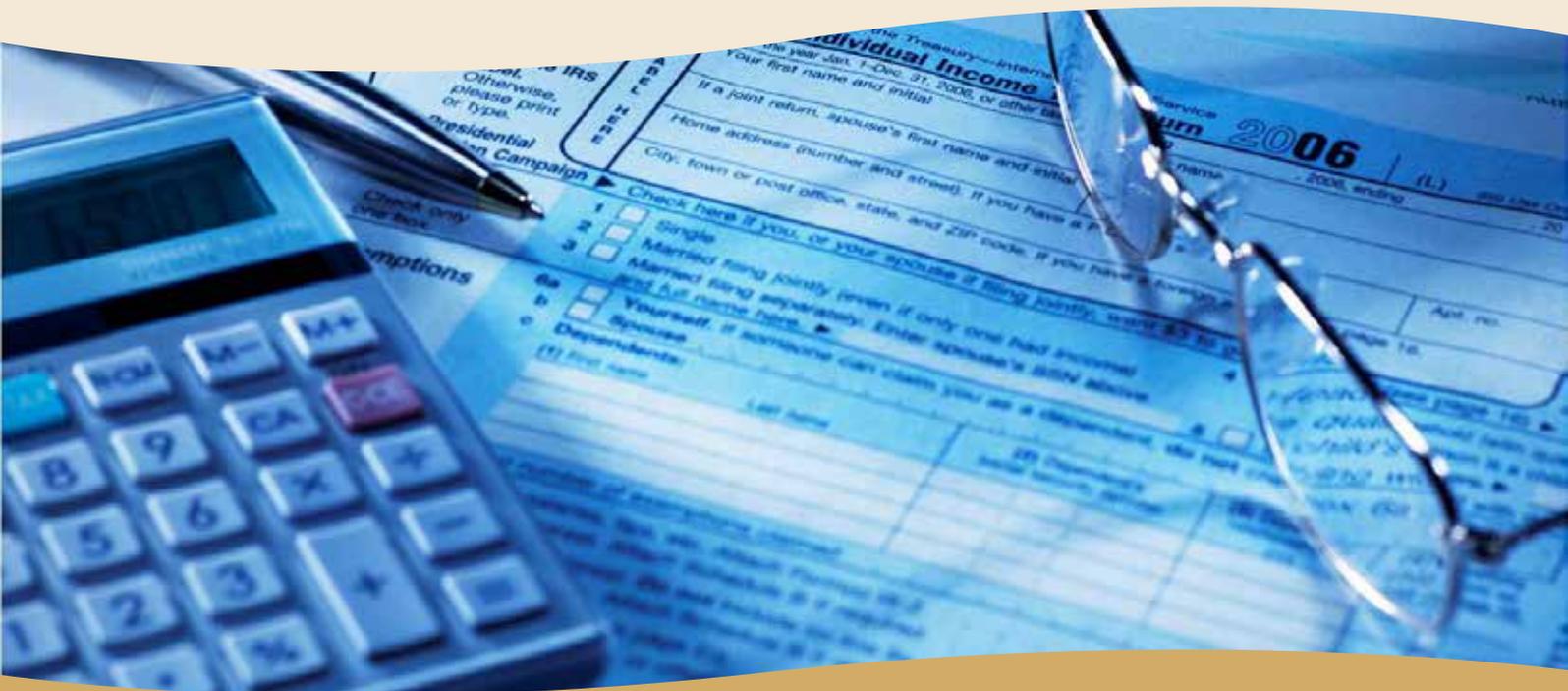


# Uncovering the Unknown: An Analysis of Tax Evasion in Zambia



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Working Paper No.18

2014



# Executive Summary

The Government of the Republic of Zambia, like many other governments in the world, significantly relies on tax revenue to finance both its key infrastructure development and social services. Zambia's tax revenue declined from 30% of GDP in the 1970s to only an average of 13% of GDP in the 1990s mainly due to the decline in mining revenue and weak tax administration. To address this decline, significant tax reforms were undertaken that included the creation of the Zambia Revenue Authority (ZRA). Despite these reforms, tax revenue collection has to a large extent been unsatisfactory, recording average tax revenue-to-GDP of 17% in the last five years.

This study investigates the extent and causes of tax evasion in Zambia including the review of the current legal and administrative measures used by the ZRA in addressing this problem. To investigate tax evasion in Zambia, several methodologies or approaches are used. These include carrying out a qualitative survey on a small sample of large taxpayers to find out their perceptions on the causes of tax evasion in Zambia. In investigating the extent of tax evasion, the tax gap with respect to Pay-As-You-Earn (PAYE) personal income tax of the self-employed and paid employees is estimated using data from the nationally representative 2010 Living Conditions and Monitoring Survey (LCMS). Further, a comparative assessment of Zambia's tax revenue performance relative to countries in the Southern Africa Customs Union (SACU) and Sub-Saharan Africa (SSA) is undertaken. The study also reviews the current legal and administrative measures used to address tax evasion.

## Legal and administrative measures to do adequately address tax evasion

The legal framework that deals with tax administration is provided for under the Income Tax Act. The Act has provisions to deal with filing of tax returns, late payment of tax and penalties on fraud. The Zambian tax structure has multiple tax rates. Among others, company income tax is 35%, non-traditional exports are taxed at 15% while income from agriculture is taxed at 10%. In addition, Double Taxation Agreements (DTAs) are provided for in the Act, meant to deal with reciprocal taxation arrangements on multinationals and foreign residents. However these legal provisions do not adequately address tax evasion. For instance, penalty for fraud is charged at 52.5% of the amount defrauded plus 5% interest at the Bank of Zambia rate and jail sentences in some cases.

## Evidence from the field survey

In order to find out the perceptions of what tax payers in Zambia think about tax evasion, a qualitative survey of large tax payers and business associations was conducted in Lusaka. Though this survey was not representative, and inferences cannot be generalised to the entire population of firms, it offered insights on what could be part of the big picture on tax system and tax evasion in Zambia.

Some of the key findings are as follows:

**Tax literacy is low:** The survey revealed that the respondents interviewed had limited knowledge of tax and the tax system in Zambia. The majority of respondents have not received any training in tax literacy indicating that ZRA has limited programmes on increasing tax literacy among taxpayers. This is despite putting in place the Taxpayers Education and Advisory Services programme and a Taxpayer Charter. This gap provides the ZRA with the opportunity to develop training and dissemination strategies in order to increase tax literacy.

**Company income tax considered to be the most complicated and most vulnerable to tax evasion:** The respondents perceived company tax, PAYE, import duty, excise duty and VAT to be high and that all were positively related to tax evasion. Of the tax types, company income tax was regarded to be the most complicated and therefore more vulnerable to tax evasion than the others. Simplifying the tax code is necessary to make application of tax simple and readily usable.

**Monetary fine as a deterrent to evasion is the most preferred:** The knowledge of the existing penalties on tax evasion is low among the respondents. With the level of knowledge on the penalties, two thirds of the respondents indicated they perceived penalties on tax evasion as

severe. Currently the monetary fine of 52.5% of the amount evaded plus interest at the Bank of Zambia rate of 5% is applied with an option for a jail sentence. Monetary fine as a deterrent to tax evasion is preferred to blacklisting of company directors, revoking operating licences and prison sentences.

## Zambia's revenue performance lower than its peers

Zambia's revenue productivity is relatively low compared to its peers in the Southern African Customs Union (SACU) and Sub-Saharan Africa (SSA) over the period 2003 to 2011. Even when compared to Malawi and Zimbabwe with whom they share a common history and benchmarks, Zambia is underperforming in terms of tax revenue collections. Zambia's tax revenue to GDP has averaged 17% while that of Malawi and Zimbabwe is slightly above 20%. Zambia's revenue underperformance is partly attributed to its large informal sector and inefficiencies in tax administration considering that its peers have comparable tax rates.

## Potentially uncollected PAYE for self-employed and paid employees amounts to 6.7 % of GDP and 40.3% of the total tax revenue

The estimate of the size of the PAYE tax gap using household survey data relies on three assumptions: first, all income groups report their consumption expenditure correctly; secondly, employees in employment report their incomes correctly; and thirdly, the self-employed under-report their income.

On the basis of these assumptions, we arrive at the conclusion that the self-employed under-reported their income in the household survey by 47.8 %. The "true" income in this context is relative to the income reported by wage earners.

Applying the tax thresholds to the "true" income of both the self employed and the paid employees, we estimate the average tax liability for each household. This amount is then multiplied by the average number of people with taxable income in each of the two categories, annualised and compared to the reported PAYE for 2010. We arrive at the PAYE gap amounting to K5.2 billion, which is 6.7 % of GDP and 40.3% of the total tax revenue.

This study unmasks the potential tax that needs to be collected from individuals: a huge sum of money in excess of K5 billion remained uncollected in personal income taxes in 2010. This study has shown that by just concentrating on the wage earners who are above the tax threshold, the Zambia Revenue Authority would have collected an additional K800 million from those classified as wage earners even before taxing the 10 % of the self-employed. Notwithstanding the difficulty and administrative burden that would result from collecting this money, as pointed out by Phiri and Kabaso (2012), this study shows that about 10 % of the many people who are in self-employment were above the tax threshold for paying PAYE tax in 2010 and would potentially contribute as much taxes as those in wage employment.

## Policy Recommendations

Government should undertake comprehensive tax reforms that should include the following:

### 1. Review and strengthen the law in order to address tax evasion. This must include among others:

- § Simplification of tax laws: Simple tax laws are easy to understand and comply with.
- § Stiffer penalties: Charge interest at above market rate, strengthening enforcement on jail sentences, revocation of operating licenses and blacklisting the directors of companies to deter tax evasion.
- § Strengthening of DTA: The law on DTAs should be strengthened to prevent multinational corporations evading tax.
- § Introduce personal filing of taxes: The filing of personal income returns by the self-employed and wage earning employees will improve tax compliance.

### 2. Review the administrative measures used to address tax evasion to include among others:

- Restructuring the Audit and Investigations departments: Increasing the number of officers and equipping them with skills to combat tax evasion.

- Continuous upgrade of the information systems: To accommodate changes in the economy, significant resources are required to constantly update the information system capable of tracing evasion transactions.
- Increase compliance through embarking on taxpayer education to improve tax literacy: This can be done by establishing call centres in each provincial centre for the purpose of taking tax literacy closer to the people.

### **3. Streamline tax incentives**

Tax incentives should be reviewed continuously to ensure those which no longer serve or have served their purpose are phased out. Maintaining incentives which appear to be disproportionately favouring a sector of the economy at the expense of tax revenue deters tax morality in the country as a whole and therefore encourages tax evasion. Tax incentives should only be awarded to firms or sectors that add value in terms of employment creation, skills transfer and foreign exchange earnings.

# Acknowledgements

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ZIPAR would like to thank the members of staff in the Research and Planning Directorate of the Zambia Revenue Authority for their assistance, inputs and encouragement throughout the study. We are particularly thankful to the Director, Mr. Maimbo Nyanga and other members of staff, namely, Mr. Kelvin Mpembamoto, Ms. Mary Chendabwamba, Mr. Laban Simbeye and Mr. Yenda Shamabobo who devoted considerable time and effort in guiding the study on the institutional and legal taxation frameworks as well as the provision of data.

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## List of Acronyms and Abbreviations

BOZ	Bank of Zambia
CIT	Corporate Income Tax
DTA	Double Taxation Agreement
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GRZ	Government of the Republic of Zambia
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HMRC	Her Majesty’s Revenue and Customs
ILO	International Labour Organisation
IMF	International Monetary Fund
ITC	International Tax Compact
LCMS	Living Conditions Monitoring Survey
LME	London Metal Exchange
MNC	Multi-National Corporations
MOF	Ministry of Finance
PAYE	Pay-As-You-Earn
SACU	Southern African Customs Union
SI	Statutory Instrument
SSA	Sub-Saharan Africa
WHT	Withholding Tax
ZDA	Zambia Development Agency

# 1 INTRODUCTION

This study investigates the causes and extent of tax evasion in Zambia. The study reviews the current legal and administrative measures that are used to minimise tax evasion in Zambia by drawing on the experiences and lessons learnt by the Zambia Revenue Authority (ZRA). It presents the perceptions on the causes of tax evasion from a sample of large taxpayers. The PAYE gap analysis is used to reveal the extent of tax evasion in Zambia.

The main objective of taxation in many countries including Zambia is to mobilise domestic revenue to finance government expenditure on public services such as infrastructure development and other social services. Tax evasion therefore has the capacity to adversely affect the ability of government to finance developmental programmes. In Zambia, domestic revenue collection through taxation averaged 30% of Gross Domestic Product (GDP) during the 1970s with 11% of the total tax revenue emanating from the mining sector. However, in the 1990s the collection dropped to an average of 13% of GDP mainly due to a decline in mining revenues and weak tax administration by the government departments (Zambia Revenue Authority, 2011). The decline in domestic revenue led to a heavy reliance on donor funding in order to bridge financing gaps.

In addressing the decline in revenues, the Government undertook reforms in tax legislation and administration with support from bilateral and multi-lateral donors in the early 1990s. Through an Act of Parliament of 1993, the ZRA was subsequently formed in 1994 as a quasi-independent Revenue Authority with the mandate to collect taxes on behalf of the Government of Zambia (Zambia Revenue Authority, 2009). These reforms have resulted in an improvement in the growth of tax revenues averaging 17% of GDP from 2006 to 2010 (Zambia Revenue Authority, 2010).

Distinguishing between tax evasion and tax avoidance is necessary in order to provide clarity and direction of the study thereby comprehensively addressing the problem.

*Tax evasion* in general refers to illegal practices to escape from tax obligations as provided by the law. To this end, taxable income, profits liable to tax or other taxable activities are concealed, the amount and/or the source of income are misrepresented, or tax reducing factors such as deductions, exemptions or credits are deliberately overstated. Tax evasion can occur as an isolated incident within activities that are in other aspects legal. Furthermore, tax evasion occurs in the informal economy where the whole activity takes place out of reach of the tax net. This means the business is not only evading tax payments but is also not registered as a formal enterprise at all (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, 2010).

*Tax avoidance*, by contrast, takes place within the legal context of the tax system; that is, individuals or firms take advantage of the tax code and exploit loopholes, specifically engaging in activities that are legal but run counter to the purpose of the tax law. Usually, tax avoidance encompasses special activities with the sole purpose to reduce tax liabilities. An example of tax avoidance practice is strategic tax planning where financial affairs are arranged in order to minimise tax liabilities by using tax deductions and taking advantage of tax credits. In recent years, tax avoidance has become more topical than tax evasion. Tax avoidance is the bending of tax laws to gain a tax advantage. Avoidance negatively affects tax revenues because it circumvents government's intention when setting tax policy. In resource-rich countries, extracting companies often use contrived schemes in the production value chain to avoid paying tax. However, tax avoidance remains legal albeit disreputable. Because avoidance is barely legal, it does not attract the attention of law enforcement.

Although tax avoidance is a significant contributor to the tax gap and a worthy subject on its own, in this study, we have focused only on the estimation of tax evasion as a component of the tax gap. It is our considered view however, that another study to estimate losses from tax avoidance is needed.

Tax evasion in a number of cases is hidden and therefore difficult if not impossible to measure directly. Since tax evasion is associated with transactions and incomes that are under-valued or un-reported in national income statistics, the transactions and incomes concerned are not officially recorded. As such, tax evasion

is usually inferred or derived from the size of the informal sector. Different writers have used different terms to describe the informal sector. The International Labour Organisation (ILO), for example, used the term “informal sector” to describe all activities that operate largely outside the system of government benefit and regulation (International Labour Organisation (ILO), 1972). Guttman (1977) referred to transactions that escape taxation as the “subterranean economy”. Feige chose “hidden economy” to explain activities that escape the official economy (Feige, 1990). In contrast, Tanzi used the term “underground economy” as gross national product that is not measured by official statistics because of un-reporting or under-reporting (Tanzi V. , 1983). Del Boca and Forte (1982) used the term “parallel economy” to refer to those activities that are characterised by a lack of formal transactions. Kabaso and Phiri (Kabaso & Phiri, 2012) define the informal sector as carrying out of the economic activities outside the established control structures of the Government non-registration with Patents and Companies Registration Agency, National Pension Scheme Authority and the ZRA. This study adopted the definition of the informal sector as used by Kabaso and Phiri.

## 1.1 Statement of the problem

As a lower middle income country, Zambia mainly relies on domestic revenue collection to finance its economic and social programmes. In 2013, the Minister of Finance announced a K32.2 billion budget. Of this amount, 76.8% was estimated to come from domestic revenues, 4.7% from cooperating partners and 18.4% from domestic and foreign financing (Government of the Republic of Zambia, 2012). To this end, Zambia is making strides to enhance domestic revenue mobilisation as shown by recent reports. For instance in 2011, the total tax revenue collection amounted to K18,928.0 million compared to K13, 161.4 million in 2010 representing 20.1 % and 16.9 % tax revenue to GDP ratio, respectively (Zambia Revenue Authority, 2011).

Though the above picture shows some positive change, there are still challenges in the collection of tax revenue as revealed by the tax audits. Of the total amount of K1, 957.6 million assessed through tax audits in 2011, tax revenue of K597.7 million was collected, while penalties amounting to K370.3 million were charged for non-compliance with tax regulations (Zambia Revenue Authority, 2011). The revelations of the tax audits are an indication that tax evasion is a challenge in Zambia with the potential to adversely affect domestic revenue collection. Though there are few studies that have been carried out on tax evasion in other countries in the region, not much has been done in Zambia. Therefore this study investigates the causes and extent of tax evasion in Zambia and review efforts that have been put in place to redress the situation.

## 1.2 Justification and rationale of the study

Tax issues are quite topical in Zambia as evidenced by on-going debate on how to broaden the tax base and how much should be taxed. Knowing the causes and extent of tax evasion will significantly increase the efficiency of tax administrators. In addition, there is need for a review of the legal and administrative measures used to address tax evasion in order to increase compliance levels. The findings of this study will provide evidence in formulating good tax policies that will create the optimal balance between tax rates and the tax base. Through the recommendations of the study, it is envisaged that new strategies to fight tax evasion will be developed. This study will also contribute in filling the literature gaps currently existing on this subject area in Zambia.

## 1.3 Objectives of the Study

The broad objective of this study is to analyse the causes and extent of tax evasion in Zambia and also review the legal and administrative framework currently used to address the problem.

### Specific Objectives

- i) To determine the causes of tax evasion in Zambia;
- ii) To determine the extent to which tax evasion is prevalent in Zambia;
- iii) To review the legal and administrative measures used to address tax evasion; and
- iv) To make policy recommendations that could be used to strengthen tax policies.

## 1.4 Methodology

Measuring tax evasion in both the developed and developing countries is difficult due to data limitations. The extent of tax evasion is hard to estimate as this practice poses observation challenges and therefore precise data is lacking (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, 2010). Since we are trying to estimate the unknown, different approaches to estimating tax evasion will be employed. Due to the data challenges, the study employed indirect methods including a field survey, comparative analysis of Zambia's tax revenue performance with countries in the region, and estimation of Pay As You Earn (PAYE) tax gap through the use of data from a household survey.

This paper is arranged as follows: Section 1 is the introduction; Section 2 is dealing with legal and administrative measures; while Section 3 discusses the findings from the field survey. Section 4 is a comparative analysis of Zambia's tax revenue performance with countries in the region; Section 6 analyses the extent of tax evasion using PAYE gap, and Section 6 offers some policy recommendations.

## 2 LEGAL AND ADMINISTRATIVE MEASURES FOR TAX EVASION

Many countries in Sub-Saharan Africa have experienced considerable difficulties in mobilising public revenue, which is key in sustaining development in any country. These difficulties necessitated the reforms of the nineties which were aimed at alleviating the challenges that these countries faced with tax administration. The reforms saw a shift in tax system designs as many tax administrations simplified, modernised and adjusted their systems to meet the new demands in taxation (Chambas, Gerald, & Bonjean, 2003). Despite the numerous efforts made to improve tax administration in most of these countries, public revenues still remain low and Zambia is no exception.

Different views have been advanced for the status quo. One of the causes for Zambia is the challenge posed by a growing informal sector which has proved hard to tax. In a study that was conducted by Alm and Martinez (Alm, Martinez, Jorge, & Wallace, 2003) on 57 developing countries, it was estimated that revenue losses in this sector account for up to 40% of the potential public revenue. Another reason for poor revenue collection in developing countries has been said to be weak administrative and legal frameworks.

Perhaps one of the greatest threats to public revenues in the recent years is the phenomenon of tax evasion by not only small and medium companies but also multinational corporations (MNCs) operating in developing countries. It has been established that MNCs can artificially shift profits from high tax rate countries to low income countries by using techniques such as thin capitalisation and transfer pricing<sup>1</sup>. Individuals also evade taxation on passive income such as interest, dividends and capital gains earned abroad by not disclosing it to tax authorities in their countries of residence. Oxfam (2013) reports that about \$100 billion to \$160 billion is lost annually due to corporate tax avoidance and evasion schemes. Developing countries are particularly vulnerable to tax avoidance and evasion due to inadequacies in their institutional framework and the lack of sufficient expertise and resources for monitoring. Given the far-reaching effect of revenue losses due to tax non-compliance, Zambia has undertaken tax reforms to improve its tax administration and has incorporated and implemented various anti-avoidance measures and regulation in the tax law to combat tax evasion.

### 2.1 Legal provisions

Regulations for dealing with tax evasion and avoidance are provided for in the Zambian tax law in Part IX of the Income Tax Act. These provisions address issues of transfer pricing and thin capitalisation. Part X of the same Act prescribes penalties for default in payment, filing and registration. The VAT Act has additional enforcement regulations all aimed at mitigating tax evasion.

The Income Tax Act allows the Commissioner General:

- i) In the case of change of ownership of shares in a company, not to allow a set off or refund of tax deducted as dividend or payment to non-resident contractor where he determines that the reason for doing so is to obtain some tax advantage. This provision is meant to protect revenue from abuse by shareholders of avoiding paying taxes on dividends under the guise of having changed ownership of the company by taking advantage of the law that allows tax set off or refund where there is a genuine variation in ownership.
- ii) Where he has reasonable grounds to believe that the main purpose for which any transaction was

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<sup>1</sup> Thin capitalisation refers to the situation in which a company is financed through a relatively high level of debt compared to equity. The way a company is capitalised will often have a significant impact on the amount of profit it reports for tax purposes. Tax rules in Zambia allow interest payment as deductions from company profits. The higher the level of debt in a company, and thus the amount of interest it pays, the lower will be its taxable profit. MNCs can contract debts from related parties solely as way of shifting profits. Transfer pricing is another channel through which MNCs can transfer profits by transacting with related parties at set and advantageous prices between them and not at market prices.

effected was the avoidance of tax, he may make adjustments with respect to tax liability as he considers appropriate to counteract the avoidance or reduction of liability to tax which would otherwise be affected by the transaction.

- iii) With regard to inter-company shareholding, he may direct that the shares of any such companies shall be deemed to be held in a manner as he deems acceptable and any distribution of dividends by those companies shall be determined in accordance with the said shareholding.
- iv) Further provisions are made in the Act that shield wrongful deductions of losses arising from any business which, having regard to the nature of the business, the expenses incurred leading to the loss were of a personal nature as opposed to those carried on with a view of realising a profit.
- v) May avoid a trust where, because of the existence of a trust, the incidence of tax in relation to a person beneficially interested in that trust is less than would be the case if that trust did not exist, the Commissioner-General may determine that the income of the trust attributable to that beneficiary's interest be assessed as if it were his income, and it shall be assessed and charged accordingly.
- vi) In order to curb transfer pricing, transactions of commercial or financial nature between associated parties are deemed to have taken place under arm's length condition i.e. at market value. This is done to curtail under-pricing or over-pricing of transactions between associated parties with a view of reducing income thereby tax liability. For the mining sector, the monthly average London Metal Exchange (LME) or Metal Bulletin prices are the acceptable prices for valuing mineral exports.
- vii) Recent legislation has provided for rules regarding exploiting debt as a channel to shift profits. Interest payment by mining companies for instance is subjected to transfer pricing rules and thin capitalisation rules by prescribing the debt-equity ratio.

In addition to the foregoing, the Act provides for penalties for willful or fraudulent returns of up to 52.5 % of the amount understated or a prison term in some instances. ZRA officers have powers to inquire into the affairs of any person where there is reasonable suspicion that the person has committed an offence under tax law by warrant of the court. The powers include entering any premises to search for money or documents or electronically stored data; to open, or remove from the premises and open, any article in which money or documents or electronically stored data may be contained; to seize any documents or electronically stored data which may be necessary for assessment or any criminal or other proceedings and retain them for as long as they are required for such purposes.

## 2.2 Administrative measures

ZRA has also undertaken some institutional and administrative reforms to improve its operational efficiency and effectiveness with the view of increasing revenue performance. Among these reforms are the following:

- i) The reorganisation of the institution by way of taxpayer segmentation. It has shifted from organisational model-based tax type to one organised around tax administration functions. Functional model of the organisation eliminates a lot of complications both to revenue bodies and taxpayers in managing and co-ordinating compliance across tax types. Instead, staff are organised principally by functional groups e.g. registration, accounting information process, audit, etc., and generally work across taxes. This system generally improves operational efficiency as it provides a single point of access to tax inquiries. The functions are further organised around segments of the taxpayers in terms of large, medium and small taxpayers. The rationale behind organising these functions in this manner is to address inherent risks associated to each taxpayer group based on their unique characteristics.
- ii) Introduction of presumptive taxes such as Turnover Tax, Advance Income Tax, Presumptive tax on public service motor vehicle, base tax, with the view of bringing into the tax net the informal sector by simplifying their tax codes.
- iii) ZRA is working with the Norwegian Government to develop capacity in mineral resource taxation in

Zambia. The initiative is aimed at bridging the gap in complex mining audit techniques which prior to this, posed challenges in auditing complex mining accounts.

- iv) In order to reduce compliance costs for the taxpayers thereby improve voluntary compliance, ZRA is currently developing an automated system called *Tax-Online* that will facilitate e-registration, e-filing and e-payment.
- v) Establishment of the Investigation Division dedicated to investigating fraud and tax evasion cases. In 2012 alone about 120 cases of malpractice were investigated. Out of these cases, additional taxes of K23.6 million were collected.
- vi) Initiatives such as the creation of Taxpayer Education and Advisory Services centres all work towards improving tax knowledge thereby improve compliance.

## 2.3 Weaknesses in tax legislation

While the measures in place may seem good to address the issues that they were designed for, there are more areas that need to be addressed to seal some of the loopholes that are driving tax evasion tendencies.

- i) The Zambian Income tax structure has multiple rates applicable to different categories of income streams. Agricultural income for instance is currently taxed at 10% while income earned from manufacturing and other activities are taxed at 35%; income from non-traditional exports is taxed at 15%. Some studies show that differentiated rate structure to some degree foster evasion. When one group begin to see the other as paying less tax than they should due to the tax structure differences, opportunities are created for the evasion of tax. Furthermore, the multiple rate structure of the Zambian system (deviate from the standard 35%) for instance, may encourage arbitrage with revenue leakages.
- ii) Through the Zambia Development Agency (ZDA) and tax laws, the country has a lot of tax incentives to specific classes of investors. The incentives include exemptions, tax holidays, credits and reduced Company Income Tax (CIT) rates among others which have been justified on the basis of attracting foreign investments. However, not all incentives can be said to provide for legitimate societal benefits. There are some that are given as a result of lobbying by influential entities or individuals and in the case of MNCs, tax incentives can be as a result of preceding lobbying activities and the incentives eventually only help these MNCs not only to avoid taxes but give rise to illegal evasion activities for domestic companies for instance by re-labelling the domestic investment as Foreign Direct Investment (FDI) (round tripping) or by selling subsidiaries in the guise of new foreign investors (double dipping). Tax incentives should be reviewed continuously to ensure those which no longer serve or have served their purpose are phased out. Maintaining incentives which appear to be disproportionately favouring a sector of the economy at the expense of tax revenue deters tax morality in the rest of the sectors and therefore encourages tax evasion. Tax incentives should only be awarded to firms or sectors that add value in terms of employment creation, skills transfer and foreign exchange earnings.
- iii) Another seemingly legitimate practice but has the potential to be used as an avenue for avoiding taxation is the double taxation and avoidance agreements ironically being used to usurp the purposes they are entered into. Double taxation agreements (DTA) are usually signed to give reciprocal treatment for business and transactions between countries usually crafted on the principle of residence or source of the business. These agreements are usually initiated by a country that has a stronger interest in the income in question and may negotiate superior terms that favour it more than the other especially for agreements between a developed and developing countries like Zambia as most of the income subject to these agreements pertain to dividends and interest.
- iv) The agreements tend to work to the disadvantage of the developing countries because of the preference that these agreements have to the residence country as opposed to the source. Most MNCs operating in the developing countries are legally resident in the developed countries hence dividends and interest payments and taxes due on them always seem to be flowing out in one direction - to the developed countries. For example, of the 22 DTA Zambia has signed only the Indian treaty allows for withholding tax (WHT) on technical fees and the Irish treaty has zero WHT on payment of dividends,

interest and royalties. The Swiss treaty also gives exemption from WHT in Zambia on dividends, interest and royalties if these are taxable in Switzerland. In a way these too, even if there may not be directly said to be avoidance tools, work against the enhancement of revenue in developing countries.

## 2.4 Conclusion

The legal framework that deals with tax administration is provided for under the Income Tax Act. The Act has provisions to deal with filing of tax returns, late payment of tax and penalties on fraud. For instance penalty for fraud is charged at 52.5% of the amount defrauded plus 5% interest at bank of Zambia rate and jail sentences in some cases. The Zambian tax structure has multiple tax rates. Among others, company income tax is 35%, non-traditional exports are taxed at 15% while income from agriculture is taxed at 10%. In addition, Double Taxation Agreements (DTAs) are provided for in the Act, meant to deal with reciprocal taxation arrangements on multinationals and foreign residents. However these legal provisions do not adequately address tax evasion. The interest rate for fraud should be above market rate and the implementation of jail sentence should be enhanced as a deterrent to tax evasion. Tax incentives should only be given to worthy businesses involved in value addition and employment creation.

# 3 ON TAX EVASION - EVIDENCE FROM THE FIELD SURVEY

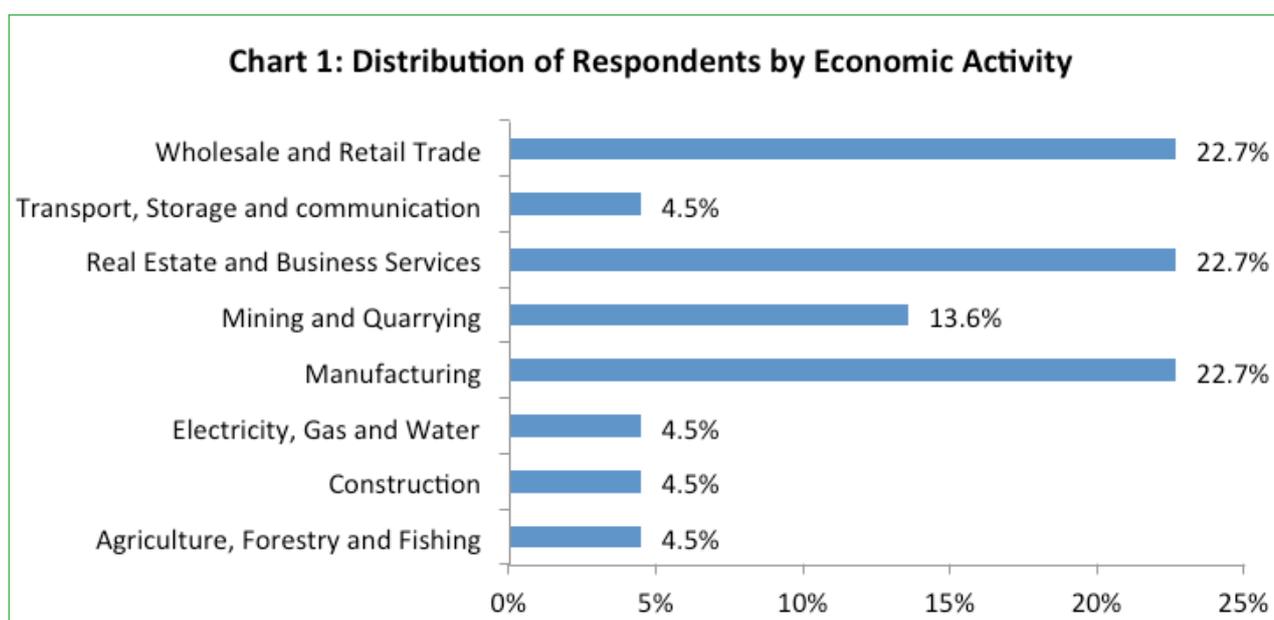
In order to find out the perceptions of what tax payers in Zambia think about tax evasion, a qualitative survey of large tax payers and business associations was conducted in Lusaka.

## 3.1 Key characteristics of the respondents

In this section, the study reports on the key characteristics of the respondents with regard to the business sector they belonged to as well as their knowledge on the Zambian tax system in general. To begin with, a total of 27 respondents took part in the quantitative survey, representing a response rate of 79 % out of a total of 34 questionnaires distributed. Of the 27 respondents, 22 were large taxpayer businesses, while the rest were key informants made up of business associations. Of the 22 large taxpayer businesses, accountants and business owners were the respondents.

### 3.1.1 Distribution of respondents by kind of economic activity

Of the companies surveyed, wholesale and retail trade, real estate and business services, and manufacturing industries each accounted for 22.7%. The other industry with a good representation was mining and quarrying at 13.6%, while the rest had representation of no more than 5% , as illustrated in Chart 1.



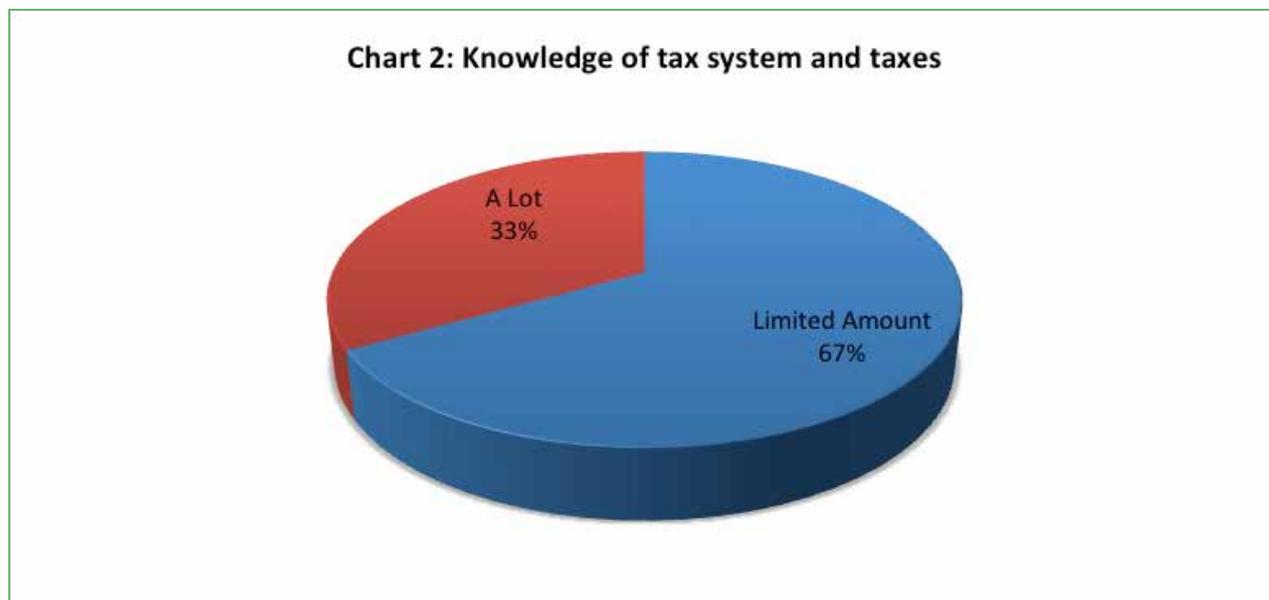
### 3.1.2 Knowledge of tax and the tax system

In line with the study objectives, the survey tried to gather the respondents' understanding of Zambia's taxes and the tax system in general.

#### i) Knowledge about the tax system and taxes in Zambia

**Two-thirds of the respondents had a limited amount of knowledge of taxes and the tax system.** When prompted about how much they knew about the tax system and taxes in Zambia, the majority or 66.7 % of the respondents indicated that they had a limited amount of knowledge, while 33.3 % of the respondents indicated that they knew a lot. None of the respondents indicated that they knew none or a little about the

subject matter (See Chart 2). This would seem to suggest that in Zambia, a larger proportion of businesses have only fair knowledge of the tax and tax system. However, as relates to the general public, studies have shown that the general understanding of tax policy concepts such as progressive taxation is inadequate (Roberts, Hite, & Bradley, 1994). Further it has been found that the public's knowledge of taxes and tax policy is remarkably low (Kasipillai & Mustafa, 2000).



Furthermore, Eriksen and Fallan (1996) suggested that a taxpayer should be given better tax knowledge to improve perceptions of fairness, tax ethics and attitudes to others' tax evasion. A successful means of preventing tax evasion is to provide more tax knowledge to a larger segment of society in order to improve tax ethics and people's conception of the fairness of the tax system.

In Zambia, the education system does not offer any specific or targeted policies in improving the level of tax literacy except for certain qualifications at tertiary levels. To start with, it would be a step in the right direction to make teaching in tax law and tax knowledge a compulsory part of social science teaching in all our schools. This could raise a generation of citizens with high knowledge of taxes and the tax system with the potential to increase compliance thereby leading to a reduction in tax evasion cases.

In line with best practices in the short and medium term, ZRA should provide the taxpayers with detailed information on the tax system and how to comply with tax obligation including filing returns, payment modalities, and penalties relating to tax evasion.

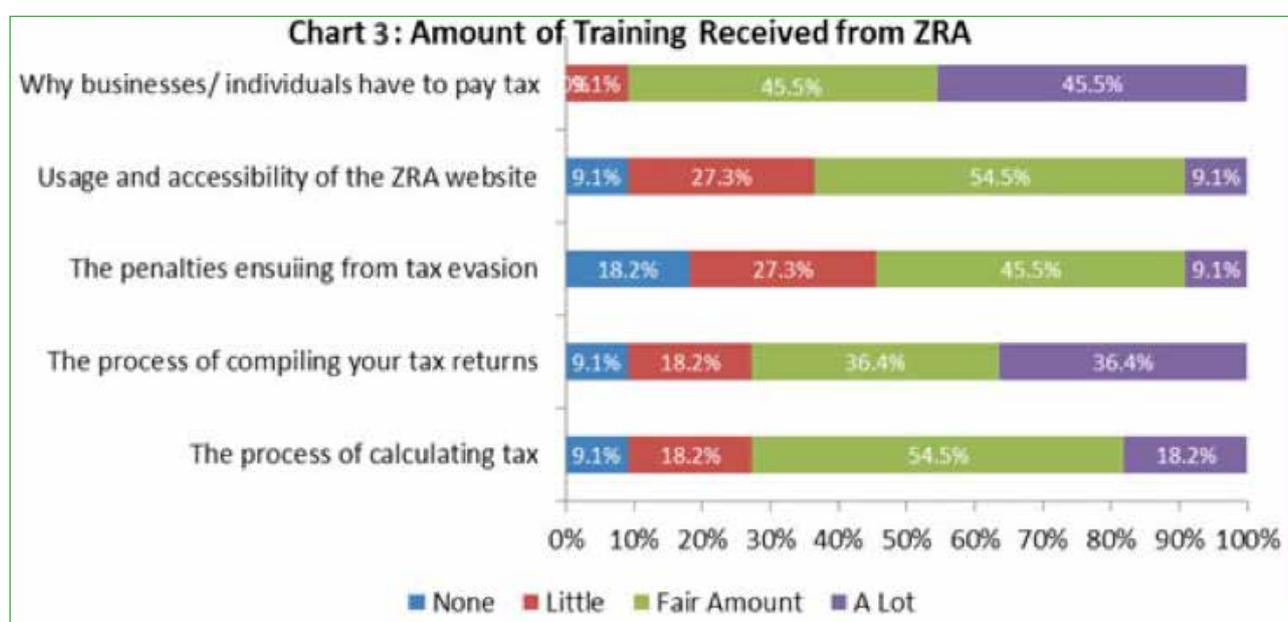
The respondents observed that in order to increase tax literacy among the taxpayers in Zambia, ZRA should undertake the following measures that include:

- **Carrying out regular sector specific workshops and seminars on tax.** Only 33% of respondents indicated that they had fair knowledge of tax system which could indicate limited availability of training programmes. The ZRA should increase the number of call centres as way of decentralising remitting of taxes. However call centres should also be used for conducting free workshops to the general public interested in learning about the tax system and taxes in all the ten provinces. These could also take the form of trade visits to large taxpayers whose operations are highly complicated.
- **Improve ZRA website and explain various tax types and processes of filing returns clearly.** It is commendable ZRA has introduced a tax online programme, which is aimed at reducing the cost of tax administration and increasing taxpayer compliance through e-registrations, e-returns and e-payments. However the website needs continuous redesigning if taxpayers are to fully benefit from this innovation. The website should educate the general public about the tax system and

taxes in Zambia in simple and attractive terms. The South Africa Revenue service is a good example of a well-designed and information packed website aimed at increasing tax literacy levels ([www.sars.gov.za](http://www.sars.gov.za)).

ii) *Training from ZRA*

**Two out of five respondents had received tax training from ZRA.** With regards to whether respondents had received any form of training from ZRA, results as depicted in Chart 3 were obtained. From the 40.7% who had received training from ZRA, the chart shows that the most popular training received by the respondents was on why businesses/individuals should pay tax where 45.5% of the respondents indicated they had received a lot. This was followed by training on process of compiling tax returns where 36.4% of respondents indicated they had received a lot of training from ZRA. Above half of the respondents had received fair amount of training on usage/accessibility of the ZRA website and on the process of calculating tax.



**ZRA is putting in place training programmes for its taxpayers.** ZRA has put in place a mechanism to educate its taxpayers in various issues aimed at increasing compliance levels through Tax Payer Education and Advisory Services (TEAS). While this is commendable, the overall impact of TEAS in terms of tax payer knowledge of the tax system and taxes cannot be verified in this study. ZRA can enhance its efforts in training taxpayers by drawing lessons from other countries such as the USA where various programmes such as Public Information to educate school children, and training of small business owners and other self-employed individuals were introduced. Through workshops or in-depth tax courses, instructors should provide training on filing tax returns, starting a business, recordkeeping, preparing business and personal tax returns, self-employment tax issues, and employment taxes (Internal Revenue Services (IRS), 2009). Assuming benchmarking Zambia to developed countries is not far-fetched, similarly ZRA can kick start these vital training programmes to improve on initiatives already under implementation such as TEAS specifically targeting taxpayers with the view of enhancing tax literacy.

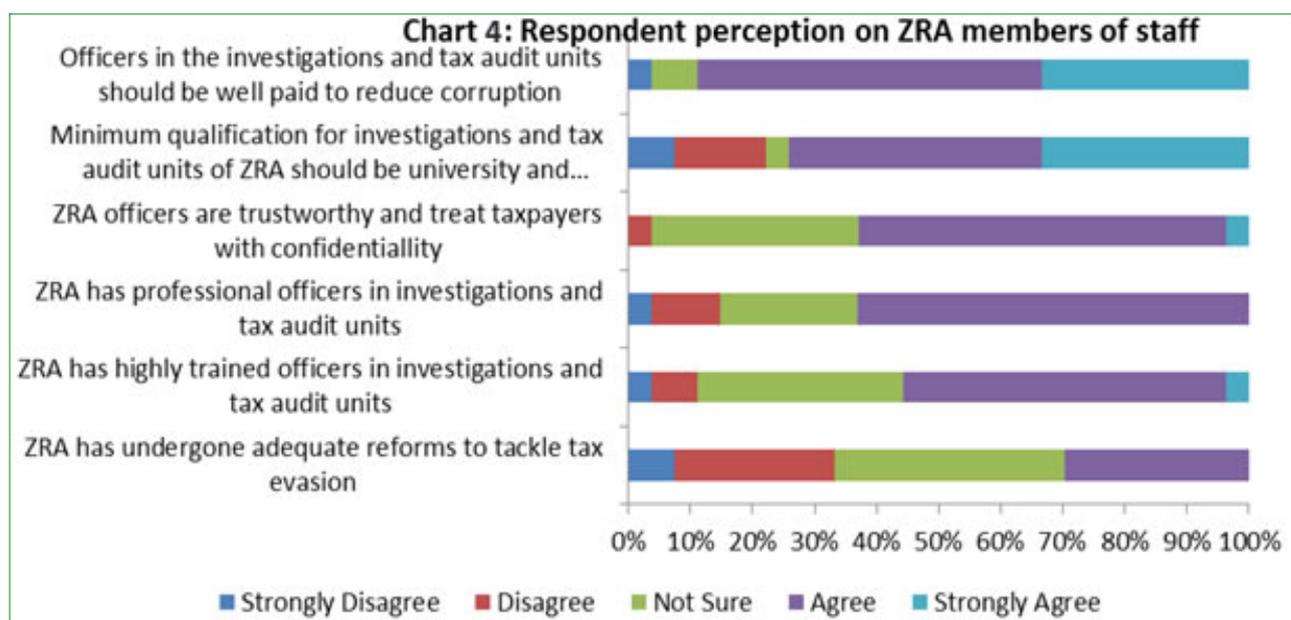
### 3.2 Respondent perception on ZRA and its workforce

**A significant proportion of respondents were not sure if ZRA had undergone adequate reforms to tackle tax evasion.** In order to establish the respondents' view of tax administration in Zambia, the study sought for perceptions on various issues pertaining to ZRA and its workforce. Respondents were asked to

rate the level at which they agreed with statements regarding reforms in ZRA vis-à-vis tax evasion, ZRA workforce’s qualifications, training and values among others.

As depicted in Chart 4, 37.0% of the respondents were not sure whether ZRA had undergone adequate reforms to tackle tax evasion. This was followed by 33.0% who disagreed (both strongly disagreed and disagreed) that the organisation had undergone adequate reforms to tackle evasion. The majority of respondents agreed on the following statements: ZRA has highly trained officers in investigations and tax audit units (55.6%); ZRA has professional officers in investigations and tax audit units (63.0%); ZRA officers are trustworthy and treat taxpayers with confidentiality (62.7%); minimum qualification for investigations and tax audit units should be university degree and specialised training (74.0%) and that officers in investigations and tax audit units should be well paid to reduce corruption (88.9%).

These responses show that having a degree as well as specialised training will significantly enhance the technical capacity of the officers. This is the case due to the complexity of tax evasion cases that can only be unearthed by a well-trained officer. The need to have well-paid officers in the audit and investigations departments is likely to reduce corruption cases and thereby reduce prevalence of tax evasion.



Generally the good perception of ZRA by the taxpayers could be attributed to the Taxpayer Charter put in place to improve the operational efficiency and service delivery even though none of the respondents made reference to the Taxpayer Charter. There is therefore need for ZRA to put in place deliberate dissemination strategies to sensitise taxpayers about the availability and importance of the document for easy of usage and reference.

### 3.3 Perception on tax rates

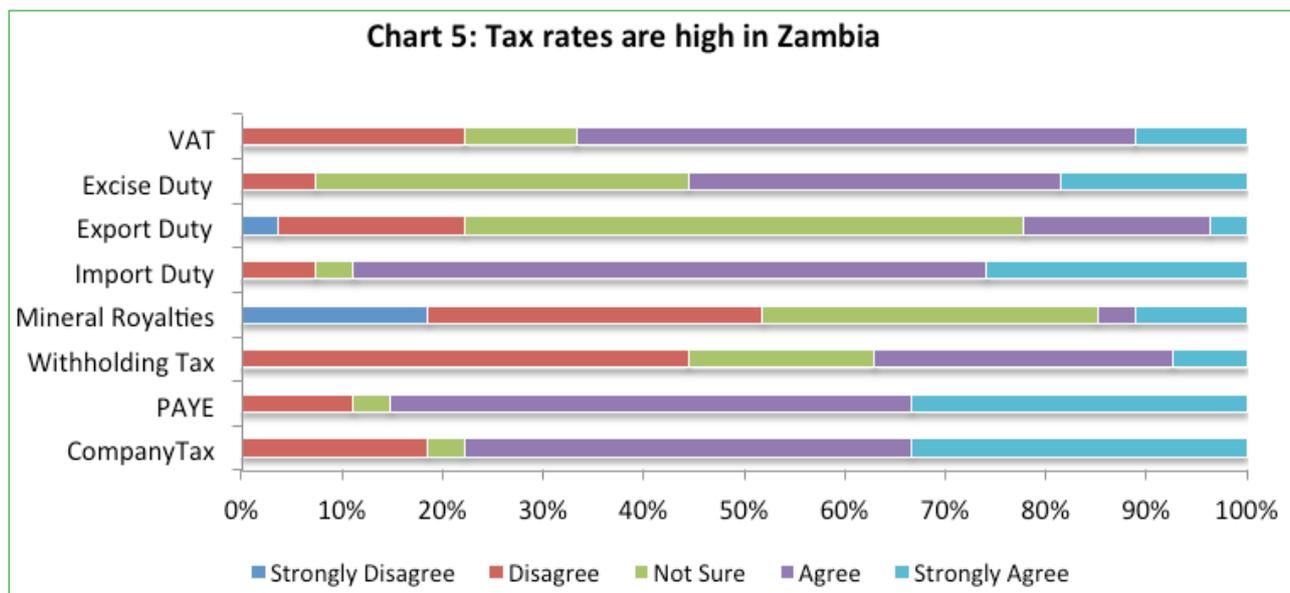
The study gathered respondent perceptions on the existing tax rates to find out whether they are high, complicated and related to tax evasion. In addition, the relationship between penalties and their deterrence to tax evasion was sought.

#### 3.3.1 Respondent perception on rates of key tax types in Zambia

**Most of the respondents perceive company income tax to be too high.** With regards to the perception on tax rates applicable to key tax types, results depicted in Chart 5 were obtained. The majority of respondents were of the view that rates on the following tax types are high; import duty (88.9%), PAYE (85.2%), company income tax (77.7%), excise duty (55.5%) and VAT (66.7%). The respondents felt that company income tax

at 35% for manufacturing firms was too high compared to non-traditional exports at 15% and agricultural income at 10%. The respondents felt that the variations in tax should be either minimal or the same across sectors. At this stage the message is more of why some sectors are paying high taxes when others are paying as little as 10% without regard to underlying factors for variations. Similarly most respondents felt that the upper band of PAYE at 35% was too high with the intervals between the tax bands of 10%, 25% and 35% as being too wide.

These views are in line with the earlier previous section on assessment of the legal framework reinforcing the need to streamline the tax incentives in order to address issues of tax morality.



Perception on mineral royalty rate was positive with 51.8 % of respondents disagreeing that the rate is high. Respondents had a mixed perception on the withholding tax rate with 44.4 % of them disagreeing that the rate is high, slightly over a third agreeing while 18.5 % remained neutral.

i) *High tax rates and tax evasion*

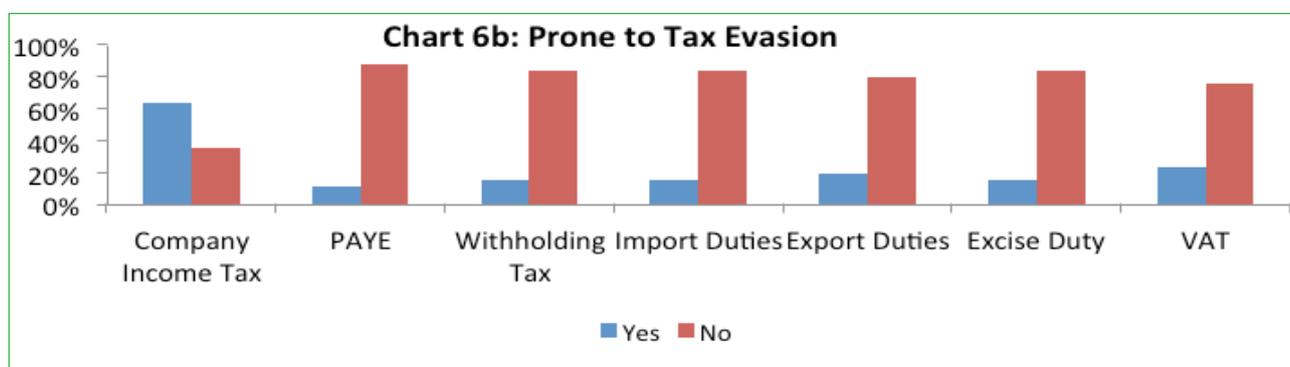
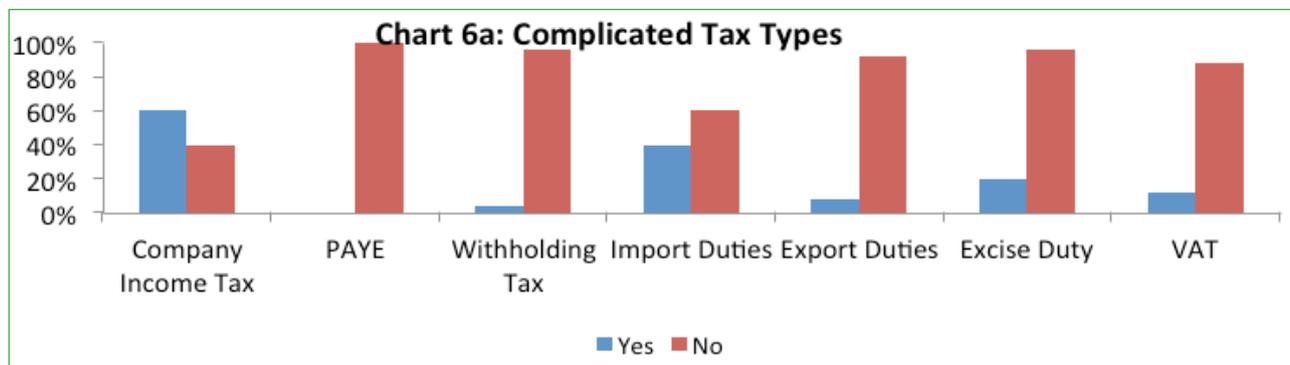
The study also explored the perception on whether high tax rates lead to tax evasion, and perception on whether rates for specific key types are high.

The study found that the majority of respondents had remarkably negative perceptions on tax rates of company tax, PAYE, import duty and VAT. Cross checking this result with the sample perception on whether high tax rates lead to tax evasion, it was observed that yet again the majority who perceived high tax rates to lead to evasion were the same group who agreed that the rate was high in each of the mentioned tax types. For instance, of those who agreed that the company tax rate was high, 63.6 % of them also agreed that high tax rates lead to tax evasion with 38.5 % of them strongly agreeing. These findings agree with earlier studies in economic literature that tax rates are positively correlated with tax evasion (Tanzi V. , 1980). However, the results also provide an insight into the issue of tax rates and the need for comprehensive studies to be undertaken driven by major tax policy reforms.

ii) *Complication of Tax Types and Tax Evasion*

**Company Income Tax is perceived to be more vulnerable to tax evasion than other tax types.** World over, scholars have argued that the more complicated a tax, the more taxpayers will attempt to evade on that particular tax. With this in mind, the survey investigated which tax types respondents found to be complicated and also which tax types they thought were prone to tax evasion.

As depicted in Chart 6a, the only tax type that the majority (60%) of the respondents found to be complicated was company income tax. Moreover, the majority (64%) of the respondents also felt that company tax was the most vulnerable to tax evasion in Zambia (see Chart 6b).



There is need to simplify the tax code to make it easy to apply by the businesses especially the company income tax. This has the potential to reduce cases of late filing, late payment of taxes and tax evasion.

### 3.3.2 Perception on penalties and deterrence on tax evasion

It can be argued that if known penalties applicable to tax evaders are deemed to be harsh, then would-be tax evaders would stay away from this crime, and vice-versa. Standard economic theory stresses that tax compliance solely is the result of punishment and of threat detection. This approach is based on a few but restrictive assumptions, like rationality and individual utility maximisation. According to this paradigm, it is expected that taxpayers weigh the expected utility of benefits from successful tax evasion with the uncertain prospect of detection and punishment (Kirchler E. et al, 2001).

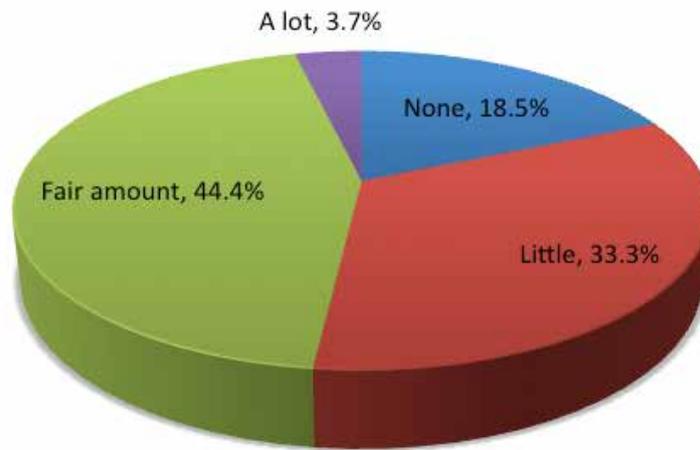
It is therefore advisable for tax administrators to put in place high penalties for tax evasion and publicise such information so as to deter evasion. For instance, in 2011, Her Majesty’s Revenue and Customs of the United Kingdom increased the penalty rate<sup>1</sup> for offshore tax evaders to 200% of the tax due in order to deter the vice. In line with this, the study also examined the sample’s awareness of the prevailing penalties for tax evaders and their rating of severity of these penalties as shown below.

#### i) Knowledge on penalties for tax evaders

**Knowledge on tax evasion penalties is low.** About 44.4% of the respondents had a fair amount of knowledge on tax evasion penalties, followed by 33.3 % who indicated that they had a little knowledge on the penalties applicable to tax evasion. Only 3.7 % of the respondents had a lot of knowledge about penalties on tax evasion while 18.5 % had no knowledge at all. These findings are shown in Chart 7.

<sup>1</sup> <http://www.hmrc.gov.uk/news/offshore-penalties.pdf>

**Chart 7: Knowledge of penalties**



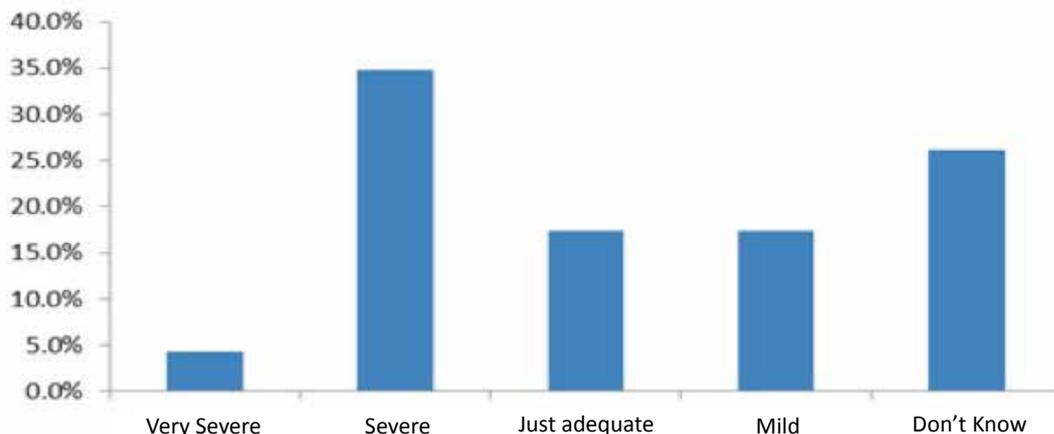
This finding implies that, generally, Zambian taxpayers only have a little or fair amount of knowledge about the penalties applicable to tax evaders. This finding provides ZRA with an opportunity to come up with strategies in enhancing tax education and sensitisation efforts with emphasis on penalties applicable to tax law breakers.

*ii) Perception on severity of penalties*

**About two thirds of respondents perceived penalties as severe.** Focusing only on those with some amount of knowledge on tax penalties, the research went on to establish perception of severity of penalties by the large taxpayers and the findings are shown in Chart 9. Generally the penalties were perceived to be severe by 36.1% of the respondents while 17.4 % felt that the penalties were both mild and just adequate respectively with only 4.3% of the respondents rating the penalties as very severe. Interestingly 26.1% of the respondents said they did not know whether the penalties were severe or not.

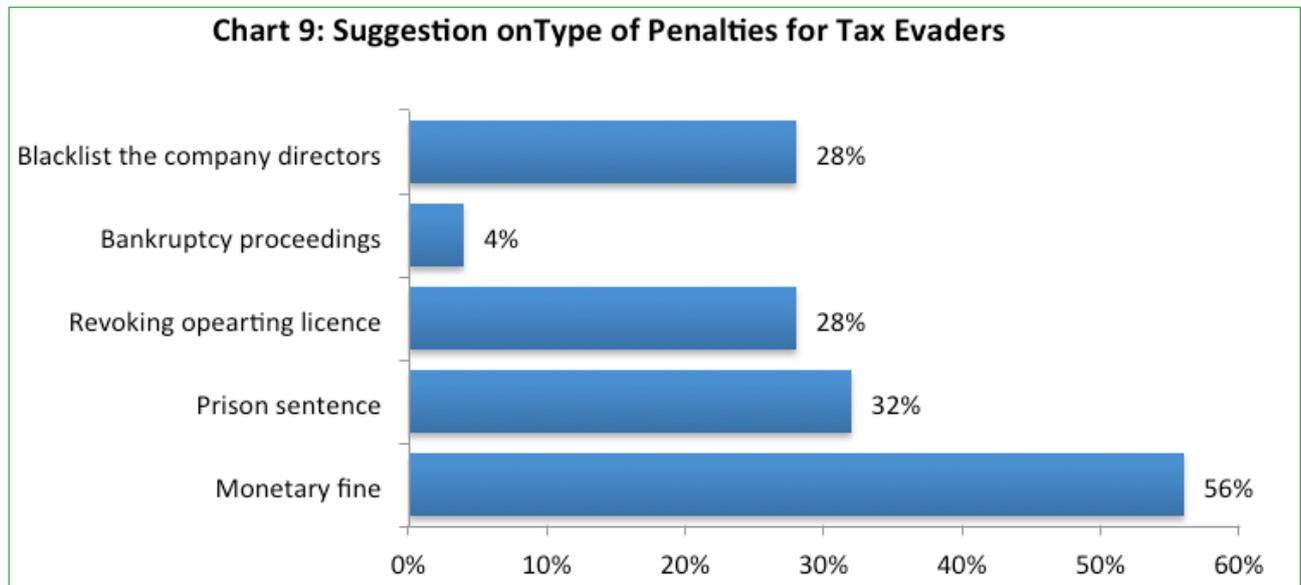
Currently a taxpayer is charged a monetary penalty of 52.5% of defrauded amount and a Bank of Zambia commercial interest of 5% and in some rare cases a jail sentence is administered where the culprit fails to pay. The respondents felt that paying a penalty slightly more than half the amount is severe as amounts involved could be large enough to paralyse an organisation. In some cases the respondents pointed out that what is termed fraud is basically calculation errors made during filing of tax returns. There is however rare instances or no records of those found guilty of being sent to jail. The fact that the penalties are mostly monetary in nature puts into question whether penalties are severe enough to deter evasion.

**Chart 8: Severity of penalties**



iii) *Suggestions on penalties for tax evaders*

**Most respondents prefer a monetary fine as a penalty for tax evasion.** The respondents were asked on which of the penalties if applied by ZRA is likely to lead to reduction in tax evasion. The results as presented in Chart 10 show that respondents prefer monetary fine as the most effective way to reduce tax evasion (56%) while 32 % thought prison sentence would be more effective. Only 28 % of the respondents regarded both blacklisting the company directors and revoking the operating licence as most effective, with 4 % in favour of bankruptcy proceedings as the most effective way of reducing tax evasion.

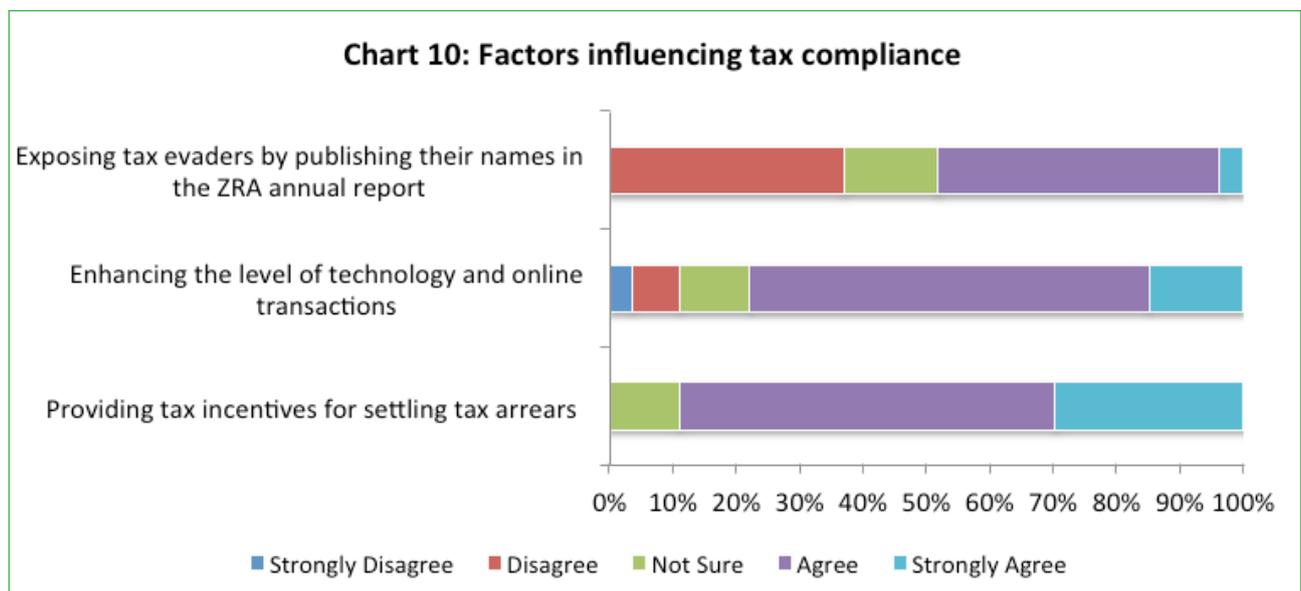


**3.3.3 Perception on compliance levels and tax evasion**

The study investigated the key factors surrounding the level of compliance and tax evasion in Zambia.

i) *Perception on factors influencing tax compliance*

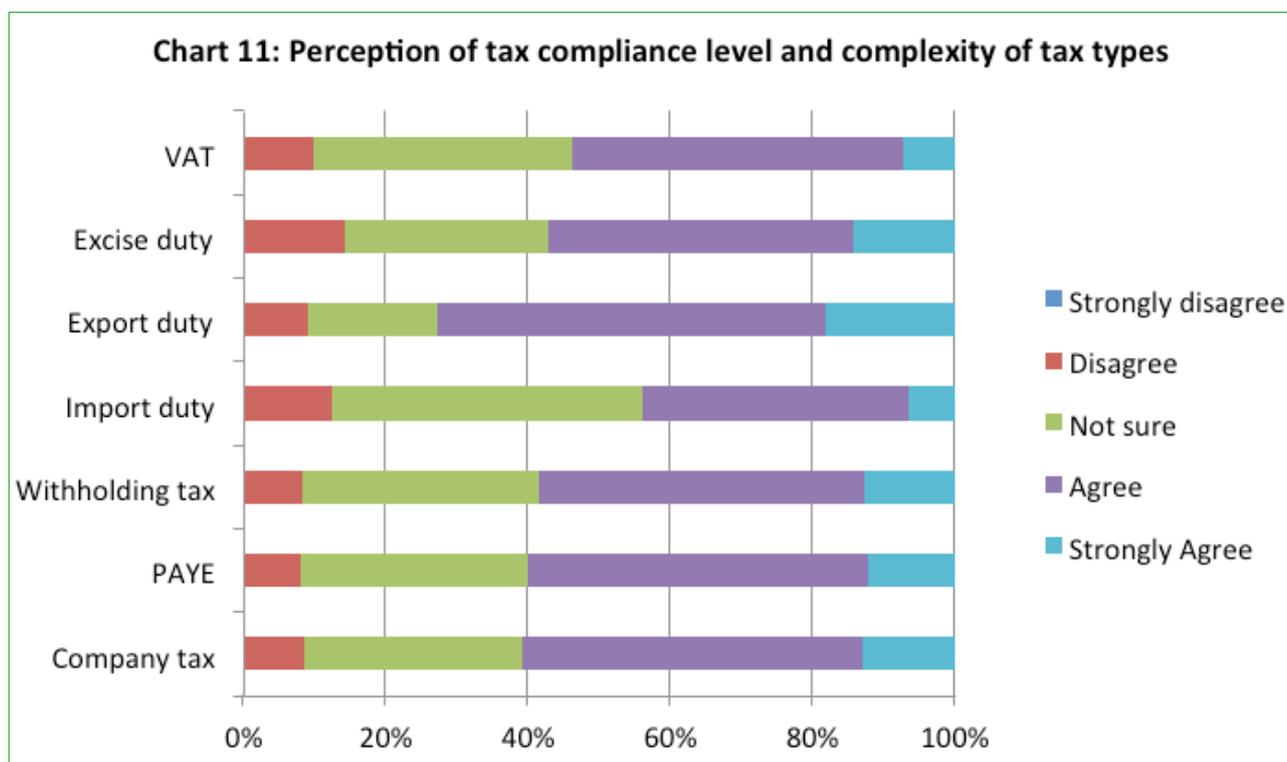
**Level of technology and tax incentives can increase tax compliance.** The respondents were asked whether tax compliance levels were low in Zambia, to which 62.9 % indicated that it was low and the rest indicated otherwise (see Chart 10).



When further prompted to suggest ways at which the government can improve tax compliance levels and in turn discourage tax evasion, the respondents agreed that providing tax incentives for settling arrears (88.9%) and enhancing ZRA's level of technology and online transactions (77.8%) would enhance tax compliance. It is worth noting that 48.0% of the respondents agreed that publishing tax evaders' names in the ZRA annual report would help improve compliance, while over a third of them disagreed. The issue of settling of tax arrears needs to be addressed by streamlining operations in order to reduce processing time.

ii) *Tax compliance and difficulty of computing a tax*

Chart 11 shows the results of the relationship between the responses on the company's perception on compliance levels and their perception on complexity of the tax types. In most of the tax types, the majority who thought that the tax types were complicated also perceived the compliance levels to be low. The study found that 60% of the respondents on average that perceived the rates on company tax, PAYE, withholding tax, and excise duty to be high, also perceived the tax compliance levels to be low in Zambia. Furthermore, 72.7 % and 53.6 % of the surveyed companies were of the opinion that rates on export duty and VAT are high, also perceived the tax compliance levels to be high.



### 3.4 Conclusion

The survey revealed that the respondents interviewed had a fairly limited knowledge of tax and the tax system in Zambia. The majority of respondents have not received any training in tax literacy indicating that ZRA has limited programmes on increasing tax literacy among taxpayers. This is despite putting in place the Taxpayers Education and Advisory Services programme and a taxpayer Charter. This gap provides the ZRA with the opportunity to develop training and dissemination strategies in order to increase tax literacy.

The respondents perceived company tax, PAYE, import duty, excise duty and VAT to be high and that all were positively related to tax evasion. Of the tax types, company income tax was regarded to be the most complicated and therefore more vulnerable to tax evasion than the others. Simplifying the tax code is necessary to make application of tax simple and readily usable.

The knowledge of the existing penalties on tax evasion is low among the respondents. With the level of knowledge on the penalties, two thirds of the respondents indicated they perceived penalties on tax evasion as severe. Currently the monetary fine of 52.5% of the amount evaded plus interest at the Bank of Zambia rate of 5% is applied with an option for a jail sentence. Monetary fine as a deterrent to tax evasion is preferred to blacklisting of company directors, revoking operating licences and prison sentences.

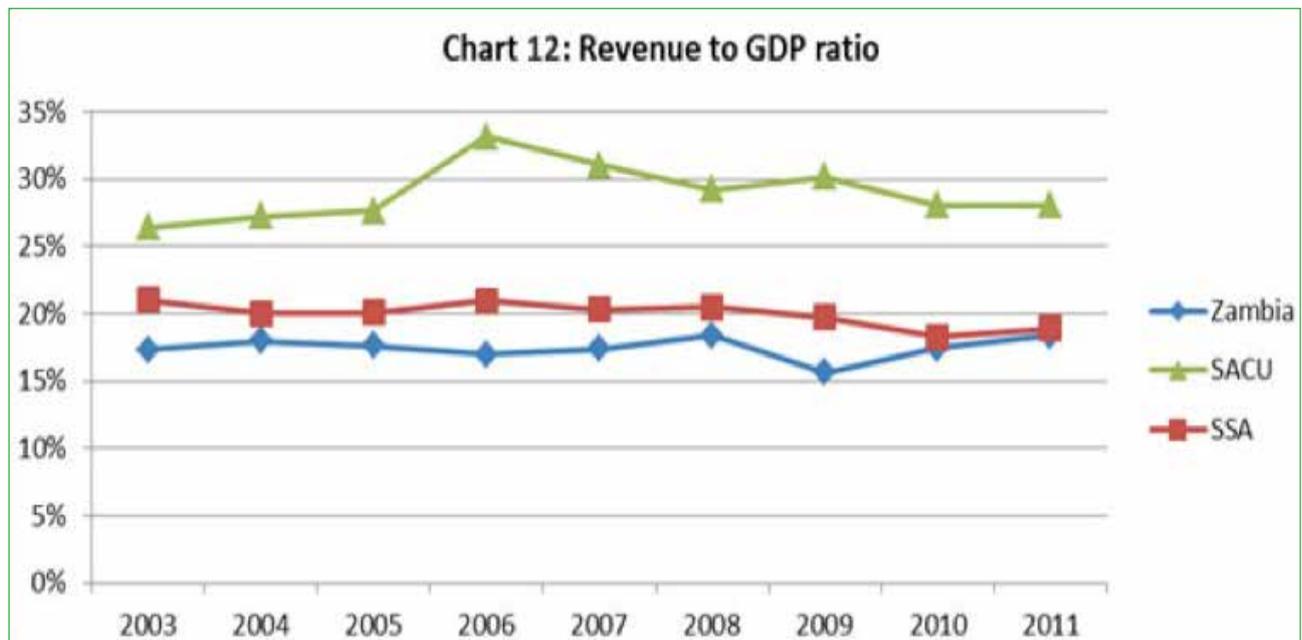
Though this survey was not statistically representative, it offered an insight on what could be part of the big picture on tax system and tax evasion in Zambia. There is need to formulate comprehensive legal and administrative tax policy reforms that will address tax literacy levels and compliance. ZRA should come up with strategies on training, dissemination of already existing programmes and policy documents, aimed at minimising tax evasion. Further, penalties should be stiffened. For example monetary fines should include interest at above the market rate. The prison sentence already in place should be strictly enforced as a deterrent to tax evasion and a strong signal to would be offenders.

# 4 COMPARATIVE ANALYSIS OF ZAMBIA'S REVENUE PERFORMANCE

## 4.1 Regional Comparative Revenue Performance

Records indicate that revenue performance since the early 90's<sup>1</sup> has been relatively low in Zambia. We illustrate this in Chart 13 showing Zambia's revenue performance relative to Sub-Sahara Africa (SSA) and Southern African Customs Union (SACU) countries<sup>2</sup> over the period 2003 – 2011. The indicator for SSA is the un-weighted average revenue performance in 24 SSA countries including SACU countries while the indicator for SACU countries is the un-weighted average for 4 SACU countries. To a lesser extent, we compare Zambia and its former federal partners, Malawi and Zimbabwe. Zambia, Malawi and Zimbabwe have a common history through the Federation of Rhodesia and Nyasaland (1953-1963). Therefore, in terms of initial conditions, Malawi and Zimbabwe are the best mirrors that reflect Zambia's revenue performance.

While average un-weighted revenue performance in SSA countries has tended to hover around 20% of GDP, in SACU countries, tax-GDP has been above 26%. This is not surprising considering the economic influence of South Africa in the SACU. But surprisingly, both Malawi and Zimbabwe have revenue productivity several significant percentage points above 20%. This is in contrast with Zambia's tax to GDP ratios which have been persistently lower than 20% of GDP (Chart 12). The question of interest here is why Zambia appears to be a misfit in the regional pattern of revenue productivity. The answer holds the clue to estimating the tax gap. Put another way, given Zambia's GDP, what should be its revenue-productivity based on the experiences of similar countries? A simple estimate is to take revenue productivity in the comparator countries and apply it to Zambia's GDP. The difference between the adjusted revenue based on the 'peer country experience' and the actual revenue can serve as a simple estimate of the tax gap. The country's revenue performance in relation to SACU and SSA are shown in tables 1 and 2.



Sources: World Development Indicators, International Financial Statistics and ZRA

<sup>1</sup> The beginning of economic liberalisation in Zambia.

<sup>2</sup> Excluding Lesotho whose revenue to GDP is an outlier.

**Table 1: Revenue Performance in Zambia (SACU relative)<sup>3</sup>**

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011
a) Zambia Tax/GDP (%)	17	18	18	17	17	18	16	17	18
b) SACU Tax/GDP (%)	26	27	28	33	31	29	3	28	28
c) VARIANCE wrt SACU (%)	-9	-9	-1	-16	-14	-11	-15	-11	-1
d) Zambia GDP (K'bn)	20.6	26	32	38.6	46.2	54.8	64.6	77.7	93.3
e) VARIANCE wrt SACU(K'bn)	<b>1.87</b>	<b>2.41</b>	<b>3.19</b>	<b>6.23</b>	<b>6.29</b>	<b>5.94</b>	<b>9.39</b>	<b>8.26</b>	<b>9.02</b>

**Table 2: Revenue Performance in Zambia (SSA relative)<sup>4</sup>**

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011
a) Zambia Tax/GDP (%)	17	18	18	17	17	18	16	17	18
b) SSA Tax/GDP (%)	21	20	20	21	20	20	20	18	19
c) VARIANCE wrt SSA (%)	-4	-2	-2	-4	-3	-2	-4	-1	0
d) Zambia GDP (K'bn)	20.6	26	32	38.6	46.2	54.8	64.6	77.7	93.3
e) VARIANCE wrt SSA(K'bn)	<b>0.76</b>	<b>0.53</b>	<b>0.78</b>	<b>1.54</b>	<b>1.35</b>	<b>1.17</b>	<b>2.63</b>	<b>0.67</b>	<b>0.46</b>

Source: Author's computations (see foot note)

Relative to SACU, between 2003 and 2011, the average tax gap was estimated at K5.78 billion while it was K1.11 billion relative to SSA. Relative to Zimbabwe and Malawi, the gap is estimated at K2.26 billion.

The collection gap as derived above is not equivalent to the net tax gap. Instead, it gives an indication of its relative size. Daal et al (2012) have estimated Zambia's revenue gap between 2.5% and 10% of GDP and it can be seen from the above computation that this is not far from the truth. The crude tax gaps estimated above show the potential revenue gain of a modest improvement in revenue productivity that matches other countries. This is consistent with the finding of the International Monetary Fund (IMF) Technical Assistance Zambia mission report (2013).

An interesting way to look at the tax gap is to see it from the expenditure perspective. In the absence of donor aid and government borrowing, government expenditure must equal government revenue. Zambia's expenditure to GDP ratio is generally about 25% while the tax to GDP ratio is at most 19% thereby demonstrating the inadequacy (6% of GDP) of tax revenues relative to the level of government expenditure. Again, this result finds support in our findings and those of Daal et al (2012).

## 4.2 The relationship between the informal sector and revenue productivity

We present evidence of the relationship between the informal sector and revenue productivity from some selected countries in Table 3. Here, we demonstrate the stylised fact that there is a correlation between a large informal sector and poor revenue performance. Thus, Zambia's poor revenue performance can almost

<sup>3</sup>  $c = a - b$ ;  $e = c*d$

certainly be explained by its large informal sector (Zambia Business Forum, 2010). The implication of this correlation is that efforts to improve revenue performance should be targeted at mechanisms that foster the formalisation of the informal sector.

**Table 3: Informal sector vs. revenue productivity in selected countries (% of GDP)**

Country	Informal % GDP	Tax to GDP
South Africa	29.5%	26.6%
Namibia	33.4%	26.0%
SSA	43.2%	21.0%
Zambia	50.8%	17.0%
Nigeria	59.4%	13.0%
Tanzania	60.2%	12.0%

Sources: WDI, ZBS (2010), Schneider& Frey (2000)

### 4.3 How does Zambia compare with tax rates of selected SACU/SSA countries?

It may be tempting to attribute other countries' 'good' revenue productivity to higher tax rates. Unfortunately, as is shown in Table 4, there is little evidence to support that claim. In fact, Zambia's tax rates of major tax types are slightly higher in some cases compared to those of SACU and SSA selected countries particularly VAT and CIT. Zambia's VAT is 16%, higher than most countries in SACU but not high enough to significantly affect revenues. However there is a considerable difference as regards CIT, with Zambia at 35% compared to that of SACU at 27.8% and that of South Africa at 28%. The PIT has various thresholds across countries and in this case Zambia compares well with countries like South Africa with rates at higher bands of 35% and 40% respectively. Therefore the high tax rates in some cases in Zambia do not significantly determine the lower Tax to GDP revenue collection in Zambia.

**Table 4: Zambia's tax rates compared to selected countries in SACU**

Country	VAT (%)	CIT (%)	PIT (%)
Botswana	12	22	5;12.5; 18.75; 25
Lesotho	14	10; 25	22; 35
South Africa	14	28	18; 25; 30; 35; 38; 40
Namibia	15	34	27; 32; 34; 37
Swaziland	14	30	20; 25; 30; 33
<b>SACU</b>	<b>13.8</b>	<b>27.8</b>	
Zambia	16	10;15;30;35;40	25; 30; 35

## Conclusion

Zambia's revenue productivity is relatively low compared to SACU and SSA countries over the period 2003 to 2011. Even when compared to Malawi and Zimbabwe with whom they share a common history and benchmarks, Zambia is underperforming in terms of tax revenue collections. Zambia's tax revenue to GDP has averaged 17% while that of Malawi and Zimbabwe is slightly above 20%. Zambia's revenue underperformance is partly attributed to its large informal sector and inefficiencies in tax administration considering that its peers have comparable tax rates.

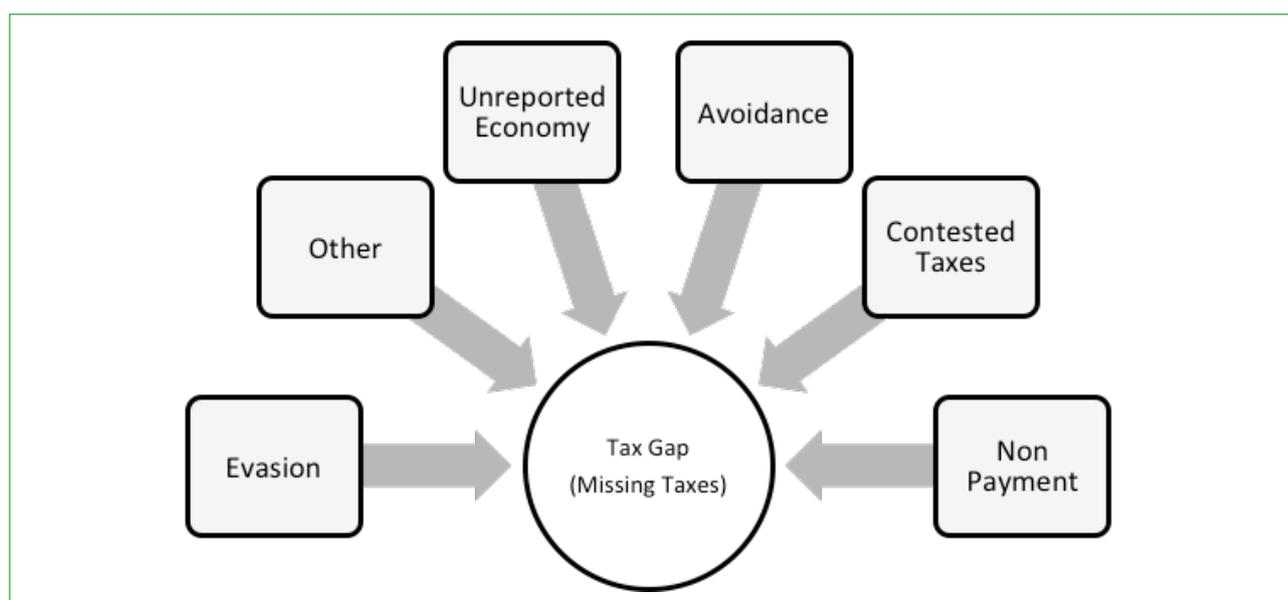
# 5 ESTIMATING THE PAY-AS-YOU-EARN TAX GAP

## 5.1 Defining the tax gap

There is a portion of taxes that eludes the government's tax net each year. This is called the tax gap. The tax gap is the difference between actual tax revenue received and potential tax revenue assuming total compliance with both the letter and spirit of the tax code. Part of this gap is bridged voluntarily by a few law-abiding tax payers who realise their filing errors in due course. The resulting gap, now marginally reduced, becomes the gross tax gap. Compliance efforts by the ZRA and other law enforcement agencies which result in convictions and revenue recoveries further cut the gross tax gap resulting in the net tax gap.

The net tax gap is the standard measure of noncompliance. It is the portion of tax revenue that is totally lost through evasion, avoidance, contestation, non-payment, the hidden economy and other channels. The dominant tax leakage channel varies across countries. In Zambia, the most likely channels are evasion, avoidance and the hidden economy. Together, the three account for the largest share of missing taxes in many countries including Zambia. -

**Chart 13: Elements of the tax gap**



Adapted from HMRC (2010)

A closer inspection of the dominant tax leakage channels will reveal fundamental loopholes in the structure of the economy, the prevailing tax code and the tax morality. The structure of the economy determines the ultimate tax base on which tax is levied. If the structure of the economy is such that it shields certain classes of tax payers from paying tax, a loophole exists. This can happen when an economy has a relatively large 'difficult to tax' sector such as peasant agriculture, informal industries, household production *et cetera*. Secondly, the tax code (law) is the primary collection tool. No taxes can be collected without the backing of the necessary legal instrument. If the legal instrument is weak, loopholes will flourish. The third fundamental loophole results from tax morality. Tax morality is the goodwill/patriotism of taxpayers to comply with tax laws. A tax reluctant citizenry will paralyse revenue collection even with the optimal economic structure and tax laws. Often times, tax morality is determined by the public perception of both the governance system and the revenue body tasked to collect the revenues. In countries where citizens appear to distrust the political leadership, tax morality is low. Similarly, perceptions of corruption by the tax officials erode tax morality. Needless to say, efforts to reduce the tax gap must address the fundamental loopholes discussed here.

## 5.2 Estimating the PAYE Tax Gap of the Self-Employed and Paid Employees Using Household Survey Data

We now investigate the extent of the tax gap with respect to Pay as You Earn (PAYE) tax, which is part of the personal income taxes.

There is abundant evidence that some individuals systematically under-report their incomes to tax authorities. Unlike most wage and salary employees whose incomes are well tabulated and taxes are deducted through the payroll systems employed in organisations, the self-employed have to expend effort to accurately account for their true income. There is a large literature showing that this group (the self-employed) consistently and substantially underreports their income to the tax authorities.

However, many studies focus on estimates of the aggregate size of the shadow economy and/or informal sector. Estimates of the extent of specific forms of underreporting are also important as detailed information is crucial for informed policy-making. This section attempts to estimate the extent of underreporting of PAYE tax by both the self-employed and paid employees. PAYE is a method of deducting tax from employees' emoluments in proportion to what they earn. Emoluments are the total earnings from employment. These include salaries, overtime, leave pay, commissions, fees, bonuses, gratuities and any other payment from employment or office (Section 2 of the Income Tax Act). Under this system, the employer is empowered to calculate tax payable by every employee; deduct tax due from the emoluments; and remit the tax deducted to ZRA.

Using micro-level data from the 2010 Living Conditions Monitoring Survey (LCMS) and comparing it to the reported tax revenue from PAYE, this section estimates the extent of under-performance of PAYE – the PAYE gap - for both the self-employed and paid employees. A paid employee is a person who works for a public or private employer and receives remuneration in wages or salaries either in cash or in kind. A self-employed person is one who operates his or her own economic enterprise(s) and hires no employees.

One of the most influential papers on this topic was by Pissarides and Weber in which they estimated the size of Britain's black economy (defined narrowly as unreported taxable income) by using income and expenditure data drawn from the 1982 Family Expenditure Survey. Pissarides and Weber compared the relationship between food expenditure and income in two groups of workers, self-employed and employees in employment, assuming that employees reported their incomes correctly. For a given level of reported income, the self-employed had a higher food expenditure than employees. Pissarides and Weber concluded that the self-employed's actual income is 1.55 times reported income, and that this part of the unobserved economy was about 5.5 % of GDP in the United Kingdom in 1982 (Pissarides & Weber, 1989).

In a study by Martinez-Lopez in which he used the Spanish household surveys over the period 2006-2009, and in which he replicated the approach by Pissarides and Weber but extended its interpretation by including the concealment of income by salary workers, it was found that the reported income by the self-employed has to be increased by about 25 % to obtain the level of income which would equal the level of underreporting by employees (Martinez-Lopez, 2012).

This study is modelled on the work by Pissarides and Weber and Martinez-Lopez.

Our working assumptions are that all income groups report their consumption expenditure correctly; employees in employment report their incomes correctly; and that the self-employed under-report their income.

### 5.3 Data description and limitations

For our empirical analysis, the study employs micro-level data from a nationally representative sample survey, the 2010 LCMS. This was a cross-sectional survey conducted by the Central Statistical Office (CSO). Due to the recall method used in the survey, the estimates of the incomes and expenditures are as good as the respondents are able to recall.

The relationship between income and expenditures for wage and salary workers and the income and expenditures for the self-employed is explored. According to the 2010 LCMS, 53.7 % of the total employed persons were self-employed (Central Statistical Office, 2010). While a substantial proportion of these individuals may not earn income above the tax threshold, we investigate those who are above the threshold and are inclined to under-report their income. We make a strong assumption that the underlying relationship between incomes and expenditures, discounted for under-reporting, is similar between those in wage employment and those in self-employment. We then estimate the relationship between incomes and expenditures for the salary and wage earners using Two-Stage Least Squares regression and derive coefficients from this relationship. We then use the estimated coefficients from the salary and wage earners to predict the 'true' income of those in self-employment based on their reported level of food expenditure. By disaggregating the data, the tax gap can then be inferred by considering the resulting income gap. For the wage earners, whose income is assumed to be correctly reported, we apply their tax payable to the number of employees classified as wage earners who are above the tax threshold.

In undertaking this exercise, the data had to be interrogated and estimates were discounted for under- or over-reporting of expenditure and income. For example, with regard to expenditure, the expenditure data in the LCMS distinguishes between frequently purchased and non-frequently purchased goods and services as well as between food and non-food items. Most of the under-reporting of expenditures is in the infrequently purchased non-food items, while on the food side, expenditures on food eaten away from home is and may be under-reported. In other instance, over-reporting of expenditure is possible. For those in self-employment, there is no clear distinction between what is for business and what is for personal use. It is, therefore, likely that a car purchase will be recorded as household final consumption even though some of the expenses may be for the business.

Due to the foregoing and for the purposes of this study, we restrict our analysis to the household expenditure on frequently purchased food items, including food eaten away from home.

### 5.4 Sample construction and procedures

To construct the sample, data from the income and expenditure sections of the LCMS are pooled together. The sample is restricted to households who reported some expenditure. The sample is further restricted by excluding any households who reported a positive amount of farm income. Farmers are excluded because the relationship between income and food expenditures may differ for individuals who grow some of their own food. Households with zero or negative reported measures of household income or zero reported measures of household expenditures are also excluded.

Consumption expenditure data on food and non-food items often serves as a useful proxy for household income as income is often under-reported by households. The expenditure data in the LCMS is reported at different intervals (fortnightly, monthly, per term for education and annually). The different time intervals were standardised to one month.

Non-farm income data that was used included income from non-farm businesses; regular gross monthly salary as well as regular and non-regular allowances from the respondents' main jobs and from second jobs; income from rentals, remittances, interest on savings, and dividends on shares, securities, bonds, treasury

bills, etc. These were already reported on a monthly basis, so no standardisation was required.

Using the household identification number as the unique identifier, the income dataset was merged with the expenditure dataset to create one dataset.

The self-employed and paid employees were defined by collapsing relevant variables. We do not define the self-employed based on their self-reported status due to the drawbacks inherent in this definition. Firstly, the self-reported employment status refers only to the household head, but the household head may not be the only income earner, and the employment status of the other adult household members who are income earners is not known. Secondly, even if it is established that the household head is the sole income earner, he/she may have both business-related income and wage income. Thirdly, from experience, households that have both paid employment and self-employment tend to report their status as in paid employment.

Table 5 reinforces these points. It shows that one-fifth of the sample where the household head is reported to be self-employed did not report any business-related income. And a significant proportion of households who were reported to be in wage employment reported some business-related income.

**Table 5: Split of the sample using different definitions of self-employment**

Self employed		Paid workers			Self-reported Employment Status		Total
Share of business income in total income	0 %	Count	1021	3951	4972		
		% within Share of business income in total income	20.5%	79.5%	100.0%		
	> 0 %	Count	3009	473	3482		
		% within Share of business income in total income	86.4%	13.6%	100.0%		
Total		Count	4030	4424	8454		
% within Share of business income in total income		47.7%	52.3%	100.0%			

This shows that there are many households that earned both wage income and business income. We therefore focus on under-reporting by households with business income, and the self-employed are defined as such.

## 5.5 The Empirical Model Specification

In the estimation, the Two-Stage Least Squares Regression (2SLS) model is used to obtain an estimate of under-reporting of income by self-employed worker households in relation to salary worker households.

In essence, food consumption of both types of households depends on reported income, on a dummy distinguishing whether the household head is self-employed or not, and a number of variables controlling for different socio-economic and demographic characteristics. These control variables include the household head's level of education, age, sex and regional dummies. We assume that the estimated coefficients of the control variables and of the income variable are the same for households of salary workers and households with business income.

We then use the estimated coefficients from the salary worker households to predict the 'true' income of those in self-employment based on their reported level of food expenditure by estimating an under-reporting factor. This factor indicates how much regular income of self-employed worker households must be scaled up to attain the "true" regular income that would be comparable to that of wage earners to attain

the same propensity of food consumption as households of wage earners. The full details of the model are discussed in Annex I.

## 5.6 Calculation of Tax Payable

Under the PAYE system, the amount of tax which the employer deducts from any pay depends on the following:

- a) The employee's total gross pay
- b) The applicable tax rates; and
- c) Statutory deductions (contributions to an allowable Pension Scheme, e.g. NAPSA) up to K434.74 (for 2010) or the actual 5% of the gross salary, whichever is lower.

To estimate the potential PAYE, and using the tax thresholds for 2010, we estimate the average tax that each person who is self-employed and who is a paid employee is supposed to pay to the tax authorities. The first K800.00 was not taxable; the amounts between K800.00 and K1,335.00 attracted a tax of 25 %; the amounts between K1,335.00 and K4,100.00 were taxed at 30 %; and the amounts above K4,100.00 were taxed at 35 %.

To estimate the tax gap on a monthly basis, the calculated tax is multiplied by the number of persons in each employment category as obtained from the survey. This is then annualised and compared to the reported PAYE from the Fiscal Table of Central Government Operations as reported by the Ministry of Finance.

The resulting tax gap is then expressed as a percentage of reported PAYE, as a percentage of tax revenue and as a percentage of GDP.

## 5.7 Analysis of the Results

Table 6 gives the main descriptive statistics of the income and consumption measures for households of wage earners (with no business income) and households with business income. Households of wage earners report a lower mean of food consumption than households with business income greater than 20% of the total regular income. However, when it comes to income, households of wage earners report a higher mean of total household income than the households with business income. Additionally, the standard deviations (expressed in brackets) of income and food consumption are higher for the self-employed than for the wage earners, reflecting a more volatile pattern for the self-employed.

**Table 6: Differences between Paid Employees and the Self-Employed Households in Food Expenditure and Regular Income**

	Wage earners	Business income $\geq$ 20% of total reported income
<b>Log food consumption</b>	8.87 (1.18)	8.92 (1.28)
<b>Log regular income</b>	14.66 (0.66)	14.41 (1.01)

The mean of the log of food consumption for the self employed is 8.92 while the mean of the log of food consumption for the wage earners is 8.87. Similarly, the log of total regular income for the self-employed is 14.41 while for the wage earners it is 14.66. Assuming independence of the two groups, normal distribution and equal variances, we use the independent samples test to compare the means of food consumption and the total income for the two groups at a 0.05 level of significance. Since the significance value of the test for the log of food consumption is greater than 0.05, we conclude that the differences in the log of food consumption is not significant, while there is a significant difference in the log of total income for both groups.

Given the fact that there are no significant differences in the food consumption between the two groups, we can conclude that the two groups have the same propensity of food consumption. And assuming that food consumption is correctly reported, the income gap can be explained by income underreporting by the households with business income.

**Table 7: Independent Samples t Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		Sig.	t	df	Sig.	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
								Lower	Upper	
Log Food	Equal variances assumed	15.511	.000	-1.631	6147	.103	-.05232	.03207	-.11519	.01056
	Equal variances not assumed			-1.601		.109	-.05232	.03268	-.11639	.01175
Log Regular Income	Equal variances assumed	493.236	.000	11.809	6147	.000	.25160	.02131	.20983	.29336
	Equal variances not assumed			10.750		.000	.25160	.02340	.20571	.29748

We use the 2-Stage Least Square regression to estimate the food Engel curve. The model summary shows the R square of 6.3%. This shows that only 6.3% of the variation in food consumption is explained by the model. The R square in a 2-Stage Least Square regression is of little analytical value.

**Table 8: Model Summary**

Multiple R	0.251
R Square	0.063
Adjusted R Square	0.063
Std. Error of the Estimate	1.213

The ANOVA table tests the acceptability of the model from a statistical perspective. The significance value of the F statistic in the ANOVA table is less than 0.05, which means that the variation that is explained by the model is not simply due to chance. This shows that the regression was a “statistically significant” reduction, since the coefficients of the additional regressors were significantly different from zero as shown in the table of coefficients. This gives us confidence that though the R squared, which is the coefficient of variation, is low, the regression is statistically significant.

**Table 9: Analysis of Variance**

		Sum of Squares	df	Mean Square	F	Sig.
Equation 1	Regression	16968.202	7	2424.029	1646.534	.000
	Residual	251687.636	170960	1.472		
	Total	268655.838	170967			

The table of coefficients shows the coefficients of the fitted regression line which are significant at the 5% level. Invoking equation (8), it states that the expected food consumption is equal to:  $\log \text{Income} + 0.089 \text{ Employment status dummy} + 0.010 \text{ Age} + 0.251 \text{ Marital status} - 0.162 \text{ Education} + 0.523 \text{ Age group} - 0.572 \text{ Rural-Urban}$ .

The propensity of consumption of food, is 0.137, while the coefficient of the employment status dummy is 0.089.

**Table 10: Coefficients of the 2-SLS regression**

B		Unstandardized Coefficients		Beta	t	Sig.
		Std. Error				
Equation 1	(Constant)	7.154	.056		127.463	.000
	LN_income	.137	.004	.088	35.747	.000
	Employment_Status1	.089	.006	.034	13.777	.000
	age	.010	.000	.077	31.282	.000
	marital	.251	.007	.083	35.398	.000
	Education	-.162	.008	-.049	-20.360	.000
	age group	.523	.018	.071	28.759	.000
	RURAL_URBAN	-.572	.007	-.201	-84.248	.000

From this regression, we now calculate the simplified underreporting factor as 1.915. This means that the reported income of households with business income over 20% (the self-employed) should be multiplied by 1.915 to attain the same propensity of food consumption as households of wage earners. Put differently, households with business income over 20% have unreported of their “true” income. This “true” income in this context is relative to the income reported by wage earners.

In Table 11, we show that the baseline model entails that 47.8% of the income is left unreported. The table also shows considerable under-reporting of total income in households in which the share of business-related income is relatively small and in households where the share of business-related income is relatively high.

We also compare with the underreporting for households with self-reported employment status. Using self-reported employment status, 56.3% of the income is left unreported.

**Table 11: Estimates of income underreporting by households with business income**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<b>Baseline</b> Self-employed = Business income >=20%, wage earners = Business income= 0%	Business income 5-10%	Business income 10- 20%	Business in-	Business income >=50%	Business income 50-75%	Business income >=75%	Self-report- ed employ- ment status
	0.137	0.130	0.134	0.145	0.150	0.134	0.147	0.110
	0.089	1.060	0.133	0.092	0.149	0.297	0.113	0.091
Under-reporting factor	1.915	3,476.7	2.698	1.886	2.7	9.174	2.157	2.287
Share of “true” income unreported	47.8%	100.0%	62.9%	47.0%	63.0%	89.1%	53.6%	56.3%

### 5.7.1 Estimation of Potential PAYE

Using the baseline model and the 2010 tax thresholds for Pay As You Earn (PAYE), and the respective tax rates applied within each threshold, and accounting for income payable to social security funds/schemes, we estimate the average tax payable for both the self-employed and the wage earners. This was computed at household level. On average, a household whose household head is self-employed.

Table 12 shows that a household whose head is a wage earner with monthly income above K800.00 in 2010 was expected to pay K804.00 in personal income taxes, specifically PAYE, while a household with a

household head who is self employed was expected to pay about K1, 490.00.

**Table 12: Estimates of reported income, “true” income, taxable income and tax payable, 2010**

Employment status	Average Reported Income	Average “True Income”	Average Taxable Income	Average Tax Payable
Wage Earner	3,511.16	3,511.16	3,370.67	804.16
Self Employed	3,146.10	5,530.84	5,362.42	1,490.63

### 5.7.2 Estimation of the PAYE Tax Gap

Of the 3,204,000 persons in the paid and self-employed categories, 75.2 % were reported to be self employed. The proportion of the self-employed whose monthly income was above K800.00 was 10.3 % while the proportion of paid employees whose income was above K800.00 per month was 58.1 %. This translated to 710,000 persons whose income was above K800.00 per month.

**Table 13: Share of self-employed and wage earners whose income equal to and above the tax threshold, 2010**

Selected	total_income >= K800	Total	Share
<b>Self Employed</b>	<b>247,409</b>	<b>2,409,584</b>	<b>10.3%</b>
Central Govt Employee	216,759	251,177	86.3%
Local Govt/ Council Employee	11,241	17,641	63.7%
Parastatal/ Quasi-govt Employee	24,813	33,095	75.0%
Private Sector employee	197,673	469,923	42.1%
NGO Employee	10,196	20,007	51.0%
International Organisation/Embassy Employee	1,556	3,301	47.1%
<b>Total wage earners</b>	<b>462,238</b>	<b>795,144</b>	<b>58.1%</b>
Total	709,647	3,204,728	22.1%

Source: CSO, 2010 LCMS; authors’ own calculations

Using the average estimated potential taxes for each self-employed and paid employee, the total potential tax was estimated at K8,886 million in 2010. Compared to the reported PAYE of K3,683.5 million, the tax gap, which is the difference between the reported PAYE and the estimated potential PAYE, was estimated at K5,203 million. This translates to 6.7 % of GDP or 40.3 % of the total tax revenue. These findings are illustrated in Table 14.

**Table 14: Estimation of the PAYE gap, 2010**

		Self em- ployed	Paid Em- ployees	Total
<b>A</b>	Total employed (number)	2,409,584	795,144	3,204,728
<b>C</b>	Proportion with income > K800,000/month (%)	10.3%	58.1%	22.1%
<b>D</b>	Total employed with income >K800,000/month (number)	247,409	462,238	709,647
<b>E</b>	Estimated PAYE (monthly) [ZMW million]	368.796	371.714	740.509
<b>F</b>	Estimated PAYE (annualised) [ZMW million]	4,425.6	4,460.6	8,886.1
<b>G</b>	Tax revenue from PAYE (as reported in Fiscal Table) [ZMW million]			3,683.5
<b>H</b>	Tax GAP (Estimated <i>minus</i> Actual) [ZMW million]			5,202.6
<b>J</b>	GDP 2010 [ZMW million]			77,666.6
<b>K</b>	PAYE Gap as % of GDP			6.7%
<b>L</b>	PAYE Gap as % of total tax revenue			40.3%

Source: 2010 LCMS, 2010 Fiscal Table – Ministry of Finance, author’s own calculations

Table 14 further shows that of the 795,000 wage earners, 58.1 % earned above K800 per month in 2010. This translates to 462, 000 wage earners who would potentially contribute K4.5 billion to the treasury. Even if the self-employed were to be ignored and ZRA concentrated their efforts on just the wage earners, they would potentially collect K800 million more than the K3.7 billion that they collected in PAYE taxes in 2010.

## 5.8 Conclusion

The estimate of the size of the PAYE tax gap using household survey data relies on three assumptions: first, all income groups report their consumption expenditure correctly; secondly, employees in employment report their incomes correctly; and thirdly, the self-employed under-report their income.

We employ two different ways of identifying the self-employed, i.e. using the self-reported status and using the share of business income.

On the basis of these assumptions, and using the share of business income, we arrive at the conclusion that it is found that the self-employed under-reported their income in the household survey by 47.8 %. The “true” income in this context is relative to the income reported by wage earners. Using the self-reported status, we establish that the underreporting of income is 56.3 %. We consider the use of the share of the business income to be a more reliable indicator of unreported income.

Applying the tax thresholds to the ‘true’ income of both the self employed and the paid employees, we estimate the average tax liability for each household. This amount is then multiplied by the average number of people with taxable income in each of the two categories, annualised and compared to the reported PAYE for 2010. We arrive at the PAYE gap amounting to K5.2 billion, which is 6.7 % of GDP and 40.3% of the total tax revenue.

This study unmasks the potential tax that needs to be collected from individuals: a huge sum of money in excess of K5 billion remained uncollected in personal income taxes in 2010. Notwithstanding the difficulty and administrative burden that would result from collecting this money, as pointed out by Phiri and Kabaso (2012), this study shows that about 10 % of the many people who are in self-employment were above the tax threshold for paying PAYE tax in 2010 and would potentially contribute as much taxes as those in wage employment. The Zambia Revenue Authority needs to conduct regular assessments to enable them collect taxes from individuals and households who are self-employed and are eligible to pay tax.

This study has shown that by just concentrating on the wage earners who are above the tax threshold, the Zambia Revenue Authority would have collected an additional K800 million from those classified as wage earners. The broadening of the tax base should start with ensuring that all the eligible wage earners are taxed as expected, even before taxing the 10 % of the self-employed. As PAYE is collected from source, is relatively inexpensive to collect and is one of the tax types effectively collected by the ZRA, it would be prudent to consider this tax type for increasing the tax base by bringing more employed individuals into the tax net than is currently the case.

## 6 RECOMMENDATIONS

Government should undertake comprehensive tax reforms that should include the following:

**1. Review the law in order to strengthen it to address tax evasion. This must include among others:**

- Simplification of tax laws. Simple tax laws are easy to understand and comply with.
- Stiffer penalties: Charge interest at above market rate, strengthening enforcement on jail sentences and create tax courts to deal with tax offenders, revocation of operating licenses and blacklisting the directors of companies involved in tax evasion. The law on Double Taxation Agreements should be strengthened to prevent MNCS evading tax.
- Review the law to include filing of personal income returns by the self-employed and wage earning employees.

**2. Review the administrative measures used to address tax evasion to include among others:**

- Restructuring the Audit and Investigations departments by increasing the number of officers and equipping them with skills to combat tax evasion.
- Continuous upgrade of the information systems to accommodate changes in the economy. Significant resources are required to constantly update the information system capable of tracing evasion transactions.
- Increase compliance through embarking on taxpayer education to improve tax literacy. This can be done by establishing call centres in each provincial centres in Zambia for the purpose of taking tax literacy closer to the people.

**3. Streamline tax incentives.** Tax incentives should be reviewed continuously to ensure those which no longer serve or have served their purpose are phased out. Maintaining incentives which appear to be disproportionately favouring a sector of the economy at the expense of tax revenue deters tax morality in the rest of the sectors and therefore encourages tax evasion. Tax incentives should only be awarded to firms or sectors that add value in terms of employment creation, skills transfer and foreign exchange earnings.

# ANNEX I: The Empirical Model and Estimation

We use the Two Stage Least Squares regression method to build the model.

Let  $Y_i$  be the true income of household  $i$ . We shall distinguish two types of households, denoted by  $S$  and  $SE$ , which refer to salary worker and self-employed worker households, respectively.

A relation between the observable income  $Y_i$  and the permanent income  $Y_i^p$  is set up:

$$Y_i = p_i Y_i^p, \quad (1)$$

where  $p_i$  is a random variable to take into consideration the deviations of observable income from its permanent, long-run value. It is assumed that the mean of  $p_i$  is the same for all households in the economy while the variance of  $p_i$  is assumed to be higher for self-employed households than for salary workers. This is a reasonable assumption as long as self-employed workers face more risks and, consequently, a more volatile income.

Let  $Y_i'$  be the disposable income reported by households in the 2010 LCMS. We modify our assumption that salary workers report all their income correctly and allow for the phenomenon of underreporting of income also for salary workers. True income  $Y_i$  and reported income  $Y_i'$  are related as follows:

$$Y_i = k_i Y_i', \text{ with } k_i \geq 1. \quad (2)$$

where  $k_i$  is a random variable that indicates the extent to which household  $i$  underreports their true income  $Y_i$ . Put differently,  $k_i$  is the number by which the reported income  $Y_i'$  must be multiplied in order to get the true income  $Y_i$ . Both the self-employed and the salary workers under-report their income, but in different proportions:  $k_i$ , that is, self-employed households under-report more disposable income than salary households.

Combining equations (1) and (2),  $p_i Y_i^p = k_i Y_i'$

For ease of interpretability and due to the skewness of income, logarithmical transformations are employed:

$$\ln p_i + \ln Y_i^p = \ln k_i + \ln Y_i'$$

The log of permanent income is therefore

$$\ln Y_i^p = \ln Y_i' - \ln p_i + \ln k_i \quad (3)$$

Thus the terms  $\ln k_i - \ln p_i$  captures the unreported log permanent income that must be added to the log reported income  $\ln Y_i'$  to attain the "true" log permanent income  $\ln Y_i^p$ .

The random variable  $v_i$  is assumed to have a log-normal distribution, and  $v_i$  can be expressed as the deviation from its mean:

$$\ln k_i = \mu_k + v_i$$

The variable  $\mu_k$  is the mean of the logarithm of  $k_i$  and  $\mu_k > 0$  would consequently entail underreporting by self-employed households. The random variable  $v_i$  is assumed to have zero mean and constant variance  $\sigma_v^2 > 0$  within each group of self-employed and paid employees (the variance for the group of household of the self-employed is labelled  $\sigma_{v|SE}^2$ , while the variance for the group of households of wage earners is labeled  $\sigma_{v|SW}^2$ ).

The main structural equation in the Pissarides and Weber (1989) analysis is a food expenditure function,

$$\ln c_i = \alpha + \beta \ln Y_i^p + X_i' \varphi + \varepsilon_i \quad (4)$$

where  $\ln c_i$  is the food expenditure of household  $i$ ,  $\mathbf{X}_i$  is a vector of control variables of households characteristics affecting consumption,  $\beta$  is a scalar that can be interpreted as the marginal propensity to consume food, and  $\varepsilon_i$  is a white noise. Equation (4) is in a sense a log-linear Engel curve for food consumption. The reason for computing the Engel curve is because there are no data on  $p_i$  and  $k_i$ . In this study, we aim to estimate  $k_i$  which is the measure of underreporting.

It is assumed that

$$\ln p_i = \mu_i^p + u_i \quad (5)$$

$$\ln k_i = \mu_i^k + v_i \quad (6)$$

are both log-normally distributed, with particular values of  $\mu^p$  and  $\mu^k$  for salary and self-employed workers. Disturbances  $u_i$  and  $v_i$  are assumed to have zero mean and constant variances  $\sigma_{u_i}^2$  and  $\sigma_{v_i}^2$ .

Substituting (5) and (6) into (3) and in turn into (4), we get the following consumption function:

$$\ln c_i = \alpha + \beta \ln Y_i' - \beta(\mu_i^p - \mu_i^k) - \beta(u_i - v_i) + \mathbf{X}_i^p \varphi + \varepsilon_i \quad (7)$$

Further manipulations results into the following Engel Curve, which is the empirical equivalent of equation 7.

$$\ln c_i = \alpha + \beta \ln Y_i' + \gamma D_i + \mathbf{X}_i^p \varphi + \varepsilon_i \quad (8)$$

where  $\ln c_i$  is the log of household food consumption,  $\ln Y_i'$  is the log reported regular income and  $D_i$  is a dummy variable which takes the value one for households with business-related income and zero for salary workers. The control variables consist of a number of household characteristics captured in a column vector  $\mathbf{X}_i$ . These include the household head's level of education, age, sex and regional dummies.

We assume that the estimated coefficients of the control variables and of the income variable are the same for households of salary workers and households with business income.

In essence, equation (8) states that food consumption of both types of households depends on reported income, on a dummy distinguishing whether the household head is self employed or not, and a number of variables controlling for different socio-economic and demographic characteristics.

The underreporting factor  $k$  indicates how much the regular income of the households with business income must be scaled up to attain the "true" regular income that would be comparable to that of wage earners:

$$k = \exp\left(\frac{\gamma}{\beta} + \frac{1}{2}(\sigma_{\omega|SE}^2 - \sigma_{\omega|SW}^2)\right)$$

The underreported income out of the total income, is computed as  $(k - 1)/k$ . The simplified measure  $k_s$  is computed as:

$$k_s = \exp\left(\frac{\gamma}{\beta}\right)$$

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