Religion, women's role, and the educational gender gap in sub-Saharan Africa

Radboud Universiteit Nijmegen

August 2020

Student: Xosé María Vega Arias (s1041526)

Supervisor: Prof. Dr. Jeroen Smits

Master: Economics

Specialization: International Economics and Development

Religion, women's role, and the educational gender gap in sub-Saharan Africa

Abstract

Previous research has shown the persistence of a gender gap in education in sub-Saharan Africa that hampers this region from higher levels of economic and social development. Another body of literature in social sciences stresses the influence of religion on values and, thus, on gender roles in preindustrial societies. In this thesis, we bring those two elements together to study the influence of religious backgrounds on gender differences in educational enrollment. Additionally, we test the extent to which households' and aggregate economic factors alter this relationship. We use a multilevel logistic model on micro-level data from Demographic and Health Surveys (DHS) that adds up to 779,958 children between 8 and 14 years old in 29 sub-Saharan African countries. This study provides evidence of a relationship between religion and the gender gap in education. Furthermore, we find a moderating influence of households' economic circumstances on the differences across religions. Paradoxically, aggregate factors point at the opposite direction, increasing those disparities. Those findings suggest that, whereas religious backgrounds may influence the gender gap in education, this relationship might considerably vary depending on micro-level economic factors.

Contents

1. Introduction

Economic literature has largely documented the importance of education as one of the major determinants of long-term individual and social prosperity. Researchers have followed different approaches to argue this positive influence. Macro-level approaches highlight that this positive impact arises from increases in labor productivity, the innovative capacity of the economy, and the diffusion of knowledge (Barro, 2001; Fleisher et al., 2008; Hanushek & Wößmann, 2007; Mankiw et al., 1992). In a similar way, micro approaches have documented the high private and social returns of education (Glewwe, 1996; Psacharopoulos & Patrinos, 2004; Vasudeva Dutta, 2007). Alternatively, the capabilities approach (see e.g., Sen, 1989) provides a more theoretical defense of the need of education. This perspective stresses the powerful influence of education on an individual's outcome and, hence, on human development. Despite this general agreement on the benefits of education, lack of access to school is still a persistent problem in developing countries. In 2015, there were about 264 million of children out of school and there has been a stagnation of out-of-school rates since 2008, 2012 and 2013 for primary, lower secondary and upper secondary, respectively (UNESCO, 2018). Thus, school enrollment is still a current issue in development economics, and additional insights can be useful to address this problem and to improve living standards across low-and middle-income countries.

Alongside the concern of overall enrollment, researchers have also widely reported and studied substantial differences in enrollment rates between male and female education. This gap, usually referred to as "the educational gender gap" (Norton & Tomal, 2017; Todaro & Smith, 2015), is an additional burden for economic development. The rationale for this negative impact is derived from the deprivation of both the "generic" benefits of education and the additional positive effects associated with female education and gender equality (Klasen, 2002; Klasen & Lamanna, 2009). In this vein, Psacharopoulos and Patrinos (2004) suggest larger private and social returns for women, particularly within the context of developing countries. More concretely, investment in female education has been associated with decreases in fertility, improved children's nutrition, and increased labor force participation (Todaro & Smith, 2015). However, despite evidence on the larger returns for women, the gender gap in education is still persistent across many developing countries, hampering future economic development (UNESCO, 2018). Therefore, understanding the factors that influence not only overall education enrollment, but also the difference between male and female enrollment rates is relevant for the field of international development.

A relatively large body of literature in social sciences has investigated the determinants of educational enrollment. Part of it, has also linked those factors to the aforementioned differences between female and male enrollment rates. In this sense, alongside other factors, cultural

determinants are particularly relevant to explain the gender gap. Both the influence of culture on institutions and the role that women play in a society or a community (i.e., how patriarchal a society or community is) can explain this relationship. Based on the framework of human capital theory (G. S. Becker & Chiswick, 1966), we could argue that the allocation of resources to education depends on the expected returns, being those influenced by the relative position of women compared to men[1]. Hence, values and social norms associated with different cultures would act as enablers or constraints to achieve gender equality in education. Indeed, existing research has already explored the relationship between the role of women in a society or community and their education (e.g. Colclough et al., 2000; Smits & Huisman, 2013).

In developing countries, religious and cultural backgrounds maintain a particularly close relationship. Religion is often referred to as one of the major sources of those values associated to culture and, thus, a determinant of gender roles (Castells, 1997; de Jong, 2009; Inglehart, 1997). However, studies at the micro-level linking religious backgrounds and gender differences in education are somewhat scarce and not conclusive (Glewwe & Ilias, 1996; Kazeem et al., 2010; Mabika, 2012; Shehu, 2018). Those studies include religion as a control factor and the gender gap does not have a central role in their analyses. Additionally, previous studies suggest that economic factors may be hidden behind an apparent backwardness of certain religious backgrounds (Inglehart & Norris, 2003; Spierings et al., 2009). Despite this macro-level evidence, there is no research to our knowledge linking economic circumstances to religious influence on gender roles at the micro-level. Given this gap in the literature, we aim to shed some light on the influence of religious backgrounds on gender differences in education by answering the following research question:

Does the religious background influence the gender gap in education?

To address this question, the present study aims to disentangle women's role in their communities and households by including religious environments as determinants of the gender gap in education. We focus on the sub-Saharan context, using data derived from household surveys. This study contributes to the existing literature in three different ways: First, by including religious variables, it enhances our understanding of how the role that women have in a society can impact their education enrollment. Second, it adds to the body of literature linking religion and gender roles by providing micro-level evidence (existing literature mainly relies on cross-country analyses, so the impact of culture through institutions is not fully disentangled from

---

[1] Within the framework drawn by Becker and Chiswick (1966), this position could be placed as ''equality of opportunity'', variable that the authors include as an ''institutional'' determinant.

individual behavior). Third, it provides additional insights on the extent to which household-level wealth and region-level economic development might alter religious influence on gender roles.

The structure of this thesis will be as follows: In Section 2, we will describe the theoretical background. This part will review existing literature on the influence of religion on gender roles and on the determinants of gender differentials and overall school enrollment. Section 3 explains the dataset used, the methodological approach, and the variables included in our empirical model. In Section 4 we will present the results of the analysis and discuss the outcome of our hypotheses. Finally, Section 5 will serve as the conclusion of this thesis, summarizing the main findings, identifying potential caveats, and outlining future research.

2. Literature review & theoretical framework

In this section, we present the theoretical framework on which we have built the empirical analysis. In Section 2.1, we describe the conceptual framework used to structure this section. The following three sections comprise a review of relevant literature that we have analyzed to address the relationship between religion and the gender gap in education. First, we will discuss the relationship between different religious backgrounds and gender roles in Section 2.2. Second, in Section 2.3, we will explain how that association can vary depending on individual and aggregate economic conditions. Last, we will review those additional factors that might influence the gender gap in education, and the overall determinants of educational enrollment (variables that will serve as control factors) in Section 2.4.

2.1.   Conceptual framework

Before introducing the relevant literature relative to our topic in the coming sections, we present the conceptual framework (see Figure 1) to illustrate the structure of the analysis. Within this framework, we distinguish four elements: child's enrollment, gender, religion, and contextual variables. This figure shows how our dependent variable (child's enrollment) is influenced, directly and indirectly, by the other three components. This study will pay particular attention to the impact of religion on the gender gap in education (i.e., the indirect effect on the dependent variable), represented by arrow C. Another component that will play a central role is the extent to which contextual (control) factors can alter the relationship between religion and gender roles (arrow D). To address these influences, we also include in our analysis the direct influence of gender and religion (represented by arrows A and B respectively). Finally, regarding control factors, we include their direct influence and the interactions with gender and religion (arrows E, F, and G, respectively).

Figure 1. Conceptual framework
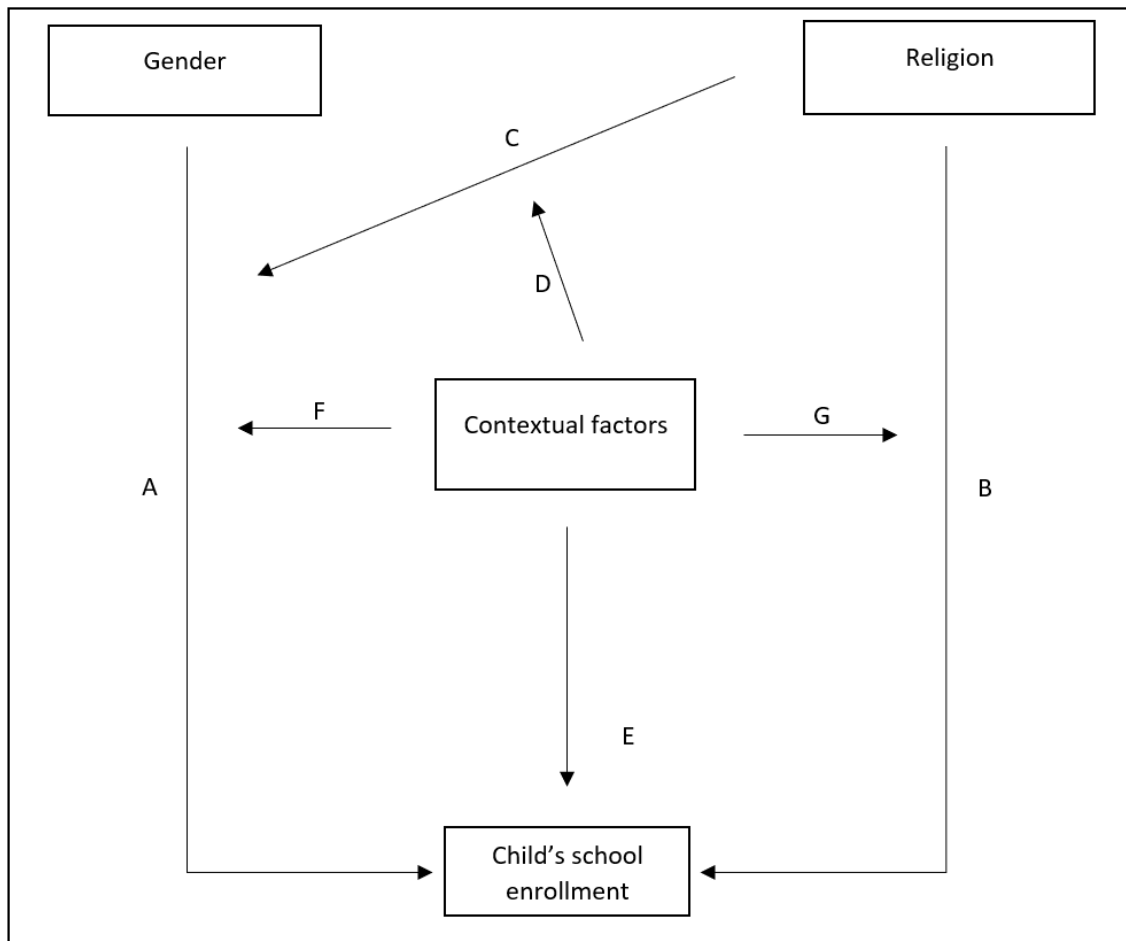
2.2.   Religion and gender roles

Research in social sciences has widely studied the relationship between religion and gender roles. It often identifies religion as a source (if not the primary source) of values in preindustrial societies (de Jong, 2009; Inglehart, 1997). Beyond the impact on (formal) institutions and governance, they often perceive religion as a determinant of an individual's identity formation, driving her or his worldviews and interiorization of social norms and relationships (Castells, 1997; Dildar, 2015; King, 2003; Oppong, 2013; Youniss et al., 1999). Consequently, religion influences educational enrollment in two different ways: First, religious beliefs may have an impact on the value associated with education, influencing the perceived returns of it; Second, as we will discuss in this section, it may also have an indirect impact on educational enrollment through a different effect on female and male education. In other words, religion (via social norms) might influence how individuals perceive an egalitarian education between girls and boys, resulting in unequal outcomes in terms of gender differentials in educational enrollment.

Closely related to social norms, gender stereotypes might be equally relevant to understand the position of women across different societies and how that influences the gender gap in

education. Research in social psychology has deeply investigated their influence on personality (e.g., Broverman et al., 1972; Cuddy et al., 2015; Eagly & Karau, 2002). In this vein, Deaux and Lewis (1984) argue that, alongside other components, role behaviors are an important element of those stereotypes. Within the central topic of this section, religion can be argued to shape how people interiorize gender roles and stereotypes. Indeed, literature frequently shows religion as a source of those gender differences. More concretely, it considers religion as a reinforcer of traditional values and women's subordination to men. Therefore, it would be a constraint to achieve gender equality (M. E. Becker, 1992). Posterior research has empirically tested this influence reaching similar conclusions (Sherkat, 2000; Voicu, 2009). Given the conception of religion as a source of values, we can expect different religions to lead to a different position of women within a society. To properly understand how rooted those social norms and gender stereotypes are, observing their behavior in countries with high religious diversity (Cinyabuguma & Putterman, 2010; Gemignani & Wodon, 2015) can be particularly relevant since it allows to use different religious backgrounds as counterfactuals to test our hypotheses.

2.2.1. Islam

An extensive body of literature in social sciences investigates those differences across religions. Within this scholarship, a large part examines Muslim culture, usually from the perspective of Western societies. For instance, a well-known article written by Inglehart and Norris (2003) highlights the differences between ("secular") Western and Muslim societies based on the World Values Survey (WVS). However, the authors note that the primary determinant of this relationship is the traditionalism associated with the Islamic religion, suggesting the endogenous nature of values and economic development[2]. Spierings et al. (2009) follow a similar (macro-level) approach on the influence of Islam. The authors investigate the compatibility of Islam and gender equality, showing a predominant influence of economic development, rather than Islamization, on female labor force participation. Evidence on educational enrollment generally shows a similar relationship. Whereas Glewwe and Ilias (1996) do not find a significant difference between Islam and Christianity on gender differentials, most posterior research does. For instance, Anyanwu (2016) finds a relatively positive influence of Christian dominance in a country when compared to Muslim dominance. Cooray and Potrafke (2011) and Norton and Tomal (2009, 2017), extending the sample of countries to developed areas, find similar results. Therefore, we expect

---

[2] "But economic development generates changed attitudes in virtually any society. In particular, modernization compels systematic predictable changes in gender roles. Industrialization brings women into the paid work force and dramatically reduces fertility rates. Women become literate and begin to participate in representative government but still have far less power than men. Then, the postindustrial phase brings a shift toward greater gender equality as women move into higher-status economic roles in management and gain political influence within elected and appointed bodies" (Inglehart & Norris, 2003, p. 68)

to find a positive relationship between Islamic households and the magnitude of the gender gap in education.

2.2.2. *Christianity*

The influence of Christianity has been frequently explored as a counterfactual to test the impact of Islamic culture, as shown in the previous paragraph. However, most research studying Christian influence on gender roles has focused on the differences between the two most extended branches of Christianity: Protestants and Catholics. In this sense, past studies have developed three main explanations to support a relatively more favorable environment within Protestantism: A different work ethic, its horizontal structure, and the influence of the *Sola Scriptura*. The first approach has been the most influential. This research builds on Weber´s (1930) work, and associate Protestantism with a distinct work ethic that stimulates upward economic mobility (Kalmijn, 1991; Norton & Tomal, 2009). This attitude would be in line with a favorable environment to promote women's position in Protestant societies. Existing research on the labor market supports this hypothesis showing higher female labor force participation among Protestants (Pastore & Tenaglia, 2013; Tzannatos, 1999), which could be interpreted as a higher position of women. Concerning Catholics, scholarship typically associates it with a less favorable setting when compared to Protestants, but still more advantageous than other religious backgrounds (Algan & Cahuc, 2006; Morgan, 1987; Wilcox & Jelen, 1991).

Some recent research has investigated the other two main alternative approaches to explain the more favorable environment generated by Protestantism. First, Norton and Tomal (2017) emphasize the positive influence of the "horizontal" structure of Protestantism to reduce the gender gap in education. This study builds on past research on trust (La Porta et al., 1996) or social capital (Putnam, 1993) that developed the concept of hierarchical religions. This explanation identifies Catholicism, Islam, and Orthodox Christianity as hierarchical religions. On the contrary, Protestantism would be understood as a horizontal religion and, hence, as an enabler of a higher position of women. Second, a recent trend investigates an additional alternative explanation. This approach associates the positive influence of Protestantism to the *Sola Scriptura*[3] (S. O. Becker & Woessmann, 2009; Cantoni, 2015; Woodberry, 2012). Therefore, it highlights the positive influence on human capital due to the importance given to the reading of the Bible, resulting in a positive indirect influence of Protestantism on women's role through literacy. Since the focus of this thesis is the influence of gender roles on education, this explanation might be particularly relevant.

---

[3] The *Sola Scriptura* principle, one of the pillars of the Reformation, implies that authority rests before on the Scriptures than on their interpretations (Mantovanelli, 2014).

Alongside this major distinction within the Christian religion, in sub-Saharan Africa, some additional religious groups associated with Christianity have shown a substantial influence. African Initiated Churches (AICs) and the Ethiopian Orthodox Tewahedo Church (EOTC) are examples of these divergences from Catholicism and Protestantism. Regarding the AICs, although their boundaries are not clearly defined, we can consider as such those Christian religious movements founded by Africans during or after colonization, without directly rising from Western religious missions (Öhlmann et al., 2020; Oosthuizen, 1996). Despite the traditional roots of these churches, we can expect them to be strongly influenced by colonialism and (Western) Christianity. Focusing on the Shona people in Southern Africa, Mukonyora (2007) argues that this influence resulted in much more patriarchal communities. The rationale provided is that, previous to the influence of Christian missions, feminine qualities associated to the figure of God and their control of agriculture allowed women to not be fully oppressed by male dominance. However, Western influence transformed the position of women within their communities and households, turning it into a much more constrained condition. This restricted position of women within AICs-associated communities is also shared in Mapuranga (2013). However, this latter article highlights recent progress in certain AICs, allowing women to acquire a higher status by undertaking several leadership positions. Therefore, we can expect a certain heterogeneity in terms of gender roles among this group.

Regarding the EOTC, its origin and importance in Ethiopian history distinguish this church from the AICs. The foundation of the EOTC dates back to the fourth century AD and has been strongly important in the development of today's Ethiopia, deeply influencing its culture and institutions (Ancel & Ficquet, 2015). Hogan et al. (1999) investigate the influence of religious backgrounds on family planning and contraceptive behavior in this country. Their study finds unclear results in terms of gender roles on the difference between Orthodox and Protestants, being an urban or rural location particularly influential on this relationship. However, their results support a stronger position of Orthodox women when compared to Muslim women. In our study, we classify households adhered to those religions as *unspecified Christians* since their presence in a limited number of countries and their heterogeneous character do not allow us to draw solid conclusions from our analysis.

2.2.3. *Traditional religions*

Although their presence and influence have been declining throughout the twentieth century, traditional religions are notably relevant within the context of sub-Saharan Africa. The heterogeneous nature of those religions might make it more complex to analyze them. However, existing research has shown common patterns concerning women's roles in those communities. Even though globalization has influenced them in most cases (Arowolo, 2010), they may strongly

differ from majoritarian religions. Studies in this vein often depict a key role of the women within those societies (Kasongo, 2010; Mbiti, 1988, 1990). However, they arguably envisage rather strongly predefined gender roles[4]. Another aspect of traditional religions that might influence gender roles is their connection to an archaic agricultural economy. Although working conditions might broadly vary, this type of agriculture might relegate women to a constrained position (Arun, 1999; Seebens, 2011; Symes, 1991). These reasons suggest that, coming back to the central topic of this thesis, we can expect female enrollment to be notably lower than that of their male counterparts.

2.2.4. Hypotheses

As explained in the previous sections, existing research often identifies religion as a reinforcer of traditional values and, therefore, as a constraint for an improved situation of women within their respective societies and households. In this sense, past studies have associated different religions with distinct values, influencing progress towards a (gender) egalitarian society. We find two primary groups of religions. On the one hand, Islam and traditional religions might lead to a stronger orthodoxy and, thus, to a weaker position of women. On the other hand, Catholicism and, particularly, Protestantism might generate a relatively more favorable environment for women's upward promotion within their societies. Similarly, past research also identifies substantial differences within those groups that may lead to distinct outcomes in the gender gap in education. Therefore, based on this reviewed literature, we develop the following hypotheses on the differences between those two groups of religions and the differences within them:

Aggregated Religious Groups Hypothesis (H1): *Protestantism and Catholicism are associated with lower gender differentials in educational enrollment compared to Islam and traditional religions.*

Protestantism - Catholicism Hypothesis (H2): *Protestantism is associated with lower gender differentials than Catholicism.*

Islam - Traditional Religions Hypothesis (H3): *Muslims are associated with a narrower gender gap in education than households associated to traditional religions.*

---

[4] Quote of a passage from John S. Mbiti (1988): "through the myths of origin, we get a picture of the woman as someone placed by God in a special position. She shares with Him the creative process of life. In some ways her position and her role in these myths eclipses the position of the husband (male). She is in a real sense the mother of human beings, the dispenser of life, howbeit as an agent of God."

2.3.   The role of circumstances

In the previous section, we discussed how religion has been frequently associated with a constrained position of women within their respective households and societies. However, causality on the influence of religion on women's roles is still rather inconclusive. Different explanations found in existing research suggest that it is not clear whether the influence comes from religion, institutions, or economic development. The coevolution and interaction of variables such as economic development, cultural modernization, and institutional change make this influence difficult to disentangle. Literature suggests that the individual and aggregate economic environment may strongly influence the impact of religion on the gender gap in education. First, both factors are likely to soften constraints on access to education. Second, particularly in the latter case, they might influence those values associated with a more restricted position of women. Hence, in this section, we will review existing research on how those two variables may moderate religious influence on the gender gap in education.

2.3.1.   Economic status

The economic background of the household is likely to influence the gender gap in education. Evidence suggests that there is a higher sensitivity to changes in income for girls' educational enrollment that might arise from distinct gender roles. For example, Glick and Sahn (2000) and Lincove (2009) find micro-level evidence of this relationship in Guinea and Nigeria, respectively. To address the potential influence of endogeneity, Grimm (2011) uses an instrumental variable approach finding a substantially larger influence of income than when using OLS regressions. De Carvalho Filho (2012) follows the same approach, finding increases in income particularly relevant to reduce the educational gender gap in rural areas in Brazil. An explanation for this phenomenon might be derived from an alleviation of a situation of poverty under predefined gender roles. For example, this higher sensitivity can arise from of a higher utility for the parents associated with equalizing investments as household income rises (Schultz, 1993). An alternative explanation highlights that, under a situation of poverty, families might concentrate their resources on the child they expect to be more successful (Akresh et al., 2012; Banerjee & Duflo, 2012; Barrera-Osorio et al., 2008). If the position of women in a community is constrained to household tasks, the expected returns of education of their male counterparts will be higher, resulting in unequal educational opportunities. Therefore, if those increases in wealth occur below a poverty threshold, families might still allocate additional resources to sons' education. On the contrary, an alleviation of the condition of poverty might result in relatively higher enrollment rates for women. Since our analysis will discuss religious influence in relative terms (i.e., with respect to other religious groups) and patriarchal influence is likely to affect all of them, we expect to observe a moderating influence of wealth on the gender gap in education.

2.3.2. Economic development

At the macro-level, economic development and the subsequent modernization may also work as mitigating factors of the strict division of gender roles and behaviors, potentially supporting women empowerment in those societies. For example, Inglehart and Norris (2003) argue that economic development, via modernization, leads to changes in gender roles. The rationale for this relationship explained in the article is that economic development results in an increased participation of women in the (formal) labor market, enhancing women's agency, literacy, and status in their households and communities. Additional empirical research on gender equality finds similar results regarding this relationship (Dollar & Gatti, 1999; Forsythe et al., 2000; Oostendorp, 2009; Spierings et al., 2009). Moreover, it is reasonable to expect more and better educational infrastructures at higher levels of development, leading to higher enrollment rates. However, the association between economic development and gender equality is likely to be a two-way relationship since an improved position of women may also lead to economic growth and development (Galor & Weil, 1996; Kimura & Yasui, 2010; Lagerlo, 2003). The theoretical argument behind this alternative direction of causality also frequently takes raising female participation in the labor market as the cornerstone. In this sense, increased women's participation and their consequent empowerment would raise investments in human capital. This positive effect would result in an improved efficiency on the allocation of resources, ultimately leading to economic growth and development (Kanbur & Spence, 2010; Schultz, 1990). Since our analysis will focus on the three-way interaction between gender, religion, and economic development, by controlling for the structure of the labor market, we expect to capture the influence of economic development on gender roles. In other words, our approach would mainly take over the moderating influence of economic development on the patriarchal values associated with religions.

2.3.3. Hypotheses

In sum, the literature reviewed in this section suggests that improved economic circumstances soften limitations imposed by a strong division of gender roles. Although the theoretical arguments on the influence of micro-and macro-level economic factors strongly differ, research suggests a strong positive impact of both variables on gender roles and the gender gap in education. Improved economic conditions within the households would relax economic constraints to achieve a convergence across religions on their influence on the gender gap once households meet a minimum threshold. Similarly, economic development is often associated with an improved situation of women and with better infrastructures that might positively influence female education. Therefore, we develop two hypotheses referring to the moderating influence of households' economic resources (H4) and economic development (H5):

Wealth Effect Hypothesis (H4): *The effect of religion is smaller for richer households.*

Economic Development and Modernization Hypothesis (H5): *The impact of religion is weaker in more advanced societies.*

2.4.   Control factors

2.4.1. *Determinants of the gender gap in education*

Alongside religious backgrounds, individual economic status, and economic development, certain contextual factors have shown an impact on gender differences in educational enrollment. Within strongly patriarchal societies, several factors may leave women more likely to be left out from the educational system. Therefore, in this section, we will review the existing literature on those determinants that have shown a distinct impact to explain male and female education.

Demographic factors

To begin with, competition over scarce resources may result in a negative relationship between the number of siblings and the resources allocated to education for each of them. However, empirical evidence is somewhat unclear in this sense. Whereas studies in developed countries have typically found a negative relationship (Booth & Kee, 2009; Hauser & Sewell, 1985; Jaeger, 2008), evidence from developing countries, particularly sub-Saharan Africa, is weaker. Within this setting, early studies using data from Botswana and Kenya showed a positive relationship (Chernichovsky, 1985; Gomes, 1984). On the contrary, more recent studies have found an adverse effect that corresponds to the results in developed countries (Eloundou-Enyegue & Williams, 2006; Lloyd & Blanc, 1996). The relationship between older and younger siblings might explain this unclear evidence. More concretely, when the older siblings become economically independent resulting in a positive impact for their younger counterparts, the relationship between the number of siblings and education enrollment may become positive.

Furthermore, there is a potential problem derived from the endogenous character of fertility resultant from the "quantity-quality" tradeoff (G. S. Becker & Lewis, 1974) through which, under a condition of limited resources, parents have to decide whether to invest in many children resulting in lower investment per head or have fewer children on which they can concentrate resources. Li et al. (2008), using twins as an instrumental variable, find evidence of a negative relationship between family size and children's education in China. However, Qian (2009), also within the Chinese context, finds the opposite relationship. This study, using relaxations on the One Child Policy in rural areas as the exogenous identification factor, finds a positive influence of a second-born child on the education of the first-born child. Within the context of developed countries, Angrist et al. (2010) and Black et al. (2005) do not find a significant impact of family size.

Alternatively, given the persistence of clearly predefined gender roles in sub-Saharan Africa and previous unclear results, some studies have explored and theorized a different influence of the number of sisters and brothers. On the one hand, the overall number of male children in the household might also result in lower opportunities for girls to be enrolled. The rationale for this relationship is that families might concentrate their (scarce) resources on their male counterparts. In other words, an increase in the number of brothers might increase the demand for child education and, thus, the opportunity cost of female education within patriarchal societies (Shapiro & Tambashe, 2000; Smits & Huisman, 2013). On the other hand, as argued in Glick and Sahn (2006), the presence of older female siblings or adult women might benefit female school enrollment as it would result in a reduction of the opportunity cost (i.e., the demand for childcare is lower). Therefore, the number of sisters might result in a positive influence on educational enrollment.

Finally, other determinants related to the composition of the household are relatively more underexplored. For instance, a growing body of research links the presence of certain relatives (particularly grandmothers) within the household and improved welfare. Although most of this research focuses on health, some studies have also shown a positive relationship with education[5]. Schrijner and Smits (2018) argue that this positive influence is derived from the compensation of direct and indirect costs associated with schooling, particularly if the mother is absent. Additionally, factors related to the mother's characteristics may be relevant. A particularly determinant factor in this sense might be her age at first birth (Delprato et al., 2016; Longwe & Smits, 2012). More concretely, those children whose mother gave birth at a very young age may be less likely to be enrolled as she may have had to leave aside her education or occupation to raise her children too early, resulting in a lower socioeconomic status. Furthermore, age at first birth at an excessively young age might also be an indicator of a lack of cultural modernization.

Socioeconomic background

Alongside the influence of the individual or household's economic status discussed in the previous section, other factors related to the socioeconomic background can also be relevant to explain the gender gap. More concretely, the educational background and occupation of the parents contribute to different educational opportunities for daughters and sons. Regarding parental education, Glick and Sahn (2000) find a similar impact of the education of the father on both genders in Guinea. However, they do not find mother's schooling significant to explain sons' education, whereas the influence on their daughters' education is similar to the one of the fathers.

---

[5] It should be noted that some studies have also found a negative relationship (e.g. Kreidl & Hubatkova, 2014) or no difference (Tamasane & Head, 2010). However, the generalizability of those results is rather limited.

13

Slightly different results are found in Emerson and Souza (2007). This study suggests that, not only higher levels of education of Brazilian women positively influence attendance of their daughters, but also higher education of their male counterparts improves education of their sons. Within the framework of a collective household model, this evidence would be associated with a higher bargaining power of each gender derived from a higher educational status[6] and different preferences. In sum, whereas evidence on the impact of the educational level of the father is somewhat unclear, past research suggests a more positive influence higher educational level of the mother on daughters than sons.

Similarly, employment of the parents is also likely to asymmetrically influence the gender gap. On the one hand, the occupation of the father in a highly patriarchal society might favor educational attainment of sons when compared to that of daughters. The rationale for this relationship is that social mobility for women is expected to occur through marriage with a richer husband rather than by achieving higher educational levels and, therefore, better employment opportunities in the future (Smits & Gündüz-Hoşgör, 2006). On the other hand, the occupation of the mother may indicate a better position of women within a society as well as a more important role in decision-making within their households derived from the economic independence associated with her employment. However, under conditions of poverty, this relationship may be reversed as women who work might be replaced by their daughter, reducing their opportunities to be enrolled in a school (Huisman & Smits, 2009).

Modernization

Modernization factors are probably the major determinants of gender differences since they might be hidden behind several other determinants. Inequality of opportunities for girls can also arise from structural factors that discourage investments in female education. For instance, the structure of the labor market may be a major determinant of gender differentials in education. More concretely, families might perceive the opportunities provided by the labor market as one of the major determinants of returns to investments in education. Therefore, if the opportunities provided to women are more scarce than the ones for their male counterparts, families might decide to invest in their sons' education rather than in their daughters' (Colclough et al., 2000; Rosenzweig & Schultz, 1982). Furthermore, the labor market frequently discriminates women paying them lower wages and, hence, lowering the expected returns to education and the likelihood of women to be enrolled (Colclough et al., 2000). Thus, if the conditions are not appropriate, parents may decide to allocate more resources to their sons than daughters. This

---

[6] Glick and Sahn (2000, p. 83) provide this explanation when hypothesizing the alternative result of higher education of the mother and father positively influencing more, respectively, their daughters' and sons' educational enrollment. These results were found, as aforementioned, in Emerson and Souza (2007).

evidence suggests the importance of the labor market as a potential constraint (or catalyzer) of women's education.

However, the position of women in a society is also likely to influence (and perpetuate) this low participation, retarding increases on female labor force participation. In other words, the structure of the labor market might alter the incentives to invest in female education, but also an improved position of women, leading to higher enrollment rates, might lead to a shift in this structure (Goldin, 1994; Lincove, 2008; Youssef, 1974). Therefore, the influence of social norms and gender expectations is likely to play a significant role in this interaction. For instance, in certain societies, women get married at an early age and remain subordinated to their husbands[7] (Field & Ambrus, 2008), reducing their future employability and, thus, decreasing the incentives to invest in female education. Additionally, even if this strongly patriarchal relationship is softened, they might be expected to work in low-level positions[8], therefore having no influence on the incentives for education. In sum, social norms and gender stereotypes might not only have a direct influence on women's education but also an indirect effect through the labor market.

Also at the community level of analysis, supply-side factors might asymmetrically influence educational enrollment of girls and boys. These factors are particularly relevant for children living in rural areas, where infrastructures are generally poorer and communities are frequently more tied to traditional values. In this sense, the presence of female teachers and distance to school may be determinant. First, the presence of female teachers, a factor that suggests the importance of the position of women in a community and, therefore, the importance of culture, is a contributing factor to reduce gender differentials (Colclough et al., 2000; Dee, 2005; Huisman & Smits, 2009, 2015; Muralidharan & Sheth, 2016). This evidence suggests the significance of gender roles to reduce the gender gap in education. Furthermore, distance to school might have a disproportionate impact on girls' compared to boys' educational enrollment. According to Huisman and Smits (2015), safety, particularly once girls have entered puberty, is the principal reason for these disparities. These factors are likely to be a bigger obstacle in rural areas, where poor infrastructures and communications are substantially more frequent. Consequently, supply-side factors might be important to explain the gender gap, being girls in rural areas a particularly vulnerable demographic group.

---

[7] This tight dependence might be softened in the context of sub-Saharan Africa as women usually have some independence and engage in economic activities with respect to, for example, Asia, different cultural backgrounds may still have a strong influence on women's role. However, they usually work as traders, therefore having no necessity to be educated (Kritz & Gurak, 1989).

[8] At this point, the country would be already at the upward-sloping part of the U-shaped curve, but most of this increased FLFP is likely to belong to low-skilled labor.

2.4.2. *Determinants of overall educational enrollment*

Demographic factors

Demographic determinants may be some of the most relevant factors at the household level. In this vein, several structural characteristics of the household and the position of the child within the family can provide relevant information. For instance, the gender of the household head is a key contributing factor regarding the allocation of resources within the household. Early studies on intrahousehold allocation of resources assumed a unitary model of the household, in which the source of income does not have any implications on its allocation (e.g., G. S. Becker & Tomes, 1976). Later studies challenged this model proposing a collective approach in which each individual has his or her own preferences, but assume Pareto efficient decisions (Browning & Chiappori, 1998; Chiappori, 1992). Although this latter approach is questionable in terms of the Pareto efficiency assumption (Duflo & Udry, 2004), other studies also share the collective household model approach. For instance, Thomas (1990) finds evidence of this distinct pattern through children's health and nutritional outcomes in Brazil. Within the context of sub-Saharan Africa, Hoddinott and Haddad (1995) and Doss (2006) contradict the unitary model in Ivory Coast and Ghana, respectively. Leaving aside discrepancies on the Pareto efficient outcome, research on educational enrollment also supports the collective household model (Glick & Sahn, 2000). Therefore, being consistent with previous literature, we can expect female-headed households to systematically differ from male-headed ones, positively influencing the educational enrollment of the children living in her household.

Other factors related to the structure of the household can also be relevant to determine the educational of their children. One of the most explored determinants in this field is the birth order of the siblings that comprise the household. In this sense, when explaining educational enrollment, there might be certain asymmetries on the distribution of resources among siblings. Although different theories have come to different outcomes on how resources are distributed, within the context of developing countries, it is rather likely that younger siblings benefit from the older ones when those enter the labor market and become economically independent (Ejrnaes & Portner, 2004; Travis & Kohli, 1995). As a result, younger siblings will be more likely to be enrolled in the educational system than their older counterparts. Research on educational attainment (not enrollment) provides additional explanations. Those studies drift apart from the economic approach that emphasizes a different allocation of resources and, thus, lead to alternative hypotheses on the influence of the order. For example, Zajonc (1976) points out at the household's intellectual environment, through which the oldest children would benefit more in households with higher IQ or average education. Another approach stresses the biological

influence through maternal depletion, leading to a biological advantage of the earlier-born children (Behrman, 1988). Nevertheless, it would be reasonable to expect the intellectual environment and the biological hypothesis to not significantly bias the effect of child order derived from the impact of a different allocation of resources when it comes to educational enrollment.

Modernization

The last category we consider, particularly relevant to disentangle the influence of religion, is the level of modernization. Within this category fall all factors associated with a more advanced society. To begin with, (infra)structural (supply-side) factors are also relevant to determine school enrollment. In this case, availability and quality of education are the most widely explored determinants. Within the context of developing countries, schools may be excessively far from certain communities, resulting in lower school enrollment rates for the children living in those areas (Colclough et al., 2000; Huisman & Smits, 2015). Similarly, if existent, the quality of the schools may be rather low and parents may decide to not enroll their children (Connelly & Zheng, 2003; Glewwe & Ilias, 1996). In sum, there is evidence of a wide variety of supply-side determinants, being access to education one of the most significant, that may notably influence enrollment rates.

Alongside access to education, cultural backgrounds are usually regarded as one of the major determinants of educational enrollment related to modernization. This aspect can be more problematic to isolate as culture influence our institutions, society, labor market, schools, and households (Colclough et al., 2000). In this sense, cultural differences across communities can influence the extent to which individuals value education. An alternative explanation can arise from a position of social exclusion of certain demographic groups. In this sense, some communities might be more likely to be in a position of relative social disadvantage compared to other groups to achieve social mobility, discouraging investments on education (Lewis & Lockheed, 2008). Furthermore, in some cultures, the expected returns may not be calculated on the basis of the child's returns, but on the parents' instead as children are expected to provide financial support to their parents when they grow old (Huisman & Smits, 2009).

Although we have already discussed the influence of religion on the gender gap, given its central role in our analysis, literature on the direct influence of religion is also relevant in our case. Since religion (alongside ethnicity) is the principal influence of cultural backgrounds in sub-Saharan Africa, we can apply the first two explanations of cultural backgrounds (different values and social exclusion) to link religious backgrounds and educational enrollment. Given the aforementioned conception of religion as a source of values in preindustrial societies (de Jong, 2009; Inglehart, 1997), it might not only have an indirect influence on education through gender

17

roles but also a direct impact. Early studies in developed countries linking religion and education followed this approach (Chiswick, 1988; Lehrer, 1999; Tomes, 1983). Those analyses, building on human capital theory (G. S. Becker & Chiswick, 1966), understand that differences in school investment are derived from different returns to education depending on the religious background. They find a particularly positive association of Judaism compared to both Protestants and Catholics. However, they do not find a significant difference between these latter groups. After distinguishing between Mainline Protestants and Fundamentalist Protestants, Lehrer (1999) finds a significant difference between Catholics and both types of Protestants. This study concludes that Mainline Protestants are associated with greater investments in education than Catholics, whereas Fundamentalist Protestants show the opposite behavior.

Additionally, religious influence might also result, in line with Lewis and Lockheed (2008), from a situation of social exclusion. For instance, Csapo (1981) argues that, in Nigeria, Muslim communities do not send their children to school because of the belief that it is a Christian institution. This influence in Nigeria is empirically tested in Kazeem et al. (2010) and Shehu (2018). A similar phenomenon might happen in Northern areas of Ghana where, despite Muslim dominance, schools are typically associated with Christian churches (Glewwe & Ilias, 1996). Traditional religions are another group that is likely to be negatively influenced by social exclusion. Due to the scarce political participation of communities associated with traditional religions (Attah, 2013), this condition of social exclusion could similarly have a negative influence on this religious group. Therefore, there are two main explanations for differences in education across religious groups. First, economic literature frequently stresses a different valuation of education. Alternatively, sociological literature usually associates them to a situation of social exclusion.

3. Empirical analysis

3.1.   Data

In this thesis, the dataset is derived from Demographic and Health Surveys (DHS), which we obtained from the Global Data Lab (www.globaldatalab.org). DHS consist of household surveys based on nationally representative clustered samples that provide indicators for children and mothers across the developing world (Gündüz-Hoşgör & Smits, 2008; Khan & Hancioglu, 2019). The use of DHS datasets allows to obtain a large number of observations, enabling the inclusion of a large volume of contextual variables and random intercepts at different levels of analysis without having a negative impact on the power of our analysis. Furthermore, the surveys include a wide variety of background variables that are necessary to develop our approach. The resultant dataset is merged with the Subnational Human Development Index (SHDI) for each region and year of the survey. This indicator is also retrieved from the Global Data Lab, which mainly uses data from DHS, but also from other similar surveys such as the Multiple Indicator Cluster Surveys (MICS) of UNICEF, World Health Surveys (WHS) of the World Health Organization, and Integrated Public Use Microdata Series (IPUMS) of the Minnesota Population Center (Smits & Steendijk, 2015).

Due to the importance of religious heterogeneity to test our hypothesis, we excluded excessively homogeneous countries from the analysis. To perform this deletion, we left out those countries in which the majoritarian religion represented 90% or more of the total population. This was the case of Niger, Senegal, and Gambia. We also removed those surveys without information regarding religious groups, adding up to 14 surveys. The resulting dataset adds up to a sample of 790,337 children between 8 and 14 years old in 29 sub-Saharan countries. The 66 surveys included in the analysis were undertaken between 2000 and 2018 and range between 1 and 4 per country. Once we obtained this dataset, we observed a relatively small number of missing cases on educational attendance, the number of brothers and sisters, household head gender, the IWI, as well as the aggregated variables on the average age of marriage, and the percentage of women in non-farm occupations. To solve this, we applied listwise deletion as it is rather unlikely to lead to unbiased estimators (Allison, 2000). After this deletion, 10,379 (1.3%) cases were removed from our dataset, resulting in a final sample of 779,958 children. The large number of missing cases for parental characteristics (mainly education and occupation), mostly associated with the lack of either the mother or the father in the household, made it necessary to use the dummy variable adjustment procedure to avoid a substantial reduction of our sample. This method also prevents biased estimates (Allison, 2002).

19

3.2. Method

Our dataset has a hierarchical structure in which households are nested in clusters, regions, and countries. This would result in intraclass correlation as it violates the Ordinary Least Squares (OLS) assumption of independence of observations (Hox, 2002). For example, the occupation of the father might be related to the cluster in which he is living, as well as to the level of development of the region and country. Furthermore, the extent to which a given religion might influence the gender gap in education is likely to broadly vary across different settings. Thus, we should use a multilevel modelling technique to solve these concerns. The resulting empirical model would be as shown in equation (1). The distinct levels of analysis are represented in this equation by $X_{ijkl}, Y_{jkl}, W_{kl}$, and Z_l representing the vectors of the household, cluster, region, and country-level independent variables, whereas y_{ijkl} represents our dependent variable (school enrollment). Additionally, t_{0jkl}, u_{0kl}, and v_{0l} represent the error terms at the cluster, region, and country levels. However, the binary character of this variable would violate the normal distribution and homogeneous error variance assumptions (Pohlmann & Leitner, 2003; Verbeek, 2005). Therefore, following Verbeek (2012), we can successively transform equation (1) into (2) (keeping the deterministic part of the model unchanged) and (3). From the latter equation, we obtain p_{ijkl}. This term allows to estimate the probability that $y_{ijkl} = 1$ (i.e., the child is enrolled at school) for a given value of the independent variables of the model.

(1) $\quad y_{ijkl} = \beta_0 + \beta_{ijkl}X_{ijkl} + \varphi_{jkl}Y_{jkl} + \delta_{kl}W_{kl} + \alpha_l Z_l + t_{0jkl} + u_{0kl} + v_{0l}$

(2) $\quad logit_{ijkl} = \beta_0 + \beta_{ijkl}X_{ijkl} + \varphi_{jkl}Y_{jkl} + \delta_{kl}W_{kl} + \alpha_l Z_l + t_{0jkl} + u_{0kl} + v_{0l}$

$$(3) \quad p_{ijkl} = \frac{\exp(logit_{ijkl})}{[1+\exp(logit_{ijkl})]}$$

3.3. Variables

Dependent variable

Our dependent variable is educational enrollment. This variable takes a value of 0 if the child has not attended education during the school year in which the survey was undertaken, and a value of 1 if she or he has attended at some point. Only children between 8 and 14 years old were included in the analysis. The rationale for the lower bound is the frequent late incorporation into school, as some kids might not be enrolled until it is compulsory (Huisman & Smits, 2009). The upper limit is set because older children might leave their household or leave school to work or because of early marriage.

Independent variables

Concerning the independent variables, two of them have a central role in our analysis: gender and religion. First, gender is a dichotomous variable, taking a value of 0 if the child is a boy and a value of 1 if the child is a girl. Second, we homogenized religious groups to make them comparable across countries, resulting in the following groupings: Catholics, Protestants, Muslims, traditional worshippers, *unspecified Christians*, and a residual category for the cases in which religion was missing or in which the households belonged to an alternative religion. The category *unspecified Christians* includes those classified in the original surveys as Christians (without further specification), other Christians, the Ethiopian Orthodox Church, and African Initiated Churches (AICs). We included those categories using contrast-coded dummy variables. This method has three requirements: j-1 contrasts must be included (being j the number of categories), the sum of the codes for a given contrast must equal zero, and codes should be orthogonal for any two variables (Hardy, 1993). The contrast-coded categorical variables regarding religious groups included in our model (displayed in Table 1) meet these three conditions. *CC1* shows the difference between Catholics and Protestants. *CC2* captures the difference between the aggregate groupings of Catholics and Protestants, and of Islam and traditional religions. The influence of traditional religions compared to Islam is captured in *CC3*. Additionally, although not much attention will be paid to the last two dummies, it should be noted that they are coded to capture the difference between the main four groups and the residual categories (*CC4*) and between those latter categories (*CC5*). The main advantage of this method rests on its flexibility in comparison to binary dummy-coded categorical variables (Wendorf, 2004). In this case, it enables to organize our religious categories into aggregated groups as hypothesized in H1, as well as to generate multiple reference categories. In other words, it allows us to test whether there is a statistical difference between Catholics and Protestants, and traditional religions and Islam on the one hand, as well as the difference within those aggregated groups on the other hand (H2 and H3).

Table 1. Contrast-coded dummy variables of religious backgrounds

	CC1	CC2	CC3	CC4	CC5
Catholics	1	0.5	0	0.25	0
Protestants	-1	0.5	0	0.25	0
Muslims	0	-0.5	1	0.25	0
Tr. Religions	0	-0.5	-1	0.25	0
Christians uns.	0	0	0	-0.5	1
Other/unknown	0	0	0	-0.5	-1

The International Wealth Index (IWI) and the Subnational Human Development Index (SHDI) also have a substantial importance in our hypotheses and analysis. The first variable is used to measure the economic status at the household level. Three main approaches have been typically used indicate the economic position: income, consumption, and ownership of durable goods (i.e., wealth). However, the lack of availability of data for the first two variables has made the latter one the most widely used within the context of developing countries (Bollen et al., 2002). Despite its widespread use, wealth indexes are frequently rather difficult to interpret across countries and time as they are survey-specific (Mckenzie, 2005). On the contrary, the IWI allows for material well-being comparisons, making it suitable for our analysis. This index ranges from 0 to 100. In the extreme case of lack of possession of the included (durable) assets and the lowest quality of housing and services, it would take a value of 0. Under the opposite condition in which the household has all the included (durable) assets and the highest quality of housing and services, it would take the value of 100. An additional advantage of using the IWI is that it allows for the same level of material well-being or economic status while having a substantially different combination of assets and housing quality (Smits & Steendijk, 2015). In our regressions, we have transformed this index by dividing its original value by 100; thus, it ranges from 0 to 1.

We expect to capture the influence of societies' socioeconomic progress on educational enrollment through the Subnational Human Development Index (SHDI). In more advanced economies, not only overall enrollment is generally higher (due to better access and higher demand of skilled labor), but also societies are typically more egalitarian in terms of gender differences. Economists have frequently used GDP per capita to measure it. However, the capacity of this variable to measure progress is somewhat limited and its effect can be biased if economic growth does not lead to social progress (Stiglitz et al., 2009). The widely known Human Development Index (HDI), published by the United Nations Development Program (UNDP), provides an improved approximation to the concept (socioeconomic progress) that we aim to measure. Despite this substantial advantage, variations within countries, particularly relevant across sub-Saharan Africa (Smits & Permanyer, 2019), might bias the results on the influence of socioeconomic development on educational enrollment. Therefore, the SHDI provides a notably more accurate measure to estimate this impact in our analysis. The SHDI, as the HDI, includes three dimensions of development (standard of living, education, and health) and ranges from 0 to 1, increasing in value with higher levels of development.

Control variables

In line with the theoretical background, we included three different categories of control variables: demographic, socioeconomic, and modernization factors.

Regarding the demographic determinants, we include age, number of brothers and sisters, birth order, the gender of the household head, whether the father or the mother is missing and whether the mother had her first child before turning 15 years old. Concerning age, it is included both in its original values and in squared terms as it might be more influential at higher values due to a tradeoff between school enrollment and early participation in the labor market. The number of siblings and birth order are numerical variables. Additionally, some characteristics of parental figures might be particularly relevant (Delprato et al., 2016; Ejrnaes & Portner, 2004; Glick & Sahn, 2000). Therefore, we include a dummy variable that takes the value of 1 when the household head is a woman and a value of 0 when this role is taken by a man. Another factor that could substantially influence educational enrollment is the lack of either the mother or the father. Consequently, we added two dummy variables to control for this effect in which a value of 1 would refer to the lack of the mother or father, respectively. Last, we included a dummy variable indicating whether the mother had had her first child at a young age (<15 years-old).

Concerning socioeconomic factors, alongside the aforementioned inclusion of the International Wealth Index (IWI) to capture the economic status, education and occupation of the father and of the mother are also included. Regarding parental education, it is measured by the years of education that each of them has attended school. On the contrary, the occupation of the father is a categorical variable indicating whether he works in a farm, a lower non-farm occupation, or an upper non-farm position. Additionally, we generated a category for the missing cases. We also incorporated the occupation of the mother through a dummy variable indicating whether the mother is working (1) or not (0). More than the socioeconomic impact, we expect this variable to indicate whether the mother might be replaced by her daughter, which might negatively influence her education (Huisman & Smits, 2009).

Eventually, factors related to the level of modernization of communities and households play a particularly relevant role to isolate the influence of religion on the women's roles and girl's educational enrollment. A variable including the average educational attainment within each cluster is expected to provide information on overall access to education within those communities. More focused on the incidence on gender differences, we include three variables related to the level of social progress: Age at marriage of the mother, the average age difference between spouses within the clusters, and the percentage of women working in non-farm occupations in the cluster. Since we included religion at the household level, a lack of cultural modernization at this level is proxied by a dummy indicating whether the mother got married before turning 15 years old (Srinivasan, 1988). We additionally control for cultural modernization at the cluster level by including the average age difference between spouses within each cluster following Spierings et al. (2009). The reason to include this variable is that the position of the daughters might be socially influenced, even if the household-level variable predicts a relatively

improved position of women. The importance of the third variable can be derived from human capital theory. Within this framework, lower enrollment rates for girls could be understood as a (rational) response to the lower expected returns to education derived from a lack of demand of skilled female profiles in the labor market. Since economic development is likely to not evenly influence all households and communities, we additionally include three variables associated with a more moderate impact of social and economic progress: whether the child is living in a rural area, and whether they might be associated to a position of social exclusion. Regarding the first variable, it consists of a dummy variable indicating whether the child lives in a rural (1) or urban (0) area. Relative to a position of social exclusion, we include two dummies indicating whether the household belongs to a minority (<20% of the population within their region) religious or ethnic group (1) or not (0).

Interactions

Interaction terms play a key role in our analysis. Hence, we should note that the variables involved are in centered terms. This implies that the main effects can be interpreted as the average effects. Furthermore, since we include three-way interactions, the same interpretation applies to the two-way interactions.

4. Results

4.1. Descriptive statistics

In Table 1, the descriptive statistics of the variables included in the analysis are displayed. This chart presents the minimum and maximum values of the variables, the mean and the standard deviation. Additionally, the table reports the total number of children included in the analysis, which adds up to 779,958 observations. Concerning the dependent variable of the analysis, educational enrollment, it shows that 77.35% of the children were enrolled at school at the moment of the interview. This shows that the problem of access to education is still persistent in sub-Saharan Africa, in line with UNESCO (2018). Concerning the primary independent variables of our analysis (gender and religion), we observe an expectable representation of the different categories. This non-parametric analysis shows that girls and boys are roughly equally represented in our sample (49.66% and 50.34% respectively). Since displaying the contrast-coded version of the dummies relative to religion would not provide useful information (details of the codes are shown in Table 1), we included the descriptive statistics of the binary-coded variables. We observe that Catholics, Protestants, and Muslims are the majoritarian groups, representing, respectively, 17.85%, 20.60%, and 26.94% of our sample. On the contrary, traditional religions represent only 3.13% of the sample. Additionally, the category *unspecified Christians* represents 17.41%, and 14.87% are associated to another religious group. These numbers are consistent with previous reports on religion in sub-Saharan Africa (Pew Forum, 2010).

Regarding the control factors, as in section previous sections, we can distinguish three different categories: demographic, socioeconomic, and modernization determinants. First, demographic factors reveal that fathers are more likely to not be present than mothers (37.19% and 23.88% respectively) and that approximately one out of four households (25.31%) is headed by a woman. Second, concerning the socioeconomic status, our dataset shows a notably higher average educational attendance of fathers compared to mothers (4.49 and 3.26 years respectively) which is consistent with the existence of a gender gap in education among adults and with previous studies (e.g., Schrijner and Smits, 2018a). Additionally, employment variables show that 49.38% of the mothers were employed (the remaining 50.62% does not necessarily mean that they were unemployed since it also includes the cases in which the mother was missing). In the case of employment of the father, most of them work in a farm (58.45%), whereas 32.63% and 8.92% work in a lower and upper non-farm occupation respectively. The modified value of the International Wealth Index (IWI/100) averages 0.29, being consistent with previous studies (e.g., Schrijner and Smits, 2018b). Finally, the variables to control for the level of modernization show an average education within the clusters of 3.06 years, an average percentage of women in non-

farm occupations of 29.41%, that 12% of the mothers got married at a very young age (before turning 15), that 70.78% of our sample live in a rural area, and an average Subnational Human Development Index of 0.45.

Table 2. Descriptive statistics

	Minimum	Maximum	Mean, %	Std. Deviation
Dependent variable				
Child enrolled at school	0	1	77.35%	0.42
Religion (binary-coded) dummies				
Catholic	0	1	17.85%	0.38
Protestant	0	1	20.60%	0.40
Muslim	0	1	26.94%	0.44
Christian (not specified)	0	1	16.61%	0.37
Traditional religion	0	1	3.13%	0.17
Other religion	0	1	14.87%	0.36
Demographic factors				
Birth order	1	18	3.22	1.86
Birth order missing	0	1	0.21	0.41
Gender (Girl=1)	0	1	49.66%	0.50
Age	8	14	10.85	2.00
Number of brothers	0	11	1.94	1.61
Number of sisters	0	11	1.82	1.53
Mother not present	0	1	23.86%	0.43
Father not present	0	1	37.18%	0.48
Female head	0	1	25.34%	0.43
Age 1st child mother (<15 y.o.)	0	1	10.73%	0.31
Socioeconomic factors				
International Wealth Index (/100)	0	1	0.29	0.23
Education father (years)	0	17	4.49	3.77
Education mother (years)	0	17	3.26	3.53
Occupation father				
Farm	0	1	58.45%	0.45
Lower non-farm	0	1	32.63%	0.37
Upper non-farm	0	1	8.92%	0.21
Mother employed	0	1	49.38%	0.50
Modernization factors				
Subnational Human Development Index	0.21	0.71	0.45	0.09
Average age difference mother father cluster	-36.00	17.73	-8.70	3.48
Women in non-farm occupations cluster (%)	0	100	29.39	23.22
Education years cluster	0	12.80	3.06	1.98
Age at marriage mother <15 y.o.	0	1	12.32%	0.33
Rural area	0	1	70.78%	0.45
Ethnic minority	0	1	41.52%	0.49
Religious minority	0	1	15.69%	0.36
N = 779,958				

Source: Demographic and Health Surveys (DHS) 2000-2018 (www.dhsprogram.com).

Table A1 (see appendix) shows school enrollment rates across sub-Saharan Africa according to our dataset. It reveals that enrollment rates and gender differences largely differ across countries. Overall enrollment rates range from 34.84% in Burkina Faso to 96.78% in Gabon. When separate rates for girls and boys are computed, those two countries also have the lowest and highest values (31.19% and 38.28%, respectively, in Burkina Faso and 96.74% and 96.81% in Gabon). Furthermore, the chart confirms the persistence of the gender gap in education in most sub-Saharan countries. In 18 out of the 29 countries included in the analysis rates for boys are higher than those for girls, being the difference substantially larger than in countries in which female rates are higher. The largest differentials are typically found in countries with relatively low overall enrollment rates, such as Benin or Guinea (69.15% and 56.82% respectively with gender differentials of roughly 10 p.p.). However, a substantial difference (5 p.p. differentials) is also found in countries with high overall enrollment rates such as Cameroon and Togo (87.42% and 88.66% respectively), suggesting that improving access to education alone does not erase the gender gap in education. Therefore, other factors might be relevant to explain the persistence of lower school enrollment rates for girls compared to those for boys.

In Table A2 (see appendix), enrollment rates and gender differences (i.e., the difference between boys' enrollment rates and girls' enrollment rates) disaggregated by country and religious groups are presented. This chart sheds some additional light on the distribution of enrollment rates in sub-Saharan Africa. However, caution should be taken when interpreting the results since socioeconomic factors may be hidden behind differences across religious groups. For example, although there is a certain pattern of higher enrollment rates and lower gender differences among Christians compared to Muslims and traditional worshippers in many countries, in some of those countries the latter religions are dominant in less developed areas (Agbiboa, 2017; Kazeem et al., 2010). However, opposite patterns can be found in, for example, Malawi. In this country, the Muslim minority shows higher overall enrollment rates and higher enrollment rates for girls than for boys. These results suggest the importance of contextual factors to determine the influence of religion. Finally, we find particularly interesting the case of Benin, where the aforementioned relatively low overall enrollment rates are shown to be driven by its Muslim population whereas this religious group has the lowest gender differentials across all religions included in the analysis. Although this chart can be illustrative to map enrollment rates across sub-Saharan Africa and religions, most questions remain open. Thus, we require from the more exhaustive multivariate analysis to draw solid conclusions.

4.2. Analysis

Table 3 shows a reduced version of our model in which only the variables and interactions of interest (those considered relevant for the hypotheses) are included. Despite their residual role, we also include in this chart the contrasts referring to the contrasts *CC4* and *CC5*, as they can provide relevant information on the influence of micro-and macro-level economic circumstances. The full model is displayed in Table A3 (see appendix). Despite being beyond the scope of this thesis, the control variables reveal additional insights on the determinants of overall educational enrollment and of gender differentials.

Table 3. Multilevel logistic regression analysis of school enrolment (dependent variable) of children aged between 8 and 14 years old in 29 sub-Saharan countries (only variables and interactions of interest are included, see Table A3 for full model).

Parameter	Estimate	Odds ratio	Std. Error
Intercept	-0.446***	0.634	0.021
Religion (contrast-coded) dummies†			
CC1	0.004***	1.004	0.001
CC2	0.059***	1.061	0.002
CC3	0.006***	1.006	0.001
CC4	-0.008***	0.992	0.002
CC5	0.010***	1.010	0.001
Interactions of interest			
Girl * IWI (/100)	-0.044***	0.957	0.005
Girl * SHDI	0.049***	1.050	0.012
Girl * CC1	-0.001	0.999	0.001
Girl * CC2	0.033***	1.033	0.003
Girl * CC3	0.016***	1.017	0.003
Girl * CC4	-0.033***	0.967	0.003
Girl * CC5	-0.006***	0.994	0.002
SHDI * CC1	-0.062***	0.940	0.010
SHDI * CC2	-0.260***	0.771	0.020
SHDI * CC3	-0.254***	0.776	0.017
SHDI * CC4	-0.244***	0.784	0.019
SHDI * CC5	0.080***	1.083	0.010
Girl * SHDI * CC1	0.005	1.005	0.018
Girl * SHDI * CC2	0.140***	1.150	0.036
Girl * SHDI * CC3	0.037	1.039	0.030
Girl * SHDI * CC4	0.013	1.014	0.034
Girl * SHDI * CC5	0.106***	1.112	0.019
IWI (/100) * CC1	0.012***	1.013	0.003
IWI (/100) * CC2	-0.340**	0.712	0.008
IWI (/100) * CC3	0.045***	1.047	0.008

Table 3. (Continued)

Parameter	Log odds	Odds ratio	Std. Error
IWI (/100) * CC4	0.199***	1.220	0.008
IWI (/100) * CC5	0.057***	1.059	0.004
Girl * IWI (/100) * CC1	-0.013*	0.987	0.006
Girl * IWI (/100) * CC2	-0.073***	0.930	0.016
Girl * IWI (/100) * CC3	-0.069***	0.933	0.015
Girl * IWI (/100) * CC4	0.046**	1.047	0.015
Girl * IWI (/100) * CC5	0.010	1.010	0.008

***p<0.001, **p<0.01, *p<0.05
†CC1: Difference between Catholics and Protestants; CC2: Difference between Catholics and Protestants, and Muslims and Traditional Religions; CC3: Difference between Muslims and traditional religions; CC4: Difference between Catholics, Protestants, Muslims, and traditional religions and unspecified Christians and residual category; CC5: Difference between unspecified Christians and residual category.

4.3.   Influence of religion on the gender gap in education

The outcome of the multilevel logistic regression model is generally in line with our expectations regarding gender differences in education and the influence of religious backgrounds. As we will discuss in the coming paragraphs, religion is a significant determinant of those differences.

We find support for our first hypothesis (H1), which referred to the gender gap in education among Muslims and households adhered to traditional religions compared to Protestants and Catholics. We expected the former religious backgrounds to be related to greater differentials between girls and boys. Additionally, we should note that both Islam and traditional religions are associated with notably lower overall enrollment rates. Consequently, in consonance with Lewis and Lockheed (2008), girls in those environments might suffer from a double disadvantage to be enrolled at school. On the one hand, their religious backgrounds are associated with substantially lower odds to attend to school. On the other hand, the more restricted role of women within their communities and households reduces the opportunities for girls to be educated at school. In this case, we find two main explanations. First, in line with most literature reviewed in this thesis (e.g., Cooray & Potrafke, 2011; Norton & Tomal, 2009, 2017), those religions might be related to more traditional beliefs and values that establish strict distinct roles between men and women, leaving females in a weaker position within their households and communities. This discrimination would reduce their role to household and caregiving tasks that do not require education, disincentivizing investments on female education and broadening the gender gap. Alternatively, a position of social exclusion could be not only an explanation for lower overall enrollment, but also for gender differences via an indirect effect on the level of modernization. Therefore, this approach would highlight a marginal position within their societies (rather than religion itself) as a reinforcer of traditional values.

The second hypothesis (H2) that we developed discussed the expected differences between the two principal branches of Christianity: Protestantism and Catholicism. In the theoretical background, we argued that previous literature had provided three different explanations to support the more favorable environment of Protestantism: a distinct work ethic, a horizontal character of Protestantism, and a positive influence of the *Sola Scriptura*. Despite the large volume of literature referring to these differences, our results do not allow us to confirm this hypothesis. However, there are two major reasons to explain why this relationship may not hold. First, the heterogeneous character of Protestantism may cause an unclear association with gender roles. As we will further develop in the coming sections, other contextual factors alter the extent to which religion influences individual and collective behavior and, thus, gender roles. In other words, religiosity (rather than religion) might be more influential. In this sense, the heterogeneous character of Protestantism, given its multiple branches, could explain the lack of a significant difference between Catholics and Protestants. Therefore, it is expectable that, in line with Lehrer (1999), religious fundamentalism linked to certain Protestant branches might vanish the positive influence often associated with mainline Protestantism. Second, regarding the hierarchical explanation of this association, Norton and Tomal (2017) argue that institutions, rather than religion itself, could explain those differences. In sub-Saharan Africa, Catholics and Protestants frequently cohabit in the same countries and regions. This might limit the influence of Protestantism via institutions, resulting in an insignificant difference in gender differences in education.

Our third and last hypothesis on the direct influence of religion on the gender gap in education (H3) referred to the influence of Islam compared to traditional religions. In this sense, we expected the marginalization often related to traditional religions to result in larger gender differences with respect to Muslims. This hypothesis is supported by our empirical model. Although in this case the difference is relatively small, the interaction term of our contrast-coded dummy on the difference between these two religious backgrounds (*CC3*) and gender of the child is significant. As in H1, girls suffer from a relative double disadvantage since overall enrollment is also lower for households associated with traditional religions. Despite being in line with our expectations, this outcome contradicts previous literature on the position of women in communities linked to African traditional religions (e.g., Kasongo, 2010; Mbiti, 1988, 1990). A reason for this disagreement might be linked to the inherent cultural traditionalism and association to agrarian communities that hamper and disincentivize investments in female education.

4.4. The role of circumstances

The empirical analysis shows a substantially different influence of micro-and macro-level economic factors (i.e., household's wealth and economic development respectively) on the

influence of religion on the gender gap. Therefore, we will independently discuss this impact, hypothesized in H4 and H5, in the coming sections. In order to analyze it, we will look at the overall picture drawn by the three-way interactions of our model.

4.4.1. *Economic status*

Our fourth hypothesis (H4) related households' economic status, religious backgrounds, and the gender gap in education. In this sense, we theorized that religious influence on gender differences in education is weakened by an improved individual economic context. This hypothesis is supported by our empirical analysis since increases in wealth do not respond to the intuited impact of gender roles associated with different religions. Despite increasing gender differences in overall terms, wealth shows a substantial reduction on the influence of religion. In this sense, we observe that those religions linked to a larger gender gap (Islam and traditional religions) invert the relationship found on the two-way interaction between gender and religion. We should highlight that the difference between the two large religious categories in our analysis is mainly driven by the positive impact of wealth on households adhered to traditional religions rather than an even influence on Islam and traditional religions. Nevertheless, the lack of a distinct impact of wealth on Muslim households and the main two Christian branches would still be in line with our hypothesis. Within Schultz's (1993) framework, this lack of a difference between Muslims and Catholics can be interpreted as a trend to equalize investments in education as (individual) economic conditions are improved. In the case of Muslims, it should also be considered the strong effect of increases in wealth to reduce overall differences with Christians. This outcome suggests that, even though different religious backgrounds may distinctly affect the gender gap in education, these differences can be overcome once economic needs are met. Hence, this would be in line with previous research on the compatibility of Islam and (gender) egalitarian, modern societies (Inglehart & Norris, 2003; Spierings et al., 2009). However, in our case, this relationship is not found as a result of (aggregate) modernization, but of households' economic status.

4.4.2. *Economic development*

The fifth hypothesis (H5) proposed in this thesis referred to the capacity of economic development to reduce the gender gap in education. We theorized that economic development would have an attenuating effect on the influence of religion on the gender gap in education. Our multivariate analysis does not support this hypothesis. Although in overall terms development influences more female than male enrollment, we observe that economic development benefits more girls associated with Catholicism or Protestantism. In other words, girls raised in households classified as traditional worshippers or Muslims, are relatively less influenced by this factor than their male counterparts compared to Catholics. Therefore, although economic development is effective to reduce the overall gender gap in education, paradoxically, it is not to reduce gender differences

across religions. This outcome might be associated with an uneven influence of economic development on education given a situation of social exclusion as previously argued (Glewwe & Ilias, 1996; Kazeem et al., 2010; Lewis & Lockheed, 2008). This explanation is further supported by the strong influence of household wealth on Muslims, which might counterbalance the relatively small effect of (aggregated) economic development. An alternative explanation for this outcome might be related to an underestimation of path dependency. In line with Williamson (2000), values, norms, customs, or traditions, referred to as informal institutions, change very slowly. As a result, it generates this dependency from past generations, once raised at a lower stage of development. Although taking those values and norms as given might be rather unrealistic in our analysis, so might be expecting a strong and rapid influence of development on cultural modernization. Nonetheless, to precisely address the evolution of values and find solid support for this latter explanation, a longitudinal analysis may be required.

4.5. Control variables

4.5.1. Determinants of the gender gap in education

Several control factors have shown a distinct impact on educational enrollment depending on whether the child is a girl or a boy. First, regarding demographic factors, birth order influences more negatively boys than girls. A reason for this finding might be that older sisters might be more likely to leave school to provide childcare for younger siblings, therefore reversing the negative association with birth order found on overall enrollment (Glick & Sahn, 2006; Shapiro & Tambashe, 2000; Smits & Huisman, 2013). However, this explanation might be contradictory with the asymmetric influence of the number of sisters on girls and boys. According to our analysis, having more sisters influences girls' education more negatively. Nevertheless, our analysis does not allow to fully uncover this relationship since we do not control for whether the siblings are younger or older, which might explain these unexpected results. Lastly, whereas there is not a significant difference between girls and boys on the influence of a missing father, lacking a maternal figure has a more negative influence on girls' education.

Second, socioeconomic factors are also determinants of the gender gap in education. The economic position (IWI/100), as briefly outlined in the previous section, reveals that boys benefit more than girls from wealth increases. A reason for this outcome might be associated with a preference for sons' education under strong budget constraints and patriarchal societies (Akresh et al., 2012; Barrera-Osorio et al., 2008). The occupation of the father is also substantially important. The analysis reveals that a higher position of the paternal figure is associated with higher odds of being enrolled for girls than for boys. Occupation of the mother is the other variable that shows a significantly different impact on boys and girls, relatively benefiting more female education. Since the employment of the mother could be associated with a higher position of

women within their households, it could be expected a positive impact on daughters' education. However, our results do not support it. A reason might be that daughters might take over household tasks (Huisman & Smits, 2009), counterbalancing the former positive impact. Regarding the influence of parental education, only the education of the mother has a significant different influence on sons and daughters. In this sense, we find evidence for a positive influence of maternal education to reduce the gender gap.

Finally, modernization factors show that determinants typically associated with patriarchal societies or to a lack of progress have a stronger negative influence on girls' education. The proxy variable for aggregate cultural modernization (average age difference between spouses within the cluster) shows that girls have substantially lower odds to be enrolled than boys as this difference increases. Concerning the variables relative to the level of progress in more general terms, we find a similar relationship. The main variable in this vein would be the regional level of economic development (SHDI). This determinant reveals, as expected, a strong capacity to reduce the gender gap in education. Similarly, living in a rural environment, frequently linked to poorer conditions and infrastructures, is an additional obstacle for girls. Finally, access to education, proxied by the average years of education at the cluster level, has a more positive impact on girls' education. This outcome suggests the importance of access to education to narrow the gender gap in education. In other words, when access is limited, families might favor sons' education. On the contrary, once this constraint is relaxed, girls might benefit relatively more, narrowing the gap. Finally, whereas we do not find evidence for a substantially different influence of belonging to an ethnic minority, belonging to a religious minority has a relatively negative impact on girl's education in comparison with their male counterparts.

4.5.2. *Determinants of overall educational enrollment*

The results are in line with previous research on overall educational enrollment. Regarding demographic factors, age, the number of sisters, and a female household head are related to a higher likelihood for children to be enrolled at school. On the contrary, a higher birth order, the number of brothers, and missing a father or a mother are associated with lower odds of attending to school. Those results are in line with our expectations based on past research. Particularly interesting might the impact of the number of sisters. Although endogeneity derived from the quantity-quality tradeoff might alter the relationship (Angrist et al., 2010; G. S. Becker & Lewis, 1974; Black et al., 2005; Li et al., 2008; Qian, 2009), according to our analysis, this variable has a positive influence on educational enrollment. A reason might be that a higher number of sisters might generate an increased supply of childcare and, therefore, a positive influence on educational enrollment (Glick & Sahn, 2006).

33

Regarding the socioeconomic determinants of school enrollment, our results are also in line with previous research. First, our analysis supports the previously documented existence of strong credit constraints for poor families to enroll their children, substantially reducing their likelihood to be enrolled (Glewwe & Jacoby, 1995). Second, it reveals the influence of parental education as a major determinant of educational enrollment, supporting previous research (Buchmann & Brakewood, 2000; Colclough et al., 2000; Huisman & Smits, 2009; Lloyd & Blanc, 1996; Mukherjee & Das, 2008). However, we find differences in the magnitude of the effect of fathers' and mothers' educational backgrounds compared to Kazeem et al., (2010). Whereas our analysis shows a stronger influence of fathers' education, their study shows the opposite. The reason for these different results might be derived from differences in the empirical analyses. In their study, the authors include education as a categorical value, showing a more positive influence of mother's education only at the secondary level. Since most of the mothers included in our analysis have not completed secondary school, this positive influence might be diminished. Third, paternal employment in a non-farm occupation notably increases the likelihood for a child to be enrolled, supporting previous research (Smits & Huisman, 2013). Lastly, having an employed mother also benefits educational enrollment.

Modernization factors also show a substantial influence overall educational enrollment. Economic development, the percentage of women in non-farm education in the cluster, average years of education in the cluster, and belonging to a religious minority show a positive influence on education. On the contrary, living in a rural area, low age at marriage of the mother, the average age difference between spouses in the cluster, a first child of the mother at a very young age, and belonging to an ethnic minority are associated with lower odds to attend to school. All those relationships are in line with our expectations and with previous literature, except for the dummy to indicate whether the household belongs to a religious minority. As aforementioned, it might be linked to the association of schools to certain religious groups in several countries (Glewwe & Ilias, 1996; Kazeem et al., 2010). Therefore, social exclusion should be understood in terms of power rather than relative demographic weight.

As noted in the theoretical background, religious backgrounds do not only influence the gender gap but also overall education. The regression shows a relatively large difference between the two aggregated groups (Catholics and Protestants, and Islam and traditional religions). It also reveals significant differences within those groups. Catholics are more likely to be enrolled than Protestants, and Muslims are associated with higher odds to be enrolled than children living in households adhered to traditional religions. The two-way interactions with the International Wealth Index (IWI) show that the differences across the two aggregated groups are reduced for richer households, whereas the ones within those groups slightly increase. On the contrary, the influence of economic development (through the Subnational Human Development Index)

reveals to reduce differences across all religious groups. However, the impact on Muslims compared to Catholics and Protestants is not as strong as it might be expected since the coefficient of *CC2* is mainly driven by the influence of traditional religions. A reason for this weaker influence of economic development for Muslims might be related to a condition of social exclusion in several countries (Glewwe & Ilias, 1996; Kazeem et al., 2010). This explanation is further supported by the relatively high value of the standard deviation of the interaction with economic development. Since in certain countries schools are subordinated to other religious organizations, as the region becomes more developed, other religious groups might benefit relatively more from economic development, resulting in this weaker influence for Muslim households. Consequently, whereas our analysis supports that economic development is a major driver of change, it also reveals a substantially different influence across religious groups which, in the case of Muslims, might be related to situations of social exclusion.

4.6.   Robustness tests

Our primary robustness tests entail the use of alternative categorical variables for the religious groups. We first tested our model using the (standard) binary dummy coding with the distinct religious groups. The results are shown in Table A4 (see appendix). According to the regressions, changing the type of dummy variables it does not change the interpretation of the effects of belonging to a religious group. Similarly, we do not find substantial differences in the influence of individual and aggregate economic circumstances on the impact of religion. Nevertheless, the outcomes provide additional insights on the relative influences on the key variables of our analysis. For example, these additional regressions allow to test that the influence of wealth on the reduction of differences between our two main groups was mainly driven by the impact on traditional religions. Secondly, we also tested our empirical model using effect-coded dummies (see Table A5). This approach provides the advantage of testing whether the influence of a religious background significantly differs from the average effect of all religious groups. On the contrary, it does not allow to use any category as reference to test our hypotheses, reason why we discarded to use it as our model. However, this lack of a reference category arguably eases the interpretation of the three-way interactions.

Given the unexpected results of some control factors, we also tested for potential multicollinearity problems among variables of interest that could have been overlooked. First, we tested Variance Inflation Factor (VIF). None of the VIF values concerning our primary variables exceeded a value of 4. Since the generally accepted threshold ranges from 5 to 10 (Alin, 2010; Salmerón et al., 2018), this method did not identify potential threats for the validity of our model. Second, we ran a matrix of bivariate correlations. This procedure led to the same outcome as the VIF regarding the identification of multicollinearity in our model. The Pearson Coefficients of

our primary variables were far below the cutoff value of 0.7 (Berry & Feldman, 2011). Thus, we determined that multicollinearity does not affect the interpretation of our model.

5. Conclusion & discussion

5.1.   Main findings

This study has examined the influence of religious backgrounds on the gender gap in education. Based on a sample of 779,958 children in 29 sub-Saharan African countries, and acknowledging the limitations discussed in Section 5.2, we can draw some conclusions. The results suggest an association between religious backgrounds and gender differences. The main interpretation that we have argued is a connection between religion and values, which might result in a distinct position of women within their communities and households. According to our empirical model, there is a large difference between Catholics and Protestants compared to Muslims and households adhered to traditional religions. We do not find evidence for a distinct impact of Catholicism and Protestantism, contradicting previous research (e.g., S. O. Becker & Woessmann, 2009; Norton & Tomal, 2009, 2017; Woodberry, 2012). On the contrary, there is a significant difference between Islam and traditional religions, being girls associated with the former case relatively more likely to be enrolled.

However, this influence is substantially altered by contextual economic factors. In this sense, we find interesting results regarding the influence of individual and aggregate economic circumstances. Whereas increases in wealth are associated with increases in the gender gap (i.e., relatively more opportunities for boys relative to those of girls), the regressions show the opposite influence regarding differences across religious backgrounds. This outcome suggests that differences between religious backgrounds are likely to be reduced as (individual) economic conditions improve. On the contrary, the impact of economic development shows the opposite relationship, increasing those disparities. We sustain that, particularly in the case of Muslims, the lack of a substantial influence of economic development might be related to a position of social exclusion. Alternatively, it might be linked to a path dependency of values, social norms, and gender roles.

5.2.   Limitations

After discussing the outcome of our analysis, it remains unclear the channel through which religious backgrounds influence educational enrollment and the gender gap in education. Is there a direct effect of religion or does social exclusion explain this relationship? It is rather clear among social scientists that religion influences values and gender roles (e.g., Castells, 1997; de Jong, 2009; Dildar, 2015; Gemignani & Wodon, 2015; Inglehart, 1997; Sherkat, 2000) and, therefore, different religions would lead to different outcomes (as our analysis supports). Hence, there is a strong theoretical background to sustain this argument. On the contrary, social exclusion,

particularly within the context of sub-Saharan Africa, has been relatively more underexplored. For instance, Meerman (2005) distinguishes five sources of social exclusion: stigmatization, subordination, ethnicity (which includes religion), low status, and involuntary minorities[9]. Although we arguably control for certain forms of social exclusion, other forms such as stigmatization or subordination might have been overlooked. Additionally, ethnic-based discrimination may play a substantial role in Sub-Saharan Africa. Despite controlling for whether the household belonged to an ethnic minority, the capacity to fully absorb this phenomenon using this variable is rather moderate. The reason for these omissions is that it would substantially increase the complexity of our analysis.

Second, another limitation regards the extent to which religion influences an individual's life and behavior. Although we include random intercepts at the country, regional and cluster levels, which may arguably absorb part of these variations, we do not fully control for this factor. Indeed, the results of the interactions with individual and aggregate economic factors point at religiosity, rather than religion itself as the factor behind the influence on gender roles and the gender gap in education. Although this topic has been investigated much further within the context of developed countries, the outcomes can also be relevant in our case since similar patterns are reasonably expectable. For instance, a comparative study between Christians and Muslims in the United States (Read, 2003) finds that, once control variables for the level of religiosity are introduced, the typically associated more traditional values of Islam disappear. Therefore, religious identity might become a substantially relevant factor to account for to determine causality (Peek, 2005). Consequently, the present analysis is somewhat limited to explain the relationship between religious backgrounds and gender roles, and the results can only be argued in terms of an association between both variables.

Third, concerning the outcomes of our fourth and fifth hypotheses on the influence of individual and aggregate economic conditions, we should mention the endogenous character of both variables (particularly the latter one) and values. In this thesis, we have assumed a unidirectional relationship from economic development and individual wealth to values and its consequent impact on gender differences in education. Despite this, previous theoretical and empirical research has also explored the opposite direction of causality (Kanbur & Spence, 2010; Schultz, 1990). Since we include a variable to control for the structure of the labor market, the main catalyzer of changes in gender roles and economic development according to those studies, this influence could be argued to be minimized. However, an impact via more egalitarian educational opportunities is also likely to occur. In this sense, better access to education for girls

---

[9] The five forms/sources of social exclusion mentioned by Meerman (2005) are not mutually exclusive, i.e., one person might have a low status and belong to an ethnic minority.

might be beneficial for long-term economic growth and individual wealth in their communities, also resulting in this reverse causality. Given the inclusion of economic development and wealth as an interaction, the alternative solution of using an instrumental variable approach to address endogeneity concerns has not been a viable solution for the present study.

Last, another mistake would be to assume that a reduction in the gender gap in education automatically implies changes in gender roles. This reduction can be considered a necessary but, in no case, a sufficient condition for a more (gender) egalitarian society. Although it might be argued that (in the long-term) it may lead to this outcome, gender differences in education are unlikely to be an optimal indicator of gender roles. Unmeasured differences regarding access to school that can vary over time, such as direct and indirect costs (school fees, uniforms, books, etc.) might distort the influence of religion captured in our empirical analysis. For instance, Lincove (2009) finds a slightly stronger impact of school fees for girls in Nigeria, and Björkman-Nyqvist (2013) finds that this constraint even heavier for poor girls in Uganda. Even though we control for household wealth, as well as for other factors that might disincentivize female educational enrollment (e.g. structure of the labor market), differences in schooling costs across areas with a certain religious dominance might be hidden behind the relationships found in this thesis. Therefore, a reduction in the gender gap in education might be connected to an unmeasured improved access to school without necessarily diminishing the influence of gender roles.

5.3.   Further research

More research is required to precisely address and disentangle the influence of religious backgrounds, social exclusion, and religiosity. Including a large sample of countries limits the capacity to analyze the phenomenon of social exclusion as it can take several forms. For instance, controlling for this factor in terms of power or influence on schools might require a more concrete analysis with a reduced sample of countries. In other words, there is a trade-off between generalizability and the capacity to fully distinguish the influence of religion and social exclusion. In this case, we have opted for the former one since we considered that more relevant insights could be obtained this way due to the relatively scarce literature on this topic, particularly on the influence of economic development and economic status. Furthermore, some concerns regarding the influence of religion on the gender gap remain unsolved. For instance, distinguishing between fundamentalist and mainline Protestants might substantially alter our results on the difference with Catholics, as it has previously occurred with studies in developed countries (e.g., Lehrer, 1999). However, the questions that remain more open for further research concern the influence of micro-and macro-level economic determinants and the evolution of values and gender roles. For instance, given the limitations of gender differences in education to address the influence of gender roles, similar approaches could be applied to research on the gender gap in the labor

market. In this sense, a longitudinal approach to the influence of religion would substantially improve our capacity to address the evolution of values alongside socioeconomic progress.

References

Agbiboa, D. E. (2017). Religion and the making of Nigeria. *The Journal of Modern African Studies*, *55*(4), 712–713. https://doi.org/10.1017/s0022278x17000325

Akresh, R., Bagby, E., De Walque, D., & Kazianga, H. (2012). Child ability and household human capital investment decisions in Burkina Faso. *Economic Development and Cultural Change*, *61*(1), 157–186. https://doi.org/10.1086/666953

Algan, Y., & Cahuc, P. (2006). Job protection: The macho hypothesis. *Oxford Review of Economic Policy*, *22*(3), 390–410.

Alin, A. (2010). Multicollinearity. *Wiley Interdisciplinary Reviews: Computational Statistics*, *2*(3), 370–374. https://doi.org/10.1002/wics.84

Allison, P. D. (2000). Mutiple imputation for missing data. In *Sociological Methods & Research* (Vol. 28, Issue 3, pp. 301–309).

Allison, P. D. (2002). *Multiple Imputation: Basics In: Missing Data*. https://doi.org/10.4135/9781412985079

Ancel, S., & Ficquet, É. (2015). The Ethiopian Orthodox Tewahedo Church (EOTC) and the challenges of modernity. In *Understanding Contemporary Ethiopia: Monarchy, Revolution and Meles Zenawi.* Hurst & Co. Ltd.

Angrist, J., Lavy, V., & Schlosser, A. (2010). Multiple experiments for the causal link between the quantity and quality of children. *Journal of Labor Economics*, *28*(4), 773–823. https://doi.org/10.1086/653830

Anyanwu, J. C. (2016). Accounting for gender equality in secondary school enrollment in Africa. *African Development Review*, *28*(2), 170–191. https://doi.org/10.1111/1467-8268.12188

Arowolo, D. (2010). The effects of Western civilisation and culture on Africa. *Afro Asian Journal of Social Sciences*, *1*(1), 1–13.

Arun, S. (1999). Does land ownership make a difference? Women's roles in agriculture in Kerala, India. *Gender & Development*, *7*(3), 19–27. https://doi.org/10.1080/741923248

Attah, N. E. (2013). Contesting exclusion in a multi-ethnic state: rethinking ethnic nationalism in Nigeria. *Social Identities*, *19*(5), 607–620. https://doi.org/10.1080/13504630.2013.835515

Banerjee, A. V., & Duflo, E. (2012). *Poor economics : a radical rethinking of the way to fight global poverty*. PublicAffairs.

Barrera-Osorio, F., Bertrand, M., Linden, L. L., & Perez-Calle, F. (2008). *Conditional cash transfers in education desing features, peer and sibling effects evidence from a randomized experiment in Colombia* (No. 13890; NBER Working Paper Series). http://www.nber.org/papers/w13890

Barro, R. J. (2001). Human capital and growth. *American Economic Review*, *91*(2), 12–17.

Becker, G. S., & Chiswick, B. R. (1966). Education and the distribution of earnings. *The American Economic Review*, *56*(1), 358–369.

Becker, G. S., & Lewis, H. G. (1974). Interaction between quantity and quality of children. *Journal of Political Economy*, *81*(2), 279–288.

Becker, G. S., & Tomes, N. (1976). Child endowments and the quantity and quality of children. *Journal of Political Economy*, *84*(4), 143–162.

Becker, M. E. (1992). The politics of Women's Wrongs and the Bill of "Rights": A bicentennial perspective. *Law Review*, *59*(1), 453–517. https://www.jstor.org/stable/1599943?seq=1&cid=pdf-reference#references_tab_contents

Becker, S. O., & Woessmann, L. (2009). Was Weber wrong? A human capital theory of protestant economic history. *The Quarterly Journal of Economics*, *124*(2), 531–596. https://academic.oup.com/qje/article-abstract/124/2/531/1905076

Behrman, J. R. (1988). Intrahousehold allocation of nutrients in rural India: Are boys favored? Do parents exhibit inequality aversion. *Oxford Economic Papers*, *40*, 32–54. https://academic.oup.com/oep/article-abstract/40/1/32/2361267

Berry, W. D., & Feldman, S. (2011). Multicollinearity. In *Multiple Regression in Practice* (pp. 38–51). Sage Publications. https://doi.org/10.4135/9781412985208

Björkman-Nyqvist, M. (2013). Income shocks and gender gaps in education: Evidence from Uganda. *Journal of Development Economics*, *105*, 237–253. https://doi.org/10.1016/j.jdeveco.2013.07.013

Black, S. E., Devereux, P. J., & Salvanes, K. G. (2005). The more the merrier? The effect of family size and birth order on children's education. *The Quarterly Journal of Economics*, *120*(2), 669–700. https://academic.oup.com/qje/article-abstract/120/2/669/1933962

Bollen, K. A., Glanville, J. L., & Stecklov, G. (2002). Economic status proxies in studies of fertility in developing countries: Does the measure matter? *Population Studies*, *56*(1), 81–96. https://doi.org/10.1080/00324720213796

Booth, A. L., & Kee, H. J. (2009). Birth order matters: the effect of family size and birth order on educational attainment. *Journal of Population Economics*, *22*(1), 367–397. https://doi.org/10.1007/s00148-007-0181-4

Broverman, I. K., Vogel, S. R., Broverman, D. M., Clarkson, F. E., & Rosenkrantz, P. S. (1972). Sex-role stereotypes: A current appraisal. *Journal of Social Issues*, *28*(2), 59–78. https://doi.org/10.1111/j.1540-4560.1972.tb00018.x

Browning, M., & Chiappori, P. A. (1998). Efficient intra-household allocations: A general characterization and empirical tests. *Econometrica*, *66*(6), 1241–1278. https://www.jstor.org/stable/2999616

Buchmann, C., & Brakewood, D. (2000). Labor structures and school enrollments in developing societies: Thailand and Kenya Compared. *Comparative Education Review*, *44*(2), 175–204.

Cantoni, D. (2015). The economic effects of the protestant reformation: Testing the Weber Hypothesis in the German lands. *Journal of the European Economic Association*, *13*(4), 561–598. https://doi.org/10.1111/jeea.12117

Castells, M. (1997). *The Power of Identity* (Vol. 2). Blackwell Publishing.

Chernichovsky, D. (1985). Socioeconomic and demographic aspects of school enrollment and attendance in rural Botswana. *Economic Development and Cultural Change*, *33*(2), 319–332.

Chiappori, P.-A. (1992). Collective labor supply and welfare. *Journal of Political Economy*, *100*(3), 437–467.

Chiswick, B. R. (1988). Differences in education and earnings across racial and ethnic groups: Tastes, discrimination, and investsments in child quality. *The Quarterly Journal of Economics*, *103*(3), 571–597.

Cinyabuguma, M. M., & Putterman, L. (2010). Sub-Saharan growth surprises: Being heterogeneous, inland and close to the Equator does not slow growth in within Africa.

Journal of African Economies, *20*(2), 217–262. https://doi.org/10.1093/jae/ejq040

Colclough, C., Rose, P., & Tembon, M. (2000). Gender inequalities in primary schooling: The roles of poverty and adverse cultural practice. *International Journal of Educational Development*, *20*, 5–27.

Connelly, R., & Zheng, Z. (2003). Determinants of school enrollment and completion of 10 to 18 year olds in China. *Economics of Education Review*, *22*, 379–388. https://doi.org/10.1016/S0272-7757(02)00058-4

Cooray, A., & Potrafke, N. (2011). Gender inequality in education: Political institutions or culture and religion? *European Journal of Political Economy*, *27*(2), 268–280. https://doi.org/10.1016/j.ejpoleco.2010.08.004

Csapo, M. (1981). Religious, social, and economic factors hindering the education of girls in Northern Nigeria. *Comparative Education*, *17*(3), 311–319. https://doi.org/10.1080/0305006810170307

Cuddy, A. J. C., Wolf, E. B., Glick, P., Crotty, S., Chong, J., & Norton, M. I. (2015). Men as cultural ideals: Cultural values moderate gender stereotype content. *Journal of Personality and Social Psychology*, *109*(4), 622–635. https://doi.org/10.1037/pspi0000027

de Carvalho Filho, I. E. (2012). Household income as a determinant of child labor and school enrollment in Brazil: Evidence from Social Security reform. *Economic Development and Cultural Change*, *60*(2), 399–435. https://doi.org/10.1086/662576

de Jong, E. (2009). *Culture and economics: on values, economics and international business*. Routledge.

Deaux, K., & Lewis, L. L. (1984). Structure of gender stereotypes: Interrelationships among components and gender label. *Journal of Personality and Social Psychology*, *46*(5), 991–1004. https://doi.org/10.1037/0022-3514.46.5.991

Dee, T. S. (2005). A teacher like me: Does race, ethnicity, or gender matter? *American Economic Review*, *95*(1), 158–165.

Delprato, M., Dunne, M., & Zeitlyn, B. (2016). Preschool attendance: a multilevel analysis of individual and community factors in 21 low and middle-income countries. *International Journal of Quantitative Research in Education*, *3*(1), 1–23.

Dildar, Y. (2015). Patriarchal norms, religion and female labor supply: Evidence from Turkey. *World Development*, *76*, 40–61. https://doi.org/10.1016/j.worlddev.2015.06.010

Dollar, D., & Gatti, R. (1999). *Gender Inequality, Income, and Growth: Are Good Times Good for Women?* (No. 1; Gender and Development Working Paper Series).

Doss, C. (2006). The effects of intrahousehold property ownership on expenditure patterns in Ghana. *Journal of African Economies*, *15*(1), 149–180. https://doi.org/10.1093/jae/eji025

Duflo, E., & Udry, C. (2004). *Intrahousehold resource allocation in Cote D'Ivore: Social norms, separate accounts and consumption choices* (No. 10498; NBER Working Paper Series). http://www.nber.org/papers/w10498

Eagly, A. H., & Karau, S. J. (2002). Role congruity theory prejuice toward female leaders. *Psychological Review*, *109*(3), 573–598. https://doi.org/10.1037/0033-295X.109.3.573

Ejrnaes, M., & Portner, C. C. (2004). Birth order and the intrahousehold allocation of time and education. *The Review of Economics and Statistics*, *86*(4), 1008–1019.

Eloundou-Enyegue, P. M., & Williams, L. B. (2006). Family size and schooling in Sub-Saharan African settings: A reexamination. *Demography*, *43*(1), 25–52.

Emerson, P. M., & Souza, A. P. (2007). Child labor, school attendance, and intrahousehold gender bias in Brazil. *Source: The World Bank Economic Review*, *21*(2), 301–316. https://doi.org/10.1093/wber/lhm001

Field, E., & Ambrus, A. (2008). Early marriage, age of menarche, and female schooling attainment in Bangladesh. *Journal of Political Economy*, *116*(5), 881–930.

Fleisher, B., Li, H., & Qiang, M. (2008). *Human capital, economic growth, and regional inequality in China* (No. 3576; IZA Discussion Papers). http://hdl.handle.net/10419/34981

Forsythe, N., Korzeniewicz, R. P., & Durrant, V. (2000). Gender Inequalities and Economic Growth: A Longitudinal Evaluation. *Economic Development and Cultural Change*, *48*(3), 573–617. https://doi.org/10.1086/452611

Galor, O., & Weil, D. N. (1996). The gender gap, fertility, and growth. *The American Economic Review*, *86*(3), 374–387.

Gemignani, R., & Wodon, Q. (2015). Child marriage and faith affiliation in Sub-Saharan Africa: Stylized facts and heterogeneity. *The Review of Faith & International Affairs*, *13*(3), 41–47. https://doi.org/10.1080/15570274.2015.1075752

Glewwe, P. (1996). The relevance of standard estimates of rates of return to schooling for education policy: A critical assessment. *Journal of Development Economics*, *51*, 267–290.

Glewwe, P., & Ilias, N. (1996). The determinants of school attainment in sub-Saharan Africa: A case study of Ghana. *Journal of International Development*, *8*(3), 395–413.

Glewwe, P., & Jacoby, H. G. (1995). An Economic Analysis of Delayed Primary School Enrollment in a Low Income Country: The Role of Early Childhood Nutrition. *The Review of Economics and Statistics*, *77*(1), 156–169.

Glick, P., & Sahn, D. E. (2000). Schooling of girls and boys in a West African country: the effects of parental education, income, and household structure. *Economics of Education Review*, *19*(1), 63–87.

Glick, P., & Sahn, D. E. (2006). The demand for primary schooling in Madagascar: Price, quality, and the choice between public and private providers. *Journal of Development Economics*, *79*(1), 118–145. https://doi.org/10.1016/j.jdeveco.2005.01.001

Goldin, C. (1994). *The U-shaped female labor force function in economic development and economic history* (No. 4707; NBER Working Paper Series).

Gomes, M. (1984). Family size and educational attainment in Kenya. *Population and Development Review*, *10*(4), 647–660.

Grimm, M. (2011). Does household income matter for children's schooling? Evidence for rural Sub-Saharan Africa. *Economics of Education Review*, *30*, 740–754. https://doi.org/10.1016/j.econedurev.2011.03.002

Gündüz-Hoşgör, A., & Smits, J. (2008). Variation in labor market participation of married women in Turkey. *Women's Studies International Forum*, *31*, 104–117. https://doi.org/10.1016/j.wsif.2008.03.003

Hanushek, E. A., & Wößmann, L. (2007). *The role of education quality in economic growth* (No. 4122; Policy Research Working Paper Series). http://econ.worldbank.org.

Hardy, M. A. (1993). *Regression with Dummy Variables*. SAGE Publications. https://doi.org/10.4135/9781412985628

Hauser, R. M., & Sewell, W. H. (1985). Birth order and educational attainment in ful siblinships. *American Educational Research Journal*, *22*(1).

Hoddinott, J., & Haddad, L. (1995). Does female income share influence household expenditures? Evidence from Côte D'Ivoire. *Oxford Bulletin of Economics and Statistics*, *57*(1), 77–96. https://doi.org/10.1111/j.1468-0084.1995.tb00028.x

Hogan, D. P., Berhanu, B., & Hailemariam, A. (1999). Household organization, women's autonomy, and contraceptive behavior in Southern Ethiopia. *Studies in Family Planning*, *30*(4), 302–314. https://doi.org/10.1111/j.1728-4465.1999.t01-2-.x

Hox, J. (2002). *Multilevel Analysis: Techniques and Applications*. Lawrence Erlbaum Associates.

Huisman, J., & Smits, J. (2009). Effects of Household- and District-Level Factors on Primary School Enrollment in 30 Developing Countries. *World Development*, *37*(1), 179–193. https://doi.org/10.1016/j.worlddev.2008.01.007

Huisman, J., & Smits, J. (2015). Keeping children in school: effects of household and context characteristics on school dropout in 363 districts of 30 developing countries. *Sage Open*, *5*(4). https://doi.org/10.1177/2158244015609666

Inglehart, R. (1997). *Modernization and postmodernization: Cultural, economic, and political change in 43 societies*. Princeton University Press.

Inglehart, R., & Norris, P. (2003). The True Clash of Civilizations. *Foreign Policy*, *135*, 62–70.

Jaeger, M. M. (2008). Do large sibships really lead to lower educational attainment? New evidence from quasi-experimental variation in couples' reproductive capacity. *Acta Sociologica*, *51*(3), 217–232. https://doi.org/10.1177/0001699308094167

Kalmijn, M. (1991). Shifting boundaries: Trends in religious and educational homogamy. *American Sociological Review*, *56*(6), 786–800.

Kanbur, R., & Spence, M. (2010). *Equity and Growth in a Globalizing World*.

Kasongo, A. (2010). Impact of globalization on traditional african religions and cultural conflict. *Journal of Alternative Perspectives in the Social Sciences*, *2*(1), 309–322. https://www.researchgate.net/publication/45146292

Kazeem, A., Jensen, L., & Stokes, C. S. (2010). School attendance in Nigeria: Understanding the impact and intersection of gender, urban-rural residence, and socioeconomic status. *Comparative Education Review*, *54*(2), 295–319.

Khan, S., & Hancioglu, A. (2019). Multiple Indicator Cluster Surveys: Delivering robust data on children and women across the globe. *Studies in Family Planning*, *50*(3), 279–286. https://doi.org/10.1111/sifp.12103

Kimura, M., & Yasui, D. (2010). The Galor-Weil gender-gap model revisited: from home to market. *Journal of Economic Growth*, *15*, 323–351. https://doi.org/10.1007/s10887-010-9058-6

King, P. E. (2003). Religion and Identity: The role of ideological, social, and spiritual contexts. *Applied Developmental Science*, *7*(3), 197–204. https://doi.org/10.1207/S1532480XADS0703_11

Klasen, S. (2002). Low schooling for girl, slower growth for all? Cross-country evidence on the effect of gender inequality in education on economic development. *The World Bank Economic Review*, *16*(3), 345–373. https://doi.org/10.1093/wber/lhf004

Klasen, S., & Lamanna, F. (2009). The impact of gender inequality in education and employment on economic growth. *Feminist Economics*, *15*(3), 91–132. https://doi.org/10.1080/13545700902893106

La Porta, R., Lopez-de-Silanes, F., Schleifer, A., & Vishny, R. W. (1996). *Trust in large*

organizations (No. 5864; NBER Working Paper Series).

Lagerlo, N.-P. (2003). Gender equality and long-term growth. *Journal of Economic Growth*, *8*, 403–426.

Lehrer, E. L. (1999). Religion as a determinant of educational attainment: An economic approach. *Social Science Research*, *28*, 358–379.

Lewis, M., & Lockheed, M. (2008). *Social exclusion and the gender gap in education* (No. 4562; Policy Research Working Paper).

Li, H., Zhang, J., & Zhu, Y. I. (2008). The quantity-quality tradeoff of children in a developing country: Identification using Chinese twins. *Demography*, *45*(1), 223–243.

Lincove, J. A. (2008). Growth, girls' education, and female labor: A longitudinal analysis. *The Journal of Developing Areas*, *41*(2), 45–68.

Lincove, J. A. (2009). Determinants of schooling for boys and girls in Nigeria under a policy of free primary education. *Economics of Education Review*, *28*, 474–484. https://doi.org/10.1016/j.econedurev.2008.10.001

Lloyd, C. B., & Blanc, A. K. (1996). Children's schooling in sub-Saharan Africa: The role of fathers, mothers, and others. *Population and Development Review*, *22*(2), 265–298.

Longwe, A., & Smits, J. (2012). Family Planning Outcomes and Primary School Attendance in Sub-Saharan Africa. *Studies in Family Planning*, *43*(2), 127–134. https://doi.org/10.1111/j.1728-4465.2012.00310.x

Mabika, C. M. (2012). School enrollment in the Democratic Republic of the Congo: Family economic well-being , gender , and place of residence. *African Population Studies*, *26*(2), 197–220.

Mankiw, N. G., Romer, D., & Weil, D. N. (1992). A contribution to the empirics of economic growth. *The Quarterly Journal of Economics*, *107*(2), 407–437.

Mantovanelli, F. (2014). Christian missions, HIV and sexual behavior in Sub-Saharan Africa. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2413178

Mapuranga, T. P. (2013). AICs as a gendered space in Harare, Zimbabwe: revisiting the role and place of women. *Studia Historiae Ecclesiasticae*, *39*(2), 303–317.

Mbiti, J. S. (1988). The role of women in African traditional religion. In *Cahiers des Religions* (Vol. 22, pp. 69–82).

Mbiti, J. S. (1990). *African Religions & Philosophy*. Heinemann.

Mckenzie, D. J. (2005). Measuring inequality with asset indicators. *Journal of Population Economics*, *18*, 229–260. https://doi.org/10.1007/s00148-005-0224-7

Meerman, J. (2005). Oppressed people: Economic mobility of the socially excluded. *The Journal of Socio-Economics*, *34*, 542–567. https://doi.org/10.1016/j.socec.2005.07.002

Morgan, M. Y. (1987). The impact of religion on gender-role attitudes. *Psychology of Women Quarterly*, *11*, 301–310.

Mukherjee, D., & Das, A. S. (2008). Role of parental education in schooling and child labour decision: Urban India in the last decade. *Social Indicators Research*, *89*(1), 305–322. https://doi.org/10.1007/s11205-007-9233-0

Mukonyora, I. (2007). *Wandering a gendered wilderness: Suffering & healing in an African initiated church* (Vol. 27). Peter Lang.

Muralidharan, K., & Sheth, K. (2016). Bridging education gender gaps in developing countries: The role of female teachers. *Journal of Human Resources*, *51*(2), 269–293.

Norton, S. W., & Tomal, A. (2009). Religion and female educational attainment. *Journal of Money, Credit and Banking*, *41*(5), 961–986.

Norton, S. W., & Tomal, A. (2017). Hierarchical religions and female education. *Journal of Human Capital*, *11*(4), 487–507. https://doi.org/10.1086/694570

Öhlmann, P., Gräb, W., & Frost, M.-L. (2020). *African Initiated Christianity and the decolonisation of development* (M. Clarke, E. Tomalin, N. Loewen, C. Rakodi, G. Singh, J. Haustein, & C. Duncanson-Hales (eds.)). Routledge.

Oostendorp, R. H. (2009). Globalization and the gender wage gap. *The World Bank Economic Review*, *23*(1), 141–161. https://doi.org/10.1093/wber/lhn022

Oosthuizen, G. (1996). African independent/indigenous churches in the social environment: An empirical analysis. *African Insight*, *26*(4), 1–7.

Oppong, S. H. (2013). Religion and identity. *American International Journal of Contemporary Research*, *3*(6). www.aijcrnet.com

Pastore, F., & Tenaglia, S. (2013). *Ora et non labora? A test of the impact of religion on female labor supply* (No. 7356; IZA Discussion Papers).

Peek, L. (2005). Becoming Muslim" The Development of a Religious Identity. *Sociology of Religion*, *66*, 3–215. https://academic.oup.com/socrel/article-abstract/66/3/215/1665611

Pew Forum. (2010). *Tolerance & Tension: Islam and Christianity in Sub-Saharan Africa*.

Pohlmann, J. T., & Leitner, D. W. (2003). A comparison of Ordinary Least Squares and logistic regression. *Ohio Journal of Science*, *103*(5), 118–125.

Psacharopoulos, G., & Patrinos, H. A. (2004). Returns to investment in education: a further update. *Education Economics*, *12*(2), 111–134. https://doi.org/10.1080/0964529042000239140

Putnam, R. D. (1993). The prosperous community: Social capital and public life. In *The American Prospect* (Vol. 13, Issue 4).

Qian, N. (2009). *Quantity-quality and the one child policy: The only-child disadvantage in school enrollment in rural China* (No. 14973; NBER Working Paper Series). http://www.nber.org/papers/w14973

Read, J. 'Nan G. (2003). The sources of gender role attitudes among Christian and Muslim Arab-American women. *Sociology of Religion*, *64*, 2–207. https://academic.oup.com/socrel/article-abstract/64/2/207/1636138

Rosenzweig, M. R., & Schultz, T. P. (1982). Market opportunities, genetic endowments and intrafamily resource distribution: Child survival in rural India. *The American Economic Review*, *72*(4), 803–814.

Salmerón, R., García, C. B., & García, & J. B. (2018). Variance Inflation Factor and Condition Number in multiple linear regression. *Journal of Statistical Computation and Simulation*, *88*(12), 2365–2384. https://doi.org/10.1080/00949655.2018.1463376

Schrijner, S., & Smits, J. (2018a). Grandmothers and children's schooling in sub-Saharan Africa. *Human Nature*, *29*, 65–89. https://doi.org/10.1007/s12110-017-9306-y

Schrijner, S., & Smits, J. (2018b). Grandparents and children's stunting in sub-Saharan Africa. *Social Science and Medicine*. https://doi.org/10.1016/j.socscimed.2018.03.037

Schultz, T. P. (1990). *Returns to Women's Education* (No. 603; Center Discussion Paper). http://hdl.handle.net/10419/160525

Schultz, T. P. (1993). Investments in the Schooling and Health of Women and Men: Quantities and Returns. *The Journal of Human Resources*, *28*(4), 694–734.

Seebens, H. (2011). Intra-household bargaining , gender roles in agriculture and how to promote welfare enhancing changes. *ESA Working Paper*, *11*, 47.

Sen, A. (1989). Development as capability expansion. *Journal of Development Planning*, *19*, 41–58.

Shapiro, D., & Tambashe, B. O. (2000). Gender, poverty, family structure, and investments in children's education in Kinshasa, Congo. *Economics of Education Review*, *20*, 359–375.

Shehu, H. K. (2018). Factors influencing primary school non-attendance among children in North West Nigeria. *Literacy Information and Computer Education Journal*, *9*(2), 2916–2922.

Sherkat, D. E. (2000). "That They Be Keepers of the Home": The effect of conservative religion on early and late transitions into housewifery. *Review of Religious Research*, *41*(3), 344–358.

Smits, J., & Gündüz-Hoşgör, A. (2006). Effects of family background characteristics on educational participation in Turkey. *International Journal of Educational Development*, *26*, 545–560. https://doi.org/10.1016/j.ijedudev.2006.02.002

Smits, J., & Huisman, J. (2013). Determinants of educational participation and gender differences in education in six Arab countries. *Acta Sociologica*, *56*(4), 325–346. https://doi.org/10.1177/0001699313496259

Smits, J., & Permanyer, I. (2019). The Subnational Human Development Database. *Scientific Data*, *6*(190038). https://doi.org/10.1038/sdata.2019.38

Smits, J., & Steendijk, R. (2015). The International Wealth Index (IWI). *Social Indicators Research*, *122*(1), 65–85. https://doi.org/10.1007/s11205-014-0683-x

Spierings, N., Smits, J., & Verloo, M. (2009). On the compatibility of Islam and gender equality. Effects of modernization, state islamization, and democracy on women's labor market in 45 Muslim countries. *Social Indicators Research*. https://doi.org/10.1007/s11205-008-9274-z

Srinivasan, K. (1988). Modernization, contraception and fertility change in India. *Family Planning Perspectives*, *14*(3), 94–102.

Stiglitz, J. E., Sen, A., & Fitoussi, J.-P. (2009). *Report by the Commission on the Measurement of Economic Performance and Social Progress*.

Symes, D. (1991). Changing gender roles in productionist and post-productionist capitalist agriculture. *Journal of Rural Studies*, *7*(1–2), 85–90. https://doi.org/10.1016/0743-0167(91)90046-U

Thomas, D. (1990). Intra-household resource allocation: An inferential approach. In *The Journal of Human Resources* (Vol. 25, Issue 4).

Todaro, M. P., & Smith, S. C. (2015). *Economic Development* (12th ed.). Pearson.

Tomes, N. (1983). Religion and the rate of return on human capital: Evidence from Canada. *The Canadian Journal of Economics*, *16*(1), 122–138.

Travis, R., & Kohli, V. (1995). The birth order factor: Ordinal position, social strata, and educational achievement. *The Journal of Social Psychology*, *135*(4), 499–507. https://doi.org/10.1080/00224545.1995.9712218

Tzannatos, Z. (1999). Women and labor market changes in the global economy: Growth helps, innequalities hurt, and public policy matters. *World Development*, *27*(3), 551–569.

UNESCO. (2018). *Global education monitoring report gender review: meeting our commitments to gender equality in education*. UNESCO.

Vasudeva Dutta, P. (2007). Returns to education: New evidence for India, 1983-1999. *Education Economics*, *14*(4), 431–451. https://doi.org/10.1080/09645290600854128

Verbeek, M. (2005). Models with limited dependent variables. In *A Guide to Modern Econometrics* (pp. 206–277). Wiley.

Voicu, M. (2009). Religion and Gender across Europe. *Social Compass*, *56*(2), 144–162. https://doi.org/10.1177/0037768609103350

Weber, M. (1930). *The Protestant ethic and the ¨spirit¨ of capitalism*. Scribner´s.

Wendorf, C. A. (2004). Primer on multiple regression coding: Common forms and the additional case of repeated contrasts. *Understanding Statistics*, *3*(1), 47–57. https://doi.org/10.1177/017084068800900203

Wilcox, C., & Jelen, T. G. (1991). Effects of employment and religion on women's feminist attitudes. *The International Journal for the Psychology of Religion*, *1*(3), 161–171. https://doi.org/10.1207/s15327582ijpr0103_3

Williamson, O. E. (2000). The New Institutional Economics: Taking stock, looking ahead. *Journal of Economic Literature*, *38*(1), 595–613.

Woodberry, R. D. (2012). The missionary roots of liberal democracy. *The American Political Science Review*, *106*(2), 244–274. https://doi.org/10.1017/S0003055412000093

Youniss, J., McLellan, J. A., & Yates, M. (1999). Religion, community service, and identity in American youth. *Journal of Adolescence*, *22*(2), 243–253. https://doi.org/10.1006/jado.1999.0214

Youssef, N. H. (1974). *Women and work in developing societies*. Institute of International Studies, University of California.

Zajonc, R. B. (1976). Family configuration and intelligence. *Science, New Series*, *192*(4236), 227–236.

Appendix

Table A1. Enrollment rates of children between 8 and 14 years per country sub-Saharan Africa (%).

Country	Overall	Girls	Boys	Difference (Boys-Girls)
Central Africa				
Angola	78.32	77.47	79.17	1.70
Cameroon	87.42	85.08	89.67	4.59
Chad	51.72	51.92	57.16	5.24
Democratic R. of Congo	84.27	81.97	86.55	4.58
Gabon	96.78	96.74	96.81	0.07
Republic of Congo	94.25	93.87	94.61	0.74
Sao Tome and Principe	93.51	94.72	92.35	-2.37
Eastern Africa				
Burundi	84.22	84.29	84.16	-0.13
Ethiopia	60.75	59.43	61.99	2.56
Kenya	91.81	91.29	92.31	1.02
Malawi	92.26	92.66	91.85	-0.81
Mozambique	79.56	78.36	80.78	2.42
Rwanda	90.55	91.55	89.53	-2.02
Tanzania	83.12	83.93	82.33	-1.60
Uganda	90.26	89.41	91.12	1.71
Zambia	84.16	84.57	83.74	-0.83
Zimbabwe	93.67	94.49	92.86	-1.63
Southern Africa				
Eswatini	91.74	92.53	90.94	-1.59
Lesotho	92.74	96.61	88.85	-7.76
Namibia	92.12	93.09	91.13	-1.96
Western Africa				
Benin	69.15	63.76	74.13	10.37
Burkina Faso	34.84	31.19	38.28	7.09
Ghana	81.26	81.22	81.30	0.08
Guinea	56.82	51.92	61.71	9.79
Ivory Coast	64.60	60.54	68.59	8.05
Mali	47.91	44.04	51.85	7.81
Nigeria	73.49	70.79	76.11	5.32
Sierra Leona	76.27	76.66	75.89	-0.77
Togo	88.66	86.30	90.91	4.61

Source: Demographic and Health Surveys (DHS) 2000-2018 (www.dhsprogram.com)

Table A2. School enrollment rates of children between 8 and 14 years old and gender differences (boys-girls) by religion and country (%).

	Catholics		Protestants		Muslims		Traditional		Christians. not specified		Other	
	Total	Difference	Total	Difference	Total	Difference	Total	Difference	Total	Difference	Total	Difference
Central Africa												
Angola	79.63	0.12	81.1	2.26	64.86	12	73.44	1.46	N/D	N/D	71.68	3.44
Cameroon	94.38	2.62	93.85	2.88	69.56	10.17	71.16	12.9	94.95	0.85	84.54	4.57
Chad	81.44	5.54	86.56	5.26	38.53	11.39	61.17	16.32	94.12	2.93	47.03	14.47
Democr. R. of Congo	83.79	4.25	82.78	5.4	85.23	1.49	74.45	1.32	87.29	4.54	80.52	4.65
Gabon	97.32	0.06	97.76	1.46	93.46	-0.41	97.74	-0.95	96.67	-0.25	95.55	-0.41
Republic of Congo	94.42	-0.18	95.51	1.24	93.22	2.03	91.43	18.75	91.38	0.27	92.93	0.77
Sao Tome and Principe	93.91	-3.08	95.48	-2.9	N/D	N/D	86.36	1.25	87.1	-1.26	93.28	-0.59
Eastern Africa												
Burundi	85.55	-0.92	83.42	0.9	88.33	0.99	N/D	N/D	N/D	N/D	78.23	-0.29
Ethiopia	69.98	3.95	67.29	5.46	53.98	6.24	39.4	10.02	67.52	-3.28	54.87	4.68
Kenya	93.78	0.89	N/D	N/D	77.17	5.38	N/D	N/D	97.3	-0.32	86.29	3.43
Malawi	94.24	-0.65	95.29	-0.39	98.83	-0.62	N/D	N/D	92.53	-1	88.79	-1.28
Mozambique	82.64	2.47	85.8	2.21	69.39	6.13	N/D	N/D	92.53	-1	88.79	-1.28
Rwanda	91.14	-2.27	91.18	-1.64	92.83	-0.32	N/D	N/D	N/D	N/D	84.79	-3.56
Tanzania	88.3	-1.06	86.06	0.51	84.99	-2.44	N/D	N/D	N/D	N/D	70.97	-2.49
Uganda	86.38	3.22	95.13	0.02	94.13	2.24	N/D	N/D	N/D	N/D	88.91	1.03
Zambia	82.84	-0.84	84.81	-1.4	86.92	3.57	N/D	N/D	N/D	N/D	77.81	-0.25
Zimbabwe	95.17	1	94.35	-2.13	96.49	8.15	89.41	91.5	N/D	N/D	91.24	-2.59
Southern Africa												
Eswatini	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	92.4	-1.14	88.74	-3.68
Lesotho	92.2	-8.43	94.6	-5.83	N/D	N/D	N/D	N/D	91.5	-8.55	91.72	-8.89

Table A2. (Continued).

	Catholics		Protestants		Muslims		Traditional		Christians. not specified		Other	
	Total	**Difference**	**Total**	**Difference**	**Total**	**Difference**	**Total**	**Difference**	**Total**	**Difference**	**Total**	**Difference**
Namibia	90.97	-1.13	93.46	-1.91	N/D	N/D	N/D	N/D	N/D	N/D	88.34	-3.14
Western Africa												
Benin	80.59	10.07	76.75	11.63	55.83	5.83	66.82	15.63	78.55	12.27	64.89	11.83
Burkina Faso	47.71	7.48	47.27	1.02	34.6	6.58	17.27	10.82	N/D	N/D	27.59	10.17
Ghana	84.31	-2.88	85.12	2.68	74.98	2.58	64.74	-1.22	82.95	0.95	82.51	-0.96
Ginea	N/D	N/D	N/D	N/D	55.92	8.85	67.74	5.84	74.29	12.34	49.43	16.45
Ivory Coast	77.68	9.34	78.93	8.71	62.2	9.92	48.13	6.13	79.37	8.97	63.79	9.14
Mali	N/D	N/D	N/D	N/D	43.03	7.38	37.58	15.7	66.76	5.43	37.01	8.85
Nigeria	93	0.53	93.71	0.08	55.42	10.01	65.6	3.66	94.86	-0.02	78.45	3.65
Sierra Leona	N/D	N/D	N/D	N/D	75.06	-1.75	85.29	-17.65	84.45	0.83	69.33	3.65
Togo	93.55	4.17	93.16	3.11	88.09	4.62	82.74	8.24	92.78	3.53	86.56	3.34

Source: Demographic and Health Surveys (DHS) 2000-2018 (www.dhsprogram.com)

Table A3. Multilevel logistic regression analysis of school enrolment (dependent variable) of children aged between 8 and 14 years old in 29 sub-Saharan countries (full model).

Parameter	Estimate	Odds ratio	Std. Error
Intercept	-0.446***	0.634	0.021
Religion (contrast cod.) dummies†			
CC1	0.004***	1.004	0.001
CC2	0.059***	1.061	0.002
CC3	0.006***	1.006	0.001
CC4	-0.008***	0.992	0.002
CC5	0.010***	1.010	0.001
Interactions of interest			
Girl * IWI (/100)	-0.044***	0.957	0.005
Girl * SHDI	0.049***	1.050	0.012
Girl * CC1	-0.001	0.999	0.001
Girl * CC2	0.033***	1.033	0.003
Girl * CC3	0.016***	1.017	0.003
Girl * CC4	-0.033***	0.967	0.003
Girl *CC5	-0.006***	0.994	0.002
SHDI * CC1	-0.062***	0.940	0.010
SHDI * CC2	-0.260***	0.771	0.020
SHDI * CC3	-0.254***	0.776	0.017
SHDI * CC4	-0.244***	0.784	0.019
SHDI * CC5	0.080***	1.083	0.010
Girl * SHDI * CC1	0.005	1.005	0.018
Girl * SHDI * CC2	0.140***	1.150	0.036
Girl * SHDI * CC3	0.037	1.039	0.030
Girl * SHDI * CC4	0.013	1.014	0.034
Girl * SHDI * CC5	0.106***	1.112	0.019
IWI (/100) * CC1	0.012***	1.013	0.003
IWI (/100) * CC2	-0.340**	0.712	0.008
IWI (/100) * CC3	0.045***	1.047	0.008
IWI (/100) * CC4	0.199***	1.220	0.008
IWI (/100) * CC5	0.057***	1.059	0.004
Girl * IWI (/100) * CC1	-0.013*	0.987	0.006
Girl * IWI (/100) * CC2	-0.073***	0.930	0.016
Girl * IWI (/100) * CC3	-0.069***	0.933	0.015
Girl * IWI (/100) * CC4	0.046**	1.047	0.015
Girl * IWI (/100) * CC5	0.010	1.010	0.008
Demographic factors			
Birth order	-0.001***	0.999	0.000
Girl	-0.033***	0.967	0.001
Age	0.139***	1.149	0.003
Age squared	-0.006***	0.994	0.000

Table A3. (Continued).

Parameter	Estimate	Odds ratio	Std. Error
Number of brothers	0.000	1.000	0.000
Number of sisters	0.004***	1.004	0.000
Mother missing	-0.017***	0.983	0.003
Father missing	-0.031***	0.969	0.002
Female household head	0.030***	1.030	0.001
Age of the mother at 1st child <15	-0.001	0.999	0.002
Socioeconomic factors			
IWI (/100)	0.070***	1.073	0.003
Education father (years)	0.008***	1.008	0.000
Education mother (years)	0.001***	1.001	0.000
Mother employed	0.019***	1.020	0.001
Occupation father (ref = farm)			
Lower non-farm	0.033***	1.034	0.001
Upper non-farm	0.018***	1.018	0.002
Modernization factors			
SHDI	0.585***	1.795	0.011
% of women in non-farm occ. cluster	0.000***	1.000	0.000
Rural	-0.026***	0.974	0.001
Age at marriage mother young	-0.004**	0.996	0.002
Ethnic minority	-0.009***	0.991	0.001
Religious minority	0.009***	1.009	0.001
Avge. education cluster (years)	0.059***	1.061	0.000
Avge. age difference spouses cluster	-0.001***	0.999	0.000
Control interactions (Girl * *variable*)			
Birth order	0.001**	1.001	0.000
Age	0.009	1.009	0.005
Age squared	-0.001**	0.999	0.000
Number of brothers	0.001	1.001	0.001
Number of sisters	-0.002**	0.998	0.001
Mother missing	0.004	1.004	0.005
Father missing	-0.004	0.996	0.004
Female household head	0.004	1.004	0.003
Age of the mother at 1st child <15	-0.001	0.999	0.003
Education father (years)	0.000	1.000	0.000
Education mother (years)	0.002***	1.002	0.000
Mother employed	0.001	1.001	0.002
Occupation father (ref = farm)			
Lower non-farm	0.012***	1.012	0.003
Upper non-farm	0.014**	1.015	0.005
% of women in non-farm occ. cluster	-0.001***	0.999	0.000
Rural	-0.015***	0.985	0.002

Table A3. (Continued)

Parameter	Estimate	Odds ratio	Std. Error
Age at marriage mother young	0.000	1.000	0.003
Ethnic minority	0.000	1.000	0.002
Religious minority	-0.009***	0.991	0.002
Avge. education cluster (years)	0.011***	1.012	0.001
Avge. age difference spouses cluster	0.003***	1.003	0.000
Random intercepts			
Country-level variance	0.006***	1.006	0.002
Region-level variance	0.004***	1.004	0.000
Cluster-level variance	0.001***	1.001	0.000
N = 779,958			

***$p<0.001$, **$p<0.01$, *$p<0.05$
†CC1: Difference between Catholics and Protestants; CC2: Difference between Catholics and Protestants, and Muslims and Traditional Religions; CC3: Difference between Muslims and traditional religions; CC4: Difference between Catholics, Protestants, Muslims, and traditional religions and unspecified Christians and residual category; CC5: Difference between unspecified Christians and residual category.

Table A4. Models 2 to 7. Estimates using binary dummy variables (reduced).

Parameter	M2	M3	M4	M5	M6	M7
Intercept	-0.415***	-0.423***	-0.472***	-0.484***	-0.433***	-0.452***
Religion dummies						
Catholic		0.008***	0.057***	0.069***	0.018***	0.038***
Protestant	-0.008***		0.049***	0.061***	0.010***	0.029***
Muslim	-0.057***	-0.049***		0.012***	-0.039***	-0.019***
Traditional rel.	-0.069***	-0.061***	-0.012***		-0.051***	-0.032***
Christian N.S.	-0.018***	-0.010***	0.039***	0.051***		0.020***
Other/Unknown	-0.038***	-0.029***	0.019***	0.032***	-0.020***	
Interactions of interest						
Girl * IWI (/100)	-0.044***	-0.044***	-0.044***	-0.044***	-0.044***	-0.044***
Girl * SHDI	0.049***	0.049***	0.049***	0.049***	0.049***	0.049***
Girl * Catholic		-0.001	0.016***	0.049***	-0.015***	-0.003
Girl * Protestant	0.001		0.017***	0.050***	-0.014***	-0.002
Girl * Muslim	-0.016***	-0.017***		0.033***	-0.031***	-0.019***
Girl * Traditional rel.	-0.049***	-0.050***	-0.033***		-0.064***	-0.052***
Girl * Christian N.S.	0.015***	0.014***	0.031***	0.064***		0.012***
Girl * Other/Unknown	0.003	0.002	0.019***	0.052***	-0.012***	
SHDI * Catholic		-0.123***	-0.068***	-0.575***	-0.294***	-0.454***
SHDI * Protestant	0.123***		0.055**	-0.452***	-0.171***	-0.331***
SHDI * Muslim	0.068***	-0.055**		-0.507***	-0.226***	-0.386***
SHDI * Traditional rel.	0.575***	0.452***	0.507***		0.281***	0.121***
SHDI * Christian N.S.	0.294***	0.171***	0.226***	-0.281		-0.160***
SHDI * Other/Unknown	0.454***	0.331***	0.386***	-0.121**	0.160***	
Girl * SHDI * Catholic		0.011	0.108***	0.182***	0.191***	-0.021
Girl * SHDI * Protestant	-0.011		0.097**	0.171***	0.181***	-0.031
Girl * SHDI * Muslim	-0.108***	-0.097**		0.074***	0.083*	-0.129***
Girl * SHDI * Traditional rel.	-0.182**	-0.171**	-0.074		0.009	-0.203**
Girl * SHDI * Christian N.S.	-0.191***	-0.181***	-0.083*	-0.009***		-0.212***
Girl * SHDI * Other/Unknown	0.021	0.031	0.129***	0.203***	0.212***	
IWI (/100) * Catholic		0.025***	-0.373***	-0.282***	0.049***	-0.065***
IWI (/100) * Protestant	-0.025***		-0.398***	-0.307***	0.024***	-0.090***
IWI (/100) * Muslim	0.373***	0.398***		0.091***	0.422***	0.307***
IWI (/100) * Traditional rel.	0.282***	0.307***	-0.091***		0.331***	0.216***
IWI (/100) * Christian N.S.	-0.049***	-0.024***	-0.422***	-0.331***		-0.114***
IWI (/100) * Other/Unknown	0.065***	0.090***	-0.307***	-0.216***	0.114***	
Girl * IWI (/100) * Catholic		-0.025***	-0.016	-0.154***	-0.004	-0.024
Girl * IWI (/100) * Protestant	0.025*		0.009	-0.129***	0.021	0.001
Girl * IWI (/100) * Muslim	0.016	-0.009		-0.138***	0.012	-0.008
Girl * IWI (/100) * Traditional rel.	0.154***	0.129***	0.138***		0.150***	0.130***
Girl * IWI (/100) * Christian N.S.	0.004	-0.021	-0.012	-0.150***		-0.020
Girl * IWI (/100) * Other/Unknown	0.024	-0.001	0.008	-0.130***	0.020	

***p<0.001, **p<0.01, *p<0.05
Reference categories: M2 Catholics, M3 Protestants, M4 Muslims, M5 Traditional religions, M6 Unspecified Christians, M7 Other/Unknown.

Table A5. Model 8. Effect Coding Dummies (reduced)

Parameter	Estimate	Odds ratio	Std. Error
Intercept	-0.456***	0.634	0.021
Religion dummies			
Catholic	0.032***	1.032	0.001
Protestant	0.023***	1.024	0.001
Muslim	-0.025***	0.975	0.001
Traditional rel.	0.014***	1.014	0.001
Christian N.S.	-0.038***	0.963	0.002
Interactions of interest			
Girl * IWI (/100)	-0.043***	0.958	0.005
Girl * SHDI	0.048***	1.050	0.012
Girl * Catholic	0.008***	1.008	0.002
Girl * Protestant	0.009***	1.009	0.002
Girl * Muslim	-0.008***	0.992	0.002
Girl * Traditional rel.	-0.041***	0.960	0.004
Girl * Christian N.S.	0.022***	1.023	0.002
SHDI * Catholic	-0.257***	0.774	0.013
SHDI * Protestant	-0.133***	0.876	0.014
SHDI * Muslim	-0.185***	0.831	0.013
SHDI * Traditional rel.	0.332***	1.394	0.027
SHDI * Christian N.S.	0.043**	1.044	0.014
Girl * SHDI * Catholic	0.080**	1.083	0.025
Girl * SHDI * Protestant	0.069**	1.071	0.025
Girl * SHDI * Muslim	-0.029	0.971	0.021
Girl * SHDI * Traditional rel.	-0.105*	0.900	0.049
Girl * SHDI * Christian N.S.	-0.112***	0.894	0.025
IWI (/100) * Catholic	-0.107***	0.898	0.005
IWI (/100) * Protestant	-0.134***	0.875	0.005
IWI (/100) * Muslim	0.268***	1.307	0.005
IWI (/100) * Traditional rel.	0.174***	1.190	0.012
IWI (/100) * Christian N.S.	-0.160***	0.852	0.005
Girl * IWI (/100) * Catholic	-0.038***	0.963	0.010
Girl * IWI (/100) * Protestant	-0.013	0.987	0.009
Girl * IWI (/100) * Muslim	-0.021*	0.979	0.009
Girl * IWI (/100) * Traditional rel.	0.120***	1.127	0.024
Girl * IWI (/100) * Christian N.S.	-0.034**	0.967	0.010

***p<0.001, **p<0.01, *p<0.05