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The Daughter Effect: How the Sex of Offspring Influences Fathers' Attitudes Toward Intimate Partner Violence

Evidence from Sub-Saharan Africa

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ABSTRACT

Violence against women is to date one the most prevalent and destructive human right violations in the world (UN, 2020). Yet, our understanding of how violent attitudes are shaped and developed, is rather limited (Picon, et al., 2017). This thesis contributes to the literature by providing new insight on how the sex of offspring impacts sub-Saharan African fathers' attitudes toward intimate partner violence.

Using two-stage least squares regression analysis with time and country fixed effects, the relative effect of having daughters, compared to sons, on men's justification of 15 separate acts of violation is estimated. The findings propose that fathers with daughters are significantly less justifying of physical violence, sexual assaults and controlling behaviour toward intimate partners. Specifically, conditional on the total number of children, men are 1.4 per cent less justifying of wife beating for every daughter they parent. Likewise, for every child being a daughter, fathers are 4.2 per cent less likely to consider either anger, refused financial support, rape or unfaithfulness as appropriate reactions if wife refuses to have sex. Fathers with daughters are also relatively more unlikely to believe that the man should have the final say on the making of large household purchases and number of children to have.

The findings are consistent and statistically significant in 10 out of 15 attitude measures using single hypothesis testing, in 9 measures using the Romano-Wolf stepwise testing and in 8 measures using the Bonferroni-correction. Yet, the opposite case is only detected in 1 of 15 of measures. The findings propose that daughters have a relatively softening effect on the development of attitudes tolerant toward violence.

PREFACE

This work marks the end of my five-year study at the Norwegian School of Economics (NHH) and by that my Master of Science in Economics and Business Administration. The thesis was written as part of a Major in Economics and amounts to 30 ETC.

Working on the thesis has been a demanding, yet fulfilling, challenge. Given my great passion for gender equality, I found it particularly rewarding to apply knowledge accumulated throughout my study to a field of high societal importance.

For their contribution and encouragement, there are some people I would like to acknowledge. First and foremost, I would like to express my sincere gratitude to my supervisor, Assistant Professor Vincent Somville, for giving generous feedback throughout the process. Moreover, I thank him for providing extraordinary online follow-up, enabling me to spend the semester in California. I would also like to hand a big thank you to my family and my partner, Jens, for always cheering on me.

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1. INTRODUCTION

The United Nations (2020) determines violence against women as “one of the most widespread, persistent and devastating human rights violations in our world today. Yet, our understanding of how hostile attitudes toward women are shaped and developed, is rather limited (Picon, et al., 2017). Given that the vast majority of violence against women is committed by male intimate partners, it is highly relevant to investigate potential risk factors for inherent acceptance of intimate partner violence (IPV) in men.

The World Health Organization (2017) defines IPV as “behaviour by an intimate partner or ex-partner that causes physical, sexual or psychological harm, including physical aggression, sexual coercion, psychological abuse and controlling behaviours”. It is estimated that around one-third of all women at some point in their lifetime will become victim of IPV (WHO, 2017). In some sub-Saharan African countries this estimate more than doubles (Devries, et al., 2013)

The occurrence of IPV entails enormous costs for victims and the society. The U.S. IPV lifetime cost is estimated to $103 767 per female victim, nearly five times higher compared to male victims (Peterson, et al., 2018). The allocation of costs varies greatly across victims, depending on the quality of social security systems and victims’ access to these systems. Regardless, the victim itself suffer great costs related to immediate or persistent health problems, the risk of complications and recurrence, reduced quality of life or ultimately an ended life. Beyond this, IPV represents massive opportunity costs for the society, mainly in form of increased social security payments, reduced workforce, productivity loss and bounded capacity in the sectors of health and criminal justice, in particular (Duvvury, Grown, & Redner, 2004; Peterson, et al., 2018). Investing in the right preventing measures can thus yield great return, not only in form of saved lives, but also through substantially reduced costs for the society.

The United Nations are promoting gender equality as one of their seventeen sustainable development goals, aiming to combat gender inequality by 2030 (UN, 2015). It is therefore an urgent call for a broader understanding of the underlaying causes and preventors of gender-based violence. This thesis contributes to this by identifying the relative effect of having daughters, compared to sons, on justification of IPV in fathers. The analysis is applied to sub-Saharan Africa, which to date is the region in the world with the highest rate of IPV (García-Moreno, et al., 2013).

2. LITERATURE REVIEW

This chapter provides an overview of the findings from the emerging literature on the formation of attitudes tolerant toward domestic violence and the daughter effect.

2.1 Literature on attitudes toward intimate partner violence

Attitudes toward IPV are, in particular, shaped by sociocultural factors and gender-roles (Flood & Please, 2009; Nayak, Byrne, Martin, & Abraham, 2003). Yet, there are documented multitude factors on the individual and household level potentially determining the acceptance of violence. Tran Nguyen and Fisher (2016) find that acceptance of IPV decreases by age, making young adults more susceptible to hold violent attitudes. Moreover, the authors document findings proposing that people who never engage in intimate relationships are significantly less accepting of IPV. In Tanzania, the strongest association with risk of approval of wife abuse is when both partners hold tolerant views (Vyas & Jansen, 2018), whilst in Latin America and the Caribbean, high fertility is proven to scale up the justification of IPV (Bucheli & Rossi, 2019).

Several risk factors of domestic violence are also associated with attitudes tolerant toward IPV. In particular, poverty, lack of education, and witnessing of violence have proven to be accelerating justification and perpetration of domestic violence (Capaldi, Knoble, & Shortt, 2012; Flood & Please, 2009). Nevertheless, we observe great variations between similarly disadvantaged areas across the African continent, indicating that the detected risk factors do not fully explain the scope (Bamiwuye & Odimegwu, 2014).

Widespread acceptance of IPV is found to be consistent with high rates of violence (Kishor & Subaiya, 2018). Moreover, males are significantly more likely to commit acts of violations when believing that physical violence is acceptable (Ali, Swahn, & Sterling, 2011). It is therefore vital to obtain a broader understanding of how attitudes tolerant toward IPV are being influenced, in order to organise effective prevention strategies. African females also run the highest risk of becoming victim of homicide by intimate partners, emphasizing the need for a broader understanding of toleration of violence in the region. (UNODC, 2018).

2.2 Literature on the daughter effect

It is a common saying that daughters bring out their father's "softer side". The literature on the topic indicate that there actually is some truth to this statement. Men raising daughters have shown to adopt behaviours more favourable to women in different domains. Brain scans and recordings of parent's daily interactions revile that fathers tend to approach their daughters more gently compered to their sons (Mascaro, Hackett, Rilling, & Rentscher, 2017). This include being more responsive, attentive and accepting of the needs and feelings of their daughters.

In study on child gender and parent's commitment to gender equality, Warner and Steel claim that "people who parent only daughters are more likely to hold feminist views" (1999). In recent years, multiple findings have identified the daughter effect on parents voting behaviour. In a study on British parents' political orientations, the authors document that having daughters increases parent's propensity to vote on left-wing parties (Oswald & Powdthavee, 2010). Having sons, by contrast, seems to make people more likely to support the right-wing. The authors argue that because parents care about the well-being of their children, they internalize some of the children's preferences. Explicitly, since women tend to have a stronger preference for government services, fathers with daughters also emphasize these values in their voting behaviour. Consistent evidence has also been reported from the United States; Washington (2008) discovered that congressmen are more prone to vote liberally when they have more daughters, whilst Glynn and Sen found that "judges with daughters consistently vote in a more feminist fashion on gender issues than judges who have only sons" (2015, s. 37).

The daughter effect has also been documented in other. Gompers and Wang (2017) revealed that parents with more daughters have a higher propensity to employ female partners by venture capital firms. Moreover, it is recently documented evidence implying that fathers who have a firstborn daughter, instead of a firstborn son, are considerably less likely to resort to violence against their partner (Somville, 2019).

Given the documentation in the literature on the daughter effect, it is reasonable to study its importance in explaining violence endorsement. The existing findings of the daughter effect have predominantly been independent interpretations and hypothesises derived from fathers' political orientations. Therefore, it is important to document whether the sex of offspring impacts justification of explicit acts of violation. The already conducted studies also target specific, industrialized countries, making their direct transferability to areas with dissimilar characteristic rather uncertain.

2.3 Contribution to the literature

I contribute to the literature by providing time and country consistent estimates on the relative effect of having daughters and sons on specific, standardised measures of attitudes toward IPV. In this way, the thesis provides new insight on whether the sex of fathers' offspring can serve as a risk factor of increased acceptance of IPV. Precisely, the thesis elaborates to what degree the sex of offspring impacts sub-Sahara African fathers' justification of wife beating, sexual assault, controlling behaviour and gender hierocracy in decision making. To the best of my knowledge, this has not been done before.

3. DATA

The relative offspring gender effect on justification of IPV is estimated using data from the Demographic and Health Surveys (DHS). All sub-Saharan African surveys containing specific measures of attitudes toward IPV are included. The panel data is aggregated and provided by IPUMS-DHS (Boyle, King, & Sobek, 2019). The final sample includes roughly 193.000 male respondents with at least one child from 26 sub-Saharan countries as of 2000 until and including 2017.

The applied data is an aggregated extract from standard DHS surveys. These surveys are nationally representative household surveys, providing a wide range of monitoring indictors in the areas of population, health, fertility, domestic violence and nutrition. The surveys have large sample sizes and are typically conducted very 5 years, making them expedient for research.

Table 1: Descriptive statistics.

Variable	Obs	Mean	Std.Dev.	Min	Max
Age	193,119	38.197	9.108	14	65
Ever married	193,119	.867	.338	0	1
Age at 1st marriage	167,585	24.435	5.374	2	64
Years of education	193,018	5.748	4.843	0	25
# Children	192,585	4.077	2.925	1	40
# Daughters	189,668	2.015	1.774	0	27
# Sons	189,669	2.067	1.783	0	30
Share of daughters	189,668	.49	.316	0	1
Share of sons	189,668	.51	.316	0	1

I measure father’s attitudes toward IPV across three dimensions: (i) justification of physical violence, (ii) justification of sexual violence and controlling behaviour and (iii) justification of gender hierarchy in decision-making. Specifically, the respondents are presented to five scenarios of wife beating, four consequences if wife refuses to have sex and four important decisions.

Two additional indictor variables are generated from the available data, specifying whether a respondent justify any of the wife beating scenarios or any of the consequences of refused sex. Creating a similar variable for the important decisions is avoided because of the relative low number of observations in decision 2, 3 and 4, compared to decision 1. The prevalence of attitudes tolerant toward IPV are listed in Table 2.

Table 2: Proportion justifying intimate partner violence in sample.

	Obs.	Mean
Wife beating justified if…		
Wife goes out without telling husband	189,982	.182
Wife neglects the children	191,928	.210
Wife argues with husband	191,432	.173
Wife refuses to have sex	191,396	.118
Wife burns the food	190,676	.077
Any of the scenarios	193,119	.331
If wife refuses sex, husband has right to…		
Get angry	59,501	.351
Refuse financial support	60,590	.116
Use force for sex	60,777	.070
Have sex with another woman	58,506	.115
Any of the rights	61,485	.456
The man should have the final say on…		
Making large household purchases	171,509	.490
Visits to family and relatives	73,355	.472
Spending wife's earnings	49,872	.275
Number of children to have	50,277	.352

The amount of data varies somewhat across the specific attitude measures. For all measures of justification of wife beating, the number of observations is close to the sample size of roughly 193,000 fathers. The number of observations on "making large household purchases" is also relatively high. The remining decisions in the final say module contain considerably fewer observations. The reason for this is that these specific questions only was applied to a defined selection of countries for a limited period of time. Specifically, these attitudes are measured in 17 of 26 sampled countries, up to and including 2013, since this set of questions was dropped in the 2014 revision of the survey. This is also the case for justification of rights if wife refuses to have sex, where the number of observations is approximately 60,000, for each measure.

On justification of wife beating, the prevalence in each scenario ranges from 7.7 per cent for if wife burns the food to 21 per cent for if wife neglects the children. Nevertheless, a 33.1 per cent of father's justify wife beating in at least one of the five questioned scenarios. When asked about what rights the husband has if wife refuses sex, 45.6 per cent of fathers justified at least one of the four suggested consequences. This is also the module where we observe the greatest variations. The most frequently justified right is to get angry, which is more than five times as common as the least accepted, namely, to use force for sex. Furthermore, justification of gender hierocracy in decision-making is predominantly high for all the suggested decisions. Specifically, a 49 per cent of fathers believe that the man should have the final say on the making of large household purchases, making this attitude the most prevalent in the sample. Additionally, a 27.5 per cent, a 35.2 per cent and a 47.2 per cent of respondents believe that the wife should be excluded from the final say on the spending of her earnings, number of children to haven and visits to family and relatives, respectively.

The varying prevalence may be due to corresponding differences in severity across the specific acts of violation and their subsequent consequences. Another potential explaining is that the attitude measures with relatively fewer observations specifically are targeting the eastern African regions, assumingly impacting the sample mean.

4. GENDER TARGETING BEHAVIOUR

A substantial challenge when estimating the relative offspring gender effect is to assure external validity. This is because a causal interpretation requires strong assumptions regarding parents' fertility behaviour (Dahl & Moretti, 2008). In order to correctly attribute attitudinal changes to the parenting of the specific sexes, the sex of offspring must necessarily be independent on the gender-preferences and fertility behaviour of parents. In the opposite scenario, the results would be biased.

The comprehensive assumptions about parent's childbearing behaviour in sub-Saharan Africa are established:

Assumtion (i) There is no practise of sex-selective abortions in the sample.
Assumtion (ii) There is no practise of son targeting stopping rules in the sample.

The first assumption propose that parents do not terminate pregnancies based upon the predicted sex of offspring. Sex-selective abortions is the most incisive sex-ratio at birth (SRB) influencing method. The SRB is the number of male live births for every female live birth. A fulfilled condition implies that the probability of giving birth to a son or a daughter is approximately equal.

The second assumption propose that parents do not apply systematic son targeting stopping rules to their fertility behaviour. This implies, among other things, that the gender composition among siblings within families should be distributed in a way that reflects the first criteria.

The assumptions are necessary to provide a causal interpretation of the estimated effects. In contexts where the specified conditions are met, the sex of offspring can be considered random. Since the validity of the results is sensitive to break in the assumptions, their strength and plausibility will be explored more in-depth. Therefore, indicators of (i) sex-selective abortions and (ii) son targeting stopping rules are examined.

4.1 Sex-selective abortions

At every pregnancy, the biological chance of having a son or a daughter is nearly identical. The sex is determined at conception by the foetus' genes and cannot be influenced (University of Melbourne, 2018). On the contrary, what can be influenced is whether the child is being born or not. Given no deliberate gender selection, the United Nations World Population Prospect expects a sex-ratio at birth value of 1.05 (UN, 2017). This means that we expect 105 male live births per 100 female live births. The marginal male-bias is caused by a slightly higher probability of miscarriage of female foetuses over pregnancies (Orzack, et al., 2015).

John Bongaarts (2013), vice president of the Population Council, predicts there to be «a large pent-up demand for sex selection», driven by the predominant presence of son preferences in the world (Bongaarts, 2013). Access to prenatal sex determination ultrasonography and liberated abortions regulations have enabled parents to directly influence the sex of offspring using sex-selective abortions. There is a great data gap on sex-selective abortions in sub-Saharan Africa, forcing us to rely on estimates (Higgins, 2016). The validity of the first assumption is evaluated by taking a closer at sub-Saharan Africa's (i) prevalence of son preferences, (ii) access to prenatal sex determination ultrasonography (iii) possibility to induce abortions and (iv) empirical SRB scores.

4.1.1 Son preferences

In most parts of the world parents want more sons than daughters (Higgins, 2016). This has typically also been the case for African countries. The prevalence of son preferences at the individual father level in the sample is investigated by computing the ratio between ideal number of sons and children (the ideal share of son). Measuring son preferences as the ratio between ideal number of sons and daughters (ideal sex-ratio) is avoided since this ratio is more suitable when comparing across, rather than within, populations. On the individual level, the ideal sex-ratio fails to fully quantify the preference when ideal number of sons or daughters is zero. Thus, in the cases where ideal number of daughters is zero, the ideal sex-ratio is unquantified. In the opposite case, where ideal number of sons is zero, the ratio becomes zero, no matter how many daughters the man finds it ideal to have. It is therefore reasonable to apply ideal share of sons and daughters as measure for individual gender preferences.

First, let α_I and γ_I denote father *i*'s ideal number of sons and ideal number of children, respectively. Then father *i*'s ideal share of sons, θ_i, can be expressed as:

$$\theta_i = \left[\frac{\alpha_i}{\gamma_i}\right] \in \{0,1\}, \quad \forall\, \alpha_i \leq \gamma_i \tag{1}$$

Now, let β_i denote the ideal number of daughters reported by father *i.* Intuitively, a respondents' ideal number of children, γ_i , must be composed by his ideal number of both sexes, such that:

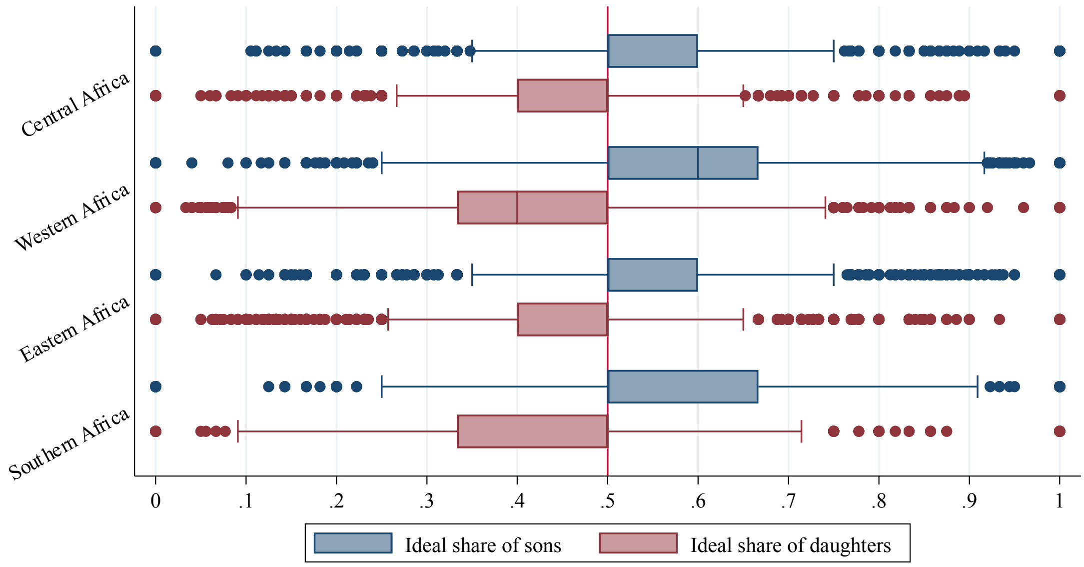
$$\gamma_i \equiv \alpha_i + \beta_i\,. \tag{2}$$

Then, *i*'s ideal share of daughters necessarily is:

$$(1 - \theta_i) = \left[\frac{\beta_i}{\gamma_i}\right] \in \{0,1\}, \quad \forall\; \beta_i \leq \gamma_i \tag{3}$$

Figure 1 documents the samples' ideal gender compositions among offspring. The box plot shows the ideal share of sons (θ_i) and daughters ($1-\theta_i$) for each of the four sub-Saharan African regions. Intuitively, to reflect a preference for balance or no preference at all, the ideal share of sons and daughters should be approximately equal to 0.5. According to the reference line in Figure 1, the data suggest that the preferences clearly are male-biased. Western African respondent are apparently having the strongest son preferences, finding it ideal to have almost 1.5 sons per daughter. The remaining regions hold an average value of $\theta_i \approx 0.55$. Nevertheless, $\theta_i = 0.50$ is still the most preferred composition, expressed by more than 50 per cent in eastern and southern African, and by about 44 per cent across all sub-Saharan African regions.

Figure 1: Box plot of fathers' ideal gender composition among children.



Although moderate son preferences are detected in the sample, this does not directly imply that parents are resorting to gender targeting fertility behaviour. It is therefore important to evaluate the sample's access to methods of SRB influencing.

4.1.2 Prenatal sex determination

In an exploratory study of Ugandan health practitioners view on prenatal sex determination ultrasonography, the author documented a great scepticism to gender disclosure (Mubuuke, 2011). All interviewees in the study addressed that gender reviling at ultrasound could result in sex-selective abortion, in case parents did not want the particular sex, indicating a demand for sex selection.

To date, the majority of pregnancies in sub-Saharan Africa are undergone without a single ultrasound examination (Sippel, Muruganandan, Levine, & Shah, 2011). The introduction of portable ultrasound devices are challenging theses stats, making ultrasonography far more accessible for rural areas, in particular (Rao & Joseph, 2017). Despite sinking acquisition costs and enhanced potability, ultrasound machines are yet not an integral component of maternal care in the region. The access to prenatal sex determination can therefore be considered rather limited in sub-Saharan Africa.

4.1.3 Access to abortions

The legal option to induce abortions is more or less non-existing on the sub-Saharan African continent. Among the 26 countries in the sample, only South Africa and Zambia have relatively liberal abortions laws (Singh, Remez, Sedgh, Kwok, & Onda, 2018). In Angola, Madagascar and Senegal, abortions are prohibited altogether. The remaining countries practice some explicit legal exceptions, e.g. to save the women's life. Even under circumstances where the law allows abortion, a safe, procedure is rarely optional.

Africa has the highest rate of abortion-related deaths in the world (Ganatra, et al., 2017). About three in four abortions in Africa are carried out using either unsafe methods, insufficiently trained people or both. Beyond monetary and legal barriers, there is considerable social stigma linked to the procedures, explaining why so many abortions are undergone without medical assistance (Yegon, Kabanya, Echoka, & Osur, 2016). Based on data available, the option to induce abortion is quite limited in sub-Saharan Africa, suggesting a constricted prevalence of sex-selecting abortions.

4.1.4 Sex-ratio at birth

Given no deliberating influencing, the SRB is remarkably consistent across human populations, suggesting a natural, expected ratio of 1.05 (Hesketh & Xing, 2006). Over the past decades, countries from East Asia through South Asia to the Middle East and North Africa have had a tendency of distorted, male-biased values. In China, in particular, there has been a steady increase in reported SRB, from 1.06 when the one-child policy was introduced in 1979 to 1.17 in 2001 (Chao, Gerland, Cook, & Alkema, 2019). Several studies confirm that access to sex-selective abortions has been the direct cause for the elevated SRB in some parts of the world (Urquia, et al., 2016; Kumm, Laland, & Feldman, 1994; Finlay, 1981). It is therefore important to inspect whether SRB imbalanced also is found in sub-Saharan Africa.

In a systematic assessment of SRB in the world, Chao, Gerland, Cook and Alkma (2019) document that the sub-Saharan regional baseline values are significantly below the conventional baseline value of 1.05. Moreover, the sub-Saharan African SRB scores have remained stable over the analysed timespan, according to data provided by the World Bank (2020). In 24 out of the 26 selected counties, the scores are beneath the conventional value of 1.05 between 1991-2017. The lowest values are measured in Guinea, Zimbabwe and Rwanda, where the SRB was between 101-103. The Nigeria and Ghana have the highest SRB scores in the sample, holding values around 105 and 106, respectively. Thus, it seems unlikely to be any major SRB influencing in the sample over the timespan.

4.2 Son targeting stopping rules

Besides sex-selective abortions, another method of son targeting is by applying specific stopping rules to one's fertility behaviour. For example, a possible stopping rules may be to use contraceptives only after reaching a specific number of sons.

Numerous studies have documented that girls tend to have more siblings (the sibling effect) and are born at earlier parities (the birth-order effect), suggesting that some parents systematically are targeting sons (Basu & de Jong, 2010; Larsen, Chung, & Das Gupta, 1998). To investigate whether this is the case for the sample, the study *Son targeting fertility behavior: some consequences and determinants* by Basu and de Jong (2010) is reviewed. In the paper, the authors calculate the sibling and birth-order effects in sub-Saharan Africa, assuming the following stopping rule: "couples continue childbearing until they attain a desired target number of sons, k, or hit a ceiling for the maximum number of children, N, with k ≤ N" (s. 523). Precisely, the sibling effect measures the relative difference in expected number of siblings between families with at least one daughter and families with at least one son. The birth-order effect captures the average within-family birth order for daughters and sons, respectively, and their relative magnitude.

The study uses one single DHS survey from each sub-Saharan country. The selected surveys are typically obtained around the turn of the millennium, while some surveys extend all the way back to the late 1980s. Based on this data, Basu and de Jong (2010) claim that “countries in sub-Saharan Africa […] do not display any statistically significant sibling or birth-order effects” (s. 527). The data provided in my sample is however considerably more updated, ranging from 2000-2017. Therefore, it is necessary to evaluate whether it is plausible to assume that the findings persist over time.

Basu and de Jong (2010) address two possible explanations for this outcome. Precisely, there must either be (i) no considerable son preferences or (ii) predominantly high fertility. As elaborated in 4.1.1, the dataset suggest that respondents have a s tendency of preferring sons over daughters. The findings are moderate, yet clear and consistent. Still, the width of the boxes in Figure 1 is fairly large for the southern and western African regions, in particular, indicating a high spread. In a study on gender preferences in Africa, Rossi & Rouanet (2015) state that “South Africa, in particular, is characterized by a strong taste for balance” (s. 327). Moreover, the study reports that most of the sampled sub-Saharan African countries display a preference for balance or no preference at all, reducing the risk of son targeting fertility behaviour.

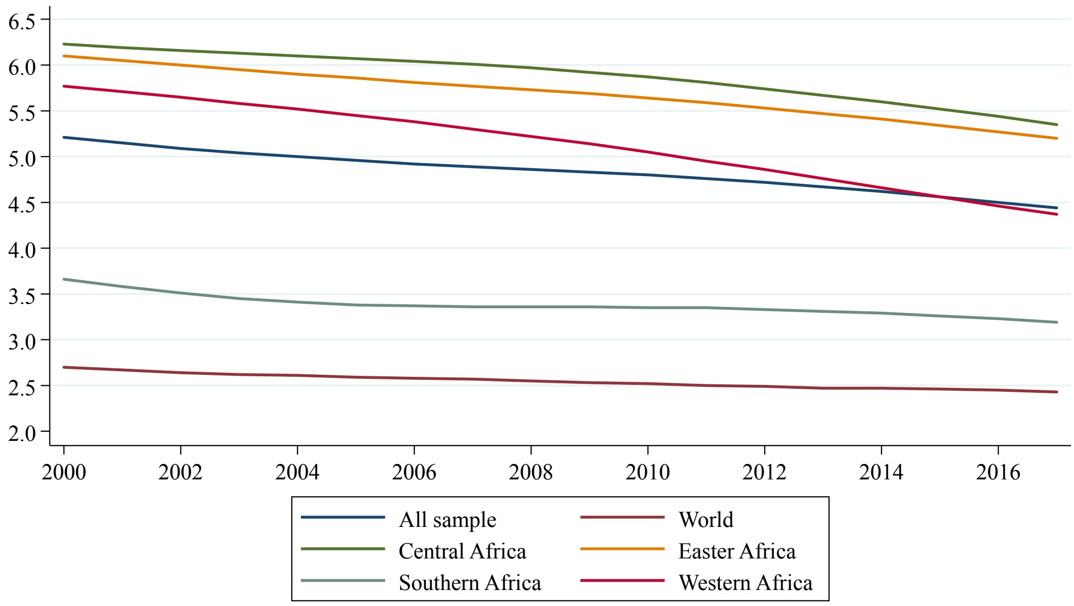
Given the uncertainty about the strength of the son preferences, it is essential to also examine the sample’s relative fertility. Supposedly, when fertility is considered high, and whenever N and k are close together, the numerical sibling and birth-order effects are vanishing, or even absent. The plausibility of a persisting absence of statistically significant effects is thus evaluated using realized and ideal fertility numbers.

4.2.1 Fertility rate

To date, sub-Saharan Africa has the highest number of births per women of reproductive age (fertility rate) in the world (Mueni, 2016). Additionally, the region also has the slowest decline in overall fertility. High realized fertility is prone to be a good predictor for high fertility targets. Figure 2 presents the sample’s weighted fertility rates between 2000-2017. Estimated worldwide fertility rates are applied as reference line.

In 23 of 26 selected countries, the national fertility rate is almost twice as high as the international reference line, clearly suggesting high values of N. The exceptions are southern African countries, i.e. South Africa, Lesotho and Namibia. These nations are seemingly following the international fertility trend.

Figure 2: Fertility-rates in sub-Saharan Africa



Data provided by The World Bank (2020)

Relatively low fertility, in isolation, is not sufficient to constitute a breach of the assumptions made about parents' fertility behaviour. Switching ideal fertility numbers by realized fertility numbers, respondent's realized share of sons and daughters can be calculated using the exact same methods as in equation (1), (2) and (3). The result indicates that the gender composition among respondents' offspring is approximately evenly distributed, for all 26 countries, pointing toward no substantial influencing.

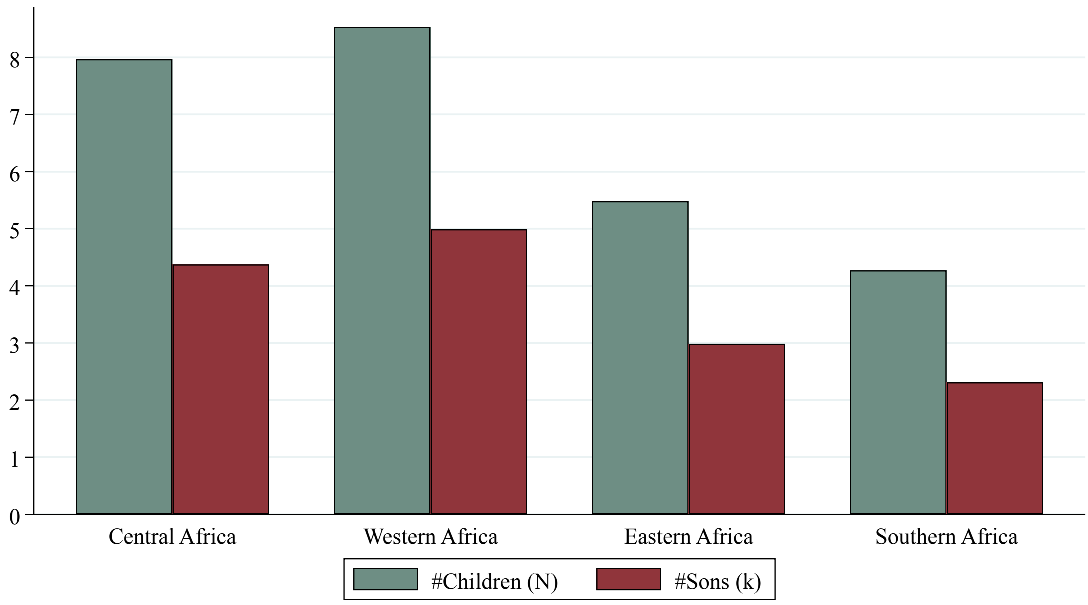
4.2.2 Fertility targets

In each DHS survey, men and women are asked to quantify their ideal number of sons, daughters and children. These answers can easily be interpreted as fertility targets, as it is plausible to assume that respondents are aiming for what they personally find ideal.

Hence, ideal number of children and ideal number of sons can serve as a good predicator for N and k, respectively.

Figure 3 presents mean ideal number of children and sons, distributed over the continental regions within the sample. Apparently, western and central African fathers are having the highest fertility targets in sub-Saharan Africa. On average, a father from western Africa find it ideal to have more than twice as many children and sons as those belonging to the southern African region. The ideal fertility numbers are, as expected, reliably higher than the fertility rates in Figure 2. Another immediate observation in Figure 3 is that N and k cannot be considered as particularly close together, indicating a potential preference for balance.

Figure 3: Estimated values of N and k based on ideal fertility numbers.



4.2.3 Non-numerical fertility targets

The non-numerical responses on ideal number of daughters, sons and children also provide precious insight to parent's fertility targets. In Cameroon and Benin, a small proportion (~ 0.5 per cent) of fathers explicitly say that they find it ideal to have as many children as possible, implying an infinite high number of both N and k. Furthermore, there is a significant share of respondents answering that their ideal fertility numbers are exclusively dependent on God. The largest proportion is found in Burkina Faso, where as many as 7 per cent of fathers answer that their ideal numbers are depended on the will of God. Although the largest share is document in an eastern African country, the greatest regional prevalence exists in western Africa, where about 3 per cent of fathers express the same.

It is reasonable to assume that a high dependency on God could be corresponding to high values of N and k. In Nigeria, strong religiosity is proven to be associated with no or limited use of contraceptives, leading to an increased fertility (Obasohan, 2015). Thus, high dependency on God is likely to be a solid predictor for elevated preferences for childbearing, as religiosity is associated with an in general more conservative and family-oriented lifestyle. In fact, it is proven that religious women give birth to far more children than non-affiliated, despite some disparity across ethno-religious boundaries (Blume, 2010). In this way, the statistics provided in Figure 3 are likely to be underestimated, substantiating even greater values for N and k.

4.3 Strength of the fertility assumptions

One additional test is performed before concluding on the strength of the fertility assumptions. Using a paired t test with an alpha of 0.05, I check whether the population sex-ratio within the sample significantly differ from the natural ratio of 1.05. The corresponding histogram indicate that the sex ratio is somewhat clustered on the right-hand side of 1.05, yet fairly normally distributed, indicating that the conditions for t testing are being met.

The paired t test reports a two-tailed p-value of 0.1405, implying that the mean sex-ratio within the sample does not significantly differ from 1.05. The one-tailed p-values also exceeds the pre-specified significance level in both cases, suggesting that the mean sex-ratio is not significantly greater (p-value = 0.0702) or smaller (p-value = 0.9298) than the natural, expected ratio.

Table 3: Paired t test of whether sex-ratio differ from the natural ratio in means.

	Obs.	Mean	St. Err.	Std. Dev.	[95% Conf. Interval]
Sex_ratio	167,901	1.0535	.0025	1.0281	1.0535 ± .004917

Ha: mean > 1.05	Ho: mean = 1.05	Ha: mean > 1.05
Pr (T < t) = 0.9298	Pr (|T| > |t|) = 0.1405	Pr (T > t) = 0.0702

Assumption (i) says that there is no practise of sex-selective abortions in the sample. Based on unbiased SRB scores, moderate son preferences and limited access to legal, safe abortions and prenatal sex determinations, it seems likely that this assumption is being fulfilled.

Assumption (ii) states that there is no practise of son targeting stopping rules in the sample. Basu and De Jong (2010) detect no significant son targeting fertility behaviour in neither of the sampled countries around year 2000. The values of N and k are estimated to be relatively high, meaning that sibling and birth-order effects assumingly are small. Moreover, the reported realized gender composition among children appears to be relatively balanced and in accordance with expected SRB. Thus, it seems likely that assumption (ii) also is being met.

Throughout this thesis, it will be assumed no external influencing of the sex of offspring.

5. METHODOLOGY

This chapter provides a review of the chosen empirical approach. This includes a description of the applied variables and their empirical applicability, followed by a demonstration of the chosen estimation method.

5.1 Dependent variables

This subsection provides an overview of the endogenous, dependent variables incorporated in the estimation model.

5.1.1 Attitudes toward intimate partner violence

Fathers' attitudes toward IPV are estimated using the 15 attitude measures presented in Table 2. Each attitude measure is transformed into binary indicator variables. This transformation enables the regression algorithm to analyse attribute variables correctly, since the initial numerical response coding does not have intrinsic meaning of their own. In lack of measures on to what degree fathers hold a specific attitude, using indicator variables is the most appropriate alternative for the study.

For all measures, the variable equals 1 if the observation is clearly indicating rationalisation of IPV. Specifically, when questioned about justification of wife beating, the variable only equals 1 in the cases where the respondent explicitly answered "yes". Consequently, the variable only equals 0 in the opposite case, namely, if the father responded "no". The answers regarding acquiring of rights if wife refuses to have sex are coded likewise. In the questionnaire about important decision, the variable equals 1 exclusively if respondent answered that "man alone" or "man and someone else" should have the final say. Subsequently, the variable only equals 0 in the cases where the man explicitly say that the wife should be included in the decision- making.

5.1.2 Total number of daughters and sons

In order to estimate the relative offspring gender effect, the sex of children must necessary be included in the model. This is done by incorporating predicted total number of daughters and sons into the regression. In the standard DHS survey, respondents report how many living daughters and sons they have, at home and away. These values are seemingly determined by other values within the system, e.g. the man's age and fertility goals, potentially causing endogeneity problems. I attempt to avoid this dependency using instrument variables. The dependency mitigates through the use of instrument variables, as addressed in chapter 5.2.1.

5.2 Independent variables

Given the complexness of the process of attitude acquisitions, it is necessary to account for factors beyond the sex of offspring. The relative offspring gender effects are isolated using instrumental variables and a wide set of control variables and fixed effects.

5.2.1 Instrument variables

To resolve the potential endogeneity problem, respondent's total number of daughters and total number of sons are predicted using instrument variables. The variables are instrumented using *i*'s ideal number of the corresponding variable from equation (1), (2) and (3). Specifically, ideal number of boys (α_i) and ideal number of girls (β_i) instrument the realized number of daughters and sons, respectively, as reported by respondent *i*.

To be valid instruments, α_i and β_i should be significantly correlated with actual numbers of daughters and sons, whilst not effecting the dependent variable. Regressing total number of daughters and sons on ideal number of daughters and sons, respectively, the repressions report a positive association, small standard errors and p-values of zero, inferring a strong correlation. This is as expected, especially considering that 35.2 per cent of questioned fathers believe that the man should have the final say on the number of children to have.

Furthermore, the instruments are invalid if they, in isolation, are good predictors of justification of IPV. It is imaginable that very high ideal fertility numbers could be correlated with e.g. conservative religiosity, poverty (children as “insurance”) or urban and labour-intensive production areas (small communities, agriculture areas etc.). These factors are again likely to be correlated with controversial gender-roles, increasing the propensity to justify IPV. Yet, when predicting the attitude measures on α_i and β_i, a strong dependency seems very unlikely. This is because the R-squared and estimated coefficients are relatively close to the value of zero.

Using the *ivreg2* package in Stata, one is provided with test statistics for a set of weak instrument identification tests (Baum, Schaffer, & Stillman, 2010). Specifically, using an overidentification test of all instruments, the Hansen J statistic suggests that the equations are exactly identified. Underidentification appears as particularly unlikely. This is because the ideal fertility numbers basically never are lower than realized fertility. Thus, the underidentification test consistently report a p-value equal to zero together with a high Kleibergen-Paap rk LM statistic. The Stock-Yogo weak identification test rejects the null-hypothesis of weak instruments, as the Cragg-Donald F statistics are strictly higher than the critical values. In this way is seems like the chosen instrument variables assumingly are valid.

On the contrary, including α_i and β_i as instruments, somewhat contradicts the discussion in chapter 4. Including ideal fertility numbers as instruments can be interpreted as that couples indeed are trying to influence the sex of their offspring. On the other hand, a presence of fertility targets does not necessary ruin the assumption that the sex of offspring is random. Communicating an ideal number of sons and daughter does not imply that couples initiate actions to reach their ideal fertility goals. It is important to keep in mind that the respondents were explicitly asked to quantify their ideal number of children, sons and daughters. As no strong evidence for sex-selective abortions nor son targeting stopping rules are detected, using ideal fertility numbers should plausibly not be an issue.

5.2.2 Control variables

To avoid omitted variable bias, I control for respondent's characteristics as well as for country and time specific effects. Specifically, the estimated offspring gender effects are controlled for father's age, marital status and educations, given the general consensus on their ability to explain acceptance of violence. It seems plausible that the fathers' perception of women differs between ever-married and never-married men. Likewise, it is reasonable to expect some attitudinal variations between young and old and low and highly educated men.

Age and marriage are definitely generated outside the system, making them suitable control variables. I also find it plausible to assume years of education to be exogenous in the model, despite collinearity with father's age. Assuming that respondents either start an education with primary school, or do not enter at all, and stay in school until reaching their total years of education, respondents typically finish their education at the age of 12. This corresponds to the education system in the respective countries, where compulsory primary school normally is provided to 6- to 15-year-olds for a period of 6-8 years. Since only men between 15-59 year are eligible for interviews, it seems unlikely that this should be a problem. Moreover, when predicting education on age, the predicted values are approximately identical to the reported values of education, substantiating the assumption of exogeneity.

5.2.3 Fixed effects

Acceptance of IPV is trending downward between 2000-2017. For instance, using a simple regression, justification of wife beating in any of the scenarios was reduced by ~1.45 per cent every year. To avoid attributing this progression in attitude patterns to the estimated relative offspring gender effects, it is essential to control for time specific effects. To do so, the variable *year* is included, defined as an unordered categorical variable, to the estimation.

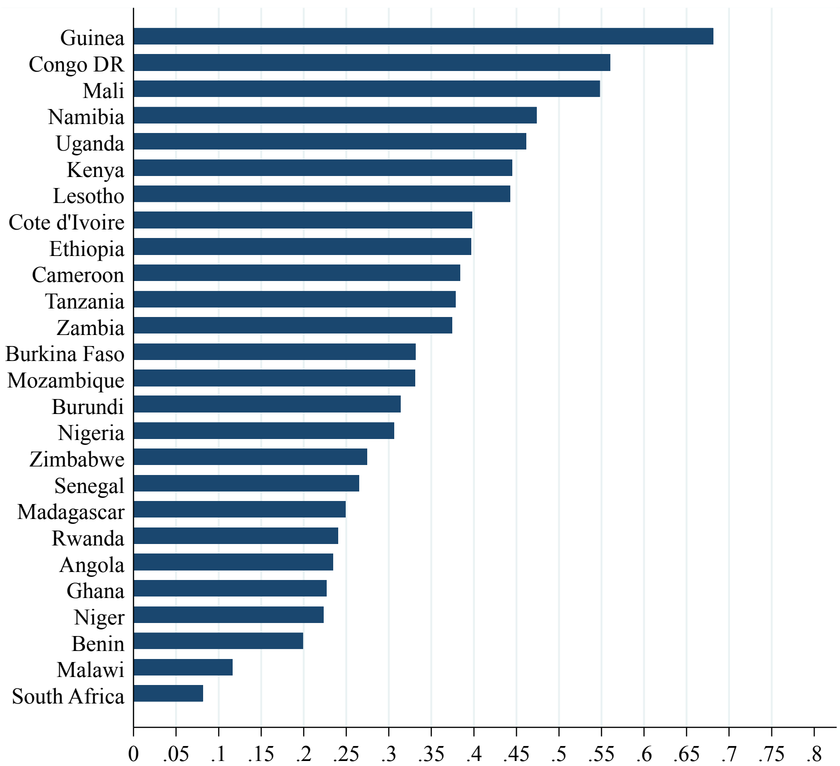
Table 4: Regression results of wife beating in any of the scenarios on year.

beating_any	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
year	-0.014	0.000	-61.89	0.000	-0.015	-0.014	***
Constant	29.429	0.470	62.59	0.000	28.508	30.351	***
R-squared			0.019	Number of obs.		193,119.000	

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

Likewise, variations in attitude patterns across countries are accounted for through the incorporation of country specific effects. Figure 4 shows that the prevalence of attitudes tolerant toward wife beating varies greatly between the countries. Justification ranging from 8 per cent in South Africa to 68 per cent in Guinea, substantiating the need for country fixed effects in the model.

Figure 4: Justification of wife beating in any of the scenarios in 26 sub-Saharan countries



5.3 Estimation method

The daughter and son effects are identified using two-stage least square estimation (2SLS). This technique is an extension of the ordinary least square method (OLS) and is used when the independent variables are correlated with the error term. Through the use of instrumental variables this method has the potential to remove endogeneity bias from regression estimates (Angrist, Imbens, & Rubin, 1996).

Cluster-robust standard errors are applied given the non-continuity in the dependent variables and observed grouping over countries. This means that the obtained standard errors should be consistent and unbiased under heteroskedasticity (Rogers, 1993).

I estimate the following equation using two-stage least squares:

$$Y_{ict}= \beta_0+\beta_1\widehat{D_i}+\beta_2\widehat{S_i} +\beta_3C_c+\beta_4T_t+\beta_5A_i+\beta_6E_i+\beta_7M_i+\epsilon_{ict} \tag{4}$$

where Y_{ict} is one of the attitude measures, $\widehat{D_i}$ and $\widehat{S_i}$ are predicted number of daughters and sons, respectively, T_t are time and survey fixed effects, C_c is country fixed effects, A_i is i's age, E_i is i's total years of education, M_i equals 1 if *i* ever has been married and ϵ_{ict} is the error term.

Total number of daughters and sons is predicted using the following equations:

$$\widehat{D_i} =\alpha_0+\alpha_1 D_i+\alpha_2C_c+\alpha_3T_t+\alpha_4A_i+\alpha_5E_i+\alpha_6M_i+\nu_{ict} \tag{5}$$

$$\widehat{S_i} = \gamma_o+\gamma_1\alpha_i+\gamma_2S_i+\gamma_3C_c+\gamma_4T_t+\gamma_5A_i+\gamma_6E_i+\gamma_7M_i+\rho_{ict} \tag{6}$$

where α_i and β_i are *i*'s ideal number of sons and daughters, respectively, S_i and D_i are *i*'s reported number of sons and daughters, respectively, and ν_{ict} and ρ_{ict} are the corresponding error terms. The values of $\widehat{D_i}$ and $\widehat{S_\iota}$ are thus being instruments by father *i*'s ideal fertility numbers.

6. RESULTS

I estimate the relative daughter and son effects on attitudes toward IPV using equation (3), (4) and (5). The estimated effects are reported in Table 4-6, summarized in Table 7. All estimations include country and time fixed effects and the effects of the applied control variables. The comprehensive instrumental variables regressions can be viewed in their entirety in Appendix B. Comparable simple OLS estimation results are provided in Appendix C.

Table 5: Regression result of justification of wife beating

Wife beating justified if…	Wife goes out without telling husband	Wife neglects the children	Wife argues with husband	Wife refuses to have sex with husband	Wife burns the food	Any of the scenarios
#daughters	.026***	.029***	.021***	.024***	.016***	.026***
	(.004)	(.004)	(.004)	(.004)	(.003)	(.005)
#sons	.030***	.023***	.035***	.045***	.017***	.039***
	(.004)	(.004)	(.004)	(.004)	(.003)	(.005)
Obs.	146,933	147,214	146,840	146,803	147,432	148,063

Cluster-robust standard errors are in parenthesis

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

Table 4 shows that justification of wife beating is increasing by the number of daughters and sons. The growth rate driven by female offspring is significantly smaller than the one for male offspring, in five of six measures.

Table 6: Regression results of justification of rights if wife refuses to have sex.

If wife refuses to have sex, husband has with to…

	Get angry	Refuse financial support	Use force for sex	Have sex with another woman	Any of the rights
#daughters	.024***	.007	.012**	.008	.026***
	(.009)	(.006)	(.005)	(.006)	(.008)
#sons	.082***	.049***	.031***	-.002	.068***
	(.010)	(.008)	(.006)	(.006)	(.009)
Obs.	46,483	47,261	47,397	45,540	47,904

Cluster-robust standard errors are in parenthesis

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

Justification of rights if wife refuses to have sex is also increasing by the number of daughters and sons. The regression result in Table 5 shows that the son effect significantly exceeds the daughter effect for the right to get angry, use force for sex and any of the rights.

Table 7: Regression results of decision-making participation.

Man should have the final say on…

	Making large household purchases	Visits to family or relatives	Spending wife's earnings	Number of children to have
#daughters	.015***	.029***	.017*	.021**
	(.005)	(.007)	(.009)	(.009)
#sons	.040***	.029***	.036***	.048***
	(.005)	(.007)	(.010)	(.009)
Obs.	133,323	58,190	40,105	40,963

Cluster-robust standard errors are in parenthesis

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

Table 6 reports the regression results of the offspring gender effects on acceptance of gender hierocracy in decision-making. Again, justification is increasing by the number of children, independent on gender. For this module, the estimated son effect is more than twice as high on three out of four decisions. The exception is the final say on visits to family and relatives, where the effects are symmetrical.

Table 8: Summary table of estimated offspring gender effects

	Effect size (%)				
	#Daughters	#Sons	Absolute diff.	Relative diff.	Obs.
Wife beating justified if…					
Wife goes out without telling husband	2.6***	3.0***	.4	15.4	146,933
Wife neglects the children	2.9***	2.3***	.6	20.1	147,214
Wife argues with husband	2.1***	3.5***	1.4	66.7	146,840
Wife refuses to have sex	2.4***	4.5***	2.1	87.5	146,803
Wife burns the food	1.6***	1.7***	.1	6.2	147,432
Any of the scenarios	2.6***	3.9***	1.3	36.7	148,063
If wife refuses sex, husband has right to…					
Get angry	2.4***	8.2***	4.8	200.0	46,483
Refuse financial support	.7	4.9***	4.5	642.9	47,261
Use force for sex	1.2**	3.1***	1.9	158.3	47,397
Have sex with another woman	.8	-.2	1.0	125.0	45,540
Any of the rights	2.6***	6.8***	4.2	161.6	47,904
The man should have the final say on…					
Making large household purchases	1.5***	4.0***	2.5	166.7	133,323
Visits to family and relatives	2.9***	2.9***	0	0	58,190
Spending wife's earnings	1.7*	3.6***	1.9	111.8	40,105
Number of children to have	2.1**	4.8***	2.7	128.6	40,963

Significance levels:
*** p<0.01, ** p<0.05, * p<0.1

Table 7 summarizes the regression results from Table 4-6. The table also right display the absolute, relative difference between the estimated offspring gender effects and this difference as per cent of the estimated daughter effect.

The daughter effect is strictly smaller than the son effect in 12 out of 15 attitude measures. The results are openly pointing toward that the sex of offspring indeed are having an impact on fathers' justification of IPV.

7. DISCUSSION AND IMPLICATIONS

This chapter provides an in-depth discussion of the obtained results, including their robustness and implications.

7.1 Reviewing the results

The daughter effect on justification of IPV must be seen in context of the opposite case, namely, the effect of having sons. Apparently, overall acceptance of IPV is increasing by the total number of children, independent on the sex of offspring. Yet, the results are demonstrating that the majority of the increasement is driven by number of sons, rather than number of daughters. In 12 out of 15 attitudes measures, the son effect exceeds the daughter effect in magnitude. In 7 these cases, the relative effect difference is more than twice the size as the daughter effect. Under the assumption that child gender is exogenous, the results clearly suggest that a child’s gender plays a role in the development of violent attitudes. In particular, it seems like daughters, compared to sons, accelerate acceptance of IPV at a significantly slower rate, indicating that female offspring have a relatively softening effect on fathers’ endorsing of violence.

7.1.1 Justification of wife beating

On justification of wife beating, the estimated relative offspring gender effects are statistically significant at 1 per cent for all scenarios. The son effect significantly exceeds the daughter effect in magnitude in 5 out of 6 scenarios. Conditional on the total number of children, men with daughters are significantly less likely to justify wife beating if wife goes out without telling husband, argues with husband, refuses to have sex or burns the food. Specifically, for every daughter among fathers’ total number of children, men are 1.4 per cent less likely to justify wife beating in any of the questioned scenarios.

The opposite case is detected for justification of wife beating if wife neglects the children, suggesting that justification is elevated 0.7 per cent more by the number of daughters, compared to the number of sons. Although the effects are statistically significant, it seems unlike that the daughter and son effects are shifting in dominance across the applied attitude measures. Thus, since the results predominantly are pointing in the opposite direction, this finding can be considered negligible.

7.1.2 Justification of rights if wife refuses sex

In this module, there are some irregularity in the estimated relative offspring gender effects across the suggest rights. For the right to have sex with another woman, the son effect is marginally negative and thus smaller than the daughter effect. However, neither of the estimated coefficients are significant at the 5 per cent threshold level. For the right to refuse financial support, the estimated son effect is nearly 650 per cent larger than the corresponding daughter effect. Despite this, the estimated daughter effect is not statistically significant, making the real, relative offspring gender effect rather uncertain.

This module also holds the highest differences in relative as well as absolute terms, given that the paired offspring gender effects have a p-values less than 5 per cent, jointly. For every fathered son, men are 4.8 per cent more likely to consider anger an appropriate reaction if wife refuses to have sex, corresponding to a growth rate three times the daughter effect. The regression suggests that a man with one son only, is just as justifying of anger as a method to resolve conflict, as a man with three daughters, everything else equal. The results also indicate that fathers with sons, compared to fathers with daughters, are more likely to justify use of force, if wife refuses to have sex. Specifically, the estimated son effect is 158.3 per cent larger than the daughter effect, corresponding to an additional increment of 1.9 per cent for every offspring that is a male. Likewise, for every fathered daughter, men have a 4.2 per cent lower propensity to justify any of the four suggested right.

7.1.3 Justification of gender hierarchy in decision-making

Given the great relative effect differences, the results suggest a considerable daughter effect on male-dominance in decision-making. The estimated offspring gender effects on visits to family and relatives are perfectly symmetrical, indicating no influencing by gender of offspring on this specific attitude. For the remaining decisions, the relative effect difference is more than double the effect size for daughters. The relative largest difference is on the making large household purchases, where the estimated son effect is 166.7 per cent larger than the daughter effect. The largest absolute difference is estimated for the fertility decision. Here men are 2.7 per cent more prone to think that the man should have the final say on the number of children to have, for every fathered son. Finally, for every offspring being a daughter, instead of a son, men are 1.9 per cent less likely to think that the wife should be excluded from the final say on the spending of her earnings. The results are pointing toward that men with sons, compared to daughters, are relatively more supporting of gender hierarchy in decision-making.

7.2 Robustness of the findings

The results were calculated using a fairly large dataset. The sample size reduces the risk of data noise, thus strengthening the robustness of the findings. Table 9 provides data on the robustness of the estimates, including the obtained cluster-robust standard errors, p-values and confidence interval of 95 per cent significance.

For most measures, the obtained standard errors are not very large, relative to the estimated effects. The magnitude of the standard errors suggests that the sample should be large enough to get reasonably precise estimates. The estimates in the questions with comparatively fewer observations tend to have relatively larger standard errors. This is particularly true for the estimated daughter effects, suggesting that some findings would benefit from more observations. Using a confidence level of 95 per cent, the upper limit of the daughter effect tends to overlap the lower limit of the son effect. This means that the relative numerical order of the estimated offspring gender effects is not necessary very robust. The width of the confidence intervals increases the risk of mistakenly rejecting the null of no effect.

The majority of the estimated offspring gender effects are statistically significant, given the pre-specified alpha of 0.05. The coefficients are statistically significant in 12 of 15 measures for daughters and 14 of 15 measures for sons. Presupposing p-values less than

5 per cent for paired effects, there are 12 statistically significant relative offspring gender effects. In 10 of these cases, the son effect significantly exceeds the daughter effect in magnitude. Still, the opposite case is only detected for wife beating if wife neglects the children, as the effects are symmetrical for the final say on visits to family and relatives.

Table 9: Standard errors, p-values and confidence intervals.

	# Daughters			# Sons		
	SE	p-value	[95 % CI]	SE	p-value	[95 % CI]
Wife beating justified if…						
Wife goes out without telling husband	.004	.000	2.6% ± .80	.004	.000	3.0% ± .84
Wife neglects the children	.004	.000	2.9% ± .81	.004	.000	2.3% ± .85
Wife argues with husband	.004	.000	2.1% ± .79	.004	.000	3.5% ± .84
Wife refuses to have sex	.004	.000	2.4% ± .73	.004	.000	4.5% ± .79
Wife burns the food	.003	.000	1.6% ± .62	.003	.000	1.7% ± .66
Any of the scenarios	.005	.000	2.6% ± .89	.005	.000	3.9% ± .93
If wife refuses sex, husband has right to…						
Get angry	.009	.006	2.4% ± 1.68	.010	.000	8.2% ± 1.87
Refuse financial support	.006	.236	.7% ± 1.24	.008	.000	4.9% ± 1.48
Use force for sex	.005	.028	1.2% ± 1.06	.006	.000	3.1% ± 1.20
Have sex with another woman	.006	.174	.8% ± 1.09	.006	.700	-.2% ± 1.17
Any of the rights	.008	.002	2.6% ± 1.63	.009	.000	6.8% ± 1.82
The man should have the final say on…						
Making large household purchases	.005	.001	1.5% ± .90	.005	.000	4.0% ± .91
Visits to family and relatives	.007	.000	2.9% ± 1.31	.007	.000	2.9% ± 1.43
Spending wife's earnings	.009	.051	1.7% ± 1.67	.010	.000	3.6% ± 1.88
Number of children to have	.009	.015	2.1% ± 1.68	.009	.000	4.8% ± 1.83

When running multiple regressions on offspring gender, there is an increasing risk of incorrectly over-rejecting null hypotheses of no effect. Given that all estimates were estimated using 15 single, separate tests, there is a considerable risk of rejecting just due to chance. With an alpha of 0.05, the probability of observing at least one significant just due to chance is:

$$P(\text{minimum one significant result}) = 1 - (1-0.05)^{15} \approx 0.537 \,, \tag{7}$$

meaning that the probability of incorrectly rejecting at least one hypothesis is 53.7 per cent. This problem of multiple hypothesis testing can efficiently be accounted for by fixing the tests' level of the family wise error rate (FWER). Using the correction proposed by Bonferroni (1936), one simply make equal adjustments to the p-values by dividing the level of alpha by the number of tests:

$$\frac{\alpha}{n} = \frac{0.05}{15} = 0.0033 \tag{8}$$

Using the Bonferroni correction technique has however been heavily criticized for being too conservative, particularly when testing a number of hypothesises (Perneger, 1998). Therefore, I also calculate the multiple hypothesis testing corrected p-values using a stepwise process. Specifically, following the stepwise testing procedure in Stata proposed by Clarke, Romano and Wolf (2019), the estimated offspring gender effects' adjusted Romano-Wolf p-values are obtained. Country and time specific effects are accounted for by specifying *country* and *year* as resembling clusters since the command in Stata does not allow factor-variable and time-series operators.

Table 9 report the robustness of the estimates under (i) the Bonferroni and (ii) the Romano-Wolf correction procedures. If the null hypothesis of no effect still is rejected after adjustment, the corresponding p-value is presented together with a significance star (*). If the correction proposes that the null no longer can be rejected, the p-value is in bold.

Table 10 summarizes test outcome from single hypothesis testing and FWER correction under Bonferroni and Romano-Rolf. The findings suggesting that daughters have a relatively softening effect on father's justification of violence are significant and consistent in 10 of 15 cases using single hypothesis testing, in 9 cases using Romano-Wolf stepwise testing and in 8 cases using the Bonferroni-correction. Yet, the opposite case is only detected 1 of 15 of measures, independent on testing procedure. Thus, it seems like the hypothesis of that daughters tend to accelerate justification of IPV at a significantly lower rate, compared to sons, is rather robust.

Table 10: Multiple hypothesis testing correction.

	Bonferroni-correction		Romano-Wolf p-values	
	#daughters	#sons	#daughters	#sons.
Wife beating justified if…				
Wife goes out without telling husband	.000*	.000*	.010*	.010*
Wife neglects the children	.000*	.000*	.010*	.010*
Wife argues with husband	.000*	.000*	.010*	.010*
Wife refuses to have sex	.000*	.000*	.010*	.010*
Wife burns the food	.000*	.000*	.029*	**.059**
Any of the scenarios	.000*	.000*	.001*	.001*
If wife refuses sex, husband has right to…				
Get angry	.006*	.000*	.020*	.020*
Refuse financial support	.236	.000*	.881	.020*
Use force for sex	.028	.000*	.048*	.020*
Have sex with another woman	.174	.700	.703	.673
Any of the rights	.002*	.000*	.040*	.020*
The man should have the final say on…				
Making large household purchases	.001*	.000*	.010*	.010*
Visits to family and relatives	.000*	.000*	.039*	.010*
Spending wife's earnings	.051	.000*	**.069**	**.238**
Number of children to have	**.015**	.000*	.030*	.020*

Bonferroni critical value: $\frac{\alpha}{n} = 0.0033$

Romano-Wolf critical value: $\alpha = 0.05$

Table 11: Testing outcome of single and multiple hypotheses testing.

	Model p-values	**Bonferroni-correction**	**Romano-Wolf p-values**
# Significant daughter effects	12	10	12
# Significant son effects	14	14	12
# Significant paired effects	12	10	11
Coef. son > Coef. daughter | significance	10	8	9
Coef. son < Coef. daughter | significance	1	1	1
Coef. son = Coef. daughter | significance	1	1	1

7.3 Literature comparison and implications

This subsection provides a brief comparison between the findings and already existing literature. The implications of the contributions to the literature are also being emphasises.

7.3.1 Literature comparison

The overall findings are in harmony with the emerging literature on the daughter effect. In particular, the results are in accordance with evidence provided by Warner and Steel (1999), concluding that parents of daughters only, are more likely to support feminism. The added insight is that daughters, compared to sons, accelerates justification of specific acts of physical violence, sexual assaults controlling behaviour and gender hierocracy at a substantially lower rate.

The provided findings are also consistent with those of Bucheli and Rossi (2019), pointing toward that high fertility, in a global context, can be associated with a higher risk of IPV justification. Moreover, as illustrated in Appendix B, approval of IPV decreases by fathers' age and total year of education, confirming the findings of Tran, Nguyen and Fisher (2016) and Flood and Please (2009), respectively.

The implications of the controlling of marital status is somewhat contradicting the literature. Tran, Nguyen and Fisher (2016) found that people who have never partnered up are less justifying of IPV. However, the coefficients of ever_married suggest that fathers who never have been married are significantly more accepting of all the 15 cases. There are mainly two possible explanations for this outcome. It could be that marriage impacts sub-Saharan African fathers' perception of women differently, compared to low- and middle-income countries as a whole. Otherwise, it could be that the never married men are, or ever have been, engaged in another type of relationship or cohabitation. Given that all the men in the sample are fathers this explanation appears more plausible.

7.3.2 Implications of the findings

The new insight is that the number of daughters accelerates fathers' acceptances of IPV at a significantly lower rate, compared to number of sons. Moreover, the results provide time and country consistent estimates from sub-Saharan Africa – the region with the highest rates of IPV in the world. The implication of the findings is that we can expect relatively higher rates of domestic violence within families with more sons, compared to families with fewer sons, for any given total number of children. This is plausible since widespread acceptances of violence tend to be consistent with a high prevalence of violence (Kishor & Subaiya, 2018). Moreover, the discoveries imply that the occurrence of IPV partly is determined by (1) the total number of children and (2) the gender-composition among offspring.

The provided insight is useful as it offers a better understanding of how attitude on IPV are shaped and developed. The discoveries also reveal that the sex of offspring can serve as a good predictor of justification of violence. In this way, the findings suggest that high numbers of male offspring serve as a risk factor of IPV promoting attitudes. In this way, the insight can be implemented to e.g. organizations fighting domestic violence, as a method of targeting high-risk families.

7.4 Potential explanations of the results

The upcoming discussion will predominantly mark my personal speculations over potential explanations of the findings.

7.4.1 Explaining the relative effect differences between daughters and sons

Assumingly, having daughters creates a reference point for fathers. The new reference point might differ from men's previous perception of females, causing a change in attitude patterns. Then, since fathers care for their daughters, they also justify IPV at a lower rate. It is also thinkable that men develop their ability of immersing themselves into the female perspective, through the experience of fathering daughters. It is also possible that fathers internalize their daughters' preferences, as suggested in Oswald and Powdthavee (2010). Given that daughters want to see their mother treated well, fathers adjust their attitudes accordingly. It is also imaginable that fathers intend to educate their daughters, by setting an example of how they should be treated.

Another potential explaining is that a high number of sons can be associated with a stronger "macho-culture" within the home. This could particularly be true in the cases where the genders composition among a men's offspring is very unevenly distributed. Then, it is imaginable that more males in the family can create synergies, increasing the likelihood of violence acceptance, since males in general have a higher propensity to express negative feelings physically (Buntaine, 1997). However, this is a quite narrow and vague hypothesis, calling for more evidence.

7.4.2 Explaining variations across attitude measures

The relative offspring gender effects are varying in magnitude across the applied attitude measures. The greatest variations are across, rather than within, the three questionnaires. The differences between the daughter and son effect is relatively smaller for justification of wife beating. One reason for this could be variations in severity. Beating up a woman might be considered more violating than many of the other actions. Then, it is possible that attitudes concerning physical abuse are less impacted by the sex of offspring, compared to attitudes tolerant toward controlling behaviour. This could potentially explain why for example the justification of to get angry is more prone to change, since the consequences of anger, in isolation, might be considered relatively small.

Assumingly, some attitudes are more susceptible for external influencing than others. Attitudes rooted in culture and social norms are probably less prone for change, compared to attitudes acquired throughout other channels. Given the sample means in Table 2, it seems like acceptance of gender hierarchy in decision-making is a very prevalent attitude to hold. This could be a sign of that male dominance in decision-making very much is linked to culture, thus making these attitudes less susceptible for offspring gender influencing. Some set of attitudes are also more observable, affecting how "normal" they might be considered. Witnessing violence is one of the main risk factors of IPV, plausibly affecting the process of attitude acquisition (WHO, 2017). This could potentially explain why the relative effect difference is greater for justification if wife refuses to have sex, as the listed consequences are less observable for people standing outside the conflict.

8. LIMITATIONS

In this chapter, some potential weaknesses and limitations of the conducted study are being emphasised. Possible data errors within the sample and drawbacks of the chosen empirical approach, are briefly discussed. Finally, I provide my personal recommendation for further study of the working hypothesis.

8.1 Survey data errors

There are numerous possible pitfalls when gathering survey data. The applied data is gathered by the DHS programme, initiated and funded by the U.S. Agency of International Development. Since the data is assembled by a very credible persecutor, questioning the survey sampling methods is avoided. However, even if the standard DHS surveys are nationally representative and fieldworkers are trained accurately, survey errors can still occur. Specifically, there are concerns surrounding cognitive response bias.

One potential weakness of the applied data is that respondents could be tempted to report in accordance with social norms. When surveys are conducted on anonymous questionnaires, this is unlikely to be an issue. In the sample, 27.33 per cent of respondents are analphabetic, whilst an additional 9.15 per cent are unable to read full sentences. This implies that a great proportion of the surveys have been conducted with support from fieldworkers. This can potentially harm the respondents trust in the integrity of the survey, leading to biased responses. The presence of fieldworkers may increase the risk of cognitive bias for social norms, reducing respondent's propensity to report attitudes considered unethical. Thus, acceptance of IPV may be underreported, if fathers have concerns about what the fieldworker might think about him.

Furthermore, insight from behavioural economics suggest that people tend to have reference-depended preferences. Loss aversion theory suggests that any deviation from a reference point is associated with either a loss or a gain, were the feeling of losses appear larger (Kahneman & Tversky, 1979). When questioned about ideal fertility numbers, fathers may view the number of, and realized gender-composition among, offspring as a reference point. Given that humans tend to be loss averse, respondents probably won't report values indicating discontent or regrets regarding their presently archived fertility outcome. Thus, the estimated son preferences are potentially higher than those estimated in Figure 1.

8.2 Empirical approach

When building estimating models, there is always a risk of omitted variable bias. The consequence of overlooking important explanatory variables is that the estimation model attributes the effect from the omitted variables to the included variables, leading to over- or underestimating of the real effects. Likewise, there is an imminent risk of selecting the wrong variables and instruments. Based on the literature available and the strong post-estimation outputs, this risk is considered to be trivial.

The application of binary dummy variables eliminates thousands of observations from the sample, increasing the risk of non-response bias. The vast majority of the excluded observations contained "don't know" and other incomprehensible responses. Nevertheless, other information-holding responses have also been neglected, particularly in the final say module. Yet, an answer was only removed if it did not have the capability to give an unambiguous indication of respondent's acceptance of IPV. Although some data simply did not fit into the model, removing them still impacts the study, since the reported prevalence of IPV justification may appear to be more or less concentrated than it really is.

Other potential weakness of the model is limiting intervals of validity of linear estimation. As the dependent variables are binary indicator variables, the estimated Y_{ict} should never be negative or exceed a value of 1. Following a strong estimated effect, the model won't be valid for a very large number of children, as the estimated probability of violence acceptance relatively rapidly surpasses the limits. This can of course be interpreted such that fathers reach a state where they either no longer ($Y_{ict} \leq 0$), or always

($Y_{ict} \geq 1$), find violence acceptable, and remains at this state, regardless of whether they have another daughter or not.

8.3 Outlooks

If more time was provided, it would have been interesting to apply a non-linear estimation method to the matter. The relationship between number of daughters and justification of IPV is supposedly not perfectly linear, but rather somewhat S-shaped. This appears plausible because (i) we expect the daughter effect to be lagging in time and (ii) since the marginal change in justification of IPV probably is declining in magnitude.

This study also calls for a greater understanding of why daughters and sons accelerate acceptance of IPV at different rates.

9. CONCLUSION

Overall acceptance of IPV is increasing by the total number of children, independent on the sex of offspring. Yet, the son effect tends to exceed the daughter effect in magnitude. Disregarding some overlapping confidence intervals, the findings are consistent and statistically significant in 10 out of 15 measures using single hypothesis testing, in 9 measures using the Romano-Wolf stepwise testing and in 8 measures using the Bonferroni-correction. The opposite case is only detected on justification of wife beating if wife neglects the children. For the final say on visits to family and relatives, the estimated effects are perfectly symmetrical.

The results reveal that fathers with daughters are significantly less justifying of physical violence, sexual assaults and controlling behaviour toward intimate partners. Specifically, for every fathered daughter, men are 1.4 per cent less likely to justify wife beating in at least one of five questioned scenarios, conditional on the total number of children they have. Likewise, for every fathered daughter, men are 4.2 per cent less prone to consider any of “get angry”, “refuse financial support”, “use force for sex” or “have sex with another women” an appropriate reaction, if wife refuses to have sex. Similarly, for any given number of children, fathers with at least one daughter are less accepting of gender hierocracy in decision-making, compared to fathers with fewer daughters, everything else equal. Precisely, for every fathered daughter, men are 2.5 per cent and 2.7 per cent less likely to believe that the man should have the final say on the making of large household purchases and number of children to have, respectively.

The relative offspring gender effects were estimated using two-stage least squares regression analysis, controlling for father’s characteristics and time and country fixed effects. A causal interpretation of the estimates is provided under the assumption of no gender targeting fertility behaviour. The findings propose that daughters, compared to sons, have a relatively softening effect on the development of violence promoting attitudes, implying that the sex of offspring significantly impacts father’s perception of women.

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APPENDIX

A. COUNTRIES, REGIONS AND YEARS

Table 8 shows number of observations from each sub-Saharan African region per year. Table 9 demonstrate the allocation of sampled countries over regions, as defined by the UN. Table 10 presents number of surveyed fathers per country per year.

Table 12: Observations per region per year.

Year of sample	Sub-Saharan African region				
	Central Africa	Western Africa	Eastern Africa	Southern Africa	Total
2000	-	-	4,533	1,566	6,099
2001	-	3,545	2,489	-	6,034
2003	-	5,751	5,153	-	10,904
2004	-	-	3,405	1,249	4,654
2005	-	-	9,154	-	9,154
2006	-	3,339	1,528	1,836	6,703
2007	-	-	3,823	-	3,823
2008	-	10,742	7,241	-	17,983
2009	-	-	-	1,451	1,451
2010	-	6,377	15,009	-	21,386
2011	3,853	5,994	11,410	-	21,257
2012	-	7,283	-	-	7,283
2013	5,326	8,117	8,802	2,488	24,733
2014	-	3,856	10,597	1,336	15,789
2015	3,269	1,626	6,273	-	11,168
2016	-	1,461	18,489	1,867	21,817
2017	-	2,881	-	-	2,881
Total	12,448	60,972	107,906	11,793	193,119

Table 13: Observations per country over regions.

Country	Sub-Saharan African region				
	Central Africa	Western Africa	Eastern Africa	Southern Africa	Total
Angola	3,269	-	-	-	3,269
Benin	-	8,069	-	-	8,069
Burkina Faso	-	6,199	-	-	6,199
Burundi	-	-	6,623	-	6,623
Cameroon	3,853	-	-	-	3,853
Congo DR	5,326	-	-	-	5,326
Cote d'Ivoire	-	2,863	-	-	2,863
Ethiopia	-	-	18,826	-	18,826
Ghana	-	7,637	-	-	7,637
Guinea	-	2,066	-	-	2,066
Kenya	-	-	10,948	-	10,948
Lesotho	-	-	-	4,036	4,036
Madagascar	-	-	6,853	-	6,853
Malawi	-	-	12,482	-	12,482
Mali	-	4,661	-	-	4,661
Mozambique	-	-	4,322	-	4,322
Namibia	-	-	-	5,890	5,890
Niger	-	2,502	-	-	2,502
Nigeria	-	17,550	-	-	17,550
Rwanda	-	-	10,537	-	10,537
Senegal	-	9,425	-	-	9,425
South Africa	-	-	-	1,867	1,867
Zimbabwe	-	-	11,676	-	11,676
Uganda	-	-	7,253	-	7,253
Tanzania	-	-	4,477	-	4,477
Zambia	-	-	13,909	-	13,909
Total	12,448	60,972	107,906	11,793	193,119

Table 14: Observations per country per year

Country	Year of sample																	
	2000	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Angola	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,269	-	-	3,269
Benin	-	1,599	-	-	-	3,339	-	-	-	-	3,131	-	-	-	-	-	-	8,069
Burkina Faso	-	-	1,858	-	-	-	-	-	-	4,341	-	-	-	-	-	-	-	6,199
Burundi	-	-	-	-	-	-	-	-	-	2,376	-	-	-	-	-	4,247	-	6,623
Cameroon	-	-	-	-	-	-	-	-	-	-	3,853	-	-	-	-	-	-	3,853
Congo DR	-	-	-	-	-	-	-	-	-	-	-	-	5,326	-	-	-	-	5,326
Cote d'Ivoire	-	-	-	-	-	-	-	-	-	-	2,863	-	-	-	-	-	-	2,863
Ethiopia	1,355	-	-	-	3,211	-	-	-	-	-	7,526	-	-	-	-	6,734	-	18,826
Ghana	-	-	2,742	-	-	-	-	2,460	-	-	-	-	-	2,435	-	-	-	7,637
Guinea	-	-	-	-	-	-	-	-	-	-	-	2,066	-	-	-	-	-	2,066
Kenya	-	-	1,892	-	-	-	-	1,861	-	-	-	-	-	7,195	-	-	-	10,948
Lesotho	-	-	-	1,249	-	-	-	-	1,451	-	-	-	-	1,336	-	-	-	4,036
Madagascar	-	-	1,473	-	-	-	-	5,380	-	-	-	-	-	-	-	-	-	6,853
Malawi	1,849	-	-	2,047	-	-	-	-	-	4,248	-	-	-	-	-	4,338	-	12,482
Mali	-	1,946	-	-	-	-	-	-	-	-	-	2,715	-	-	-	-	-	4,661
Mozambique	-	-	1,788	-	-	-	-	-	-	-	2,534	-	-	-	-	-	-	4,322
Namibia	1,566	-	-	-	-	1,836	-	-	-	-	-	-	2,488	-	-	-	-	5,890
Niger	-	-	-	-	-	-	-	-	-	-	-	2,502	-	-	-	-	-	2,502
Nigeria	-	-	1,151	-	-	-	-	8,282	-	-	-	-	8,117	-	-	-	-	17,550
Rwanda	1,329	-	-	-	2,496	-	-	-	-	3,310	-	-	-	3,402	-	-	-	10,537
Senegal	-	-	-	-	-	-	-	-	-	2,036	-	-	-	1,421	1,626	1,461	2,881	9,425
South Africa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,867	-	1,867
Zimbabwe	-	-	-	-	3,447	-	-	-	-	3,794	-	-	-	-	4,435	-	-	11,676
Uganda	-	1,205	-	-	-	1,528	-	-	-	-	1,350	-	-	-	-	3,170	-	7,253
Tanzania	-	-	-	1,358	-	-	-	-	-	1,281	-	-	-	-	1,838	-	-	4,477
Zambia	-	1,284	-	-	-	-	3,823	-	-	-	-	-	8,802	-	-	-	-	13,909
Total	6,099	6,034	10,904	4,654	9,154	6,703	3,823	17,983	1,451	21,386	21,257	7,283	24,733	15,789	11,168	21,817	2,881	193,119

B. COMPREHENSIVE REGRESSIONS

Table 11-13 display the comprehensive regression result of all estimations, displaying the relative daughter and son effects, the effects of fathers' age, marital status and education and country and time fixed effects.

Table 15: Complete regression results of justification of wife beating.

Wife beating justified if...	Wife goes out without telling husband	Wife neglects the children	Wife argues with husband	Wife refuses to have sex with husband	Wife burns the food	Any of the scenarios
# daughters	.026***	.029***	.021***	.024***	.016***	.026***
	(.004)	(.004)	(.004)	(.004)	(.003)	(.005)
# sons	.030***	.023***	.035***	.045***	.017***	.039***
	(.004)	(.004)	(.004)	(.004)	(.003)	(.005)
age	-.007***	-.007***	-.007***	-.007***	-.004***	-.009***
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
education	-.009***	-.009***	-.009***	-.007***	-.005***	-.013***
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
ever_married	-.024***	-.038***	-.029***	-.029***	-.023***	-.052***
	(.006)	(.006)	(.005)	(.004)	(.004)	(.007)
Country FE: (Angola=bn.country)						
Benin	-.119***	-.109***	-.100***	-.055***	-.068***	-.165***
	(.011)	(.012)	(.011)	(.009)	(.008)	(.014)
Burkina Faso	.025**	.046***	.025**	.023***	.016**	.023*
	(.011)	(.011)	(.011)	(.009)	(.007)	(.013)
Burundi	.085***	.153***	.011	.093***	.004	.135***
	(.010)	(.011)	(.010)	(.009)	(.007)	(.013)
Cameroon	.130***	.171***	.074***	.045***	.021**	.167***
	(.013)	(.014)	(.013)	(.010)	(.010)	(.016)
Congo DR	.267***	.288***	.314***	.179***	.099***	.418***
	(.014)	(.015)	(.014)	(.012)	(.010)	(.016)
Cote d'Ivoire	.098***	.122***	.096***	.064***	.022**	.122***
	(.014)	(.014)	(.014)	(.011)	(.010)	(.017)
Ethiopia	.106***	.096***	.067***	.101***	.086***	.079***
	(.011)	(.012)	(.011)	(.009)	(.008)	(.014)
Ghana	.033***	.052***	-.007	.038***	-0.001	-.023*
	(.011)	(.012)	(.011)	(.009)	(.007)	(.014)
Guinea	.225***	.321***	.286***	.298***	.081***	.312***
	(.025)	(.026)	(.025)	(.024)	(.020)	(.026)
Kenya	.207***	.291***	.178***	.150***	.039***	.278***
	(.011)	(.012)	(.011)	(.009)	(.007)	(.014)
Lesotho	.178***	.235***	.235***	.171***	.051***	.261***
	(.013)	(.014)	(.014)	(.011)	(.009)	(.016)
Madagascar	.010	.027**	-.086***	.003	-.018**	-.074***
	(.012)	(.013)	(.012)	(.010)	(.008)	(.015)
Malawi	-.038***	-.048***	-.049***	.003	-.016***	-.113***
	(.009)	(.010)	(.009)	(.007)	(.006)	(.011)
Mali	.014	.079***	.112***	.281***	-.009	.132***
	(.019)	(.020)	(.019)	(.018)	(.014)	(.021)
Mozambique	-.008	-.040***	-.031***	.033***	-.063***	.006
	(.012)	(.012)	(.012)	(.010)	(.008)	(.014)
Namibia	.088***	.072***	.009	.015	.005	.085***
	(.013)	(.014)	(.013)	(.010)	(.009)	(.016)
Niger	-.159***	-.154***	-.036	.075***	-.091***	-.163***
	(.023)	(.024)	(.024)	(.022)	(.018)	(.026)
Nigeria	.128***	.102***	.067***	.104***	.055***	.113***

	(.012)	(.012)	(.012)	(.010)	(.008)	(.014)
Rwanda	-.012	.059***	-.075***	.035***	-.025***	-.013
	(.009)	(.010)	(.009)	(.008)	(.006)	(.012)
Senegal	.101***	.115***	.109***	.121***	.043***	.097***
	(.010)	(.011)	(.011)	(.009)	(.007)	(.013)
South Africa	.076***	.071***	.041***	.081***	.031***	.027*
	(.011)	(.012)	(.011)	(.009)	(.007)	(.014)
Zimbabwe	.105***	.080***	.055***	.055***	.008	.105***
	(.008)	(.008)	(.008)	(.006)	(.005)	(.010)
Uganda	.149***	.173***	.119***	.062***	.006	.191***
	(.011)	(.012)	(.011)	(.009)	(.007)	(.013)
Tanzania	.133***	.150***	.095***	.092***	.016**	.155***
	(.010)	(.011)	(.010)	(.009)	(.006)	(.013)
Zambia	.147***	.119***	.113***	.083***	.034***	.161***
	(.013)	(.013)	(.013)	(.010)	(.009)	(.015)
Time FE: (2000=bn.year)						
2001.year	.180***	.125***	.119***	.020*	.091***	.077***
	(.013)	(.013)	(.012)	(.011)	(.009)	(.014)
2003.year	.009	-.022**	.074***	-.004	.031***	-.025**
	(.010)	(.011)	(.008)	(.009)	(.006)	(.012)
2004.year	-.062***	-.106***	-.023***	-.059***	-.010*	-.157***
	(.009)	(.010)	(.008)	(.008)	(.006)	(.012)
2005.year	-.023***	-.079***	.017**	-.059***	.001	-.097***
	(.009)	(.010)	(.007)	(.008)	(.006)	(.011)
2006.year	.015	-.029**	.032***	-.041***	.023***	-.098***
	(.011)	(.012)	(.010)	(.010)	(.007)	(.013)
2007.year	.009	-.010	.037***	-.013	.031***	-.086***
	(.014)	(.015)	(.013)	(.012)	(.010)	(.017)
2008.year	-.039***	-.069***	.003	-.049***	-.001	-.104***
	(.010)	(.011)	(.009)	(.009)	(.006)	(.012)
2009.year	-.045***	-.111***	-.003	-.063***	-.020**	-.137***
	(.017)	(.018)	(.017)	(.015)	(.010)	(.020)
2010.year	-.082***	-.126***	-.026***	-.072***	-.028***	-.192***
	(.007)	(.009)	(.006)	(.007)	(.005)	(.010)
2011.year	-.046***	-.082***	.002	-.052***	.019***	-.145***
	(.009)	(.010)	(.008)	(.009)	(.006)	(.011)
2012.year	.065***	.001	.033	-.120***	.076***	-.061***
	(.021)	(.022)	(.021)	(.020)	(.016)	(.023)
2013.year	-.143***	-.153***	-.051***	-.085***	-.036***	-.254***
	(.011)	(.012)	(.010)	(.010)	(.007)	(.013)
2014.year	-.092***	-.160***	-.037***	-.089***	-.029***	-.226***
	(.009)	(.010)	(.007)	(.008)	(.005)	(.011)
2015.year	-.081***	-.104***	-.028***	-.065***	-.020***	-.196***
	(.009)	(.010)	(.008)	(.008)	(.006)	(.012)
2016.year	-.125***	-.169***	-.077***	-.106***	-.052***	-.260***
	(.008)	(.009)	(.006)	(.007)	(.005)	(.010)
2017.year	-.149***	-.169***	-.084***	-.122***	-.051***	-.262***
	(.012)	(.013)	(.012)	(.011)	(.008)	(.015)
_cons	.382***	.476***	.360***	.287***	.194***	.746***
	(.013)	(.014)	(.012)	(.011)	(.009)	(.016)
Obs.	146,933	147,214	146,840	146,803	147,432	148,063
R-squared	.057	.068	.062	.010	.034	.090

Standard errors are in parenthesis
**** p<0.01, ** p<0.05, * p<0.1*

Table 16: Complete regression results of justification of rights if wife refuses to have sex.

If wife refuses to have sex, husband has right to…					
	Get angry	Refuse financial support	Use force for sex	Have sex with another woman	Any of the rights
# daughters	.024***	.007	.012**	.008	.026***
	(.009)	(.006)	(.005)	(.006)	(.008)
# sons	.082***	.049***	.031***	-.002	.068***
	(.010)	(.008)	(.006)	(.006)	(.009)
age	-.010***	-.005***	-.004***	-.002***	-.009***
	(.001)	(.001)	(.000)	(.000)	(.001)
education	-.006***	-.005***	-.004***	-.004***	-.007***
	(.001)	(.000)	(.000)	(.000)	(.001)
ever_married	-.046***	-.034***	-.013**	-.073***	-.075***
	(.014)	(.009)	(.007)	(.011)	(.014)
Country FE: (Angola=bn.country)					
Cameroon	.008	.002	-.045***	.100***	.079***
	(.014)	(.008)	(.007)	(.009)	(.014)
Ethiopia	-.164***	-.006	.003	-.114***	.453***
	(.026)	(.017)	(.014)	(.013)	(.022)
Ghana	-.195***	.002	-.050***	.020***	-.135***
	(.013)	(.008)	(.007)	(.008)	(.013)
Kenya	-.058***	.022**	-.022***	.020**	.012
	(.014)	(.009)	(.008)	(.008)	(.014)
Lesotho	.221***	.117***	.047***	.119***	.243***
	(.022)	(.016)	(.014)	(.015)	(.022)
Madagascar	-.132***	.018**	-.018***	.156***	-.005
	(.012)	(.008)	(.007)	(.009)	(.013)
Malawi	-.282***	-.077***	-.056***	-.065***	-.283***
	(.011)	(.006)	(.006)	(.006)	(.012)
Mozambique	-.171***	-.052***	-.018*	.035***	-.072***
	(.018)	(.011)	(.011)	(.012)	(.018)
Namibia	-.300***	.002	-.090***	-.000	-.250***
	(.031)	(.022)	(.017)	(.020)	(.030)
Niger	.098***	.077***	-.008	.010	.134***
	(.011)	(.007)	(.006)	(.006)	(.011)
Rwanda	-.107***	.014	-.008	-.019**	.526***
	(.018)	(.011)	(.010)	(.008)	(.010)
Zimbabwe	-.110***	.019	-.015	.004	.534***
	(.022)	(.014)	(.012)	(.008)	(.017)
Uganda	-.138***	-.015	-.093***	.032**	-.085***
	(.024)	(.017)	(.014)	(.015)	(.023)
Tanzania	.136***	.055***	-.051***	.002	.143***
	(.022)	(.015)	(.012)	(.012)	(.022)
Time FE: (2000=bn.year)					
2001.year	.120***	.056***	.060***	.018*	.120***
	(.019)	(.013)	(.012)	(.011)	(.018)
2003.year	-.039***	.018***	.034***	.022***	-.024**
	(.009)	(.007)	(.005)	(.006)	(.010)
2004.year	.025**	.022***	.033***	.005	.036***
	(.012)	(.007)	(.007)	(.005)	(.013)
2005.year	-.052***	-.020*	-.022**	.	-.660***
	(.018)	(.012)	(.010)	.	(.011)
2006.year	.105***	.030	.049***	.027	.142***
	(.030)	(.021)	(.017)	(.019)	(.029)
2009.year	.079***	.135***	.050***	.093***	.105***
	(.023)	(.019)	(.016)	(.018)	(.022)
_cons	.678***	.251***	.192***	.225***	.742***
	(.020)	(.014)	(.011)	(.014)	(.020)
Obs.	46,483	47,261	47,397	45,540	47,904
R-squared	.040	.	.	.050	.083

Robust standard errors are in parenthesis
**** p<0.01, ** p<0.05, * p<0.1*

Table 17: Complete regression results of decision-making participation.

The man should have the final say on…	Making large household purchases	Visits to family or relatives	Spending wife's earnings	Number of children to have
# daughters	.015***	.029***	.017*	.021**
	(.005)	(.007)	(.009)	(.009)
# sons	.040***	.029***	.036***	.048***
	(.005)	(.007)	(.010)	(.009)
age	-.007***	-.007***	-.006***	-.008***
	(.000)	(.001)	(.001)	(.001)
education	-.009***	-.012***	-.013***	-.014***
	(.000)	(.001)	(.001)	(.001)
ever_married	-.025*	-.045***	-.042***	-.058***
	(.013)	(.013)	(.013)	(.014)
Country FE: (Angola=bn.country)				
Benin	.467***	.	.	.
	(.015)	.	.	.
Burkina Faso	.427***	.	.	.
	(.013)	.	.	.
Burundi	.175***	.	.	.
	(.014)	.	.	.
Cameroon	.368***	.253***	-.098***	.017
	(.017)	(.012)	(.013)	(.014)
Congo DR	.272***	.	.	.
	(.018)	.	.	.
Cote d'Ivoire	.450***	.	.	.
	(.018)	.	.	.
Ethiopia	.029	-.233***	-.291***	-.376***
	(.019)	(.017)	(.017)	(.018)
Ghana	.160***	.045***	-.175***	-.119***
	(.015)	(.011)	(.013)	(.014)
Guinea	.340***	.	.	.
	(.025)	.	.	.
Kenya	.130***	.035***	-.142***	-.180***
	(.015)	(.012)	(.013)	(.014)
Lesotho	.025	.332***	-.069***	.088***
	(.017)	(.024)	(.022)	(.025)
Madagascar	-.278***	-.203***	-.323***	-.349***
	(.016)	(.009)	(.010)	(.011)
Malawi	.274***	.176***	-.088***	.113***
	(.013)	(.014)	(.012)	(.016)
Mali	.398***	.290***	.	.
	(.020)	(.019)	.	.
Mozambique	.125***	-.030*	-.102***	-.069***
	(.016)	(.016)	(.020)	(.020)
Namibia	.026	-.242***	-.215***	-.288***
	(.017)	(.023)	(.013)	(.014)
Niger	.146***	.	.	.
	(.025)	.	.	.
Nigeria	.392***	.174***	-.037***	.073***
	(.015)	(.009)	(.011)	(.011)
Rwanda	.018	-.062***	.006	-.261***
	(.014)	(.012)	(.014)	(.013)
Senegal	.468***	.	.	.
	(.014)	.	.	.
South Africa	.084***	.	.	.
	(.018)	.	.	.
Zimbabwe	-.119***	.	.	.
	(.010)	.	.	.

Uganda	.301***	.101***	-.126***	-.011
	(.015)	(.020)	(.016)	(.017)
Tanzania	.275***	.576***	.031	.186***
	(.014)	(.023)	(.022)	(.025)
Zambia	.187***	.	.	.
	(.016)	.	.	.
Time FE: (2000=bn.year)				
2001.year	-.123***	.177***	.113***	-.018
	(.015)	(.016)	(.018)	(.018)
2003.year	-.024*	.176***	.170***	.036***
	(.014)	(.008)	(.013)	(.013)
2004.year	-.173***	-.269***	.020	-.198***
	(.014)	(.017)	(.014)	(.018)
2005.year	-.124***	.	.	.
	(.014)	.	.	.
2006.year	-.194***	.096***	.	.
	(.015)	(.020)	.	.
2007.year	-.203***	.161***	.	.
	(.018)	(.011)	.	.
2008.year	-.106***	.	.	.
	(.015)	.	.	.
2009.year	-.290***	-.279***	-.078***	-.266***
	(.022)	(.029)	(.024)	(.027)
2010.year	-.211***	-.194***	.	-.188***
	(.012)	(.015)	.	(.015)
2011.year	-.319***	.	.	.
	(.013)	.	.	.
2012.year	-.143***	.	.	.
	(.021)	.	.	.
2013.year	-.390***	.	.	.
	(.015)	.	.	.
2014.year	-.271***	.	.	.
	(.014)	.	.	.
2015.year	-.302***	.	.	.
	(.014)	.	.	.
2016.year	-.374***	.	.	.
	(.012)	.	.	.
2017.year	-.125***	.	.	.
	(.017)	.	.	.
_cons	.757***	.641***	.625***	.752***
	(.021)	(.017)	(.019)	(.019)
Obs.	133,323	58,190	40,105	40,963
R-squared	.199	0.141	.074	.088

Robust standard errors are in parenthesis
**** p<0.01, ** p<0.05, * p<0.1*

C. COMPARISON WITH SIMPLE OLS ESTIMATION

Table 18-20 shows the approximated offspring gender effects using simple OLS regressions. The estimates are consistently and markedly smaller than the ones estimated using 2SLS with instrumental variables. In all 15 measures, the daughter and son effect are strictly smaller than 1 per cent, suggesting that (high) fertility does not largely impact attitudes toward IPV largely.

Moreover, there is no clear pattern in the numerical order of the estimated effects, indicating that the sex of offspring do not tend to affect justification in a certain way. The differences between the OLS and 2SLS regression results indicate that there assumingly is a noteworthy bias.

Table 18: OLS regression results of justification of wife beating.

Wife beating justified if…

	Wife goes out without telling husband	Wife neglects the children	Wife argues with husband	Wife refuses to have sex with husband	Wife burns the food	Any of the scenarios
#daughters	.004***	.004***	.003***	.003***	.002***	.004***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
#sons	.003***	.003***	.003***	.003***	.001*	.004***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Obs.	188,021	188,419	187,919	187,881	188,713	189,573

Cluster-robust standard errors are in parenthesis

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

Table 19: OLS regression results of justification of rights if wife refuses to have sex.

If wife refuses to have sex, husband has with to…

	Get angry	Refuse financial support	Use force for sex	Have sex with another woman	Any of th rights
#daughters	.007**	.004**	.002**	.002**	.006*
	(.003)	(.002)	(.001)	(.001)	(0.003)
#sons	.006**	.004***	.002**	.002**	.006**
	(.001)	(.001)	(.001)	(.001)	(.002)
Obs.	57,912	58,994	59,173	56,929	59,872

Cluster-robust standard errors are in parenthesis

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

Table 20: OLS regression results of decision-making participation.

Man should have the final say on…

	Making large household purchases	Visits to family or relatives	Spending wife's earnings	Number of children to have
#daughters	.004***	.005***	.003*	.006***
	(.001)	(.002)	(.001)	(.002)
#sons	.005***	.004*	.002	.004***
	(.001)	(.002)	(.002)	(.003)
Obs.	171,007	73,284	49,829	50,232

Cluster-robust standard errors are in parenthesis

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