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Can the Decriminalization of Homosexuality Counter Religious and Traditional Homophobia in Africa?

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Abstract: This paper aims to analyze how the decriminalization of homosexuality contributes to the reduction of stigma against homosexuals in Africa in a context characterized by trust in religious and traditional leaders. Methodologically, we used a basic ordered probit regression with endogenous covariates and instruments variables, exploiting the Afrobarometer database (2023). The results show that trust in traditional and religious leaders increases the stigmatization of homosexuals. However, in countries that have decriminalized homosexuality, the stigmatization of homosexuals decreases, even when trust in religious and traditional leaders increases. This confirms the role of the rule of law in combating stigma and other forms of discrimination.

Keywords: trust; religion; tradition; stigmatization of homosexuals; decriminalization of homosexuality

JEL Classification: A12; D43; D82; H10; Z12; Z13

1 Introduction

This paper aims to examine how the decriminalization of homosexuality contributes to the reduction of stigma against homosexuals in Africa in a context characterized by trust in religious and traditional leaders. To achieve this objective, a basic ordered probit regression with endogenous covariates and instruments

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variables was used and applied to Afrobarometer 2023 data. This study is justified by the influence of homosexual stigma on mental disorders, suicidal tendencies, economic vulnerability, violence and HIV transmission.[1] Our study also contributes to the growing debate on how religion and cultural tradition affect various behaviors and socio-economic indicators.

As announced and expected, the synthesis of the positions of the African Episcopal Conferences, gathered in the Symposium of Episcopal Conferences of Africa and Madagascar (SECAM), was published in Ghana on January 11, 2024. Not surprisingly, the statement is unequivocal, since the vast majority of African episcopates, while reaffirming "their unwavering attachment to and communion with the Successor of Peter," reject the blessing of same-sex couples, as mentioned in the doctrinal statement "Fiducia Supplicans",[2] published by the Dicastery for the Doctrine of the Faith on December 18, 2023. For these African pastors, homosexuality is an abomination and any charity towards those who practice it is likely to cause confusion in the minds of the Catholic faithful and scandal within the ecclesial community. According to SECAM, the practice is "in direct contradiction with the cultural ethos of African communities". At the national level, other initiatives of this kind have been taken. This is the case in Cameroon, where the bishops, in a declaration published on December 21, 2002, considered "any form of public or private blessing that tends to recognize homosexual couples as a state of life" as incompatible and therefore formally prohibited "all blessings of homosexual couples" in the Roman Catholic Church of Cameroon. It should be recalled that this position of the Cameroonian prelates on the practice of homosexuality remains in line with that published on January 12, 2013.

The Vatican's flexibility toward homosexual couples was hailed as a breakthrough in the West and even in Latin America (Djarmaila 2024). It was even widely reported by the mainstream media, whose closeness to LGBT circles is undeniable. On the other hand, "Fiducia Supplicans" sent shock waves through Africa. The spontaneity of the negative reactions from African bishops' conferences and public opinion even led Vatican officials to re-specify the spirit of the text, indicating that these non-ritual blessings do not legitimize these irregular couples and that they must be applied prudently according to local contexts (Djarmaila 2024). Africa, whose cultures and criminal laws are strongly opposed to homosexuality, seems to be a sanctuary on this issue. Although homosexuality has always existed in African

1 Read Mosley et al. (2022)

2 Fiducia Supplicans enables Catholic clergy to bless couples in irregular situations, including remarried divorcees, public cohabitants and same-sex couples. However, these blessings must be spontaneous and extra-liturgical. Of course, the Catholic Church's traditional doctrine on marriage and sexuality remains unchanged.

societies, it is considered an abomination and a curse (Djarmaila 2024). Of Africa's 54 countries, only half a dozen have decriminalized homosexuality. Only one country, South Africa, has legalized same-sex marriage since 2006. This African resistance is rooted in the Bible: "In the beginning God created man and woman" (Genesis, chapter 1, verses 26–28), and "a man shall leave his own family and be united to his wife, and with her he shall create a new family" (Genesis, chapter 2, verse 24). In the same vein, the Old Testament tells us that the city of Sodom was destroyed because of the practice of homosexuality.

Africa is the continent with the most countries that prohibit consensual homosexual acts between adults in private. In fact, homosexuality is criminalized in more than half of African countries.[3] Stigmatization means that individuals who do not respect socio-cultural norms or who do not share the same religious, ethnic, traditional and political values may be consistently denied full acceptance by society (Furuya 2002). Homophobia can act as a brake on economic development (Ananyev and Poyker 2021). In 34 African countries surveyed by Afrobarometer (2023), over 78.73 % of the population would not like to have homosexuals as neighbors. These statistics mask certain disparities, as the proportion of people who would not like to have homosexuals as neighbors is 88.37 % among Muslims, compared with 75.88 % among Christians and 60.98 % among members of other religions.

Africa has many different ways of dealing with the issue of homosexuality.[4] In fact, according to Broqua (2012), "it is the continent with the greatest diversity of situations, ranging from a country where gay rights are among the most advanced in the world (South Africa) to others where the same people face the death penalty. It is also important to take into account the complexity and often ambivalence of each local configuration. For example, in South Africa, where rights are guaranteed, there are considerable problems of violence, especially against lesbians, whereas in some countries where homosexual behavior is condemned by law, it can sometimes be carried out without major problems, although such a context often encourages blackmail and extortion practices".

This homophobia may also depend on the trust individuals have in religious and Christian leaders. Trust can be beneficial in that it makes it possible to build relationships, work with people, and rely on them (You 2018). On the other hand, trust is also risky and can lead to significant financial, material and immaterial

3 According to Statista (2023), homosexuality is criminalized in 32 African countries, compared to 20 in Asia, 6 in the Americas, 6 in Oceania and none in Europe.

4 Desorgues (2023) shows that homosexuality is (i) illegal in some countries (Algeria, Chad, Cameroon, Egypt, Kenya, Libya, Mauritania, Morocco, Nigeria, Tunisia, and Zambia), partially illegal in some countries (Eswatini, Namibia, Sierra Leone, and Zimbabwe), Eswatini and Sierra Leone) and decriminalized in some other countries (Angola, Botswana, Burkina Faso, Central African Republic, Congo, Democratic Republic of Congo, Gabon, Lesotho, Mali, Niger, and South Africa).

losses (Uslaner 2013; You 2018). Religious and traditional leaders are the representatives of religious and traditional institutions, respectively. Trust in institutions generally implies confidence not only in integrity and fairness, but also in the competence of the institutions and the people who embody them (Mpabe 2023; You 2018). The vast majority of Africans practice a religion. According to Afrobarometer (2023), 56 % of them are Christians, 34.3 % are Muslims, and 4 % say they are atheists, agnostics, or have no religion. What's more, Africans trust their religious leaders (87.80 %) and traditional leaders (84.60 %) far more than any other institution, such as the police (73.10 %) and the judiciary (79.70 %). This trust is reflected in the contacts they have with them. In fact, 43 % and 31 % of African citizens have contacted a religious leader and a traditional leader, respectively, at least once in the past year (Afrobarometer 2023). Africans are more likely to contact religious and traditional leaders than other types of leaders, including local councillors (22 %) or members of the national assembly (11 %).[5]

The influence of tradition and religion on people's daily lives remains very strong (Mpabe 2015; Mpabe and Abba 2018; Tabard 2010). Religious leaders can influence individuals' attitudes toward important social and political issues (Jones and Menon 2022), such as immigration (Nteta and Wallsten 2012), contraceptive use (Adedini et al. 2018), electoral participation and candidate choice (Campbell and Monson 2003), participation in public demonstrations (Butt 2016), and violent conflict (Basedau, Pfeiffer, and Vüllers 2016). Moreover, while much attention has been paid to the role of religious institutions, which can have an indirect effect on the attitudes and behaviors of the faithful, religious leaders of all denominations can have a direct effect (Jamal 2005). As for traditional authorities, they are the guarantors of the link of the living with the past generations, with their own ancestors and, in general, with the past (Perrot 2009). Ranger (2012) demonstrates the almost futile nature of any separation between the traditional and the modern. Foucher and Smith (2011) argue that for many people, tradition is still an indispensable category for thinking about Africa's destiny. Religious and traditional leaders are less likely to be perceived as corrupt than any other group of public leaders. In fact, according to Afrobarometer (2023), the corruption perception rate of religious leaders (63.2 %) and (71.1 %) is lower than the corruption perception rate of police officers (90 %) and judges and magistrates (86.50 %).

We draw on a large body of literature in African studies that analyzes the causes of intolerance toward homosexuality in Africa. Previous studies (Awondo,

5 Afrobarometer (2023)

Geschiere, and Reid 2012; Bertolt 2020; Currier 2018) have argued that anti-gay sentiments are driven by a number of factors, including the consolidation of elite power, anti-elite resentment, conspiracy theories, secret societies, witchcraft, and religion. However, this literature only considers how religious affiliation affects these anti-gay sentiments. Awondo, Geschiere, and Reid (2012) suggest that anti-gay discourse in Uganda was largely facilitated by conservative American Christians who had access to the highest levels of government, while Thoreson (2014) highlights the influence of Christian nationalism. In Zambia, homophobia is more entrenched among Pentecostals. These studies provide a rich qualitative analysis of contemporary institutions and struggles against homosexuality in specific countries. Taking a quantitative approach, Ananyev and Poyker (2021) focus on the effect of proximity to colonial Christian missions on attitudes toward homosexuals. Our article complements this body of work with an empirical analysis of the influence of trust in religious and traditional leaders on homophobia. It is the first to highlight the influence of trust in religious and traditional leaders. Religious affiliation and trust in religious leaders are distinct concepts. One can belong to a religious obedience and not trust religious leaders: 12.74 % and 9.07 % of Christians and Muslims, respectively, do not trust religious leaders. All the more so as some authors have noted the existence of homosexual practices by members of the prelate in certain countries (Kappler, Hancock, and Plante 2013; Martel 2019; Regnerus, Cranney, and Vermurlen 2021). According to some authors (Hoffmann 2013; Kleiman, Ramsey, and Palazzo 1996), people's trust in religious leaders has declined sharply in some Western countries, both for the population as a whole and for each demographic subgroup, while personal commitment to religion itself has increased. In addition, our study is also the first to examine in an econometric way the impact of the law on the decriminalization of homosexuality in the fight against homophobia.

It is less clear whether trust in traditional and religious leaders has a positive or negative impact on the practice of homophobia. There are two main reasons for this ambiguity. First, traditional and religious leaders may have conflicting incentives when it comes to advising their flocks on whether or not to adopt antigay attitudes. For example, some religious leaders may be reluctant to castigate the practice of homosexuality because doing so could reduce the number of worshippers and deprive them of the benefits of communal prayer. Second, because they are often decentralized, we have little reason to expect religious and traditional leaders to present a unified message on homosexuality.

To achieve this goal, the second section of the study is devoted to a review of the literature, the third to the methodology, the fourth to the presentation of the results, and the fifth to a discussion of the results.

2 Literature Review

Religion and tradition provide benefits to individuals in the form of worship, explanations of the origin of things, comfort in difficult times, forgiveness of sins, and the promise of salvation (Foucher and Smith 2011; Mpabe and Abba 2018; Tridimas 2022). From the perspective of institutional analysis, religion and tradition can be seen as fundamental determinants of social interactions and economic performance (Foucher and Smith 2011; Mpabe 2023; Tridimas 2022). By sanctioning certain values and prohibiting others, they influence individual ethics and the social norms that shape actions and outcomes (Foucher and Smith 2011; Tridimas 2022). The growth of religious and traditional beliefs is therefore based on belief in a deity to be served and trust in members of religious or traditional leaders (Mpabe 2023). In the broadest sense, culture is the way of life created and acquired by individuals and transmitted intergenerationally other than through genes (Erickson and Murphy 2013). Religion and traditional culture create social identities that can influence the socioeconomic behaviors of individuals, such as the stigmatization of LGBT people (Chuah et al. 2016).

2.1 Influence of Religious Leaders

The role of religious leaders has been highlighted in many areas. In times of crisis, religious leaders often play a greater role; individuals are often inclined to turn to religion because they face high levels of threat and uncertainty (Mpabe 2015; Mpabe and Abba 2018). The key mechanism underlying all these influences is the ability of religious leaders to convey a credible message to their followers, which depends on trust. As theories of trust suggest (Levi 1998), the content of their message would be inconsequential if the recipients of that message did not believe that the messenger was acting in their best interests. In other words, without trust, religious leaders would not be able to exert sufficient influence on their followers to change their behavior, short of physical coercion or threat (Jones and Menon 2022). Religious leaders often have the moral authority to influence individuals' willingness to engage in prosocial behavior. However, this influence can be positive or negative, as religious leaders face a variety of incentives to promote compliance, and their leadership is often decentralized (Jones and Menon 2022). The introduction of imported religions (Christianity and Islam) into African societies has reinforced patriarchy, weakened the social position of women, and institutionalized heterosexuality (Amaduime 1997).

Some studies have shown that in monotheistic religions (Christianity and Islam), people with high levels of religiosity have more negative attitudes toward homosexual relationships (Herek, Chopp, and Strohl 2007; Szymanski and Carretta

2020). Using data from the World Values Survey on a sample of 38 countries outside of Africa, Andersen and Fetner (2008) show that people with high levels of religiosity,[6] are less likely to be supportive of homosexuality. Religious leaders can spread messages that stigmatize gay people (White et al. 2020). Faith-based stigma refers to a process of stigmatization that originates in religious teachings, practices, and beliefs by labeling characteristics or behaviors as immoral (Goodman 2017). Stigma against LGBT people is rooted, in part, in religious attitudes and community norms (Frohwirth, Coleman, and Moore 2018; Gaydos et al. 2010; Smith et al. 2016).

Christian and Muslim condemnation of homosexuality is one aspect of a broader prohibition of all non-procreative sexual acts, including sex outside of marriage, masturbation, and abortion, all of which have been characterized as "sins against nature" (Herek, Chopp, and Strohl 2007). Consequently, as LGBTQ people disrupt hegemonic cisgender norms (including the expectation that gender is biologically determined) and myths of sexual purity (that sex is only for procreation between married men and women), they threaten dominant religious doctrine among Christians and Muslims, as well as community norms (Kumar, Hessini, and Mitchell 2009; White Hughto, Reisner, and Pachankis 2015). Stigma against LGBT people is often more pronounced in places where Christianity is particularly dominant (Rice et al. 2017; Smith et al. 2016). Christianity and Islam base their theological and ethical perspectives on the primacy of heterosexuality over the notion of complementarity between a woman and a man (Demange 2012,[7] Gueboguo 2007,[8] Menguele 2016.[9]) Tonyé Bakot (2012),[10] denounced the fact that certain political elites condition social advancement on homosexual practices. In his view, "homosexuality remains a plot against the family and marriage, … an infamy that deserves to be condemned". At a time when "the famous project of marriage for all" was dominating the news in Europe, this religious leader feared that homosexuality would end up being imported because of the mimetic effects of a "normative Darwinism" (Commaille 2010) that was very much at work in the "factory of law" (Latour 2002) in sub-Saharan African states. It was also a critique of the cultural imperialism manifested in the pressure exerted by certain Western countries on

6 The 2 authors measure religiosity in terms of attending church at least once a month.

7 In Uganda, the "Uganda National Pastors Task Force against Homosexuality" and the "National Coalition against Homosexuality and Other Sexual Abuses" are religious associations that defend the death penalty clause for homosexuality (Demange 2012).

8 Gueboguo (2007) points out that Christians accused of practicing homosexuality are often stripped naked in the midst of worship, and suffer temporary or permanent ex-communiation.

9 Radical speeches mobilizing against homosexuality have been echoed by the Council of Muslim Imams and Dignitaries of Cameroon, which considers homosexuality a "haram" sexual practice, i.e. detestable and abominable.

10 He was Metropolitan Archbishop of Yaoundé in Cameroon.

African governments. Indeed, the prospect of decriminalizing homosexuality, condemned in Cameroon and Senegal by Articles 347 bis and 319 of the penal code respectively, promoted and desired by certain Western states, reflected this cultural imperialism.

At the same time, it must be acknowledged that the sexual beliefs, attitudes, and social norms of religious leaders and congregations are highly diverse and complex (Dozier et al. 2020; Jefferies et al. 2008; Lindley et al. 2010). In fact, there are progressive or moderate trends in Christian religious organizations that do not support the stigmatization of LGBT people. According to the Pew Research Center (2019), 64 % of devout Catholics think same-sex marriage is good or somewhat good, compared to 27 % of white evangelical Protestants, 43 % of black Protestants, and 82 % of freethinkers. When it comes to the stigmatization of gay people, there is tension between judgment and religious ideologies dedicated to charity (Mosley et al 2022). Some religious leaders and believers believe that because of God's love, any discrimination or stigmatization of LGBT people within religious communities must disappear (Mosley et al 2022).

Some studies have noted the practice of homosexuality among members of the clergy, particularly within the Catholic Church (Kappler, Hancock, and Plante 2013; Martel 2019; Regnerus, Cranney, and Vermurlen 2021).[11] Although it is not widely known, the official position of the Catholic Church is that homosexual men, even if they are not sexually active, should not be admitted to the priesthood (Regnerus, Cranney, and Vermurlen 2021; Sullins 2020b). Pope Benedict XVI stated in 2005 that "the Church … cannot admit to the seminary or to the priesthood those who practice homosexuality" (Congregation for Catholic Education 2005). The environment of Catholic seminaries can shape and constrain clerical trajectories in terms of sexual habits and attitudes (Cozzens 2000; Greeley 2004; Pullella 2019;[12] Regnerus, Cranney, and Vermurlen 2021). The number of sexual abuse allegations made between 1955 and 1999 is closely related to both the rate of self-reported homosexuality among Catholic priests (Boisvert and Goss 2021) and priests' perceptions of homosexual subcultures in seminaries (Sullins 2020a).

2.2 The Influence of Traditional Leaders

Popular homophobia in Africa is based on the myth of an Africa traditionally untainted by homosexuality due to its animist religious underpinnings (Menguele

11 In the USA, estimates of the proportion of homosexual priests have varied considerably over the last few decades, but are generally between 25 % and 50 %.

12 In 2019, Pope Emeritus Benedict XVI remarked on seminary culture in the 1960s and 1970s, stating that "in various seminaries, homosexual cliques were established, which acted more or less openly and considerably changed the climate in the world" (Pullella 2019).

2016). Homophobic beliefs in Africa are based on the received idea that homosexuality is a colonial import. It echoes the famous Western origin of homosexuality theory (Msibi 2011). According to this theory, African animist societies did not know homosexual defilement until the arrival of Western settlers (Menguele 2016). Considered a prerogative of Western societies, homosexuality would have been introduced to Africa by vicious settlers if it wasn't simply promoted by a certain African elite under the influence of "the fascination of the West" (Njoh Mouelle 1998). We have spoken of a "cultural exception" and insisted on the decisive influence of "external dynamics" in the contemporary emergence of homosexuality in the Cameroonian public sphere. The prevailing homophobia is perceived first and foremost as a divine decree. It is also an expression of African cultural exceptionalism (Akana 2007). The myth of a virgin Africa also suggests that African societies in general were unaware of homosexual practices because none of them had explicitly named the issue.

But in reality, "the skillfully crafted myth of an Africa that has never known homosexuality" (Gueboguo 2009) is nothing more than a received idea with no real reference to reality, for as Oraison (1975) observed, "homosexuality has existed at all times and in all cultures. So just because it hasn't been explicitly named doesn't mean it hasn't existed. Several studies have confirmed the existence of homosexuality in Africa before the arrival of colonists (Epprecht 2006; Evans-Pritchard 1970; Jjuuko and Tabengwa 2018; Morgan and Wieringa 2005; Nwoko 2012). The existence of same-sex sexual practices has been documented in some societies, notably among the Zande of Sudan, between women in Lesotho, among the Mossi of West Africa and the Kololo-Lozi of Zambia, and among the Azandes of the Central African Republic, before colonization and during the colonial period (Bertolt 2020; Crémieux and Tin 2013; Murray and Roscoes 1998). In the kingdom of Buganda, part of present-day Uganda, King Mwanga II was openly gay and did not face hatred from his subjects until whites introduced the Christian church and its condemnation. Although King Mwanga was the most prominent African recorded as openly gay, he was not the only one (Bisi Alimi 2015). Moreover, there were words in local languages to refer to this type of sexual practice (Bisi Alimi 2015; Gueboguo 2006): adofuro (in the Yoruba language,[13]) Yan daudu (in the Haoussa language.[14]) Drawing on these studies of indigenous African homosexuality, Bisi Alimi (2015),[15] states, "If you say being gay is not African, you don't know your history."

From an ethnological and anthropological point of view, some authors have linked homosexuality to the particular initiation rites of certain human societies

13 A people of Nigeria

14 A people found in Cameroon, Nigeria and Niger

15 He is a Nigerian gay rights activist

(Bisi Alimi 2015; Dynes 1992; Gueboguo 2006). Homosexuality is often perceived as an occult and initiatory practice. This narrative is often used by religious figures to justify their hostility to any attempt to promote this form of sexuality. Some of these clerics cite the use of homosexuality in the rites of secret societies to provoke homophobic behavior. If "homosexuality is a practice that is immediately assimilated to witchcraft" (Abéga 1995), it's mainly because of its initiatory functions, now assimilated to witchcraft. It's an explanation that is systematically mobilized to arouse the population's revulsion against any homosexual practice, in a context where revulsion against sexuality is far from being the most widespread thing in the world. As a result, "the revulsion is such that the traditional African considers this practice to be real witchcraft" (Akana 2007). And yet, any practice suspected of witchcraft or occult potential is generally feared and shrouded in mystery (Geschière 1998; Hebga 1979). Indeed, irrationality plays a crucial role in the process of popular homophobia in Africa. The frightening initiatory uses of homosexuality condemned by religious figures arouse fear and apprehension.

The fantastic register of this sexual genre is therefore part of the cultural perception of homosexuality. For example, the initiatory aspect of homosexuality in the initiation rites of secret societies or in female sterility has been invoked to show that recourse to homosexuality is never "simple" or harmless (Menguele 2016). Some social anthropologists have even shown that there are traditional African rites of a homosexual nature (Gueboguo 2007). In Cameroon, for example, the rites of mevungu among the Beti and koo among the Bassa are often cited. It seems that these ancient rituals were often of a homosexual nature. In traditional societies, this more or less homosexual initiation rite, performed by a traditional priest, was used in times of famine, epidemic, or when "harvests were poor and game was scarce" (Laburthe Tolra 1985). As Gueboguo (2007) points out, "it is a means of protection and elimination of evil spells in the eyes of all". These rites included "touching of a homosexual nature" (Gueboguo 2007). According to Ombolo (1990), "mevungu, an exclusively female rite, included dances that sometimes mimicked coitus, with menopausal initiates playing the male role. The contemporary trivialization of this category of sexuality thus becomes suspect, allowing preachers to conflate homosexuality, secret societies, and witchcraft.

Homosexuality is often equated with "a kind of vampirism" (Abéga 2007) promoted by esoteric lodges such as Rosicrucianism and, above all, Freemasonry, initiatory brotherhoods whose mere mention is enough to arouse fear in the African context (Edzoa 2012; Menguele 2014; Pigeaud 2011). As Fancello (2008) points out, "the fraternal nature of Rosicrucianism and Freemasonry feeds the witchcraft imaginary in Africa. For this reason, their members are "accused of possessing the most fearsome international magic [...] they are associated with certain incestuous practices, homosexuality, ritual murder and other practices that symbolize the most destructive witchcraft" (Tonda 2002). In popular imagery, "the initiatory nature of

homosexuality is all the more supported by the fact that in some African countries homosexuals are sometimes referred to as Freemasons, the confusion between the two categories being tantamount to making them sorcerers, since mystical circles are not always distinguished from sorcerers in the chiaroscuro" (Abéga 1995).

3 The Effect of the Church and the Law on Incentives

Inspired by the theoretical model developed by Hylton, Rodionova, and Deng (2011), we propose the following model:

A church would adopt a doctrine that increase its membership share of the population from S_q to S_p when: $\eta\ (S_p - S_q) - \Delta C > 0$.

where η represents the revenue per share of population and Δc is the change in cost to the church.

It is also the case that $S_p = 1 - p$ and $S_q = 1 - q - \delta$.

We suppose that there is a social harm caused by free riding or violation of church norms. Let p equal the frequency with which this social harm occurs when free riding and the violation of church norms is common. Let q equal the frequency of harm when free riding and violation of church norms is relatively infrequent. Suppose that these frequencies depend on the share of the population that is members of a religious organization.

The norm that the church wishes to promote in this context is family stability, which is obviously beneficial to society. However, some members of society may choose to violate or free ride on the church's norm through adultery, the debauchment of young people, or some other type of conduct that tends to undermine the stability of the family. As the church norm advances beyond a minimal level of acceptance, it may become easier at first for norm violators to operate without immediate detection. However, the church can reduce the degree of free riding through its expansion.

In this case, δ represents the external harm to minorities who are disparaged by the church doctrine (e.g. gays). This external harm reduced the beneficial impact of the promotion of the church's doctrine. Here, the basic doctrine, which is to promote the stability of the traditional family, clearly has a positive effect overall. However, there is also a negative externality on a certain minority (gays).

Substituting, it is clear that.

$$\eta\left(S_p - S_q\right) - \Delta C = \eta\left(p - q - \delta\right) - \Delta C > 0$$

Thus, the church's revenue is dampened by the "minority harm". But the church cannot itself avoid the harm without also missing out on the additional

revenue. The state, however, can reduce the harm to the minority group through an antidiscrimination law protecting the minority group. The antidiscrimination law permits the church to continue to play its role while at the same time regulating the harmful external effect.

4 Methodology

4.1 Data

Data for this study come from the Afrobarometer database (2023). Information was collected in 34 African countries in 2022. The database consists of 48,804 individuals. Afrobarometer uses national probability samples, which are designed to be representative of all citizens of voting age in a given country. The goal is to give every adult citizen an equal and known chance of being selected for an interview. We achieve this by: (i) using random selection methods at each stage of sampling, and (ii) sampling at all stages with probability proportional to population size, wherever possible, to ensure that larger (i.e. more populous) geographical units have a proportionately greater chance of being selected for the sample.

The sample universe usually includes all citizens aged 18 and over. In general, people living in institutions are excluded, such as students in dormitories, patients in hospitals, and people in prisons or nursing homes. Sometimes people living in areas considered inaccessible due to conflict or insecurity are also excluded. The sample design is a multi-stage, stratified, clustered regional probability sample. Specifically, the sample is first stratified by the main subnational unit of government (state, province, region, etc.) and by urban or rural location. The Afrobarometer Network is an independent, non-partisan research project run by CDD,[16] IDASA,[17] and MSU.[18] Implemented through a network of national partners, Afrobarometer measures economic conditions and the political atmosphere in African countries. The questionnaire is standardized to facilitate cross-country comparisons. The countries covered by Afrobarometer (2023) are listed in Appendix Table 5.

4.2 Econometric Model Specification

No study in the empirical literature has examined the influence of decriminalization of homosexuality, trust in religious and traditional leaders on the stigmatization of homosexuality.

16 CDD: Ghana Center for Democratic Development
17 IDASA: Institute for Democracy in South Africa
18 MSU: Michigan State University

Our structural equation model is written as follows:

$$HOMO_i = \alpha + \beta_1 TRUST_i + \beta_2 LEGAL_i + \gamma X_i + \varepsilon_i \quad (1)$$

$$TRUST_i = c_0 + c_1 CORTL_i + c_2 CORRL_i + c_3 HOMO_i + \delta_1 W_i + v_i \quad (2)$$

$$LEGAL_i = d_0 + d_1 GDP_i + d_2 HOMO_i + \delta_2 Z_i + u_i \quad (3)$$

This relationship may suffer from endogeneity or simultaneity bias: (i) between trust in religious and traditional leaders on the one hand and the stigmatization of homosexuality on the other, and (ii) between decriminalization of homosexuality on the on hand and the stigmatization of homosexuality on the other hand. The data at our disposal do not provide information on the chronology of these 3 behaviors. For example, we don't know (i) whether trust in traditional and religious leaders precedes the stigmatization of homosexuality or (ii) whether decriminalization of homosexuality precedes the stigmatization of homosexuality. However, the expression of a direct simultaneity between these 3 attitudes requires an answer to this question. The endogeneity of explanatory variables often poses difficulties in behavioral econometrics. Theoretically, in the presence of endogeneity, the expectation of the error term conditional on the explanatory variable is non-zero, and the usual estimators are subject to bias.

To solve the endogeneity problem, we will use basic ordered probit regression with endogenous covariates and instruments variables. This method is a variation of a three-stage estimation for systems of simultaneous equations (3SLS).[19] It is also possible to use an alternative approach based on the "reduced form" method (see Appendix). The instrumental variables must simultaneously satisfy two conditions. The first is the relevance condition, which implies that the instrumental variable must be sufficiently correlated with the endogenous variable it is instrumenting. This means that the instrumental variable must be relevant to explain the variation in the endogenous variable. The second condition is that the instrument must satisfy the validity property. To be valid, the instrumental variable must have no partial effect (direct or indirect) on the variable to be explained except through the endogenous variable. Thus, the instrumental variable must not be correlated with the error term. Inspired by the suggestions of some authors (Angrist and Krueger 2001; Mpabe and Kamdem 2024), we chose (i) ***CHOMO*** as instrument the annual average ***HOMO*** by country, (ii) ***CTRUSTTL*** as instrument the annual average ***CTRUSTTL*** by country, and (iii) ***CTRUSTRL*** as instrument the annual average ***CTRUSTRL*** by country. ***GDP*** is the instrumental variable of ***LEGAL***. To test their validity, we used the Wald

19 Read De Luca and Perotti (2011), Roodman (2011), Bartus and Roodman (2014)

test of exogeneity of the instrumented variables. The results of this test confirm the validity of this instrument (Appendix Table 6).

HOMO is the variable that measures homophobia. In the Afrobarometer database (2023), this homophobia is measured by the degree of disapproval of living near homosexuals. This variable takes the value 0 if the respondent strongly approves of living near homosexuals, 1 if the respondent somewhat approves of living near homosexuals, 2 if the respondent is not interested, 3 if the respondent somewhat disapproves of living near homosexuals, and 4 if the respondent strongly disapproves of living near homosexuals. Several other variables have been used to measure attitudes toward homosexuals, including the belief that homosexuality is justifiable (Andersen and Fetner 2008).

TRUST is the dependent variable that measures trust in religious leaders (***TRUSTTL***) or trust in traditional leaders (***TRUSTRL***). ***TRUSTRL*** is the variable that provides information about the individual's trust in religious leaders. It takes the value of 0 if he trusts them "not at all", 1 if he trusts them "a little", 2 if he trusts them "somewhat", and 4 if he trusts them "a lot". ***TRUSTTL*** is the variable that provides information about the individual's trust in traditional leaders. It takes the value 0 if he trusts them "not at all", 1 if he trusts them "a little", 2 if he trusts them "some", and 4 if he trusts them "a lot".

LEGAL is the variable that captures the decriminalization of homosexuality in the individual's country of residence. It takes the value 1 if homosexuality is decriminalized and 0 otherwise.

X_i is the vector of control variables in equation (1), while W_i is the vector of control variables in equation (2), Z_i is the vector of control variables in equation (3). ε_i, v_i and u_i represent the error terms in equations (1)–(3) respectively.

CORRL is the variable that provides information about the individual's perception of religious leader corruption. It takes the value 0 if he thinks no religious leaders are corrupt, 1 if he thinks some religious leaders are corrupt, 2 if he thinks most religious leaders are corrupt, and 3 if he thinks all religious leaders are corrupt.

CORTL is the variable that provides information about the individual's perception of the corruption of traditional leaders. It takes the value 0 if he thinks that no traditional leaders are corrupt, 1 if he thinks that some traditional leaders are corrupt, 2 if he thinks that most traditional leaders are corrupt, and 3 if he thinks that all traditional leaders are corrupt.

GDP is the variable that captures the average GDP per capita of the individual's country of residence during the period 2019–2022. It is a quantitative variable that measures the size of the economy.

POV is the variable that provides information about the individual's standard of living. It has a value of 0 if the individual is not poor, 1 if the poverty level is low, 2 if the poverty level is moderate, and 3 if the poverty level is high.

REL is the variable that provides information on the religious affiliation of the individual. It takes the value 0 if he is a member of other religions, 1 if he is a Christian and 2 if he is a Muslim.

SEX is the variable that provides information about the individual's sex. It takes the value 1 if it's a man and 0 if it's a woman.

AGE is the quantitative variable that provides information on the age of the individual.

EDU is the variable that captures the individual's level of education. It takes the value 0 if the individual is illiterate, 1 if he/she has primary education, 2 if he/she has secondary education, and 3 if he/she has tertiary education.

EMPL is the variable that indicates the employment status of the individual. It takes the value 0 if he/she is unemployed, 1 if he/she is actively unemployed, 2 if he/she works part-time and 3 if he/she works full-time.

ZON is the binary variable indicating the place of residence of the individual. It takes the value 1 if the person lives in an urban area and 0 otherwise.

INT is the variable indicating the frequency of Internet use. It takes the value 0 if he never uses it, 1 if he uses it less than once a month, 2 if he uses it a few times a month, 3 if he uses it a few times a week and 4 if he uses it every day.

DEMOS is the variable that provides information on the individual's support for democracy. It has a value of 0 if the individual attaches no value to a political regime, 1 if he or she thinks that a non-democratic regime is preferable under certain circumstances, and 2 if he or she thinks that a democratic regime is always preferable.

UNITY is the variable that provides information on the perception of national unity in diversity. It takes the value 0 if national unity is very fragile (several issues divide citizens), 1 if it is fragile (a few issues divide citizens), 2 if it is strong (a few issues unite citizens), and 3 if it is very strong (several issues unite citizens). Unity in diversity means that the citizens of a given country, through the nation-state, unite their efforts for peace and prosperity, and that the country's many different cultures, traditions, and languages are an asset.

UNF is the variable that measures the discriminatory attitude of the government. Specifically, it measures the fact that the government treats certain citizens unfairly because of their economic situation. It takes the value 0 if never, 1 if sometimes, 2 if often and 3 if always.

DIV is the variable that measures the individual's preference for ethnic diversity in a country. It takes the value 0 if this preference is very strong, 1 if it is strong, 2 if it is neither strong nor weak, 3 if it is weak and 4 if it is very weak.

ICHINA is the variable that captures the assessment of the influence of China in the respondent's country of residence. It takes the value 0 if he thinks it is very

negative, 2 if he thinks it is somewhat negative, 3 if he thinks it is neither positive nor negative, 4 if he thinks it is somewhat positive and 5 if he thinks it is very positive.

IUSA is the variable that captures the assessment of the influence of the United States in the respondent's country of residence. It takes the value of 0 if he thinks it is very negative, 2 if he thinks it is somewhat negative, 3 if he thinks it is neither positive nor negative, 4 if he thinks it is somewhat positive, and 5 if he thinks it is very positive.

IRUS is the variable that captures the assessment of the influence of Russia in the respondent's country of residence. It takes the value 0 if he thinks it is very negative, 2 if he thinks it is somewhat negative, 3 if he thinks it is neither positive nor negative, 4 if he thinks it is somewhat positive, and 5 if he thinks it is very positive.

5 Results

Table 1 shows that homophobia is deeply entrenched in Africa. In fact, almost 78.80 % of African citizens are anti-gay. At the same time, they trust religious and traditional leaders. To illustrate, only 12.20 % and 15.40 % of African citizens have no confidence at all in religious and traditional leaders, respectively.

Table 2 shows that the rate of disapproval of homosexuality increases with trust in religious and traditional leaders in Africa. For example, the disapproval rate of homosexuality is 85.43 % among citizens who trust religious leaders "a lot," compared with 78.15 % among those who don't trust them "at all. In addition, disapproval of homosexuality is 84.63 % among citizens who trust traditional leaders "a lot," versus 70.58 % among those who don't trust them "at all. This suggests that homophobia increases with citizens' trust in religious and traditional leaders. Finally, the rate of disapproval of homosexuality is 67.30 % among citizens living in countries that have decriminalized homosexuality, versus 89.34 % among those living in countries where this sexual orientation is still criminalized. This suggests that homophobia decreases with the decriminalization of homosexuality.

A key assumption for endogeneity is that the errors in both steps are jointly normal. We have used the Doornik–Hansen test to show that the errors are jointly normal (see Table 3).

We analyze the econometric results in Table 4. The correlation coefficient **CORR (TRUST, HOMO)** between the equation of trust in traditional leaders (or religious leaders) and the equation of stigmatization of homosexuality is statistically significant at the 1 % threshold. Certain unobservable individual characteristics play a simultaneous role in the African citizen's odds of trusting traditional leaders (or religious leaders) and stigmatizing homosexuals. Therefore, it seems useful to estimate these 2 equations simultaneously.

Table 1: Descriptive statistics.

Variables	Number of observations	Mean	Std. Dev.	Min	Max
HOMO					
Strongly approves	47,018	0.039	0.194	0	1
Somewhat approves	47,018	0.038	0.192	0	1
Indifferent	47,018	0.135	0.342	0	1
Somewhat disapproves	47,018	0.086	0.280	0	1
Strongly disapprove	47,018	0.702	0.458	0	1
TRUSTRL					
No confidence at all	47,175	0.122	0.327	0	1
Just a little confidence	47,175	0.179	0.383	0	1
Some confidence	47,175	0.226	0.418	0	1
A lot of confidence	47,175	0.474	0.499	0	1
TRUSTTL					
No confidence at all	41,081	0.154	0.361	0	1
Just a little confidence	41,081	0.210	0.408	0	1
Some confidence	41,081	0.246	0.431	0	1
A lot of confidence	41,081	0.389	0.488	0	1
ZON					
Rural	48,084	0.547	0.498	0	1
Urban	48,084	0.453	0.498	0	1
AGE	48,072	37.068	14.794	18	120
EMPL					
Unemployed inactive	47,908	0.400	0.490	0	1
Active unemployed	47,908	0.262	0.440	0	1
Part-time worker	47,908	0.124	0.330	0	1
Full-time worker	47,908	0.213	0.410	0	1
SEX					
Female	48,084	0.500	0.500	0	1
Male	48,084	0.500	0.500	0	1
EDU					
Illiterate	47,909	0.199	0.400	0	1
Primary education	47,909	0.280	0.449	0	1
Secondary education	47,909	0.354	0.478	0	1
Higher education	47,909	0.167	0.373	0	1
REL					
Other religions	47,825	0.092	0.290	0	1
Christian	47,825	0.563	0.496	0	1
Muslim	47,825	0.344	0.475	0	1
POV					
Not poor	47,595	0.107	0.310	0	1
Low poverty level	47,595	0.332	0.471	0	1
Moderate poverty level	47,595	0.341	0.474	0	1
High level of poverty	47,595	0.219	0.414	0	1

Table 1: (continued)

Variables	Number of observations	Mean	Std. Dev.	Min	Max
DEMOS					
Non-democratic and democratic regimes are one and the same	46,596	0.147	0.354	0	1
Non-democratic regime is preferable	46,596	0.148	0.356	0	1
Democratic rule is always preferable	46,596	0.705	0.456	0	1
INT					
Never	47,507	0.524	0.499	0	1
Less than once a month	47,507	0.039	0.193	0	1
A few times a month	47,507	0.050	0.218	0	1
A few times a week	47,507	0.124	0.330	0	1
Every day	47,507	0.263	0.440	0	1
UNITY					
Very fragile	46,783	0.155	0.362	0	1
Fragile	46,783	0.171	0.377	0	1
Strong	46,783	0.251	0.433	0	1
Very strong	46,783	0.424	0.494	0	1
CORTL					
None corrupted	39,263	0.289	0.453	0	1
Some are corrupt	39,263	0.491	0.500	0	1
Most are corrupt	39,263	0.149	0.356	0	1
All are corrupt	39,263	0.071	0.257	0	1
CORRL					
None corrupted	44,478	0.368	0.482	0	1
Some are corrupt	44,478	0.455	0.498	0	1
Most are corrupt	44,478	0.119	0.324	0	1
All are corrupt	44,478	0.058	0.234	0	1
GDP	48,084	5,385.500	4,893.908	1,020	23,033
UNF					
Never	47,416	0.510	0.500	0	1
Sometimes	47,416	0.276	0.447	0	1
Often	47,416	0.135	0.342	0	1
Always	47,416	0.079	0.269	0	1
DIV					
Very strong	47,194	0.438	0.496	0	1
Strong	47,194	0.249	0.432	0	1
Neither strong nor low	47,194	0.012	0.107	0	1
Low	47,194	0.132	0.339	0	1
Very low	47,194	0.169	0.375	0	1

Table 1: (continued)

Variables	Number of observations	Mean	Std. Dev.	Min	Max
ICHINA					
Very negative	39,559	0.076	0.266	0	1
Somewhat negative	39,559	0.095	0.293	0	1
Neither positive nor negative	39,559	0.083	0.275	0	1
Somewhat positive	39,559	0.383	0.486	0	1
Very positive	39,559	0.363	0.481	0	1
IUSA					
Very negative	38,382	0.072	0.259	0	1
Somewhat negative	38,382	0.090	0.286	0	1
Neither positive nor negative	38,382	0.102	0.302	0	1
Somewhat positive	38,382	0.396	0.489	0	1
Very positive	38,382	0.340	0.474	0	1
IRUS					
Very negative	23,895	0.128	0.335	0	1
Somewhat negative	23,895	0.125	0.331	0	1
Neither positive nor negative	23,895	0.212	0.409	0	1
Somewhat positive	23,895	0.319	0.466	0	1
Very positive	23,895	0.215	0.411	0	1

The correlation coefficient **CORR (LEGAL, HOMO)** between the equation of existence of a law decriminalizing homosexuality in the country and the equation of stigmatization of homosexuality is statistically significant at the 1 % threshold. Therefore, it seems useful to estimate these 2 equations simultaneously.

6 Discussions

The coefficient modalities of the variable "***TRUSTTL***" are positive and significant at the 1 % level in models 1 and 2. Thus, trust in traditional leaders increases the stigmatization of homosexuals. In models 3 and 4, the modalities of the coefficient of the variable "***TRUSTRL***" are positive and significant. Thus, trust in religious leaders increases the stigmatization of homosexuals. The modalities of the "***REL***" variable are positive and significant at the 1 % level in models 1 to 4. Thus, Christians and Muslims are more inclined to stigmatize homosexuals. Some authors (Rice et al. 2017; Smith et al. 2016) have shown that stigmatization of LGBT people is often more pronounced in agglomerations that are predominantly populated by Christians and/or Muslims. These two religions base their theological and ethical

Table 2: Bivariate statistics (in %).

	HOMO							Pearson chi2
	Strongly approves	Somewhat approves	Indifferent	Somewhat disapproves	Strongly disapprove	Total	Rate of disapproval of homosexuality	
TRUSTTL								
No confidence at all	0.720	0.620	2.030	1.350	10.710	15.430	78.150	
Just a little confidence	0.840	0.950	2.670	2.210	14.470	21.150	78.860	
Some confidence	0.860	0.940	2.880	2.470	17.500	24.640	81.040	
A lot of confidence	1.680	1.220	2.760	2.310	30.820	38.780	85.430	629.279
TRUSTRL								
No confidence at all	0.630	0.530	2.420	1.040	7.550	12.170	70.580	
Just a little confidence	0.690	0.880	3.320	2.020	11	17.920	72.650	
Some confidence	0.720	0.930	3.590	2.410	14.960	22.610	76.820	
A lot of confidence	1.840	1.460	3.970	3.070	36.960	47.300	84.630	1.5e 03
LEGAL								
Homosexuality is not decriminalized	1.180	1.290	3.040	3.880	42.390	51.790	89.340	
Homosexuality decriminalized	2.730	2.550	10.480	4.690	27.760	48.210	67.300	3.8e+03

Table 3: Doornik–Hansen test for bivariate and multivariate normality.

Bivariate normality test					
Pair of variables		**chi2**	**Pair of variables**		**chi2**
RESIDLEGAL	**RESIDTL**	6,435.340[a]	**RESIDILEGAL**	**RESIDRL**	6,130.150[a]
	RESIDHOMO	5,014.620[a]		**RESIDHOMO**	5,014.620[a]
RESIDTL	**RESIDHOMO**	2,129.340[a]	**RESIDRL**	**RESIDHOMO**	1772.610[a]
Multivariate normality test					
chi2 (6) = 6,912.944[a]			chi2 (6) = 6,554.505[a]		

[a]represents significance at 1%

perspectives on the primacy of heterosexuality and the notion of the complementarity of a woman and a man.

The coefficient of the variable "***LEGAL***" is negative and significant at the 1 % level in models 1 and 3. Thus, people residing in countries with a law decriminalizing homosexuality are less likely to engage in homophobic behavior. This shows that the sanctions often provided for by the law decriminalizing homosexuality in general, and imprisonment in particular, can theoretically contribute to the reduction of crimes (or acts of homophobia) through various means: (i) a neutralizing effect, since individuals cannot commit crimes during their incarceration and (ii) a general deterrent effect, as each individual knows that he or she risks being punished if he or she breaks the law, which can prevent the transition to homophobic acts. Looking at the ***LEGAL*** equation, we see that the sign of the ***CHOMO*** variable is negative and significant in the models. This indicates that the passage of a law decriminalizing homosexuality is less likely when the majority of citizens are homophobic.

Moreover, Models 2 and 4 show that the coefficients of the 4 interaction variables "***LEGAL********TRUSTTL***" and "***LEGAL********TRUSTRL***" are negative and significant at the 1 % level. These results show that the stigmatization of homosexuals decreases in countries that have decriminalized homosexuality, even as trust in religious and traditional leaders increases. By decriminalizing homosexuality, the government can reduce the stigmatization of homosexuals. This confirms the authority of the law thesis (Carbonnier 2004). Once a law is passed, it only comes into effect after a double formalism: promulgation and publication. Promulgation is the solemn act by which the head of the executive acknowledges that the law has been passed by parliament and instructs the authorities to enforce it. Promulgation gives the law enforceability (Chamboredon 2015). The law then bears the date of its promulgation. Once promulgated, the law does not take effect until it is published. The rule

Table 4: Econometric results: basic ordered probit regression with endogenous covariates and instruments variables.

	Model 1		Model 2		Model 3		Model 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
	HOMO Equation		HOMO Equation		HOMO Equation		HOMO Equation	
TRUSTTL	0.492[a]	0.035	0.640[a]	0.042				
TRUSTRL					0.386[a]	0.033	0.522[a]	0.038
LEGAL	−0.999[a]	0.060	−0.458[a]	0.106	−1.021[a]	0.052	−0.381[a]	0.109
LEGAL*TRUSTL			−0.362[a]	0.058				
LEGAL*TRUSTRL							−0.375[a]	0.056
ZON (ref: Rural area)	0.044[b]	0.020	0.027	0.020	0.035[c]	0.020	0.018	0.019
AGE	0.003[a]	0.001	0.003[a]	0.001	0.003[a]	0.001	0.003[a]	0.001
EMPL (ref: unemployed inactive)								
No (looking)	−0.084[a]	0.022	−0.081[a]	0.022	−0.081[a]	0.022	−0.078[a]	0.021
Yes, part time	−0.092[a]	0.030	−0.093[a]	0.029	−0.099[a]	0.029	−0.101[a]	0.028
Yes, full time	−0.062[b]	0.028	−0.065[b]	0.027	−0.057[b]	0.027	−0.058[b]	0.026
SEX (ref: Female)	0.031[c]	0.019	0.030[c]	0.018	0.030[c]	0.018	0.030[c]	0.017
EDU (ref: Illiterate)								
Primary education	−0.079[a]	0.029	−0.077[a]	0.028	−0.094[a]	0.028	−0.096[a]	0.027
Secondary education	−0.013	0.029	−0.018	0.029	−0.018	0.029	−0.022	0.028
Higher education	−0.087[b]	0.035	−0.080[b]	0.034	−0.086[b]	0.035	−0.076[b]	0.033
REL (ref: Other religions)								
Christian	0.164[a]	0.032	0.162[a]	0.031	0.162[a]	0.031	0.159[a]	0.030
Muslim	0.219[a]	0.034	0.269[a]	0.034	0.222[a]	0.033	0.265[a]	0.033
POV (ref: Not poor)								
Low level of poverty	0.035	0.037	0.021	0.036	0.076[b]	0.036	0.068[b]	0.034
Moderate level of poverty	0.124[a]	0.037	0.097[a]	0.036	0.169[a]	0.036	0.154[a]	0.035
High level of poverty	0.113[a]	0.039	0.077[b]	0.038	0.159[a]	0.037	0.136[a]	0.036

Table 4: (continued)

	Model 1		Model 2		Model 3		Model 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
	HOMO Equation		HOMO Equation		HOMO Equation		HOMO Equation	
DEMOS (ref: non-democratic and democratic regimes are the same)								
Non-democratic regime is preferable	−0.137[a]	0.031	−0.133[a]	0.030	−0.131[a]	0.030	−0.125[a]	0.029
Democratic rule is always preferable	0.130[a]	0.025	0.124[a]	0.025	0.131[a]	0.025	0.125[a]	0.024
INT (ref: Never)								
Less than once a month	−0.033	0.044	−0.037	0.043	−0.034	0.043	−0.038	0.042
A few times a month	−0.063	0.040	−0.064[c]	0.039	−0.062	0.039	−0.066[c]	0.038
A few times a week	0.010	0.029	0.003	0.029	0.012	0.029	0.002	0.028
Every day	0.024	0.027	0.015	0.026	0.006	0.026	−0.008	0.025
UNITY (ref: Very fragile)								
Fragile	−0.105[a]	0.033	−0.091[a]	0.032	−0.099[a]	0.032	−0.084[a]	0.031
Strong	−0.187[a]	0.030	−0.160[a]	0.030	−0.186[a]	0.030	−0.159[a]	0.029
Very strong	−0.047	0.029	−0.031	0.028	−0.047[c]	0.028	−0.032	0.027
	LEGAL equation		LEGAL equation		LEGAL equation		LEGAL equation	
HOMO	−0.322[a]	0.011	−0.324[a]	0.011	−0.335[a]	0.011	−0.336[a]	0.011
GDP	0.000[a]	0.000	0.000[a]	0.000	0.000[a]	0.000	0.000[a]	0.000
UN (ref: Never)								
Sometimes	−0.013	0.022	−0.004	0.022	−0.003	0.022	0.006	0.021
Often	0.035	0.028	0.040	0.027	0.043	0.027	0.047[c]	0.027
Always	0.007	0.036	0.011	0.035	0.021	0.035	0.024	0.034
DIV (ref: Very strong)								
Strong	0.169[a]	0.023	0.168[a]	0.022	0.177[a]	0.022	0.175[a]	0.022
Neither strong nor low	0.209[c]	0.115	0.193[c]	0.112	0.188[c]	0.113	0.171	0.110

Table 4: (continued)

	Model 1		Model 2		Model 3		Model 4	
	Coef.	**S.E.**	**Coef.**	**S.E.**	**Coef.**	**S.E.**	**Coef.**	**S.E.**
	HOMO Equation		**HOMO Equation**		**HOMO Equation**		**HOMO Equation**	
Low	0.163[a]	0.028	0.165[a]	0.027	0.169[a]	0.027	0.171[a]	0.026
Very low	0.310[a]	0.027	0.304[a]	0.027	0.306[a]	0.027	0.298[a]	0.026
ICHINA (ref: Very negative)								
Somewhat negative	0.269[a]	0.049	0.271[a]	0.048	0.281[a]	0.048	0.280[a]	0.047
Neither positive nor negative	0.299[a]	0.051	0.311[a]	0.050	0.313[a]	0.050	0.324[a]	0.049
Somewhat positive	0.270[a]	0.042	0.271[a]	0.041	0.277[a]	0.041	0.276[a]	0.040
Very positive	0.304[a]	0.041	0.300[a]	0.041	0.317[a]	0.041	0.310[a]	0.040
IUSA (Ref: very negative)								
Somewhat negative	0.297[a]	0.049	0.297[a]	0.048	0.314[a]	0.048	0.311[a]	0.047
Neither positive nor negative	0.389[a]	0.048	0.392[a]	0.047	0.405[a]	0.048	0.405[a]	0.046
Somewhat positive	0.175[a]	0.041	0.177[a]	0.040	0.185[a]	0.041	0.185[a]	0.040
Very positive	0.016	0.041	0.030	0.040	0.034	0.041	0.050	0.039
IRUS (Ref: Very negative)								
Somewhat negative	0.179[a]	0.041	0.181[a]	0.040	0.182[a]	0.040	0.183[a]	0.039
Neither positive nor negative	0.151[a]	0.038	0.148[a]	0.037	0.159[a]	0.038	0.155[a]	0.037
Somewhat positive	0.303[a]	0.035	0.303[a]	0.035	0.316[a]	0.035	0.312[a]	0.034
Very positive	0.488[a]	0.037	0.487[a]	0.036	0.502[a]	0.037	0.494[a]	0.036
	TRUSTTL equation		**TRUSTTL equation**		**TRUSTRL equation**		**TRUSTRL equation**	
HOMO	0.346[a]	0.023	0.346[a]	0.023	0.304[a]	0.023	0.304[a]	0.023
ZON (ref: Rural area)	−0.274[a]	0.018	−0.274[a]	0.018	−0.169[a]	0.019	−0.169[a]	0.019
AGE	0.001	0.001	0.001	0.001	0.002[b]	0.001	0.002[b]	0.001
EMPL (ref: unemployed inactive)								
Active unemployed	0.004	0.020	0.004	0.020	0.039[c]	0.021	0.039[c]	0.021

Table 4: (continued)

	Model 1		Model 2		Model 3		Model 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
	HOMO Equation		HOMO Equation		HOMO Equation		HOMO Equation	
Part-time worker	−0.003	0.027	−0.003	0.027	0.039	0.028	0.039	0.028
Full-time worker	0.061[b]	0.025	0.061[b]	0.025	0.053[b]	0.026	0.053[b]	0.026
SEX (ref: female sex)	0.062[a]	0.017	0.062[a]	0.017	−0.017	0.018	−0.017	0.018
EDU (ref: Illiterate)								
Primary education	−0.098[a]	0.026	−0.098[a]	0.026	−0.040	0.027	−0.040	0.027
Secondary education	−0.193[a]	0.026	−0.194[a]	0.026	−0.165[a]	0.027	−0.165[a]	0.027
Higher education	−0.269[a]	0.032	−0.269[a]	0.032	−0.275[a]	0.032	−0.275[a]	0.032
REL (ref: Other religions)								
Christian	−0.036	0.032	−0.037	0.032	0.133[a]	0.032	0.133[a]	0.032
Muslim	0.044	0.033	0.043	0.033	0.265[a]	0.034	0.264[a]	0.034
POV (ref: Not poor)								
Low level of poverty	0.011	0.035	0.011	0.035	−0.037	0.035	−0.036	0.035
Moderate level of poverty	0.020	0.035	0.021	0.035	−0.016	0.035	−0.016	0.035
High level of poverty	−0.027	0.036	−0.027	0.036	−0.023	0.036	−0.023	0.036
DEMOS (ref: non-democratic and democratic regimes are the same)								
Non-democratic regime is preferable	0.031	0.029	0.031	0.029	−0.004	0.030	−0.004	0.030
Democratic rule is always preferable	0.015	0.024	0.014	0.024	0.082[a]	0.024	0.082[a]	0.024
INT (ref: Never)								
Less than once a month	−0.155[a]	0.040	−0.155[a]	0.040	−0.159[a]	0.042	−0.159[a]	0.042
A few times a month	0.011	0.037	0.011	0.037	−0.081[b]	0.038	−0.081[b]	0.038

Table 4: (continued)

	Model 1		Model 2		Model 3		Model 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
	HOMO Equation		HOMO Equation		HOMO Equation		HOMO Equation	
A few times a week	−0.062[b]	0.027	−0.062[b]	0.027	−0.073[a]	0.027	−0.073[a]	0.027
Every day	−0.133[a]	0.024	−0.133[a]	0.024	−0.129[a]	0.025	−0.129[a]	0.025
CORTL (ref: None corrupted)								
Some are corrupt	−0.499[a]	0.025	−0.499[a]	0.025	−0.070[a]	0.026	−0.070[a]	0.026
Most are corrupt	−0.798[a]	0.031	−0.798[a]	0.031	−0.143[a]	0.032	−0.143[a]	0.032
All are corrupt	−1.015[a]	0.041	−1.016[a]	0.041	−0.197[a]	0.041	−0.197[a]	0.041
CORRL (ref: None corrupted)								
Some are corrupt	−0.195[a]	0.023	−0.195[a]	0.023	−0.706[a]	0.025	−0.706[a]	0.025
Most are corrupt	−0.184[a]	0.030	−0.184[a]	0.030	−1.044[a]	0.032	−1.044[a]	0.032
All are corrupt	−0.049	0.040	−0.049	0.040	−1.098[a]	0.042	−1.098[a]	0.042
corr (e.ILEGAL,e.HOMO)	0.461[a]	0.042	0.544[a]	0.037	0.523[a]	0.034	0.611[a]	0.029
corr (e.TRUSTTL,e.HOMO)	0.022[c]	0.012	0.030[a]	0.011				
corr (e.TRUSTTL,e.ILEGAL)	0.158[a]	0.011	0.157[a]	0.011				
corr (e.TRUSTRL,e.HOMO)					0.030[a]	0.011	0.034[a]	0.011
corr (e.TRUSTRL,e.ILEGAL)					0.094[a]	0.012	0.093[a]	0.012

[a], [b]and [c]represent significance at 1 %, 5 % and 10 % respectively.

of law contained in the text becomes binding only when it can be made known to citizens. Publication brings the law to the attention of all citizens (Chamboredon 2015).

The coefficient of the "***ZON***" variable is positive and significant in models 1 and 3. Our result seem to be in line with those obtained by some authors (Andersen and Fetner 2008; Dillon and Savage 2006). People living in small towns are less likely to be in favor of homosexuality (Andersen and Fetner 2008). In the US, citizens living in the South, particularly in rural areas, are also more likely to have negative attitudes toward abortion and homosexual relationships (Dillon and Savage 2006).

The coefficient of the variable "***SEX***" is positive and significant in models 1–4. Thus, men are more likely to stigmatize homosexuals. Numerous works in the empirical literature have highlighted the fact that men tend to be more hostile to homosexuality than women (Andersen and Fetner 2008; Britton 1990; Persell, Green, and Gurevich 2001; Winegard et al. 2016). In areas with high sex ratios (i.e. where there are many men), homophobia is therefore more likely to become the dominant social norm. This effect may be particularly strong in areas where men have more power than women in determining social norms and laws (Baranov and De Haas 2018). Specifically for LGBTQ + people, Baranov and De Haas (2018) show that male-to-female ratios in favor of men have influenced opposition to same-sex marriage in Australia, as well as occupational segregation by gender. Brodeur and Haddad (2021) suggest that during the California Gold Rush, high male-to-female ratios led to more tolerant attitudes toward homosexuality. Bentzen and Sperling (2020) show that "faith-based initiatives" in the United States fostered skepticism about homosexuality, science, and women's empowerment.

The coefficient of the variable "***AGE***" is positive and significant at the 1 % level in models 1–4. Thus, stigma against homosexuals in Africa increases with age. Our result is similar to that of Andersen and Fetner (2008), who show that older people tend to be more supportive of homosexuality.

The modalities of the "***EMPL***" variable are negative and significant in models 1–4. This result indicates that people with full-time or part-time employment are less likely to stigmatize homosexuals. Persell, Green, and Gurevich (2001) find that people who have been unemployed in the last 10 years are slightly more likely to express tolerance towards homosexuals than people who have not been unemployed, and people with greater job security are slightly more likely to express tolerance than people who feel less job security).

The modalities of the "***EDU***" variable are negative and significant at the 1 % level in models 1–4. Thus, people with a high level of education are less likely to stigmatize homosexuals. This result is similar to that obtained by some authors (Andersen and Fetner 2008; Persell, Green, and Gurevich 2001). School as a place of education can contribute to the construction of values such as patriotism, res-

pect for others, tolerance and cultural diversity. Hammoud (2015) points out that "teachers whose discipline doesn't allow them to engage in a debate about the importance of tolerance still claim to make their students aware of this value through everyday situations. In the classroom, it's an intolerant word, an insult, a conflict between students that leads the teacher to interrupt his or her lesson to engage in dialogue and take the opportunity to explain the importance of tolerance".

The modalities of the variable "***UNITY***" are negative and significant at the 1 % level in models 1–4. This shows that increasing the sense of national unity reduces the stigmatization of homosexuals. A sense of unity can increase tolerance. National unity and tolerance are essential values for the cohesion and stability of a nation. They promote mutual understanding, peace and peaceful coexistence among different communities and groups within a country. National unity fosters solidarity and pride in belonging to the same nation, while tolerance enables respect for cultural, religious and ethnic differences. Tolerance is the recognition of universal human rights and fundamental freedoms of others. Peoples are naturally diverse; only tolerance can ensure the survival of mixed communities in every region of the world. Together, these two principles help to build a harmonious society and prevent conflict.

The modalities of the variable "***POV***" are positive and significant in models 1–4. Thus, the stigmatization of homosexuals increases with the level of poverty of individuals. In countries where GDP per capita is increasing, individuals are more likely to have a positive view of homosexuality (Andersen and Fetner 2008). In addition, people who belong to a higher social class (managers or professionals) are more likely to be in favor of homosexuality (Andersen and Fetner 2008). People with higher real incomes are slightly more likely to be tolerant of homosexuals than people with lower incomes, even when education and other factors are held constant (Persell, Green, and Gurevich 2001).

In models 2 and 4, the modality "A few times a month" of the variable "***INT***" are negative and significant. This result can be justified if the Internet is seen as a tool for promoting intolerance. While the freedom of expression guaranteed by the Internet is positive, it can easily drift due to the lack of filters. On the Internet, speech is free under the cloak of anonymity. Add to this the impunity that reigns there, and it's easy to understand why 53 % of French internet users say they have already been confronted with abusive language, according to an Opinion Way survey published in December 2018 (Serrat 2019). However, the spread of the internet throughout the world has changed the framework of homosexuality by participating in the internationalization of homoerotic forms, both in terms of images

and practices, and by establishing itself as a major space for the circulation of representations of sexuality between men, influencing *de facto* processes of homosexual subjectivation and the way in which this sexual orientation is put into discourse (Awondo 2016).

The modality "*democratic regime is always preferable*" of the variable "***DEMOS***" is positive and significant at the 1 % threshold in the stigmatization equation for homosexuals (models 1–4). Indeed, tolerance is one of the conditions for harmonious coexistence. It is also a condition of democracy, since it presupposes the recognition of the legal equality and dignity of all opinions. The philosopher Karl Popper addressed this issue by exposing the paradox of the limits of tolerance. In his political essay "The Open Society and Its Enemies," Karl Popper points out that "tolerance without limits can only lead to the disappearance of tolerance. If we extend tolerance without limits even to those who are intolerant, if we are not prepared to defend a tolerant society against the onslaught of the intolerant, then the tolerant will be destroyed, and with them tolerance. Thus, democracy must walk a fine line between promoting tolerance and the need to protect itself from those who would destroy it. Tolerance, while essential, cannot be absolute. It must be balanced with the preservation of democratic values and fundamental rights. Homophobia is often seen as fear-based violence (Banens 2011).

We examine the robustness of our econometric results by replacing the basic ordered probit regression with endogenous covariates and instruments variables by 3SLS. The results in Appendix Table 7,[20] are similar to those in Table 4.

7 Conclusions

This paper has highlighted the role of decriminalization of homosexuality in combating the stigmatization of homosexuals in Africa, in a context characterized by trust in religious and traditional leaders. Methodologically, we apply basic ordered probit regression with endogenous covariates and instruments variables on the Afrobarometer (2023) database.

The econometric results show that trust in religious and traditional leaders significantly increases the stigmatization of homosexuals. However, these power relations are reversed in countries that have decriminalized homosexuality. Higher levels of education, a stronger sense of national unity in diversity, and frequent access to the Internet also contribute significantly to reducing the stigmatization of homosexuals.

20 See Appendix

8 Annex

8.1 Robustness

To examine the robustness of our econometric results, we replace the basic ordered probit regression with endogenous covariates and instruments variables by 3SLS. The 3SLS method estimates a system of structural equations, where some equations contain endogenous variables among the explanatory variables (Zellner and Theil 1962). Typically, the endogenous explanatory variables are dependent variables from other equations in the system. 3SLS supports iterated GLS estimation and linear constraints. It can also estimate systems of equations by seemingly unrelated regression estimation (SURE), multivariate regression (MVREG), and equation-by-equation ordinary least squares (OLS) or two-stage least squares (2SLS). Under 3SLS estimation, a structural equation is defined as one of the equations specified in the system. A dependent variable will have its usual interpretation as the left-hand-side variable in an equation with an associated disturbance term. All dependent variables are explicitly taken to be endogenous to the system and are treated as correlated with the disturbances in the system's equations.

To use 3SLS method, we'll transform the ***HOMO***, ***TRUSTTL*** and ***TRUSTRL*** variables respectively into the ***HOMO1***, ***TRUSTTL1*** and ***TRUSTRL1*** variables. The ***HOMO1*** variable is a dichotomous variable that takes the value 1 if the individual somewhat or strongly disapproves of living near gay people, and 0 otherwise.

The results in Appendix Table 7 are similar to those in Table 4. The coefficients of the variables "***TRUSTTL***" and "***TRUSTRL***" are positive and significant at the 1 % level. The coefficient of the variable "***LEGAL***" is negative and significant at the 1 % level. The coefficients of the variables "***LEGAL****TRUSTTL***" and "***LEGAL****TRUSTRL***" are negative and significant at the 1 % level. This shows that trust in traditional and religious leaders increases the stigmatization of homosexuals. However, in countries that have decriminalized homosexuality, the stigmatization of homosexuals decreases even when trust in religious and traditional leaders increases.

8.2 Reduced Form Method

Consider the following structural form which is inspired by that of Section 4. For ease of reference, some variables have been given new abbreviations: $H_i = HOMO_i$; $T_i = TRUST_i, L_i = LEGAL_i; RL_i = CORRL_i; TL_i = CORTL_i; G_i = GDP_i$. We note that X, W and Z represent exogenous variables. $\varepsilon_i; v_i$ et u_i represent the errors terms. α, β_1, β_2, δ_0, δ_1, δ_2, c_1, c_2, c_3, d_0, d_1, and d_2 represent constant terms.

$$H_i = \alpha + \beta_1 T_i + \beta_2 L_i + \delta_0 X_i + \varepsilon_i \tag{4}$$

Appendix Table 5: List and profile of countries in the sample.

Country	Population size	GDP per capita in US dollars	Sample size	Decriminalization of homosexuality
Angola	35,590,000	2,385	2,400	Yes
Benin	13,301,694	3,649	1,200	Yes
Botswana	2,350,667	16,304	1,200	Yes
Burkina Faso	21,382,659	2,394	1,200	Yes
Cabo Verde	589,451	6,717	1,200	Yes
Cameroon	28,524,175	4,065	1,200	No
Ivory Coast	29,389,150	5,850	1,200	Yes
eSwatini	1,113,276	9,730	1,200	Yes
Ethiopia	123,379,920	1,020	2,378	No
Gabon	2,284,912	15,175	1,200	Yes
Gambia	2,100,000	2,281	1,200	No
Ghana	32,372,889	5,971	2,400	Yes
Guinea	1,976,187	2,900	1,200	No
Kenya	54,685,051	5,211	2,400	No
Lesotho	2,177,740	2,521	1,200	Yes
Liberia	5,214,030	1,563	1,200	No
Malawi	20,308,502	1,638	1,200	No
Mali	20,137,527	2,329	1,200	Yes
Mauritius	1,386,129	23,035	1,200	Yes
Morocco	36,561,813	8,853	1,200	No
Mozambique	30,888,034	1,347	1,110	Yes
Namibia	2,678,191	10,038	1,200	Yes
Niger	23,605,767	1,303	1,199	Yes
Nigeria	219,463,862	5,408	1,599	Non
Senegal	16,082,442	3,840	1,200	Non
Sierra Leone	6,807,277	1,773	1,200	Yes
South Africa	56,978,635	14,624	1,600	Yes
Sudan	45,500,000	4,066	1,800	No
Tanzania	62,092,761	2,836	2,398	No
Togo	8,283,189	2,334	1,200	No
Tunisia	11,811,335	11,282	1,200	No
Uganda	44,000,000	2,467	1,200	No
Zambia	19,077,816	3,556	1,200	Non
Zimbabwe	14,829,988	2,329	1,200	Yes

Source: World Bank (2022).

$$T_i = c_0 + c_1 RT_i + c_2 RR_i + c_3 H_i + \delta_1 W_i + v_i \tag{5}$$

$$L_i = d_0 + d_1 G_i + d_2 H_i + \delta_2 Z_i + u_i \tag{6}$$

We resolve this system:

Appendix Table 6: Wald test of the exogeneity of the instrumented variables.

	Instrumented variables	Instruments variabes	Chi2 (1)
HOMO equation			
	TRUSTRL	CTRUSTRL	66.760
	TRUSTTL	CTRUSTTL	193.260
	LEGAL	GDP	272.63
TRUSTTL equation			
	HOMO	CHOMO	93.300
TRUSTRL equation			
	HOMO	CHOMO	81.540
LEGAL equation			
	HOMO	CHOMO	2,892.180

By putting first (5) inside (4)

$$H_i = \alpha + \beta_1\left[c_0 + c_1RT_i + c_2RR_i + c_3H_i + \delta_1W_i + v_i\right] + \beta_2L_i + \delta_0X_i + \varepsilon_i$$

$$\left[1 - \beta_1c_3\right]H_i = \alpha + \beta_1c_0 + \beta_1c_1RT_i + \beta_1c_2RR_i + \beta_1\delta_1W_i + \beta_1v_i + \beta_2L_i + \delta_0X_i + \varepsilon_i$$

$$H_i = \left(\frac{1}{1 - \beta_1c_3}\right)\left(\alpha + \beta_1c_0 + \beta_1c_1RT_i + \beta_1c_2RR_i + \beta_1\delta_1W_i + \beta_1v_i + \beta_2L_i + \delta_0X_i + \varepsilon_i\right)$$

This equation can be written like this:

$$H_i = \lambda_1 + \lambda_2RT_i + \lambda_3RR_i + \lambda_4W_i + \lambda_5L_i + \lambda_6X_i + \lambda_7v_i + \varepsilon_i \tag{7}$$

With:

$$\lambda_1 = \left(\frac{\alpha + \beta_1c_0}{1 - \beta_1c_3}\right)$$
$$\lambda_2 = \left(\frac{\beta_1c_1}{1 - \beta_1c_3}\right)$$
$$\lambda_3 = \left(\frac{\beta_1c_2}{1 - \beta_1c_3}\right)$$
$$\lambda_4 = \left(\frac{\beta_1\delta_1}{1 - \beta_1c_3}\right)$$
$$\lambda_5 = \left(\frac{\beta_2}{1 - \beta_1c_3}\right)$$
$$\lambda_6 = \left(\frac{\delta_0}{1 - \beta_1c_3}\right)$$
$$\lambda_7 = \left(\frac{\beta_1}{1 - \beta_1c_3}\right)$$

Appendix Table 7: 3SLS estimation results.

	Model 5		Model 6		Model 7		Model 8	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
	HOMO1 Equation		HOMO1 Equation		HOMO1 Equation		HOMO1 Equation	
TRUSTTL1	0.324[a]	0.018	0,238[a]	0.021				
TRUSTRL1					0.257[a]	0.016	0,223[a]	0.020
LEGAL	−1.097[a]	0.013	−1.390[a]	0.042	−1.122[a]	0.013	−1,405[a]	0.045
LEGAL*TRUSTL1			0.284[a]	0.050				
LEGAL*TRUSTRL1							0.299[a]	0.049
ZON (ref: Rural area)	0.091[a]	0.016	0.082[a]	0.016	0.049[a]	0.015	0.051[a]	0.015
AGE	0.001[b]	0.001	0.001[b]	0.001	0.001[c]	0.001	0.001[c]	0.001
EMPL (ref: unemployed inactive)								
No (looking)	−0.046[a]	0.017	−0.044[a]	0.017	−0.052[a]	0.017	−0.050[a]	0.016
Yes, part time	−0.040[c]	0.023	−0.042[c]	0.022	−0.050[b]	0.022	−0.047[b]	0.022
Yes, full time	−0.052[b]	0.021	−0.044[b]	0.021	−0.046[b]	0.020	−0.042[b]	0.020
SEX (ref: Female)	−0.004	0.014	0.000	0.014	0.021	0.014	0.023[c]	0.014
EDU (ref: Illiterate)								
Primary education	0.009	0.021	−0.008	0.021	−0.025	0.020	−0.028	0.020
Secondary education	0.073[a]	0.022	0.048[b]	0.021	0.033	0.021	0.028	0.021
Higher education	0.093[a]	0.027	0.049[c]	0.026	0.051[b]	0.026	0.037	0.026
REL (ref: Other religions)								
Christian	0.132[a]	0.026	0.115[a]	0.026	0.073[a]	0.026	0.064[b]	0.025
Muslim	0.178[a]	0.027	0.152[a]	0.026	0.110[a]	0.027	0.096[a]	0.026
POV (ref: Not poor)								
Low level of poverty	0.007	0.029	0.016	0.029	0.036	0.028	0.036	0.028
Moderate level of poverty	0.052[c]	0.029	0.058[b]	0.028	0.080[a]	0.028	0.077[a]	0.028
High level of poverty	0.066[b]	0.030	0.074[b]	0.029	0,084[a]	0.029	0.085[a]	0.029

Appendix Table 7: (continued)

	Model 5		Model 6		Model 7		Model 8	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
	HOMO1 Equation		HOMO1 Equation		HOMO1 Equation		HOMO1 Equation	
DEMOS (ref: non-democratic and democratic regimes are the same)								
Non-democratic regime is preferable	−0.047[c]	0.024	−0.054[b]	0.024	−0.035	0.024	−0.041[c]	0.024
Democratic rule is always preferable	0.072[a]	0.020	0.065[a]	0.019	0.057[a]	0.019	0.051[a]	0.019
INT (ref: Never)								
Less than once a month	0.063[c]	0.034	0.048	0.033	0.052	0.033	0.050	0.033
A few times a month	−0.017	0.031	−0.021	0.030	0.003	0.030	0.007	0.030
A few times a week	0.049[b]	0.022	0.040[c]	0.022	0.043[b]	0.022	0.041[c]	0.021
Every day	0.067[a]	0.021	0.056[a]	0.020	0.046[b]	0.020	0.048[b]	0.020
UNITY (ref: Very fragile)								
Fragile	−0.021	0.021	−0.037[c]	0.022	−0.022	0.021	−0.033	0.022
Strong	−0.044[b]	0.019	−0.065[a]	0.020	−0.048[b]	0.020	−0.063[a]	0.020
Very strong	0.009	0.018	−0.001	0.019	0.019	0.019	0.010	0.019
CONS	3.022[a]	0.061	3.262[a]	0.065	3.187[a]	0.058	3.296[a]	0.063
	TRUSTTL1 equation		**TRUSTTL1 equation**		**TRUSTRL1 equation**		**TRUSTRL1 equation**	
HOMO1	0.487[a]	0.018	0.392[a]	0.019	0.427[a]	0.018	0.396[a]	0.018
ZON (ref: Rural area)	−0.238[a]	0.017	−0.239[a]	0.017	−0.131[a]	0.016	−0.131[a]	0.016
AGE	−0.001	0.001	0.000	0.001	0.000	0.001	0.000	0.001
EMPL (ref: unemployed inactive)								
Active unemployed	0.045[b]	0.019	0.037[c]	0.019	0.065[a]	0.018	0.063[a]	0.018
Part-time worker	0.004	0.025	−0.001	0.025	0.035	0.024	0.032	0.024

Appendix Table 7: (continued)

	Model 5		Model 6		Model 7		Model 8	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
	HOMO1 Equation		HOMO1 Equation		HOMO1 Equation		HOMO1 Equation	
Full-time worker	0.089[a]	0.023	0.083[a]	0.023	0.070[a]	0.022	0.068[a]	0.022
SEX (ref: female sex)	0.043[a]	0.016	0.045[a]	0.016	−0.029[c]	0.015	−0.028[c]	0.015
EDU (ref: Illiterate)								
Primary education	−0.122[a]	0.023	−0.121[a]	0.023	−0.054[b]	0.022	−0.055[b]	0.022
Secondary education	−0.235[a]	0.024	−0.228[a]	0.023	−0.178[a]	0.023	−0.177[a]	0.023
Higher education	−0.323[a]	0.029	−0.313[a]	0.029	−0.289[a]	0.028	−0.287[a]	0.028
REL (ref: Other religions)								
Christian	−0.142[a]	0.030	−0.112[a]	0.029	0.037	0.028	0.046	0.028
Muslim	−0.139[a]	0.030	−0.090[a]	0.030	0.085[a]	0.029	0.100[a]	0.029
POV (ref: Not poor)								
Low level of poverty	0.032	0.033	0.033	0.032	−0.027	0.031	−0.025	0.031
Moderate level of poverty	0.000	0.032	0.012	0.032	−0.046	0.031	−0.040	0.031
High level of poverty	−0.031	0.033	−0.019	0.033	−0.043	0.032	−0.038	0.032
DEMOS (ref: non-democratic and democratic regimes are the same)								
Non-democratic regime is preferable	0.043	0.027	0.040	0.027	0.010	0.026	0.009	0.026
Democratic rule is always preferable	−0.047[b]	0.022	−0.028	0.022	0.019	0.021	0.026	0.021
INT (ref: Never)								
Less than once a month	−0.178[a]	0.038	−0.173[a]	0.038	−0.167[a]	0.036	−0.166[a]	0.036
A few times a month	0.009	0.035	0.007	0.035	−0,074[b]	0.033	−0,074[b]	0.033
A few times a week	−0.090[a]	0.025	−0.083[a]	0.025	−0.086[a]	0.024	−0.084[a]	0.024
Every day	−0.147[a]	0.023	−0.142[a]	0.023	−0.123[a]	0.022	−0.122[a]	0.022

Appendix Table 7: (continued)

	Model 5		Model 6		Model 7		Model 8	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
	HOMO1 Equation		HOMO1 Equation		HOMO1 Equation		HOMO1 Equation	
CORTL (ref: None corrupted)								
Some are corrupt	−0.338[a]	0.019	−0.366[a]	0.021	−0.030	0.019	−0.032	0.020
Most are corrupt	−0.560[a]	0.025	−0.609[a]	0.026	−0.075[a]	0.024	−0.079[a]	0.025
All are corrupt	−0.718[a]	0.033	−0.772[a]	0.034	−0.128[a]	0.031	−0.132[a]	0.032
CORRL (ref: None corrupted)								
Some are corrupt	−0.135[a]	0.018	−0.152[a]	0.019	−0.462[a]	0.019	−0.475[a]	0.019
Most are corrupt	−0.109[a]	0.024	−0.126[a]	0.026	−0.743[a]	0.025	−0.758[a]	0.026
All are corrupt	0.006	0.032	−0.002	0.034	−0.779[a]	0.033	−0.786[a]	0.033
CONS	1.006[a]	0.075	1.299[a]	0.077	1.160[a]	0.072	1.256[a]	0.073
	Legal equation		Legal equation		Legal equation		Legal equation	
HOMO1	−0.456[a]	0.009	−0.462[a]	0.009	−0.461[a]	0.009	−0.463[a]	0.009
GDP	0.000[a]	0.000	0.000[a]	0.000	0.000[a]	0.000	0.000[a]	0.000
UN (ref: Never)								
Sometimes	−0.052[a]	0.008	−0.050[a]	0.008	−0.051[a]	0.008	−0.049[a]	0.008
Often	−0.030[a]	0.010	−0.030[a]	0.010	−0.027[a]	0.010	−0.028[a]	0.010
Always	−0.043[a]	0.013	−0.044[a]	0.013	−0.041[a]	0.013	−0.045[a]	0.013
DIV (ref: Very strong)								
Strong	0.004	0.008	0.005	0.008	0.004	0.008	0.005	0.008
Neither strong nor low	0.048	0.043	0.038	0.043	0.039	0.043	0.032	0.043
Low	−0.016	0.010	−0.016	0.010	−0.017	0.010	−0.016	0.010
Very low	0.037[a]	0.010	0.037[a]	0.010	0.037[a]	0.010	0.037[a]	0.010

Appendix Table 7: (continued)

	Model 5		Model 6		Model 7		Model 8	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
	HOMO1 Equation		HOMO1 Equation		HOMO1 Equation		HOMO1 Equation	
ICHINA (ref: Very negative)								
Somewhat negative	−0.050[a]	0.018	−0.047[a]	0.018	−0.049[a]	0.018	−0.048[a]	0.018
Neither positive nor negative	−0.069[a]	0.019	−0.067[a]	0.019	−0.068[a]	0.019	−0.069[a]	0.019
Somewhat positive	−0.035[b]	0.015	−0.033[b]	0.015	−0.035[b]	0.015	−0.033[b]	0.015
Very positive	−0.015	0.015	−0.012	0.015	−0.013	0.015	−0.011	0.015
IUSA (Ref: very negative)								
Somewhat negative	0.013	0.018	0.013	0.018	0.015	0.018	0.016	0.018
Neither positive nor negative	0.016	0.018	0.018	0.018	0.018	0.018	0.022	0.018
Somewhat positive	−0.010	0.015	−0.009	0.015	−0.011	0.015	−0.007	0.015
Very positive	−0.072[a]	0.015	−0.072[a]	0.015	−0.074[a]	0.015	−0.072[a]	0.015
IRUS (Ref: Very negative)								
Somewhat negative	−0.004	0.015	−0.001	0.015	−0.002	0.015	0.000	0.015
Neither positive nor negative	0.010	0.014	0.014	0.014	0.012	0.014	0.015	0.014
Somewhat positive	0.019	0.013	0.022[c]	0.013	0.022[c]	0.013	0.024[c]	0.013
Very positive	0.047[a]	0.013	0.050[a]	0.014	0.051[a]	0.014	0.052[a]	0.014
CONS	2.064[a]	0.037	2.083[a]	0.037	2.076[a]	0.036	2.079[a]	0.036

[a], [b] and [c] represent significance at 1 %, 5 % and 10 % respectively.

Secondly, we put (7) inside (5)

$$T_i = c_0 + c_1 RT_i + c_2 RR_i + c_3\left[\lambda_1 + \lambda_2 RT_i + \lambda_3 RR_i + \lambda_4 W_i + \lambda_5 L_i + \lambda_6 X_i + \lambda_7 v_i + \varepsilon_i\right] + \delta_1 W_i + v_i$$

$$T_i = (c_0 + c_3\lambda_1) + (c_1 + c_3\lambda_2)RT_i + (c_2 + c_3\lambda_3)RR_i + (\delta_1 + c_3\lambda_4)W_i + c_3\lambda_5 L_i + c_3\lambda_6 X_i + c_3\lambda_7 v_i + v_i + c_3\varepsilon_i$$

$$T_i = \left(\frac{c_0 + c_3\alpha}{1-\beta_1 c_3}\right) + \left(\frac{c_1}{1-\beta_1 c_3}\right)RT_i + \left(\frac{c_2}{1-\beta_1 c_3}\right)RR_i + \left(\frac{\delta_1}{1-\beta_1 c_3}\right)W_i + \left(\frac{c_3\beta_2}{1-\beta_1 c_3}\right)L_i + \frac{c_3\delta_0}{1-\beta_1 c_3}X_i + c_3\lambda_7 v_i + v_i + c_3\varepsilon_i$$

$$c_0 + c_3\lambda_1 = \frac{c_0 + c_3\alpha}{1-\beta_1 c_3}$$

$$c_1 + c_3\lambda_2 = \frac{c_1}{1-\beta_1 c_3}$$

$$c_2 + c_3\lambda_3 = \frac{c_2}{1-\beta_1 c_3}$$

$$\delta_1 + c_3\lambda_4 = \frac{\delta_1}{1-\beta_1 c_3}$$

$$c_3\lambda_5 = \frac{c_3\beta_2}{1-\beta_1 c_3}$$

$$c_3\lambda_6 = \frac{c_3\delta_0}{1-\beta_1 c_3}$$

Thirdly, we put (7) inside (6)

$$L_i = d_0 + d_1 G_i + d_2\left[\lambda_1 + \lambda_2 RT_i + \lambda_3 RR_i + \lambda_4 W_i + \lambda_5 L_i + \lambda_6 X_i + \lambda_7 v_i + \varepsilon_i\right] + \delta_2 Z_i + u_i$$

$$L_i = (d_0 + d_2\lambda_1) + d_1 G_i + d_2\lambda_2 RT_i + d_2\lambda_3 RR_i + d_2\lambda_4 W_i + d_2\lambda_5 L_i + d_2\lambda_6 X_i + d_2(\lambda_7 v_i + \varepsilon_i) + \delta_2 Z_i + u_i$$

$$(1 - d_2\lambda_5)L_i = (d_0 + d_2\lambda_1) + d_1 G_i + d_2\lambda_2 RT_i + d_2\lambda_3 RR_i + d_2\lambda_4 W_i + d_2\lambda_6 X_i + d_2(\lambda_7 v_i + \varepsilon_i) + \delta_2 Z_i + u_i$$

$$L_i = \frac{1}{(1-d_2\lambda_5)}\left[(d_0 + d_2\lambda_1) + d_1 G_i + d_2\lambda_2 RT_i + d_2\lambda_3 RR_i + d_2\lambda_4 W_i + d_2\lambda_6 X_i + \delta_2 Z_i + d_2(\lambda_7 v_i + \varepsilon_i) + u_i\right]$$

$$L_i = \eta_0 + \eta_1 G_i + \eta_2 RT_i + \eta_3 RR_i + \eta_4 W_i + \eta_5 X_i + \eta_6 Z_i + d_2\lambda_7 v_i + d_2\varepsilon_i + u_i$$

$$\eta_0 = \frac{1}{(1 - d_2\lambda_5)}(d_0 + d_2\lambda_1)$$

$$\eta_1 = \frac{1}{(1 - d_2\lambda_5)}(d_1)$$

$$\eta_2 = \frac{1}{(1 - d_2\lambda_5)}(d_2\lambda_2)$$

$$\eta_3 = \frac{1}{(1 - d_2\lambda_5)}(d_2\lambda_3)$$

$$\eta_4 = \frac{1}{(1 - d_2\lambda_5)}(d_2\lambda_4)$$

$$\eta_5 = \frac{1}{(1 - d_2\lambda_5)}(d_2\lambda_6)$$

$$\eta_6 = \frac{1}{(1 - d_2\lambda_5)}(\delta_2)$$

Reduced form is written as follow:

$$H_i = \lambda_1 + \lambda_2 RT_i + \lambda_3 RR_i + \lambda_4 W_i + \lambda_5 L_i + \lambda_6 X_i + \check{\varepsilon}$$

$$T_i = \theta_1 + \theta_2 RT_i + \theta_3 RR_i + \theta_4 W_i + \theta_5 L_i + \theta_6 X_i + \check{u}$$

$$L_i = \eta_0 + \eta_1 G_i + \eta_2 RT_i + \eta_3 RR_i + \eta_4 W_i + \eta_5 X_i + \eta_6 Z_i + \check{\sigma}$$

Errors terms:

$$\check{\varepsilon} = \lambda_7 v_i + \varepsilon_i$$

$$\check{u} = c_3\lambda_7 v_i + v_i + c_3\varepsilon_i$$

$$\check{\sigma} = d_2\lambda_7 v_i + d_2\varepsilon_i + u_i$$

Algorithm finding structural coefficients:

$$\widehat{\theta_1} = c_0 + c_3\widehat{\lambda_1}$$

$$\widehat{\theta_2} = c_1 + c_3\widehat{\lambda_2}$$

$$\widehat{\theta_3} = c_2 + c_3\widehat{\lambda_3}$$

$$\widehat{\theta_4} = \delta_1 + c_3\widehat{\lambda_4}$$

$$\widehat{\theta_5} = c_3\widehat{\lambda_5}$$

An from this you easily find δ_0 and now work through equations to identify remaining parameters.

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