Table 19 and Figure 9, it was also interesting to note that, on average, economists tended towards falling in the Anti VAT cluster whereas tax academics tended to fall in the Pro VAT cluster. The tax practitioners tended to fall in the Anti VAT cluster followed reasonably closely by the Pro VAT cluster, indicating as a group the tax practitioners were reasonably undecided as to whether or not VAT should be increased to fund NHI. Tax academics exhibited a very different pattern of cluster membership than the economist and tax practitioner groups who had fairly similar patterns indicating that the academics had differing views to their counterparts working in a non-academic environment.

Table 19: Distribution of respondents among the identified cluster profiles as per Table 18 per occupation groups

		Economist	Tax academic	Tax Practitioner	Total
Q4_Regr Tax collection preference profile	Cl 1	9	7	17	33
		50.0%	21.2%	42.5%	36.3%
	Cl 2	5	21	15	41
		27.8%	63.6%	37.5%	45.1%
	Cl 3	4	5	8	17
		22.2%	15.2%	20.0%	18.7%

Figure 9: Graphical representation of respondent distribution by occupation



5.4) Statistical analysis results Question 4 – Progressive Collection Methods

Section 5.4 seeks to summarize the statistical results relating to progressive collection methods in Question 4 of the questionnaire. Question 4 of the questionnaire seeks to address the research sub-question "What method should Government implement in order to collect the funds that are required".

In an effort to reduce the dimensionality of the data, patterns of correlations among the questions used to measure the respondents' perceptions regarding progressive methods of collecting tax to fund the NHI System, were examined by subjecting the set of items to PCA.

The research variables of interest included fourteen statements representing different perceptions of progressive methods of tax collection. Prior to performing PCA the suitability of the data for factor analysis was assessed. The relationships among the fourteen variables, that were measured on a scale of one to four in order to indicate the extent to which the respondents agreed with the statements presented to them, was investigated using non-parametric Spearman's rho correlation coefficient. Preliminary analyses revealed deviations from normality. Inspection of the correlation matrix, (Annexure 4, Table 42), confirmed the presence of a number of coefficients of 0.3 and above. Additionally, the Kaiser-Meyer-Olkin value was 0.713, exceeding the recommended minimum value of 0.6 (Kaiser, 1970, 1974). The Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance, $p<.001$, supporting the factorability of the correlation matrix.

The initial PCA solution using the fourteen (statements 4.23 to 4.36) revealed the presence of five factors with Eigenvalues exceeding one. However, three (4.24, 4.26, 4.36) of the fourteen statements were excluded from the final PCA solution because they either did not load sufficiently on any factor, fell out as a factors on their own or combined with other items in a non-theoretically

defendable way to form a factor. In each case, the amount of total variance in the data explained by the solution also increased. These items can be considered factors on their own.

Table 20: Total Variance Explained by Exploratory Factor Analysis

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.969	26.991	26.991	1.909	17.352	17.352
2	1.575	14.314	41.305	1.741	15.824	33.176
3	1.402	12.741	54.046	1.654	15.037	48.213
4	.920	8.363	62.409	1.562	14.196	62.409
5	.838	7.614	70.023			
6	.730	6.641	76.664			
7	.678	6.164	82.828			
8	.588	5.342	88.170			
9	.502	4.563	92.733			
10	.429	3.896	96.629			
11	.371	3.371	100.000			

Extraction Method: Principal Component Analysis.

Table 20 above, indicated that PCA using the remaining eleven items revealed the presence of three factors with Eigenvalues exceeding one. The Scree plot (Annexure 4, Figure 19) also indicated the presence of four factors, cumulatively explaining 62.409% of the variance in the data. Using Cattell's (1966) Scree test, it was decided to retain these four factors for further investigation. To aid in the interpretation and scientific utility of these four factors, Varimax rotation was performed. Orthogonal rotation was chosen since the analytical procedures were better developed than those of Oblique rotation. Varimax rotation specifically was chosen since it resulted in a clearer separation of factors (Hair et al., 2006). The rotated solution revealed the presence of a simple structure (Thurstone, 1947), with each of the five factors showing a number of strong loadings. Loadings less than 0.5 were excluded from the solution (Annexure 4, Table 44).

Table 21, below, contains the Cronbach's Alpha for each factor, as well as the number of statements that fell within these factors. Annexure 4, Table 44 contains a list of the remaining 11 statements categorised according to which factor each statement fell within. Only Factor 1 demonstrated an internal consistency above 0.6 as illustrated by the Cronbach's Alpha coefficients listed in Table 21 below, while the remaining components, also located in Table 21, were well above 0.5. These Cronbach's Alpha coefficients are lower than the generally accepted minimum of 0.7. As this research is exploratory in nature, these values will be deemed acceptable. The subscales for the extracted factors can be obtained by calculating the mean of the items loading on each of the subscales. This resulted in four latent factors being calculated and named. Factor 1 can be renamed; increasing personal income tax is efficient and assists in income redistribution. Factor 2 can be renamed, increasing tax on individuals or payroll taxes will lead to migration of labour to lower taxed jurisdictions and exiting the formal sector. Factor 3 can be renamed, introducing a payroll tax will be ineffective as a large portion of the population remains unemployed or employed in the informal sector and the tax base is too thin. Finally, Factor 4 can be renamed, Increasing taxes on individuals and payroll taxes will result in less disposable income and will also result in less foreign direct investments due to demands for higher wages, this in turn will result in lower tax revenues. Descriptive statistics for the four factors can be found in Annexure, Table 42.

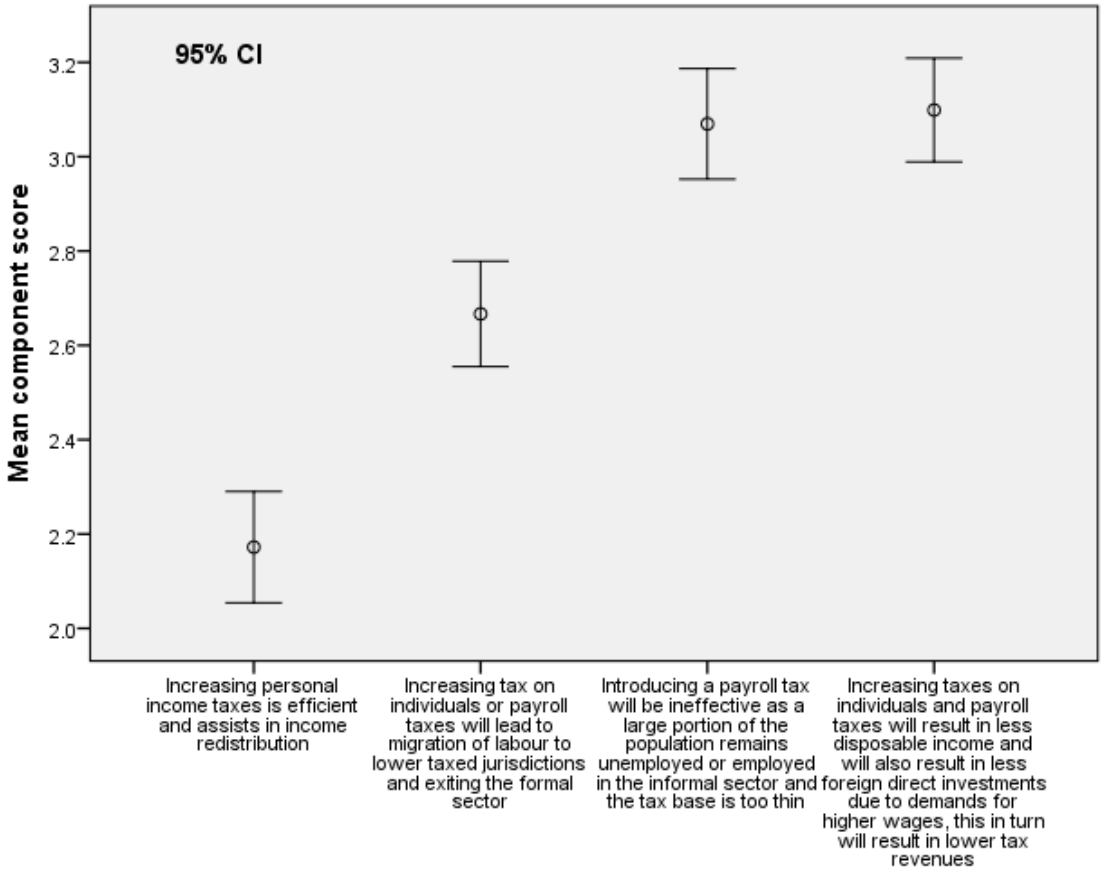
Table 21: Reliability statistics for the four extracted progressive factors

Subscale	Description	No of Items	Cronbach's Alpha
F1	Increasing personal income tax is efficient and assists in income redistribution	3	0.671
F2	Increasing tax on individuals or payroll taxes will lead to migration of labour to lower taxed jurisdictions and exiting the formal sector	3	0.530
F3	Introducing a payroll tax will be ineffective as a large portion of the population remains unemployed or employed in the informal sector and the tax base is too thin	3	0.567
F4	Increasing taxes on individuals and payroll taxes will result in less disposable income and will also result in less foreign direct investments due to demands for higher wages, this in turn will result in lower tax revenues	2	0.596
Overall	**All dimensions**	**11**	**0.426**

Figure 10 below graphically represents the mean scores for each of the four previously identified progressive collection methods factors identified. From Figure 10, it is clear that there were differences in the scores of the factors. To assess whether there were statistically significant differences among the factor scores, the four factor variables were subjected to a Friedman's analysis of variance by ranks test which confirmed that, at the 0.1% level of significance, there was a statistically significant difference between at least one pair of factor variables, $\chi 2(3, N=91)=101.622$, $p<.001$. The statistics for this test can be found in Annexure 4, Table 46 and Table 47. More specifically, from Figure 10 the mean rank score of "Increasing personal income tax is efficient and assists in income redistribution" (MR=1.56) is less than the score for any of the other factors, which is an indication that on average, there is less support for implementing an increase in taxes on individuals or a payroll tax than the disadvantages associated with the implementation of these taxes. On average, the respondents felt the strongest about the ineffectiveness of implementing payroll tax and its consequences leading to a decrease in tax

revenue. There were no statistically significant differences in the mean rank scores for the latter two reasons of being against the implementation of an increased personal income tax.

Figure 10: Comparison of the mean progressive component scores



To determine whether the different occupation groups differed significantly with respect to any of the four latent factors, a non-parametric Kruskal-Wallis test was used to test the null hypotheses specifying that there is no effect of occupation on the factors. The non-parametric test was used as the data was not normally distributed. The results are listed in Annexure 4, Table 48 and Table 49.

The Kruskal-Wallis test revealed that the score for “Increasing tax on individuals or payroll taxes will lead to migration of labour to lower taxed jurisdictions and exiting the formal sector" varied significantly across occupations, $\chi 2(2)= 6.686$, $p<.05$. Tax practitioners appeared to care more

about this possible consequence of implementing an increased tax on individuals or payroll taxes when compared to economists. Table 22 below, shows the mean scores for each of the four components identified across the differing occupations.

Table 22: Comparison of mean scores across occupation

	Most appropriate description of your occupation			
	Economist	Tax academic	Tax Practitioner	Total
Q4_Progr Increasing personal income taxes is efficient and assists in income redistribution	2.2963	2.2121	2.0833	2.1722
Q4_Progr Increasing tax on individuals or payroll taxes will lead to migration of labour to lower taxed jurisdictions and exiting the formal sector	2.4074	2.6768	2.7750	2.6667
Q4_Progr Introducing a payroll tax will be ineffective as a large portion of the population remains unemployed or employed in the informal sector and the tax base is too thin	2.9444	3.1717	3.0417	3.0696
Q4_Progr Increasing taxes on individuals and payroll taxes will result in less disposable income and will also result in less foreign direct investments due to demands for higher wages, this in turn will result in lower tax revenues	2.8611	3.1515	3.1625	3.0989

Figure 11: Graphical representation of mean scores per occupation

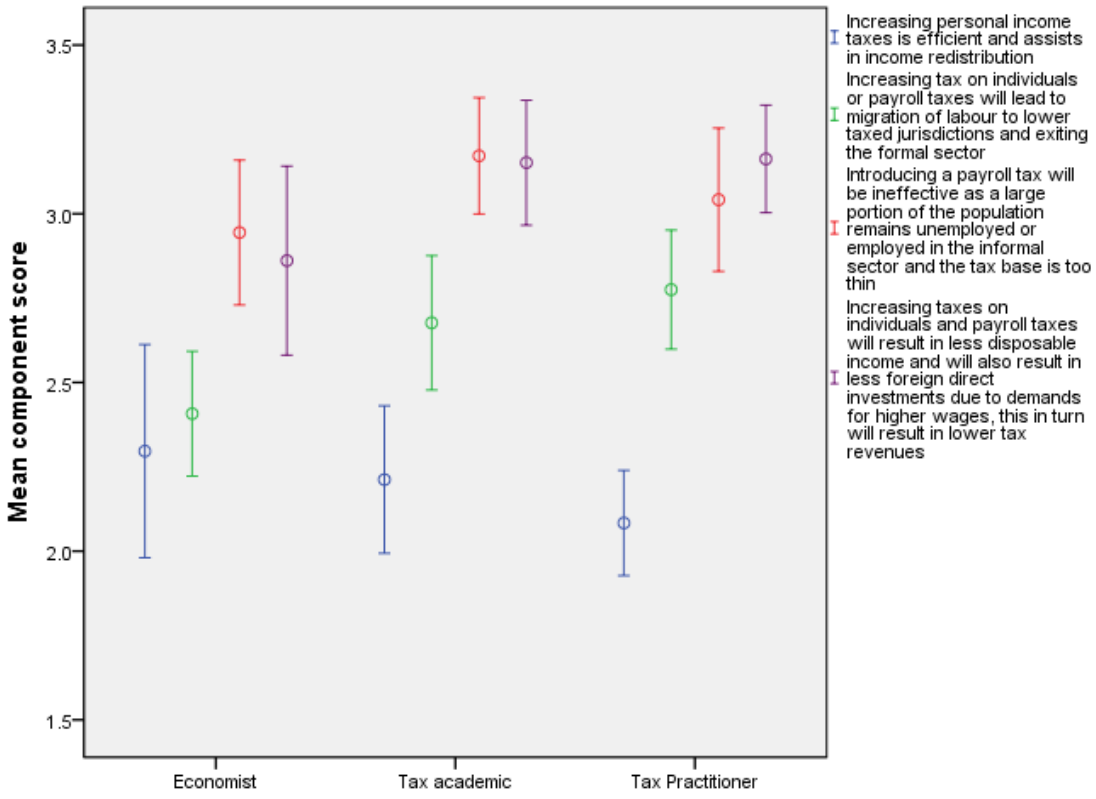


Figure 11 above shows the mean scores for each component identified, per occupation. All of the occupation groups scored the lowest on “Increasing personal income taxes is efficient and assists in income redistribution”. This implies that increasing taxes on individuals or implementing payroll taxes is the least popular option for collecting taxes to fund NHI. Economists and tax academics scored the highest on “Introducing a payroll tax will be ineffective as a large portion of the population remains unemployed or employed in the informal sector and the tax base is too thin”, meaning that this would be their main reason for not considering the increase of taxes on individuals and implementing a payroll tax as viable options for collecting revenue to fund the NHI. For tax practitioners the possibility of the consequences of increasing personal income tax, like less disposable income and less direct foreign investment, causing lower government revenue was of highest concern.

In order to establish whether there were patterns among the respondents regarding the extent to which they supported the four factors, the four component items were subjected to cluster analysis.

Table 23: Final clusters - progressive taxes

	Q4_Progr Tax collection preference profile			
	1	2	3	Total
Q4_Progr Increasing taxes on individuals and payroll taxes will result in less disposable income and will also result in less foreign direct investments due to demands for higher wages, this in turn will result in lower tax revenues	2.7870	3.5435	3.5714	3.0989
Q4_Progr Introducing a payroll tax will be ineffective as a large portion of the population remains unemployed or employed in the informal sector and the tax base is too thin	2.8951	3.4928	3.0476	3.0696
Q4_Progr Increasing tax on individuals or payroll taxes will lead to migration of labour to lower taxed jurisdictions and exiting the formal sector	2.5309	3.2319	2.2619	2.6667
Q4_Progr Increasing personal income taxes is efficient and assists in income redistribution	2.4630	1.8551	1.5714	2.1722

Three different groups were distinguished based on how the respondents answered questions and the group means for each component in the falling within the different clusters are listed in Table 23 above.

Figure 12: Graphical representation of final clusters

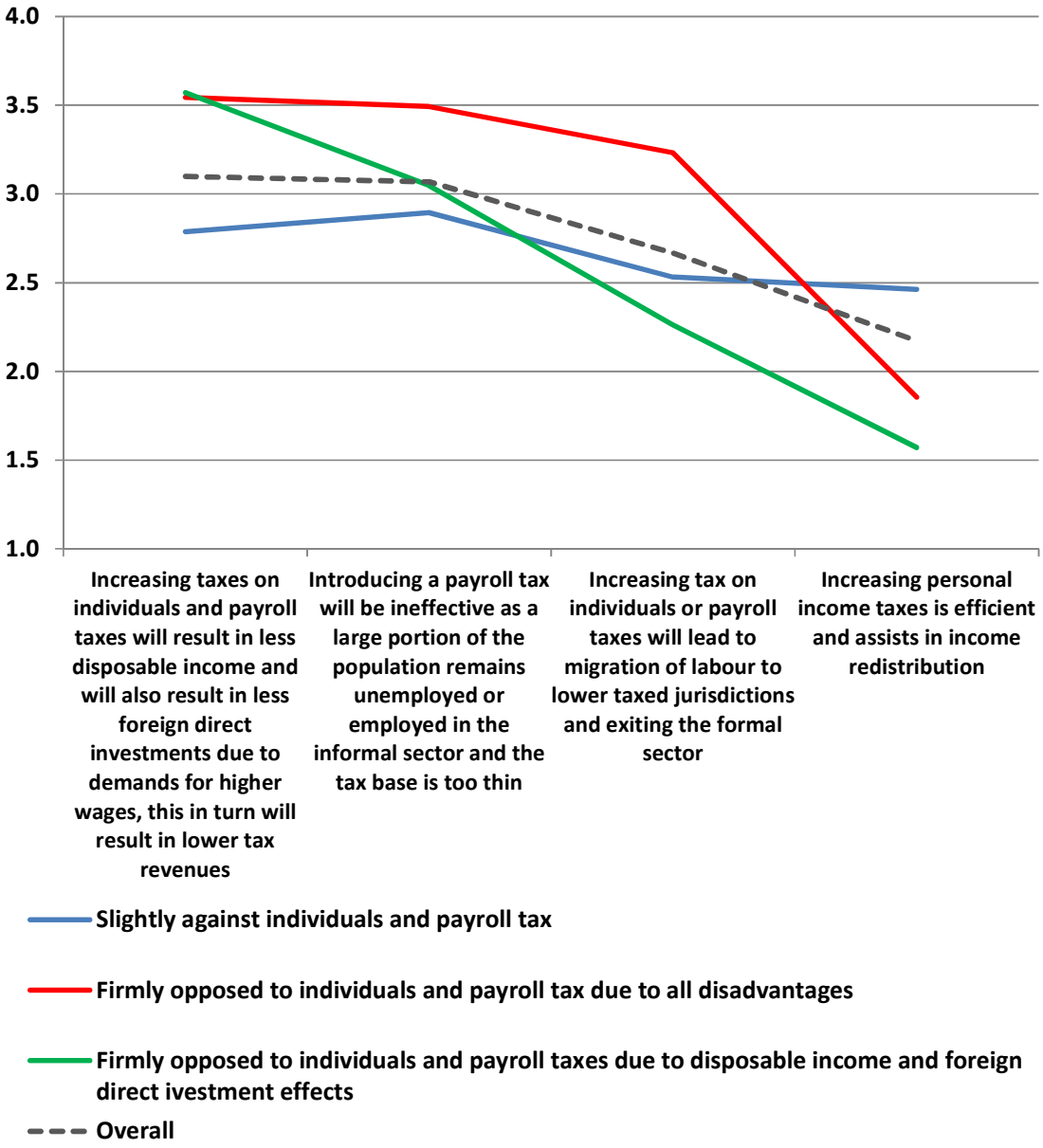


Figure 12 above, graphically represents the mean scores achieved by each cluster for each progressive collection factor. The dotted line shows the mean scores for the group of respondents as a whole. On average, the respondents, as a single group (total line), rated two of the components relatively high above the middle value of the scale, one around the middle value of the scale and one below the middle value of the scale. All those that are higher than the middle value represent reasons for being against increasing taxes on individuals or introducing payroll taxes as

a way to collect revenue to fund the NHI. The one factor that is lower than the middle value of the scale represents agreement with increasing taxes on individuals and payroll taxes. Thus, on average the respondents are against increasing taxes on individuals and payroll taxes.

The slightly against individuals and payroll taxes group (Cluster 1 in Table 23) tended to follow the overall average pattern but at a lower level for all factors except "Increasing personal income taxes is efficient and assists in income redistribution". This group had the highest score for "Increasing personal income taxes is efficient and assists in income redistribution" although this score is still slightly below the middle value of the scale. Thus, these respondents exhibit an average opinion about how taxes to fund the NHI should be collected but lean slightly towards favoring reasons for not increasing personal income tax although they are not strongly opposed to increasing personal income tax either.

The firmly oppose individuals and payroll taxes due to all disadvantages group (Cluster 2 in Table 23) tended to score above the overall average on all factors except for a relatively low score for "Increasing personal income taxes is efficient and assists in income redistribution". They score the highest for "Increasing taxes on individuals and payroll taxes will result in less disposable income and will also result in less foreign direct investments due to demands for higher wages, this in turn will result in lower tax revenues" and "Introducing a payroll tax will be ineffective as a large portion of the population remains unemployed or employed in the informal sector and the tax base is too thin". Thus, this group of respondents seems to be strongly against increasing payroll and individuals' tax and also show strong support for all three of the disadvantages for being against increasing payroll and individual's tax.

The Firmly oppose individuals and payroll taxes due to disposable income and foreign investment effects group (Cluster 3 in Table 23) tended to score relatively high on "Increasing taxes on

individuals and payroll taxes will result in less disposable income and will also result in less foreign direct investments due to demands for higher wages, this in turn will result in lower tax revenues" and scored very low on "Increasing personal income taxes is efficient and assists in income redistribution" while scoring the same as the overall group on "Introducing a payroll tax will be ineffective as a large portion of the population remains unemployed or employed in the informal sector and the tax base is too thin" and below the overall average, and even below the middle value of the scale on "Increasing tax on individuals or payroll taxes will lead to migration of labour to lower taxed jurisdictions and exiting the formal sector". Thus, these respondents appear to be extremely (the lowest support of all) against increasing personal income tax and are extremely sure that the consequences of doing so will have a detrimental effect on the government's revenue.

The three groups differ considerably regarding their reasons for not supporting the increase of personal tax, with Cluster 1 agreeing, but not very strongly, with all three of the disadvantages. Cluster 1 also did not disagree very strongly with the advantage. Cluster 2 (Table 23) felt very strongly that all three of the disadvantages were valid and Cluster 3 (Table 23) felt "Increasing taxes on individuals and payroll taxes will result in less disposable income and will also result in less foreign direct investments due to demands for higher wages, this in turn will result in lower tax revenues" was the strongest reason for their non-support of increasing taxes on individuals and payroll taxes.

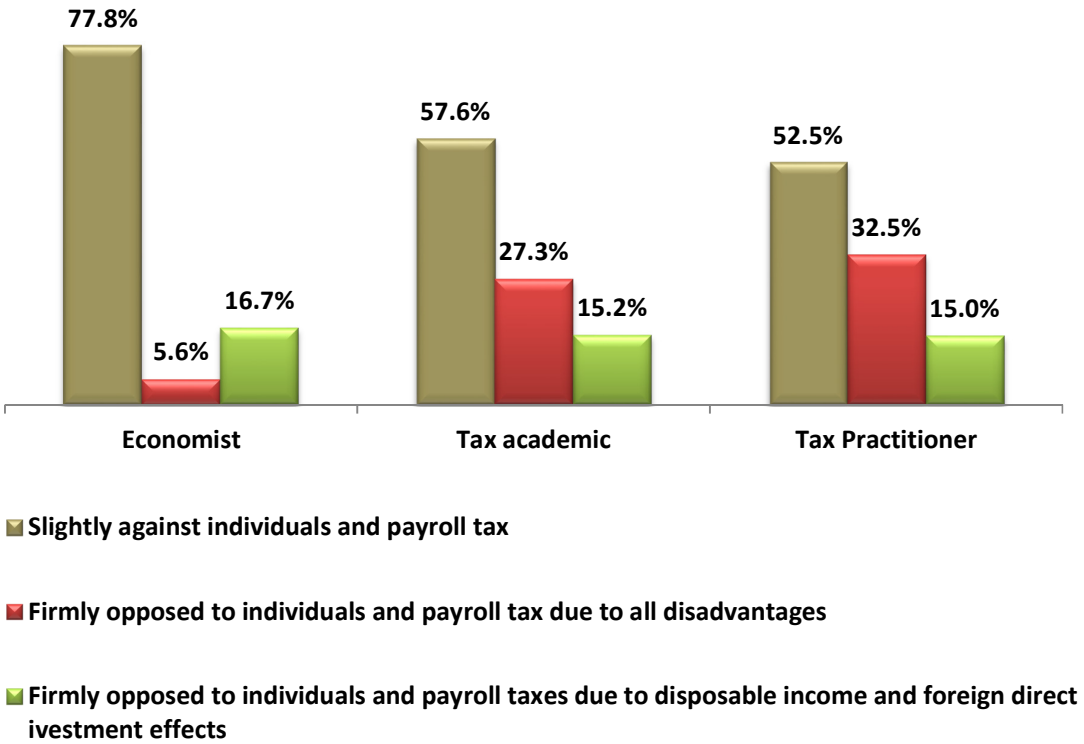
From Table 24 and Figure 13 below it is evident that on average, economists tended towards falling in Cluster 1 and not Cluster 2, tax academics tended to fall in Cluster 1 and to a lesser extent in Cluster 2 and tax practitioners tended to fall in Cluster 1 followed by Cluster 2. About the same proportion of each of the occupation groups ended up in Cluster 3. Tax academics and tax practitioners exhibited a similar pattern of cluster membership however the economist group differed slightly from the norm. Overall the respondents only slightly opposed individuals and

payroll taxes at 59.3%. It is also worth noting that 100% of the respondents fall within the 3 clusters indicating that all respondents are opposed to increases in individuals and payroll taxes funding NHI however, the degree to which they opposed it and reason for opposing it differed.

Table 24: Distribution of respondents among the progressive cluster profiles per occupation groups

		Economist	Tax academic	Tax Practitioner	Total
Q4_Progr Tax collection preference profile	CL 1	14	19	21	54
		77.8%	57.6%	52.5%	59.3%
	Cl 2	1	9	13	23
		5.6%	27.3%	32.5%	25.3%
	Cl 3	3	5	6	14
		16.7%	15.2%	15.0%	15.4%

Figure 13: Graphical representation of progressive clusters among occupation groups



5.5) Statistical analysis results Question 5 - Hypothecation

Section 5.5 seeks to summarise the results of the statistical tests relating to Question 5 of the questionnaire. Question 5 of the questionnaire was designed to answer the research sub-question "should the NHI fund apply the concept of pooling of funds or should the hypothecation of funds collected by the tax specifically for healthcare be implemented".

The research variables of interest, regarding respondents' perceptions on whether the funds should be ring fenced or added to the general tax collected by the fiscus and then allocated to NHI, included nine statements representing different perceptions about whether the collected funds should be ring fenced or not. Prior to performing PCA the suitability of the data for factor analysis was assessed. The relationships among the nine variables, that were measured on a scale of one to four to indicate the extent to which the respondents agreed with the statements presented to them, was investigated using non-parametric Spearman's rho correlation coefficient. Preliminary analyses revealed deviations from normality. Inspection of the correlation matrix, (Annexure 5, Table 52), confirmed the presence of a number of coefficients of 0.3 and above. Additionally, the Kaiser-Meyer-Olkin value was 0.672, exceeding the recommended minimum value of 0.6 (Kaiser, 1970, 1974) and the Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance, $p<.001$, supporting the factorability of the correlation matrix.

Performing a PCA using the nine statements (Statements 5.1 to 5.9) revealed the presence of two factors with Eigenvalues exceeding one. However, the Scree plot indicated a solution of three components. Allowing the solution to consider three factors resulted in Statement 5.7 "Earmarking funds may negatively impact Government's ability to allocate resources to where they may be needed in different economic situations" combined with other items in a non-theoretically defendable way to form a component and was excluded from the final solution. The exclusion of Statement 5.7 also resulted in a solution that explained more of the variation in the data. Statement

5.6 was excluded from the final solution because it resulted in a higher Cronbhach's Alpha (better internal consistency) for the factor. The exclusion of Statement 5.6 also resulted in the variance in the data explained by the solution increasing by more than 5%.

Table 25 indicated that a PCA using the remaining seven items revealed the presence of only two factors with Eigenvalues exceeding one. The Scree plot (Annexure 5, Figure 20) indicated the presence of three factors, cumulatively explaining 75.385% of the variance in the data. Using Cattell's (1966) Scree test, it was decided to retain these three factors for further investigation.

Table 25: Total Variance Explained by Exploratory Factor Analysis

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.584	36.909	36.909	1.954	27.910	27.910
2	1.784	25.482	62.391	1.767	25.239	53.149
3	.910	12.994	75.385	1.556	22.236	75.385
4	.603	8.610	83.995			
5	.523	7.465	91.460			
6	.376	5.376	96.835			
7	.222	3.165	100.000			

Extraction Method: Principal Component Analysis.

To aid in the interpretation and scientific utility of these three factors, Varimax rotation was performed. Orthogonal rotation was chosen since the analytical procedures are better developed than those of Oblique rotation. Varimax rotation was specifically chosen since it results in a clearer separation of factors (Hair et al., 2006). The rotated solution revealed the presence of a simple structure (Thurstone, 1947), with each of the three factors showing a number of strong loadings. Loadings less than 0.49 were excluded from the solution the rotated component matrix can be found in Annexure 5, Table 53.

Each of the extracted Factors, except Factor 3, demonstrated an internal consistency that was higher than the generally accepted minimum of 0.7 as illustrated by the Cronbach's Alpha coefficients listed in Table 26. The generally agreed upon lower limit for Cronbach's Alpha is 0.70, although it may decrease to 0.60 in exploratory research (Hair et al., 2006). As the research being conducted is exploratory in nature, the Cronbach's Alpha for Factor 3 was also be deemed acceptable. The subscales for the extracted components were obtained by calculating the mean of the items loading on each of the subscales. This resulted in three latent factors being calculated and named. Factor 1 was renamed; Ring-fencing takes the funds out of the political and budgetary arenas. Factor 2 was renamed; Ring-fencing the funds will improve accountability. Finally, Factor 3 was renamed; Ring-fencing limits the funding to only one source. The descriptive statistics for the renamed factors have been included in Annexure 5, Table 54.

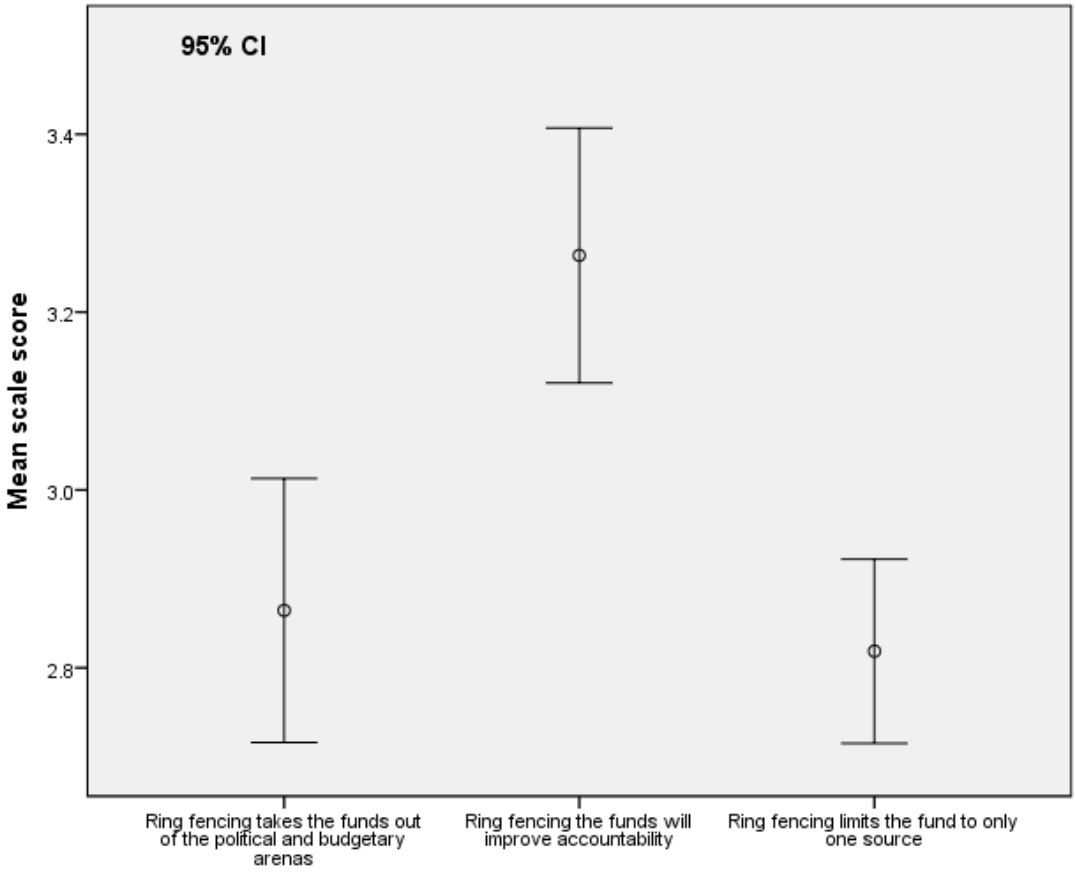
Table 26: Reliability statistics for the three extracted factors

Subscale	Description	No of Items	Cronbach's Alpha
F1	Ring-fencing takes the funds out of the political and budgetary arenas	3	0.745
F2	Ring-fencing the funds will improve accountability	2	0.842
F3	Ring-fencing limits the funding to only one source	2	0.575
Overall	**All dimensions**	**7**	**0.695**

From Figure 14 it is clear that there were differences in the scores of the factors. To assess whether there were statistically significant differences among the factor scores, the three factor variables were subjected to a Friedman's analysis of variance by ranks test which confirmed that, at the 0.1% level of significance, there was a statistically significant difference between at least one pair of component variables, $\chi 2(2, N=91)=30.007$, $p<.001$. More specifically, from Table 57 (Annexure 5), the mean rank score of "Ring-fencing the funds will improve accountability" (MR=2.41) was more than the scores of the other two factors, which is an indication that on average, there was more support for ring-fencing because of accountability than for ring-fencing

due to funds not being subjected to political and budgetary concerns. On average, the respondents felt the strongest about ring-fencing because of higher accountability.

Figure 14: Comparison of the mean component scores



To determine whether the different occupation groups differ significantly with respect to any of the three latent factors, a non-parametric Kruskal-Wallis test (non-parametric because data is not normally distributed) was used to test the null hypotheses specifying that there is no effect of occupation on the factors. The results are listed in Annexure 5, Table 55 and Table 56.

The Kruskal-Wallis analysis of variance revealed that, at the 5% level of significance, the different perceptions regarding ring-fencing funds collected to fund the NHI varied significantly across occupation types, $\chi 2(2) = 7.226$, $p < .05$. More specifically, the extent to which economists believed that funds must be ring fenced due to budgetary and political concerns is significantly lower than the extent to which tax academics and tax practitioners believed so.

In order to ascertain whether there were patterns among the respondents regarding the extent to which they support the three factors, the three factors were subjected to cluster analysis. Three different groups were distinguished and the group means for each factor in the different clusters are listed in Table 27 below.

Table 27: Ring-fencing Final cluster centres

	Cluster Number of Case			
	1	2	3	Total
Q5 Ring-fencing takes the funds out of the political and budgetary arenas	2.4167	2.4314	3.5278	2.8645
Q5 Ring-fencing the funds will improve accountability	1.5000	3.0392	3.7778	3.2637
Q5 Ring-fencing limits the fund to only one source	3.5000	2.7255	2.8750	2.8187

Figure 15: Graphical representation of mean scores among clusters

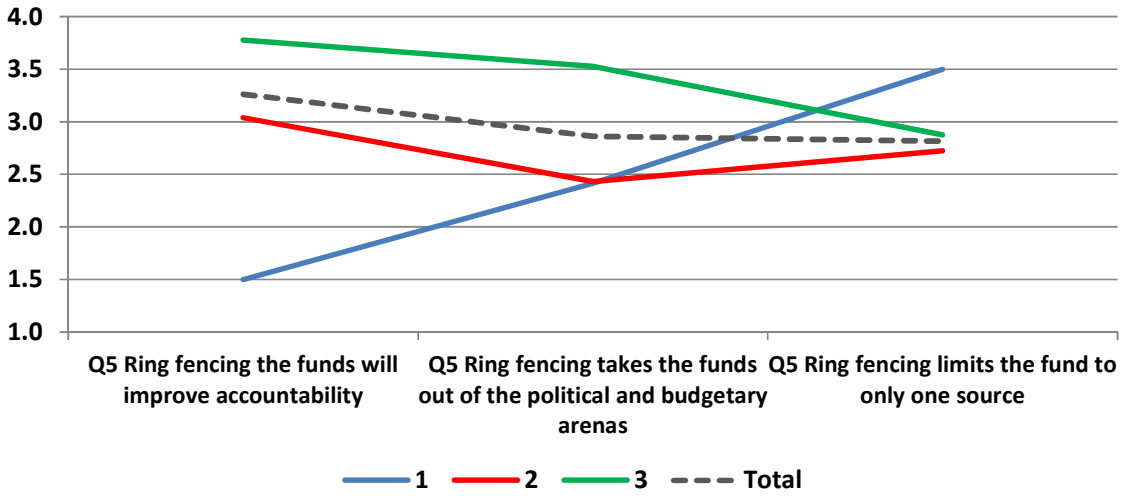


Figure 15 above graphically represents the how the mean scores differed for each component amongst the identified clusters and how these compared to the scores of the group as a whole. On average, the respondents, as a single group (total line), rated all aspects above the middle value of the scale. Ring-fencing funds due to improved accountability had the highest mean score, of 3.23 per Figure 15 and not ring-fencing because it limits the fund to a single source had the lowest mean score, of 2.81. These results indicate that as a whole the respondents agreed that ring-fencing would improve accountability and would not subject the funds to political infighting. The respondents also believed, although to a lesser extent, that a disadvantage of ring-fencing would be that the funding would be limited to one source.

The Anti Ring-fencing group (Cluster 1, Table 27) tended to score very low on ring-fencing increasing accountability and high for not ring-fencing due to ring-fencing limiting the fund to certain sources. They scored at the middle value of the scale, with a score of 2.5, on ring-fencing removing the funds from political and budgetary considerations. Thus, as these respondents did not agree with the advantages of ring-fencing, but agreed with the disadvantages of ring-fencing, the Anti Ring-fencing group believed that ring-fencing is not the appropriate method.

The Slightly for Ring-fencing group (Cluster 2, Table 27) tended to follow the overall average pattern but at a lower level for all factors. This group tended to agree with the advantages and disadvantages of ring-fencing and thus were only slightly inclined to support ring-fencing. These respondents exhibited lower than average perceptions of ring-fencing across all factors, with ring-fencing improving accountability being the highest.

The Pro Ring-fencing (Cluster 3, Table 27) group tended to score above the overall average across all components with ring-fencing improving accountability being the highest and not ring-fencing due to the fund being limited to a single source being the lowest. Thus, this group of respondents seem to support ring-fencing for both reasons and agree with the disadvantages of ring-fencing to a lesser extent. Therefore, overall the group supported the ring-fencing of funds for NHI.

The three groups differed considerably regarding ring-fencing increasing accountability with Anti Ring-fencing respondents scoring very low and Pro Ring-fencing and Slightly for Ring-fencing scoring above the middle value of the scale. The inverse interaction was observed regarding not ring-fencing due to limiting the fund certain sources. In this instance the Anti Ring-fencing

respondents scored highest and the Pro Ring-fencing and Slightly for Ring-fencing respondents scoring slightly above the middle value of the scale.

Table 28: Distribution of respondents among the cluster profiles

		Economist	Tax academic	Tax Practitioner	Total
Q5 Ring-fencing preference profile	Cl 1	3	0	1	4
		16.7%	0.0%	2.5%	4.4%
	Cl 2	11	18	22	51
		61.1%	54.5%	55.0%	56.0%
	Cl 3	4	15	17	36
		22.2%	45.5%	42.5%	39.6%

Figure 16: Graphical representation of Ring-fencing distribution amongst occupation

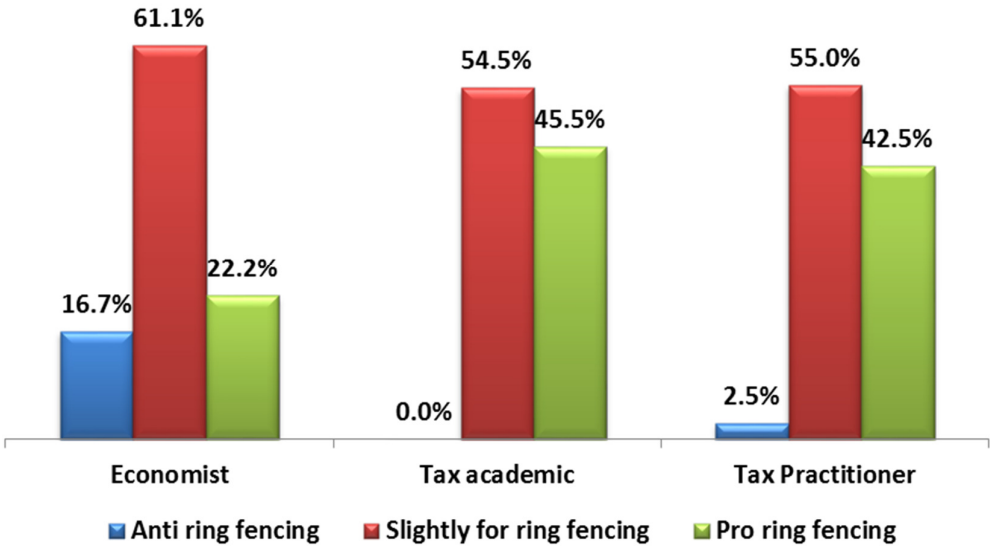


Table 28 and Figure 16 depict the distribution of respondents by occupation amongst the newly identified clusters. On average, all the occupation groups tended towards falling in the Slightly for Ring-fencing group (Cluster 2). Only 4.4% of the respondents fell within the Anti Ring-fencing group (Cluster 1) and the respondent proportions for Cluster 1 tended to be the smallest across all the occupation groups. This indicates that the majority of the respondents were either Pro Ring-fencing or Slightly for Ring-fencing with a combined 95.6% of the respondents falling within these categories. This indicated that the respondents firmly believed that ring-fencing should be

implemented. It was also interesting to note that economists exhibited a different pattern of cluster membership than the tax academics and tax practitioners who have fairly similar patterns. Economists had less members fall within the Pro Ring Fencing group when compared to the other occupational groupings and had a higher percentage falling within the Anti Ring-fencing group when compared to the other occupational groups. Overall however, a large majority of the economists still supported ring-fencing of funds.

5.6) Conclusions

The results of the various statistical analyses performed have been summarised below in a tabular form below. The results of the cluster analysis were combined with the factor analyses results in order to provide reasons for the conclusions.

Conclusion table 1: Summary of advanced statistics results

Research question	Clusters identified and percentage of population	Conclusion combined with factor analysis reasoning
Progressive Vs regressive	Slightly Progressive (51.6%) Firmly progressive (20.9%) Regressive (27.5%)	The majority of the respondents fall within the slightly progressive and Firmly progressive category indicating a progressive tax should be implemented. The main reasons for respondents falling within this category was due to the fact that respondents felt people should pay proportionately what they could afford and that the wealthy should support the poor.
Collection methods (regressive)	Anti VAT (36.3%) Pro VAT (45.1%) Pro consumption taxes (18.7%)	The majority of the respondents fell within the Pro VAT or Pro consumption taxes categories. The main reasons identified for the responses is that an increase in VAT was seen as justifiable, fair and efficient.
Collection methods (progressive)	Slightly against individuals and payroll taxes (59.3%) Firmly against individuals and payroll taxes (25.3%) Firmly against individuals and payroll taxes due to effects on foreign direct investments (14.4%)	The results indicated that all respondents were opposed to individuals and payroll taxes for various reasons. The main reason being, a payroll tax would be ineffective as a large portion of the population remained unemployed or employed in the informal sector resulting in a thin tax base.
Ring fencing versus pooling funds	Anti Ring fencing (4.4%) Slightly for ring fencing (56%) Prof Ring fencing (39.6%)	Almost all the respondents supported the notion that ring fencing should be applied in order to fund NHI. The factor analysis revealed the reasons for the outcome was that the respondents felt that ring fencing the funds specifically for NHI would take the funds out of the political and budgetary arena, thus subjecting them to less political infighting.

6) Conclusions

This section seeks to summarize and conclude on the results as discussed in the previous sections. In concluding, the information gathered will be used to attempt to answer the main research question "How should NHI be funded using the current tax system in South Africa to achieve the best outcome for all citizens within its population". The Section starts by answering each of the research sub-questions individually and then aggregates the response to find a final solution.

6.1) Summary of results

The first research question posed was, "should the tax to fund the NHI system be a progressive or regressive tax?" The literature review contained in Section 2, identified various arguments for and against a progressive tax. In Section 4.5, the descriptive statistics were analysed and there were various factors in which the respondents believed would impact the decision to implement a progressive or regressive tax. In an attempt to group the factors together and identify new combined reasons for the responses, a factor analysis was performed in Section 5.2. The factor analysis resulted in the identification of five main factors that would influence the decision into whether a progressive or regressive tax should be implemented. The five factors were, sympathy lies with non-poor; the wealthy should support the poor; stability of progressive taxes; pro progressive tax due to income redistribution effects and; progressive taxes are perceived as equitable. The analysis also revealed that the extent that economists felt the tax must be progressive was significantly higher than the extent to which tax practitioners felt that the tax must be progressive. Finally, the results were subjected to a cluster analysis, the cluster analysis was performed in order to group the respondents into various categories based on the responses and provide more insight into the way the respondents answered as opposed to only selecting various

scores. The cluster analysis revealed the presence of three groups amongst the respondents. The three groups identified were as follows, Slightly for progressive taxes, the Firmly for progressive taxes and the Pro regressive taxes group. The results indicated 72.5% of the respondents fell within the slightly progressive and firmly progressive clusters, and thus a progressive tax should be implemented. The main reasons for the respondents falling within these categories and thus the main reasons for opting for the use of a progressive tax was due to the respondents believing the wealthy should support the poor and that each person should pay proportionately what they could afford.

The second research question posed was, “should the NHI fund apply the concept of pooling of funds or should the hypothecation of funds collected by the tax specifically for healthcare be implemented?” As with the previous question, the literature review contained various factors that could affect the decision to ring fence funds or not. The various factors were posed to respondents and the respondents agreed with many of the reasons. In order to reduce the number of factors, a factor analysis was performed in Section 5.5. The results revealed the presence of three main themes namely, ring-fencing takes the funds out of the political and budgetary arenas; ring-fencing the funds will improve accountability and; ring-fencing limits the funding to only one source. A Kruskal-Wallis test was performed in order to ascertain whether or not the different occupation groups differed significantly in their opinions. The results revealed that the extent to which economists believed that funds must be ring fenced due to budgetary and political concerns was significantly lower than the extent to which tax academics and tax practitioners believed so. Finally, a cluster analysis was performed on the data and the results indicated the presence of three clusters, namely, Anti ring-fencing, Slightly Pro ring-fencing and Pro ring-fencing. Only 4.4% of the respondents fell within the Anti ring-fencing group and the respondent proportions for Cluster 1 tended to be the smallest across all the occupation groups. This indicates that the majority of the respondents were either Pro ring-fencing or Slightly Pro ring-fencing at a combined 95.6% of the respondents falling within these categories. Additionally, the research revealed that the reasons

why the respondents tended to support ring-fencing was due to the increased accountability created from ring-fencing funds specifically for NHI and the fact that ring-fencing the funds would take the funds out of the political and budgetary arena, thus subjecting them to less political infighting.

The final research question to be answered was, “what method should Government implement to collect the funds that are required?” In order to determine what method the respondents felt was the most appropriate method of financing NHI the respondents were asked to rate the effectiveness and equitableness of certain tax collection methods. The respondents believed increasing VAT was the most effective method of financing NHI with 53.8% of the respondents rating increasing VAT as highly effective. The respondents believed that the least effective method of financing NHI was increasing tax on individuals with 60.5% of the respondents rating increasing tax on individuals as ineffective. The results also reflected that increasing VAT was rated highly equitable by the largest number of respondents with a frequency of 41.8%, whereas, increasing tax on individuals was rated as the most inequitable means of financing with the highest number of respondents believing raising taxes on individuals is highly inequitable 32.5%. Thus, increasing VAT should be the method used to finance NHI. This was contrary to the conclusions reached earlier stating that a progressive tax should be used as VAT is regressive in nature. However, the literature review revealed that much of the regressivity in VAT was removed due to zero rating and exemption of certain goods and services.

In order to determine what the reasoning for the respondents selecting VAT as the most appropriate means of funding NHI was a factor analysis was performed. The factor analysis was conducted in two parts, firstly on factors influencing collection methods that were regressive in nature and secondly, on collection methods that were progressive in nature. The factor analysis on the regressive methods revealed the presence of five factors that influenced the decision. These

factors were, increasing VAT is justifiable, fair and efficient; increasing sin tax/taxes on unhealthy foods will lead to lower tax revenue due to job cuts and decreased consumption; increasing sin taxes/tax on unhealthy foods will result in a healthier population and that in turn will incur less healthcare costs; increasing VAT will lead to increased food prices and that in turn can lead to political opposition and; increasing sin tax/taxes on unhealthy foods will lead to inflation increase and lower government revenue due to loss of corporate tax. A Kruskal-Wallis analysis of variance revealed that none of the regressive collection components were significantly influenced by the respondents' occupation. Finally, a cluster analysis revealed that the respondents fell within three main groups being, Pro VAT, Anti VAT and Pro consumption taxes. The majority of respondents fell within the Pro VAT cluster, at 45.1% of the total population. 63.8% of the respondents fell within the Pro VAT and Pro consumption taxes clusters combined. It was also interesting to note that, on average, economists tended towards falling in the Anti VAT cluster, whereas, tax academics tended to fall in the Pro VAT cluster. Even though the respondents believed that increasing VAT would drive up food prices and result in political opposition, they felt that increasing VAT was justifiable, fair and efficient. The main reason for the respondents not selecting increased sin taxes or taxes on unhealthy foods was that the respondents felt the increase would lead to inflation increases and lower government revenues due to loss of corporate taxes.

The factor analysis on progressive taxes revealed the presence of four main factors that would influence the decision to implement a progressive tax. These components are, increasing personal income tax is efficient and assists in income redistribution; increasing tax on individuals or payroll taxes will lead to migration of labour to lower taxed jurisdictions and exiting the formal sector; introducing a payroll tax will be ineffective as a large portion of the population remains unemployed or employed in the informal sector and the tax base is too thin and; increasing taxes on individuals and payroll taxes will result in less disposable income and will also result in less foreign direct investments due to demands for higher wages, this in turn will result in lower tax revenues. The Kruskal-Wallis test revealed that tax practitioners seem to care more about the effect that

increasing tax on individuals or payroll taxes would have on migration of labour to lower taxed jurisdictions and employees exiting the formal sector when compared to economists. The cluster analysis indicated the presence of three clusters namely, those who firmly opposed individuals and payroll taxes due to disposable income and foreign investment effects, those who firmly opposed individuals and payroll taxes due to all disadvantages and those who were slightly opposed to individuals and payroll taxes. The results revealed that all the respondents were opposed to increases in payroll taxes and individual taxes to different extents and for different reasons. The main reason for them opposing payroll taxes and individuals taxes were, introducing a payroll tax would be ineffective as a large portion of the population remained unemployed or employed in the informal sector and the tax base was too thin. The respondents also did not believe the payroll and individuals taxes would assist in income redistribution as the literature suggested.

From the results as summarised above, it would appear that the answer to the main research question, "How should NHI be funded using the current tax system in South Africa to achieve the best outcome for all citizens within its population?", as evidenced by the data gathered from the respondents, is that in the opinion of the respondents the NHI system should be financed by an increase in VAT because the respondents felt that increasing VAT was justifiable, fair and efficient. The funds collected should be ring fenced specifically for the NHI fund because the respondents believe increased accountability is created from ring-fencing and the ring-fencing the funds would take the funds out of the political and budgetary arena thus subjecting them to less political infighting.

6.2) Limitations

The study was limited as the majority of the respondents were in the tax academics and tax expert occupation category whilst fewer of the respondents fell within the economist category. Should

there have been more economist respondents the average curves used to compare the different clusters to may have changed. The research was also limited to qualitative considerations as the data to perform quantitative calculations surrounding the funding method was not available. The research was also limited due to the limited amount of literature available on the topic in a South African context and as such the questionnaire was limited to the statements identified form the small amount of available literature.

6.3) Recommendations for future research

The quantitative impact of selecting a financing method could be a potential research area in future as more data becomes available once the NHI pilot is completed. Another are for future research is amending the questionnaire for additional statements once more literature becomes available on the NHI system.

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Annexure 1: NHI Survey



WITS
THE SCHOOL OF ACCOUNTANCY

National Health Insurance Survey

Dear Participant,

Thank you in advance for your participation in this survey. I am currently a masters student at The University of the Witwatersrand. As part of my MCom accounting degree, I am working with my supervisor on a research project titled "The most appropriate method of financing National Health Insurance (NHI)". The purpose of the project is to obtain information from tax practitioners, tax academics and economists on what they perceive to be the most appropriate method of financing NHI.

The questionnaire consists of four parts and will take approximately fifteen to thirty minutes to complete, please answer all parts. There will be no compensation of any kind available for your participation. I agree to provide, at your request, a copy of the final research paper.

The risks to you by participating in this project are minimal. Your identity will be kept strictly confidential and no personal information is required whilst completing the survey.

If you have any questions about this project or your participation, you can email me at ttu@Deloitte.co.za. Should you need to contact a person within the Wits School of Accountancy, please feel free to contact Magda Turner, Head of taxation, at Magda.turner@wits.ac.za.

By completing and submitting this survey, as a participant, you are providing your informed consent to the publication of the results.

Sincerely,

Terry Tu
The University of the Witwatersrand
School of Accountancy

1. **Effectiveness**

Q: 1) Please rate the **effectiveness** of each of the following financing methods in collecting tax revenues, 1 being **ineffective** and 4 being highly **effective?**

Financing Method for NHI	**1 Highly Ineffective**	**2 Ineffective**	**3 Effective**	**4 Highly Effective**
Increasing VAT				
Payroll tax on employees				
Increasing "sin" taxes				
Excise duty on unhealthy foods				
Increasing tax on individuals				
Some combination of the above				

If you selected a combination of options, Please specify which combination

2. **Equitableness**

Q: 2) How would each of the following methods of financing rate in terms of being **equitable** to all taxpayers, 1 being extremely **inequitable** and 4 being highly **equitable**?

Financing Method	**1 Highly Inequitable**	**2 Inequitable**	**3 Equitable**	**4 Highly Equitable**
Increasing VAT				
Payroll tax on employees				
Increasing "sin" taxes				
Excise duty on unhealthy foods				
Increasing tax on individuals				
Some combination of the above				

If you selected a combination of options, Please specify which combination

3. **Progressive Vs Regressive taxes**

Q: 3) On a scale of 1 - 4 indicate whether or not you agree with the statements. 1 being strongly disagree and 4 being strongly agree.

	1 Strongly Disagree	**2 Disagree**	**3 Agree**	**4 Strongly Agree**
3.1) Wealthy people should pay more taxes as they stand to lose more if the state does not protect their assets.				
3.2) Poor people should pay more taxes as they receive more benefits from the Government than wealthy people				
3.3) Progressive taxes are more stable in times of recession,				

when a recession hits people will earn less and be shifted into a lower bracket.				
3.4) Each person should sacrifice proportionately what they can afford.				
3.5) Progressive taxes are a necessary tool in transferring wealth from the rich to the poor.				
3.6) A regressive tax is unlikely to improve income redistribution				
3.7) Taxing a person more for working harder and earning more income is unfair.				
3.8) If the poor pay more taxes, then a result of this would be that the poor would require more government services.				
3.9) A progressive tax should be implemented.				

4. <u>Collection Methods</u>

Q: 4) Indicate on a scale of 1 - 4 whether you agree or disagree with the statements. 1 being strongly disagree and 4 being strongly agree.

	1 Strongly Disagree	**2 Disagree**	**3 Agree**	**4 Strongly Agree**
4.1) An increase in the VAT rate in South Africa is justifiable as the current rate of 14% is below the international average of 16.4%				
4.2) VAT is fairly easy for SARS to administer and is an efficient method of collecting taxes.				
4.3) Increasing VAT will inevitably lead to an increase in food prices.				
4.4) Trade unions carry strong political clout, an increase in VAT will result in stiff union opposition.				
4.5) An increase in VAT will not have much effect on the poor as most necessities are zero rated or exempt.				
4.6) VAT is the most efficient means of financing NHI as it is the fastest growing source of tax revenue.				
4.7) Increasing VAT will result in lower consumption of goods and services which in turn would lead to labour cuts.				
4.8) Increasing VAT is the fairest method of financing NHI as the entire population pays VAT.				
4.9) Increasing VAT will ultimately be unfavorable as the final burden is borne by consumers				
4.10) Increasing Sin taxes will discourage consumption of the products and in turn improve the health of the population.				
4.11) Alcohol related healthcare issues will represent a huge cost for NHI.				
4.12) If Sin taxes are increased, this will result in increased smuggling of illegal cigarettes.				
4.13) The effects of increased sin taxes will be negated by the loss of corporate taxes due to decreased consumption.				
4.14) Decreased consumption due to increased sin taxes could				

lead to job cuts in the industry and as a result lead to decreased employees tax.				
4.15) High medical costs of alcoholism only relate to heavy drinkers. Not occasional drinkers.				
4.16) If people eat less unhealthy foods, this would decrease the costs needed to fund NHI as healthcare costs will decrease.				
4.17) A tax on unhealthy foods will result in decreased consumption of unhealthy foods.				
4.18) A tax on unhealthy foods will increase inflation.				
4.19) Decreased consumption of unhealthy foods will lead to job cuts and in turn less employees tax				
4.20) The loss in corporate taxes due to decreased consumption of unhealthy foods will outweigh the amount of taxes generated from a tax on unhealthy foods.				
4.21) Implementing a tax on unhealthy foods will be ineffective as the legislative process is likely to take a long time.				
4.22) Consumption taxes (VAT, Excise duty, sin taxes) are the most appropriate means of financing NHI as the more you consume the more you pay.				
4.23) Unemployment is a major factor when implementing payroll taxes.				
4.24) The estimated 6 million individual taxpayers will generate enough additional tax revenue to fund the expected 40 million NHI user's needs.				
4.25) If there is an increase in payroll taxes, the result will be workers leaving the formal sector to avoid paying the taxes.				
4.26) Payroll taxes are costly and difficult to administer.				
4.27Increase in payroll taxes will result in demand for higher wages; this in turn will decrease foreign direct investment.				
4.28) Increasing payroll tax will help balance the regressive impact of consumption taxes.				
4.29) Income taxes have been successful in redistributing wealth, making it appropriate for funding NHI.				
4.30) Increasing payroll taxes will not result in a wider tax base but merely squeeze more out of an already thin tax payer base.				
4.31) Increasing tax on individuals will result in less disposable income which would lead to decreased spending and decreased corporate taxes.				
4.32) Personal income taxes are the most efficient as they are already the largest contributor towards tax revenue.				
4.33) Increasing tax on individuals would lead to decreased investment. This in turn would lead to higher inflation which would increase costs of funding NHI.				
4.34) Due to globalization, increasing taxes on individuals could result in relocation of individuals to lower taxed jurisdictions.				
4.35) Most of the workforce in South Africa are employed in the informal sector and remain untaxed, thus increasing payroll taxes will not be viable.				
4.36) Increasing tax on individuals will not result in a material amount of additional revenue.				

5. Ring-fencing Funds

Q: 5) Indicate whether or not you agree with the each statement. 1 being strongly disagree and 4 being strongly agree.

	1 Strongly Disagree	**2 Disagree**	**3 Agree**	**4 Strongly Agree**
5.1) Revenues collected should be ring fenced.				
5.2) If funds are earmarked specifically for NHI this will create more accountability over these funds.				
5.3) If funds are earmarked specifically for NHI, this will not subject them to political infighting. Revenue for NHI will be determined by taxes collected and not ruling party policy decisions.				
5.4) Earmarking funds for NHI will reduce the opposition of implementing new taxes as people will be able to see where the funds are being used.				
5.5) Earmarking fund will build an exemption from review from the finance ministry as it will not be subject to budget cuts.				
5.6) Earmarking funds for NHI will result in inappropriate funding levels.				
5.7) Earmarking funds may negatively impact Government's ability to allocate resources to where they may be needed in different economic situations.				
5.8) Earmarking funds limits funding for NHI to specific sources				
5.9) If the budgetary process is used then funding may be obtained from a broader base as opposed to a single source of revenue				

Which best describes your occupation

A. Economist

B. Tax academic

C. Tax practitioner

Thank you for completing the questionnaire

Annexure 2: Statistics Question 3

Table 29: Spearman's rho among the original 9 items (N=91, Listwise)

	Q3_1	Q3_2	Q3_3	Q3_4	Q3_5	Q3_6	Q3_7	Q3_8	Q3_9
Q3_1 Wealthy people should pay more taxes as they stand more to lose if the state does not protect their assets.	1.000								
Q3_2 Poor people should pay more taxes as they receive more benefits from the Government than wealthy people	-.114	1.000							
Q3_3 Progressive taxes are more stable in times of recession, when a recession hits people will earn less and be shifted into a lower bracket.	.262*	.125	1.000						
Q3_4 Each person should sacrifice proportionately what they can afford.	.049	.035	.104	1.000					
Q3_5 Progressive taxes are a necessary tool in transferring wealth from the rich to the poor.	.350**	-.302**	.105	.214*	1.000				
Q3_6 A regressive tax is unlikely to improve income redistribution	-.032	-.087	-.011	.073	.273**	1.000			
Q3_7 Taxing a person more is for working harder and earning more income is unfair.	-.197	.374**	.082	.191	-.307**	-.169	1.000		
Q3_8 If the poor pay more taxes then a result of this would be that the poor would require more government services.	.071	-.161	.355**	.147	.163	.002	.042	1.000	
Q3_9 A progressive tax should be implemented.	.347**	-.285**	.148	.340**	.579**	.363**	-.268*	.176	1.000

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Figure 17: Scree plot Question 3 - progressive vs regressive taxes

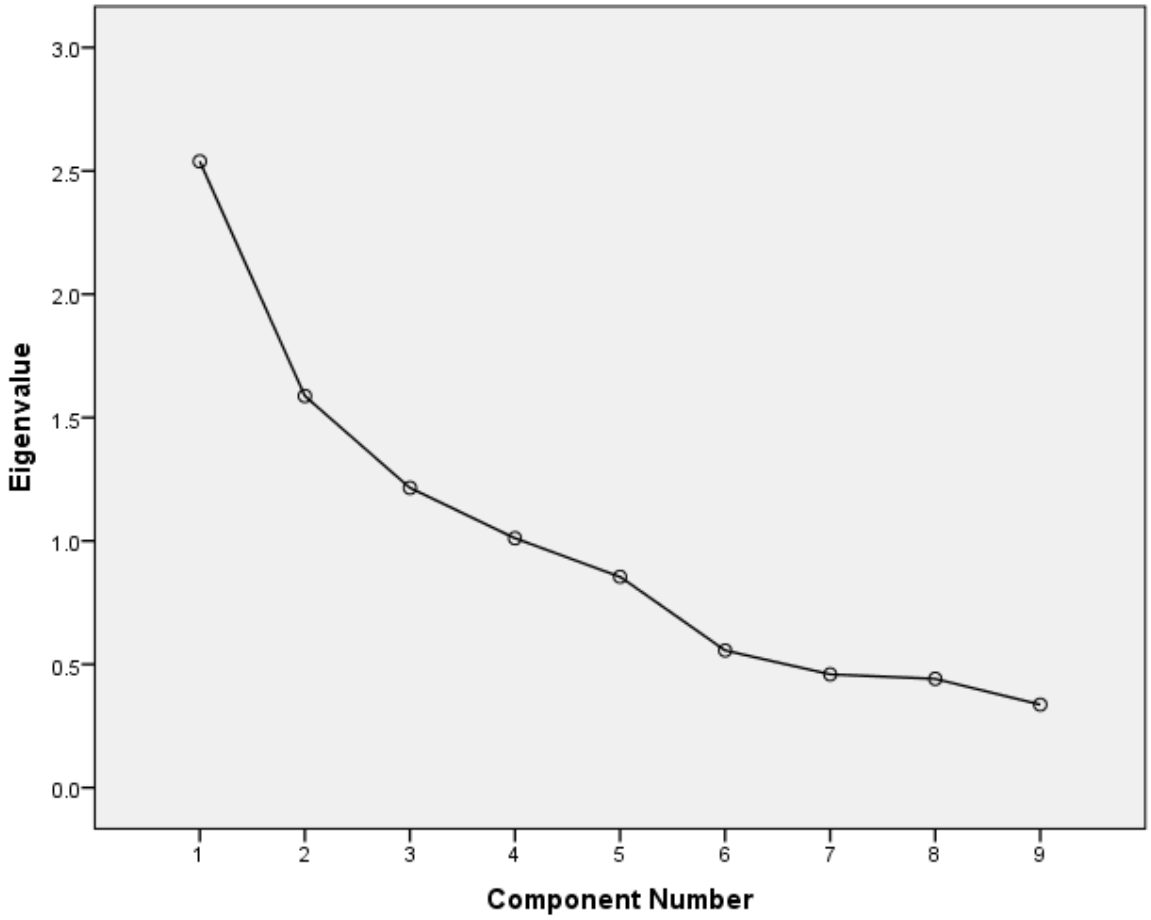


Table 30: Rotated Component Matrix: Principal Component Analysis with Varimax rotation (Kaiser Normalization)

	Component				
	1	2	3	4	5
Q3_2 Poor people should pay more taxes as they receive more benefits from the Government than wealthy people	**.890**				
Q3_7 Taxing a person more is for working harder and earning more income is unfair.	**.622**				
Q3_5 Progressive taxes are a necessary tool in transferring wealth from the rich to the poor.	-.485	**.447**			
Q3_1 Wealthy people should pay more taxes as they stand more to lose if the state does not protect their assets.		**.900**			
Q3_8 If the poor pay more taxes then a result of this would be that the poor would require more government services.			**.880**		
Q3_3 Progressive taxes are more stable in times of recession, when a recession hits people will earn less and be shifted into a lower bracket.			**.736**		
Q3_6 A regressive tax is unlikely to improve income redistribution				**.953**	
Q3_9 A progressive tax should be implemented.				**.519**	
Q3_4 Each person should sacrifice proportionately what they can afford.					**.927**

Table 31: Descriptive statistics progressive vs regressive taxes

	N	Range	Minimum	Maximum	Mean	Std. Deviation
C1 Sympathy lies with non-poor	91	3.00	1.00	4.00	2.4451	.72053
C2 The wealthy should support the poor	91	3.00	1.00	4.00	2.5330	.69842
C3 Stability of progressive taxes	91	3.00	1.00	4.00	2.7582	.65981
C4 Pro progressive tax due to income redistribution effects	91	3.00	1.00	4.00	2.8077	.65307
C5 Progressive taxes are perceived as equitable	91	3.00	1.00	4.00	2.9121	.79789
Valid N (listwise)	91					

Table 32: Kruskal-Wallis Results

		N	Mean Rank
Q3 Sympathy lies with non-poor	Economist	18	38.78
	Tax academic	33	47.24
	Tax Practitioner	40	48.23
	Total	91	
Q3 The wealthy should support the poor	Economist	18	52.94
	Tax academic	33	46.47
	Tax Practitioner	40	42.49
	Total	91	
Q3 Stability of progressive taxes	Economist	18	50.14
	Tax academic	33	51.83
	Tax Practitioner	40	39.33
	Total	91	
Q3 Pro progressive tax due to income redistribution effects	Economist	18	62.39
	Tax academic	33	43.58
	Tax Practitioner	40	40.63
	Total	91	
Q3 Progressive taxes are perceived as equitable	Economist	18	40.89
	Tax academic	33	51.80
	Tax Practitioner	40	43.51
	Total	91	

Table 33: Test Statistics[ab]

	Chi-Square	df	Asymp. Sig.
Q3 Sympathy lies with non-poor	1.795	2	.408
Q3 The wealthy should support the poor	2.076	2	.354
Q3 Stability of progressive taxes	4.932	2	.085
Q3 Pro progressive tax due to income redistribution effects	9.580	2	.008
Q3 Progressive taxes are perceived as equitable	3.140	2	.208

a. Kruskal Wallis Test

b. Grouping Variable: Most appropriate description of your occupation

Table 34: Mean scores per component across occupation

	Most appropriate description of your occupation			
	Economist	Tax academic	Tax Practitioner	Total
Q3 Sympathy lies with non-poor	2.2500	2.4545	2.5250	2.4451
Q3 The wealthy should support the poor	2.7222	2.5455	2.4375	2.5330
Q3 Stability of progressive taxes	2.8611	2.8788	2.6125	2.7582
Q3 Pro progressive tax due to income redistribution effects	3.1944	2.7576	2.6750	2.8077
Q3 Progressive taxes are perceived as equitable	2.7222	3.1212	2.8250	2.9121

Table 35: Distribution of respondents among the three cluster groupings

		Frequency	Valid Percent
Valid	Slightly progressives	47	51.6
	Firmly Progressive	19	20.9
	Regressive	25	27.5
	Total	91	100.0

Annexure 3: Statistics Question 4 – Regressive Collection methods

Table 36: Spearman's rho among the original 22 items (N=91, Listwise)

	Q4_1	Q4_2	Q4_3	Q4_4	Q4_5	Q4_6	Q4_7	Q4_8	Q4_9	Q4_10	Q4_11	Q4_12	Q4_13	Q4_14	Q4_15	Q4_16	Q4_17	Q4_18	Q4_19	Q4_20	Q4_21	Q4_22
Q4_1 An increase in the VAT rate in South Africa is justifiable as the current rate of 14% is below the international average of 16.4%	1.000																					
Q4_2 VAT is fairly easy for SARS to administer and is an efficient method of collecting taxes.	.346**	1.000																				
Q4_3 Increasing VAT will inevitably lead to an increase in food prices.	-.101	.228*	1.000																			
Q4_4 Trade unions carry strong political clout; an increase in VAT will result in stiff union opposition.	-.050	.343**	.489**	1.000																		
Q4_5 An increase in VAT will not have much effect on the poor as most necessities are zero rated or exempt.	.541**	.290**	-.170	-.093	1.000																	
Q4_6 VAT is the most efficient means of financing NHI as it is the fastest growing source of tax revenue.	.711**	.394**	-.116	.020	.475**	1.000																
Q4_7 Increasing VAT will result in lower consumption of goods and services which in turn would lead to labour cuts.	-.252*	-.216*	.192	-.044	-.137	-.232*	1.000															
Q4_8 Increasing VAT it the fairest method of financing NHI as the entire population pays VAT.	.591**	.228*	-.077	.010	.405**	.548**	-.312**	1.000														
Q4_9 Increasing VAT will ultimately be unfavourable as the final burden is borne by consumers	-.347**	-.131	.290**	.171	-.183	-.327**	.169	-.339**	1.000													
Q4_10 Increasing Sin taxes will discourage consumption of the products and in turn improve the health of the population.	.095	.017	-.158	-.281**	.185	.136	.003	.100	-.062	1.000												

Q4_11 Alcohol related healthcare issues will represent a huge cost for NHI.	.017	.033	.042	-.037	.088	-.096	-.300**	.249*	.146	.149	1.000											
Q4_12 If Sin taxes are increased; this will result in increased smuggling of illegal cigarettes.	.133	.007	.095	.131	.020	.014	-.164	.301**	-.059	-.122	.272**	1.000										
Q4_13 The effects of increased sin taxes will be negated by the loss of corporate taxes due to decreased consumption.	-.078	.056	.009	-.059	-.028	-.107	.026	-.110	.009	.109	-.050	.081	1.000									
Q4_14 Decreased consumption due to increased sin taxes could lead to job cuts in the industry and as a result lead to decreased employees tax.	-.101	.009	-.046	-.084	.040	-.033	.055	-.095	.091	.062	-.027	.113	.682**	1.000								
Q4_15 High medical costs of alcoholism only relate to heavy drinkers. Not occasional drinkers.	.026	-.008	.280**	.110	-.091	-.028	.314**	.000	.073	.022	-.185	.133	.015	.044	1.000							
Q4_16 If people eat less unhealthy foods, this would decrease the costs needed to fund NHI as healthcare costs will decrease.	.071	.088	.018	.022	.089	.158	-.119	.154	-.041	.268*	.161	-.109	.051	-.053	.089	1.000						
Q4_17 A tax on unhealthy foods will result in decreased consumption of unhealthy foods.	.099	.110	-.023	-.203	.154	.067	-.107	.157	-.105	.522**	.095	-.194	.113	-.034	-.051	.412**	1.000					
Q4_18 A tax on unhealthy foods will increase inflation.	.154	.002	-.056	-.052	.045	.065	-.038	.011	.118	-.152	-.060	-.112	.083	.072	-.005	-.115	-.121	1.000				
Q4_19 Decreased consumption of unhealthy foods will lead to job cuts and in turn less employees tax	-.027	-.207*	-.067	-.240*	-.008	-.095	.181	-.120	.104	.123	.004	.038	.507**	.570**	.101	.018	.092	.203	1.000			
Q4_20 The loss in corporate taxes due to decreased consumption of unhealthy foods will outweigh the amount of taxes generated from a tax on unhealthy foods.	.108	.055	.010	-.020	.131	.103	.040	.062	.113	.073	-.050	.022	.236*	.379**	.163	.035	.161	.445**	.463**	1.000		
Q4_21 Implementing a tax on unhealthy foods will be ineffective as the legislative process is likely to take a long time.	-.062	-.073	.050	.031	.066	-.036	.101	.165	-.009	-.108	-.085	-.018	.003	-.072	-.018	-.225*	-.079	-.042	-.005	.156	1.000	
Q4_22 Consumption taxes (VAT, Excise duty, sin taxes) are the most appropriate means of financing NHI as the more you consume the more you pay.	.546**	.208*	-.121	-.175	.377**	.514**	-.204	.677**	-.316**	.179	.214*	.117	-.175	-.251*	-.046	.100	.229*	.188	-.073	.098	.091	1.000

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 18: Scree plot regressive collection methods

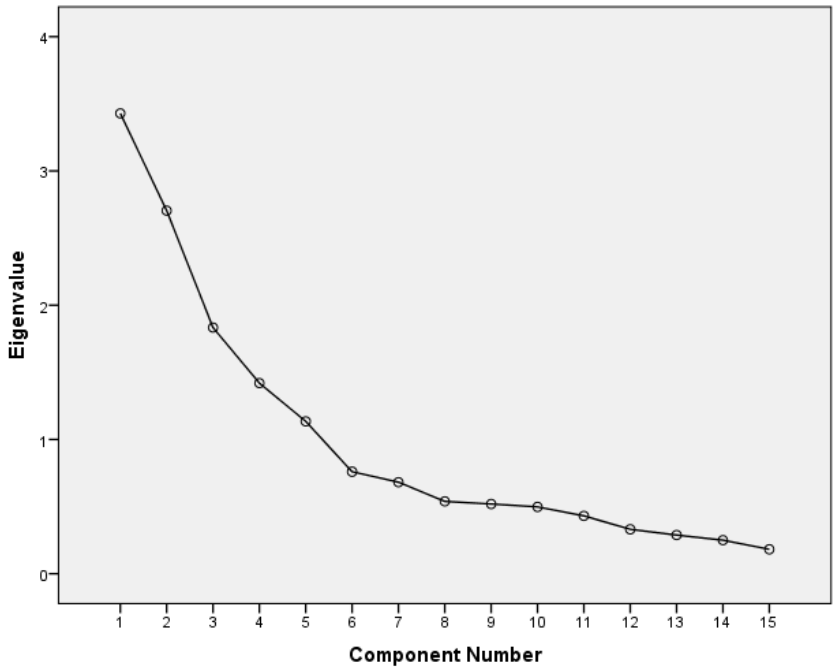


Table 37: Communalities of the 15 items (Principle Component Analysis)

	Initial	Extraction
Q4_1 An increase in the VAT rate in South Africa is justifiable as the current rate of 14% is below the international average of 16.4%	1.000	.779
Q4_3 Increasing VAT will inevitably lead to an increase in food prices.	1.000	.653
Q4_4 Trade unions carry strong political clout; an increase in VAT will result in stiff union opposition.	1.000	.780
Q4_5 An increase in VAT will not have much effect on the poor as most necessities are zero rated or exempt.	1.000	.539
Q4_6 VAT is the most efficient means of financing NHI as it is the fastest growing source of tax revenue.	1.000	.728
Q4_8 Increasing VAT it the fairest method of financing NHI as the entire population pays VATS	1.000	.658
Q4_10 Increasing Sin taxes will discourage consumption of the products and in turn improve the health of the population.	1.000	.641
Q4_13 The effects of increased sin taxes will be negated by the loss of corporate taxes due to decreased consumption.	1.000	.726
Q4_14 Decreased consumption due to increased sin taxes could lead to job cuts in the industry and as a result lead to decreased employees tax.	1.000	.844
Q4_16 If people eat less unhealthy foods, this would decrease the costs needed to fund NHI as healthcare costs will decrease.	1.000	.587
Q4_17 A tax on unhealthy foods will result in decreased consumption of unhealthy foods.	1.000	.752
Q4_18 A tax on unhealthy foods will increase inflation.	1.000	.747
Q4_19 Decreased consumption of unhealthy foods will lead to job cuts and in turn less employees tax	1.000	.681
Q4_20 The loss in corporate taxes due to decreased consumption of unhealthy foods will outweigh the amount of taxes generated from a tax on unhealthy foods.	1.000	.687
Q4_22 Consumption taxes (VAT, Excise duty, sin taxes) are the most appropriate means of financing NHI as the more you consume the more you pay.	1.000	.718

Table 38: Rotated Component Matrix: Principal Component Analysis with Varimax rotation (Kaiser Normalization)

	Component				
	1	2	3	4	5
Q4_1 An increase in the VAT rate in South Africa is justifiable as the current rate of 14% is below the international average of 16.4%	.880				
Q4_6 VAT is the most efficient means of financing NHI as it is the fastest growing source of tax revenue.	.852				
Q4_8 Increasing VAT it the fairest method of financing NHI as the entire population pays VAT.	.782				
Q4_5 An increase in VAT will not have much effect on the poor as most necessities are zero rated or exempt.	.705				
Q4_22 Consumption taxes (VAT, Excise duty, sin taxes) are the most appropriate means of financing NHI as the more you consume the more you pay.	.685				
Q4_14 Decreased consumption due to increased sin taxes could lead to job cuts in the industry and as a result lead to decreased employees tax.		.915			
Q4_13 The effects of increased sin taxes will be negated by the loss of corporate taxes due to decreased consumption.		.845			
Q4_19 Decreased consumption of unhealthy foods will lead to job cuts and in turn less employees tax		.715			
Q4_17 A tax on unhealthy foods will result in decreased consumption of unhealthy foods.			.850		
Q4_10 Increasing Sin taxes will discourage consumption of the products and in turn improve the health of the population.			.723		
Q4_16 If people eat less unhealthy foods, this would decrease the costs needed to fund NHI as healthcare costs will decrease.			.718		
Q4_4 Trade unions carry strong political clout; an increase in VAT will result in stiff union opposition.				.854	
Q4_3 Increasing VAT will inevitably lead to an increase in food prices.				.787	
Q4_18A tax on unhealthy foods will increase inflation.					.827
Q4_20 The loss in corporate taxes due to decreased consumption of unhealthy foods will outweigh the amount of taxes generated from a tax on unhealthy foods.					.715

Table 39: Descriptive statistics for the five extracted components

	N	Minimum	Maximum	Mean	Std. Deviation
Q4_Regr Increasing VAT is justifiable, fair and efficient	91	1.00	4.00	2.7912	.68242
Q4_Regr Increasing sin tax/taxes on unhealthy foods will lead to lower tax revenue due to job cuts and decreased consumption	91	1.00	3.67	2.3700	.54081
Q4_Regr Increasing sin taxes/tax on unhealthy foods will result in a healthier population and that in turn will incur less healthcare costs	91	1.00	4.00	2.6227	.60084
Q4_Regr Increasing VAT will lead to increased food prices and that in turn can lead to political opposition	91	1.50	4.00	3.2967	.60543

Q4_Regr Increasing sin tax/taxes on unhealthy foods will lead to inflation increase and lower government revenue due to loss of corporate tax	91	1.00	3.50	2.4231	.53189
Valid N (listwise)	91				

Table 40: Kruskal-Wallis Ranks

		N	Mean Rank
Q4_Regr Increasing VAT is justifiable, fair and efficient	Economist	18	37.50
	Tax academic	33	50.21
	Tax Practitioner	40	46.35
	Total	91	
Q4_Regr Increasing sin tax/taxes on unhealthy foods will lead to lower tax revenue due to job cuts and decreased consumption	Economist	18	47.47
	Tax academic	33	49.68
	Tax Practitioner	40	42.30
	Total	91	
Q4_Regr Increasing sin taxes/tax on unhealthy foods will result in a healthier population and that in turn will incur less healthcare costs	Economist	18	43.00
	Tax academic	33	45.27
	Tax Practitioner	40	47.95
	Total	91	
Q4_Regr Increasing VAT will lead to increased food prices and that in turn can lead to political opposition	Economist	18	50.31
	Tax academic	33	47.14
	Tax Practitioner	40	43.13
	Total	91	
Q4_Regr Increasing sin tax/taxes on unhealthy foods will lead to inflation increase and lower government revenue due to loss of corporate tax	Economist	18	41.72
	Tax academic	33	52.17
	Tax Practitioner	40	42.84
	Total	91	

Table 41: Kruskal-Wallis Test Statistics regressive methods[ab]

	Chi-Square	df	Asymp. Sig.
Q4_Regr Increasing VAT is justifiable, fair and efficient	2.740	2	.254
Q4_Regr Increasing sin tax/taxes on unhealthy foods will lead to lower tax revenue due to job cuts and decreased consumption	1.565	2	.457
Q4_Regr Increasing sin taxes/tax on unhealthy foods will result in a healthier population and that in turn will incur less healthcare costs	.498	2	.779
Q4_Regr Increasing VAT will lead to increased food prices and that in turn can lead to political opposition	1.100	2	.577
Q4_Regr Increasing sin tax/taxes on unhealthy foods will lead to inflation increase and lower government revenue due to loss of corporate tax	3.089	2	.213

a. Kruskal Wallis Test

b. Grouping Variable: Most appropriate description of your occupation

Annexure 4: Statistics Question 4 – Progressive Collection methods

Table 42: Spearman's rho among the original 14 items (N=91, Listwise) - progressive methods

	Q4_23	Q4_24	Q4_25	Q4_26	Q4_27	Q4_28	Q4_29	Q4_30	Q4_31.	Q4_32	Q4_33	Q4_34.	Q4_35	Q4_36.
Q4_23 Unemployment is a major factor when implementing payroll taxes.	1.000													
Q4_24 The estimated 6 million individual taxpayers will generate enough additional tax revenue to fund the expected 40 million NHI users' needs.	-.118	1.000												
Q4_25 If there is an increase in payroll taxes, the result will be workers leaving the formal sector to avoid paying the taxes.	-.017	.070	1.000											
Q4_26 Payroll taxes are costly and difficult to administer.	.094	.076	.040	1.000										
Q4_27 Increase in payroll taxes will result in demand for higher wages; this in turn will decrease foreign direct investment.	.049	-.111	.161	.195	1.000									
Q4_28 Increasing payroll tax will help balance the regressive impact of consumption taxes.	-.009	.135	-.086	.163	-.180	1.000								
Q4_29 Income taxes have been successful in redistributing wealth, making it appropriate for funding NHI.	-.076	.248*	-.156	.145	-.307**	.422**	1.000							

Q4_30 Increasing payroll taxes will not result in a wider tax base but merely squeeze more out of an already thin tax payer base.	.225*	-.352**	.112	.084	.326**	.062	-.263*	1.000						
Q4_31 Increasing tax on individuals will result in less disposable income which would lead to decreased spending and decreased corporate taxes.	.102	-.303**	.187	.047	.460**	-.231*	-.455**	.354**	1.000					
Q4_32 Personal income taxes are the most efficient as they are already the largest contributor towards tax revenue.	-.211*	.225*	.102	.069	-.261*	.252*	.517**	-.174	-.290**	1.000				
Q4_33 Increasing tax on individuals would lead to decreased investment. This in turn would lead to higher inflation which would increase costs of funding NHI.	.045	.036	.311**	.050	.285**	-.135	-.237*	.190	.432**	-.077	1.000			
Q4_34 Due to globalization, increasing taxes on individuals could result in relocation of individuals to lower taxed jurisdictions.	.070	-.269**	.181	.230*	.178	-.110	-.134	.293**	.256*	.078	.285**	1.000		
Q4_35 Most of the workforce in South Africa are employed in the informal sector and remain untaxed, thus increasing payroll taxes will not be viable.	.372**	-.218*	.019	.180	.297**	-.096	-.251*	.477**	.322**	-.239*	.226*	.216*	1.000	
Q4_36 Increasing tax on individuals will not result in a material amount of additional revenue.	.145	-.055	.094	.190	.151	-.237*	-.054	.033	.118	-.110	.068	.218*	.264*	1.000

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed)

Table 43: Communalities of the 11 items (Principle Component Analysis)

	Initial	Extraction
Q4_23 Unemployment is a major factor when implementing payroll taxes.	1.000	.730
Q4_25 If there is an increase in payroll taxes, the result will be workers leaving the formal sector to avoid paying the taxes.	1.000	.486
Q4_27 Increase in payroll taxes will result in demand for higher wages; this in turn will decrease foreign direct investment.	1.000	.708
Q4_28 Increasing payroll tax will help balance the regressive impact of consumption taxes.	1.000	.686
Q4_29Income taxes have been successful in redistributing wealth, making it appropriate for funding NHI.	1.000	.673
Q4_30 Increasing payroll taxes will not result in a wider tax base but merely squeeze more out of an already thin tax payer base.	1.000	.640
Q4_31 Increasing tax on individuals will result in less disposable income which would lead to decreased spending and decreased corporate taxes.	1.000	.619
Q4_32 Personal income taxes are the most efficient as they are already the largest contributor towards tax revenue.	1.000	.672
Q4_33 Increasing tax on individuals would lead to decreased investment. This in turn would lead to higher inflation which would increase costs of funding NHI.	1.000	.538
Q4_34 Due to globalization, increasing taxes on individuals could result in relocation of individuals to lower taxed jurisdictions.	1.000	.522
Q4_35 Most of the workforce in South Africa are employed in the informal sector and remain untaxed, thus increasing payroll taxes will not be viable.	1.000	.590

Extraction Method: Principal Component Analysis.

Table 44: Rotated Component Matrix: Principal Component Analysis with Varimax rotation (Kaiser Normalization)

	Component			
	1	2	3	4
Q4_28 Increasing payroll tax will help balance the regressive impact of consumption taxes.	.793			
Q4_29 Income taxes have been successful in redistributing wealth, making it appropriate for funding NHI.	.747			
Q4_32 Personal income taxes are the most efficient as they are already the largest contributor towards tax revenue.	.675			
Q4_34 Due to globalization, increasing taxes on individuals could result in relocation of individuals to lower taxed jurisdictions.		.698		
Q4_25 If there is an increase in payroll taxes, the result will be workers leaving the formal sector to avoid paying the taxes.		.692		
Q4_33 Increasing tax on individuals would lead to decreased investment. This in turn would lead to higher inflation which would increase costs of funding NHI.		.666		
Q4_23 Unemployment is a major factor when implementing payroll taxes.			.794	
Q4_35 Most of the workforce in South Africa are employed in the informal sector and remain untaxed, thus increasing payroll taxes will not be viable.			.694	
Q4_30 Increasing payroll taxes will not result in a wider tax base but merely squeeze more out of an already thin tax payer base.			.615	
Q4_27 Increase in payroll taxes will result in demand for higher wages; this in turn will decrease foreign direct investment.				.830
Q4_31 Increasing tax on individuals will result in less disposable income which would lead to decreased spending and decreased corporate taxes.				.601

Figure 19: Scree plot Progressive collection method

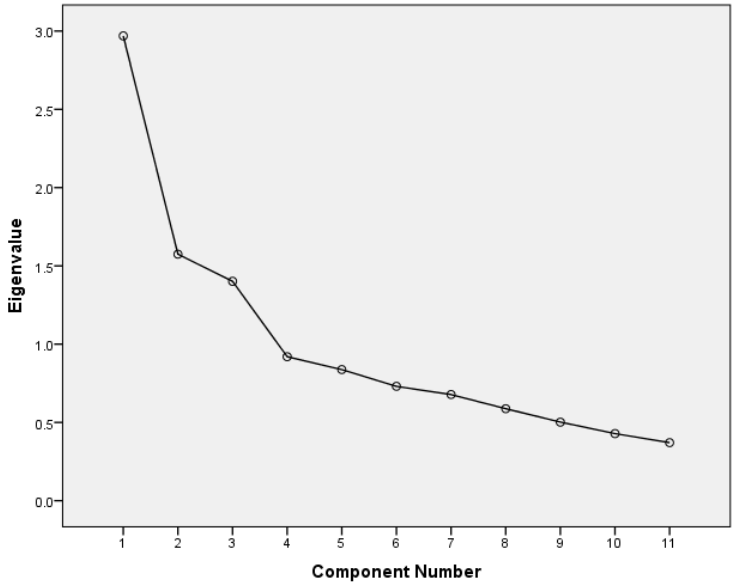


Table 45: Descriptive statistics for the four extracted progressive components

	N	Minimum	Maximum	Mean	Std. Deviation
Q4_Progr Increasing personal income taxes is efficient and assists in income redistribution	91	1.00	3.67	2.1722	.56735
Q4_Progr Increasing tax on individuals or payroll taxes will lead to migration of labour to lower taxed jurisdictions and exiting the formal sector	91	1.00	4.00	2.6667	.53748
Q4_Progr Introducing a payroll tax will be ineffective as a large portion of the population remains unemployed or employed in the informal sector and the tax base is too thin	91	1.33	4.00	3.0696	.56332
Q4_Progr Increasing taxes on individuals and payroll taxes will result in less disposable income and will also result in less foreign direct investments due to demands for higher wages, this in turn will result in lower tax revenues	91	2.00	4.00	3.0989	.52820
Valid N (listwise)	91				

Table 46: Mean rank test results

	Mean Rank
Q4_Progr Increasing personal income taxes is efficient and assists in income redistribution	1.56
Q4_Progr Increasing tax on individuals or payroll taxes will lead to migration of labour to lower taxed jurisdictions and exiting the formal sector	2.22
Q4_Progr Introducing a payroll tax will be ineffective as a large portion of the population remains unemployed or employed in the informal sector and the tax base is too thin	3.09
Q4_Progr Increasing taxes on individuals and payroll taxes will result in less disposable income and will also result in less foreign direct investments due to demands for higher wages, this in turn will result in lower tax revenues	3.13

Table 47: test statistics[a]

N	91
Chi-Square	101.622
df	3
Asymp. Sig.	.000

a. Friedman Test

Table 48: Kruskal-Wallis ranks - progressive methods

		N	Mean Rank
Q4_Progr Increasing personal income taxes is efficient and assists in income redistribution	Economist	18	51.19
	Tax academic	33	47.11
	Tax Practitioner	40	42.75
	Total	91	
Q4_Progr Increasing tax on individuals or payroll taxes will lead to migration of labour to lower taxed jurisdictions and exiting the formal sector	Economist	18	32.00
	Tax academic	33	48.48
	Tax Practitioner	40	50.25
	Total	91	
Q4_Progr Introducing a payroll tax will be ineffective as a large portion of the population remains unemployed or employed in the informal sector and the tax base is too thin	Economist	18	39.14
	Tax academic	33	50.67
	Tax Practitioner	40	45.24
	Total	91	
Q4_Progr Increasing taxes on individuals and payroll taxes will result in less disposable income and will also result in less foreign direct investments due to demands for higher wages, this in turn will result in lower tax revenues	Economist	18	34.22
	Tax academic	33	48.61
	Tax Practitioner	40	49.15
	Total	91	

Table 49: Kruskal-Wallis test statistics - progressive methods[ab]

	Chi-Square	df	Asymp. Sig.
Q4_Progr Increasing personal income taxes is efficient and assists in income redistribution	1.418	2	.492
Q4_Progr Increasing tax on individuals or payroll taxes will lead to migration of labour to lower taxed jurisdictions and exiting the formal sector	6.686	2	.035
Q4_Progr Introducing a payroll tax will be ineffective as a large portion of the population remains unemployed or employed in the informal sector and the tax base is too thin	2.359	2	.307
Q4_Progr Increasing taxes on individuals and payroll taxes will result in less disposable income and will also result in less foreign direct investments due to demands for higher wages, this in turn will result in lower tax revenues	4.917	2	.086

a. Kruskal Wallis Test

b. Grouping Variable: Most appropriate description of your occupation

Table 50: Regressive collection method selections

		Strongly Disagree	Disagree	Agree	Strongly Agree	Total
4.1	An increase in the VAT rate in South Africa is justifiable as the current rate of 14% is below the international average of 16.4%	11 12.10%	28 30.80%	37 40.70%	15 16.50%	91 100.00%
4.2	VAT is fairly easy for SARS to administer and is an efficient method of collecting taxes.	2 2.20%	7 7.70%	46 50.50%	36 39.60%	91 100.00%
4.3	Increasing VAT will inevitably lead to an increase in food prices.	1 1.10%	14 15.40%	39 42.90%	37 40.70%	91 100.00%
4.4	Trade unions carry strong political clout, an increase in VAT will result in stiff union opposition.	1 1.10%	7 7.70%	41 45.10%	42 46.20%	91 100.00%
4.5	An increase in VAT will not have much effect on the poor as most necessities are zero rated or exempt.	12 13.20%	32 35.20%	34 37.40%	13 14.30%	91 100.00%
4.6	VAT is the most efficient means of financing NHI as it is the fastest growing source of tax revenue.	7 7.70%	22 24.20%	44 48.40%	18 19.80%	91 100.00%
4.7	Increasing VAT will result in lower consumption of goods and services which in turn would lead to labour cuts.	8 8.80%	45 49.50%	36 39.60%	2 2.20%	91 100.00%
4.8	Increasing VAT it the most fair method of financing NHI as the entire population pays VAT.	6 6.60%	15 16.50%	41 45.10%	29 31.90%	91 100.00%
4.9	Increasing VAT will ultimately be unfavorable as the final burden is borne by consumers	10 11.00%	43 47.30%	27 29.70%	11 12.10%	91 100.00%
4.10	Increasing sin taxes will discourage consumption of the products and in turn improve the health of the population.	11 12.10%	35 38.50%	35 38.50%	10 11.00%	91 100.00%
4.11	Alcohol related healthcare issues will represent a huge cost for NHI.	3 3.30%	22 24.20%	53 58.20%	13 14.30%	91 100.00%
4.12	If sin taxes are increased, this will result in increased smuggling of illegal cigarettes.	1 1.10%	12 13.20%	55 60.40%	23 25.30%	91 100.00%
4.13	The effects of increased sin taxes will be negated by the loss of corporate taxes due to decreased consumption.	5 5.50%	54 59.30%	29 31.90%	3 3.30%	91 100.00%
4.14	Decreased consumption due to increased sin taxes could lead to job cuts in the industry and as a result lead to decreased employees tax.	6 6.60%	45 49.50%	37 40.70%	3 3.30%	91 100.00%
4.15	High medical costs of alcoholism only relate to heavy drinkers. Not occasional drinkers.	2 2.20%	21 23.10%	57 62.60%	11 12.10%	91 100.00%
4.16	If people eat less unhealthy foods, this would decrease the costs needed to fund NHI as healthcare costs will decrease.	4 4.40%	17 18.70%	60 65.90%	10 11.00%	91 100.00%
4.17	A tax on unhealthy foods will result in decreased consumption of unhealthy foods.	7 7.70%	36 39.60%	39 42.90%	9 9.90%	91 100.00%
4.18	A tax on unhealthy foods will increase	4	39	46	2	91

	inflation.	4.40%	42.90%	50.50%	2.20%	100.00%
4.19	Decreased consumption of unhealthy foods will lead to job cuts and in turn less employees tax	5 5.50%	47 51.60%	39 42.90%	0 0.00%	91 100.00%
4.20	The loss in corporate taxes due to decreased consumption of unhealthy foods will outweigh the amount of taxes generated from a tax on unhealthy foods.	5 5.50%	53 58.20%	30 33.00%	3 3.30%	91 100.00%
4.21	Implementing a tax on unhealthy foods will be ineffective as the legislative process is likely to take a long time.	4 4.40%	29 31.90%	49 53.80%	9 9.90%	91 100.00%
4.22	Consumption taxes (VAT, Excise duty, sin taxes) are the most appropriate means of financing NHI as the more you consume the more you pay.	4 4.40%	16 17.60%	48 52.70%	23 25.30%	91 100.00%

Table 51: Progressive collection method selections

		Strongly Disagree	Disagree	Agree	Strongly Agree	Total
4.23	Unemployment is a major factor when implementing payroll taxes.	5 5.50%	21 23.10%	42 46.20%	23 25.30%	91 100.00%
4.24	The estimated 6 million individual taxpayers will generate enough additional tax revenue to fund the expected 40 million NHI user's needs.	50 54.90%	29 31.90%	12 13.20%	0 0.00%	91 100.00%
4.25	If there is an increase in payroll taxes, the result will be workers leaving the formal sector to avoid paying the taxes.	10 11.00%	47 51.60%	28 30.80%	6 6.60%	91 100.00%
4.26	Payroll taxes are costly and difficult to administer.	5 5.50%	50 54.90%	27 29.70%	9 9.90%	91 100.00%
4.27	Increase in payroll taxes will result in demand for higher wages; this in turn will decrease foreign direct investment.	1 1.10%	18 19.80%	56 61.50%	16 17.60%	91 100.00%
4.28	Increasing payroll tax will help balance the regressive impact of consumption taxes.	9 9.90%	54 59.30%	25 27.50%	3 3.30%	91 100.00%
4.29	Income taxes have been successful in redistributing wealth, making it appropriate for funding NHI.	17 18.70%	49 53.80%	23 25.30%	2 2.20%	91 100.00%
4.30	Increasing payroll taxes will not result in a wider tax base but merely squeeze more out of an already thin tax payer base.	2 2.20%	6 6.60%	40 44.00%	43 47.30%	91 100.00%
4.31	Increasing tax on individuals will result in less disposable income which would lead to decreased spending and decreased corporate taxes.	0 0.00%	8 8.80%	53 58.20%	30 33.00%	91 100.00%
4.32	Personal income taxes are the most efficient as they are already the largest contributor towards tax revenue.	18 19.80%	44 48.40%	25 27.50%	4 4.40%	91 100.00%
4.33	Increasing tax on individuals would lead to decreased investment. This in turn would lead to higher inflation which would increase costs of funding NHI.	5 5.50%	25 27.50%	50 54.90%	11 12.10%	91 100.00%
4.34	Due to globalization, increasing taxes on individuals could result in relocation of individuals to lower taxed jurisdictions.	3 3.30%	19 20.90%	50 54.90%	19 20.90%	91 100.00%
4.35	Most of the workforce in South Africa are employed in the informal sector and remain untaxed, thus increasing payroll taxes will not be viable.	3 3.30%	20 22.00%	48 52.70%	20 22.00%	91 100.00%
4.36	Increasing tax on individuals will not result in a material amount of additional revenue.	4 4.40%	36 39.60%	39 42.90%	12 13.20%	91 100.00%

Annexure 5: Statistics Question 5 – Hypothecation

Table 52: Spearman's rho among the original 9 items (N=91, Listwise)

	Q5_1	Q5_2	Q5_3	Q5_4	Q5_5	Q5_6	Q5_7	Q5_8	Q5_9
Q5_1 Revenues collected should be ring fenced.	1.000								
Q5_2 If funds are earmarked specifically for NHI this will create more accountability over these funds.	.739**	1.000							
Q5_3 If funds are earmarked specifically for NHI; this will not subject them to political infighting. Revenue for NHI will be determined by taxes collected and not ruling party policy decisions.	.387**	.415**	1.000						
Q5_4 Earmarking funds for NHI will reduce the opposition of implementing new taxes as people will be able to see where the funds are being used.	.409**	.407**	.569**	1.000					
Q5_5 Earmarking fund will build an exemption from review from the finance ministry as it will not be subject to budget cuts.	.258*	.119	.536**	.440**	1.000				
Q5_6 Earmarking funds for NHI will result in inappropriate funding levels.	-.295**	-.390**	-.262*	-.397**	-.008	1.000			
Q5_7 Earmarking funds may negatively impact Government's ability to allocate resources to where they may be needed in different economic situations.	-.372**	-.348**	-.218*	-.338**	-.132	.345**	1.000		
Q5_8 Earmarking funds limits funding for NHI to specific sources	-.047	-.174	-.039	.018	.216*	.213*	.216*	1.000	

Q5_9 If the budgetary process is used then funding may be obtained from a broader base as opposed to a single source of revenue	.025	.020	.161	.123	.295**	.157	.179	.441**	1.000

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 20: Scree plot - Hypothecation

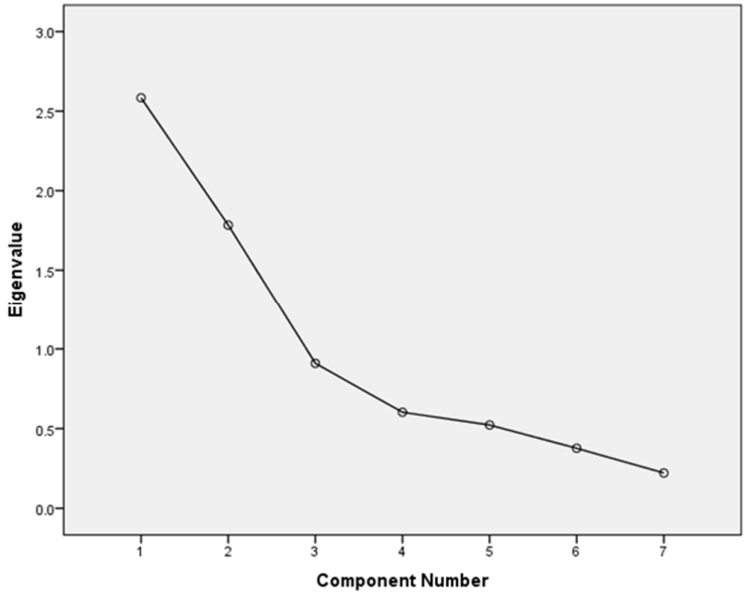


Table 53: Rotated Component Matrix: Principal Component Analysis with Varimax rotation (Kaiser Normalization)

	Component		
	1	2	3
Q5_3 If funds are earmarked specifically for NHI; this will not subject them to political infighting. Revenue for NHI will be determined by taxes collected and not ruling party policy decisions.	.865		
Q5_4 Earmarking funds for NHI will reduce the opposition of implementing new taxes as people will be able to see where the funds are being used.	.773		
Q5_5 Earmarking fund will build an exemption from review from the finance ministry as it will not be subject to budget cuts.	.723		
Q5_2 If funds are earmarked specifically for NHI this will create more accountability over these funds.		.910	
Q5_1 Revenues collected should be ring fenced.		.908	
Q5_8 Earmarking funds limits funding for NHI to specific sources			.849
Q5_9 If the budgetary process is used then funding may be obtained from a broader base as opposed to a single source of revenue			.799

Table 54: Descriptive statistics for the three extracted components

	N	Minimum	Maximum	Mean	Std. Deviation
Q5 Ring-fencing takes the funds out of the political and budgetary arenas	91	1.33	4.00	2.8645	.71315
Q5 Ring-fencing the funds will improve accountability	91	1.00	4.00	3.2637	.68856
Q5 Ring-fencing limits the fund to only one source	91	1.50	4.00	2.8187	.49731
Valid N (listwise)	91				

Table 55: Kruskal-Wallis test results

		N	Mean Rank
Q5 Ring-fencing takes the funds out of the political and budgetary arenas	Economist	18	31.31
	Tax academic	33	50.80
	Tax Practitioner	40	48.65
	Total	91	
Q5 Ring-fencing the funds will improve accountability	Economist	18	50.28
	Tax academic	33	47.42
	Tax Practitioner	40	42.90
	Total	91	
Q5 Ring-fencing limits the fund to only one source	Economist	18	50.42
	Tax academic	33	47.47
	Tax Practitioner	40	42.80
	Total	91	

Table 56: Test statistics[ab]

	Chi-Square	df	Asymp. Sig.
Q5 Ring-fencing takes the funds out of the political and budgetary arenas	7.226	2	.027
Q5 Ring-fencing the funds will improve accountability	1.253	2	.534
Q5 Ring-fencing limits the fund to only one source	1.399	2	.497

a. Kruskal Wallis Test

b. Grouping Variable: Most appropriate description of your occupation

Table 57: mean rank scores

	Mean Rank
Q5 Ring-fencing takes the funds out of the political and budgetary arenas	1.84
Q5 Ring-fencing the funds will improve accountability	2.41
Q5 Ring-fencing limits the fund to only one source	1.75

Test Statistics[a]

N	91
Chi-Square	30.007
df	2
Asymp. Sig.	.000

a. Friedman Test

Figure 21: Comparison of the occupation mean scores per component

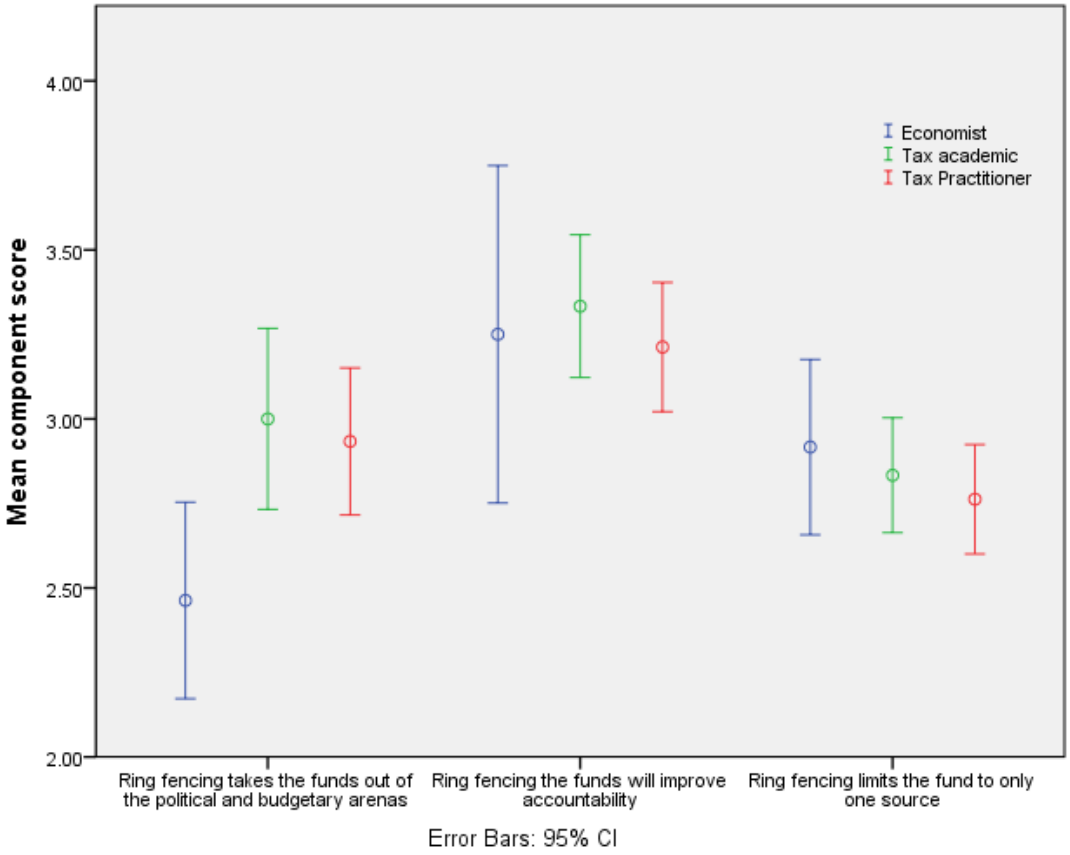
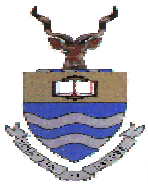


Table 58: Ring-fencing responses

		Strongly Disagree	Disagree	Agree	Strongly Agree	Total
5.1	Revenues collected should be ring fenced.	3	11	41	36	91
		3.30%	12.10%	45.10%	39.60%	100.00%
5.2	If funds are earmarked specifically for NHI this will create more accountability over these funds.	2	6	44	39	91
		2.20%	6.60%	48.40%	42.90%	100.00%
5.3	If funds are earmarked specifically for NHI, this will not subject them to political infighting. Revenue for NHI will be determined by taxes collected and not ruling party policy decisions.	8	19	33	31	91
		8.80%	20.90%	36.30%	34.10%	100.00%
5.4	Earmarking funds for NHI will reduce the opposition of implementing new taxes as people will be able to see where the funds are being used.	6	18	45	22	91
		6.60%	19.80%	49.50%	24.20%	100.00%
5.5	Earmarking fund will build an exemption from review from the finance ministry as it will not be subject to budget cuts.	4	35	34	18	91
		4.40%	38.50%	37.40%	19.80%	100.00%
5.6	Earmarking funds for NHI will result in inappropriate funding levels.	11	44	32	4	91
		12.10%	48.40%	35.20%	4.40%	100.00%
5.7	Earmarking funds may negatively impact Government's ability to allocate resources to where they may be needed in different economic situations.	10	34	39	8	91
		11.00%	37.40%	42.90%	8.80%	100.00%
5.8	Earmarking funds limits funding for NHI to specific sources	3	27	53	8	91
		3.30%	29.70%	58.20%	8.80%	100.00%
5.9	If the budgetary process is used then funding may be obtained from a broader base as opposed to a single source of revenue	1	13	70	7	91
		1.10%	14.30%	76.90%	7.70%	100.00%

Annexure 6: Ethics clearance

Ethics Clearance Certificate



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18 December 2013

Mr T TU **Student Number: 351101**

Dear Tu

I have pleasure in informing you that the **SOA Post Graduate Degrees Committee** has approved the following title for your Research Report:

National Health Insurance: The most appropriate method of financing it.

Furthermore the committee has approved the following supervisor: **Mrs M Turner**, with whom you should maintain regular contact. Please ensure that the title on the bound copies of your research report is the same as that approved by the Post Graduate Committee.

You will be required to submit to the Faculty Office on submission of the report:

- Two spiral bound copies of the Research Report with a signed declaration
- one copy of the abstract
- one copy of the title page
- the Supervisor's Clearance Form

The ethics number for your research report is **CACCN/1041**. It is very IMPORTANT that you ensure that this number appears on the cover page of your research report when you submit.

Please note that you need to be registered every year until your graduation.

Please note: After confirmation of the final Research Report mark, you will be required to submit two unbound final corrected copies signed and dated, an electronic copy (in PDF format), a signed library clearance form and have completed the full ETD form.

We wish you success with your research.

Kind Regards

Ms Sibongile Dhladhla

Faculty Admin Officer

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