

Working Paper Series
(ISSN 2788-0443)

750

**Colonialism, Cash Crops
and Women in Africa**

Martina Miotto

CERGE-EI
Prague, April 2023

ISBN 978-80-7343-557-8 (Univerzita Karlova, Centrum pro ekonomický výzkum a doktorské studium)
ISBN 978-80-7344-674-1 (Národohospodářský ústav AV ČR, v. v. i.)

Colonialism, Cash Crops and Women in Africa

Martina Miotto*

Abstract

I study the impact of European colonialism in Africa on the present status of women. The historical literature suggests that a critical determinant of persistent gender inequality is the colonial cash crop system. This favoured men's entry into the cash economy and excluded women, whose workload increased as they provided additional labour in their husbands' cash crop fields. By contrast, contemporary economic literature suggests that raising the status of women in the labour force could improve gender norms. I take districts with different levels of participation in cash crop agriculture during colonial rule and compare outcomes for the contemporary female descendants, using exogenous land suitability as the instrument for cash crop production. My findings show a persistent positive effect of cash crop agriculture on women's status, measured as higher agency within the household, less willingness to justify husbands' violence, and higher levels of education. No effect is found for labour force participation. The intergenerational transmission of culture plays a key role in explaining the long-run persistent effect, which is especially prevalent in regions whose cash crops were cocoa and palm oil, as women played a substantial role in producing these crops.

*University of Warwick. Email: m.miotto@warwick.ac.uk. I thank Sascha Becker, James Fenske, Bishnu Gupta and Andreas Menzel for their valuable comments, as well as the participants of the following seminars and workshops: Applied Micro Early Stage (Warwick), African Economic History Network (Bologna), Brown Bag Seminar (Prague), Economic History Society (Belfast), Graduate Seminar in Economic History (London), Workshop on Gender and Family in the Labor Market (Prague), Graduate Seminar in Economic and Social History (Oxford). I also thank Maria Fibaek for sharing data and useful discussions. I gratefully acknowledge the financial support of the ESRC.

1 Introduction

Empowering women is a fundamental development objective, and is essential to enabling women and men to participate equally in society and in the economy.¹ Gender inequalities are pervasive and present along a multitude of dimensions, such as levels of education, labour market participation rates, and political representation.² To measure them, the United Nations Development Programme has developed two indices: the Gender Development Index and the Gender Inequality Index.³ Figures 1 and 2 show their distribution around the world, revealing two patterns: overall, women score worse than men, and the majority of low-performing countries are ex-colonies, with a stark cluster in Africa.

A recent and growing empirical literature focuses on the historical roots of gender norms and female empowerment. There is a large set of evidence in this literature that links historical conditions to present gender inequalities (among others, Alesina et al. (2013); Henderson and Whatley (2014), Giuliano and Nunn (2018)). The consensus of this research is that differences in cultural norms regarding gender roles emerge in response to specific historical situations, and tend to persist even after the historical conditions have changed (Giuliano (2017)).

I study the role of the colonial agricultural system, based on cash crop production, in shaping gender norms and women's empowerment in Sub-Saharan Africa. This system was biased towards African men, making them the primary beneficiaries of the economic returns, but dependent upon women's unremunerated work (Boserup (1970), Etienne (1977), Korieh (2001)).

¹Source: World Bank, 2014: www.worldbank.org/en/region/afr/brief/improving-gender-equality-in-africa.

²UN, Gender statistics: <https://genderstats.un.org/#/indicators>.

³The Gender Development Index measures gender gaps in human development achievements by accounting for disparities between women and men on three basic dimensions of human development: health, measured as life expectancy at birth, knowledge, measured as expected and mean years of schooling, and living standards, measured as the gross national income per capita. It is the ratio of the Human Development Indices calculated separately for females and males. The Gender Inequality Index measures gender inequalities in three important aspects of human development: reproductive health, measured by the maternal mortality ratio and adolescent birth rates, empowerment, measured by proportion of parliamentary seats occupied by females and proportion of adult females and males aged 25 years and older with at least some secondary education, and economic status, expressed as labour market participation and measured by the labour force participation rate of female and male populations aged 15 years and older (<http://www.undp.org>).

The historical and anthropological literatures have long suggested that women’s subordinate position in the cash economy harmed their socio-economic status (Boserup (1970), Rodney (1972), Davison (1988), Grier (1992)). Beyond their duties in the household and in food crop production, women’s workloads increased as they were needed to provide additional labour in their husbands’ cash crops. However, it is not clear whether this hypothesis is consistent with contemporary economic evidence. Since cash crop agriculture often increased female labour in agriculture, as more output was required to meet colonial taxation demands, recent empirical literature on the determinants of gender inequality would suggest that this led to better outcomes for women, and that these could persist into the present (Alesina et al. (2013), Hansen et al. (2015), Teso (2018)). My results support this second view, that women are better off as a consequence of their greater traditional involvement in cash crop agriculture.

I construct a dataset linking three sets of information: (i) current indicators for women’s empowerment, using variables from the Demographic and Health Surveys, (ii) ancestral location and characteristics of the ethnicities of the women in the data from Murdock’s (1967) *Ethnographic Atlas*, and (iii) the location of cash crop production in colonial times. I retrieved yearly cash crop production data for the twenty years between 1920 and 1940 from historical colonial official statistics, complemented with historical maps of cash cropping areas when yearly data was not available. With these data, I compare the current status of women whose ancestors lived in colonial districts more involved in cash crop agriculture with women whose ancestors lived in districts less or not at all involved in cash crop agriculture. I control for pre-colonial levels of women’s empowerment using ethnicity-level variables from the recent economic literature. However, as colonial cash crop production could be endogenous to unobserved characteristics of local populations, I instrument for colonial cash crop production with terrain suitability for cash crops, relative to suitability for food crops.

I find that women whose ancestors were more involved in cash crop production are nowadays more empowered: they have more decision-making power within the household and they are

less willing to justify their husband's violence. Men from the same ancestral areas are also less keen to condone spousal violence, in line with improved gender norms, but do not display more empowerment in terms of household agency.

I explore possible mechanisms for the positive results on women's status. I find that on average the long lasting impact of cash crop agriculture is visible also in higher education levels for women but not in labour force participation, suggesting that the higher education levels are not driven by labour market opportunities. I find a larger effect on decisions that do not involve financial matters such as income management or purchases for the house. Women have greater agency over their own income but not their husbands'. Further, I examine whether the effect of cash crop agriculture is driven by certain specific cash crops. I show that the results are mainly driven by cocoa and palm oil. Indeed, the historical literature suggests a particularly active role for women in the production of cocoa and palm oil (Grier (1992), Austin (2014)), speaking further to the hypothesis that the increased need for female labour in cash crop production lead to their persistent empowerment. I also explore the role of the marriage market in the long-run transmission of cultural values (Fernández et al. (2004)), without finding significant evidence in support of this channel.

This paper contributes to several strands of literature. First, it complements a growing empirical literature on the historical roots of gender roles. In particular, this paper contributes to a literature on natural experiments, which claims that historical shocks can alter beliefs about the role of women and that these are transmitted across generations. For instance, the Transatlantic slave trade has been shown to affect current female labour force participation (Teso (2018)), and the acceptability of polygyny (Edlund and Ku (2011), Dalton and Leung (2014)). Acemoglu et al. (2004), Fernández et al. (2004) and Goldin and Olivetti (2013) show that higher mobilization rate of men during World War II, leads to a positive and persistent effect on female labour force participation in the United States. Becker and Woessmann (2008) look at the long-term impact of the Protestant Reformation and show it decreased the gender

gap in basic education and literacy. Campa and Serafinelli (2019) document how more equal gender-role attitudes emerged in state-socialist regimes. Xue (2018) finds that premodern cotton textile production is systematically correlated with more progressive gender norms and daughter preference. Grosjean and Khattar (2018) study the long-run effect of the male-biased sex ratio that emerged in Australia by the late eighteenth century, finding worse outcomes on cultural attitudes and women's labour supply decisions in areas with historically more male-biased sex ratios. I complement this literature by focusing on another historical shock, namely the introduction of cash crop production by European colonisers on the African continent. Also, at the centre of this paper are two measures of women's empowerment rarely used in the literature so far, which inform us how women perceive their status rather than measuring it through standard objective indicators, such as labour force participation or education. The results show that, even if women from areas more involved in cash crop production do not participate more in the labour force, they do display higher levels of empowerment by having more decision power and justifying husbands' violence in fewer instances.

Second, this paper contributes to the debate on colonialism and women's status, which spans different fields including economic history, history and anthropology. A major avenue of research that links colonialism and gender norms looks at the role played by Christian mission education. Among others, Boserup (1970), Rodney (1972), and Akyeampong and Fofack (2014) suggest that Christian mission schools provided gender-biased education, reflecting the typical Western view of the domestic role of women, disproportionally teaching males knowledge useful for participation in the modern colonial economy and leading to sizeable gender gaps in education (Nunn (2014), Meier zu Selhausen and Weisdorf (2016), De Haas and Frankema (2018)). Other studies have instead argued that a channel through which colonialism affected women's status is the decline in land control and use rights for women. This process could take various forms. It could be institutionalised, as happened in Rhodesia with the Native Land Husbandry Act of 1951, which gave male heads of household individual, rather than lineage, rights to land (Peters

and Peters (1998)). Or it could occur as a consequence of land becoming scarce and hence more expensive, making it less affordable to African women (Sheldon (2017)). I contribute to this research by providing the first quantitative test of the prominent cash crop hypothesis, complementing the evidence based on qualitative methods from the anthropology and historical literatures. I do so by exploiting geographical, within-country variation in cash crop production within colonies, using within-country variation in soil suitability for cash crops for identification, and large-scale representative surveys of country populations.

In the next section I outline the historical background, describing pre-colonial gender norms and the introduction of cash crops in Africa. In section 3, I outline the two competing hypotheses discussed in this paper. I give a detailed description of the data used for the analysis in section 4, and I lay out the empirical strategy and construct the instrument for cash crop production in section 5. In section 6, I focus on the main results, investigating the effect of cash crop agriculture on women’s status, while in section 7, I explore the mechanisms. In section 8, I present robustness checks, and in section 9 the conclusion.

2 Historical Background

2.1 Pre-colonial Gender Roles

Gender relations and women’s status in pre-colonial Africa differed across societies and are difficult to lay out in detail. The anthropologist Sudarkasa (1986) argues that the “status of women” as a connotation of sexual stratification is not appropriate for describing the relationship between female and male in most pre-colonial African societies. Citing Whyte (1978), she suggests that in many indigenous African societies women and men occupied different domains, the domestic and the public one, and these should not be understood in terms of ranking but rather as equally important and mostly overlapping. Sudarkasa (1986) stresses that it was the market economy introduced at the onset of colonisation that created conditions for increasingly

defining females and males as unitary distinct categories that were compared one against the other and, therefore, hierarchically related to one another.

Bearing in mind these limitations on the use of the term “status” when addressing pre-colonial gender relations, anthropologists and historians have generally reached a consensus that women played important roles in rites associated with religious beliefs (Sheldon (2017)), had a degree of control over resources (Etienne (1977), Guyer (1980)), that they were involved in the political process and the public domain (Sudarkasa (1986)), organized themselves into secret societies and organizations (Sheldon (2017)), held formal leadership and elevated roles in many matrilineal societies (Guyer (1980), Sudarkasa (1986), Grier (1992), Henderson and Whatley (2014)), and were involved in the production and distribution of various goods, with their activities complementary rather than subordinate to those of men (Etienne (1977), Sudarkasa (1986), Tashjian and Allman (2002)).⁴

In particular, discussing the role of women in agriculture during pre-colonial times, Boserup (1970, p.16), claims that “Africa is the region of female farming *par excellence*”, and there are many accounts of women in agriculture spending at least as many hours in the fields as men did (Boserup (1970), Henn (1978), Linares (1985)). Meanwhile women were often entitled to appropriate the harvests of particular crops, either because they were the primary producers of such crops (Etienne (1977)) or because of land rights in matrilineal societies (Coquery-Vidrovitch (1997), Tashjian and Allman (2002)).⁵

⁴Sheldon (2017) argues that Africa was the world region that was most noted for a high incidence of matrilineal descent systems, found in an extensive belt across the centre of the continent, and including peoples in parts of West Africa, central Africa, and extending into southern Africa.

⁵Coquery-Vidrovitch (1997) states that in the matrilineal tradition marital dominance was counterbalanced by women’s continuing to belong to their own lineage of origin, and that before colonisation no distinction was made between the male right to allocate familial lands, which were not private, and the mixed right of access to the land to which women acceded as daughters, wives, and mothers. Looking at the context of pre-colonial Asante, Tashjian and Allman (2002) claim that although spouses jointly produced foodstuff, joint labour did not give rise to joint property, and as was the case for most matrilineal societies, property was owned by one spouse or the other.

2.2 Cash Crops and Colonisation

Cash crops are crops grown mainly for an export market, and are different from food crops that are used for subsistence and are only occasionally sold for cash (Klein (1980), Hart et al. (1982), Bates (1983)). The introduction of the first cash crops in Africa, other than the few native ones such as palm oil and kola, and the resulting emergence of mass export agriculture began in the nineteenth century, before the European Scramble of Africa, primarily along the coasts. However, it was during colonial rule that agricultural-export economies expanded and incorporated the fertile hinterlands (Austin (2009)) under the pressure of colonial administrations, which encouraged market-oriented crop production by both persuasion and coercion (Usoro (1977), Ochonu (2018)).

Cash crops usually had a sole economic function, different from food crops, which tended to have social uses, as in ceremonies for instance, and to take on diverse meanings in different local contexts. They were frequently foreign in origin and lacked social meaning in particular kinship contexts.⁶ This facilitated sexual and social separation of agricultural tasks once the new crops were introduced (Linares (1985)).

3 Hypotheses: Cash Crops and Gender Norms

According to the historical and anthropological literatures, women's exclusion from the growing colonial cash economy had a negative and persistent effect on their status. Their marginalization can be thought of as the outcome of few combined forces.

Colonial states introduced monetization in Africa in the form of monetary wage payments and monetary tax collection.⁷ The tax system was introduced with the main purpose of making

⁶For instance, cotton was introduced to Ghana by the British administration from 1903 onwards (Meier zu Selhausen (2015)); Groundnuts were introduced to Senegal by the French (Linares (1985)); Cocoa was introduced to Ghana by British missionaries in the 1860s (Hill (1963)) and to the Ivory Coast by the French in 1910 (Ruf (1995)); Tobacco was introduced to South Africa by Jehovah's Witnesses at the beginning of the twentieth century (Coquery-Vidrovitch (1997)).

⁷Rudimentary currencies were already used throughout the continent, however, colonial states outlawed pre-colonial standards of value and currencies such as manilla, cowrie shells, metal bars, cloth, and others, in favour of unified official currencies within sovereign states and their colonies and protectorates (Ochonu (2018)).

colonies financially self-sufficient. Colonial officials created either a flat-rate hut tax on African dwellings or a poll tax paid mostly by African men.⁸ This tax system implicitly considered the man as the head of the household, and hence the only responsible for tax payments of the whole household, imposing the coloniser's idealized notion of women's dependent status on men (Byfield (2018)). It was based on the European model, where the husband and father was considered the head of the household and responsible for paying taxes, and for the other interactions with the state (Sheldon (2017)).

Even though households were not formally obliged to cultivate cash crops, the fiscal pressure of the newly introduced tax system indirectly forced farmers and peasants to market their produce and therefore to maximize their production of cash crops (Bryceson (1990), Mandala (1990), Wrigley (1959), Papaioannou and de Haas (2017)). While these crops assumed a monetary value, men quickly assumed control over their production, land and especially over their profits. This process was the result of two forces. First, because of the patriarchal assumption about the appropriate role of women, colonial officials dictated agricultural development policies that enabled men to dominate the cultivation of cash crops for the international market (Korih (2001)), and only recognised men as counterparts in their transactions (Hailey and Hailey (1957)). Second, as the primary target of taxation men had to acquire cash, tending to justify and reinforce their control over cash crops (Etienne (1977)), and leading to women's exclusion from the cash economy. Boserup (1970) argues that European settlers and colonial administrators neglected the female agricultural labour force when they introduced modern commercial agriculture, and promoted the productivity of male labour.

The exclusion of women from taxation, however, did not imply an exclusion from the work involved in cash crop production. In most cases women continued to work alongside their husbands to produce valuable crops, which was an extension of domestic chores, while their

⁸In the vast majority of cases taxes were imposed on African dwellings or men. As the imposition of taxation was heterogeneous across and within countries, there were exceptions. For instance, the colonial government in Nigeria initially imposed taxation on African women as well, however, after the Abeokuta Women's Revolt in the 1940s, women were excluded from taxation. In Ghana, direct taxation was not imposed until the 1950s (Sederberg (1971), Frankema and van Waijenburg (2013)).

husbands became the owner of the land and profits from cropping (Etienne (1977), Guyer (1980), Davison (1988), Grier (1992), Coquery-Vidrovitch (1997)). Cash crop production required extra labour of women, as they also continued to play a critical role in subsistence agriculture, from which men abruptly withdrew. Although essential, mediated by cash and the capitalist commodity economy, their labour became invisible and largely unremunerated (Etienne (1977), Byfield (2018)).

However, it is not clear whether this hypothesis from the historical and anthropological literatures is consistent with contemporary economic evidence. If cash crop agriculture increased female labour in agriculture because additional income was needed to pay taxes, recent empirical literature on the determinants of gender inequality would suggest that this may lead to better outcomes for women. For instance, Teso (2018) demonstrates that the shortage of African men in areas more severely affected by the Transatlantic slave trade pushed women into the labour force, substituting missing men on new areas of work. He finds positive long-term effects both on current labour participation and attitudes towards women. On the opposite side, Alesina et al. (2013) show that descendants of societies that traditionally practised plough agriculture, where men had a physical advantage in farming and women were therefore less involved in agricultural work, today have less equal gender norms, and less female participation in the workplace, politics, and entrepreneurial activities. Hansen et al. (2015) find that societies with long histories of agriculture show greater dissimilarity in gender roles as a consequence of more patriarchal values and beliefs regarding the proper role of women in society. They argue that one of the primary mechanisms underlying their results is that societies with longer agricultural histories had a higher level of technological advancement, which in the Malthusian Epoch translated into higher fertility and a diminished role for women outside the home.

4 Description of Data

The analysis in this paper is based on a cross-sectional dataset covering roughly 103,100 present-day African women across the ex-British colonies of current Ghana, Kenya, Malawi, Nigeria, and Uganda.⁹ The dataset links three sets of information: current indicators for women’s empowerment, ancestral characteristics of their ethnicities, and cash crop production in the ancestral homelands of these ethnicities in colonial times. This section outlines the data sources and the process of constructing the main variables.

4.1 Modern Variables

4.1.1 Main Outcomes

The main outcome variables are derived from the Demographic and Health Surveys (DHS). I use all rounds for many ex-British colonies from the year 2000 onwards, when additional indicators on women’s status and empowerment were included in the surveys.¹⁰ The DHS data were collected by a stratified two-stage cluster design that is meant to provide a representative sample of women aged 15-49 at national and state levels. I construct two main outcome variables capturing women’s empowerment, which I refer to as the *Beating Free Index* and the *Decision Index*.

The *Beating Free Index* is the sum of answers to a series of yes/no questions where women respondents are asked whether a husband is justified in hitting or beating his wife under a number of different circumstances, that are: the wife goes out without telling him, the wife neglects their children, the wife argues with him, the wife refuses to have sex with him, the wife burns the food. The index is the share of times a woman replies “No” to these questions. Thus, a higher value on this index means that women do not justify beating in a larger set

⁹My sample does not include women from the remaining ex-British colonies as I have not yet collected the data on the main explanatory variable.

¹⁰DHS Survey rounds used for the main results: Ghana 2003, 2008, 2014; Kenya 2003, 2008, 2014; Malawi 2000, 2004, 2010, 2016; Nigeria 2003, 2008, 2013; Uganda 2001, 2006, 2011, 2016. All DHS survey data have been retrieved already harmonized from IPUMS-DHS.

of circumstances, and are therefore more empowered. Table 1 summarises the availability of the index components across surveys. To minimize misreporting, I do not include survey respondents who were in the same room as their husband when being asked these questions. The beating justification variables have already been used in previous economics literature on violence against women, such as in Alesina et al. (2016), Leyaro et al. (2017) and Teso (2018).

The *Decision Index* is constructed in a similar way, and provides information on whether women report to have some say on: making large household purchases, household purchases for daily needs, visits to family or relatives, spending their own earnings, spending husband's earnings, their own health care, food to be cooked, and children's health care. The possible answers to these questions are *woman alone*, *woman and husband/partner*, *woman and someone else*, *husband/partner*, *someone else*. The decision variable on these situations takes value of 1 whenever a woman has some degree of say in a decision (first three options) and 0 otherwise (last two options). The *Decision Index* then gives the share of decisions' dimensions for which the woman has some input. Table 2 summarises the availability of the index components across surveys. Decision making power has been widely used in the literature to measure women's empowerment, as reviewed in Duflo (2012), and these DHS variables have also recently being used in Teso (2018) to look at gender norms. I focus on the *Beating Free* and *Decision* indices as they most probably provide insights on an intrinsic dimension of female empowerment that is not endogenous to market forces, and therefore capture an uncontaminated measure of status.

4.1.2 Additional Outcomes

To further explore mechanisms, I use years of education and labour force participation as additional outcome variables. While in some cases these may be measurable with more precision, they should not be interpreted as pure indicators of empowerment, as they are also determined by different market forces and other variables such as poverty and safety.

Table 3 provides summary statistics for all the outcome variables used. On average, women do not justify beating in three-fourths of the occasions, have some decision power in slightly more than a half of the cases, have on average 6 years of education, and the majority of them are currently working.

4.2 Ethnicity Level Data

To measure women pre-colonial status, I use information on ancestral anthropological and cultural practices of the women’s ethnic groups, taken from Murdock’s (1967) Ethnographic Atlas. The Ethnographic Atlas is an ethnicity-level database with pre-colonial information for more than 1,200 ethnic groups worldwide. To control for women’s empowerment during pre-colonial times I use many of the variables that the previous economic and anthropological literature has used regarding women’s status or value.

In particular, I use data on customs of bride price, practice of polygyny, the descent system of matriliney, and on whether agriculture is the main subsistence source for an ethnicity’s economy. Appendix A lists how I code these variables starting from the original variables in the Ethnographic Atlas.¹¹

Linking DHS respondents to their ancestors’ ethnic groups in the Ethnographic Atlas is not straightforward, as ethnicities’ names can vary across space and time. In order to address this, I use different sources: the Ethnologue, a catalogue of more than 6,700 languages spoken in 228 countries, the Joshua Project, an online directory of more than 10,000 ethnic groups, and the Ethnohistorical Dictionary, a book with information on more than 1,800 different ethnic

¹¹*Bride price* can be considered capturing an implicit economic value of women following Boserup (1970), Goody (1973), Becker (1981), Alesina et al. (2016); *Polygyny* is a practice which generally correlates negatively with female bargaining power (Tertilt (2005), Doepke et al. (2012)) since having more than one wife customarily indicates less progressive attitudes and a lower consideration of women’s status (Alesina et al. (2016)); *Matrilineal system of descent* is associated with a higher status of women in different sources as Guyer (1980), Grier (1992), Henderson and Whatley (2014), Sheldon (2017); *Agriculture as main subsistence activity* can reflect a higher status of women, as discussed in Alesina et al. (2016), since in economies based on agriculture, especially without the plough like basically everywhere in Africa, women could participate more in the labour force and develop a more equal status in society and in the family. Alesina et al. (2013) relate prevailing gender norms to aboriginal use of plough and finds strong evidences that descendants of societies which traditionally practised plough agriculture have today less equal gender norms. However, there is no society in my sample which practised plough agriculture before colonial times, reflecting the general trend for African societies present in the Murdock’s Atlas.

societies.¹² These sources provide alternative names for ethnicities and specify links among societies (based on location or supergroup), making it possible to connect distinct names in the DHS surveys and the Ethnographic Atlas. When no match is found, I use pre-existing matches from two datasets provided, respectively, by Nunn and Wantchekon (2011) and Fenske (2014). To fill a small remaining gap I checked on further online sources for possible matches.¹³ Overall, 64 percent of women in the final sample are linked to an ethnicity in the Atlas through a perfect match, 32 percent through Ethnologue, Joshua Project or the Ethnohistorical Dictionary, more than 3 percent thanks to pre-existing mappings, and less than 0.5 percent via manual matching.¹⁴

4.3 Colonial Agricultural Production

To measure colonial agricultural production, I use an indicator for the share of a colonial district's area dedicated to cash crops. Following the definition by Papaioannou and de Haas (2017) I classify the following as cash crops: cocoa, coffee, copra, cotton, groundnuts, palm oil and tobacco.

Based on borders of colonial districts from historical maps, I measure the share of the total districts' area that was under cash crops cultivation. I compiled data on colonial agricultural production from a number of different sources, depending on the availability of reliable information. Whenever official colonial statistics are available, I collected and digitised acres under cultivation of each cash crop for all colonial districts at yearly level over the period 1920-1939. I retrieved from the same sources total districts' areas, and averaged agricultural production across these years. Whenever official accounts are not available, I extract similar information

¹²Ethnologue: <https://www.ethnologue.com>; Joshua Project: <https://joshuaproject.net>; Ethnohistorical Dictionary: Olson (1996).

¹³The match is performed either on ethnicities' names, or on the language spoken by an ethnicity.

¹⁴For almost 80 percent of the sample the match is either perfect or the listed names in the DHS and the Ethnographic Atlas are alternative names for the same ethnicity. For example, a substitute name for the Mole-Dagbani of Ghana is Dagomba, and in the same country, Twi and Ashanti are two different names to refer to the same ethnic group. For the remaining part of the sample ethnicities are linked to their supergroup or a related group. For instance, the Baruli of Uganda are matched to the Ganda, a larger group of which they form a smaller part.

from historical maps showing the main cash crops production zones. Appendix B lists all the sources used to compile the agricultural production data. These data are collected for all the countries of residence of the women in my sample, and also for current-day Tanzania, as many respondents' ancestors lived there.

4.4 Data on Terrain Suitability

I use data on terrain suitability for the cultivation of different crops to provide a source of exogenous geographic variation in colonial cash crop agriculture.¹⁵ Data on suitability are provided by the Global Agro-Ecological Zones (GAEZ) project from the Food and Agriculture Organization (FAO).¹⁶ The FAO-GAEZ data provide global estimates of land suitability for different crops within cells of approximately fifty-six kilometres by fifty-six kilometres, based on land and climate characteristics. The climate characteristics are precipitation, frequency of wet days, mean temperature, diurnal temperature range, vapour pressure, cloud cover, sunshine, ground-frost frequency, and wind speed, and they all come from the global climatic database compiled by the Climate Research Unit at the University of East Anglia. Land characteristics are taken from the FAO's Digital Soil Map of the World. The final FAO-GAEZ dataset provides an estimate of the potential yield (kg/ha) of each crop in each grid-cell, given an assumed level of water supply and input use, and then creates a suitability index that ranges from 0 to 1. To closely mimic historical land conditions and agriculture during colonial rule, I use variables constructed under the assumption that cultivation occurs under rain-fed conditions and low input intensity.

¹⁵I use all crops available in the FAO-GAEZ database and divide them in two categories: cash crops (cocoa, coffee, copra, cotton, groundnuts, palm oil, tobacco) and all remaining as food crops (banana, cassava, foxtail and pearl millet, maize, phaseolu beans, dry and wet rice, sorghum, sweet and white potato, sugar beet, sugar cane, wheat).

¹⁶<http://www.fao.org/nr/gaez>.

4.5 Other Data

I collect additional data from various sources to control for further characteristics of colonial districts and ethnicities. For ethnic ancestral homelands, I retrieve information on distance from rivers and the coast from the Natural Earth dataset, distance from the closest railway track using maps available in Jedwab and Moradi (2016), and on the number of slaves involved both in the Transatlantic and the Indian slave trade using Nunn and Wantchekon (2011) data. At the colonial district level I combine a host of historical data: on population density in 1930 from the Historical Database of the Global Environment; on the historical rule of Islam by geocoding a 1918 map of the geographic distribution of religions in Africa from Bartholomew and Brooke (1918); on conflicts occurring before colonisation between 1400 and 1700 from Brecke (1999); on the dominant vegetation type using White’s (1983) map; on the number of Christian missions from Roome (1925); on soil ruggedness using Nunn and Puga’s (2012) data; on the presence of diamond mines from Lujala et al.’s (2005) DIADATA dataset. I also gather data on general land quality using nutrient availability and land workability provided by FAO, nitrogen and carbon density level taken from EarthDATA Spatial Data Access Tool, and an index for general suitability developed by Ramankutty et al. (2002). A full list of all variables used in the analysis along with detailed information on sources can be found in appendix A.

5 Empirical Strategy

5.1 Baseline Estimating Equation

To measure the persistent effect of colonial cash crop production on current-day women’s status I estimate the following equation:

$$EMP_{iedcy} = \alpha + \beta CP_d + I_{iedcy}\gamma + E_e\delta + D_d\lambda + \rho_{cy} + \varepsilon_{iedcy} \quad (1)$$

where EMP_{iedcy} is women's empowerment status, measured either through the *Beating Free Index* or the *Decision Index* for individual i of ethnicity e with ancestors living in district d for DHS country c administered in year y . CP_d denotes intensity in cash crop production in the ancestral colonial district, reducing concerns about possibly endogenous post-colonial migration.¹⁷ I_{iedcy} , E_e , D_d are, respectively, contemporary individual level controls, ethnicity level controls, and ancestral district level controls. Furthermore, I include fixed effects at DHS country-round level ρ_{cy} .¹⁸ Standard errors are robust and clustered at ethnicity level. In Table C1 of appendix C, I show that the main results are robust using standard errors adjusted for two-way clustering within ethnic group and district of origin.

5.2 Instrument for Cash Crop Agriculture

Cash crop production may be endogenous. For instance, ethnicities more likely to engage with Europeans in cash crop agriculture could also be those with particularly regressive gender norms, matching those of the colonisers. On the other hand, ethnicities with more inclusive gender norms could be more open to cooperation with colonisers. In either case, OLS estimates of β in equation 1 would be biased. Another potential concern is that the data on colonial cash crop production is derived from official colonial statistics and historical maps. This might generate measurement error that could bias OLS estimates towards zero. To deal with these concerns, I use the relative suitability of land for cash crops compared to food crops as an instrument for colonial cash crop agriculture. I take the ratio of average suitability for all cash crops over average suitability for all cash and food crops at the colonial district level:

$$SuitCC_d = \frac{\frac{1}{C} \sum_{c=1}^C Suit_{cd}}{\frac{1}{C} \sum_{c=1}^C Suit_{cd} + \frac{1}{F} \sum_{f=1}^F Suit_{fd}} \quad (2)$$

¹⁷Ancestral colonial districts are referred to as the district where a respondent's ancestors lived during colonial rule. Such districts are geographically different from current ones, as districts' borders changed with time.

¹⁸Results are robust to adding origin country-by-ethnicity fixed effects.

where $c = 1, \dots, C$ and $f = 1, \dots, F$ are cash and food crops. Therefore, I estimate the first stage as:

$$CP_d = \alpha + \beta SuitCC_d + I_{iedcy}\gamma + E_e\delta + D_d\lambda + \rho_{cy} + v_{iedcy} \quad (3)$$

5.2.1 Identifying Assumptions and Instrument Validity

The key identifying assumption is that the instrument needs to be uncorrelated with the error term in equation 1, ε_{iedcy} , to satisfy the exclusion restriction. That is, suitability for cash crops should predict contemporary women’s empowerment only via the channel of agricultural production. Given that in equation 1 I control explicitly for a rich set of other possible ways that cash crops can be correlated with the outcomes of interest, this assumption is likely to be fulfilled. Most importantly, I control for pre-colonial women’s status, which could directly have an effect on women’s current status in society, by controlling at the ethnicity-level for the custom of bride price, the practice of polygyny, the descent system of matriliney, and the dependence of an ethnicity on agriculture as main form of subsistence, during the pre-colonial period, using the Murdock Atlas. Table 4 shows that neither of these variables is significantly correlated with land suitability for cash vs. food crops.

For the two-stage least squares estimates to identify causal estimates, the instrument also needs to be a good predictor of colonial cash crop production. In Figure 3, I report the relationship between suitability for cash crops and its actual production. As expected, there is a significant positive relationship. The strength of the instrument is also captured by the Kleibergen-Paap F-statistic of the first stage which is reported in each regression table, and is always above 10 in the main specifications.

6 Results

In this section I present the main results of the analysis, following the identification strategy laid out in the previous section. For ease of interpretation, all outcome and main explanatory

variables have been standardized.

6.1 Main Results

Table 5 presents the OLS and 2SLS estimates of the effect of cash crop agriculture on women’s empowerment using the *Beating Free Index* in Panel A and the *Decision Index* in Panel B. Specifications include fixed effects at DHS country-round level. Column 1 reports results for a simple specification which only includes fixed effects. When looking at the *Beating Free Index* the effect of cash crop agriculture is positive and statistically significant, indicating that women with ancestors from a district with more cash crop production during colonial rule justify husbands’ violence on fewer occasions. In columns 2 to 5, I add several sets of control variables, which are pre-determined with respect to colonisation to avoid potentially endogenous controls.

Column 2 adds variables that vary at the colonial-district level. These include geographic characteristics such as terrain ruggedness, general soil quality, fixed effects for vegetation type, and the presence of diamond mines. I also include population density in the 1930s and a dummy on whether Islam was the prevalent religion at the beginning of the twentieth century, which could potentially directly affect women’s status as the Islamic religion in this region generally prohibited women from working outside the home. Finally, I further add the number of conflicts between 1400 and 1700 to control for levels of warfare in the pre-colonial period, since Besley and Reynal-Querol (2014) showed that a history of pre-colonial conflicts is associated with lower levels of trust today, which in turn could be associated with gender norms. Adding these controls halves the coefficient from 0.307 to 0.170, but the effect remains positive and statistically significant at the 5 percent level.

In column 3 I add ethnicity-level characteristics taken from the Murdock Atlas on women’s pre-colonial status to control for women’s initial level of empowerment. The coefficient on share of cash crops stays positive and significant.

Column 4 controls for ethnicity-level geographic characteristics: distance from rivers, coasts and railways, to take into account the greater likelihood of a colonial presence at or near ports. Meanwhile Jedwab and Moradi (2016) show a strong effect of rail connectivity on cash crop production, population, and urban growth. Including these variables barely changes the main results.

In column 5, instead, I add ethnicity-level information on slaves taken in the Transatlantic and Indian slave trades. I construct this variable as the logarithm of 1 plus the number of slaves taken from the respondent's ethnic group in the slave trade divided by the area of land historically inhabited by the group. Nunn (2008) finds a negative impact of the slave trade on long-term development, while Nunn and Wantchekon (2011) shows that current differences in trust levels within Africa, which might be associated with gender norms, can be traced back to the slaves trade. Teso (2018) directly links the Transatlantic slave trade to current women's labour force participation and gender norms. Further, Dalton and Leung (2014), Edlund and Ku (2011), and Thornton (1983) discuss the slave trade as a cause of polygamy. Adding this control shrinks the coefficient, but the positive relationship between cash crop agriculture and the *Beating Free Index* is still positive and significant at the 1 percent level.

Finally, column 6 presents results when controlling for all variables together. The coefficient of interest remains positive and statistically significant, and suggests that a one standard deviation increase in the share of land devoted to cash crops within a district leads to an increase of 0.485 of a standard deviation in the *Beating Free Index*, or 16 percentage points.

Panel B presents the same estimates using the *Decision Index* as the outcome variable. Results are significant at the 10 and 5 percent level, and they are very similar to those for the *Beating Free Index*, indicating that women from ethnicities more involved in cash crop agriculture have more decision power within the household. When looking at the preferred specification including all the controls, a coefficient size of 0.663 suggests an increase in the *Decision Index* of 23 percentage points for an increase of one standard deviation in cash crop

agriculture.

The IV results are consistently larger than their OLS counterparts shown at the bottom of each column in Table 5. There could be a few explanations. First, as discussed above, some measurement error leading to attenuation bias is to be expected since the share of cash crop agriculture is calculated based on historical statistics and digitised maps.¹⁹ Second, IV estimates only capture the average treatment effect for compliers, i.e. those ethnicities who produced more cash crops only because their land was more suitable for such crops with respect to others. OLS estimates can be downward biased if ethnicities that produced cash crops for reasons other than having suitable land have a persistent lower level of gender equality, a possibility discussed above. Third, the OLS estimates could be downward biased because of endogeneity if ethnicities with more regressive gender norms were also more open to cooperation with colonisers.

6.2 Decision Index Components

A natural question when looking at the *Decision Index* is whether women's empowerment is reflected in each of its components. I group the different categories of situations in two main classes: financial decisions (final say on: large household purchases, household purchases for daily needs, spending own earnings, spending husband's earnings) and other decisions (final say on own health, and children's health care, final say on food to be cooked, and visits to family or relatives). The first two columns of Table 6 show that women's agency is reflected in both domains, with coefficients similar in size and significance. It is also interesting to explore whether, within the financial realm, women have decision power only with respect to their own earnings. The last two columns of Table 6 show that while women have more agency when it comes to their earnings, they do not have decision power over the earnings of their husbands.

¹⁹I expect the measurement error to be classical in nature, and thus to drive OLS estimates toward zero.

6.3 Effects Across Cohorts

As the DHS sample used for this analysis includes women born since the 1950s, it is also possible to check whether the long-run effect of cash crop agriculture has been dissipating over time. To analyse this, I add to the specification in equation 1 the treatment interacted linearly with women’s year of birth. Table C2 shows the results looking at the specification with the full set of controls and finding no significant effect of the interaction term, suggesting persistence even for younger cohorts of women.

6.4 Adding Potentially Endogenous Variables: Individual Level Controls

While in Table 5 I only included pre-determined controls, in Table 7 I add current-day individual level characteristics, which could potentially be affected by colonial cash crop agriculture, and themselves affect gender equality. These include marital status, number of children, religion, urban status, and the household’s geographic coordinates. Although the DHS does not provide information on individuals’ incomes, it includes a categorical variable that captures wealth by ranking households into wealth quintiles from the poorest to the richest within each country. The coefficients for the *Beating Free* and the *Decision* indices of column 7 remain positive and statistically significant. Crucially, the relationship does not seem to be driven by people whose ancestors engaged in colonial cash crop production being more wealthy today, a variable often associated with greater female empowerment.

6.5 Identifying Long-Run Persistence

In this sub-section, I isolate the role played by the intergenerational transmission of cultural values from the persistent effects of the introduction of cash crop production on the external environment. I exploit the fact that many individuals of different ethnic groups have migrated over time and nowadays women of different ethnic origins live in the same location. Therefore, in columns 2 and 4 of Table 8, I add fixed effects for the districts where women are currently

living. This specification isolates persistent cultural effects of cash crop agriculture by comparing women from different ethnic groups while keeping constant the current external environment. Both the coefficients for the two different measures of empowerment remain positive. Comparing them with the results in columns 1 and 3, the coefficient sizes halve, but statistical significance increases. Among migrants currently living in the same districts, a one standard deviation increase in ancestral districts' share of cash crop agriculture leads to an increase of almost 6 and 8 percentage points in the *Beating Free Index* and *Decision Index*, respectively.

6.6 Results for Men

Did cash crop agriculture affect only women, or did it affect men as well? Did men also gain empowerment, or change their attitudes towards women? I answer these questions using a sample of only male respondents from the same DHS surveys used in the analysis for women. The data on men were collected by DHS to provide a representative sample of men aged 15-54 at national and state levels.²⁰ The sample sizes of men are typically lower than those of the women, especially in the most recent surveys where the ratio of men to women interviewed is about 1 to 3. The final sample size for my regression analysis on men is 48,326 individuals.

I construct the *Beating Free Index* in the same way as before, using the questions of whether it is justified for a husband to beat his wife in different circumstances. As shown in Table C3 of appendix C, men do not think it is justified to beat their wife in 85 percent of the scenarios. Regarding household agency, I construct two different indices in the spirit of the *Decision Index* for women. The first one, *Decision Index Husband-Husband* summarises the number of household decisions in which the men says he has at least some decision power. The second, *Decision Index Husband-Wife* reflects the number of decisions in which the man thinks his wife has at least some decision power. The two indices are not symmetric, since I code the answers

²⁰While for women the targeted age is always 15-49, for males it varies. Ghana 2003, 2008 and 2014 surveys targeted age 15-59; Kenya 2003, 2008 and 2014 surveys targeted age 15-54; Malawi 2000, 2004, 2010, 2016 surveys targeted age 15-54; Nigeria 2003 and 2008 surveys targeted age 15-59, while the Nigeria 2013 survey targeted age 15-49; Uganda 2001, 2006, 2011 and 2016 surveys targeted age 15-54.

in a non mutually exclusive way, assigning to both the husband and the wife some degree of power when they take decisions together. As shown in Table C3, men say they have some decision power in four-fifths of the scenarios, while they believe women have it in 50 percent of the scenarios.

Finally, Table C4 in appendix C presents the effect of colonial cash crop production on the three indices when estimating equation 1 on the sample of only men, using all control variables, with and without current district fixed effects. Columns 1 and 2 show the results previously obtained in the sample of women. As in the previous subsection, the results for the specification including current district fixed effects speak to the intergenerational transmission channel and highlight long-run persistence.

Column 4 of Panel A shows that in areas with higher share of colonial cash crop production, men do not justify violence towards their wives on more occasions, indicating more progressive gender norms. This is in line with the results previously found for women, as shown in column 2 of Panel A. I test the hypothesis of equality of the two coefficients, finding they are not statistically different from each other.

Columns 4 and 6 of Panel B present the results for the two *Decision* indices. While not statistically significant, the negative coefficient on column 4 reveals that, on average, men from areas with more colonial cash crop production do have less decision power, contrasting the results for women reported in column 2. These men also say that women have more decision power, as shown with the coefficient in column 6, almost statistically significant at a conventional level (p-value 0.114).

6.7 Adding Potentially Bad Controls: Christian Missions

A different strand of research which links colonialism and gender norms looks at the role played by Christian mission education on persistent gender norms. Among others, Boserup (1970), Rodney (1972), and Akyeampong and Fofack (2014) suggest that Christian mission

schools provided gender-biased education, reflecting the typical Western view of the domestic role of women, while disproportionally teaching males knowledge useful for participation in the modern colonial economy. Meanwhile Jedwab et al. (2018) find that cash crop exports attracted European missionaries, making missions a potentially bad control to use.²¹ In any case, taking this concern into account Table C5 shows that adding missions as a control, with and without current district fixed effects, does not change the main results.

7 Discussion of Potential Mechanisms

In this section, I explore the mechanisms that drive the effect of cash crop agriculture on women’s empowerment and its persistence over time.

7.1 Human Capital and Labour Force Participation

To shed a light on possible mechanisms, I look at two additional outcomes: education and female labour force participation. These outcomes have been long used in the literature on women’s status (e.g. Acemoglu et al. (2004), Fernández (2007), Goldin and Olivetti (2013)), and are also often employed in the recent scholarship that studies the historical roots of gender roles (e.g. Becker and Woessmann (2008), Alesina et al. (2013), Nunn (2014), Teso (2018)), but they may be affected by other variables such as poverty rates or safety concerns (Duflo (2012), Borker (2017)).

Table 9 replicates the analysis in Table 7 and Table 8, but with years of education and labour force participation as outcome variables in Panel A and B, respectively. The coefficients on education are consistently positive and statistically significant. The effect is also quite sizeable. For instance, adding all the controls, column 8 indicates that a one standard deviation

²¹Jedwab et al. (2018) make another important contribution by collecting new data on missions in Ghana and showing that the data often used for missions in the economic history literature, Beach (1903) and Roome (1925), suffer from severe under-reporting. For instance, Beach (1903) counts 26 missions in Ghana in 1900 and Roome (1925) counts 23 in 1924, while Jedwab et al. (2018) count, respectively, 304 and 1,213. Taking this concern into account, in my analysis I use Roome (1925) data assuming these are the most important missions.

increase in a district's share of cash crop agriculture leads to an increase of one more year of education.

Panel B, on the other hand, shows no persistent effect of colonial cash crop agriculture on labour force participation, suggesting that the higher education levels are not driven by labour market opportunities or necessities. This is consistent with a mechanism that with the money from the sale of cash crops, local populations invest in household improvements and children's education (Berry (1975), Cogneau and Jedwab (2012)). Alternatively, it could also be that these women are in the lower part of the U-shaped function between labour force participation and development levels suggested in Goldin (1995) and Olivetti (2014), and for developing countries in Mammen and Paxson (2000) and Fatima and Sultana (2009).

I repeat the same analysis in the sample with only male respondents. Table C6 in appendix C presents the results. Panel A shows the results for education compared to the findings for women. While a higher share of colonial cash crop agriculture has a positive and statistically significant effect on women, it does not have any effect on men. A test for the equality of the two coefficients fails to reject the hypothesis that the two coefficients are the same, although the Z-statistic is 1.61 (just slightly below the conventional 1.64 for significance at the 10 percent level).

Panel B, instead, shows the results on male labour force participation. I find that men from districts with higher colonial cash crop production do work significantly more, an effect absent in the sample of women. However, the two coefficients from columns 2 and 4 are not statistically different from each other.

7.2 Crop by Crop Analysis

The analysis so far has looked at cash crop agriculture as a bundle of seven export crops: cocoa, coconut, coffee, cotton, groundnuts, palm oil and tobacco. In this section, I separate the effect of each crop and construct individual measures of production and suitability to explore

whether the positive relationship between cash crop agriculture and women’s status is driven particularly by some crops.

Panel A of Table 10 presents the crop by crop results on the two main outcomes of interest, the *Beating Free* and *Decision* indices. Each column refers to a different crop and shows the estimates of equation 1 with all controls and current district fixed effects. The results show that it is mainly cocoa and palm oil production that match the main results. A less clear role is played by tobacco, which has a positive effect on the *Decision Index* but a negative one on the *Beating Free Index*.²²

In Panel B, I also look at education and labour force participation. The results reinforce the story for cocoa, which shows a positive significant coefficient for education but not for labour force participation, as in the main analysis. Palm oil production shows similar results, but differently from the main findings also the coefficient for labour force participation is significant.

What is different about cocoa and palm oil with respect to other crops? Looking at cocoa, Grier (1992), argues that in the labour-intensive processes of establishing a cocoa farm by clearing the virgin forest, planting the cocoa seeds or seedlings and intercropping with food crops, the labour of women and girls largely dominated. Austin (2014) highlights the importance of women in the establishment of cocoa farms, as they planted plantain and cocoyam to shade the young cocoa plants, and reports that sometimes women were among the early cocoa farm owners.²³ This suggests that women were particularly valuable in the production of cocoa, and an expansion of production of this crop to meet demand from colonisers lead to an increasingly important role for women in the local economy, resulting in persistent, more progressive gender norms.

Also palm oil production exhibits a particularly close relationship with women’s participation in cash cropping. For instance, while in Nigeria men took over the production of palm oil,

²²Also notice that the F-statistic of the first stage is above 10 only for cocoa, palm oil and tobacco.

²³Austin (2014) draws from Kyei (2001) and specifies that where women were among the early cocoa farm owners, they tended to be “elderly and unattached”, therefore freed from the obligation to help men.

previously a female activity in precolonial societies of West Africa (Maier (2009)), women were rewarded for helping in oil processing through the allocation of property rights to its by-product, the palm kernels (Martin (2006)). Thus, women living in palm fruit producing households profited directly from the production of palm oil. Byfield (2018) argues that women’s involvement in palm oil processing was conspicuous at least till the post-Second World War period, to the extent that missionary accounts and colonial reports acknowledged women’s important role in processing the palm fruit, while remaining silent on their involvement on other cash crops.

The crop by crop analysis also suggests that the main findings are not driven by economic growth. Even though I show in subsection 6.4 that including household wealth does not change the results, the effect on women’s empowerment could still be partially driven by income, a variable I cannot measure since the DHS does not provide data on it. However, if this was the case, we would see significant positive results for all cash crops individually, since the production of each one leads to an increase in income, and therefore in growth.

7.3 The Marriage Market Channel

I explore whether cultural transmission within the family plays a role in explaining the long-run effect of colonial cash crop agricultural system on women’s empowerment. In particular, I look at whether the persistence of values is passed on through generations by men: men of ethnicities ancestrally more involved in cash crop production could be more exposed to positive attitudes towards women, thereby granting or allowing their wives more autonomy. The role of the marriage market in the transmission of cultural values was originally formulated in Fernández et al. (2004).

If the marriage market channel is active, women with husbands ancestrally more exposed to cash crop agriculture should have higher levels of empowerment, conditional on their own ethnicity. To investigate this, I follow the same approach in Teso (2018). Results are available in Table C7 of appendix C.

First, to benchmark the marriage market analysis, I re-estimate equation 1 only on a sample of married women for whom DHS provides information on their husbands’ ethnicity, as shown in columns 1 and 2, for the *Beating Free Index* and the *Decision Index*, respectively.²⁴ Then, in columns 3 and 4, I add country-round-wife’s ethnicity fixed effect, and I use the husbands’ ethnicity to link a woman from the DHS to all variables measured at the colonial-district level, and at the ethnicity level. This way, the comparison is between women whose ancestors were equally involved in cash crop production, but who married men whose ancestors’ exposure varied. However, marriage decisions are likely to be endogenous since individuals tend to marry within ethnicity (in this sample, 91 percent of couples are composed by same ethnicity individuals). Thus, in columns 5 and 6, I use country-round-husband’s ethnicity fixed effect to isolate the effect of a woman’s ethnic group’s exposure to colonial cash crop agriculture while holding fixed the ethnicity of the husband.

As shown in Table C7, by restricting the sample to married women for whom husbands’ ethnicity is non-missing, the total observations are reduced to a fifth of the initial sample. Hence, my findings are not clear cut. Regardless of whether I include current district fixed effects or not, the results show that, on the one hand, I can not reject the hypothesis that the marriage market does not play a role in the transmission of cultural values. But, especially for the *Decision Index*, the results are noisy. Furthermore, as opposed to Teso (2018), my regressions are estimated through 2SLS, and not OLS, which may induce additional noise in this procedure, next to the already much smaller sample size.

8 Robustness

To demonstrate the robustness of my results, I construct an alternative index of cash crop suitability following Alesina et al. (2013). Instead of measuring districts’ suitability for cash

²⁴Information on the ethnicity of a woman’s husband is taken, when available, from the DHS “Couples’ Recode” datasets.

crop as the average suitability of the land for such products, I build an index measuring the district's share of land suitable for cash crops. Following Alesina et al.'s (2013) approach, each grid-cell is defined suitable if the yield of at least one cash crop is no less than 40 percent.

Table C8 replicates the analysis on all outcome variables and shows IV coefficients using the new instrument. In columns 1 to 6 the results are broadly similar to the previous findings. There is a drop in significance when adding all controls together, however as in column 8, when only using variation coming from migrants the coefficients are all significant. Overall, except for the significant coefficient on labour force participation, these results are very similar to those in the main analysis on persistence, suggesting the findings are robust to different suitability measures.²⁵

9 Conclusions

I show that the cash-crop production system introduced by European colonisers in the African continent had a persistent effect on women's empowerment. I exploit exogenous within-country variation in soil suitability for cash crop production for identification, and use large-scale representative surveys of the country populations.

I find that women from ethnicities with more ancestral exposure to cash crop agriculture have more agency within the household and are less willing to condone spousal violence. When looking at a sample with only male respondents, the initial results are confirmed: males from the same areas are also less likely to justify beating their wives. Further, they do not display any increase in decision power within the household, unlike women. The main results hold when looking at migrants across regions within countries, comparing women from different ethnic

²⁵In the spirit of Galor and Özak (2016), I also construct two additional instruments that capture the variation in potential crop yield as measured in calories per hectare per year, reflecting the fact that land that is suitable for agriculture is not necessarily suitable for the most productive crops in terms of their caloric return. The resulting indices adapted to my scenario are one for the productivity of land as the maximum potential caloric yield per hectare, and one for the productivity advantage of cash crops versus food crops (in the original paper presented as cereals versus tubers). However, as the cash crops under consideration are very low in caloric content with respect to food crops, the resulting indices did not produce enough variation, and therefore could not predict cash crop production. Intuitively, such instruments also do not reconcile with the context of this paper, where cash crop production was a choice driven by market forces, rather than consumption ones.

homelands who are now living in the same district, keeping the current environment constant. I also find no evidence of a decay in the effect of cash crop agriculture on female empowerment.

I explore possible mechanisms for these results and find that the long lasting impact of cash crop agriculture is also visible in higher education levels for women, but not in labour force participation. Further, I examine whether the effect of cash crop agriculture is driven by certain individual cash crops. I show that the results are mainly driven by cocoa and palm oil, as women played a substantial role in producing these crops.

This work speaks to the literature on the effects of cash crop agriculture on women's status. The historical and anthropological literatures have long suggested that women's subordinate position in the cash economy had a negative impact on them. Beyond their roles in the home and in food crop production, women had to carry the extra burden of helping their husbands with cash crop agriculture, by working longer hours. On the other hand, it is not clear whether this hypothesis is consistent with contemporary economic evidence. Since cash crop agriculture often increased female labour in agriculture, as increased output was required to meet colonial taxation demands, recent literature on the determinants of gender inequality would suggest that this lead to better outcomes for women, and that these could persist into the present. My results support the second hypothesis, that women benefited from their ancestral involvement in cash crop agriculture.

These findings suggest future work in at least two directions. First, to improve external validity, it would be useful to enlarge the sample to countries colonised by other European states. While the hypothesis of the historical and anthropological literatures is not exclusive to British colonies, assembling the colonial agricultural production data for the whole continent requires significant archival effort. Second, a limitation of this analysis is the lack of colonial data on women. While the Ethnographic Atlas provides information on some aspects of pre-colonial women's status by ethnicity, no data are systematically recorded for the colonial times. Deep anthropological research on the topic would strengthen the analysis in this paper. By observing

women's empowerment at three points in time: pre-colonial, colonial and post-colonial, it would be possible to draw conclusions about the trajectory of women's empowerment. For example, were the effects on women already apparent during colonial times, or only decades later, possibly due to policies countries implemented as a result of their colonial experience. These questions are left for future work.

References

- Acemoglu, D., D. H. Autor, and D. Lyle (2004). Women, war, and wages: The effect of female labor supply on the wage structure at midcentury. *Journal of Political Economy* 112(3), 497–551.
- Akyeampong, E. and H. Fofack (2014). The contribution of African women to economic growth and development in the pre-colonial and colonial periods: Historical perspectives and policy implications. *Economic History of Developing Regions* 29(1), 42–73.
- Alesina, A., B. Brioschi, and E. L. Ferrara (2016). Violence against women: A cross-cultural analysis for Africa. NBER Working Paper No. 21901.
- Alesina, A., P. Giuliano, and N. Nunn (2013). On the origins of gender roles: Women and the plough. *The Quarterly Journal of Economics* 128(2), 469–530.
- Austin, G. (2009). Cash crops and freedom: Export agriculture and the decline of slavery in colonial West Africa. *International Review of Social History* 54(1), 1–37.
- Austin, G. (2014). Vent for surplus or productivity breakthrough? The Ghanaian cocoa take-off, c. 1890–1936. *The Economic History Review* 67(4), 1035–1064.
- Bartholomew, J. G. and G. C. Brooke (1918). *A Literary and Historical Atlas of Africa and Australasia*. JM Dent & Sons.
- Bates, R. H. (1983). *Essays on the Political Economy of Rural Africa*. Cambridge University Press.
- Beach, H. P. (1903). *A Geography and Atlas of Protestant Missions: their Environment, Forces, Distribution, Methods, Problems, Results and Prospects at the Opening of the Twentieth Century*, Volume 2. Student Volunteer Movement for Foreign Missions.
- Becker, G. S. (1981). *A Treatise on the Family*. Cambridge, MA: Harvard University Press.
- Becker, S. O. and L. Woessmann (2008). Luther and the girls: Religious denomination and the female education gap in nineteenth-century Prussia. *The Scandinavian Journal of Economics* 110(4), 777–805.
- Berry, L. (1971). *Tanzania in Maps*. London: University of London Press.
- Berry, S. (1975). *Cocoa, Custom and Socio-Economic Change in rural Western Nigeria*. Oxford, Clarendon Press.

- Besley, T. and M. Reynal-Querol (2014). The legacy of historical conflict: Evidence from Africa. *American Political Science Review* 108(2), 319–336.
- Borker, G. (2017). Safety first: Perceived risk of street harassment and educational choices of women. Brown University.
- Boserup, E. (1970). *Women's Role in Economic Development*. London, George Allen and Unwin Ltd.
- Brecke, P. (1999). Violent conflicts 1400 AD to the present in different regions of the world. Paper presented at the Annual Meeting of the Peace Science Society (International), Ann Arbor, MI, October 1999.
- Bryceson, D. (1990). *Food Insecurity and the Social Division of Labour in Tanzania, 1919-85*. Springer.
- Byfield, J. A. (2018). African women in colonial economies. In *The Palgrave Handbook of African Colonial and Postcolonial History*, pp. 145–170. Springer.
- Campa, P. and M. Serafinelli (2019). Politico-economic regimes and attitudes: Female workers under state-socialism. *Review of Economics and Statistics* 101(2), 233–248.
- Cardinall, A. W. (1932). *The Gold Coast, 1931 : A Review of Conditions in the Gold Coast in 1931 as Compared with Those of 1921, Based on Figures and Facts Collected by the Chief Census Officer of 1931, Together with a Historical, Ethnographical, and Sociological Survey of the People of that Country*. Accra, Government Printer.
- Cogneau, D. and R. Jedwab (2012). Commodity price shocks and child outcomes: The 1990 cocoa crisis in Cote d'Ivoire. *Economic Development and Cultural Change* 60(3), 507–534.
- Coquery-Vidrovitch, C. (1997). *African Women: A Modern History*. Boulder, CO: Westview Press.
- Dalton, J. T. and T. C. Leung (2014). Why is polygyny more prevalent in Western Africa? An African slave trade perspective. *Economic Development and Cultural Change* 62(4), 599–632.
- Davison, J. (1988). *Agriculture, Women, and Land: The African Experience*. Boulder, CO: Westview Press.
- De Haas, M. and E. Frankema (2018). Gender, ethnicity, and unequal opportunity in colonial Uganda: European influences, African realities, and the pitfalls of parish register data. *The Economic History Review* 71(3), 965–994.

- Doepke, M., M. Tertilt, and A. Voena (2012). The economics and politics of women's rights. *Annual Review of Economics* 4, 339–372.
- Duflo, E. (2012). Women empowerment and economic development. *Journal of Economic Literature* 50(4), 1051–79.
- Edlund, L. and H. Ku (2011). The African slave trade and the curious case of general polygyny. MPRA Working Paper No. 52735.
- Etienne, M. (1977). Women and men, cloth and colonization: The transformation of production-distribution relations among the Baule (Ivory Coast). *Cahiers d'Études africaines*, 41–64.
- Fatima, A. and H. Sultana (2009). Tracing out the U-shape relationship between female labor force participation rate and economic development for Pakistan. *International Journal of Social Economics* 36(1/2), 182–198.
- Fenske, J. (2014). Ecology, trade, and states in pre-colonial Africa. *Journal of the European Economic Association* 12(3), 612–640.
- Fernández, R. (2007). Women, work, and culture. *Journal of the European Economic Association* 5(2-3), 305–332.
- Fernández, R., A. Fogli, and C. Olivetti (2004). Mothers and sons: Preference formation and female labor force dynamics. *The Quarterly Journal of Economics* 119(4), 1249–1299.
- Frankema, E. H. P. and M. van Waijenburg (2013). Endogenous colonial institutions: Lessons from fiscal capacity building in British and French Africa, 1880-1940. African Economic History Network Working Paper No. 11.
- Galor, O. and Ö. Özak (2016). The agricultural origins of time preference. *American Economic Review* 106(10), 3064–3103.
- Giuliano, P. (2017). Gender: An historical perspective. NBER Working Paper No. 23635.
- Giuliano, P. and N. Nunn (2018). Ancestral characteristics of modern populations. *Economic History of Developing Regions* 33(1), 1–17.
- Goldin, C. (1995). The U-shaped female labor force function in economic development and economic history. In *Schultz TP Investment in Women's Human Capital and Economic Development*, pp. 61–90. University of Chicago Press.

- Goldin, C. and C. Olivetti (2013). Shocking labor supply: A reassessment of the role of World War II on women's labor supply. *American Economic Review: Papers and Proceedings* 103(3), 257–62.
- Goody, J. (1973). Polygyny, economy, and the role of women. In *The Character of Kinship*, pp. 175–190. Cambridge University Press Cambridge.
- Grier, B. (1992). Pawns, porters, and petty traders: Women in the transition to cash crop agriculture in colonial Ghana. *Signs: Journal of Women in Culture and Society* 17(2), 304–328.
- Grosjean, P. and R. Khattar (2018). It's raining men! Hallelujah? The long-run consequences of male-biased sex ratios. *The Review of Economic Studies* 86(2), 723–754.
- Guyer, J. I. (1980). Food, cocoa, and the division of labour by sex in two West African societies. *Comparative Studies in Society and History* 22(3), 355–373.
- Hailey, W. M. and L. Hailey (1957). *An African Survey Revised 1956. A Study of Problems Arising in Africa South of the Sahara*. Oxford University Press.
- Hansen, C. W., P. S. Jensen, and C. V. Skovsgaard (2015). Modern gender roles and agricultural history: The Neolithic inheritance. *Journal of Economic Growth* 20(4), 365–404.
- Hart, K. et al. (1982). *The Political Economy of West African Agriculture*. Cambridge University Press.
- Henderson, M. and W. Whatley (2014). Pacification and gender in colonial Africa: Evidence from the Ethnographic Atlas. MPRA Working Paper No. 61203.
- Henn, J. K. (1978). Peasants, workers, and capital: The political economy of labor and incomes in Cameroon. Doctoral thesis, Harvard University.
- Hill, P. (1963). *The Migrant Cocoa-Farmers of Southern Ghana: a Study in Rural Capitalism*. London: Cambridge University Press.
- Hopkins, A. G. (1973). *An Economic History of West Africa*. London: Longman Group Ltd.
- Jedwab, R. and A. Moradi (2016). The permanent effects of transportation revolutions in poor countries: Evidence from Africa. *Review of Economics and Statistics* 98(2), 268–284.
- Jedwab, R., F. M. zu Selhausen, and A. Moradi (2018). The economics of missionary expansion: Evidence from Africa and implications for development. CSAE Working Paper No. WPS/2018-07.

- Kaplan, I. (1971). *Area Handbook of Ghana*. Washington, D.C., U.S. Government Printing Office.
- Klein, M. A. (1980). *Peasants in Africa: Historical and Contemporary Perspectives*. Beverly Hills, CA (USA) Sage Publications.
- Korieh, C. J. (2001). The invisible farmer? Women, gender, and colonial agricultural policy in the Igbo region of Nigeria, c. 1913-1954. *African Economic History* (29), 117–162.
- Kyei, T. E. (2001). *Our Days Dwindle: Memories of my Childhood Days in Asante*. Heinemann.
- Leyaro, V., P. Selaya, N. Trifkovic, et al. (2017). Fishermen’s wives: On the cultural origins of violence against women. WIDER Working Paper No. 2017/205.
- Linares, O. F. (1985). Cash crops and gender constructs: The Jola of Senegal. *Ethnology* 24(2), 83–93.
- Lujala, P., N. P. Gleditsch, and E. Gilmore (2005). A diamond curse? Civil war and a lootable resource. *Journal of Conflict Resolution* 49(4), 538–562.
- Maier, D. J. (2009). Precolonial palm oil production and gender division of labor in nineteenth-century Gold Coast and Togoland. *African Economic History* 37(1), 1–32.
- Mammen, K. and C. Paxson (2000). Women’s work and economic development. *Journal of Economic Perspectives* 14(4), 141–164.
- Mandala, E. C. (1990). *Work and Control in a Peasant Economy: A History of the Lower Tchiri Valley in Malawi, 1859-1960*. University of Wisconsin Press.
- Martin, S. M. (2006). *Palm Oil and Protest: An Economic History of the Ngwa Region, South-Eastern Nigeria, 1800-1980*, Volume 59. Cambridge University Press.
- Meier zu Selhausen, F. (2015). Women’s empowerment in Uganda: Colonial roots and contemporary efforts, 1894-2012. Doctoral thesis, Utrecht University.
- Meier zu Selhausen, F. and J. Weisdorf (2016). A colonial legacy of African gender inequality? Evidence from Christian Kampala, 1895–2011. *The Economic History Review* 69(1), 229–257.
- Murdock, G. P. (1959). *Africa: Its Peoples and Their Culture History*. McGraw-Hill.
- Murdock, G. P. (1967). *Ethnographic Atlas*. University of Pittsburgh Press.
- Nunn, N. (2008). The long-term effects of Africa’s slave trades. *The Quarterly Journal of Economics* 123(1), 139–176.

- Nunn, N. (2014). Gender and missionary influence in colonial Africa. In *African Development in Historical Perspective*, pp. 489–512. New York: Cambridge University Press.
- Nunn, N. and D. Puga (2012). Ruggedness: The blessing of bad geography in Africa. *Review of Economics and Statistics* 94(1), 20–36.
- Nunn, N. and L. Wantchekon (2011). The slave trade and the origins of mistrust in Africa. *The American Economic Review* 101(7), 3221–3252.
- Ochonu, M. E. (2018). Africans and the colonial economy. In *The Palgrave Handbook of African Colonial and Postcolonial History*, pp. 123–143. Springer.
- Olivetti, C. (2014). The female labor force and long-run development: The American experience in comparative perspective. In *Human Capital in History: The American Record*, pp. 161–197. University of Chicago Press.
- Olson, J. S. (1996). *The Peoples of Africa: an Ethnohistorical Dictionary*. Greenwood Publishing Group.
- Papaioannou, K. J. and M. de Haas (2017). Weather shocks and agricultural commercialization in colonial tropical Africa: Did cash crops alleviate social distress? *World Development* 94, 346–365.
- Peters, B. L. and J. E. Peters (1998). Women and land tenure dynamics in pre-colonial, colonial, and post-colonial Zimbabwe. *Journal of Public and International Affairs* 9, 183–208.
- Ramankutty, N., J. A. Foley, J. Norman, and K. McSweeney (2002). The global distribution of cultivable lands: Current patterns and sensitivity to possible climate change. *Global Ecology and Biogeography* 11(5), 377–392.
- Rodney, W. (1972). *How Europe Underdeveloped Africa*. London: Bogle-L'Ouverture.
- Roome, W. J. W. (1925). *Ethnographic Survey of Africa. Showing the Tribes and Languages; also the Stations of Missionary Societies*. London, Edward Stanford Limited.
- Ruf, F. (1995). *Booms et Crises du Cacao: les Vertiges de l'Or Brun*. Karthala.
- Sederberg, P. C. (1971). The Gold Coast under colonial rule: An expenditure analysis. *African Studies Review* 14(2), 179–204.
- Sheldon, K. (2017). *African Women: Early History to the 21st Century*. Indiana University Press.

- Sudarkasa, N. (1986). "The status of women" in indigenous African societies. *Feminist Studies* 12(1), 91–103.
- Tashjian, V. B. and J. Allman (2002). Women in African colonial histories. In *The Palgrave Handbook of African Colonial and Postcolonial History*, pp. 237–259. Indiana University Press.
- Tertilt, M. (2005). Polygyny, fertility, and savings. *Journal of Political Economy* 113(6), 1341–1371.
- Teso, E. (2018). The long-term effect of demographic shocks on the evolution of gender roles: Evidence from the Transatlantic slave trade. *Journal of the European Economic Association* 17(2), 497–534.
- Thornton, J. (1983). Sexual demography: The impact of the slave trade on family structure. In *Women and Slavery in Africa*, pp. 39–48. University of Wisconsin Press Madison, WI.
- Usoro, E. J. (1977). Colonial economic development strategy in Nigeria 1919-1939: An appraisal. *The Nigerian Journal of Economic and Social Studies* 19(1), 121–141.
- White, F. (1983). *The Vegetation of Africa, a Descriptive Memoir to Accompany the UNESCO/AETFAT/UNSO Vegetation Map of Africa*. UNESCO, Natural Resources 20, 1–356.
- Whyte, M. K. (1978). *The Status of Women in Preindustrial Societies*. Princeton, NJ: Princeton University Press.
- Wrigley, C. C. (1959). *Crops and Wealth in Uganda: A Short Agrarian History*. Kampala: East African Institute of Social Research.
- Xue, M. M. (2018). High-value work and the rise of women: The cotton revolution and gender equality in China. MPRA Working Paper No. 91100.

Tables

Table 1: *Beating Free Index* components across DHS surveys

SURVEY	In your opinion, is a husband justified in hitting or beating his wife if she..					
	..argues with him	..burns food	..goes out without telling him	..refuses to have sex with him	..neglects the children	..commits infidelity
Ghana 2003	✓	✓	✓	✓	✓	.
Ghana 2008	✓	✓	✓	✓	✓	.
Ghana 2014	✓	✓	✓	✓	✓	.
Kenya 2003	✓	✓	✓	✓	✓	.
Kenya 2008	✓	✓	✓	✓	✓	.
Kenya 2014	✓	✓	✓	✓	✓	.
Malawi 2000	✓	✓	✓	✓	✓	.
Malawi 2004	✓	✓	✓	✓	✓	✓
Malawi 2010	✓	✓	✓	✓	✓	.
Malawi 2016	✓	✓	✓	✓	✓	.
Nigeria 2003	✓	✓	✓	✓	✓	.
Nigeria 2008	✓	✓	✓	✓	✓	.
Nigeria 2013	✓	✓	✓	✓	✓	.
Uganda 2001	✓	✓	✓	✓	✓	.
Uganda 2006	✓	✓	✓	✓	✓	.
Uganda 2011	✓	✓	✓	✓	✓	.
Uganda 2016	✓	✓	✓	✓	✓	.

Note: Ticks indicate the question is present in the specific survey.

Table 2: *Decision Index* components across DHS surveys

SURVEY	Who usually makes decision about..							
	..making major household purchases	..household purchases for daily needs	..visits to family or relatives	..how your earning will be used	..how your husband's earnings will be used	..health care for yourself	..food to be cooked each day	..health care for children
Ghana 2003	✓	✓	✓	✓	.	✓	✓	.
Ghana 2008	✓	✓	✓	✓	✓	✓	.	.
Ghana 2014	✓	.	✓	✓	✓	✓	.	.
Kenya 2003	✓	✓	✓	✓	.	✓	✓	.
Kenya 2008	✓	✓	✓	✓	✓	✓	✓	.
Kenya 2014	✓	.	✓	✓	✓	✓	✓	.
Malawi 2000	✓	✓	✓	✓	.	✓	✓	.
Malawi 2004	✓	✓	✓	✓	.	✓	✓	.
Malawi 2010	✓	✓	✓	✓	✓	✓	.	.
Malawi 2016	✓	.	✓	✓	✓	✓	.	.
Nigeria 2003	✓	✓	✓	✓	.	✓	✓	✓
Nigeria 2008	✓	✓	✓	✓	✓	✓	.	.
Nigeria 2013	✓	.	✓	✓	✓	✓	.	.
Uganda 2001	✓	✓	✓	✓	.	✓	✓	✓
Uganda 2006	✓	✓	✓	✓	✓	✓	.	.
Uganda 2011	✓	.	✓	✓	✓	✓	.	.
Uganda 2016	✓	.	✓	✓	✓	✓	.	.

Note: Ticks indicate the question is present in the specific survey.

Table 3: Summary Statistics on Women's Empowerment

	<i>N</i>	<i>Mean</i>	<i>St Dev</i>	<i>Min</i>	<i>Max</i>
<i>Beating Free Index</i>	103,134	0.76	0.33	0	1
Arguing	102,516	0.75	0.43	0	1
Burning food	102,669	0.86	0.34	0	1
Going out	102,744	0.73	0.44	0	1
Refusing sex	101,896	0.79	0.40	0	1
Neglecting kids	102,699	0.68	0.46	0	1
Committing infidelity	4,771	0.49	0.50	0	1
<i>Decision Index</i>	103,134	0.58	0.36	0	1
Big purchases	102,704	0.49	0.49	0	1
Daily purchases	54,359	0.52	0.49	0	1
Visiting family	102,771	0.65	0.47	0	1
Own earnings	54,356	0.85	0.35	0	1
Husband's earnings	74,772	0.43	0.49	0	1
Own healthcare	102,970	0.57	0.49	0	1
Deciding food	38,676	0.71	0.45	0	1
Kids healthcare	3,625	0.37	0.48	0	1
<i>Education</i>	103,134	6.21	4.59	0	26
<i>Labour Force Participation</i>	103,134	0.74	0.44	0	1
Agricultural	33,121 (43.29%)				
Clerical	21,259 (27.78%)				
Household, Services	6,721 (8.78%)				
Manual worker	7,281 (9.52%)				
Professional, Managerial	6,328 (8.27%)				
Other	54 (0.07%)				
Missing information	1,749 (2.29%)				

Note: Unit of observation is a DHS respondent. *Beating Free Index* and *Decision Index* are constructed as explained in main text. Education is measured in years of education. Labour Force Participation is a dummy equal to 1 if a woman was employed in the 12 months before the survey.

Table 4: Instrument and Pre-colonial Measures of Women's Status

	(1)	(2)	(3)	(4)
	Bride price	Polygyny	Matriliny	Dependence on Agriculture
Cash Crop Suitability Index	0.031 (0.023)	0.008 (0.007)	0.029 (0.051)	-0.032 (0.036)
Observations	91	91	91	91

Notes: Table reports OLS estimates. Unit of observation is as ethnicity. Cash Crop Suitability Index is the instrument as constructed in equation 2. Bride price is a dummy equal to 1 if bride price is customary; Polygyny is a dummy equal to 1 if polygyny is practised instead of monogamy; Matriliny is a dummy equal to 1 if the system of descent is not patrilineal; Dependence on agriculture is a percentage of an ethnicity dependence on such activity as main source of subsistence. Standard errors clustered at the district level. *, ** and *** indicate significance at the 10, 5 and 1 percent levels, respectively.

Table 5: Women's Empowerment and Colonial Cash Crops

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: <i>Beating Free Index</i>						
2SLS Share Cash Crop	0.307*** (0.115)	0.170** (0.078)	0.225*** (0.085)	0.211*** (0.060)	0.143*** (0.040)	0.485** (0.233)
OLS Share Cash Crop	0.053* (0.028)	0.034 (0.029)	0.037 (0.027)	0.023 (0.031)	0.046** (0.023)	0.059 (0.046)
Panel B: <i>Decision Index</i>						
2SLS Share Cash Crop	0.342* (0.178)	0.215** (0.092)	0.202** (0.103)	0.137** (0.067)	0.151** (0.066)	0.663* (0.351)
OLS Share Cash Crop	-0.022 (0.033)	-0.022 (0.025)	-0.040 (0.025)	-0.065** (0.032)	-0.030 (0.026)	-0.051 (0.041)
FE Country-round	Y	Y	Y	Y	Y	Y
Colonial District Controls		Y				Y
Pre Col. Ethnicity Controls			Y			Y
Distance Controls				Y		Y
Slave Trade Controls					Y	Y
K-P F-stat	13.09	13.69	13.57	15.73	24.97	8.917
Clusters	91	91	91	91	91	91
Observations	103,134	103,134	103,134	103,134	103,134	103,134

Notes: Table reports OLS and 2SLS estimates. Unit of observation is a DHS respondent. *Beating Free Index* and *Decision Index* are constructed as explained in main text. Share Cash Crop is the percentage of a district area dedicated to cash crops. Colonial District Controls: dummy for Islam as main religion, population density in 1930, district area, number of pre colonial conflicts by area, dummy for major vegetation type, ruggedness, number of diamond mines by area, general land quality indices; Pre Colonial Ethnicity Controls: dummy for bride price, dummy for polygyny, dummy for descent system of matriliney, dummy for agriculture as main subsistence activity, Murdock year of observation and coordinates of ethnicity homeland's centroid; Distance Controls: ethnicity's homeland distance from closest railroad, coast and rivers; Slave Trade Controls: log of 1 + number of Transatlantic and Indian slaves by ethnicity's area. Standard errors clustered at the ethnicity level in parentheses. *, ** and *** indicate significance at the 10, 5 and 1 percent levels, respectively.

Table 6: *Decision Index* Components

	(1) Other Decisions	(2) Financial Decisions	(3) Own Earnings	(4) Husband's Earnings
Share Cash Crop	0.696** (0.349)	0.522** (0.253)	0.185*** (0.069)	0.169 (0.104)
FE Country-round	Y	Y	Y	Y
Colonial District Controls	Y	Y	Y	Y
Pre Col. Ethnicity Controls	Y	Y	Y	Y
Distance Controls	Y	Y	Y	Y
Slave Trade Controls	Y	Y	Y	Y
K-P F-stat	9.067	9.067	9.067	9.067
Clusters	89	89	89	89
Observations	42,413	42,413	42,413	42,413

Notes: Table reports 2SLS estimates. Unit of observation is a DHS respondent. Outcome variables are indices on Financial Decisions (making large household purchases, household purchases for daily needs, spending women own earnings, spending husband's earnings), Other Decisions (visits to family or relatives, food to be cooked, women own health care, and children's health care), Own Earnings management and Husband's Earning management. Share Cash Crop is the percentage of a district area dedicated to cash crops. Colonial District Controls: dummy for Islam as main religion, population density in 1930, district area, number of pre colonial conflicts by area, dummy for major vegetation type, ruggedness, number of diamond mines by area, general land quality indices; Pre Colonial Ethnicity Controls: dummy for bride price, dummy for polygyny, dummy for descent system of matriliney, dummy for agriculture as main subsistence activity, Murdock year of observation and coordinates of ethnicity homeland's centroid; Distance Controls: ethnicity's homeland distance from closest railroad, coast and rivers; Slave Trade Controls: log of 1 + number of Transatlantic and Indian slaves by ethnicity's area. Standard errors clustered at the ethnicity level in parentheses. *, ** and *** indicate significance at the 10, 5 and 1 percent levels, respectively. The total number of observations is different with respect to the main analysis. This is because I sample women who have been asked and answered at least one question within each of the two categories, "Financial Decisions" and "Other Decisions", for the split in column 1 and 2, and women who have been asked and answered both questions on Own and Husband's Earnings for the split in column 3 and 4. Results are robust to different splits of the sample.

Table 7: Adding Potentially Endogenous Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: <i>Beating Free Index</i>							
2SLS Share Cash Crop	0.307*** (0.115)	0.078** (0.033)	0.170** (0.078)	0.225*** (0.095)	0.211*** (0.060)	0.143*** (0.040)	0.314** (0.152)
OLS Share Cash Crop	0.053* (0.028)	0.009 (0.012)	0.034 (0.029)	0.037 (0.027)	0.023 (0.031)	0.046** (0.023)	0.036 (0.038)
Panel B: <i>Decision Index</i>							
2SLS Share Cash Crop	0.342* (0.178)	0.099** (0.047)	0.215** (0.092)	0.202** (0.103)	0.137** (0.067)	0.151** (0.066)	0.511** (0.258)
OLS Share Cash Crop	-0.022 (0.033)	-0.058*** (0.020)	-0.022 (0.025)	-0.040 (0.025)	-0.065** (0.032)	-0.030 (0.026)	-0.049 (0.035)
FE Country-round	Y	Y	Y	Y	Y	Y	Y
Individual Controls		Y					Y
Colonial District Controls			Y				Y
Pre Col. Ethnicity Controls				Y			Y
Distance Controls					Y		Y
Slave Trade Controls						Y	Y
K-P F-stat	13.09	20.55	13.69	13.57	15.73	24.97	10.34
Clusters	91	91	91	91	91	91	91
Observations	103,134	103,134	103,134	103,134	103,134	103,134	103,134

Notes: Table reports OLS and 2SLS estimates. Unit of observation is a DHS respondent. *Beating Free Index* and *Decision Index* are constructed as explained in main text. Share Cash Crop is the percentage of a district area dedicated to cash crops. Individual Controls: age, dummy for religion, dummy for marital status, number of children, dummy for urban vs. rural status, dummy for household wealth's quantile, household's geographic coordinates; Colonial District Controls: dummy for Islam as main religion, population density in 1930, district area, number of pre colonial conflicts by area, dummy for major vegetation type, ruggedness, number of diamond mines by area, general land quality indices; Pre Colonial Ethnicity Controls: dummy for bride price, dummy for polygyny, dummy for descent system of matriliney, dummy for agriculture as main subsistence activity, Murdock year of observation and coordinates of ethnicity homeland's centroid; Distance Controls: ethnicity's homeland distance from closest railroad, coast and rivers; Slave Trade Controls: log of 1 + number of Transatlantic and Indian slaves by ethnicity's area. Standard errors clustered at the ethnicity level in parentheses. *, ** and *** indicate significance at the 10, 5 and 1 percent levels, respectively.

Table 8: Intergenerational Transmission of Women's Empowerment

	(1)	(2)	(3)	(4)
	<i>Beating Free Index</i>		<i>Decision Index</i>	
2SLS Share Cash Crop	0.314** (0.152)	0.169** (0.071)	0.511** (0.258)	0.232*** (0.069)
OLS Share Cash Crop	0.036 (0.038)	0.001 (0.031)	-0.049 (0.035)	0.021 (0.023)
FE Country-round	Y	Y	Y	Y
FE Current Districts		Y		Y
Individual Controls	Y	Y	Y	Y
Colonial District Controls	Y	Y	Y	Y
Pre Col. Ethnicity Controls	Y	Y	Y	Y
Distance Controls	Y	Y	Y	Y
Slave Trade Controls	Y	Y	Y	Y
K-P F-stat	10.34	26.86	10.34	26.86
Clusters	91	91	91	91
Observations	103,134	103,134	103,134	103,134

Notes: Table reports OLS and 2SLS estimates. Unit of observation is a DHS respondent. *Beating Free Index* and *Decision Index* are constructed as explained in main text. Share Cash Crop is the percentage of a district area dedicated to cash crops. Individual Controls: age, dummy for religion, dummy for marital status, number of children, dummy for urban vs. rural status, dummy for household wealth's quantile, household's geographic coordinates; Colonial District Controls: dummy for Islam as main religion, population density in 1930, district area, number of pre colonial conflicts by area, dummy for major vegetation type, ruggedness, number of diamond mines by area, general land quality indices; Pre Colonial Ethnicity Controls: dummy for bride price, dummy for polygyny, dummy for descent system of matriliney, dummy for agriculture as main subsistence activity, Murdock year of observation and coordinates of ethnicity homeland's centroid; Distance Controls: ethnicity's homeland distance from closest railroad, coast and rivers; Slave Trade Controls: log of 1 + number of Transatlantic and Indian slaves by ethnicity's area. Standard errors clustered at the ethnicity level in parentheses. *, ** and *** indicate significance at the 10, 5 and 1 percent levels, respectively.

Table 9: Women Human Capital and Labour Force Participation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Education								
2SLS Share Cash Crop	0.711** (0.302)	0.223*** (0.079)	0.334*** (0.106)	0.462*** (0.168)	0.467*** (0.168)	0.375*** (0.114)	0.335* (0.180)	0.222** (0.088)
OLS Share Cash Crop	0.124** (0.052)	0.037* (0.021)	0.098** (0.043)	0.092* (0.047)	0.049 (0.055)	0.109*** (0.038)	0.029 (0.043)	0.012 (0.039)
Panel B: Labour Force Participation								
2SLS Share Cash Crop	0.051 (0.052)	-0.020 (0.018)	0.005 (0.017)	-0.004 (0.022)	-0.026 (0.017)	-0.006 (0.022)	0.066 (0.048)	0.036 (0.032)
OLS Share Cash Crop	-0.019** (0.008)	-0.025*** (0.008)	-0.015** (0.008)	-0.013* (0.007)	-0.037*** (0.010)	-0.022** (0.009)	0.025* (0.013)	0.010 (0.012)
FE Country-round	Y	Y	Y	Y	Y	Y	Y	Y
FE Current Districts								Y
Individual Controls		Y					Y	Y
Colonial District Controls			Y				Y	Y
Pre Col. Ethnicity Controls				Y			Y	Y
Distance Controls					Y		Y	Y
Slave Trade Controls						Y	Y	Y
K-P F-stat	13.09	20.55	13.69	13.57	15.73	24.97	10.34	26.86
Clusters	91	91	91	91	91	91	91	91
Observations	103,134	103,134	103,134	103,134	103,134	103,134	103,134	103,134

Notes: Table reports OLS and 2SLS estimates. Unit of observation is a DHS respondent. Education is measured in years of education. Labour Force Participation is a dummy equal to 1 if a woman was employed in the last 12 months before the survey. Share Cash Crop is the percentage of a district area dedicated to cash crops. Individual Controls: age, dummy for religion, dummy for marital status, number of children, dummy for urban vs. rural status, dummy for household wealth's quantile, household's geographic coordinates; Colonial District Controls: dummy for Islam as main religion, population density in 1930, district area, number of pre colonial conflicts by area, dummy for major vegetation type, ruggedness, number of diamond mines by area, general land quality indices; Pre Colonial Ethnicity Controls: dummy for bride price, dummy for polygyny, dummy for descent system of matriliney, dummy for agriculture as main subsistence activity, Murdock year of observation and coordinates of ethnicity homeland's centroid; Distance Controls: ethnicity's homeland distance from closest railroad, coast and rivers; Slave Trade Controls: log of 1 + number of Transatlantic and Indian slaves by ethnicity's area. Standard errors clustered at the ethnicity level in parentheses. *, ** and *** indicate significance at the 10, 5 and 1 percent levels, respectively.

Table 10: Crop by Crop Analysis

<i>Dependent Variable</i>	(1) Cocoa	(2) Coffee	(3) Copra	(4) Cotton	(5) Groundnuts	(6) Palm Oil	(7) Tobacco
Panel A							
<i>Beating Free Index</i>	0.145** (0.066)	-0.193 (0.196)	0.030 (0.049)	0.012 (0.159)	0.155 (0.361)	0.276** (0.119)	-0.022 (0.038)
<i>Decision Index</i>	0.243*** (0.046)	-0.576** (0.225)	0.132* (0.070)	0.182 (0.185)	0.201 (0.377)	0.269** (0.119)	0.111*** (0.037)
Panel B							
<i>Education</i>	0.206** (0.094)	-0.395 (0.420)	0.054 (0.063)	-0.393 (0.400)	0.119 (0.533)	0.269* (0.162)	-0.061 (0.059)
<i>Labour Force Participation</i>	-0.023 (0.031)	-0.406* (0.210)	0.024 (0.028)	-0.381* (0.199)	0.449 (0.828)	0.094** (0.046)	-0.050** (0.020)
FE Country-round	Y	Y	Y	Y	Y	Y	Y
FE Current Districts	Y	Y	Y	Y	Y	Y	Y
Individual Controls	Y	Y	Y	Y	Y	Y	Y
Colonial District Controls	Y	Y	Y	Y	Y	Y	Y
Pre Col. Ethnicity Controls	Y	Y	Y	Y	Y	Y	Y
Distance Controls	Y	Y	Y	Y	Y	Y	Y
Slave Trade Controls	Y	Y	Y	Y	Y	Y	Y
K-P F-stat	73.66	9.956	3.504	4.196	0.336	16.43	25.19
Clusters	91	91	91	91	91	91	91
Observations	103,134	103,134	103,134	103,134	103,134	103,134	103,134

Notes: Table reports 2SLS estimates. Unit of observation is a DHS respondent. Outcome variables are constructed as explained in main text. Individual Controls: age, dummy for religion, dummy for marital status, number of children, dummy for urban vs. rural status, dummy for household wealth's quantile, household's geographic coordinates; Colonial District Controls: dummy for Islam as main religion, population density in 1930, district area, number of pre colonial conflicts by area, dummy for major vegetation type, ruggedness, number of diamond mines by area, general land quality indices; Pre Colonial Ethnicity Controls: dummy for bride price, dummy for polygyny, dummy for descent system of matriline, dummy for agriculture as main subsistence activity, Murdock year of observation and coordinates of ethnicity homeland's centroid; Distance Controls: ethnicity's homeland distance from closest railroad, coast and rivers; Slave Trade Controls: log of 1 + number of Transatlantic and Indian slaves by ethnicity's area. Standard errors clustered at the ethnicity level in parentheses. *, ** and *** indicate significance at the 10, 5 and 1 percent levels, respectively.

Figures

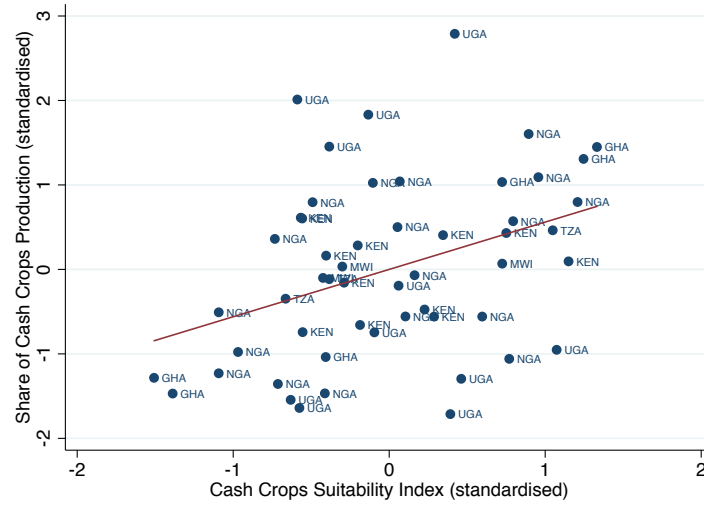
Figure 1: Gender Development Index, 2017

Notes: World distribution of Gender Development Index in 2017, in quintiles. It takes lower values when gender disparities are greater, therefore darker areas indicates higher levels of women's empowerment. Source: <http://www.undp.org>. Data accessed on April 2019.

Figure 2: Gender Inequality Index, 2017

Notes: World distribution of Gender Inequality Index in 2017, in quintiles. It takes higher values when gender inequalities are bigger, therefore darker areas indicates higher levels of women's empowerment. Source: <http://www.undp.org>. Data accessed on April 2019.

Figure 3: Cash Crops Suitability and Cash Crops Production



Notes: The unit of observation is a colonial district. The figure represents the relationship between the share of districts' area dedicated to cash crop production (standardised) and the suitability of such districts for cash crops against overall suitability (standardised), as computed in equation 2. ISO codes used for countries: GHA (Ghana), KEN (Kenya), MWI (Malawi), NGA (Nigeria), TZA (Tanzania), UGA (Uganda).

Appendix A List of Variables Used in the Paper

Outcome Variables for Women

Beating Free Index: share of questions on attitudes towards domestic violence for which a woman answers that it is justified for a husband to beat his wife. Index components: if she argues with the partner, if she burns food, if she goes out without telling the partner, if she refuses to have sex, if she neglects the children, if she commits infidelity. Since the answer to some of these questions can be missing for some respondents, this variable should be intended as the share of instances for which the respondent answers that beating is justified among the questions with non-missing information. Individuals answering while the husband is present have been excluded. Source DHS (Individual Recode).

Decision Index: share of questions on a woman's participation in household decisions for which the woman answers that she has a say in the decision, even when the decision is taken together with her partner. Questions include decisions regarding: major household purchases, household purchases for daily needs, visits to family or relatives, how her earnings are used, how partner's earnings are used, her own health care, children's healthcare, food to be cooked each day. Since the answer to some of these questions can be missing for some respondents, this variable should be intended as the share of decisions for which the woman has a say among the decisions with non-missing information. Source DHS (Individual Recode).

Education: years of education. Source DHS (Individual Recode).

Labour Force Participation: dummy taking value one if respondent was employed in the last 12 months before survey. Source DHS (Individual Recode).

Outcome Variables for Men

Beating Free Index: share of questions on attitudes towards domestic violence for which a man answers that it is justified for a husband to beat his wife. Index components: if she argues with the partner, if she burns food, if she goes out without telling the partner, if she refuses to have sex, if she neglects the children, if she commits infidelity. Since the answer to some of these questions can be missing for some respondents, this variable should be intended as the share of instances for which the respondent answers that beating is justified among the questions with non-missing information. Source DHS (Men's Recode).

Decision Index Husband-Husband: share of questions on a men's participation in household decisions for which the man answers that he has a say in the decision, even when the decision is taken together with his partner. Questions include decisions regarding: major household purchases, household purchases for daily needs, visits to family or relatives, how his earnings are used, how partner's earnings are used, his own health care, food to be cooked each day. Since the answer to some of these questions can be missing for some respondents, this variable should be intended as the share of decisions for which the man has a say among the decisions with non-missing information. Source DHS (Men's Recode).

Decision Index Husband-Wife: share of questions on a woman's participation in household decisions for which the man answers that she has a say in the decision, even when the decision is taken together with his partner. Questions include decisions regarding: major household purchases, household purchases for daily needs, visits

to family or relatives, how his earnings are used, how partner's earnings are used, his own health care, food to be cooked each day. Since the answer to some of these questions can be missing for some respondents, this variable should be intended as the share of decisions for which the man has a say among the decisions with non-missing information. Source DHS (Men's Recode).

Education: years of education. Source DHS (Men's Recode).

Labour Force Participation: dummy taking value one if respondent was employed in the last 12 months before survey. Source DHS (Men's Recode).

Main Explanatory Variable

Share Cash Crop: share of a colonial district's area dedicated to the production of cash crops (cocoa, coffee, copra, cotton, groundnuts, palm oil and tobacco). Source for cash crops' production area at colonial district level and total district areas: sources in appendix B.

Instrumental Variables

Suitability for Cash Crop: average suitability of a district for cash crops (cocoa, coffee, copra, cotton, groundnuts, palm oil and tobacco) divided by average suitability of a district for cash crops and food crops (banana, cassava, foxtail and pearl millet, maize, phaseolu beans, dry and wet rice, sorghum, sweet and white potato, sugar beet, sugar cane, wheat). Source: FAO-GAEZ.

Area Suitable for Cash Crop: district area suitable for cash crops (cocoa, coffee, copra, cotton, groundnuts, palm oil and tobacco) over district area. Each grid-cell is defined suitable if the yield of at least one cash crop is no less than 40 percent. This approach follows Alesina et al. (2013). Source: FAO-GAEZ.

Caloric Indices: 1) productivity of land as the maximum potential caloric yield per hectare, 2) productivity advantage of cash crops versus food crops. This approach follows Galor and Özak (2016). Source: Galor and Özak (2016).

Individual Level Controls

Age: age of the respondent. Source: DHS (Individual Recode).

Urban: dummy taking value one if respondent lives in a urban location. Source: DHS (Individual Recode).

Married: dummy taking value one if respondent is married. Source: DHS (Individual Recode).

Religion: dummies for different religions. Source: DHS (Individual Recode).

Number of children: number of children ever born. Source: DHS (Individual Recode).

Wealth: dummies for household-level wealth quintiles. Source DHS (Individual Recode).

Latitude: latitude of respondent's DHS cluster. Source DHS (Geographic Data).

Longitude: longitude of respondent's DHS cluster. Source DHS (Geographic Data).

Colonial Districts Level Historical Controls

Islam: dummy taking value 1 if main religion is Islam. Source: Bartholomew and Brooke (1918).

Population Density in 1930. Source Historical Database of the Global Environment.

Colonial district area: area of colonial district in squared kilometres. Computed in ArcGIS.

Vegetation type: dummies for dominant vegetation type. Source White (1983).

Ruggedness: average of soil ruggedness weighting grid-cells by their sea-level surface area. Source: Nunn and Puga (2012).

Nutrient availability: indexed composed by soil texture, soil organic carbon, soil pH, total exchangeable bases, all averaged at district level. Source: FAO.

Land workability: indexed composed by soil texture, effective soil depth/volume, and soil phases constraining soil management, all averaged at district level. Source: FAO.

General land suitability index: suitability of land for cultivation based on climate and soil constraints, averaged at district level. Source: Ramankutty et al. (2002).

Diamond mines: number of diamond mines divided by the district area. Source: Lujala et al. (2005)'s DIA-DATA.

Precolonial conflicts: number of conflicts between 1400 and 1700 in the district area. Source Brecke (1999).

Christian missions: number of Christian missions in the district area. Source Roome (1925).

Distance Controls

Distance from rivers: the distance of the centroid of the land historically inhabited by the ethnic group from the closest river. Source for rivers: Natural Earth Data; source for ancestral land: Murdock (1959).

Distance from coast: the distance of the centroid of the land historically inhabited by the ethnic group from the closest coast. Source for coast: Natural Earth Data; source for ancestral land: Murdock (1959).

Distance from railway: the distance of the centroid of the land historically inhabited by the ethnic group from the closest railway line built before 1960. Source for railway: Jedwab and Moradi (2016); source for ancestral land: Murdock (1959).

Ethnicity's Homeland Level Controls

$\ln(1+Slave\ trade/area)$: logarithm of 1 plus the number of slaves taken from the respondent's ethnic group in the Transatlantic and Indian slave trade divided by the area of land historically inhabited by the group. Source: Nunn and Wantchekon (2011); source for ancestral land: Murdock (1959).

Pre-Colonial Ethnicity Level Controls

Bride price: comes from variable v6 of the Ethnographic Atlas; I create a dummy variable for bride price taking value 1 if the prevalent mode of marriage prior to industrialization was characterized by bride price or wealth to bride's family, bride service to bride's family or token bride price, and taking value 0 in the remaining cases of absence of consideration, dowry, reciprocal gift exchange, or sister or female relative exchanged for bride. Source: Murdock (1967).

Polygyny: comes from variable v9 of the Ethnographic Atlas; I create a dummy for polygyny taking value 1 if the prevalent marital composition was independent nuclear (polygyny), non-sororal (cowives in same dwellings), non-sororal (cowives in separate dwellings), preferentially sororal (cowives in separate dwellings), independent

polyandrous families, and taking value 0 in the remaining case of independent nuclear (monogamous). Source: Murdock (1967).

Matriliney: comes from variable v43 of the Ethnographic Atlas; I create a dummy for matriliney taking value 1 if the prevalent descent system was not solely based on the patrilineal line, therefore: matrilineal, duolateral, bilateral, ambilineal, mixed, and taking value 0 in the remaining case of patrilineal. Source: Murdock (1967).

Subsistence Economy Agriculture: comes from variable v42 of the Ethnographic Atlas, which reports which activity (agriculture, fishing, gathering, hunting, pastoralism) is mainly practised for subsistence. I create a dummy taking value 1 if what contributes most to the economy is extensive agriculture, intensive agriculture, or agriculture type unknown, and taking value 0 otherwise. Source: Murdock (1967).

Ethnicity latitude: latitude of the centroid of the land historically inhabited by the ethnic group. Source: Murdock (1967).

Ethnicity longitude: longitude of the centroid of the land historically inhabited by the ethnic group. Source: Murdock (1967).

Year of observation: year in which an ethnicity has been observed for the construction of the variables in Murdock's Atlas (1967). Source: Murdock (1967).

Appendix B Colonial Agricultural Production Sources

Gold Coast

District borders are the administrative borders from 1930 as reported in the “Administration Report 1930” (National Archives CO98/55,58). District-level production data are estimated using maps in Cardinall (1932) and Kaplan (1971).

Kenya

District borders are the administrative borders from 1931 as reported in the “Administration Report 1931” (National Archives CO544/33,34). District-level production data are obtained from Kenya “Agricultural Census 1930”.

Nigeria

District level data for Nigeria is not available. Instead, I use provinces. Province borders are retrieved from Papaioannou (2016). District-level production data are estimated using maps from Austin (2009), Berry (1975), Hopkins (1973), and Iloeje & FAO (2001).

Nyasaland

District borders are the administrative borders from 1928 as reported in the “Administration Report 1933” (National Archives CO626/12). District-level production data are obtained from the Nyasaland Blue Books (1923, 1925, 1927, 1929, 1931, 1933, 1935, 1937, 1939).

Tanganyika

District borders are the administrative borders from 1933 reported in Berry (1971). District-level production data are obtained from the Tanganyika Blue Books (1926, 1927, 1929, 1930, 1932, 1933, 1935, 1937, 1938, and 1939).

Uganda

District borders are the administrative borders from 1950 as reported in the “Administration Report 1948” (National Archives CO685/31). District-level production data are obtained from the Uganda Blue Books (1920, 1923, 1926, 1929, 1932, 1935, 1938).

Appendix C Additional Tables

Table C1: Robustness to Different Standard Errors (Main Results)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: <i>Beating Free Index</i>								
2SLS Share Cash Crop	0.307 (0.115) [0.119]	0.078 (0.033) [0.033]	0.170 (0.078) [0.081]	0.225 (0.085) [0.100]	0.211 (0.060) [0.062]	0.143 (0.040) [0.042]	0.314 (0.152) [0.144]	0.169 (0.071) [0.067]
OLS Share Cash Crop	0.053 (0.028) [0.028]	0.009 (0.012) [0.012]	0.034 (0.029) [0.029]	0.037 (0.027) [0.027]	0.023 (0.031) [0.031]	0.046 (0.023) [0.023]	0.036 (0.038) [0.038]	0.001 (0.031) [0.031]
Panel B: <i>Decision Index</i>								
2SLS Share Cash Crop	0.342 (0.18) [0.187]	0.099 (0.05) [0.055]	0.215 (0.09) [0.096]	0.202 (0.10) [0.120]	0.137 (0.07) [0.073]	0.151 (0.07) [0.072]	0.511 (0.26) [0.276]	0.232 (0.07) [0.069]
OLS Share Cash Crop	-0.022 (0.033) [0.033]	-0.058 (0.020) [0.020]	-0.022 (0.025) [0.025]	-0.040 (0.025) [0.025]	-0.065 (0.032) [0.032]	-0.030 (0.026) [0.026]	-0.049 (0.035) [0.035]	0.021 (0.023) [0.023]
Panel C: Education								
2SLS Share Cash Crop	0.711 (0.302) [0.319]	0.223 (0.079) [0.087]	0.334 (0.106) [0.117]	0.462 (0.168) [0.197]	0.467 (0.168) [0.182]	0.375 (0.114) [0.124]	0.335 (0.180) [0.191]	0.222 (0.088) [0.086]
OLS Share Cash Crop	0.124 (0.052) [0.052]	0.037 (0.021) [0.021]	0.098 (0.043) [0.043]	0.092 (0.047) [0.047]	0.049 (0.055) [0.055]	0.109 (0.038) [0.038]	0.029 (0.043) [0.043]	0.012 (0.039) [0.039]
Panel D: Labour Force Participation								
2SLS Share Cash Crop	0.051 (0.052) [0.055]	-0.020 (0.018) [0.021]	0.005 (0.017) [0.018]	-0.004 (0.022) [0.023]	-0.026 (0.017) [0.019]	-0.006 (0.022) [0.026]	0.066 (0.048) [0.046]	0.036 (0.032) [0.033]
OLS Share Cash Crop	-0.019 (0.008) [0.008]	-0.025 (0.008) [0.008]	-0.015 (0.007) [0.007]	-0.013 (0.008) [0.008]	-0.037 (0.010) [0.010]	-0.022 (0.009) [0.009]	0.025 (0.013) [0.013]	0.010 (0.012) [0.012]
FE Country-round	Y	Y	Y	Y	Y	Y	Y	Y
FE Current Districts								Y
Individual Controls		Y					Y	Y
Colonial District Controls			Y				Y	Y
Pre Col. Ethnicity Controls				Y			Y	Y
Distance Controls					Y		Y	Y
Slave Trade Controls						Y	Y	Y
Observations	103,134	103,134	103,134	103,134	103,134	103,134	103,134	103,134

Notes: Table reports OLS and 2SLS estimates. Standard errors in () are clustered at the ethnicity level; Standard errors in [] are two-way clustered at ethnicity and country of origin level. Unit of observation is a DHS respondent. *Beating Free Index* and *Decision Index* are constructed as explained in main text. Education is measured in years of education. Labour force Participation is a dummy equal to 1 if a men was employed in the last 12 months before the survey. Share Cash Crop is the percentage of a district area dedicated to cash crops. Individual Controls: age, dummy for religion, dummy for marital status, number of children, dummy for urban vs. rural status, dummy for household wealth's quantile, household's geographic coordinates; Colonial District Controls: dummy for Islam as main religion, population density in 1930, district area, number of pre colonial conflicts by area, dummy for major vegetation type, ruggedness, number of diamond mines by area, general land quality indices; Pre Colonial Ethnicity Controls: dummy for bride price, dummy for polygyny, dummy for descent system of matriline, dummy for agriculture as main subsistence activity, Murdock year of observation and coordinates of ethnicity homeland's centroid; Distance Controls: ethnicity's homeland distance from closest railroad, coast and rivers; Slave Trade Controls: log of 1 + number of Transatlantic and Indian slaves by ethnicity's area.

Table C2: Dissipation Over Time

	(1)	(2)
	<i>Beating Free Index</i>	<i>Decision Index</i>
Share Cash Crop	0.467** (0.229)	0.587* (0.319)
Share Cash Crop $\times$ Birth Year	-0.024 (0.026)	-0.065 (0.043)
FE Country-round	Y	Y
Colonial District Controls	Y	Y
Pre Col. Ethnicity Controls	Y	Y
Distance Controls	Y	Y
Slave Trade Controls	Y	Y
Clusters	91	91
Observations	103,134	103,134

Notes: Table reports 2SLS estimates. Unit of observation is a DHS respondent. *Beating Free Index* and *Decision Index* are constructed as explained in main text. Share Cash Crop is the percentage of a district area dedicated to cash crops. Birth Year is standardised to the original DHS variable's mean and standard deviation. Colonial District Controls: dummy for Islam as main religion, population density in 1930, district area, number of pre colonial conflicts by area, dummy for major vegetation type, ruggedness, number of diamond mines by area, general land quality indices; Pre Colonial Ethnicity Controls: dummy for bride price, dummy for polygyny, dummy for descent system of matriliney, dummy for agriculture as main subsistence activity, Murdock year of observation and coordinates of ethnicity homeland's centroid; Distance Controls: ethnicity's homeland distance from closest railroad, coast and rivers; Slave Trade Controls: log of 1 + number of Transatlantic and Indian slaves by ethnicity's area. Standard errors clustered at the ethnicity level in parentheses. *, ** and *** indicate significance at the 10, 5 and 1 percent levels, respectively.

Table C3: Summary Statistics on Men's Sample

	<i>N</i>	<i>Mean</i>	<i>St Dev</i>	<i>Min</i>	<i>Max</i>
<i>Beating Free Index</i>	48,326	0.85	0.26	0	1
<i>Decision Index Husband-Husband</i>	48,326	0.81	0.26	0	1
<i>Decision Index Husband-Wife</i>	48,326	0.50	0.37	0	1
Education	48,326	7.97	4.54	0	25
Labour Force Participation	48,326	0.87	0.34	0	1

Note: Unit of observation is a DHS respondent. *Beating Free Index* and *Decision Indices* are constructed as explained in main text. Education is measured in years of education. Labour Force Participation is a dummy equal to 1 if a man was employed in the 12 months before the survey.

Table C4: Gender Norms and Men's Empowerment

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: <i>Beating Free Index</i>						
	Women Sample		Men Sample			
Share Cash Crop	0.314** (0.152)	0.169** (0.071)	0.064 (0.089)	0.126* (0.071)		
Panel B: <i>Decision Indices</i>						
	Women Sample		Husband-Husband Men Sample		Husband-Wife Men Sample	
Share Cash Crop	0.511** (0.258)	0.232*** (0.069)	0.033 (0.076)	-0.069 (0.051)	0.326 (0.130)	0.102 (0.064)
FE Country-round	Y	Y	Y	Y	Y	Y
FE Current Districts		Y		Y		Y
All Controls	Y	Y	Y	Y	Y	Y
K-P F-stat	10.34	26.86	9.33	27.51	9.33	27.51
Clusters	91	91	85	85	85	85
Observations	103,134	103,134	48,326	48,326	48,326	48,326

Notes: Table reports 2SLS estimates. Unit of observation is a DHS respondent. *Beating Free Index* and *Decision Indices* are constructed as explained in main text. Share Cash Crop is the percentage of a district area dedicated to cash crops. All Controls include: Individual Controls (age, dummy for religion, dummy for marital status, number of children, dummy for urban vs. rural status, dummy for household wealth's quantile, household's geographic coordinates), Colonial District Controls (dummy for Islam as main religion, population density in 1930, district area, number of pre colonial conflicts by area, dummy for major vegetation type, ruggedness, number of diamond mines by area, general land quality indices), Pre Colonial Ethnicity level controls (dummy for bride price, dummy for polygyny, dummy for descent system of matriline, dummy for agriculture as main subsistence activity, Murdock year of observation and coordinates of ethnicity homeland's centroid), Distances controls (ethnicity's homeland distance from closest railroad, coast and rivers), and Slave Trade control (log of 1 plus number of Transatlantic and Indian slaves by ethnicity's area). Standard errors clustered at the ethnicity level in parentheses. *, ** and *** indicate significance at the 10, 5 and 1 percent levels, respectively.

Table C5: Controlling for Christian Missions

	(1)	(2)	(3)	(4)
	<i>Beating Free Index</i>		<i>Decision Index</i>	
Share Cash Crop	0.344** (0.164)	0.170** (0.072)	0.557** (0.278)	0.238*** (0.068)
FE Country-round	Y	Y	Y	Y
FE Current Districts		Y		Y
All Controls	Y	Y	Y	Y
K-P F-stat	10.30	27.53	10.30	27.53
Clusters	91	91	91	91
Observations	103,134	103,134	103,134	103,134

Notes: Table reports 2SLS estimates. Unit of observation is a DHS respondent. *Beating Free Index* and *Decision Index* are constructed as explained in main text. Share Cash Crop is the percentage of a district area dedicated to cash crops. All Controls include: Individual Controls (age, dummy for religion, dummy for marital status, number of children, dummy for urban vs. rural status, dummy for household wealth's quantile, household's geographic coordinates), Colonial District Controls (dummy for Islam as main religion, population density in 1930, district area, number of pre colonial conflicts by area, dummy for major vegetation type, ruggedness, number of diamond mines by area, general land quality indices), Pre Colonial Ethnicity level controls (dummy for bride price, dummy for polygyny, dummy for descent system of matriline, dummy for agriculture as main subsistence activity, Murdock year of observation and coordinates of ethnicity homeland's centroid), Distances controls (ethnicity's homeland distance from closest railroad, coast and rivers), and Slave Trade control (log of 1 plus number of Transatlantic and Indian slaves by ethnicity's area). Standard errors clustered at the ethnicity level in parentheses. *, ** and *** indicate significance at the 10, 5 and 1 percent levels, respectively.

Table C6: Men Human Capital and Labour Force Participation

	(1)	(2)	(3)	(4)
Panel A: Education				
	Women Sample		Men Sample	
Share Cash Crop	0.335* (0.180)	0.222** (0.088)	0.021 (0.086)	0.041 (0.070)
Panel B: Labour Force Participation				
	Women Sample		Men Sample	
Share Cash Crop	0.066 (0.048)	0.036 (0.032)	0.053* (0.029)	0.054*** (0.018)
FE Country-round	Y	Y	Y	Y
FE Current Districts		Y		Y
All Controls	Y	Y	Y	Y
K-P F-stat	10.34	26.86	9.33	27.51
Clusters	91	91	85	85
Observations	103,134	103,134	48,326	48,326

Notes: Table reports 2SLS estimates. Unit of observation is a DHS respondent. Education is measured in years of education. Labour force Participation is a dummy equal to 1 if a men was employed in the last 12 months before the survey. Share Cash Crop is the percentage of a district area dedicated to cash crops. All Controls include: Individual Controls (age, dummy for religion, dummy for marital status, number of children, dummy for urban vs. rural status, dummy for household wealth's quantile, household's geographic coordinates), Colonial District Controls (dummy for Islam as main religion, population density in 1930, district area, number of pre colonial conflicts by area, dummy for major vegetation type, ruggedness, number of diamond mines by area, general land quality indices), Pre Colonial Ethnicity level controls (dummy for bride price, dummy for polygyny, dummy for descent system of matriliney, dummy for agriculture as main subsistence activity, Murdock year of observation and coordinates of ethnicity homeland's centroid), Distances controls (ethnicity's homeland distance from closest railroad, coast and rivers), and Slave Trade control (log of 1 plus number of Transatlantic and Indian slaves by ethnicity's area). Standard errors clustered at the ethnicity level in parentheses. *, ** and *** indicate significance at the 10, 5 and 1 percent levels, respectively.

Table C7: The Marriage Market

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Beating Free Index</i>	<i>Decision Index</i>	<i>Beating Free Index</i>	<i>Decision Index</i>	<i>Beating Free Index</i>	<i>Decision Index</i>
Panel A: Without Current District Fixed Effects						
Share Cash Crop	0.172 (0.176)	0.926* (0.472)			0.059** (0.030)	0.019 (0.026)
Share Cash Crop Husband			-0.076 (0.432)	0.616 (0.506)		
Panel B: With Current District Fixed Effects						
Share Cash Crop	0.200** (0.100)	0.295** (0.124)			0.041 (0.028)	0.000 (0.026)
Share Cash Crop Husband			0.019 (0.343)	0.457 (0.413)		
FE Country-round	Y	Y				
FE Country-round-wife's ethnicity			Y	Y		
FE Country-round-husband's ethnicity					Y	Y
Individual Controls	Y	Y	Y	Y	Y	Y
Colonial District Controls	Y	Y	Y	Y		
Pre Col. Ethnicity Controls	Y	Y	Y	Y		
Distance Controls	Y	Y	Y	Y		
Slave Trade Controls	Y	Y	Y	Y		
K-P F-stat	7.495	7.495	4.582	4.582	18.31	18.31
Clusters	78	78	66	66	66	66
Observations	18,064	18,064	18,063	18,063	18,063	18,063

Notes: Table reports 2SLS estimates. Unit of observation is a DHS respondent. *Beating Free Index* and *Decision Index* are constructed as explained in main text. Share Cash Crop is the percentage of a district area dedicated to cash crops. Individual Controls: age, dummy for religion, dummy for marital status, number of children, dummy for urban vs. rural status, dummy for household wealth's quantile, household's geographic coordinates – relative to wives in columns 1-6; Colonial District Controls: dummy for Islam as main religion, population density in 1930, district area, number of pre colonial conflicts by area, dummy for major vegetation type, ruggedness, number of diamond mines by area, general land quality indices – relative to wives in columns 1-2, to husbands in columns 3-6; Pre Colonial Ethnicity Controls: dummy for bride price, dummy for polygyny, dummy for descent system of matriliney, dummy for agriculture as main subsistence activity, Murdock year of observation and coordinates of ethnicity homeland's centroid – relative to wives in columns 1-2, to husbands in columns 3-6; Distance Controls: ethnicity's homeland distance from closest railroad, coast and rivers – relative to wives in columns 1-2, to husbands in columns 3-6; Slave Trade Controls: log of 1 + number of Transatlantic and Indian slaves by ethnicity's area – relative to wives in columns 1-2, to husbands in columns 3-6. Standard errors clustered at the ethnicity level in parentheses. *, ** and *** indicate significance at the 10, 5 and 1 percent levels, respectively.

Table C8: Using Instrument following Alesina et al.'s (2013) Approach

<i>Dependent Variable</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Beating Free Index</i>	0.205*** (0.05)	0.068** (0.03)	0.164** (0.08)	0.133*** (0.05)	0.151*** (0.06)	0.162*** (0.05)	0.401 (0.26)	0.298* (0.17)
<i>Decision Index</i>	0.162*** (0.06)	0.010 (0.03)	0.177* (0.10)	0.055 (0.05)	0.051 (0.06)	0.112** (0.05)	0.542 (0.37)	0.230* (0.13)
<i>Education</i>	0.391*** (0.10)	0.081** (0.04)	0.387*** (0.13)	0.229*** (0.08)	0.223** (0.11)	0.302*** (0.09)	0.571* (0.34)	0.497** (0.25)
<i>Labour Force Participation</i>	0.022 (0.02)	-0.021 (0.01)	0.027 (0.02)	-0.004 (0.02)	-0.022 (0.02)	0.007 (0.02)	0.150* (0.09)	0.114* (0.07)
FE Country-round	Y	Y	Y	Y	Y	Y	Y	Y
FE Current Districts								Y
Individual Controls		Y					Y	Y
Colonial District Controls			Y				Y	Y
Pre Col. Ethnicity Controls				Y			Y	Y
Distance Controls					Y		Y	Y
Slave Trade Controls						Y	Y	Y
K-P F-stat	34.43	27.90	8.750	34.07	19.39	34.52	3.908	5.058
Clusters	91	91	91	91	91	91	91	91
Observations	103,134	103,134	103,134	103,134	103,134	103,134	103,134	103,134

Notes: Table reports 2SLS estimates. Unit of observation is a DHS respondent. Outcome variables and the instrument are constructed as described in the main text. Individual Controls: age, dummy for religion, dummy for marital status, number of children, dummy for urban vs. rural status, dummy for household wealth's quantile, household's geographic coordinates; Colonial District Controls: dummy for Islam as main religion, population density in 1930, district area, number of pre colonial conflicts by area, dummy for major vegetation type, ruggedness, number of diamond mines by area, general land quality indices; Pre Colonial Ethnicity Controls: dummy for bride price, dummy for polygyny, dummy for descent system of matriliney, dummy for agriculture as main subsistence activity, Murdock year of observation and coordinates of ethnicity homeland's centroid; Distance Controls: ethnicity's homeland distance from closest railroad, coast and rivers; Slave Trade Controls: log of 1 + number of Transatlantic and Indian slaves by ethnicity's area. Standard errors clustered at the ethnicity level in parentheses. *, ** and *** indicate significance at the 10, 5 and 1 percent levels, respectively.

Abstrakt

Studuji dopad evropského kolonialismu v Africe na současné postavení žen. Historická literatura naznačuje, že kritickým determinantem přetrvávající genderové nerovnosti je koloniální systém tržních plodin. To upřednostňovalo vstup mužů do hotovostní ekonomiky a vylučovalo ženy, jejichž pracovní zátěž se zvyšovala, protože poskytovaly další práci na polích tržních plodin svých manželů. Současná ekonomická literatura naopak naznačuje, že zvýšení postavení žen v pracovní síle by mohlo zlepšit genderové normy. Vybírám si regiony s různou mírou účasti na pěstování tržních plodin během koloniální nadvlády a porovnávám výsledky pro současné ženské potomky. Jako instrument pro produkci tržních plodin používám exogenní vhodnost půdy. Moje výsledky ukazují přetrvávající pozitivní vliv zemědělství tržních plodin na postavení žen, měřeno jako vyšší vyjednávací schopnost v domácnosti, menší ochota ospravedlňovat násilí manželů a vyšší úroveň vzdělání. Nebyl zjištěn žádný vliv na účast na trhu práce. Mezigenerační přenos kultury hraje klíčovou roli ve vysvětlení dlouhodobého přetrvávajícího efektu, který převládá zejména v regionech, jejichž tržní plodiny byly kakao a palmový olej, jelikož ženy hrály podstatnou roli v produkci těchto plodin.

Working Paper Series
ISSN 2788-0443

Individual researchers, as well as the on-line version of the CERGE-EI Working Papers (including their dissemination) were supported from institutional support RVO 67985998 from Economics Institute of the CAS, v. v. i.

Specific research support and/or other grants the researchers/publications benefited from are acknowledged at the beginning of the Paper.

(c) Martina Miotto, 2023

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical or photocopying, recording, or otherwise without the prior permission of the publisher.

Published by
Charles University, Center for Economic Research and Graduate Education (CERGE)
and
Economics Institute of the CAS, v. v. i. (EI)
CERGE-EI, Politických vězňů 7, 111 21 Prague 1, tel.: +420 224 005 153, Czech Republic.
Phone: + 420 224 005 153
Email: office@cerge-ei.cz
Web: <https://www.cerge-ei.cz/>

Editor: Byeongju Jeong

The paper is available online at <https://www.cerge-ei.cz/working-papers/>.

ISBN 978-80-7343-557-8 (Univerzita Karlova, Centrum pro ekonomický výzkum a doktorské studium)
ISBN 978-80-7344-674-1 (Národohospodářský ústav AV ČR, v. v. i.)