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## Taxation As a Social Contract: Public Goods and Collective Action

An empirical analysis of determinants of tax compliance in Sub-Saharan Africa

Master's thesis in Political Science

Supervisor: Espen Moe

Trondheim, June 2016

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# Abstract

Increasing tax revenue is an important aspect of development policy as it is associated with sustainable economic development. In order to increase tax compliance, it is vital to understand its determinants. According to the fiscal contract theory, people assent to pay taxes because they value what they gain from it - public services. Tax paying is a horizontal relationship between the citizens and the state. However, focusing especially on income taxation, the vertical relationship between the citizens receives more and more attention. Because paying taxes implies giving up a part of your personal income for the benefit of your co-citizens, taxation becomes a classical collective action dilemma. Thus, the relationship between the citizens becomes an important determinant for tax compliance. The main argument put forward in this thesis is that a society that aims to increase tax compliance should be a socially cohesive society, which includes providing public services, but also values such as social capital, a common national identity and social solidarity. This is of immediate relevance to Sub-Saharan Africa, where there are huge variation in both public service provision and social cohesion, and where it is vital to understand the determinants of tax compliance in order to increase the tax to GDP-ratio in the region. Using data from the Afrobarometer survey Round 5 (2011-2013), this thesis performs a binary logistic cross-country analysis across 28 countries in Sub-Saharan Africa. The main finding in this thesis is that the traditional approach to the fiscal contract is what matters the most. Additionally, political legitimacy is an important determinant of tax compliance. However, social cohesion does provide some explanatory power in the sense that social solidarity also increases tax compliance. There is also reason to believe that there are huge differences between the countries, which paves the way for additional research on this topic.



# Sammendrag

Økte skatteinntekter er ønskelig for alle stater, fordi det er forbundet med bærekraftig økonomisk utvikling. For å øke skattevilje er det viktig å forstå hvorfor folk betaler skatt. I følge fiskal kontrakt-teori velger individer å betale skatt fordi de verdsetter godene de får igjen for det, i form av offentlige tjenester. Skatteinnbetaling er dermed et horisontalt forhold mellom staten og innbyggerne. Når man ser spesielt på inntektsskatt, derimot, så blir det å betale skatt å gi opp en del av egen inntekt til nytte for hele samfunnet. Dermed blir det å betale skatt et dilemma hvor egen nytte veies opp mot hele samfunnets nytte. Forholdet mellom innbyggerne er dermed en viktig forklaringsfaktor for skattevilje. Hovedargumentet i denne masteroppgaven er at et samfunn som ønsker å øke skatteviljen må være et samfunn med sterke sosiale bånd, mellom innbyggerne og staten, men også innbyggerne seg imellom. Denne problemstillingen er spesielt relevant for Afrika sør for Sahara, der det er stor grad av variasjon i kvaliteten på offentlige tjenester, og sosiale bånd, og hvor det er viktig å forstå forklaringsfaktorene til skattevilje for å kunne øke statens skatteinntekter. Ved å bruke data fra Afrobarometer runde 5 (2011-2013), gjøres det en binær logistisk regresjonsanalyse over 28 land fra Afrika sør for Sahara. Resultatet fra regresjonsanalysen viser at det er den tradisjonelle fiskal-kontrakt teorien som har størst forklaringskraft for skattevilje i Afrika sør for Sahara. En stat som søker å øke skatteviljen må være politisk legitim og tilby velferdstjenester. Imidlertid er sosiale bånd også viktig, i form av fattigdomsbekjempelse. Det er likevel grunn til å tro at det er store variasjoner mellom land, så mer forskning bør utføres på dette området.



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Any remaining errors are my own responsibility.

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Elise Ellingsen Tengs

*Bergen, June 2016*





# Table of contents

- 1 Introduction ..... 1
  - 1.1 Scientific contribution ..... 3
  - 1.2 Structure of the thesis ..... 4
- 2 Theory, existing knowledge and hypotheses..... 7
  - 2.1 What is tax compliance and why is it important?..... 7
  - 2.2 Taxation as a social contract..... 10
    - 2.2.1 The provision of public goods..... 15
    - 2.2.2 Social values..... 17
    - 2.2.3 Common national identity ..... 19
    - 2.2.4 Social solidarity..... 22
  - 2.3 Summary of hypotheses and causal framework ..... 24
- 3 Data, measurement and research method ..... 27
  - 3.1 The employed data material ..... 27
  - 3.2 Measurement ..... 29
    - 3.2.1 The dependent variable ..... 29
    - 3.2.2 The independent variables..... 33
    - 3.2.3 Summary statistics..... 39
  - 3.3 Research method..... 41
    - 3.3.1 The logit model ..... 41
  - 3.4 Assumptions of the logit model..... 43
  - 3.5 Limitations to the analysis ..... 44
    - 3.5.1 Causality..... 44
    - 3.5.2 Challenges with survey data..... 45
    - 3.5.3 Country fixed effects ..... 47
- 4 Analysis ..... 49
  - 4.1 Descriptive analysis ..... 49
  - 4.2 Regression analysis..... 51
    - 4.2.1 Model building ..... 51
    - 4.2.2 Interpretation of the findings from the full model..... 59
    - 4.2.3 Comparing the findings from the full model..... 66
  - 4.3 Testing the assumptions of the final model ..... 69

4.4	A sum-up of the hypotheses .....	71
5	Conclusion.....	73
5.1	Summary and main findings.....	73
5.2	Lessons learned.....	75
5.3	Suggestions for further research .....	75
	References .....	79
	Appendix A Details about sample and variables .....	87
	Appendix B Statistical tests.....	91
	Appendix C Regression models .....	93
	Appendix D Testing the assumptions of the final model .....	103
	Appendix E Suggestion for further research: Country-specific analysis .....	107

## List of tables

Table 1: Forrest and Kearns' conceptualization of social cohesion.....	14
Table 2 Summary statistics for whole sample.....	39
Table 3 Summary statistics for final sample .....	40
Table 4 Descriptive analysis of socio-economic factors (weighted and clustered sample) .....	50
Table 5 Descriptive analysis of other control variables (weighted and clustered sample) .....	50
Table 6 Logistic regression of public services and tax compliance .....	52
Table 7 Logistic regression of social values and tax compliance .....	55
Table 8 Logistic regression of identity and solidarity .....	57
Table 9 Significance test for interaction terms.....	63
Table 10: A summary of the hypotheses .....	71
Table 11 Countries and sample size .....	87
Table 12 Descriptive analysis non-weighted and non-clustered sample.....	88
Table 13 Principal Component Analysis.....	88
Table 14 Correlation matrix .....	89
Table 15 Wald test for interaction variables .....	91
Table 16 Bivariate logistic regression .....	93
Table 17 Logistic regression with alternative measure of tax compliance .....	93
Table 18 Logistic regression of tax compliance and income inequality .....	94
Table 19 Logistic regression of pride of nationality .....	95
Table 20 Logistic regression of social trust .....	96
Table 21 Logistic regression dropping variables .....	97
Table 22 Model 16 without problematic observations.....	98
Table 23 VIF-test .....	103

## List of figures

Figure 1 Tax to GDP-ratio over time .....	3
Figure 2 Tax to GDP-ratio in Africa .....	4
Figure 3 Reasons for tax evasion amongst individuals in Sub-Saharan Africa .....	8
Figure 4 The fiscal contract.....	15
Figure 5 Causal framework .....	25
Figure 6 Share of population being tax compliant in each country .....	49
Figure 7 Probability of tax compliant attitude .....	59
Figure 8 Marginal effects of social trust*compared living conditions.....	62
Figure 9 Marginal effect id*ethnic discrimination.....	64
Figure 10 Percentage change in odds of tax compliant attitude.....	68
Figure 11 Distribution of the dependent variable (ordinal).....	90
Figure 12 Distribution of the dependent variable (dichotomous) .....	90
Figure 13 Change in Pearson chi-squared vs. predicted probability for model 16 .....	104
Figure 14 Change in deviance vs. predicted probability for model 16 .....	104
Figure 15 Influence vs. predicted probability for model 16.....	105



# 1 Introduction

For any state, revenue is vital. “Raising revenue is the most basic task of the state. Before a state can protect its citizens, before it can provide justice or administer a bureaucracy, it needs to raise money.” (D. Bräutigam, 2002, no page number). In general, the government has three main sources of revenue (i) domestic revenue from taxation, (ii) natural resources and (iii) foreign aid. A wide range of literature has thoroughly examined the damaging consequences of being dependent on either of the two latter sources, so called unearned income. Raising domestic revenue through taxation is especially important to poor countries as they are prone to both the ‘natural resources curse’ and the ‘aid dependency trap’, which impedes both political and economic development.<sup>1</sup> Rakner (2001, p.125) states that “revenue is the lifeblood of the state and taxation is the primary mechanism of revenue generation”. In 2013, the tax to GDP-ratio was 14.6 % of GDP for high income countries, 13.5 % for upper middle income, and 11 % for lower middle income countries (The World Bank, 2013).<sup>2</sup> Figure 1 shows how, over time, high-income countries have a higher tax to GDP-ratio than low-income countries. Increasing taxation is an important part of the development agenda. The full potential for tax collection in developing countries is far from reached, but widespread tax evasion and avoidance make taxation a challenge (Gupta & Tareq, 2008; IMF, 2011).

According to fiscal contract theorists, citizens consent to pay taxes because they receive public goods in return (Bräutigam, Fjeldstad, & Moore, 2008; Levi, 1988; Schumpeter, 1991; Tilly, 1990). This creates a contractual relationship with “duties and rights for each contract party” (Feld & Frey, 2007, p. 104). Hence, “taxation and fiscal policy are at the core of every society’s social contract. Citizens pay their taxes in exchange for public services and goods” (Daude, Gutiérrez, & Melguizo, 2012, p. 5). Persson (2008b) challenges this ‘welfare state approach’ for not taking into account the nature of a welfare state. Because taxation finances public goods, it is a classical collective action problem (D’Arcy, 2011). When choosing to enter a social contractual relationship with the state, the citizens also consent to the same type of relationship

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<sup>1</sup> See for instance Knack (2001), Birdsall (2007), Ear (2007), Djankov, Montalvo and Reynal-Querol (2008), Abuzeid (2009), and Bräutigam and Knack (2004) for an analysis of ‘the aid dependency trap’, and Sachs and Warner (2001), De Mesquita and Smith (2010), Ross (2012) and Sachs and Warner (2001) for more information about the ‘natural resources curse’. Smith (2008) discusses how unearned income in general can reduce political legitimacy.

<sup>2</sup> The tax to GDP-ratio is the percentage of a country’s GDP that comes from taxation.

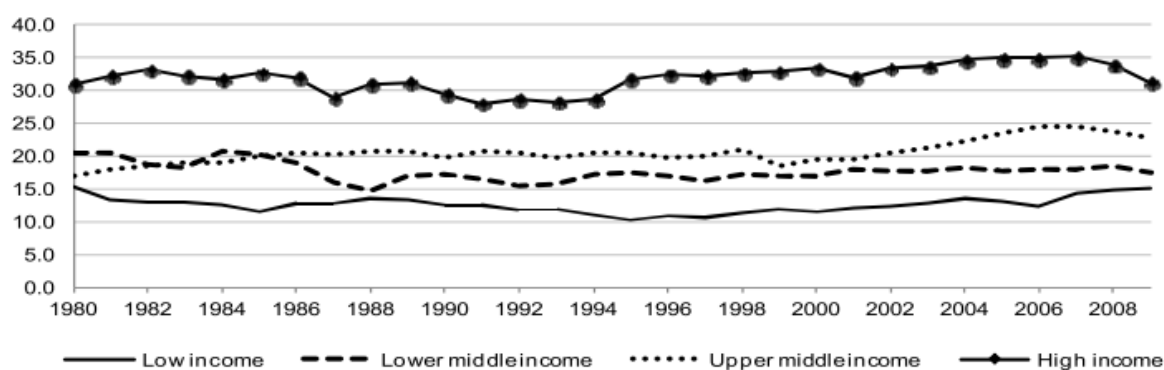
with each other. For Rawls (1971, p.12), this is a situation where “the principles of justice are chosen behind a veil of ignorance”. Establishing the fiscal contract requires the citizens to agree to share a proportion of own wealth with their co-citizens in order to finance a welfare state. Hence, the fiscal contract is horizontal; between the citizens and the state, and vertical; between the citizens (D’Arcy, 2011).<sup>3</sup> The fulfilment of the former is theoretically straightforward; it requires the government to deliver public services. The fulfilment of the latter is not so straightforward; it requires collective action between the citizens, who must agree to share a portion of their own wealth with their co-citizens. This is of immediate relevance to Sub-Saharan Africa, where there is a large variation in the degree of tax capacity (Mkandawire, 2010). Figure 2 shows the difference in the tax to GDP-ratio in Africa, illustrating the need to increase the tax to GDP-ratio in the region. At the same time, the provision of public services is poor, and the legitimacy deficit and fragmentation in many states makes it hard to establish a social contract (Englebert, 2000, pp. 71–122). Against this background, I seek to answer the following research question:

### **What are the social prerequisites for establishing a fiscal contract in Sub-Saharan Africa?**

The main argument put forward in this thesis is that a society that wants to succeed in establishing a fiscal contract must be *socially cohesive*, in addition to provide the necessary public goods. One cannot function without the other. This is a society where the citizens solve the problem of collective action that taxation presents. Citizens must accept that a part of their personal income finances their co-citizens. This requires high levels of social trust and having a common national identity without salient social cleavages. The government plays an important role in promoting these values by reducing the ethnic cleavages, promoting economic equality, in addition to provide the necessary public services.

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<sup>3</sup> D’Arcy (2011) also includes a comparative treatment perspective, which I will include as a part of the social cohesion-approach.



Source: The IMF (2011)

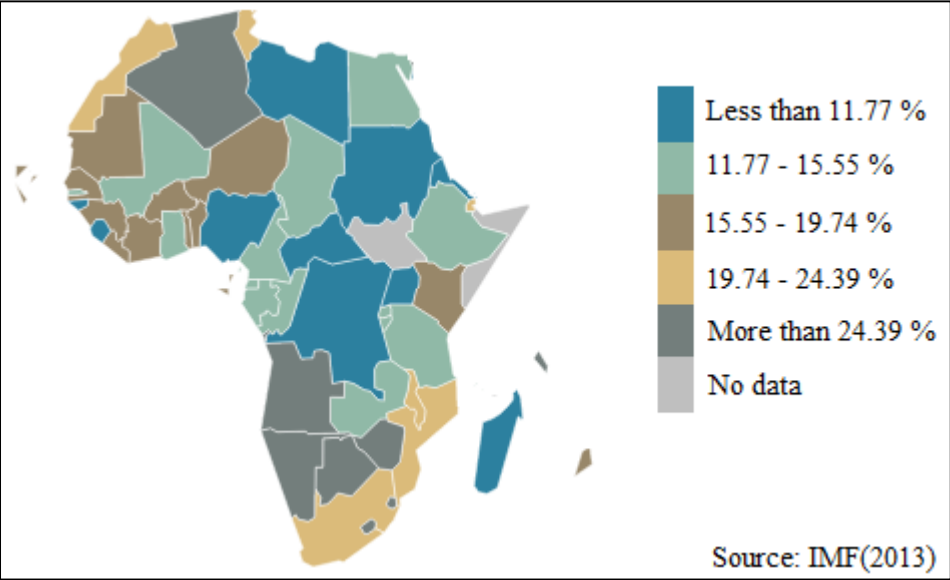
**Figure 1 Tax to GDP-ratio over time**

## 1.1 Scientific contribution

There is still no clear consensus about the fiscal contract. D’Arcy (2011, p.6) states that “[t]he fiscal contract hypothesis, well established theoretically, has yet to receive emphatic empirical endorsement”. D’Arcy suggests that this might be because the reduction of the fiscal contract to a “one dimensional model”, only including the relationship between the state and its citizens. I see this in connection with the argument put forward by Persson (2008); that the so –called welfare state approach does not take into account the relationship between the citizens as a prerequisite for establishing a welfare state. In a cross-country study from Sub-Saharan Africa, D’Arcy (2011) examines first the traditional fiscal exchange argument, in the form of the government’s provision of public services, and the consequence for the citizen’s perception of the tax department’s right to claim taxes.<sup>4</sup> Next, D’Arcy (2011) examines the impact of a *national political community*, based on the arguments from Persson (2008b), together with a comparative treatment hypothesis, arguing that how the government treats the citizens relative to each other matters for the citizens’ level of tax compliance. D’Arcy finds support for both the fiscal exchange argument, and the comparative treatment argument. I aim to bring the arguments put forward by D’Arcy and Persson one step further. Introducing the concept of social cohesion allows me to include even more explanatory variables regarding the part of the fiscal contract that is between the citizens, such as social values and social solidarity. Moreover, by simultaneously investigating the ‘original fiscal contract’ as presented by Schumpeter (1991), Tilly (1990) and Levi (1988), what I term the ‘taxation for services’ approach to the

<sup>4</sup> Cross country regression from 17 countries in Sub-Saharan Africa, data from Afrobarometer Round 3 (2005).

fiscal contract, I am able to evaluate the relative importance of the different part of the complex puzzle that is the fiscal contract. Moreover, tax compliance is difficult to measure. According to Sacks (2012, p.29), “[w]e know very little about how citizens’ reported willingness to comply with taxes [...] corresponds to their actual compliance behavior”. The macro economic measures are poor, and it is a difficult aspect to capture in a survey. Asking the respondent directly about own level of tax compliance equals asking the respondent about own level of law breaking, which is prone to social desirability bias in a survey. Reinikka and Svensson (2006) argue that an indirect formulation of the survey question can respond to this challenge, and I follow this argument and use an indirect formulation about the question regarding tax compliance. This measure was first proposed and utilized by Ali, Fjeldstad, and Sjurson (2014) in a study about determinants of tax compliance in South Africa, Kenya, Tanzania and Zambia. To my knowledge, I am the first to apply this measure in a cross-country analysis of Sub-Saharan Africa, making this thesis a further development of the study by D’Arcy (2011). This thesis adds to the existing literature by (i) providing a theoretical bridge between the classical fiscal contract, and the social factors necessary to establish it and by (ii) using a new and improved way to measure tax compliance in a cross-country analysis of Sub-Saharan Africa.



**Figure 2 Tax to GDP-ratio in Africa**

**1.2 Structure of the thesis**

The structure of this thesis is as follows: In chapter 2, I establish the theoretical framework. First, I present a definition of tax compliance. Next, I discuss how taxation is a type of social



contract both between the state and the citizens, and between the citizens themselves. I present this in the context of Sub Saharan Africa. I argue that in addition to the ‘taxation for services’ approach to the fiscal contract from the existing literature, social cohesion can contribute to explain tax compliance and show how this is of immediate relevance to establish a fiscal contract especially in the Sub-Saharan African context. Based on the theoretical framework and previous research, I establish eight hypotheses, which I present at the end of the chapter. In the methodology chapter (chapter 3), I account for the data material and the research method, employing logit regression and relying on survey data from the Afrobarometer. Additionally, I outline the limitations to this analysis. In chapter 4, I embark on the analysis. First, I present a descriptive analysis in order to get an overview of the substance in the data material. Next, I build up the logistic regression model. Then, I analyse the relative difference between the variables and test the assumptions of this final model. Chapter 5 provides a summary of the main findings in this thesis and the lessons learned, in addition to suggestions of further research on tax compliance in Sub Saharan Africa. The main findings in this thesis are that the traditional approach to the fiscal contract has most explanatory power on tax compliance in Sub-Saharan Africa, in the sense that the provision of public services is an important determinant of tax compliance in the region. However, social solidarity can also explain tax compliance.

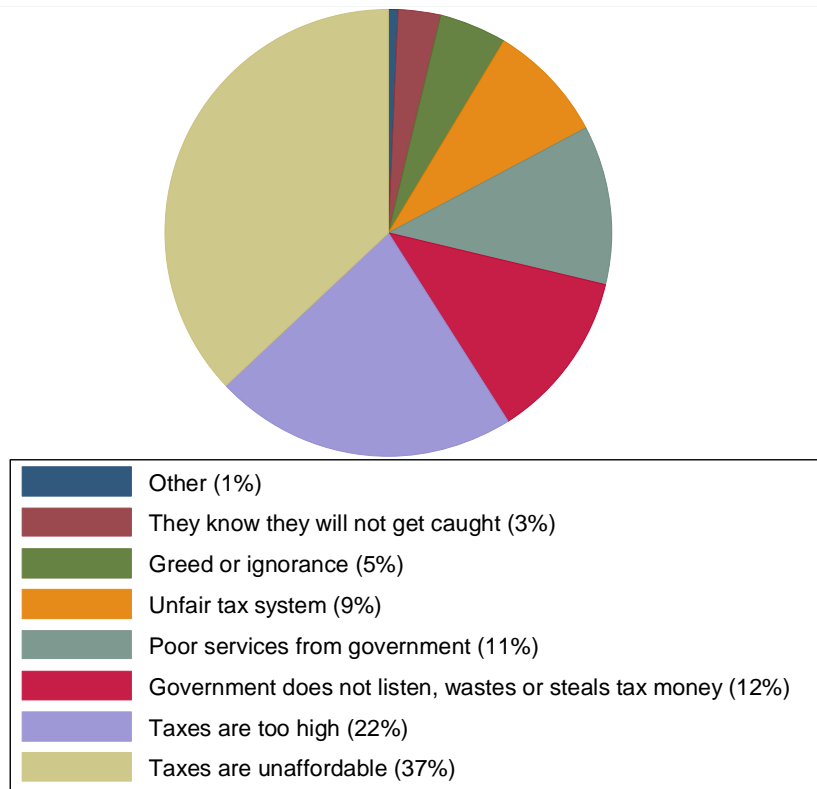


## **2 Theory, existing knowledge and hypotheses**

In this chapter, I begin by explaining the concept of tax compliance its importance to generating tax revenue for the state. Next, I argue how taxation constitutes a social contract, where the relationship between both the state and the citizens, *and* between the citizens matter. Because taxation finances public goods, one should understand lack of tax compliance as a collective action dilemma. Then, I present social cohesion as the element leading to tax compliance, and I derive hypotheses to explain my research question. The chapter finishes with a summary of my hypotheses along with a figure presenting my proposed causal framework.

### **2.1 What is tax compliance and why is it important?**

Tax compliance is paying the taxes you are supposed to pay, which is a result of both voluntary and involuntary compliance (Kirchler, Hoelzl, & Wahl, 2008). Fjeldstad and Heggstad (2012, p. ix), define compliance as “the degree to which taxpayers meet their obligations under tax law”. As compliance is a result of both voluntarily obedience and coercion based obedience, it is often referred to as ‘quasi-voluntary’ compliance (Levi, 1988). Tax evasion is not paying the taxes you are supposed to pay, whereas tax avoidance is using legal means to reduce one’s tax payments. Only the former is strictly illegal and subject to punishment, but the line can sometimes be blurry (Shaw, Slemrod, & Whiting, 2010, p. 1104). Figure 3 shows reasons for tax evasion in Sub-Saharan Africa as perceived by citizens. The perception that taxes are either too high or unaffordable together makes 59% of why people believe others are not paying their taxes. Lack of government legitimacy and poor public services are other noteworthy reasons. A weak regulatory framework makes up only 3%.



Source: Afrobarometer round 5 (2011-2013)

**Figure 3 Reasons for tax evasion amongst individuals in Sub-Saharan Africa**

There are many different sorts of taxation, and the compositions of the different types varies between each country. Generally, the tax revenue in African countries comes from (i) direct taxes on individuals and companies, (ii) indirect taxes imposed on goods and services, (iii) trade taxes or custom duties, and (iv) taxes related to natural resources (Fjeldstad & Heggstad, 2011, p. 7). Non-compliance is a problem for all types of taxes. In the agricultural sector production and consumptions occurs in the same household, making it hard to tax, as the transactions are often not visible. Monitoring the informal sector is difficult and costly (Mascagni, Moore, & Mccluskey, 2014). In some places, tax resistance take extreme forms, as the example from some villages in Tanzania where tax resistance and protests against tax officials can be violent (Fjeldstad, 2001).

According to the classic model of tax compliance, taxpayers pay *only* because they are subject to coercion (Allingham & Sandmo, 1972). A tax-paying individual is a rational actor that will

consider a trade-off situation between the gain of evading taxes and the risk of punishment. Consequently, “if detection is likely and penalties are severe, few people will evade taxes” (Fjeldstad, Schulz-Herzenberg, & Sjursen, 2012, p. 8). In this case, tax compliance is simply deciding whether to obey by the law. However, the classical model fails to capture the whole concept of tax compliance and the real level of tax compliance is in fact *higher* than what the classical model predicts (Andreoni & Feinstein, 1998; Feld & Frey, 2007; Mascagni, 2014). As a result, “there is growing consensus that a state’s tax abilities are contingent upon some degree of voluntary cooperation on behalf of citizens” (Persson, 2008a, p. 16). This voluntary cooperation requires a tax moral, described by Daude, Gutiérrez and Melguizo (2012, p.9) as “the motivation of a country’s citizens to paying taxes, in addition to legal obligations”. Torgler (2005a, p.526) defines tax moral as “the intrinsic motivation to pay taxes”, and presents tax moral as the “individuals’ willingness or moral obligation to pay taxes or their belief in contributing to the society by paying taxes. Tax morale also includes the moral regret or guilt over cheating on taxes”. Thus, tax moral is a form of morally based compliance with the tax law that exceeds the cost- benefit decision of a rational actor. A tax-paying citizen with tax moral recognizes the value of taxation and consent to pay taxes even without high levels of coercion. According to Torgler (2002, p.658), “[t]he question about tax morale has more to do with why people do not cheat rather than why they do”. This is because generally, people pay their taxes. The choice between non-compliant or compliant behaviour involves a wide range of factors, such as the probability of being caught and the level of punishment, but it is also “a function of the individual’s willingness to comply or evade” (Torgler, 2002, p. 658). As social influences are important, there will also be a virtuous circle; the perception of the general tax moral in the society is an important determinant for the citizen’s own level of tax moral (Luttmer & Singhal, 2014). Daude, Gutiérrez and Melguizo (2012, p.9) argue that “there is a large empirical evidence of a significant correlation between tax morale and tax compliance in developing and developed countries”, meaning that this inner motivation of the citizens to consent to paying taxes is an important part of the concept of tax compliance.

Tax compliance is important because it generates revenue for the state, but also because tax non-compliance is an expense in itself. Coercion in the form of monitoring and sanction is costly for the state (Fjeldstad & Heggstad, 2012; Timmons, 2005). Thus, not having to spend money and resources on using coercive power will result in a cheaper and more efficient way

for the government to collect taxes, hence more revenue. This is why “[t]he promotion of voluntary compliance should be a primary concern of revenue authorities” (OECD, 2001, p. 3). It is, however, difficult to distinguish between voluntary compliance and coercion based coercion (involuntary compliance), as “[c]onceptually, the importance of tax morale depends on the enforcement environment because tax morale and enforcement generally interact” (Luttmer & Singhal, 2014, p. 154). This is why I will primarily use the concept of tax compliance in this thesis, when discussing why citizens consent to pay taxes. I assume that the tax-paying citizen will always have the level of probable punishment in mind. However, my aim is not to describe what makes tax payers obey by the laws in the society, but how they will come to recognize the value of taxation, and because of this, consent to pay taxes without the government having to rely primarily on coercion. Here, tax compliance is rather the apprehension that paying taxes is *the right thing to do*. Thus, non-compliant behaviour is not necessarily illegal, but rather the perception that *not* paying taxes is *not necessarily wrong*.

## **2.2 Taxation as a social contract**

The proposition that provision of public goods is important for tax compliance has deep roots in history. According to the historical analysis of state building in Europe done by Tilly (1990), modern states formed because of taxation. As the monarchs got involved in expensive warfare, they had to turn to the citizens for revenue (Schumpeter, 1991, p. 105). The demand for taxation from the monarchs was a way of proving its power. “For the ordinary citizen, the power to tax is the most familiar manifestation of the government’s power to coerce” (Brennan & Buchanan, 1980, p. 8). The citizens met the government’s demand for taxation with a demand for political influence. This is why “taxpayers rebelled or cooperated to the extent they felt some measure of membership in the community” (Bergman, 2002, p. 289), and resulted in the famous slogan ‘no taxation without representation’ from the American colonies’ fight for independence from British rule (Gloppen & Rakner, 2002). Paying taxes became a mechanism through which the citizens themselves had certain power over the government (Brennan & Buchanan, 1980, p. 9). Consequently, “taxation may play the *central* role in building and sustaining the power of states, and shaping their ties to the society” (Bräutigam, 2008, p. 1). According to Levi (1988, p.1), “[t]he history of state revenue production is the history of the evolution of the state”. The

proposition that fiscal issues are driving forces for a state's political development is fiscal sociology, proposed by Schumpeter (1991, p. 100), who claims:

The spirit of a people, its cultural level, its social structure, the deeds its policy may prepare – all this and more is written in its fiscal history, stripped of all phrases. He who knows how to listen to its message here discerns the thunder of world history more clearly than anywhere else.

The bargaining process around taxation that leads to political power for the citizens has the potential to “bolster the legitimacy of the state and enhance accountability between the state and its citizens” (Bräutigam, 2008, p. 1). The evidence of this was the rise of the different parliaments in modern Europe (Brennan & Buchanan, 1980, p. 9). Hence, “[c]ontrols over the sovereign have been exercised through constraints on the taxing authority.”(Brennan & Buchanan, 1980, p. 9). D’Arcy (2011, p.1) argues that “[w]hile voting may be the citizen’s main action as a political actor - to determine who has access to power, paying tax is her primary political act as an economic actor and provides that which enables the state to exercise power” The citizens used their newly gained power to demand public goods. According to Schumpeter (1991), the process of demanding political influence in return for taxation, led to the development of a *tax state*. In a tax state, tax revenues finances public goods. “The newly born state acquired a solid framework, created its own organs, became a separate power. Taxes were no longer raised merely for the purposes for which the prince had asked them, but also for others” (Schumpeter, 1991, p. 107). The welfare provided by the government was now an important measure of the responsiveness of the state towards its citizens. Hence, “the legitimacy of taxation has been based on the welfare [...] provided by governments.” (Bergman, 2002, p. 290). This was the beginning of a welfare state financed by taxation, represented by part A. and B. in Figure 4. The government demands taxes, which, generally speaking, finances public goods. Next, I will outline part C., which in fact is a prerequisite for the fulfilment of the fiscal contract.

Levi (1988, p.48) presents tax compliance as “a strategic interaction between the rulers and constituents, and among constituents”. The state has to uphold its part of the contract and

provide public goods, but the contract between the citizens themselves is equally important. “Individual taxpayers are more likely to cooperate if they have reasonable expectations that both the rulers and other taxpayers will also cooperate” (Levi, 1988, p. 69). Hence, “citizens’ willingness to pay service charges voluntarily rests on the existence of the local government’s capacity to provide services and its demonstrated readiness to secure the compliance of the otherwise non-compliant” (Fjeldstad, 2004, p. 547). The difficulty of ‘securing the compliance of the otherwise non-compliant’ comes from the nature of the public good. D’Arcy (2011, p.6) argues that looking purely on taxation as a transaction between a supplier and a demander, “misses the critical point about taxation – that it is the translation of private wealth into a public resource”. Public goods are “[t]he common or collective benefits provided by governments” (Olson, 1971, p. 14). They are in nature non-excludable, which means that once established everyone would benefit from them. This gives rise to the problem of *free-riding*, where it is beneficial for each individual to refrain from contributing to the provision of public goods. The result is ‘*the tragedy of the commons*’, and the problem of collective action. “The very fact that a goal or purpose is common to a group means that no one in the group is excluded from the benefit or satisfaction brought about by its achievement” (Olson, 1971, p. 15). This gives rise to a collective action problem, because there must be a collective willingness in the population to finance this type of good.

The benefits of collective action are public, while the costs are borne privately. The choice of each individual to work for the collective benefit or not usually has no bearing on its provision. Under these circumstances, every person’s best move is to stay home and let someone else work for the public benefit—that is, free ride. If everyone reasons as he or she should, public goods will be systematically underprovided, even when everyone wants them (Kalyvas & Kocher, 2007, p. 108).

Taxation goes to the tax state, which distributes the revenues equally, which means giving up a part of your own income to the benefit of the community. Vigdor (2004, p.311) presents this as a situation where “individuals must weigh public benefits when making private decisions.” Drawing on a Rawlsian social contract, individuals decide whether to contribute to the welfare state or not on the background of an original position. This is a hypothetical situation where



“no one knows his place in society, his class position or social status, nor does any one know his fortune in the distribution of national assets and abilities, his intelligence, strengths, and the like.” Rawls (1971 p. 12). Consequently, taxation can be seen as a classic collective action problem (D’Arcy, 2012). Part C. in Figure 4 represents this part of the fiscal contract, that the completion of the contract requires the citizens to work together.

The dilemma of collective action is hence to incentivise cooperation between the citizens, in order to reach a common goal. Here, it means the construction of a welfare state financed by taxation. The important element in this process of cooperation is that the citizens will benefit by forming the fiscal contract with the state. “Before wealth can be created, human beings have to learn to work together” (Fukuyama, 1995, p. 47). According to (Kearns & Forrest, 2000, p. 1000), “a cohesive society is one in which dilemmas and problems can be easily solved by collective action.” In a society with social cohesion, there is a mutual understanding of the gains from cooperation. However, the concept of social cohesion has as many definitions as it has advocates and elements. Of some, social cohesion is considered a buzz-word (Chan, To, & Chan, 2006, p. 273), and of others it is criticised for being a mere quasi-concept (Bernard, 1999). My attempt is not to contribute to this debate, but rather demonstrate how several elements related to social cohesion provides a useful framework for explaining the type of society that can establish a welfare state financed by taxation. Chan et al. (2006, p.289) have a more light-weight grasp of the concept, arguing that “social cohesion” should also be understood as a state of affairs concerning how well people in a society “cohere” or “stick” to each other”. The consent seems to be around social cohesion as a type of glue for the society:

The kernel of the concept is that a cohesive society ‘hangs together’; all the component parts somehow fit in and contribute to society’s collective project and well-being; and conflict between societal groups, and disruptive behaviours, are largely absent or minimal. (Kearns & Forrest, 2000, p. 996)

Central to the concept of social cohesion is the act of working together to make the society benefit common goals. Benard (2012, p.108) defines cohesion as “the extent to which people

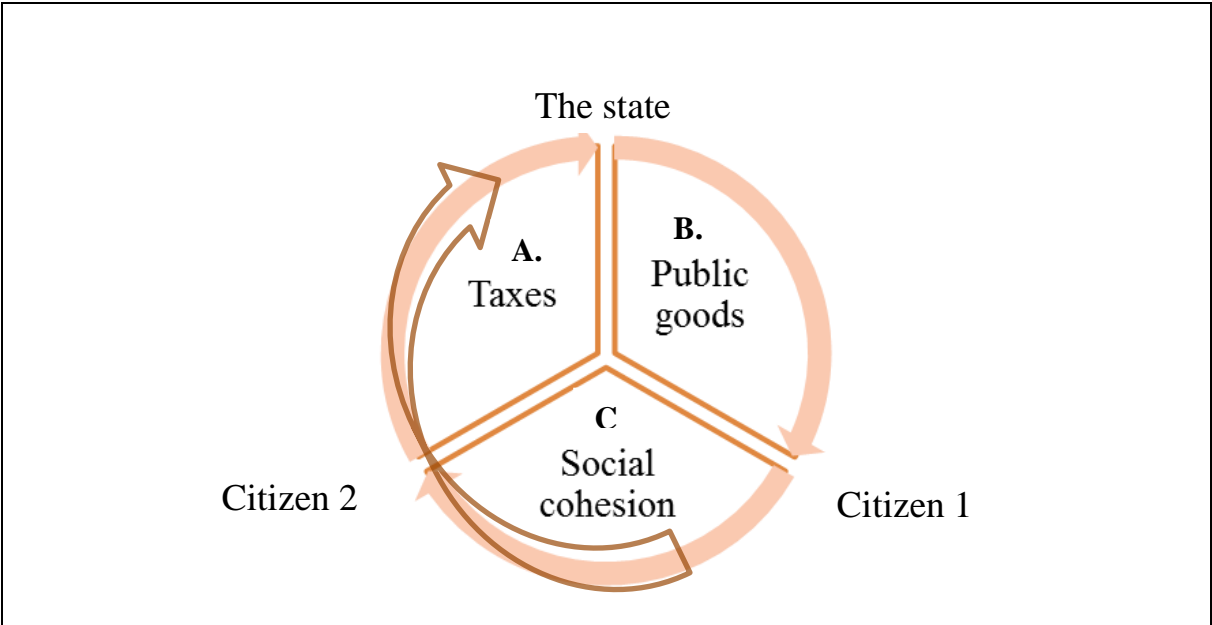
invest personal resources (e.g., time, effort, or money) in a group's goals". Consequently, social cohesion is a core element in the provision of public goods through taxation. One link between social cohesion and taxation is made by Chan et al. (2006, p.295), when including "I am willing to pay more tax if that could improve social welfare" in an empirical definition of social cohesion. I follow the conceptualization by Forrest and Kearns (2001, p. 2129) as shown in Table 1. This provides a broad overview of the different elements central to social cohesion.

**Table 1: Forrest and Kearns' conceptualization of social cohesion**

<b>Domain</b>	<b>Description</b>
Common values and a civic culture	Common aims and objectives; common moral principles and codes of behavior; support for political institutions and participation in politics
Social order and social control	Absence of general conflict and threats to the existing order; absence of incivility; effective informal social control; tolerance; respect for difference; intergroup co-operation
Social solidarity and reductions in wealth disparities	Harmonious economic and social development and common standards; redistribution of public finances and of opportunities; equal access to services and welfare benefits; ready acknowledgement of social obligations and willingness to assist others
Social networks and social capital	High degree of social interaction within communities and families; civic engagement and associational activity; easy resolution of collective action problems
Place attachment and identity	Strong attachment to place; intertwining of personal and place identity
Directly adopted from Forrest and Kearns (2001, p. 2129) .	

Summing up, Figure 4 shows the fiscal contract, which is a relationship between the state and its citizens, and between the citizens themselves. Both relationships constitutes an element of cooperation for a common gain, which is central to a society with social cohesion. The government uses the taxation to form a welfare state. In order for this to be the case, the citizens must willing to form this fiscal contract with the state. Returning to basic contract theory, a contract is one of cooperation. The assent to pay taxes depends on the willingness to finance

public goods, which again depends on the relationship between the citizens who also have to uphold the fiscal contract.



**Figure 4 The fiscal contract**

**2.2.1 The provision of public goods**

The central role of the state is service provision. According to Olson (1971, p.15), “[a] state is first of all an organization that provides public goods for its members, the citizens [...]”. A central aspect by state capacity is the ability to provide public services (Ali, Fjeldstad, Jiang, & Shifaz, 2015, p. 3). The theory of the fiscal contract is, according to Timmons (2005, p.535), “an exchange-based theory of the state, whereby governments sell services for revenue.” By offering public goods in return for tax revenue, the government can increase tax compliance among the citizens, and reduce the level of coercion needed to collect taxes. The government plays an important role in incentivizing tax compliance by providing public services, a perspective that I account for also in section 0.2. From the perspective of social cohesion, the government has to provide a satisfyingly level of welfare. Forrest and Kearns (2001) points to the aspects of *equal access to services and welfare benefits* as an important aspect by social cohesion. The OECD (2012, p.53) reports that a socially cohesive society «[...] works towards the well-being of all its members [...]”. It is not enough only providing the services. They must also be available for the whole population, and have a satisfyingly quality. Levi (1988) stresses the importance of the terms of trade between the citizens and the government. If the citizens perceive that the quality of the services are not meeting their expectations, the terms of trade

changes, and tax compliance decreases. This is of particular relevance for Sub-Saharan Africa, as the situation of public services in the region is especially poor. Consequently, private companies and aid organizations play an important role in service provision, something that might further undermine tax compliance (Sacks, 2012; World Bank, 2004, p. 203).

A wide range of empirical research support the proposition that public goods leads to tax compliance. Alm, McClelland, and Schulze (1992, p. 36) find evidence that tax compliance “occurs because some individuals value the public goods that their tax payments finance”. Even in cases where the risk of being caught for not paying taxes is low, individuals will pay taxes because value public goods. In a study from Argentina and Chile, Bergman (2002, p.294) tests “the reported willingness of taxpayers to comply with taxes in order to fund social policies”, and finds a strong positive correlation. Daude et al. (2012) finds that some services matter more than others do, where health care, water and sanitation are of most importance. D’Arcy (2011) supports the finding of health being of special importance in Sub-Saharan Africa, and suggests that this might be because only people with children in school age values educational services, whereas health services benefit everyone. Additionally, Ali, Fjeldstad and Sjørusen (2014) find that in Tanzania and Uganda health services matter most for tax compliance, in Kenya access to infrastructure is vital whereas the South Africans emphasize security. This leads to the following hypothesis:

***H1a: The better the government provides public services, the higher the tax compliance.***

A critical good that is worth paying some extra attention is security. Together with defence, law and order “is generally regarded as the state provided service *par excellence*.” (Therkildsen & Semboja, 1995, p. 2). According to Brinkerhoff, Wetterberg and Dunn (2012, p.277), “[a] defining feature of state sovereignty and capacity is provision of security within its territorial boundaries without which the other governance functions cannot be fulfilled”. Lack of intrastate security will hinder provision of other public services due to instability and uncertainty. As citizens will demand security, the government competes against traditional rulers, religious leaders and insurgents in the provision of services. Kearns and Forrest (2000, p.998) stress the

importance of intrastate stability for obtaining a cohesive society. “A second interpretation of social cohesion refers to the absence of general conflict within society and of any serious challenge to the existing order and system”. As this is often not the case in Sub Saharan Africa, there is an increase in the number of private security actors. “Somewhat ironically and belying its nature as a pure public good, African citizens are increasingly resorting to private provision of security and safety services to palliate for these public deficiencies.” (Van de Walle, 2003, p. 14). The state does not succeed in providing a core public good. Ali, Fjeldstad and Sjursten (2014, p.829) finds that “frequent payment to non-state actors (such as criminal gangs) in exchange for protection [...] reduces individual’s likelihood of having a tax compliant attitude.” On the other hand, Bellows and Miguel (2009) find in an analysis of households in Sierra Leone that those directly exposed for war participated more both in the political and the civic life, and contributed more to providing local public goods. However, this is only on the local level. A civil conflict that separates the population might lead to increased collective action in the local community, but based on the theory presented by Kearns and Forrest (2000) it is most likely to reduce the willingness to contribute to a welfare state. This is why I formulate the following hypothesis:

***H1b: The more often an individual pay a non-state security actor, the lower the tax compliance.***

### **2.2.2 Social values**

According to Forrest and Kearns (2001), are *common values and a civic culture*, along with *social networks and social capital*, important aspects of a social cohesive society (from Table 1). The former includes *common moral principles and codes of behaviour*, the latter *civic engagements and associational activity*. In a cohesive society, the citizens share common values, which generates common principles of moral and behavior. The citizens interact based on these common features (Kearns & Forrest, 2000). The changes necessary to establish the demand for institutions must happen between individuals. For this to happen, shared cultural values are necessary which must happen between individuals, as “norms and cultural values can be manipulated by public policy only at the margin” (Fukuyama, 2004, p. 43). Trust is an important for generating cooperation and norms of reciprocity (Uslaner, 1999). In a trusting society, people will be more willing to take the risk of financing the public project, because the

likelihood is big that their co-citizens will do the same. Kaplan (2009, p.468) underline that “[t]rust is a prerequisite for any economic and political development because it facilitates cooperation”. Social trust is more than the general confidence that your co-citizens will pay their taxes, or obey by the law.<sup>5</sup> According to Uslaner (1999, p.122), “trust as a moral resource leads us to look beyond our own kind”. Delhey and Newton (2005, p.311) define trust as “the belief that others will not deliberately or knowingly do us harm, if they can avoid it, and will look after our interests, if this is possible”. Both definitions emphasize that trust causes people to care about the needs of others. Additionally, Uslaner (2000) emphasizes ‘moralistic trust’, which is an important determinant for cooperating with people we do not know. Moralistic trust is “trust in people whom we don't know and who are likely to be different from ourselves” (p.572). Shared common values is an important aspect for generating trust. A high level of moralistic trust facilitates cooperation and compromising, and incentivizes people to invest in the community’s benefit. Moralistic trust assumes that people generally share the same values, regardless of background, which reduces the risk of trusting strangers (Uslaner, 2000).

An important element of trust is predictability. Being able to predict your co-citizen’s actions makes it less risky to trust them. Such trust can come from experience, through group activity. According to Fearon and Laitin (1996), it is the common history and traditions often found within a group, that creates predictability in the group members’ actions.<sup>6</sup> Civic cooperation is beneficial for overcoming the collective action problem, as “[n]etworks of community engagement foster sturdy norms of reciprocity: I’ll do this for you now, in the expectation that you (or perhaps someone else) will return the favour” (Putnam, 2000, p. 20). Participation in community organisations is an important building block in a socially cohesive society, because of the norms of reciprocity and cooperation it generates (Kearns & Forrest, 2000; Uslaner, 1999). Putnam (2000, p. 21) argue that “[c]ivic engagement and social capital entail mutual obligation and responsibility for action”. Playing an active role in the society will form a norm of morality. “Social cohesion is a state of affairs in which a group of people (delineated by a geographical region, like a country) demonstrate an aptitude for collaboration that produces a climate for change.” (Rizen & Woolcock, 2000, p. 9). There is not much research undertaken on the specific factor of social trust and tax compliance. Most research rely on trust in

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<sup>5</sup> I will include this as a control variable.

<sup>6</sup> They focus on ethnic groups.

politicians and/ or political institutions, and trust that other people will pay their taxes/ obey by the laws. For instance, Scholz & Lubell (1998) outline the theoretical argument of why trust between the citizens should lead to tax compliance, but operationalise this as *trust that other people will pay their taxes*. D'Arcy (2011) includes trust as a control variable, and finds that it correlates positively with tax compliance, but it is unclear whether this is social trust, or trust that other people pay their taxes. Research on trust as a moral resource “that leads us to look beyond our own kind”, and hence will increase tax compliance, is lacking from cross-country studies on tax compliance. Expanding the literature to look at collective action, however, shows otherwise. In a study amongst farmers in Kenya, Willy and Holm-Müller (2013) find that social trust increases the probability of participation in solving local collective action initiatives regarding conservation of soil. Although the research is scarce, I believe there is theoretical reason to formulate the following hypotheses:

***H2a: The more social trust between the citizens, the higher the tax compliance.***

***H2b: The more participation in community organisations, the higher the tax compliance.***

### **2.2.3 Common national identity**

The welfare state provides goods that generally benefit the whole population. Taxes finances services for each individual, but tax-paying citizens also consider the fact that some of the taxes they pay benefit their co-citizens. Hence, “[t]he decision about whether or not to pay taxes also hinges on how the citizen relates to the collective” (D'Arcy, 2011, p. 6). According to Rizen and Woolcock (2000, p. 10), developing a sense of shared national identity is a particular important aspect of social cohesion in developing countries. Lieberman (2001, 2003) and Persson (2008b) stress the importance of a National Political Community (NPC) as a determinant of the state's ability to collect taxes. The NPC is “the official, state-sponsored definition of the nation, which is specified in constitutions or other key policy documents during critical moments of political change” (Lieberman, 2001, p. 517). More specifically, the NPC decides who belongs to the nation. It is formalized in the constitution, but the idea behind is the most important for the welfare state, because “before reaching a solution in terms of who belongs to the national political community and on what terms, it is difficult to establish

welfare” (Persson, 2008b, p. 10). The difference between the countries in succeeding to establish a NPC that either makes the cleavages more visible, or overcomes them, determines their ability to collect taxes. The challenge to do this in Sub Saharan Africa is primarily because of ethnic cleavages, because “...the more individuals identify politically with the smaller ethnic community rather than the larger national community, the less likely they will be to quasi-voluntarily comply with tax demands.” (Persson, 2008b, p. 17). Comparing Botswana, Uganda and Zambia, Persson (2008b) finds that whether citizenship is associated with ethnicity influences the feeling of nation, and hence the development of a state with tax capacity.

In Sub-Saharan Africa, there are more than 2000 ethnic groups with different languages, culture and traditions (Kimenyi, 2006). According to Easterly and Levine (1997), “[e]thnic diversity may increase polarization and thereby impede agreement about the provision of public goods” (p.1206). This is because ethnic groups often have different preferences regarding the public goods and because heterogeneity can reduce the ability for collective action. “When individuals have different preferences, they want to pull fewer resources together for public projects.”(Alesina, Baqir, & Easterly, 1999, p. 1243). Across the ethnic groups the preferences for different types of public goods vary, additionally, the endowments differ. These differences might be a result of different history, culture and geography (Kimenyi, 2006). Moreover, according to Kimenyi (2006), heterogeneity makes it more difficult to achieve cooperation, which is an important prerequisite for collective action. This is because the common identity found within ethnic groups creates predictability in the cooperation process, and information about and predictability in the action of others reduces the transaction costs of cooperation (Fearon and Laitin (1996). According to Miguel and Gugerty (2005, p.2329), “[e]thnic diversity could also lead to lower public goods funding because different ethnic groups have divergent preferences over the type of public good to be funded and are therefore less willing to contribute toward compromise types”. According to Poteete and Ostrom (2004, p.441), “[w]hether because it promotes trust or reflects common interests, homogeneity may facilitate collective action”. The core aspect is that the citizen should not primarily have an ‘ethnic identity’, but rather identify with the large community, in this case, the nation. “States will work better if they are structured around cohesive population groups able to capitalize on their common interests and affinities.” (Kaplan, 2009, p. 470). It is important that this notion of place attachment and identity stretches beyond the small community, as “[o]ne place’s cohesion



might be society's deconstruction" (Kearns & Forrest, 2000, p. 1001). A strong sense of attachment to a smaller part of the larger community can increase the barriers to cooperation across the communities.

Miguel and Gugerty (2005) find that ethnic diversity is associated with both lower funding and lower quality in 84 primary schools in Kenya. This is due to a collective action problem, as the lower school funding was a consequence of the difficulties with raising revenue at public fundraising events. This is also the case in water infrastructure, where ethnic diversity in communities in rural Kenya corresponds to poorer maintenance of the local water wells, that what is the case in more homogenous areas. Additionally, Miguel (2004, p.328) finds that "the Kenya-Tanzania comparison provides suggestive microeconomic evidence that serious nation-building reforms can successfully bridge social divisions and affect important economic outcomes, like public goods provision". This is not only the case in developing countries. Alesina, Baqir and Easterly (1999, p.1244) find that "voters choose lower public goods when a significant fraction of tax revenues collected on one ethnic group are used to provide public goods shared with other ethnic groups" across several cities in the U.S.. D'Arcy (2011) finds that identifying equally with ethnic identity and national identity increases the probability of agreeing that the government has the right to demand taxes, as opposed to if the respondent is purely identifying with the ethnic group. However, there is no significant difference between the respondent having a pure national identification, and those identifying themselves with the ethnic group. In India, Banerjee, Iyer, and Somanathan (2005) find that in regions with high fragmentation in terms of caste and religion, there is a lower provision of local public goods. Based on theory and earlier research I formulate the following hypothesis:

***H3a: The larger degree of shared collective national identity, the higher the tax compliance.***

A common identity is a way to overcome the poor-governance problems associated with fragile states (Kaplan, 2009). Whereas the studies show that heterogeneity impedes cooperation, at the same time it is argued that the relative treatment, that is, the negative effect of ethnic identity might not have a negative effect on tax compliance in the cases where the government is

actively working to reduce the ethnic cleavages. Habyarimana, Humphreys, Posner and Weinstein (2007, p.710) propose that one possible explanation for the fact that ethnic diversity undermines the provision of public goods, is due to the ‘preferences mechanism’, more precisely, ‘the other-regarding preferences mechanism’. Here, the identity of the other persons that will benefit from the public good is important. Consequently, the distribution of the public goods on the national level seems to be of importance for the causal connection between ethnic/national identity and the willingness to pull individual resources together for common gain. Moreover, Miguel and Gugerty (2005, pp. 327–328) find that “the Tanzanian nation-building approach has allowed ethnically diverse communities in rural Tanzania to achieve considerable success in fund-raising for local public goods, while diverse communities in the nearby Kenyan region typically fail”. This means that it is not necessarily the cleavages that matters, or the level of homogeneity. In some cases, it is rather how the different groups interact and form a national identity. This result in the following hypothesis:

***H3b: The larger the degree a government works to reduce ethnic cleavages, the less negative effect will ethnic identity have on tax compliance.***

#### **2.2.4 Social solidarity**

Kearns, Bailey, Gannon, Livingston, and Leyland (2014, p.454) interpret social cohesion “as having a solidaristic foundation”. An important factor in a socially cohesive society is the aspect of economic equality and reduction of poverty. This element also stems from the policies outlined by the OECD (2012), when stressing the importance of social cohesion in the community. “In addition to eliminating absolute poverty, reducing relative poverty is particularly important for social cohesion at the bottom of the income distribution” (OECD, 2012, p. 99). In a socially cohesive society, there is a willingness to contribute to the needs of other, an element of social solidarity. “It involves the recognition of the needs of the co-citizens, an interest in their well-being and the willingness to provide assistance and to engage in collective action with one-sided benefits.” (Kearns & Forrest, 2000, p. 999). Important aspects of social solidarity are reduction in poverty and reduced income differences, as well as employment and higher living standards. According to Kawachi and Kennedy (1997, no page number), large income differences leads to “a breakdown of social cohesion”, and “a widening

of the gap between rich and poor might result in damage to the social fabric”. Economic inequality is damaging for a society because it reduces the feeling of being a part of a collective project – the society. Hence, assuming that paying taxes is to contribute to a collective project, large income differences should reduce tax compliance. The OECD (2012, p.94) notes that “[w]here important inequalities persist between different groups, society will enjoy less social capital, less trust and less sense of belonging among its members”, and that “[i]nequality is a considerable threat to social cohesion”. Economic differences creates cleavages in the population, and synonymous with the ethnic cleavages, this harms the social cohesion. As argued for in section 2.2.2, social trust increases tax compliance. A society where there are not economic inequality, the citizens have higher incentives to collective action. Reducing poverty is an important dimension of social cohesion (Kearns & Forrest, 2000, p. 999). Poverty causes people to be “excluded from the norms of society” (Dorling, 2010, p. 92). Living in extreme poverty creates a sense of exclusion. A completely other degree is that the poor often falls under the taxation threshold, and as knowledge about taxation/ experience reduces tax compliance, this might be an indirect effect of how poverty reduces tax compliance.

In a study from Japan, Yamamura (2008) finds that economic inequality is associated with lower response rate in a collective action project. This supports the findings by Vigdor (2004) that socioeconomic inequalities in counties in the U.S. lead to lower response rate in a collective action project. Regarding poverty, a case study from peri-urban Malawi has a more instrumental approach, finding that “poverty makes it hard for people to work together to solve collective problems. Looking for work and eking out a precarious living take a great deal of time and energy, leaving little to spare” (Booth & Cammack, 2013, p. 102). However, this is not directly related to tax compliance...After undertaking field work in a squatter settlement in Peru, Brodrecht (2012) identifies several factors that explains the low level of collective action amongst the settlers, all related to poverty. The absence of governmental interference provoked an individualistic culture, where settlers had to seize what land they could. Poverty reduces the development of the social capital necessary to create collective action. It is important to separate between the two concepts reducing income inequality and reducing poverty, because “[r]ising inequality can limit social inclusion even as the number of extremely poor falls, if much of the population remains excluded from the customary living standard enjoyed by a socially relevant

reference group” (OECD, 2012, p. 94). They are both important aspects of social cohesion, and I will test them respectively, with the following hypotheses:

*H4a: The better the government works to reduce economic inequalities, the higher the tax compliance.*

*H4b: The better the government works to prevent absolute poverty, the higher the tax compliance.*

## **2.3 Summary of hypotheses and causal framework**

In order to answer the research question of what is the role of the government and the citizens in promoting tax compliance, I present the following hypotheses. The first two hypotheses build directly on the ‘taxation for services’-approach. The six latter derives from social cohesion theory.

*H1a: The better the government provides public services, the higher the tax compliance.*

*H1b: The more often an individual pay a non-state security actor, the lower the tax compliance.*

*H2a: The more social trust between the citizens, the higher the tax compliance.*

*H2b: The more participation in community organisations, the higher the tax compliance.*

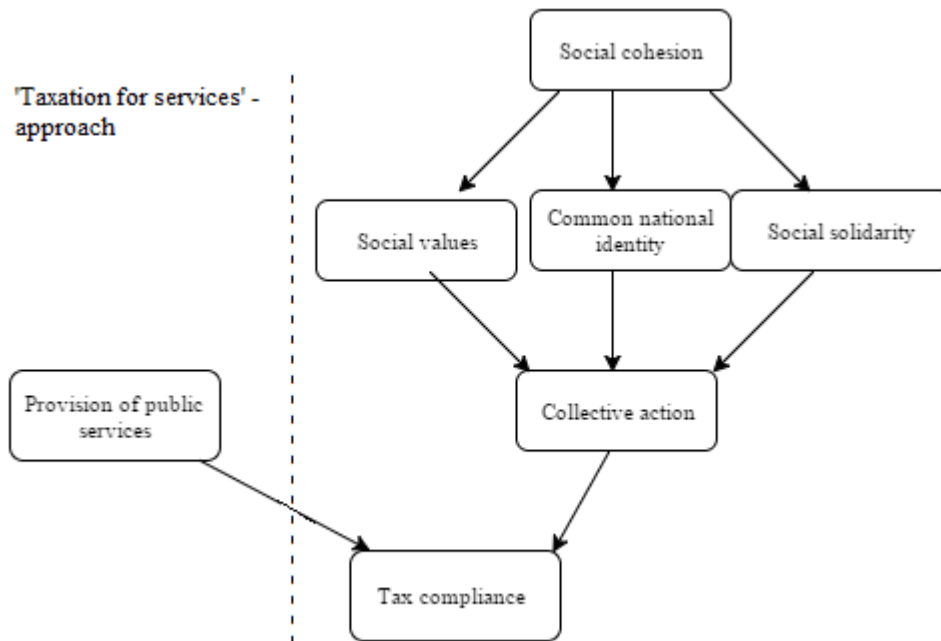
*H3a: The larger degree of shared collective national identity, the higher the tax compliance.*

*H3b: The larger the degree a government works to reduce ethnic cleavages, the less negative effect will ethnic identity have on tax compliance.*

*H4a: The better the government works to reduce the income gap, the higher the tax compliance.*

*H4b: The better the government works to prevent absolute poverty, the higher the tax compliance.*

**Figure 5 Causal framework**





### 3 Data, measurement and research method

To allow for a replication of the analysis it is important in academic research to be open about the different aspects of the research process. According to (King, Keohane, & Verba, 1994, p.26), “[r]eplicability applies not only to data, so that we can see whether our measures are reliable, but to the entire reasoning process used in producing conclusions”. In this chapter, I will firstly give an account of the decisions made during the research process and secondly evaluate certain limitations to this analysis, and the consequences these limitations have for the analysis.

#### 3.1 The employed data material

Sub-Saharan Africa is especially interesting to examine the proposed research question. Firstly, because there are not much research done on tax compliance in this region and especially cross-country studies are limited. Secondly, because there is a large variation in the degree of tax compliance in this region<sup>7</sup>, the performance of the public sector and the degree of cleavages in the society. The data is from the round 5 of the Afrobarometer<sup>8</sup>. Afrobarometer “collects and disseminates information regarding Africans’ views on democracy, governance, economic reform, civil society, and quality of life” (Afrobarometer Network, 2011, p. 1). The vision is to “create a regularly updated data bank of public opinion surveys in a range of African countries ” (Afrobarometer Network, 2011, p. 1). Afrobarometer is neither responsible for the analysis conducted in this thesis, nor the conclusions drawn. This is a survey dataset based on face-to-face interviews with respondents<sup>9</sup> across 34 African countries. The sample size for each country is 1200 for the countries with smaller population and 2400 for the more populous countries.<sup>10</sup> Round 5 was conducted in the period of 2011 to 2013 and the merged dataset was published in 2013. Afrobarometer employs the same standardized questionnaire for each country<sup>11</sup>, making the dataset especially suitable for both cross-country studies and cross-country comparisons. The dataset has some weaknesses. Firstly, there are two general challenges related to survey

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<sup>7</sup> See Figure 6 Share of population being tax compliant in each country.

<sup>8</sup> For more information about Afrobarometer, data and questionnaires, visit <http://www.afrobarometer.org>.

<sup>9</sup> Citizens of voting age, which is usually 18 years and older. The sampling universe excludes people living in areas experiencing natural disasters or armed conflicts, in addition to residents of institutions, national parks or game reserves.

<sup>10</sup> See Table 11 Countries and sample size.

<sup>11</sup> It is interesting to note that the Afrobarometer network provides a so-called master dataset in English, French and Portuguese, but the survey itself is conducted in the respondent’s local language.

data; measurement and representation, which I will discuss in section 3.2 and 3.5.2 respectively. Additionally, although the formulation of the questions is the same across all countries, not all questions exist in all countries.<sup>12</sup> Secondly, the questionnaire changes slightly from each round, hence applying the dataset for time series analysis is not always possible. Ideally, I would like to conduct a time series analysis to provide a more comprehensive analysis of the changes over time, but this is not possible as the question for the dependent variable only exists in round 5.<sup>13</sup> This is a general problem by Afrobarometer, also emphasized by McLean (2007). Hence, my analysis will be cross-country regression. Thirdly, and of most relevance to this thesis, is the problem of missing values.

Missing values are observations that lack data for one or several variables (Ringdal, 2007, p. 233). If the missing variables are systematic, this can cause a problem for the analysis, and reduce how representative the sample is of the population (Ringdal, 2007, p. 233). The dataset contains in total 51587 observations (respondents). After removing the observations from the four countries in the MENA-region included in the dataset (Algeria, Egypt, Morocco and Tunisia<sup>14</sup>), including Sudan where the questionnaire does not include the measure for tax compliance, I am left with 45598 observations from Sub-Saharan Africa where the dependent variable is asked. Furthermore, all respondents from Swaziland (1200) has to be dropped due to lacking data on two variables, leaving me with 44398 units. I will build up my final model gradually, and the result is that the final model only contains 26160 respondents, because of missing values. I will refer to this as ‘the final sample’ throughout my analysis. Missing values is a problem with this analysis. In order to compare the models properly, it is important that the sample size is the same. Missing variables is a big problem in my analysis, and can cause me to draw the wrong conclusions, simply because, with a large number of missing values, the dataset’s representativeness reduces (Ringdal, 2007, p. 234). I base my conclusions on the final model, with the final sample, as I do not want my conclusions to reflect different sample sizes.

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<sup>12</sup> Ali and Fjeldstad (2015) suggests that this can to a certain extent be because of the political sensitivity of some of the questions.

<sup>13</sup> However, it is included in at least some of the countries for the forthcoming round 6 which makes time-series analysis an excellent suggestions for further analysis on tax compliance in this region. Data from Afrobarometer round 6 is available for certain countries, but the merged dataset is to this date not yet published.

<sup>14</sup> This is of course not problematic, as my aim in this thesis is to study the Sub-Saharan region.



## 3.2 Measurement

To determine the operationalisation of the variables, that is, the way of measuring the concepts, I use the two concepts of validity and reliability. Firstly, “validity refers to measuring what we think we are measuring” (King et al., 1994, p. 25). This implies a theoretical reason for the chosen operationalisation of a variable, that properly captures the concept I want to measure (Ringdal, 2007, p. 86). Hence, I avoid the problem of conceptual stretching and ensure that “the observations meaningfully capture the ideas contained in the concepts” (Adcock & Collier, 2001). Secondly, “reliability means that applying the same procedure in the same way will always produce the same measure” (King et al., 1994, p. 25). This is an empirical question and a judgement of how trustworthy the data material is. Measurement is an important limitation to my analysis. In social science, it is a challenge to operationalise and measure concepts, often concepts that are difficult to define theoretically as well as empirically. By taking validity and reliability into account when choosing data, I attempt to respond to this weakness. Using survey-data also present a particular challenge with regard to reliability of the data. Errors can occur both in the field when the interviewer might fill in the questionnaire incorrectly, and in the process when entering the data into the dataset from the questionnaire (Afrobarometer Network, 2011, p. 53). As a rule of thumb, ordinal variables with five categories or more can be treated as continuous, if it is theoretically correct (Ringdal, 2007, p. 361). However, several of the variables included in my analysis contains only 4 categories, but I treat them as continuous as I assume them to measure an underlying continuous dimension, with responses that ranges from 1 “Very easy” to 4 “Very difficult”. This is also done by Ali, Fjeldstad and Sjursen (2014).

### 3.2.1 The dependent variable

The dependent variable is tax compliance - the apprehension that paying taxes is the right thing to do. To measure this I will employ a variable from Afrobarometer Round 5 (2011-2013), where the respondents give their opinion of people that are not paying taxes they owe on their income. As described in section 2.2, my focus is how people choose to give up a part of their income to the benefit of the society, which is why I consider this question an adequate operationalization.<sup>15</sup> The respondents states whether they think this action is “wrong”, “wrong

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<sup>15</sup> I exclude tax compliance of other types of taxes, such as VAT, because they are theoretically less relevant than personal income tax, as explained in section 2.2.

but understandable” or “wrong and punishable”. It is not evident that this is the best way to operationalise tax compliance. Firstly, I will give an account for other ways of measuring tax compliance, secondly the reliability and validity of the chosen measurement, and lastly I will explain the details about the operationalisation.

An ideal measurement of tax compliance on the macro level is the so called tax gap; measured as “the difference between the federal income taxes households actually owe, and what they report and pay voluntarily on a timely basis” (Andreoni, Erard, & Feinstein, 1998, p. 819). However, constructing such a measure is difficult, almost impossible, because there is no exact data on this. A second ideal alternative would be a survey asking the respondents directly about their own level of tax compliance, but also this is problematic. Firstly, there is a problem of validity. Posing a direct question about tax evasion can rather be a measure of the strength of the rule of law, and the level of punishment in each country, because cheating on taxes is illegal. In section 2.1, I argued in favour of a definition of tax compliance based on the concept of tax moral. This implies a variable that captures more than the actions of the respondents. The level of punishment for tax evasion and the strength of the rule of law in the respondent’s country will cause a bias to such a measurement. From this follows the second problem, which is that of reliability. Lawbreaking is a sensitive subject and difficult to capture in a survey, due to the “individual’s reluctance to reveal one’s own non-compliance” (Ali et al., 2014). Tax compliance being a sensitive topic in the sense that withholding taxes is illegal, might make it difficult to obtain a correct measure on tax compliance.<sup>16</sup> In general, survey data of illegal behaviour suffers from this “problem of biases in self-reports of sensitive behaviour” (Kinsey, 1992, p. 263). However, Reinikka and Svensson (2006) argue that the formulation of the questions in the survey can to a certain extent bypass this bias. In their research on corruption “the questions on corruption were phrased in an indirect manner to avoid implicating the respondent of wrongdoing” (p. 365). Ali, Fjeldstad and Sjørusen (2014) argue in favour of a similar indirectly phrased question to capture tax compliance.

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<sup>16</sup> There is, however, evidence that not paying taxes can be a form of resistance against the government. See, for instance, Scott (1985) who describes tax evasion as a ‘weapon of the poor’, where this will be regarded favourably by compatriots. However, as a protest against the government, also for this reason respondents would most likely underreport tax non-compliance. Especially in low-trust countries, including many African countries, this is especially important.

Research conducted on tax compliance in other geographic regions relies on an indirect measurement of tax compliance. In the World Values Survey<sup>17</sup> the respondents answers the following question: “Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between: Cheating on tax if you have the chance?”<sup>18</sup> This is employed by Hug and Spörri (2011) in their analysis of how opening up for democratic referendums influences trust and tax moral in Europe. Torgler has conducted two separate studies of tax moral in Asia (2004) and Latin-America (2005b) with data from the World Value Survey. Lago-Peñas and Lago-Peñas (2010) use data from the European Social Survey to investigate tax moral resulting from individual and contextual factors. Here, the respondents answers to what extent they believe in the statement ‘citizens should not cheat on their taxes’, with the alternatives ‘agree strongly or agree’, ‘neither agree nor disagree’ or ‘disagree strongly or disagree’. Of country studies, Torgler (2005a) uses a similar approach in a study of the effect of direct democracy on tax compliance in Switzerland.<sup>19</sup> In contrast, earlier research on tax compliance in Sub Saharan Africa, see for instance Levi and Sacks (2009), D’Arcy (2011) and Sacks, 2012), have relied on the statement “The tax department always has the right to make people pay taxes” from Afrobarometer. The respondents answer whether they “strongly disagree,” “disagree,” “neither disagree nor agree,” “agree,” or “strongly agree” with this statement. This was the best available measurement of tax compliance in earlier rounds of the Afrobarometer. Daude, Gutiérrez and Melguizo (2012) argue that in this case, the respondent will give an answered biased by the level of trust in the tax administration itself.

With an indirect formulation, I follow the argument by Reinikka and Svensson (2006), and bypass the earlier mentioned problems. The measurement is not perfect. The earlier mentioned problems of reliability and validity are still present. Even with an indirect formulation, respondents might be reluctant to reveal ‘law breaking attitudes’. In this sample from Afrobarometer Round 5 when asked who they think sent the interviewer, as many as 43% answered the government, as opposed to 15% answering research company, which strengthens

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<sup>17</sup> World Values Survey only includes data from Sub Saharan Africa: Zimbabwe, Ghana, South Africa and Rwanda.

<sup>18</sup> Data and questionnaire available on [www.worldvaluessurvey.org](http://www.worldvaluessurvey.org).

<sup>19</sup> Data from the International Social Survey Program (ISSP, 1998), with the question “Do you feel it is wrong or not wrong if a taxpayer does not report all of his or her income in order to pay less income tax?” This is coded 0=not wrong, 1=a bit wrong, 2=wrong, and 3=seriously wrong.

this concern.<sup>20</sup> However, the Afrobarometer covers around 100 questions on a wide range of topics, “which reduces framing effects compared to a survey based only on tax compliance questions” (Torgler, 2005b, p. 141). Thus, it remains a better measurement for this conceptualisation of tax compliance for Sub Saharan Africa, and is an improvement to earlier research on tax compliance in this region, and, so far, only used by Ali, Fjeldstad and Sjørusen (2014) in their analysis of four African countries.<sup>21</sup> However, it makes my measurement only a proxy for the phenomenon I want to measure, because it relies on the honesty of the citizens and will suffer from a social desirability bias. Measuring the individual’s actual behaviour would still be the ideal, regardless of my perception-based conceptualization of tax compliance.

For the analysis, I follow Ali, Fjeldstad and Sjørusen (2014) and construct a dichotomous variable of tax compliance, considering respondents as being tax compliant if they answer ‘wrong’, and non-compliant if they answers “wrong but understandable” or “wrong and punishable”. This process implies that I might lose some valuable information. The reason for this dichotomisation is primarily theoretical. As described in section 2.1, I conceptualise tax compliance the apprehension that paying taxes is *the right thing to do* and tax non-compliance as the perception that *not* paying taxes is *not necessarily wrong*. Of interest is the difference between the two categories. Either, you believe not paying taxes is wrong, or you believe this is not wrong, due to various reasons, which can be reasonable, but it is still not *not* wrong. Sacks (2012) argues in favour of a dichotomous variable using a similar measurement related to tax compliance and the citizens’ legitimating beliefs.<sup>22</sup> Sacks (2012, p.10) compares “people who accept government’s right to make people pay taxes” with “those who express some ambiguity about this right and those who reject this right”. Additionally, there is a statistical benefit from this dichotomization. Figure 11 shows the distribution of the original dependent variable, which is uneven. The dichotomous variable, however, has an even distribution, see Figure 12. There is an interesting consideration here. Of the non-tax compliant respondents, 22% responded “not wrong at all”, whereas 78% of the respondents answered “wrong but understandable”. Either

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<sup>20</sup> ‘Research company/ organization/ programme (including the Afrobarometer National Partner, the network’s partner for each country)’.

<sup>21</sup> Kenya, South Africa, Tanzania and Uganda.

<sup>22</sup> “The tax department always has the right to make people pay taxes”, from Afrobarometer round 4. A 5-point scale measures this, ranging from ‘strongly disagree’, ‘disagree’, “neither disagree nor agree”, “agree”, and “strongly agree”. Sacks (2012) collapses the first two into one category, the three latter in another category.

this can mean a reluctance to reveal a complete non-compliant attitude, or in fact, that changing what is ‘understandable’ by cheating on taxes, for example improving the pay-off for the taxes, will cause a large share of the taxpayers being tax compliant. Ali, Fjeldstad and Sjurson (2014) control with an ordered logit regression and concludes that the dichotomization did not result in loss of valuable information. My control with ordered logit regression of the final model (Model 16) shows the same.<sup>23</sup>

### 3.2.2 The independent variables

Next, I will introduce the independent variables. Firstly, I will capture the respondent’s overall satisfaction with public services. This is in line with the theory about the fiscal contract where the state trades public services for taxation. I choose to operationalise public services with a variable measuring the citizens’ *perception* about the services, rather than with an objective variable for e.g. coverage or public spending, where unequal distribution might bias the former and corruption the latter. The citizens’ perception of the public services should be more important than the macro-economic measurement of e.g. school enrolment or health service coverage. I create the scale SATISFACTION PUBLIC SERVICES, measuring the citizen’s satisfaction with the government’s provision of security, health care, education, roads and electricity, where the two latter measures infrastructure. This is of theoretical importance as I aim not to measure the citizen’s satisfaction with each of the services, but rather the citizen’s overall evaluation of the government’s performance. The theory of the fiscal contract concerns public services in general, which is why I consider this operationalisation most valid. Moreover, by creating a scale, I avoid potential multicollinearity in the model as the original variables for the different public services correlate (see Table 14 Correlation matrix). I use principal component analysis to identify the underlying factor capturing the general level of satisfaction with the government. I follow Kaiser’s criteria and keep the factors with an eigen-value of more than, or equal to 1 (Christophersen, 2013, p. 99). Further, I test the reliability of the scale by ensuring a Cronbach’s alpha of more than 0.7 (Ringdal, 2007, p. 87). The correlation is 0.78.<sup>24</sup> The drawback by creating a scale is that I am unable to test for the relative difference between

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<sup>23</sup> Regression table available upon request.

<sup>24</sup> See Table 13 Principal Component Analysis

the services. Both McLean (2007) and D’Arcy (2011) test only for health and education services, arguing that these are the most central to a welfare state. The latter also finds that health matters most. Moreover, education is likely to matter most for those with children in school age (Ali et al., 2014). SATISFACTION PUBLIC SERVICES goes from 1 “Very bad”, to 4 “Very well”, and I expect a positive correlation with tax compliance. Next, I will capture the frequency of insurgents or other powerful non-governmental actors undermines the government’s provision of security. I follow Ali, Fjeldstad and Sjørusen (2014) and operationalise this with a variable measuring how often *powerful people or groups other than the government, such as criminals or gangs, have made people in the community pay them money in return for protection*. This question measures how frequent the respondent encounters a threat to the government’s provision of security, or put another way, this variable measures the state’s inability to provide within-state security. The variable PROTECTION PAYMENT has the scale from 1 “Often”, to 4 “Never”, and I expect a negative correlation with tax compliance.

I follow Delhey and Newton (2005), and define social trust as the generalized trust in people we know, or do not know. This I operationalize with a dichotomous variable, SOCIAL TRUST where the respondents answer if they *would say that most people can be trusted, or that one should be very careful in dealing with people*. The variable for social trust takes the value 1 if the respondents agree with the former. This is a dichotomous variable in the dataset, taking the value 1 if the individual is *socially trusting*. This will not provide a much-nuanced answer, but in the Afrobarometer it is the best available operationalisation of social trust.<sup>25</sup> I expect SOCIAL TRUST to correlate positively with tax compliance. Next, I measure the participation in community activities by using factor analysis to create a scale between two variables measuring *if the respondent has attended a community meeting [joined with others to raise an issue] during the past year, or would, if possible*. Putnam (2000, p. 50) argue, “[w]hat really matters from the point of view of social capital and civic engagement is not merely nominal membership, but active and involved membership”. Hence, I want to capture the underlying dimension of a person’s willingness to participate in the community. Again, I follow Kaiser’s criteria, and ensure scale reliability of an alpha of 0.79.<sup>26</sup> The variable COMMUNITY PARTICIPATION goes from 1 “No, would never do this”, to 5 “Yes, often” and I expect a positive

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<sup>25</sup> As opposed to the World Value Survey, who measures social trust on an 11-point scale.

<sup>26</sup> See Table 13 Principal Component Analysis

correlation with tax compliance. To operationalize common national identity, I follow D'Arcy (2011) and constructs a dummy variable measuring whether the respondent associates most with the ethnic identity, the national identity or equal between the two. The respondent give an answer to the following statement: *Let us suppose that you had to choose between being a national ID and being a [insert respondent's ethnic group]. Which of the following best expresses your feelings?* The respondents choose between a) I feel only [ethnic group], b) I feel more [ethnic group], c) I feel equally national ID and [ethnic group], d) I feel more national ID than [ethnic group] or e) I feel only national ID. I follow D'Arcy (2011) and construct a dummy set for EQUAL ID consisting of the answers a), and a variable NATIONAL ID for the responses d) and e). Ethnic ID, responses a) and b) is the reference category. I expect both EQUAL ID and NATIONAL ID to correlate positively with tax compliance. To measure the two dimensions of social solidarity, I employ two variables where the respondent evaluate the government's performance on reducing the income gap in the society, and on increasing the living standards for the poor, on a scale from 1 "Very badly" to 5 "Very well". I expect both GOV. WORKING TO REDUCE INCOME GAP and GOV. WORKING TO REDUCE ABSOLUTE POVERTY, to correlate positively with tax compliance.

I include control variables to avoid spurious findings. I have chosen the control variables I see most relevant for my analysis and that measures the relevant aspects my other independent variables do not captures, in addition to follow the examples from relevant research. First, I include a variable capturing the respondent's level of political trust. That political trust increases tax compliance is a core theoretical assumption in the literature, as outlined in section 2.2. I construct the scale POLITICAL TRUST, with a principal component factor analysis consisting of trust in president/ prime minister, trust in the parliament/ national assembly and trust in the tax department. For respondents from Madagascar data is missing on the variable for trust in parliament/ national assembly so I replace this with the average for the two other variables. Again, I follow Kaiser's criteria; keeping the factors with an eigen-value equal to, or more than one, and ensuring a Cronbach's alpha >0.6. The scale measuring POLITICAL TRUST has a Cronbach's alpha of 0.76. Ali, Fjeldstad and Sjørusen (2014) finds that this increases tax compliance, and Sacks (2012) finds that the perception of government fairness and legitimacy is an important determinant of tax compliance, correlating positively with tax compliance. Next, the level of perceived difficulty to avoid paying the taxes is identified as an important

determinant of tax compliance (Allingham & Sandmo, 1972), which is supported by the empirical findings from Ali, Fjeldstad and Sjursen (2014). This I measure with the variable TAX DETERRENCE, where the respondent answers the perceived level of difficulty to avoid taxes on a scale from 1 “Very easy” to 4 “Very difficult”, and I expect a positive correlation with tax compliance. Moreover, I consider this variable to capture the trust that others are paying their taxes as well, that is not captured by the variable SOCIAL TRUST. The degree to which the taxpayers will pay voluntarily depends on “that their neighbours are also likely to pay” (Gloppen, S. & Rakner, 2002, p. 5). The next variable considered influencing the citizens’ tax compliance is the perceived level of corruption amongst tax officials. This differs from the trust in tax department, as the tax officials are the persons the taxpayers are in daily contact with, the tax collectors. I measure this with the variable CORRUPTION TAX OFFICIALS. D’Arcy (2011) finds no effect of this variable on tax compliance, whereas bureaucratic honesty is found to increase the perception of the government’s right to collect taxes by Sacks (2012) and Levi and Sacks (2009). The variable is from 1 “None of the tax officials are corrupt” to 4 “All of the tax officials are corrupt”, and I expect a negative correlation with tax compliance.

Next, I need to avoid the possible spurious effect of human capital; that more knowledge about taxation leads to higher tax compliance. Ali, Fjeldstad and Sjursen (2014) find support for this, and according to Gloppen and Rakner (2002) the visibility of the taxes increases the accountability of the tax system, which again can increase the tax compliance. I create a factor variable measuring TAX KNOWLEDGE, again using principal component analysis and following Kaiser’s criteria. This is a variable constructed by the respondents experience with paying the following taxes and/ or knowledge about the requirements to pay the following taxes: general sales tax or value added tax (VAT), license fees to local government, property rates or taxes, income tax if you have paid employment, self-employer tax for those who are self-employed. These are all dummy-variables coded 0=respondent answers “no, are not required to pay” or 1=“yes, are required to pay”. The Cronbach’s alpha is 0.82.<sup>27</sup> I create an index measured from 0 “No knowledge about taxation” to 1 “Much knowledge about taxation”.

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<sup>27</sup> See Table 13 Principal Component Analysis



Finally, I follow the tradition of research on tax compliance and include several socio-demographic control variable. Gender is a recurrent control variable, although the effect on tax compliance is ambiguous (Daude et al., 2012). D’Arcy (2011) finds a significant effect that women are more tax compliant than men, however Ali, Fjeldstad and Sjursen (2014) and Sacks (2012) find no significant gender effect. I control for this with the dichotomous variable MALE taking the value 1 for male and 0 for woman. Neither Sacks (2012) nor D’Arcy (2011) find a significant age effect on tax compliance. Ali, Fjeldstad and Sjursen (2014) find that age increases tax compliance in South Africa, Kenya and Tanzania, but has no significant effect in Uganda. Torgler (2004, 2005b) finds that tax moral rises with age in Asia and Latin America. I include the variable AGE that ranges from 18-108, and I expect a positive correlation with tax compliance. Next, a higher level of education is associated with higher tax compliance (Daude et al., 2012). D’Arcy (2011) find that those with no education, or with only primary education, are less tax compliant. Ali, Fjeldstad and Sjursen (2014) finds a positive effect in Tanzania, but no significant effect in neither South Africa, Kenya nor Uganda. The variable EDUCATION measures the respondent’s level of education on a scale ranging from 1 “No formal schooling”, to 10 “Post-graduate”. Additionally, the citizen’s job situation influences the level of tax compliance, where having a job is associated with higher tax compliance because they are themselves paying taxes, making them more hostile towards tax evasion. Moreover, self-employed citizens are less tax compliant than citizens that are not self-employed, as individuals that have a formal employment are more likely to contribute (Daude et al., 2012). Torgler (2004) finds that having a job increases tax moral, whereas self-employment is associated with lower tax moral across Asian countries. Ali, Fjeldstad and Sjursen (2014) finds a positive effect of employment in Kenya, but a negative effect Uganda, and no effect in South Africa and Tanzania. I measure these two phenomena with the variables JOB and SELF-EMPLOYED. The first takes the value 1 if the respondent has a job that pays cash income, and 0 if this is not the case. The latter takes the value 1 if the respondent is self-employed, and 0 if this is not the case. I expect the first to correlate positively with tax compliance, the latter negatively. Wealth is also a recurrent control variable, but the direction of the correlation with tax compliance in theoretically unclear, as it depends on the structure of the tax system (regressive or progressive), and the individual’s willingness to risk-taking (Andreoni & Feinstein, 1998). As many individuals are involved in barter economics instead of market economics in developing countries, measuring wealth is difficult (Levi & Sacks, 2009). I follow Ali, Fjeldstad and Sjursen (2014), Levi and Sacks (2009) and Sacks (2012) and create an index consisting of the

ownership of a basket of different goods, however none of their results are significant. I include the ownership of radio, television, vehicle and the quality of the respondent's roof. I create an additive index for WEALTH, where I assume that together these variables gives a measure of the respondent's level of wealth. The variable goes is and index measured on 0., 0.25, 0.5, 0.75 and 1. The last of the recurrent control variable is whether the respondent lives in urban or rural areas. Fjeldstad and Semboja (2001) suggest that there is a positive correlation with tax compliance because the tax enforcement is weaker in the rural areas, which Sacks (2012) and Daude et al. (2012) find support for. On the other hand, neither D'Arcy (2011) nor Ali, Fjeldstad and Sjursen (2014) find significant effect of this. I include the dummy-variable URBAN, taking the value 1 if the respondent lives in an urban place, and 0 for rural place, expecting a positive correlation with tax compliance.

I also include several variables to measure interaction effects. To test H3b, I measure how the often the government is discriminating the respondent's ethnic group. D'Arcy (2011) found a strong negative correlation with tax compliance. The variable ETHNIC DISCRIMINATION takes the values from 1 "Never", to 4 "Always". With this, I will create an interaction with the variables NATIONAL ID, EQUAL ID and ETHNIC ID, where I expect the interaction effect to be strongest for the latter, and reduce the negative effect of ETHNIC ID on tax compliance, as argued for in section 2.2.3. I will include a variable measuring the respondent's living standard compared to co-citizens', which I assume influences social trust. The respondent is asked to rate this self, and the variable COMPARED LIVING STANDARD goes from 1 "Much worse" to 5 "Much better". I will also include an alternative measure of *common national identity*, with a variable measuring the respondent's level of pride in own nationality. The respondent states the level of agreement with the statement *it makes you proud to be called a national identity*. Hence, the variable PROUD OF NATIONALITY has a scale from 1 "Strongly disagree" to 5 "Strongly agree", and I expect a positive correlation with tax compliance. Lastly, I will in one model use an alternative operationalisation of tax compliance, to control for a possible bias in the operationalisation of TAX COMPLIANT. I introduce a variable measuring whether the respondent *supports higher taxes for more [public] services*, a dichotomous variable taking the value 1 if this is the case, and 0 if the respondent do not support higher taxes for more services. I present the theoretical arguments for the three latter variables in chapter 0.

### 3.2.3 Summary statistics

I present the summary statistics for all the variables employed in the analysis, first for the whole sample, then for the final sample.

**Table 2 Summary statistics for whole sample**

	N	Mean	Std. Dev.	Min	Max
Tax compliant	41,810	0.498	0.500	0	1
Satisfaction with public services	43,598	2.406	0.655	1	4
Protection payment	42,703	1.157	0.540	1	4
Social trust	43,555	0.189	0.392	0	1
Community participation	44,287	3.101	1.211	1	5
Ethnic ID	42,632	0.107	0.309	0	1
Equal ID	42,632	0.405	0.491	0	1
National ID	42,632	0.488	0.500	0	1
Ethnic discrimination	41,150	1.648	0.938	1	4
Gov. working to reduce income gap	42,053	1.811	0.847	1	4
Gov. working to reduce absolute poverty	42,710	1.985	0.888	1	4
Tax deterrence	36,657	3.173	0.776	1	4
Political trust	43,616	2.708	0.893	1	4
Corruption tax officials	37,457	2.438	0.855	1	4
Taxation for more services	38,649	0.580	0.494	0	1
Tax knowledge	42,359	0.612	0.388	0	1
Male	44,398	0.500	0.500	0	1
Age	43,986	37.05	14.57	18	105
Urban	44,398	0.384	0.486	0	1
Job	44,253	0.325	0.468	0	1
Self-employed	42,406	0.493	0.500	0	1
Education	44,309	4.192	2.058	1	10
Wealth	43,963	0.462	0.282	0	1
Compared living condition	42,910	2.874	0.991	1	5
Proud of nationality	44,133	4.387	1.111	1	5

**Table 3 Summary statistics for final sample**

	N	Mean	Std. Dev.	Min	Max
Tax compliant	26,160	0.506	0.500	0	1
Satisfaction with public services	26,160	2.398	0.659	1	4
Protection payment	26,160	1.176	0.568	1	4
Social trust	26,160	0.183	0.387	0	1
Compared living condition	26,160	2.900	0.998	1	5
Community participation	26,160	3.159	1.209	1	5
Ethnic ID	26,160	0.106	0.308	0	1
Equal ID	26,160	0.407	0.491	0	1
National ID	26,160	0.487	0.500	0	1
Ethnic discrimination	26,160	1.675	0.936	1	4
Gov. working to reduce absolute poverty	26,160	1.975	0.891	1	4
Gov. working to reduce income gap	26,160	1.811	0.850	1	4
Tax deterrence	26,160	3.173	0.780	1	4
Political trust	26,160	2.668	0.871	1	4
Corruption tax officials	26,160	2.450	0.854	1	4
Tax knowledge	26,160	0.626	0.379	0	1
Male	26,160	0.537	0.499	0	1
Age	26,160	36.75	13.96	18	100
Urban	26,160	0.393	0.488	0	1
Job	26,160	0.359	0.480	0	1
Self-employed	26,160	0.537	0.499	0	1
Education	26,160	4.352	2.068	1	10
Wealth	26,160	0.490	0.280	0	1

### **3.3 Research method**

I aim to test the hypotheses outlined in chapter 2. Hence, the hypothetic-deductive approach is the most appropriate research method, where theories is the base for the formation of the hypotheses, which again is the base for the empirical studies. This is in accordance with the naturalistic way of doing research; to identify patterns in the world (Moses & Knutsen, 2012, p. 22, 70). The logic is that “when an independent variable (X) is present, then its dependent associate (Y) is also present; and that when X is absent, then Y is also absent” (Moses & Knutsen, 2012, p. 52). The data material is a large N-study with empirical observations, which leads me to the statistical method, where quantitative information is collected and then tested based on theory (Moses & Knutsen, 2012, p. 71). Of these, the simplest way is with descriptive statistics, from which I cannot test causality. According to King and Keohane (1994, p. 7), the goal of scientific research is inference, and Moses and Knutsen (2012, p.83) claims that the role of statistics is today to “infer beyond the data”. Consequently, by using this method I aim to draw conclusions about the real world. The regression analysis is considered "the workhorse of modern statistical inference" (Moses & Knutsen, 2012, p. 84). Regression analysis measures the strength of the co-variation between different variables, and whether this co-variation is negative or positive, that is, if high values on one phenomenon equals high values on a different phenomenon.<sup>28</sup> With this method, I can study if the provision of public services, social values, common national identity and social solidarity correlates with tax compliance. Moreover, I can measure the strength of the co-variation; hence evaluate the relative importance of the different factors explaining tax compliance (Skog, 2004, pp. 213–215). I use the statistical package from the software STATA to execute the analysis (StataCorp., 2013). I have used SPSS and Microsoft Excel for some minor data management.

#### **3.3.1 The logit model**

In this analysis of tax compliance, the dependent variable is binary with to possible outcomes. Zero (0) represents the absence of tax compliant attitude and one (1) represent the presence of tax compliant attitude. The logit model is the most used regression model for analysing such data. (Hosmer, Lemeshow, & Sturdivant, 2013, pp. 1).<sup>29</sup> A logit model estimates the probability

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<sup>28</sup> I will address the challenge of causality in section 3.5.1.

<sup>29</sup> There is also the probit model, which is most used in the field of economics. The differences are minimal, and I will not discuss it here, suffice to say that I choose the logit model over probit as it is the most common in political science.

for observing an outcome  $P(y_i=1)$ , given a vector of explanatory variables,  $x_i$ :  $P(y_i=1|x_i)$ . Hence, with the logit model I can estimate the probability of a respondent having a tax compliant attitude, given the values on the different explanatory variables. The following equation gives the logit model:

$$P(y_1 = 1|x_1) = \frac{e^{b_0+b_1X_1}}{1 + e^{b_0+b_1X_1}}$$

On the logit scale, the logit model is linear and estimated with the natural logarithm of  $P(Y=1)$ . This gives the general likelihood function, expressed as:

$$L_p = \alpha + \beta X_i + \varepsilon$$

I have the following logit model to estimate:

$$L_{TAX\ COMPLIANT} = \alpha + \beta X_1 + \gamma X_2 + \delta X_3 + \zeta X_4 + \eta D_1 + \epsilon_i$$

Where  $X_1$  expresses the independent variables for the provision of public goods,  $X_2$  expresses the independent variables on citizen-citizen relations,  $X_3$  represents the attitude control variables,  $X_4$  represents the socio-demographic control variables and  $D_1$  is a dummy set for all countries in the analysis, taking 28 values, and  $\varepsilon$  is the error term. The method for estimating the logit model is maximum likelihood estimation (MLE), which gives the parameters that is most likely to correspond to the data sample (Hamilton, 1992, p. 223). There are three main ways of interpreting the results from a logit model; by the logit b-coefficients, the odds-ratios or the marginal effects. I will focus on the latter, as this enables me to say something about both the direction and the substantial effect of the correlation tax compliance. However, as the marginal effects are not directly comparable when the scales of the explanatory variables differ, I will also compute standardized beta-coefficients to compare the relative effect of the different explanatory variables on tax compliance.<sup>30</sup>

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<sup>30</sup> I compute the standardized beta-coefficients subtracting the mean value and divide by the standard error, and compute what is often known as a z-score:  $bz=(b-\text{mean}(b))/ b(\text{SE})$ , then I re-run the regression with the standardized beta-coefficients.

### 3.4 Assumptions of the logit model

There are four main assumptions of the logit model; (i) correct specification, (ii) independent observations, (iii) no multicollinearity and (iv) no influential cases. (Hamilton, 1992, p. 225). A correct specified model implies firstly that  $P=1|x_i$  is a logit function. The probability of  $y=1$  is explained as a linear function of the  $x$ -values. I test for the model's goodness of fit with the Wald-test, which tests whether the coefficients equals zero (Skog, 2004, p. 374). Secondly, a correct specified model includes all relevant variables, and excludes all irrelevant variables. This is a theoretical assumption. I cannot claim to succeed in including all relevant variables that explains tax compliance. Thirdly, a correct specified model does not have any measurement errors. I correct for this by ensuring reliability in the data, which I describe in section 3.2 (Hamilton, 1992, p. 225).

Next, the independent variables should be independent of one another, which means that they do not explain the same concept (Moses & Knutsen, 2012, p. 89). Having many variables measuring the same concept is highly problematic, both theoretically and statistically. Too many similarities between the independent variables makes it difficult to isolate the single effects. Statistically, it can result in multicollinearity. Multicollinearity in a model causes incorrect specified coefficients and large standard errors which can cause the model to give a false explication of the relationship between  $X$  and  $Y$ . A theoretical method to ensure independent observations and avoid multicollinearity is to follow the principle of parsimony in the research model. For every explanatory variable I include, I have a theoretical reason for doing so. A statistical method is to examine a correlation matrix between the dependent variable, see Table 14 Correlation matrix. However, this method is not ideal, as one can have multicollinearity in the model without high correlation in the matrix. (Hamilton, 1992, p. 233). As a rule of thumb, a Variance Inflation Factor  $> 10$  signifies multicollinearity. Multicollinearity is a problem in my mode, I will return to that in section 4.3, but instead of following this principle too meticulously, I will make the reader aware of this problem, as I have sound theoretical reasons for including every variable. Introducing interaction terms will increase multicollinearity, which cause inflated standard errors and hence increases the possibility of a keeping a false  $H_0$ . For this reason, I use the Wald-test to detect whether there is a significant increase in model after adding the interaction terms, because in this case, due to multicollinearity, the  $z$ -test can be misleading. Instead of excluding relevant variable, I have

included variables that are of significance in the model. This causes inflated standard errors, which can cause one to commit a type 1 error, keeping a wrong H0. This is why I build up the model gradually and run bivariate models to check for any effects. All variables are included on a firm theoretical basis, which I deem the most important. Next, discrimination is a problem that occurs in logistic regression when an independent variable not varies on the dependent variable (Hamilton, 1992, p. 233). Lastly, influential cases also represent a problem for the model. Having many so-called outliers, variables with extreme values on some observations or unusual patterns, will lead to biased parameter estimates or inflated standard error. Moreover, it can be a symptom that the model lack one or more relevant variables. I will use the deviance residual method to test for possible influential cases. The deviance residuals tests for the leverage of different cases to see whether some of them have enough leverage to bias the estimates. I will do this in section 4.3.

## **3.5 Limitations to the analysis**

### **3.5.1 Causality**

“The problem with statistical approaches, even from a naturalist perspective, is their inability to examine causal mechanisms” (Moses & Knutsen, 2012, p. 93). Therefore, I have to justify why I treat tax compliance as the dependent variable, whereas I treat other factors as explanatory variables. It might be that it is tax compliance that leads both to the provision of public goods and to social cohesion. The first proposition is rather intuitive, increased tax compliance will increase GDP, which again can increase the provision of public goods.<sup>31</sup> Persson (2008b, p.10) argue that “universal welfare programs are expensive and, as a result, most societies that have them have a strong tax capacity too. Moreover, the studies by Miguel (2004) and Miguel and Gugerty (2005) and have shown that ethnic diversity is associated with lower willingness to contribute to a public project. A consequence of this is lower provision of public goods *per se*, which again will reduce tax compliance. An econometric method that partly corrects for this limitation is employing lagged variables. However, this is only possible for time series analysis, the lack of which is an already mentioned weakness with my dataset. A chicken-and-egg problem is always present in social science, but it is very important to be aware of this. When I draw the conclusions about the causality of the analysis, it is important

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<sup>31</sup> If the government chooses to spend the revenue on this good.



that I base my proposed course of events on theory. I base my model on the fiscal contract theory, which is deeply rooted in history and proven valid in several empirical studies. The model will prove a correlation, and on the background of the theory outlined in chapter 2, I will interpret these findings as evidence of possible causal mechanisms.

### **3.5.2 Challenges with survey data**

There are particularly two challenges that arises when using survey data for regression analysis. First, avoiding bias in the parameters (point estimates) and second, estimating the correct variance and standard errors (Kreuter & Valliant, 2007, p. 4). The aim of a survey dataset is to represent a specific population. The sampling method defines how representative the sample is with regard to the whole population. A statistical generalization from the sample to the population is possible only with a certain form of sampling method (Ringdal, 2007, p. 185). Afrobarometer uses a clustered, stratified, multi-stage area probability sampling method.<sup>32</sup> When used in regression analysis, I need to take into consideration the weights, the stratification and the clustered nature of the data (Kreuter & Valliant, 2007, p. 2). Weights correct for over- and under-representation in survey data and are consequently used in analysis of survey data to adjust for different biases in the sampling method (Hamilton, 2009, p. 393). I will use two probability weights already available in the Afrobarometer dataset. The probability weight for an observation equals the inverse of the probability that this observation is included in the analysis (Hamilton, 2009, p. 393). The first probability weight adjusts the sample distribution in each country to account for individual selection probabilities, such as urban-rural, regions, gender and household size. The other weight combines this weighing with a weight correcting each country to the same sample size (N=1200). I will use this combined weight for the cross-country analysis.

Stratified survey data divides respondents into strata, which are subgroups of the sample. The sampling is then done within these strata, ensuring that the sample includes observation units from each strata (Kreuter & Valliant, 2007, pp. 2–3). Afrobarometer uses two stratas, also known as sampling units; urban/rural and regions. The purpose of this stratification from areas

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<sup>32</sup> To avoid repeated references, all information about the Afrobarometer sampling method in this section (3.5.2) is adopted from The Afrobarometer round 5 survey manual (Afrobarometer Network, 2011).

is to make it more likely that distinctive ethnic or language groups are included in the sample. Stratified data can cause a bias to the parameter estimates, but the survey weight accounts for this. However, stratification can also result in incorrectly computed standard errors (Kreuter & Valliant, 2007). Next, the observations within one cluster share more common particularities than they do with the observations outside the cluster (Gore, 2000, p. 298). Often, as is the case in Afrobarometer, clustering is done in order to reduce the costs of executing the survey, and the respondents are clustered within census enumeration areas. This similarity amongst the observations within the same cluster violates the assumption of independent observations. Failing to take into account the clustered nature of the data increases the probability of a type II error, because the standard errors will be underestimated and results can falsely be interpreted as significant (Kreuter & Valliant, 2007, p. 6).

Ideally, I would survey-set the dataset in Stata, meaning that every analysis executed takes into account the survey design of the data set; the primary sampling units (PSU), the two stratas (urban/ rural and region) and sampling stages. However, I do not fully succeed in this. Firstly, the Afrobarometer does not provide information about the PSU (the households), meaning that I have no variable to measure this. Secondly, due to a large number of missing variables, several regions end up containing only one unit with information on all observations. Moreover, the multistage sampling varies between urban and rural sampling units. Limited by data, time and knowledge about survey data I am unable to reflect the complex sampling method Afrobarometer employ. I choose to rely on the methodology by earlier researchers, which accounts only for the weighting and clusters the standard errors on the regional level. It is reasonable to assume that there are similarities between the respondents in the same area, especially since these are often based on ethnicity (Kimenyi, 2006).<sup>33</sup> I cluster around the 348 regions in my sample. To sum up, I follow earlier research with this dataset, that to my knowledge includes the survey-weights, and cluster the standard errors on the regional level.

Finally, I emphasize the limitations to generalise from this data sample to the region of Sub Saharan Africa. First, data is lacking from especially authoritarian countries and countries with

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<sup>33</sup>Ali, Fjeldstad, Jiang and Shifaz (2015) cluster the standard errors around ethnic groups, which will give a slightly better effect.

civil war. The survey favour stable and democratic countries. Additionally, the weighting of the survey generalizes to the region incorrectly, as the combined weight only standardizes each country sample to the number of population. Consequently, the weight does not take into account regional effects such as colonial heritage that might influence tax compliance. Ali, Fjeldstad, Jiang and Shifaz (2015) finds that there is a difference between former English and French colonies with regard to tax compliance. However, the Afrobarometer remains the best option for conducting large-N survey research in this region. I will evaluate the models with a level of significance  $p=0.01$  or  $p=0.05$ .<sup>34</sup> The p-value gives the probability of rejecting  $H_0$  even if it is true, that is, committing a type I error (Skog, 2004, pp. 207–209). This means that there is respectively 1% or 5% of drawing the wrong conclusion. Choosing a strict significance level can increase the possibility of committing a type II error, which is to keep a false  $H_0$ . This possibility depends also on the sample size and the strength of the relation between the variables, which is given by the standard errors (Skog, 2004, pp. 207–209). I will discuss tax compliance in Sub Saharan Africa throughout this thesis, but it is vital that I make the reader aware that a complete generalisation to this region from my sample will be incorrect.

### **3.5.3 Country fixed effects**

Contextual factors are of huge significance. I choose to run a fixed-effect model, including a dummy variable for each country, in order to correct for country-specific differences. The data has a multilevel structure of three levels: The individual respondents are clustered within primary sampling units, which are nested within countries. This alone implies a multilevel model. However, I choose not to do that, following the methodology used by D’Arcy (2011), and McLean (2007) in their cross-country analyses with the Afrobarometer, which is ‘simple’ regression and controlling for country fixed effects by including a dummy for each of the country in the analysis. My primary interest is the variation between the individual respondents, so I consider this method adequate. I confront the hierarchical nature of the data rather by controlling for country fixed effects. The reference country will be Benin, which has a medium level of tax compliance.<sup>35</sup>

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<sup>34</sup> As  $N > 100$ , I do not interpret  $p=0.1$  as a significant finding.

<sup>35</sup> See Figure 6 Share of population being tax compliant in each country.



# 4 Analysis

In this chapter, I will present the analysis and the findings. The aim is to answer the research question by testing the hypotheses outlined in chapter 2. Firstly, I will present a descriptive analysis focusing on the independent control variables and some country differences. Secondly, I present and interpret the findings from the regression models.

## 4.1 Descriptive analysis

A descriptive analysis is useful to get an overview of the information provided in the data material. I will first present the dependent variable by country, in order to get an overview of the distribution of the dependent variable by country. Figure 6 shows the percentage of tax compliant respondents in each country, revealing the differences between the countries. The variation is from around 30% to 80%. Malawi has the smallest share of population being tax compliant, with only 27% percent. On the other side of the scale, in Mauritius, 73% of the population thinks it is wrong not to pay the taxes one owes to the government.

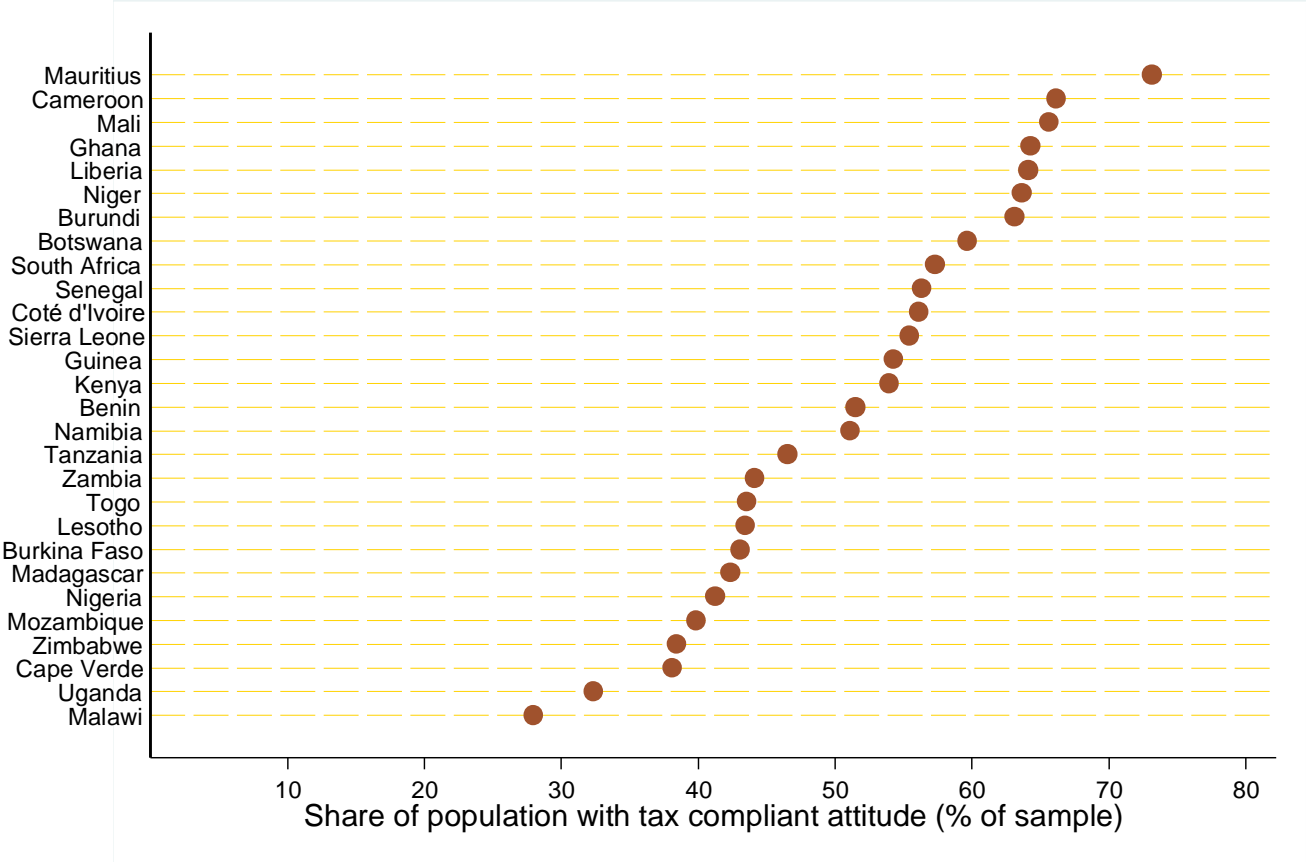


Figure 6 Share of population being tax compliant in each country

**Table 4 Descriptive analysis of socio-economic factors (weighted and clustered sample)<sup>36</sup>**

	<b>Tax compliant</b>	<b>Non-tax compliant</b>
Total	52	48
Male (%)	52	49
Age (mean)	37.54	36.73
Education (mean)	4.25	4.08
Wealth (mean)	0.49	0.45
Job with cash income (%)	31	31
Self-employed (%)	52	47
Urban (%)	37	41

The tax compliant citizen is most likely a man, older, have a higher level of education, are wealthier, self-employed and lives at the countryside. There is no difference in having a job or not.

**Table 5 Descriptive analysis of other control variables (weighted and clustered sample)<sup>37</sup>**

	<b>Tax compliant</b>	<b>Non-tax compliant</b>
Political trust (mean)	2.77	2.66
Difficulty to avoid taxes (mean)	3.18	3.15
Corruption amongst tax officials (mean)	2.39	2.47
Knowledge about taxes (mean)	0.7	0.55

Tax compliant respondent have higher political trust than non-tax compliant respondents do. They believe it is more difficult to avoid taxes, thinks it is less corruption amongst tax officials, and have a higher knowledge about taxation. However, I cannot say whether the differences are significant or not.

<sup>36</sup> Descriptive analysis with non-weighted and non-clustered sample in appendix.

<sup>37</sup> Descriptive analysis with non-weighted and non-clustered sample in appendix.

## 4.2 Regression analysis

For the regression analysis, I build up the model systematically, adding the explanatory variables following the order from the hypotheses. I evaluate the coefficients with the z-test, on 0.01 and 0.05 level of significance.<sup>38</sup> To evaluate the dummy-sets and the interaction terms, I employ the Wald-test. Strictly speaking, I should evaluate these also according to 0.01 or 0.05 level of significance, but I choose to include also those being significant on a 0.1-level during the model building, and evaluate them again for the last sample. I do *not* employ listwise deletion from the beginning. From the first model, to the last model, the sample size is half the size. This is why during the model building I will pay limited attention to the substantial finding, focusing more on the statistical significance and the direction of the correlation.<sup>39</sup> Based on the result from the final model, I will provide a more thorough discussion of the findings.

### 4.2.1 Model building

I start by adding the variable for satisfaction with public services in **model 1**, which demonstrates a positive correlation between satisfaction of public services, and the probability of being tax compliant. This is significant on a 0.01-level, and provides a preliminary support for H1a, that the provision of public services is important for promoting tax compliance, and supports earlier findings from Ali et al. (2014) and D'Arcy (2011). Next, in **model 2**, I add the variable for protection payment, which also turns out to be significant on a 0.01-level. SATISFACTION WITH PUBLIC SERVICES remains significant on a 0.01-level. However, by introducing PROTECTION PAYMENT, the sample size drops with 2.3%, possibly reflecting the sensitivity of the question.

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<sup>38</sup> In the regression tables, I mark also findings that are significant on a 0.1-level, for an interested reader.

<sup>39</sup> Also because I am limited in time and space.

**Table 6 Logistic regression of public services and tax compliance**

	Model 1 logit coeff./ (SE)	Model 2 logit coeff./ (SE)
Satisfaction with public services	0.149*** (0.043)	0.138*** (0.045)
Protection payment		-0.202*** (0.033)
Male	0.084*** (0.026)	0.089*** (0.026)
Age	0.003*** (0.001)	0.003*** (0.001)
Education	0.046*** (0.013)	0.044*** (0.013)
Wealth	0.099 (0.087)	0.091 (0.085)
Job	-0.082 (0.053)	-0.079 (0.054)
Self employed	-0.181*** (0.060)	-0.177*** (0.062)
Urban	0.014 (0.056)	0.011 (0.057)
Political trust	0.108*** (0.029)	0.102*** (0.030)
Tax deterrence	0.086** (0.037)	0.079** (0.037)
Corruption tax officials	-0.057** (0.025)	-0.058** (0.025)
Tax knowledge	0.908*** (0.083)	0.923*** (0.083)
Constant	-1.341*** (0.298)	-1.050*** (0.302)
Observations	30,068	29,373
Pseudo R2	0.0633	0.0648
Wald test	978.84, <i>df</i> =39, <i>p</i> =0.000***	958.73, <i>df</i> =40, <i>p</i> =0.000***
Log Likelihood	-14602.323	-14233.074
Country fixed effects	Yes	Yes
Std. Err. adjusted for clusters in regions	Yes	Yes
Number of clusters	348	348

Robust standard errors in parentheses.

\*\*\* *p*<0.01, \*\* *p*<0.05, \* *p*<0.1



Next, I test the second hypothesis where I expect to find a positive correlation between social trust and tax compliance. As both satisfaction with public services and protection payment clearly affects tax compliance, I will keep these variables in the model to avoid any spurious findings. The z-test in **model 3** shows that the variable for social trust is not significant on a 0.05-level, but the effect on tax compliance is negative. This time, the sample size drops with 1.4%. To avoid that the control variables capture some of the effect of social trust on tax compliance, I examine a simple bivariate correlation between social trust and tax compliance. The result in **model 4** shows that SOCIAL TRUST correlates negatively with tax compliance, which is significant on a 0.05-level. Because this is the opposite of what theory predict, I examine this relationship further. According to Newton (2001, p. 204), social trust is “more frequently expressed by the ‘winners’ in society, rather than the ‘losers’” . It might be that the effect of social trust on tax compliance depends on the respondent’s position in the society. In **model 5**, I test for this by introducing an interaction term between social trust and a variable measuring the respondent's own living condition compared to that of the co-citizens. I believe a perception variable is the most adequate, because it is more likely the *perception* of own position that should best capture the concept.<sup>40</sup> A Wald test on the interaction term yields a p-value of 0.0706, which I will keep to include in the last model. The total effect of social trust on tax compliance is still negative, but not significant. It might be that the formulation of the question for the dependent variable biases the respondent’s answer in this situation, which can explain the unexpected negative correlation between social trust and tax compliance. The question asks about the respondent’s opinion about other people that cheats on taxes, where the majority of the non-compliant answered *wrong, but understandable*. It might be that people with high social trusts have generally positive view about humanity, as emphasized by Uslaner (2000), and might believe that people cheat because they have to/ or has a general understanding for people that chooses not to pay. Figure 3 shows that 22% of the respondents believe people evade taxes because the taxes too high and 37% believes other people evade taxes because the taxes are unaffordable. This might be ‘understandable reasons for tax evasion’, which means that a trusting individual believe people cheat on taxes because they have to, and therefore fall into the non-compliant category, although they themselves might choose to pay taxes, trusting that other people might do the same if they could. I test for this I **model 6** by substituting the

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<sup>40</sup> As opposed to measuring e.g. education or wealth.

dependent variable with a variable measuring whether the respondent supports more taxes for higher services. I assume that a trusting individual, which consents to the common project of the society as outlined by Chan et al., (2006), will have a positive correlation with this variable. Here, I avoid the possible consideration effect the original operationalisation of the dependent variable presents. I control for the level of satisfaction with public services. The intuition behind this is that, following the theory about the welfare state approach already confirmed in section 3.7.2, and combining this with the theory about social trust, a trusting individual will only support higher taxes for public services if there is already a satisfaction with the existing public services. Moreover, in this case the number of regions dropped to 347 due to missing variables. I keep the interaction term along with SATISFACTION WITH PUBLIC SERVICES and PROTECTION PAYMENT to avoid any spurious findings, and continue with testing H2b, that participation in community activities increases tax compliance, which turns out not significant on a 0.05-level, shown in **model 7**. As I did with social trust, I run a simple bivariate model between PARTICIPATION IN COMMUNITY ACTIVITIES and TAX COMPLIANCE, presented in **model 8**. Here, participation in community activities has a positive effect on tax compliance on a 0.05-level, but this can be a highly spurious finding.

**Table 7 Logistic regression of social values and tax compliance**

	Model 3 logit coeff./ (SE)	Model 5 logit coeff./ (SE)	Model 7 logit coeff./ (SE)
Satisfaction with public	0.142*** (0.045)	0.138*** (0.046)	0.139*** (0.046)
Protection payment	-0.202*** (0.032)	-0.199*** (0.032)	-0.196*** (0.032)
Social trust	-0.100* (0.060)	0.181 (0.145)	0.180 (0.145)
Compared living condition		0.042* (0.025)	0.042* (0.025)
Social trust* Compared living condition		-0.096** (0.048)	-0.097** (0.048)
Community participation			0.003 (0.019)
Male	0.086*** (0.026)	0.086*** (0.027)	0.086*** (0.027)
Age	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)
Education	0.045*** (0.013)	0.044*** (0.013)	0.044*** (0.013)
Wealth	0.080 (0.086)	0.071 (0.089)	0.064 (0.088)
Job	-0.086 (0.053)	-0.099* (0.054)	-0.100* (0.054)
Self employed	-0.181*** (0.062)	-0.174*** (0.063)	-0.174*** (0.063)
Urban	-0.000 (0.058)	0.004 (0.058)	0.008 (0.057)
Political trust	0.106*** (0.029)	0.106*** (0.030)	0.106*** (0.030)
Tax deterrence	0.075** (0.037)	0.079** (0.037)	0.080** (0.037)
Corruption tax officials	-0.062** (0.025)	-0.059** (0.026)	-0.061** (0.026)
Tax knowledge	0.919*** (0.083)	0.905*** (0.084)	0.906*** (0.083)
Constant	-1.007*** (0.307)	-1.140*** (0.305)	-1.154*** (0.311)
Observations	28,956	28,274	28,243
Pseudo R2	0.0649	0.0650	0.0652
Wald-test	958, df=41, p=0.000***	1050, df=43, p=0.000***	1051.39, df=44, p=0.000***
Log Likelihood	-14022.576	-13674.11	-13656.805
Country fixed effects	Yes	Yes	Yes
Std. Err. adjusted for	Yes	Yes	Yes
Number of clustes	348	348	348

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \*

To test for hypothesis 3a, I add the dummy set for identification, which compares the effect of EQUAL ID and NATIONAL ID on tax compliance to the effect of ETHNIC ID. I expect them both to correlate positively with tax compliance, as opposed to ETHNIC ID. The result is in **model 9**. The Wald test for the dummy set shows that this dummy set shows a p-value of 0.0725, I choose to keep the interaction term. Of the two dummy-variables, there is only a significant difference between the individuals having an ethnic identification and equal identification, where the latter has less probability of being tax compliant than the former, which is the opposite of what theory predicted. The next model might provide some answers, because I hypothesized that in the cases where the government is working to combat the ethnic cleavages, the effect on tax compliance would be the same, regardless of the identity. I investigate this in **model 10**, where I introduce an interaction term between each of the identity-variables and the variable ETHNIC DISCRIMINATION. Here, I expect that the interaction term to correlate positively with tax compliance. The Wald test for the interaction term together with the dummy-set shows that the p-value is significant on a 0.01-level. However, the direction of the causality is not as expected. This question is only asked amongst respondents who initially said they were a part of an ethnic group, meaning that I by adding this ethnicity variable remove 4.6 % of the sample. I therefore test with an alternative measurement of the nationality variable, measuring the respondent's level of pride of own nationality. Because I consider it an alternative measurement, and wish to test on a broader sample, I remove the ethnicity/ discrimination variable. **Model 11** shows that this did not yield a significant result, so I leave this out of the model and continue with the interaction term and the smaller sample, as I consider this operationalisation theoretically more valid.

Lastly, I test the impact of social solidarity on tax compliance, beginning with the variable measuring the income gap, which is not significant on a 0.05-level, as shown in **model 12**. I investigate a simple bivariate regression analysis between GOV. WORKING TO REDUCE INCOME GAP and TAX COMPLIANCE in **model 13**. In this case, there is a positive correlation with tax compliance, significant on a 0.01-level. In **model 14**, I add the control variable and the finding remains significant. However, when adding SATISFACTION WITH PUBLIC SERVICES, the variable GOV. WORKING TO REDUCE INCOME GAP no longer has a significant correlation with tax compliance, as shown in **model 15**. The correlation is not that high, see table with correlation matrix. Next, I investigate the last hypothesis, that perceiving that the government

works to reduce the level of absolute poverty. This correlates positively with tax compliance, as shown in **model 16**, and is significant on a 0.05-level. This is also my final model.

**Table 8 Logistic regression of identity and solidarity**

	Model 9 logit coeff./	Model 10 logit coeff./ (SE)	Model 12 logit coeff./ (SE)	Model 16 logit coeff./ (SE)
Satisfaction with public services	0.145*** (0.046)	0.151*** (0.048)	0.131*** (0.049)	0.108** (0.049)
Protection payment	-0.195*** (0.033)	-0.197*** (0.033)	-0.203*** (0.034)	-0.202*** (0.033)
Social trust	0.177 (0.144)	0.196 (0.147)	0.200 (0.146)	0.204 (0.146)
Compared living condition	0.038 (0.026)	0.039 (0.026)	0.043* (0.026)	0.043* (0.026)
Social trust* Compared living condition	-0.095** (0.047)	-0.099** (0.048)	-0.104** (0.048)	-0.106** (0.048)
Community participation	0.000 (0.020)	0.004 (0.020)	0.001 (0.020)	0.000 (0.020)
Equal ID	-0.035 (0.068)	0.307** (0.131)	0.301** (0.133)	0.300** (0.133)
National ID	-0.151** (0.069)	0.091 (0.133)	0.106 (0.134)	0.110 (0.133)
Ethnic discrimination		0.133*** (0.048)	0.137*** (0.048)	0.137*** (0.048)
Equal ID*Ethnic discrimination		-0.174*** (0.053)	-0.172*** (0.053)	-0.169*** (0.053)
National ID*Ethnic discrimination		-0.113** (0.056)	-0.117** (0.056)	-0.116** (0.056)
Gov. working to reduce income gap			0.042 (0.029)	0.010 (0.027)
Gov. working to reduce absolute poverty				0.073** (0.028)
Male	0.074*** (0.027)	0.079*** (0.028)	0.079*** (0.028)	0.073** (0.029)
Age	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)
Education	0.048*** (0.014)	0.047*** (0.014)	0.047*** (0.014)	0.046*** (0.014)
Wealth	0.075 (0.090)	0.074 (0.091)	0.073 (0.091)	0.071 (0.090)
Job	-0.108* (0.056)	-0.100* (0.057)	-0.101* (0.058)	-0.102* (0.058)
Self employed	-0.175*** (0.065)	-0.174*** (0.066)	-0.179*** (0.066)	-0.187*** (0.066)
Urban	0.009 (0.059)	0.020 (0.059)	0.019 (0.060)	0.021 (0.060)
Political trust	0.106***	0.110***	0.103***	0.094***

	(0.030)	(0.031)	(0.030)	(0.030)
Tax deterrence	0.083**	0.080**	0.081**	0.086**
	(0.037)	(0.037)	(0.038)	(0.038)
Corruption tax officials	-0.063**	-0.068***	-0.067**	-0.067**
	(0.026)	(0.026)	(0.026)	(0.026)
Tax knowledge	0.913***	0.910***	0.904***	0.905***
	(0.086)	(0.087)	(0.087)	(0.088)
Constant	-1.083***	-1.364***	-1.388***	-1.395***
	(0.319)	(0.356)	(0.357)	(0.359)
Observations	27,396	26,762	26,329	26,160
Pseudo R2	0.0662	0.0664	0.0664	0.0673
Wald-test	1051.44, df=46,	1017.91, df=49	780.01, df=50	773.57, df=51
Log Likelihood	-13178.008	-12870.409	-12652.254	-12553.458
Country fixed effects	Yes	Yes	Yes	Yes
Std. Err. adjusted for clusters	Yes	Yes	Yes	Yes
Number of clusters	348	348	348	348

Robust standard errors in

\*\*\* p<0.01, \*\* p<0.05, \*

### 4.2.2 Interpretation of the findings from the full model

In this section, I will evaluate the findings systematically according to the order of the hypotheses. At the end of the section, I will discuss the relative importance of the findings from each other.

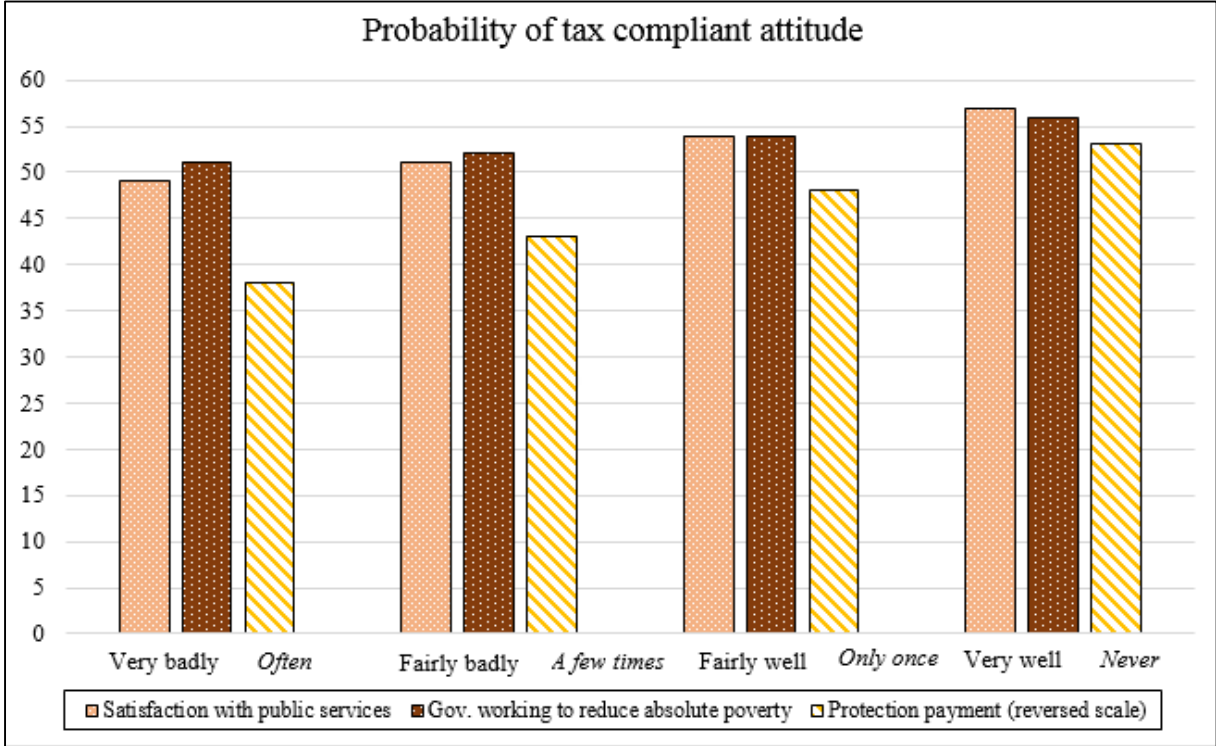


Figure 7 Probability of tax compliant attitude<sup>41</sup>

Based on the results in model 16, I confirm H1a, that the better the government provides public services, the higher the tax compliance, on a 0.05 level of significance. Figure 7 shows the marginal probability of having a tax compliant attitude for different levels of satisfaction with public services (left columns), all other variables fixed to their respective mean values. Believing that the government is handling the public services *very badly* implies a 49% probability of having a tax compliant attitude. Moving up on the scale towards believing that the government is handling the services *very well*, increases the probability of having a tax compliant attitude to 57%. This gives empirical support to the 'welfare state approach' presented by Tilly, Levi and Schumpeter, and confirms earlier cross-country findings from Ali, Fjeldstad and Sjørusen (2014) and D'Arcy (2011). Providing good quality public services will

<sup>41</sup> All other variables fixed to their respective mean values.

lead to a higher tax compliant attitude amongst the citizens. However, one should not deny that even in the case where the respondent believes the government is handling the service providing *very badly*, the probability of tax compliant behavior is *still 49%*, implying that there are other factors much more important than service provision for explaining tax compliance. The dynamic still holds though, and I confirm H1a that the better the government provides public services, the higher the tax compliance. My findings shows that a marginal increase in the level of satisfaction with public services causes a 2.6% increase in the probability of tax compliant attitude. These findings are in line with the findings from D'Arcy (2011), who finds that a marginal increase in the satisfaction of public health care increases the probability of being tax compliant with 3.1%. For educational services, the effect is 1.7%.<sup>42</sup> Considering that I have a scale, it make sense that my finding lies in the middle. The alternative measure of tax compliance used by D'Arcy provides the same findings as the operationalisation I employ. The findings from Ali, Fjeldstad and Sjursen (2014) are larger. They find that in Tanzania, a marginal increase in the satisfaction of public health care increases the probability of being tax compliant with 9%, and 6.1% in Uganda. In Uganda, an increase in the satisfaction of security increases the probability of tax compliant attitude of 9.2%. For Kenya, a marginal increase in the level of satisfaction with infrastructure increases tax compliance by 10.9%.<sup>43</sup> The effects I present here are smaller; possibly, because of the scale construction and that I have a cross-country regression. The marginal effect are smaller, but I can provide evidence that across Sub-Saharan Africa, a government providing public services increases tax compliance.

Next, my findings also cause me to keep H1b, that the more the individuals pay non-state actors for protection, the lower the tax compliance, on a 0.01 level of significance. Figure 7 presents the probability of being tax compliant according to how often the citizen pay for protection.<sup>44</sup> An individual that *often* pays for protection has a 38% probability of being tax compliant. On the other end of the scale, never paying for protection implies a probability of 53% of being tax compliant. A marginal increase in how often an individual pays for protection reduces the probability of being tax compliant with 5%. This confirms the findings from Ali, Fjeldstad and Sjursen (2014), but again, their findings are larger. In South Africa, the reduction is 8.3%, in

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<sup>42</sup> Both results significant on a 0.001-level.

<sup>43</sup> All findings significant on a 0.001-level.

<sup>44</sup> A reversed scale, for comparative reasons.

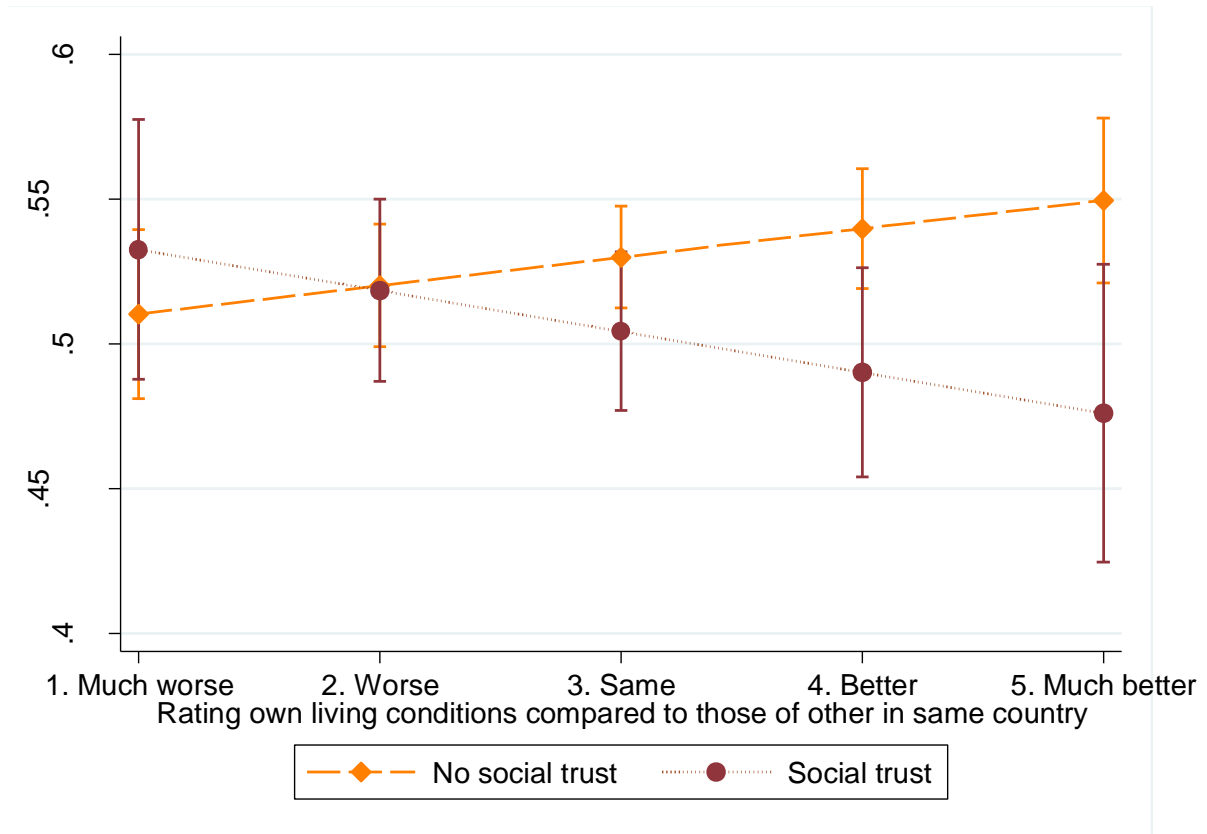


Kenya 6.4%, in Tanzania 11.4% and in Uganda 8.7%.<sup>45</sup> Again, there are significant country differences that my findings does not capture. As my findings are below, this might imply that this finding would not be consistent in all countries. However, as argued for in section 2.2.1. intrastate stability seems to be important in order to promote tax compliant behaviour.

The initial hypothesis H2a was that social trust leads to tax compliance, leaning on the theory about social cohesion, that a trusting individual would be more likely to share personal resources with others. In the bivariate analysis, social trust has a negative effect on tax compliance. An interaction term with how the individual rate own living conditions compared to that of co-citizens, reveals that social trust has a different impact on tax compliance according to the level of comparative living standard, presented in Figure 8. Amongst the respondents who rate own comparative living conditions as *much worse*, trusting individuals have a higher probability of being tax compliant compared to non-trusting individuals, 51% against 53%, so the difference is indeed very small. This relationship changes as the comparative living conditions improves. At the other extreme, an individual with a *much better* living condition has 47% probability of being tax compliant if trusting, 55% if non-trusting. As one moves upward on the "social ladder", social trust reduces the probability of being tax compliant, non-trust increases the probability. One possible explanation of this can be the argument put forward by LaFerrara (2002), that when inequality arises, the relatively wealthier drop out of the collective project, as they have less to gain from it. Those who already are better off in the society, and trust that others contribute, might be the ones who do not benefit enough from the public services, maybe because the services are poor, and those who are better off can 'buy themselves out of the collective action problem that taxes cause'.

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<sup>45</sup> Significant on 0.01 and 0.05-level.



**Figure 8 Marginal effects of social trust\*compared living conditions<sup>46</sup>**

Figure 8 shows how the effect of social trust on tax compliance differ according to the level of compared living conditions for the individual. The confidence intervals for several of the plots are overlapping, implying that not all findings are equally significant. Table 9 shows that the difference in effect of social trust on tax compliance is different on the upper end of the scale for living conditions. Being not socially trusting and rating own living conditions as *better* than that of their co-citizens, implies having a higher probability of tax compliance, than non-trusting individuals. Moving right to rating own living standards as *much better* than that of others, the difference between trusting and non-trusting individuals are even bigger. In this situation, a non- trusting individual has a 55% probability of being tax compliant, whereas a trusting individual has a 47% probability of being tax compliant. **Model 3** showed a negative and significant correlation between social trust and tax compliance. In order to verify if this finding is consistent also with the findings in the last model, I run model 16 again, on the same sample, but excludes the interaction term between SOCIAL TRUST and COMPARED LIVING CONDITIONS.

<sup>46</sup> All other variables to their respective mean values.

**Model 17** shows that there is a negative correlation between social trust and tax compliance, but this is only significant on a 0.1-level. I conclude by giving a preliminary evidence that social trust leads to lower tax compliance, on the basis of **model 3** and **model 17**.

**Table 9 Significance test for interaction terms**

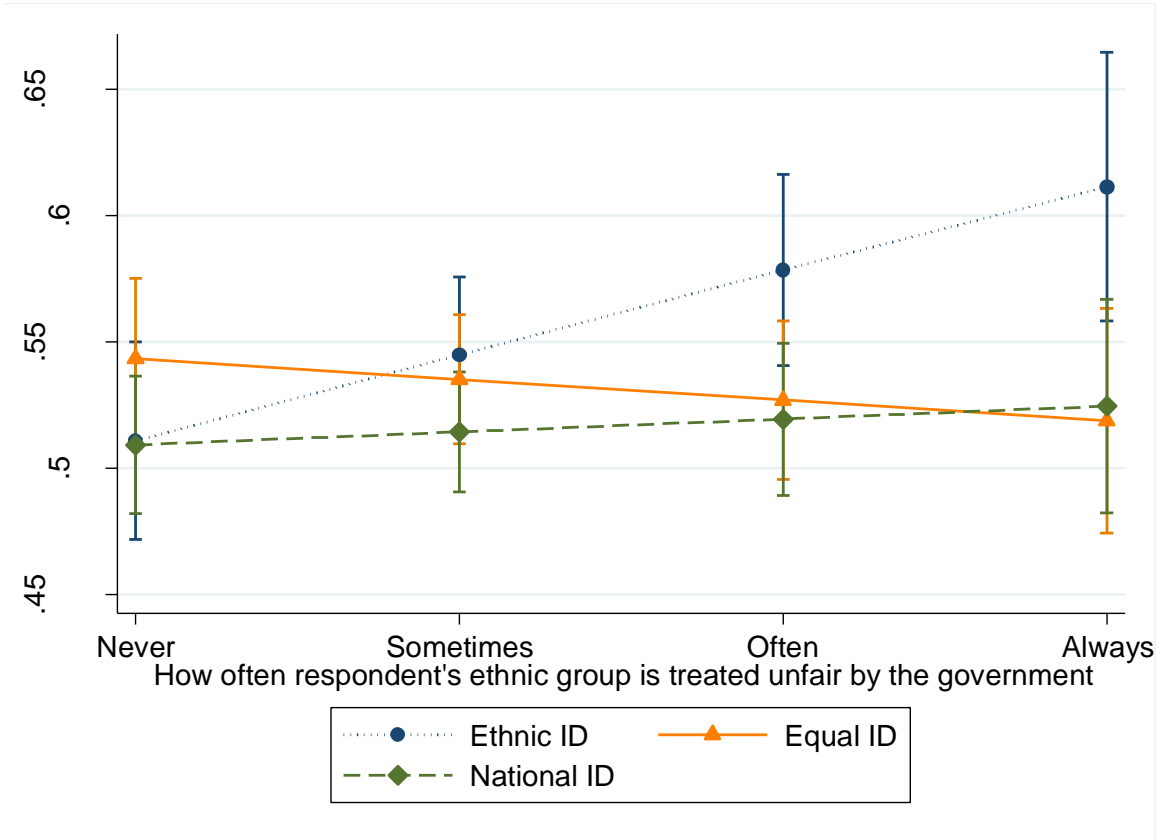
	df	ch2	p>chi2
Social trust *Much worse	1	0.86	0.352
Social trust *Worse	1	0.01	0.906
Social trust*Same	1	3.48	0.062
Social trust*Better	1	6.85	0.009***
Social trust*Much better	1	6.94	0.009***
Equal ID vs. EthnicID*Never	1	2.07	0.150
Equal ID vs. EthnicID*Sometimes	1	0.35	0.554
Equal ID vs. EthnicID*Often	1	7.15	0.008***
Equal ID vs. EthnicID*Always	1	10.79	0.001***
NationalID vs. EthnicID*Never	1	0.00	0.945
NationalID vs. EthnicID*Sometimes	1	3.08	0.079
NationalID vs. EthnicID*Often	1	7.37	0.007***
NationalID vs. EthnicID*Always	1	7.58	0.006***

\*\*\* denotes 0.01 level of significance

One possible reason for this might be the one I presented in section 4.2.1, that trusting individuals might not grasp the problem of tax evasion, or might find it understandable, although the attempt to confirm this empirically in model 6, Table 17, did not support this argument. I cannot keep H2a, that social trust leads to tax compliance. On the contrary, social trust seems to have a negative correlation with tax compliance. Having already not kept H2b, that participation in voluntary organisations increases tax compliance, the argument that social capital is a requirement for tax compliance seems not valid.

Next, I hypothesized that having a stronger national than ethnic identification would increase tax compliance. This I could not confirm, on the background of model 9. The findings do not support the theory presented by Persson and Lieberman about the importance of a *consent of the community* for tax compliance. D'Arcy (2011) finds that those with a shared identity are 2% more likely to accept the government's right to collect taxes, than those with an ethnic identity.

In this case, it might be that the operationalisation of the dependent variable causes the difference.



**Figure 9 Marginal effect id\*ethnic discrimination**

In H4b, I hypothesized that in the cases where the government is working to reduce ethnic cleavages there will be no negative effect of having an ethnic identity on tax compliance. I introduced an interaction term with the variable for how the government treats the respondent’s ethnic group, with the purpose of detecting this effect. Figure 9 illustrated these findings from model 16, and Table 9 presents the significance for predicted values of the interaction term. Fixing all other variables to their respected mean values, having a strong ethnic identity and a government that *always* discriminates against your own ethnic group implies a probability of being tax compliant of 52.4%, for equal ID at the same level it is slightly lower, 51.9%. Having an ethnic ID and a discriminating government, however, implies a 61% probability of tax compliant attitude. According to Table 9, these findings are significant, as is the findings from the interaction terms at the *often*-level, where the dynamic is still the same. Moreover, the findings demonstrates that having an ethnic identity is much more sensitive to how the

government treat your own ethnic group, with regard to tax compliance, than having an equal or national ID, where the effect is more or less the same. However, the direction of the correlation is in the opposite of what is expected. It seems that with a strong ethnic identification, the probability of tax compliance is higher, the more your own ethnic group is discriminated by the government, which is a rather surprising finding. The essence of my initial argument still holds though, that the effect of government discrimination is higher amongst those with an ethnic ID on the probability of tax compliant attitude.

Moving on to the theory about social solidarity and tax compliance, I hypothesized that the more the government works to prevent absolute poverty, the higher the tax compliance, which my findings confirm. Presented in Figure 7, believing that the government does not do enough to fight absolute poverty, the probability of being tax compliant is 51%. Moving to the other end of a scale, a respondent very satisfied with the way the government works to reduce absolute poverty, has a 56% probability of having a tax compliant attitude. The dynamic of the finding confirms the hypothesis albeit the substantial meaning is the same as for the impact of public services. Being at the lowest possible end of the scale of how one believes the government fights absolute poverty still implies around 50% probability of still being tax compliance. There are many other variables affecting tax compliance. The *solidaristic foundation* of social cohesion as presented by Kearns, Bailey, Gannon, Livingston, and Leyland (2014) explains a part of the variation in tax compliance. In a socially cohesive society, the citizens willingly spend a portion of their own income to help others. I interpret this that a government that want to increase tax compliance can promote these values by reducing the level of absolute poverty in the society. According to Knack and Keefer, social solidarity is an important aspect of a social cohesive society that will lead to collective action and again increase tax compliance. This finding suggests that this is the case in Sub-Saharan Africa. Moreover, this supports the theory of Levi, that the government can have an impact on the citizens' tax compliance by coordinating them. Departing from the assumption that cleavages is negative, improving living standards will be positive for tax compliance. However, one must take into consideration that improving living standards of the poor do not necessarily mean reducing cleavages per se, as it says nothing about how the government should act towards the richer groups in the society. This variable does not say anything about the initial level of the government's attempt to fight poverty in the community. One possible error in this type of measurement is that it could be rather selfish. Even though the government is not really

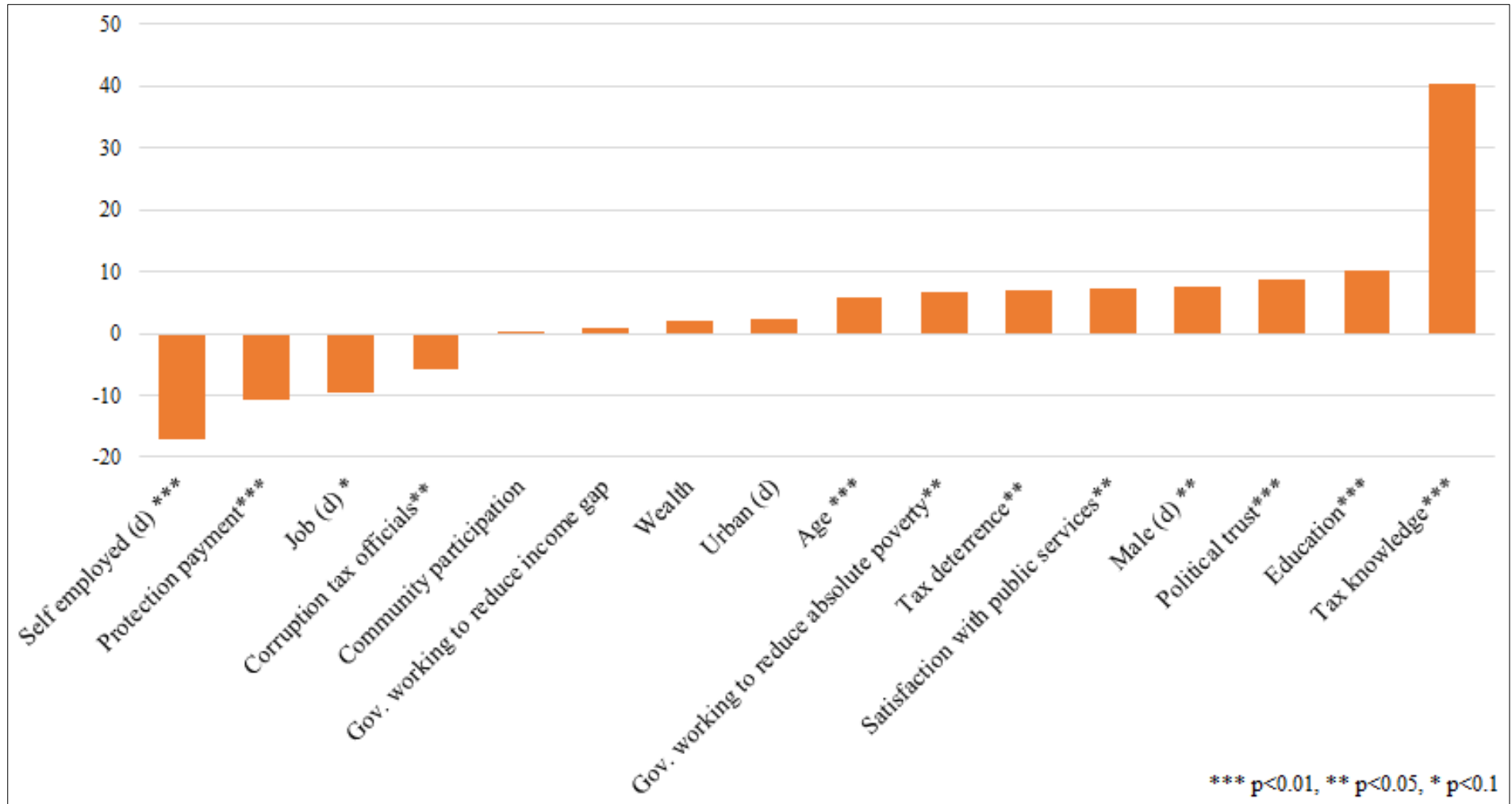
investing in improving the living conditions for the poor, it might be that in the respondent's view, this is 'enough'. Still, this can be said to support the proposition by Knack and Keefer that social solidarity is an important aspect of social cohesion. Supporting that the government is helping the poor correlates positively, and as social cohesion implies a willingness to pull private resources together for a common gain, this supports that this also increases tax compliance. The control variables generally yield significant results. Men have a slightly higher probability of being tax compliant. Tax compliance increases with both age and education. Having a job, and being self-employed, however, reduces the probability of being tax compliant, where the first was the opposite of what I expected. Political trust and tax deterrence increases tax compliance, whereas corruption amongst tax officials has the opposite effect. Knowledge about taxation increases tax compliance. There is no significant effect of neither wealth nor geographical location.

### **4.2.3 Comparing the findings from the full model**

In this section, I will compare the effects on tax compliance for some significant and theoretically interesting explanatory variables. First, I will look more closely at the explanatory variables. Next, I will compare them with the effects of the control variables. Figure 7 shows that going from one end to the other on the level of satisfaction with public services means an increase of 8% percent points on the probability of being tax compliant. Between the two extremes on the protection payment scale, however, there is a difference of almost the double, 15% points. Hence, getting a citizen from the lowest extreme level to the highest has almost a twice as big turnout for taxation, if it is protection payment rather than the governmental services. Security is a core public good, and these findings suggests that it is very important for tax compliant behaviour as well. The effect of going from one extreme to the other on the scale to the other for how the government is working to reduce absolute poverty means an increase of only 5% percent points. Protection payment is much more harmful for tax compliance than dissatisfaction with public services or with how the government fights poverty. The finding that increasing the living standards for the poor increases the probability of being tax compliant, can be seen in connection with the findings in section 3.7.1., where public services increases the probability of being tax compliant.

Figure 10 compares the effect of the different explanatory variables on the log odds of tax compliance. For the continuous variables, it shows the standardized effect of a 1 standard deviation increase. For the dichotomous variables marked (d), it shows the effect of one unit change. Of the variables related to the fiscal contract, although only treated as a control variable in this thesis, political trust has the highest effect. The effect of a 1-standard deviation increase in political trust increases the odds of tax compliant behaviour with 8.6%. Next, is satisfaction with public services, where the increase is 7.3%. The traditional tax deterrence argument by (Allingham & Sandmo, 1972) comes next, where a 1-standard deviation change increases the odds with 6.9%. My findings provide firm support for the welfare state approach, that a state seeking to increase tax compliance can do so by improving the quality of the public services. Additionally, the negative effect on tax compliance of a state failing to provide security and internal stability is evident. Reducing absolute poverty and, to a certain extent, reducing the income gap, explains tax compliance. Overall, of the proposed explanatory variables, payment to non-state security actors has the biggest effect on tax compliance, where a 1-std increase in the frequency of payment to non-state security actors reduces the odds of being tax compliant with 9.7%. Corruption amongst tax officials also has a negative effect of 5.7%.

Of the control variables, knowledge about taxation has a remarkably high impact on tax compliance, where a 1-standard deviation increase increases the odds of tax compliant attitude with 40.3%. Education is also very important, 10.2%. Being male increases the odds of 7.6%. Both job and self-employment has a negative effect, the former unexpectedly, where the odds of being tax compliant is 9.7% lower for the people with a job that pays cash income. For the self-employed, the difference is much bigger, where being self-employed is associated with 17.1% lower odds of being tax compliant.



**Figure 10 Percentage change in odds of tax compliant attitude**



### 4.3 Testing the assumptions of the final model

Next, I check for multicollinearity in my model, measured by the Variation Inflation Tolerance test (VIF). Table 23, column A, shows the tolerance test for model 16, indicating high multicollinearity amongst many of the variables.<sup>47</sup> Table 23 shows high multicollinearity, also when removing the interaction terms. The problematic variables are SATISFACTION WITH PUBLIC SERVICES, COMPARED LIVING CONDITION, GOV.WORKING TO REDUCE ABSOLUTE POVERTY, POLITICAL TRUST and TAX DETERRECE. They are all included based on a firm theoretical framework as outlined in section 2.2. Comparing with the findings from model 16, the z-test shows that all problematic variables are significant. Even though there exists a correlation between them, they still have individual explanatory power on tax compliance. The correlation matrix (Table 14) shows a relatively high correlation (0.569), although theoretically I have argued for keeping the variables separately. Running model 16 again, but dropping SATISFACTION WITH PUBLIC SERVICES and GOV.WORKING TO REDUCE ABSOLUTE POVERTY renders GOV.WORKING TO REDUCE INCOME GAP significant on a 0.01-level.<sup>48</sup> This is shown in Table 21, **model 18**. Moreover, this reduces multicollinearity. This means that I capture the same concept with several of the variables in the analysis. Instead of dropping variables as to reduce the multicollinearity, I choose to include the variables I find theoretically relevant, and then make the reader aware of the limitations of my findings that are due to multicollinearity. The correlation between GOV.WORKING TO REDUCE ABSOLUTE POVERTY and GOV.WORKING TO REDUCE INCOME GAP can be substantial, that a government doing one of them would also be doing the other. However, it can also be a weakness of the questionnaire because respondents might find it difficult to separate between the two concepts. SATISFACTION WITH PUBLIC SERVICES might capture the same, in the sense that a welfare state is in a certain sense redistributive. I consider the theoretical framework most important, which treats inequality and absolute poverty as two separate aspects of social cohesion. It turns out, however, that empirically it is difficult to distinguish between the concepts, causing me to reject H3a, even though not controlling for concepts close to it, with the danger of committing a type 2-error.

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<sup>47</sup> I do not present VIF for country dummies, limited by time and space, but none of them have  $VIF > 3$ , so they are not problematic.

<sup>48</sup> Dropping one of them, respectively, did not change the result of the z-test for GOV.WORKING TO REDUCE ABSOLUTE POVERTY.

Lastly, I check for outliers in my data, which are units of observations with unusual patterns on the combination of explanatory variables. This might be a result of typing error in the material, but it might as well be what a respondent with unusual patterns. It can also be a symptom of omitted variable bias. Due to limited time, space and experience, I am not able to account for this structure in the data set when checking for outliers. I still find it highly relevant to test for outliers. However, outliers are a part of the sample, and one should be careful with deleting them.<sup>49</sup> I settle with the second best option, which is to check for outliers in model 16, but *not accounting for the survey weight*.<sup>50</sup> What I want to look for are units of observations with a large difference between the predicted value and the observed value. I will deal with the outliers in three ways, by checking for (i) large values on the Pearson chi-squared ( $\chi^2_P$ ) and on the (ii) deviance residual ( $\chi^2_D$ ). Large values, as a rule of thumb  $\chi^2_P > 4$  or  $\chi^2_D > 4$ , implies that the model would fit the sample better if these observations were deleted. Next, I will also look at the cases with high *leverage*, measured by  $\Delta B$ , where  $\Delta B > 1$  indicates that these observations have substantial influence in the model, and that the model would fit better if excluding these observations. (Hamilton, 1992, pp. 235–242). Figure 13 and Figure 14 presents  $\chi^2_P$  and  $\chi^2_D$  plotted against the predicted probability for tax compliant behaviour in model 16. The plotting symbols is proportional to  $\Delta B$ , to identify the leverage, and the label is the respondent's number. There are 142 units with  $\chi^2_P > 4$ , and 7 units with  $\chi^2_D > 4$ . There are no units with  $\Delta B > 1$ . As a poorness-of-fit test, in **model 19**, I exclude the units with  $\chi^2_P > 4$ , and in **model 20**, I exclude units with  $\chi^2_D > 4$ .<sup>51</sup> This is shown in Table 22. This did not change the results substantially. There is however one respondent that stands out with high  $\chi^2_P$  and  $\chi^2_D$  and stands out on the plot with  $\Delta B$ .<sup>52</sup> Based on model 16, the predicted probability of this respondent having a tax compliant attitude is 90.6%, but the respondent is non-tax compliant.<sup>53</sup> For this respondent, the fit of model 16 is poor. The results from my analysis does not change because of outliers in the model, but it is important that I make the reader aware that it is far from perfect for all units of observation

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<sup>49</sup> Unless, of course, one finds that this is because of a typing error.

<sup>50</sup> Standard errors still clustered around regions.

<sup>51</sup> These models includes the survey weight.

<sup>52</sup> Respondent nr. MAU0659.

<sup>53</sup> MAU0659 has a survey weight below average (0.43, the average being 0.75)

## 4.4 A sum-up of the hypotheses

**Table 10: A summary of the hypotheses**

	Keep
<i>H1a: The better the government provides public services, the higher the tax compliance.</i>	X
<i>H1b: The more often an individual pay a non-state security actor, the lower the tax compliance.</i>	X
<i>H2a: The more social trust between the citizens, the higher the tax compliance.</i>	-
<i>H2b: The more participation in community organisations, the higher the tax compliance.</i>	-
<i>H3a: The larger degree of shared collective national identity, the higher the tax compliance.</i>	-
<i>H3b: The larger degree of a government working to reduce ethnic cleavages, the less negative effect will ethnic identity have on tax compliance</i>	-
<i>H4a: The better the government works to reduce the income gap, the higher the tax compliance.</i>	-
	(Risk of committing a type 2 error)
<i>H4b: The better the government works to prevent absolute poverty, the higher the tax compliance.</i>	X



## 5 Conclusion

As concluding remarks of this master's thesis, I begin with summing up the main findings. Then, I evaluate the scientific contribution of this thesis along with some practical implications. In the last part of the thesis, I present some suggestions for further research on tax compliance in Sub-Saharan Africa. The limitations of this study gives room for suggestions for more thorough research on the same topic. At the same time, the findings paves the way for additional research on related topics. With new knowledge, new questions arise.

### 5.1 Summary and main findings

This thesis aimed to answer the following research question: **What are the social prerequisites for establishing a fiscal contract in Sub-Saharan Africa?** On the background of the fiscal contract theory as presented by Tilly (1990), Schumpeter (1991) and Levi (1988), I hypothesized that the provision of public services will increase tax compliance. Security being a core public good, protection payment to non-state actors, a widespread phenomenon in Sub Saharan Africa, reduces tax compliance. This approach receives criticism from Persson (2008b), who argue that establishing a fiscal contract requires a certain social bond between the citizens in the society. Country-specific research, such as by Lieberman (2001, 2003), Miguel and Gugerty (2005), Bellows and Miguel (2009) and Miguel (2004) builds up under this perspective. Because taxes finances public goods, it becomes a collective action dilemma where the citizen weights the private gain of evading taxes up against the benefit from public goods, which can also be used by co-citizens (D'Arcy, 2011; Vigdor, 2004). With this as my backdrop, I presented social cohesion as a conceptual framework to understand the other part of the fiscal contract, the one between the citizens. I argued than in addition to the 'tax for public services'-approach, elements from social cohesion are important determinants of taxation. This is of immediate relevance for explaining tax compliance, or lack of it, in Sub-Saharan Africa, a region with poor public services, and fragmented societies. I emphasized social values such as social trust and civic cooperation, a common national identity and non-salient ethnic cleavages, and social solidarity such as the reduction in economic inequality and elimination of absolute poverty as especially important aspects of social cohesion. This gave rise to six additional hypotheses.

Furthermore, I argued in favour of a definition of tax compliance based on the concept of *tax moral*. Measuring tax compliance is a challenge, because in a survey the respondent would be hesitant to reveal own law-breaking, especially in low-trust countries such as Sub Saharan African countries. Therefore, I employed an indirect operationalisation of tax compliance, where the respondent gives the opinion on other people that are evading taxes, to this date only used by Ali, Fjeldstad and Sjørusen (2014). I examined the hypotheses using the data from the Afrobarometer round 5 (2011-2013) for a cross-country analysis including 28 countries in Sub-Saharan Africa. The main findings in this thesis are that (i) the more satisfaction with public services, the higher the tax compliance, (ii) paying non-state actors for security reduces tax compliance, and (iii) a government that works to reduce absolute poverty increases tax compliance. Moreover, there seems to be a positive effect of reduced income gaps in the society on tax compliance, but this concept has proved difficult to distinguish from public services and reduction in poverty. This leads me to the conclusion that the prerequisites in the society for tax compliance is mainly a welfare state, rather than the concepts directly related to social cohesion. Introducing social cohesion as a theoretical framework did not yield empirical results that increased the understanding of tax compliance in Sub-Saharan Africa, with the exception of social solidarity. On the contrary, elements of social cohesion that I predicted should increase tax compliance, proved in the analysis to *reduce* the probability of tax compliant behaviour. Social trust seems to have a negative effect on tax compliance. Moreover, social trust has a different impact on tax compliance after the comparative position in the society for the individual. Trusting people that are also well off have a lower tax compliance than non-trusting citizens sharing same position. This led me to question the operationalisation of the dependent variable, where a large part of the non-compliant individuals found tax evasion understandable. However, an attempt to test this with an alternative measure of tax compliance did not yield a significant result. Additionally, respondents identifying themselves primarily with their nationality, have lower tax compliance than those with an ethnic identity. For those with an ethnic identity tax compliance increases the more the government discriminates towards ethnic groups, which is rather counter-intuitive, and should imply further research.

Both the data material and my choice of research method suffers from weaknesses it is important to be aware of. Missing values caused my final model to consist of half as many units of observations that what exists in the original sample. Undertaking quantitative research is

especially challenging when the data is poor. However, Afrobarometer is a widely used and respected dataset and the most comprehensive survey for Sub-Saharan Africa. I did not succeed in reflecting the complex sampling strategy done by Afrobarometer, and high multicollinearity might camouflage significant results. Moreover, as always in quantitative research in the social sciences, one draws the conclusions about causality based on theory, as the empirical analysis can only establish correlation.

## **5.2 Lessons learned**

There is an increased political interest for taxation, and taxation is on the top of the development agenda. Lack of tax compliance is an impediment to economic development, as it denies the state its revenue. The findings from this thesis confirm the findings from other researches, that working to increase the citizen's satisfaction with the public services is important to promote tax compliance. Security seems to be the most important, which is in interest for almost any state, and builds up under state legitimacy. It seems to be of more importance to increase the living standards of the poor than reducing the income gap. Can we generalise the findings to other regions? The theoretical framework stems from classical theories within political science, and are not specific for Sub-Saharan Africa. The fiscal contract theory has its historical roots based on state building theories in Western Europe. Both from a practical and theoretical perspective it is important to discuss whether the findings in this thesis can shed light on tax compliance elsewhere. Provision of public services is the core of any welfare state, and it is likely that this finding can be generalised also to other regions. Initially, I argued that the operationalization of tax compliance in this thesis, following Ali et al., (2014) was an improvement of the earlier question from Afrobarometer. My results did also differ slightly from the results by D'Arcy (2011).

## **5.3 Suggestions for further research**

This thesis provided only limited support for the explanatory power of social cohesion on tax compliance. Neither social trust, civic participation nor a common national identity gave significant results. However, it is too early to eliminate this argument altogether. A severe limitation of the analysis in this thesis is not accounting for the institutional factors. Including

cross-country fixed effects, means that I expected the explanatory variables to have the same effect in all countries included in the sample, and the result in my analysis gave the mean effect of each of the explanatory variables. This is clearly a limitation, as the analysis excludes important institutional factors. Limited by time and scope, I have not emphasized enough the institutional factors enough. Introducing social cohesion as a theoretical framework was my attempt to respond to what I argued was a limitation with the fiscal contract in understanding tax compliance in Sub-Saharan Africa. However, also within the social cohesion framework I relied on theories that might not be directly adoptable to all countries in this region. I based the argument that civic participation increases tax compliance mainly on Putnam (2000). An active civil society can be a threat to state building as it can create cleavages and reduce the need for a strong state (Bratton, 1989). As Fukuyama (2011, p. 404) claims, “[s]trongly bonded kin groups can provide collective action within the limits of the group, while serving as barriers to cooperation outside the lineage or tribe.” It is therefore highly likely that the effect of especially social trust, identity and participation will vary according to the institutional framework in the society. In weak states, civic participation could have a negative impact on tax compliance, if it in this case is a response to a weak state, and from the fiscal contract (and the findings from the control variables in my analysis), it is evident that political legitimacy is an important determinant of tax compliance. On the other hand, the effect of civic participation could be positive for tax compliance in strong states, where it builds up under a strong civil society. One should also separate between determinants of tax compliance on the local level and the national level. Whereas trust might be important in small communities, a strong institutional framework is important in order to incentivize cooperation outside the local community. In appendix E I present the significant results from regression analysis across all countries in the sample.<sup>54</sup>The heterogeneous country effects gives rise to the suggestion of a similar analysis I have done, only with the use of multilevel modeling. With multilevel modeling, more specifically a random slope multilevel model, the effect of each of the explanatory variables can vary. Instead of eliminating the country-effects altogether, as I have done, one can account for them, as they will also provide important information themselves. Moreover, with forthcoming rounds of Afrobarometer that continues to include this specific question related to tax moral, time-series

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<sup>54</sup> I have run a regression model for the probability of tax compliance, using SATISFACTION WITH PUBLIC SERVICES, PROTECTION PAYMENT, SOCIAL TRUST, COMMUNITY PARTICIPATION, ETHNIC/EQUAL/ NATIONAL ID, GOV. WORKING TO REDUCE INCOME GAP and GOV. WORKING TO REDUCE ABSOLUTE POVERTY, controlling for the control variables and using within-country weights. The figures shows the marginal effects for each variable on the probability of tax compliant attitude. Only results significant on a 0.01 and 0.05-level are shown. The Regression tables are available upon request.



analysis will be possible that can provide a deeper understanding of the determinants of tax compliance over time.

One of the most consistent finding in this thesis was that the provision of public services is an important determinant of tax compliance in Sub-Saharan Africa. As a response to the poor service delivery from the government, non-governmental organisations (NGOs) and private companies play an increasingly important role in service delivery non only in Sub-Saharan Africa, but in development countries in general (Batley & Mcloughlin, 2010; Katseli, 2004). What are the consequences for tax compliance when the government is no longer the main provider of public goods? What happens with the incentive to collective action in the society when each individual pursues individual interest? As Batley and Mcloughlin (2010, p.132) note, “what is good for service delivery may not be good for state-building.” Additionally, I found that a government fighting to reduce absolute poverty is an important determinant of tax compliance. Remittances from the diaspora is an important source of income for many families across Sub-Saharan Africa (Dionne, Inman, & Montinola, 2014). What happens with tax compliance when one rely on other sources to fight poverty? The upcoming Afrobarometer round 6 includes questions about the use of private services, questions not included in earlier questionnaires, and remittances from the diaspora, which can shed light on these questions. In addition to a more thorough investigation of more established theories, keeping track of new phenomena is important to understand more about the determinants of tax compliance in Sub-Saharan Africa - and elsewhere.



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# Appendix A Details about sample and variables

**Table 11 Countries and sample size**

<b>Country name</b>	<b>Year</b>	<b>Sample size</b>	<b>Final sample</b>
Benin	2011	1200	881
Botswana	2012	1200	460
Burkina Faso	2012	1200	707
Burundi	2012	1200	829
Cameroon	2013	1200	571
Cape Verde	2011	1200	195
Côte d'Ivoire	2013	1200	719
Ghana	2012	2400	1650
Guinea	2013	1200	867
Kenya	2011-2012 (november-november)	2400	1444
Lesotho	2012	1200	222
Liberia	2012	1200	624
Madagascar	2013	1200	511
Malawi	2012	2400	1353
Mali	2012-2013 (december-january)	1200	966
Mauritius	2012 (january-februrary)	1200	787
Mozambique	2012	2400	953
Namibia	2012	1200	577
Niger	2013	1200	728
Nigeria	2012	2400	1731
Senegal	2013	1200	671
Sierra Leone	2012	1200	910
South Africa	2011	2399	1220
Tanzania	2012	2400	1935
Togo	2012	1200	658
Uganda	2011-2012(december-february)	2400	1621
Zambia	2012-2013 (january-february)	1200	739
Zimbabwe	2012	2400	1631

**Table 12 Descriptive analysis non-weighted and non-clustered sample**

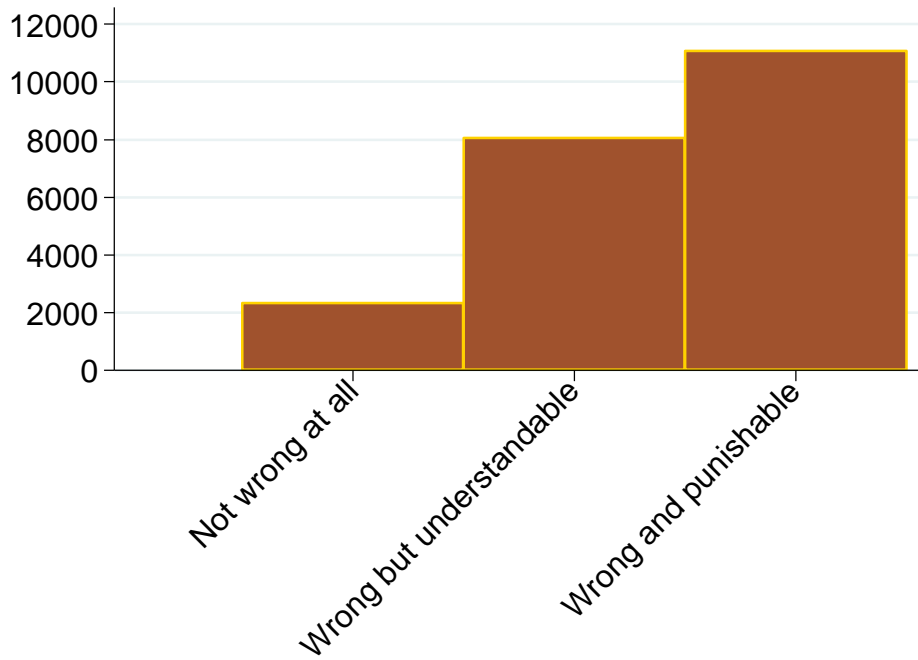
	<b>Tax compliant</b>	<b>Non-tax compliant</b>
Total	49.82	50.18
Male (%)	52	49
Age (mean)	37.55	36.53
Education (mean)	4.33	4.15
Wealth (mean)	0.49	0.45
Job with cash income (%)	33	33
Self-employed (%)	52	48
Urban (%)	42	36
Political trust (mean)	2.76	2.65
Difficulty to avoid taxes (mean)	3.18	3.16
Corruption amongst tax officials (mean)	2.39	2.48
Knowledge about taxes (mean)	0.70	0.54

**Table 13 Principal Component Analysis**

	Factor 1	Factor 2	Factor 3	Factor 4
<i>Satisfaction public services</i>				
Security	.5800			
Health	.7615			
Education	.7373			
Water and sanitation services	.7079			
Roads	.6852			
Electricity	.6694			
<i>Community participation</i>				
Attend a community meeting		.9090		
Join others to raise an issue		.9090		
<i>Political trust</i>				
Trust in president or prime minister			.8357	
Trust in parliament or national			.8641	
Trust in tax department			.7707	
<i>Knowledge about taxes</i>				
VAT				.7559
License fees				.8027
Property rates/ taxes				.8004
Income taxes				.7446
Self-employer taxes				.7654
<b>Cronbach's alpha</b>	<b>.7764</b>	<b>.7898</b>	<b>.7631</b>	<b>.8189</b>

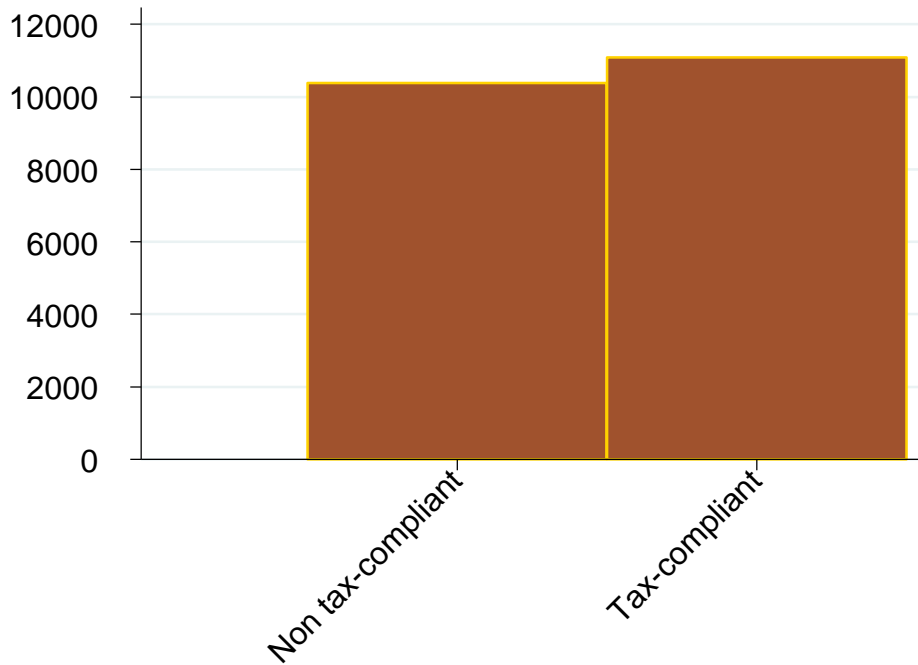
**Table 14 Correlation matrix**

	Satisfaction with public services	Protection payment	Social trust	Compared living condition	Community participation	Dummy set for Ethnic ID, Equal ID and National ID	Ethnic discrimination	Proud of nationality	Gov. working to reduce income gap	Gov. working to reduce absolute poverty	Male	Age	Education	Wealth	Job	Self employed	Urban	Political trust	Tax deterrence	Corruption tax officials	Tax knowledge	
Satisfaction with public services	1.000																					
Protection payment	-0.027	1.000																				
Social trust	0.031	-0.003	1.000																			
Compared living condition	0.175	0.004	-0.001	1.000																		
Community participation	0.024	0.020	0.030	-0.049	1.000																	
Dummy set for Ethnic ID, Equal ID and National ID	0.043	-0.011	0.060	-0.020	0.049	1.000																
Ethnic discrimination	-0.157	0.115	-0.055	-0.074	0.021	-0.165	1.000															
Proud of nationality	0.056	-0.095	-0.011	0.033	0.035	0.139	-0.109	1.000														
Gov. working to reduce income gap	0.440	0.020	0.048	0.154	0.025	0.012	-0.105	0.021	1.000													
Gov. working to reduce absolute poverty	0.474	0.006	0.042	0.178	0.031	0.006	-0.122	0.029	<b>0.569</b>	1.000												
Male	-0.015	0.007	0.002	0.003	0.137	0.025	0.022	0.013	-0.014	0.010	1.000											
Age	-0.019	-0.027	0.045	-0.058	0.123	0.024	-0.018	0.019	-0.009	-0.009	0.128	1.000										
Education	0.036	0.037	-0.127	0.191	-0.079	0.000	0.041	-0.007	-0.031	0.014	0.117	-0.219	1.000									
Wealth	0.003	0.030	-0.097	0.139	-0.044	0.001	0.023	-0.011	-0.041	-0.028	0.121	0.026	0.379	1.000								
Job	0.039	0.026	-0.076	0.089	-0.022	-0.025	0.031	0.002	-0.007	0.010	0.102	0.011	0.255	0.235	1.000							
Self employed	-0.008	0.026	-0.024	-0.007	0.095	-0.033	0.014	-0.019	0.005	-0.019	0.029	0.020	-0.081	0.004	0.179	1.000						
Urban	0.033	0.024	-0.084	0.128	-0.191	0.018	-0.023	-0.011	-0.020	-0.011	-0.006	-0.070	0.342	0.350	0.106	-0.062	1.000					
Political trust	0.326	-0.050	0.119	0.050	0.109	0.073	-0.188	0.085	0.264	0.312	0.012	0.082	-0.157	-0.146	-0.030	0.005	-0.124	1.000				
Tax deterrence	-0.065	-0.063	0.004	-0.086	-0.004	0.012	0.020	0.042	-0.091	-0.087	-0.015	0.015	-0.073	-0.063	-0.037	-0.043	-0.071	-0.012	1.000			
Corruption tax officials	-0.157	0.051	-0.044	-0.042	0.009	-0.020	0.134	-0.054	-0.145	-0.175	0.013	-0.046	0.062	0.066	0.020	0.038	0.040	-0.283	0.028	1.000		
Tax knowledge	0.041	-0.023	-0.033	0.107	-0.045	0.047	-0.094	0.029	0.051	0.065	0.056	0.039	0.110	0.158	0.065	0.009	0.148	0.012	-0.068	-0.031	1.000	



Right or wrong: People not paying the taxes they owe on their income

**Figure 11 Distribution of the dependent variable (ordinal)**



Tax compliance attitude

**Figure 12 Distribution of the dependent variable (dichotomous)**

# Appendix B Statistical tests

**Table 15 Wald test for interaction variables**

Model	Variable	Chi <sup>2</sup>	Degrees of freedom	Prob > chi <sup>2</sup>
Model 5	Social trust*Compared living	6.97	3	0.0728
Model 9	Ethnic dummy set	5.25	2	0.0725
Model16	Ethnic dummy set*Ethnic	16.84	5	0.0048
Model16	Ethnic dummy set	5.38	2	0.0680
Model16	Social trust*Compared living	8.16	3	0.0428
Model16	Ethnic dummy set*Ethnic	15.7	5	0.0077





# Appendix C Regression models

**Table 16 Bivariate logistic regression**

	Model 4 logit coeff./ (SE)	Model 8 logit coeff./ (SE)
Social trust	-0.134** (0.055)	
Community participation		0.034** (0.017)
Constant	0.142* (0.081)	-0.003 (0.093)
Observations	41,103	41,740
Pseudo R2	0.0378	0.0379
Wald-test	1668.58, df=28 p=0.000***	1724.87, df=28, p=0.000***
Log Likelihood	-20715.894	-21039.606
Country fixed effects	Yes	Yes
Std. Err. adjusted for clusters in regions	Yes	Yes
Number of clustes	348	348

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 17 Logistic regression with alternative measure of tax compliance**

	Model 6 logit coeff./ (SE)
Supporting higher taxes for more public services	
Social trust	0.034 (0.059)
Satisfaction with public services	0.154*** (0.037)
Male	-0.032 (0.032)
Age	-0.004*** (0.001)
Education	0.058*** (0.013)
Wealth	0.081 (0.080)
Job	0.006 (0.049)
Self employed	-0.045 (0.049)
Urban	0.035 (0.052)
Political trust	0.063** (0.027)
Tax deterrence	-0.062** (0.029)
Corruption tax officials	-0.013 (0.028)
Tax knowledge	0.780*** (0.080)
Constant	-0.416 (0.362)
Observations	27,357
Pseudo R2	0.0604

Wald-test	1239.45, df=40, p=0.000***
Log Likelihood	-12966.615
Country fixed effects	Yes
Cluster standard errors	Yes
Number of clusters	347
Robust standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

**Table 18 Logistic regression of tax compliance and income inequality**

	Model 13 logit coeff./ (SE)	Model 14 logit coeff./ (SE)	Model 15 logit coeff./ (SE)
Satisfaction with public services			0.137*** (0.044)
Gov. working to reduce income gap	0.126*** (0.025)	0.073*** (0.028)	0.035 (0.028)
Male		0.080*** (0.026)	0.083*** (0.027)
Age		0.003*** (0.001)	0.003*** (0.001)
Education		0.048*** (0.013)	0.046*** (0.013)
Wealth		0.103 (0.087)	0.098 (0.087)
Job		-0.084 (0.054)	-0.086 (0.054)
Self employed		-0.178*** (0.059)	-0.181*** (0.060)
Urban		0.020 (0.056)	0.011 (0.057)
Political trust		0.120*** (0.028)	0.101*** (0.028)
Tax deterrence		0.084** (0.037)	0.088** (0.037)
Corruption tax officials		-0.059** (0.025)	-0.056** (0.025)
Tax knowledge		0.908*** (0.083)	0.902*** (0.083)
Constant	-0.137 (0.091)	-1.139*** (0.268)	-1.361*** (0.300)
Observations	39,999	29,530	29,525
Pseudo R2	0.0381	0.0623	0.0631
Wald-test	508.07, df=28, p=0.000***	657.06, df=39 p=0.000***	666.33, df=40 p=0.000***
Log Likelihood	-20134.353	-14334.339	-14319.714
Country fixed effects	Yes	Yes	Yes
Std. Err. adjusted for clusters in regions	Yes	Yes	Yes
Number of clustes	348	348	348
Robust standard errors in parentheses			
*** p<0.01, ** p<0.05, * p<0.1			

**Table 19 Logistic regression of pride of nationality**

	Model 11 logit coeff./ (SE)
Satisfaction with public services	0.138*** (0.046)
Protection payment	-0.195*** (0.032)
Social trust	0.180 (0.144)
Compared living condition	0.041 (0.026)
Social trust* Compared living condition	-0.096** (0.048)
Community participation	0.003 (0.019)
Proud of nationality	0.020 (0.020)
Male	0.085*** (0.027)
Age	0.003*** (0.001)
Education	0.044*** (0.013)
Wealth	0.063 (0.089)
Job	-0.100* (0.055)
Self employed	-0.173*** (0.063)
Urban	0.012 (0.057)
Political trust	0.104*** (0.030)
Tax deterrence	0.079** (0.037)
Corruption tax officials	-0.062** (0.026)
Tax knowledge	0.909*** (0.083)
Constant	-1.228*** (0.324)
Observations	28,155
Pseudo R2	0.0652
Wald-test	1062.75, <i>df</i> =45 <i>p</i> =000***
Log Likelihood	13616.857
Country fixed effects	Yes
Std. Err. adjusted for clusters in regions	Yes
Number of clustes	348
Robust standard errors in parentheses	
*** <i>p</i> <0.01, ** <i>p</i> <0.05, * <i>p</i> <0.1	

**Table 20 Logistic regression of social trust**

	model17 logit coeff./ (SE)
Satisfaction with public services	0.112** (0.049)
Protection payment	-0.204*** (0.033)
Social trust	-0.105* (0.062)
Community participation	0.000 (0.020)
Equal ID	0.300** (0.133)
National ID	0.106 (0.134)
Ethnic discrimination	0.135*** (0.048)
Equal ID*Ethnic discrimination	-0.170*** (0.053)
National ID*Ethnic discrimination	-0.116** (0.056)
Gov. working to reduce income gap	0.011 (0.027)
Gov. working to reduce absolute poverty	0.074*** (0.028)
Male	0.072** (0.029)
Age	0.004*** (0.001)
Education	0.048*** (0.014)
Wealth	0.075 (0.089)
Job	-0.101* (0.058)
Self employed	-0.185*** (0.067)
Urban	0.023 (0.060)
Political trust	0.094*** (0.030)
Tax deterrence	0.084** (0.038)
Corruption tax officials	-0.068** (0.026)
Tax knowledge	0.908*** (0.088)
Constant	-1.280*** (0.367)
Observations	26,160
Pseudo R2	0.0669
Wald-test	708.67, $df=49$ $p=0.000$ ***
Log Likelihood	-12558
Country fixed effects	Yes
Std. Err. adjusted for clusters in regions	Yes
Number of clustes	348

Robust standard errors in parentheses

\*\*\*  $p<0.01$ , \*\*  $p<0.05$ , \*  $p<0.1$

**Table 21 Logistic regression dropping variables**

	model18 logit coeff./(SE)
Protection payment	-0.205*** (0.033)
Social trust	-0.108* (0.063)
Compared living condition	0.032 (0.024)
Community participation	0.002 (0.020)
Equal ID	-0.025 (0.068)
Ethnic ID	-0.130* (0.070)
Ethnic discrimination	0.009 (0.022)
Gov. working to reduce income gap	0.077*** (0.030)
Male	0.070** (0.029)
Age	0.004*** (0.001)
Education	0.048*** (0.014)
Wealth	0.070 (0.090)
Job	-0.102* (0.058)
Self employed	-0.183*** (0.067)
Urban	0.028 (0.060)
Political trust	0.119*** (0.031)
Tax deterrence	0.080** (0.038)
Corruption tax officials	-0.071*** (0.026)
Tax knowledge	0.912*** (0.088)
Constant	-0.867*** (0.310)
Observations	26,160
Pseudo R2	0.0654
Wald-test	680.94, df=46 p=0.000***
Log Likelihood	-12578.798
Country fixed effects	
Std. Err. adjusted for clusters in regions	
Number of clustes	
Robust standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

**Table 22 Model 16 without problematic observations**

	Model19 logit coeff./ (SE)	model20 logit coeff./ (SE)
Satisfaction with public services	0.105** (0.050)	0.107** (0.049)
Protection payment	-0.225*** (0.033)	-0.205*** (0.033)
Social trust	0.221 (0.144)	0.205 (0.146)
Compared living condition	0.052** (0.026)	0.044* (0.026)
Social trust* Compared living condition	-0.119** (0.047)	-0.107** (0.048)
Community participation	0.000 (0.020)	0.000 (0.020)
Equal ID	0.324** (0.134)	0.306** (0.133)
National ID	0.108 (0.134)	0.114 (0.133)
Ethnic discrimination	0.139*** (0.048)	0.138*** (0.048)
Equal ID*Ethnic discrimination	-0.177*** (0.053)	-0.171*** (0.053)
National ID*Ethnic discrimination	-0.118** (0.056)	-0.117** (0.056)
Gov. working to reduce absolute poverty	0.012 (0.028)	0.012 (0.027)
Gov. working to reduce income gap	0.083*** (0.029)	0.073** (0.028)
Male	0.081*** (0.029)	0.074*** (0.029)
Age	0.005*** (0.001)	0.004*** (0.001)
Education	0.048*** (0.015)	0.046*** (0.014)
Wealth	0.058 (0.090)	0.068 (0.090)
Job	-0.114* (0.059)	-0.102* (0.058)
Self employed	-0.214*** (0.067)	-0.189*** (0.066)
Urban	0.044 (0.058)	0.024 (0.060)
Political trust	0.098*** (0.030)	0.094*** (0.030)
Tax deterrence	0.095** (0.038)	0.086** (0.038)
Corruption tax officials	-0.074*** (0.027)	-0.068*** (0.026)
Tax knowledge	0.976*** (0.088)	0.908*** (0.087)
Constant	-1.496*** (0.367)	-1.400*** (0.360)
Observations	26,018	26,153
Pseudo R2	0.0762	777.94, <i>df</i> =51 <i>p</i> =0.000***
Wald-test	1108.87, <i>df</i> =51	0.0677
Log Likelihood	-12364.918	-12544.308
Country fixed effects		
Std. Err. adjusted for clusters in regions		

Number of clustes  
 Robust standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Tabell 1 Final model including country fixed effects**

	Model 16 (including country dummies) logit coeff./ (SE)
Satisfaction with public services	0.108** (0.049)
Protection payment	-0.202*** (0.033)
Social trust	0.204 (0.146)
Compared living condition	0.043* (0.026)
Social trust* Compared living condition	-0.106** (0.048)
Community participation	0.000 (0.020)
Equal ID	0.300** (0.133)
National ID	0.110 (0.133)
Ethnic discrimination	0.137*** (0.048)
Equal ID*Ethnic discrimination	-0.169*** (0.053)
National ID*Ethnic discrimination	-0.116** (0.056)
Gov. working to reduce income gap	0.010 (0.027)
Gov. working to reduce absolute poverty	0.073** (0.028)
Male	0.073** (0.029)
Age	0.004*** (0.001)
Education	0.046*** (0.014)
Wealth	0.071 (0.090)
Job	-0.102* (0.058)
Self employed	-0.187*** (0.066)
Urban	0.021 (0.060)
Political trust	0.094*** (0.030)
Tax deterrence	0.086** (0.038)
Corruption tax officials	-0.067** (0.026)
Tax knowledge	0.905*** (0.088)
Botswana	-0.426*** (0.162)
Burkina Faso	-0.791***

	(0.213)
Burundi	0.377*
	(0.216)
Cameroon	0.409*
	(0.212)
Cape Verde	-1.143***
	(0.186)
Coté d'Ivoire	-0.191
	(0.206)
Ghana	0.187
	(0.221)
Guinea	-0.044
	(0.218)
Kenya	-0.151
	(0.183)
Lesotho	-0.029
	(0.184)
Liberia	0.333*
	(0.177)
Madagascar	-0.355*
	(0.211)
Malawi	-0.894***
	(0.147)
Mali	0.201
	(0.345)
Mauritius	0.473*
	(0.259)
Mozambique	-1.204***
	(0.150)
Namibia	-0.467
	(0.294)
Niger	0.160
	(0.192)
Nigeria	-0.560**
	(0.224)
Senegal	-0.168
	(0.152)
Sierra Leone	-0.099
	(0.387)
South Africa	-0.224
	(0.164)
Tanzania	-0.239*
	(0.144)
Togo	-0.364
	(0.308)
Uganda	-0.608***
	(0.170)
Zambia	-0.687***
	(0.233)
Zimbabwe	-0.913***
	(0.187)
Constant	-1.395***
	(0.359)
Observations	26,160
Pseudo R2	0.0673
Wald-test	773.57, <i>df</i> =51 p=0.000***
Log Likelihood	-12553.458
Country fixed effects	Yes
Std. Err. adjusted for clusters in regions	Yes
Number of clusters	



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Robust standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1



# Appendix D Testing the assumptions of the final model

**Table 23 VIF-test**

	Including interaction term	Without interaction term	Dropping variables
Satisfaction with public services	<b>22.49</b>	<b>22.24</b>	-
Protection payment	5.59	5.57	5.56
Social trust	<b>12.72</b>	1.38	1.38
Compared living condition	<b>13.43</b>	<b>11.18</b>	<b>10.88</b>
Community participation	9.58	9.54	9.50
Equal ID	<b>17.62</b>	4.86	4.84
National ID	<b>20.91</b>	5.96	5.92
Ethnic discrimination	<b>22.44</b>	4.66	4.66
Gov. working to reduce income gap	9.24	9.23	6.41
Gov. working to reduce absolute poverty	<b>10.63</b>	<b>10.63</b>	-
Male	2.36	2.36	2.36
Age	9.00	8.88	8.87
Education	8.49	8.46	8.42
Wealth	6.03	6.03	6.02
Job	1.84	1.84	1.84
Self employed	2.65	2.64	2.63
Urban	2.19	2.18	2.17
Political trust	<b>13.49</b>	<b>13.31</b>	<b>11.99</b>
Tax deterrence	<b>16.03</b>	<b>15.39</b>	<b>15.25</b>
Corruption tax officials	9.61	9.36	9.29
Tax knowledge	4.95	4.93	4.91
Social trust* Compared living condition	<b>12.54</b>		
Equal ID*Ethnic discrimination	<b>13.33</b>		
National ID*Ethnic discrimination	<b>14.28</b>		
Note: All country-dummies have VIF < 3.			

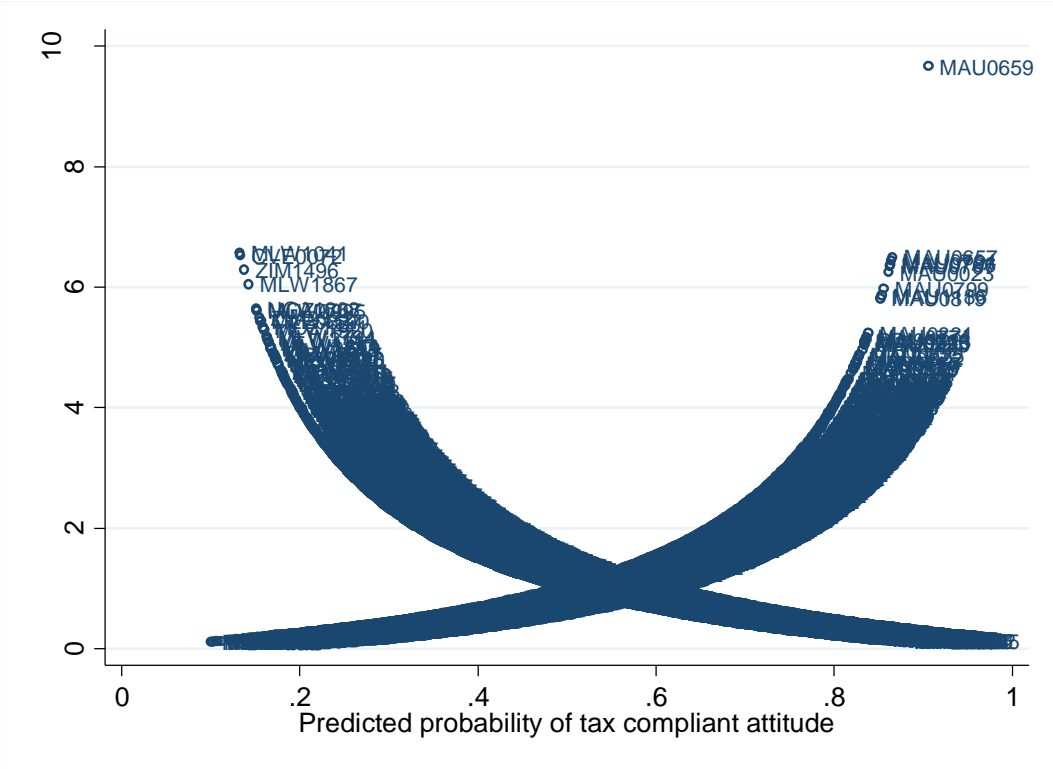


Figure 13 Change in Pearson chi-squared vs. predicted probability for model 16

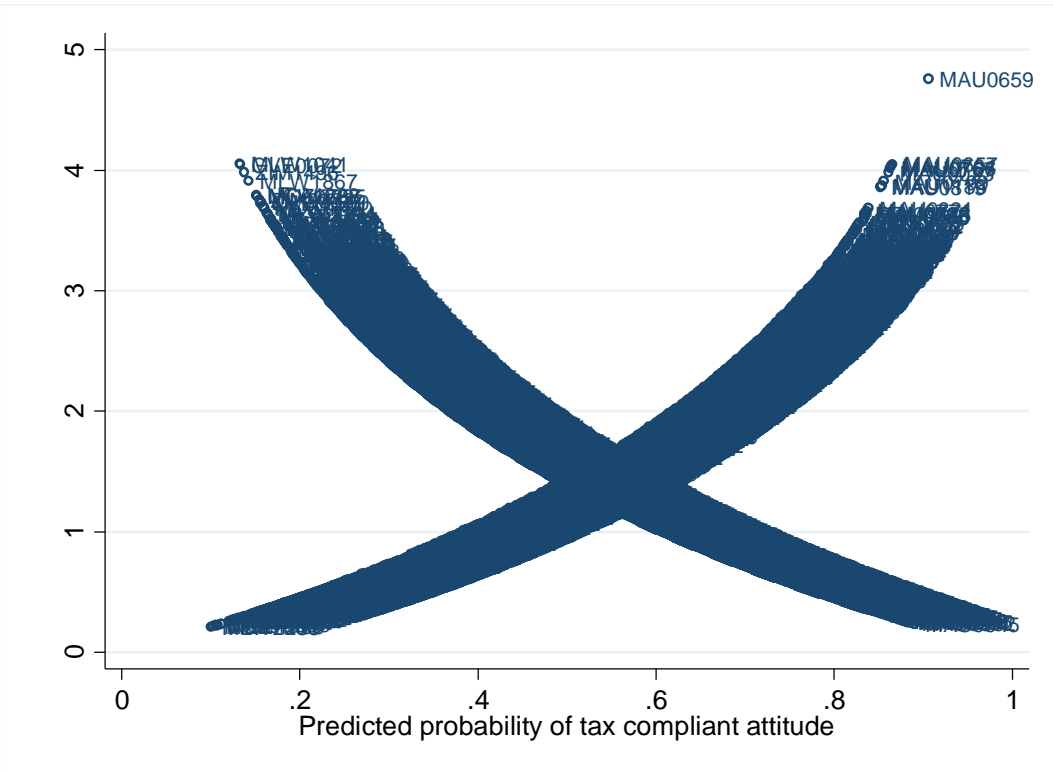


Figure 14 Change in deviance vs. predicted probability for model 16





# Appendix E Suggestion for further research: Country-specific analysis

