ORIGINAL ARTICLE

Slave trades, kinship structures and women's political participation in Africa

Leoné Walters[1] [iD] | Carolyn Chisadza[2] | Matthew Clance[2]

[1]Laboratory for the Economics of Africa's Past (LEAP), Department of Economics, Stellenbosch University, Stellenbosch, South Africa

[2]Department of Economics, University of Pretoria, Pretoria, South Africa

Correspondence
Leoné Walters, School of Economics, University of Cape Town, South Africa.
Email: leone.walters@uct.ac.za

Abstract

We study whether present-day women's political participation in sub-Saharan Africa is associated to the temporary gender ratio imbalances caused by the transatlantic and Indian Ocean slave trades, taking into account pre-existing gender norms influenced by kinship structures. To study the interrelatedness between historical exposure to the slave trades, patrilineality and their association to contemporary women's political participation, we use individual-level data for 35,595 women from 28 sub-Saharan African countries from three rounds of Afrobarometer surveys, georeferenced to historical ethnic region kinship and slave trade data. Our findings suggest that a woman's ethnic region historical exposure to the transatlantic slave trade is associated with an increase in her likelihood to vote today, however, only in non-patrilineal ethnic regions. This effect is mitigated in patrilineal ethnic regions, where women have less decision-making power. This paper contributes to the literature on the contemporary sub-national effects of the slave trades and the historical causes of gender gaps in political participation.

1 | INTRODUCTION

Several studies have linked the slave trades to development outcomes and, specifically, underdevelopment in Africa. Seminal work by Nunn (2008) find that African countries exposed to higher intensity of slave trades have lower GDP

per capita today.[1] Studies have also associated the higher intensity of slave trade with lower levels of trust between and within ethnic groups, decreased democracy and liberalism, political fragmentation, increased contemporary civil conflict and violence, and higher ethnic diversity in countries (Besley & Reynal-Querol, 2014; Boxell et al., 2019; Fenske & Zurimendi, 2017; Green, 2013; Nunn & Wantchekon, 2011; Obikili, 2016b; Whatley, 2014; Whatley & Gillezeau, 2011).[2]

An important channel through which the slave trades affect contemporary development outcomes is the temporary change in the male-to-female gender ratio in regions. The transatlantic slave trade decreased the male-to-female gender ratio as more men were exported, while the Indian Ocean slave trade increased the gender ratio as more women were exported (Campbell, 2003; Lovejoy, 2011; Manning, 1990). Although the change in the gender ratio is not necessarily persistent, the impact on society and gender dynamics can be lasting. The temporary male-to-female gender ratio imbalance resulting from the transatlantic slave trade is, for example, associated with increased prevalence of polygyny in Africa, even in the present day (Bertocchi, 2016; Dalton & Leung, 2014; Fenske, 2015). With more women than men, a woman would need to enter into a polygynous marriage to have a husband. The Indian Ocean slave trade had the opposite effect, as this slave trade is negatively associated with polygyny due to the increased gender ratio (Dalton & Leung, 2014). Such changes in marital composition and institutions entail further socio-economic consequences such as higher HIV infection rates amongst women, infidelity and child mortality (Bertocchi & Dimico, 2019). Moreover, in a recent working paper, La Ferrara et al. (2021) compile data on all four of the slave trades and show that women in ethnic regions with historical exposure to the Red Sea slave trade experience higher contemporary female genital cutting rates.

Recent literature also links the temporary male-to-female gender ratio imbalance from the transatlantic slave trade to contemporary women labour force participation. Using Demographic and Health Surveys (DHS) data, Teso (2019) shows that the likelihood of a woman being employed is higher in ethnic regions exposed to the transatlantic slave trade. In addition, he finds that the effect of this historic demographic shock is persistent. This association, however, only holds for the transatlantic slave trade and not the Indian Ocean slave trade, suggesting that it is the historic decrease in the gender ratio and subsequent change in gender roles that are responsible for the increase in women's employment. Due to more men being exported during the transatlantic slave trade, women had to substitute for men in the workforce, which altered cultural beliefs in how women provide for their household. Earlier work by Manning (1990) also notes that women were obliged to fulfil the man's role and shifted to working in commerce.

Related to women's roles, studies have associated kinship structures with women's political participation. Ethnic region kinship structures determine how inheritance and lineage are traced. Patrilineal, matrilineal and other structures ultimately influence gender norms that entail varying cultural, social, economic and political implications for women in sub-Saharan Africa (Lowes, 2020a, 2020b; Robinson & Gottlieb, 2021; Tène, 2021). Robinson and Gottlieb (2021) find that matrilineality in sub-Saharan Africa is associated with closing the gender gap in political participation, as a result of more progressive gender norms and views on gender roles. They highlight that increased women's political participation in matrilineal societies should not be attributed to resource distribution but to more equal gender and cultural norms. In India, Brule and Gaikwad (2020) find that kinship structures, which essentially determine decision-making regarding wealth through lineage, are key determinants of political participation and interest in politics. In patrilineal societies, men are more likely to participate in politics than women; however, in matrilineal societies, this gender gap narrows.

A new body of evidence is emerging where the link between historical shocks, such as the slave trades, and precolonial ethnic group characteristics, such as kinship structures, are examined (see, e.g., Archibong, 2019; Ricart-Huguet, 2021; Walters et al., 2023). For example, Lowes and Nunn (2024) examine the association between the slave trades and kinship structure and find that exposure to the transatlantic and Indian Ocean slave trades is positively associated with matrilineal kinship as measured in the 19th and early 20th century. We contribute to this

---

[1]Nunn (2008) also shows that it was not necessarily poorer societies that were subjected to the slave trades, societies such as the Kongo Kingdom with high population density were even more affected.
[2]Obikili (2016a) finds that the transatlantic slave trade in Nigeria and the Gold Coast is negatively associated with historical and contemporary literacy. On the other hand, Okoye and Pongou (2015) show that there is a positive relationship between the transatlantic slave trade and schooling, resulting from the missionaries that set up in regions more hindered by the slave trade.

literature by studying the interrelated dynamics between slave trade, pre-existing kinship structures and women's political participation. We argue that the mechanisms at play in the different slave trade routes created gender ratio imbalances that can explain variations in women's political participation, conditional on the pre-existing kinship structures in these affected regions.

To evaluate the impact of historical events such as the slave trades, we use Afrobarometer survey data for 28 sub-Saharan African countries. These countries are georeferenced to historical geographic regions of ethnic groups as classified by Murdock's Ethnographic Atlas (Murdock, 1959), for which we also have ethnic region-level kinship structure and slave trade data (Murdock, 1967; Nunn & Wantchekon, 2011). We use the number of slaves exported during the respective slave trades as a measure of the intensity or level of exposure that an individual's ethnic region experienced. Our results suggest that a woman's historical ethnic region exposure to the transatlantic slave trade is associated with an increase in her likelihood to vote in non-patrilineal societies, where women have more decision-making power based on lineage and inheritance. This positive association is mitigated in patrilineal ethnic regions, as men would use their decision-making power to limit women's economic and political participation. Further analysis examining gender norms pertaining to women's employment opportunities supports these findings that the transatlantic slave trade has negative gender effects in patrilineal ethnic regions relative to non-patrilineal regions.

Our analysis expands the literature regarding gender norms and causes of gender gaps in political participation (Arriola & Johnson, 2014; Isaksson, 2014; Isaksson et al., 2014; Marien et al., 2010; Ndlovu & Mutale, 2013). While other studies such as Robinson and Gottlieb (2021) and Alesina et al. (2013) have related historical aspects such as matrilineality and historical plough use to women's political participation, we are the first to analyse the effect of gender ratio imbalances as a result of the transatlantic and Indian Ocean slave trades in the context of pre-existing kinship structures on women's political participation. Additionally, our contribution is also methodological as we refine the variable of patrilineality by considering descent, inheritance and locality to create a more accurate measurement of kinship for our analysis.

The general agreement within the literature is that women are deprived of power economically, socially and politically (Bagues & Campa, 2020; Isaksson et al., 2014; Lowes, 2020a; Robinson & Gottlieb, 2021). In sub-Saharan Africa, women representation in parliament remains relatively low and society still views women as inferior political leaders. Countries in the Pacific have 44% women representation in the upper chamber of national parliament, the Americas and Europe approximately 33% and 30%, while in Sub-Saharan Africa, only 24% of upper chamber members of national parliament are women (Inter-Parliamentary Union, 2020). Evidence suggests that women's political participation can contribute to better development outcomes. For example, more women in political office have been associated with decreased corruption and improved education and health policy (Hessami & da Fonseca, 2020). As such, determining historical effects on contemporary inequality in political participation is thus essential in addressing socio-economic challenges faced by women in Africa.

The rest of the paper is organised as follows. In the next section, we provide background on kinship structures, the slave trades and discuss our conceptual framework. Section 3 describes the data and methodology used. Section 4 presents the main empirical results and Section 5 robustness checks. Section 6 concludes.

2 | BACKGROUND

2.1 | Patrilineal kinship structure

Different kinship structures determine norms that hold cultural, social, economic and political implications for women in sub-Saharan Africa. Kinship structures determine not only the inheritance of property or lineage of the family but also the distribution of resources and obligations of family members (Robinson & Gottlieb, 2021; Tène, 2021).

There are two types of *unilateral* kinship structures and several *cognatic* structures. In *unilateral* structures, descent is traced through either one of the two parents, fathers (patrilineal) or mothers (matrilineal). In patrilineal

ethnic regions, lineage is traced through an individual's father's kinship group, and inheritance is passed to children from male group members. Although matrilineal societies are not the opposite of patrilineal kinships, lineage and inheritance are traced through female group members (Lowes, 2020b). Relative to women in patrilineal ethnic regions, women in matrilineal ethnic regions have greater support from their own kin networks, they are likely to hold more resources such as land, enjoy increased decision-making power and have increased preference for competition.[3] Due to structural reasons such as matrilocality, a system where the husband and wife will live close to the wife's relatives, women have higher status and are more valued. Although matrilineality is not the same as matriarchy, women experience more empowerment relative to women in patrilineal ethnic regions (Lowes, 2020a; Robinson & Gottlieb, 2021; Tène, 2021).

Cognatic structures are more complicated. In these ethnic regions, lineage and inheritance are traced through both parents (Lowes, 2020a). These societies include duolateral, quasi-lineage, ambilineal, bilateral and mixed (Murdock, 1967). Although these kinship structures vary to a degree, both the biological ancestors are of importance. In quasi-lineage societies, men trace their lineage from their father and women from their mothers, while in ambilineal societies, individuals are able to choose and may choose based on social and economic standing of the mother's or father's family. To some extent, we can assume that in these ethnic regions, like in matrilineal societies, women have more decision-making power (or structural power, as we discuss in the next section) relative to women in patrilineal ethnic regions. Figure 1 shows the distribution of patrilineal and non-patrilineal ethnic regions in sub-Saharan Africa. We can observe that patrilineal ethnic regions are predominantly in the West of Africa, where the transatlantic slave trade was also most intense.

2.2 | Slave trade in Africa

Africa experienced four slave trades over the 1400 to 1900 period. Noteworthy was the transatlantic slave trade exporting slaves from Western, West-Central and Eastern Africa to work in European colony plantations in the Americas. Pre-dating the transatlantic slave trade, the Indian Ocean slave trade exported slaves from Eastern Africa to the Middle East, India and plantation islands in the Indian Ocean (Nunn, 2008). The other two smaller slave trades were the Red Sea and trans-Saharan slave trades.[4]

Slaves were captured by kidnapping people from neighbouring ethnic regions during raids and enslavement by family, friends and other people from the same ethnic group (Nunn, 2017). This did not only cause contemporary inter- and intra-group mistrust but also mistrust of political leaders, as slave traders were often chiefs and leaders within communities (Nunn & Wantchekon, 2011). Collecting data on the manner of enslavement in Sierra Leone, Koelle (1854) finds that approximately 40% of slaves were kidnapped, 25% enslaved through warfare, 20% enslaved by family and friends and 16% as a result of judicial processes. Enslaved people were sold to slave merchants in return for imported goods and guns, which were used to capture more people to be sold, also known as the 'gun-slave cycle' (Lovejoy, 2011). Another form of slavery that took place during the Indian Ocean slave trade was enslavement as a result of debt. Men would be indebted and resolve to pay-off debt through enslavement of their wives and/or children (Campbell, 2003).

The slave trades and associated deaths had a substantial effect on demography. First, the slave trades affected the population size. Figure 2 shows the spatial distribution of the number of slaves exported during the transatlantic and Indian Ocean slave trades. Approximately 12 million slaves were exported during the transatlantic slave trade and six million all together during the Indian Ocean, Red Sea and trans-Saharan slave trades (Nunn, 2008).

---

[3]Evaluation of the preference for competition is based on a lab experiment in which individuals chose whether to compete or not (Lowes, 2020a).
[4]The Red Sea slave trade exported slaves to the Middle East and India from inland ethnic regions close to the Red Sea. The trans-Saharan slave trade exported slaves to North Africa from the Saharan desert (Nunn, 2008). Ethnic region data on the Red Sea and trans-Saharan slave trades are not yet available.
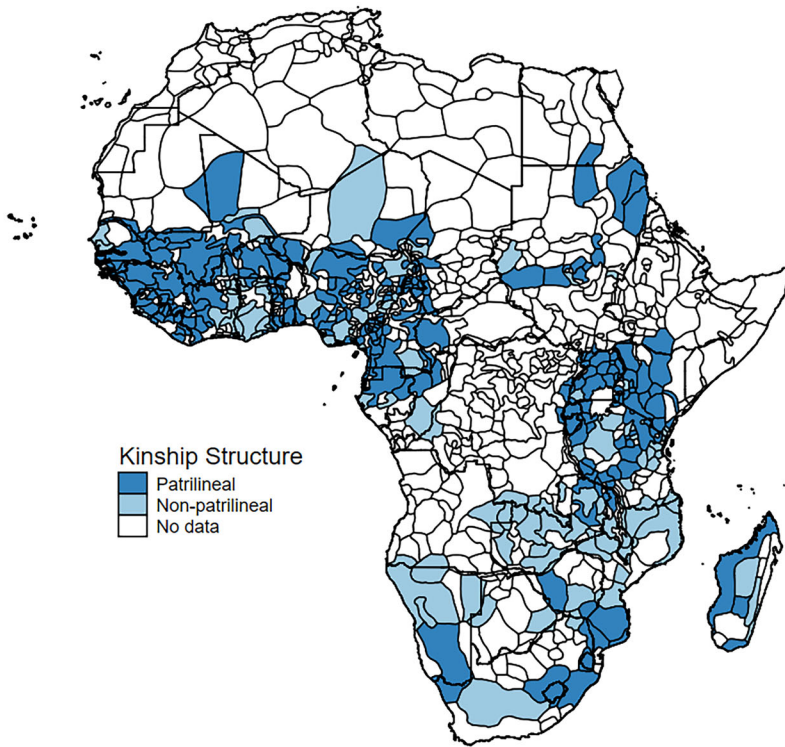
FIGURE 1 Patrilineal and non-patrilineal ethnic regions. *Note*: Figure illustrates patrilineal and non-patrilineal kinship structures in sub-Saharan Africa. *Source*: Based on Murdock (1959, 1967). [Colour figure can be viewed at wileyonlinelibrary.com]

Manning (1990) notes that by 1800, the population in Africa had declined by half, while Whatley and Gillezeau (2011) estimate a more conservative but still noteworthy decline of 10%. As noted by Dalton and Leung (2014), the mere volume of slaves captured and exported, especially during the transatlantic slave trade, reduced labour and human capital within these affected regions. Given that the African continent was land abundant and labour scarce, the negative effect on the labour force placed great constraints on productivity (Austin, 2008).

Second, the slave trades skewed the gender ratios in African countries. Figure 3 illustrates the impact of slave exports on the male-to-female gender ratio in Western and Eastern Africa. As mentioned, the transatlantic slave trade exported slaves to the Americas to work in plantations. Men were therefore preferred for their strength, decreasing the gender ratio in the affected ethnic regions. Between the 17th and 19th century, the ratio of men to women exported in the transatlantic trade was 181:100, essentially two men for every woman (Lovejoy, 2011; Manning, 1990). The opposite occurred during the Indian Ocean slave trade on the Eastern coast of Africa. Women were mostly enslaved in this region as slaves were acquired to serve as domestic servants, entertainers and concubines. As more women were exported from Eastern Africa to the Middle East and India, the gender ratio increased (Campbell, 2003; Manning, 1990). This slave trade and effect on the gender ratio was shorter in time and of a smaller scale relative to the transatlantic slave trade.
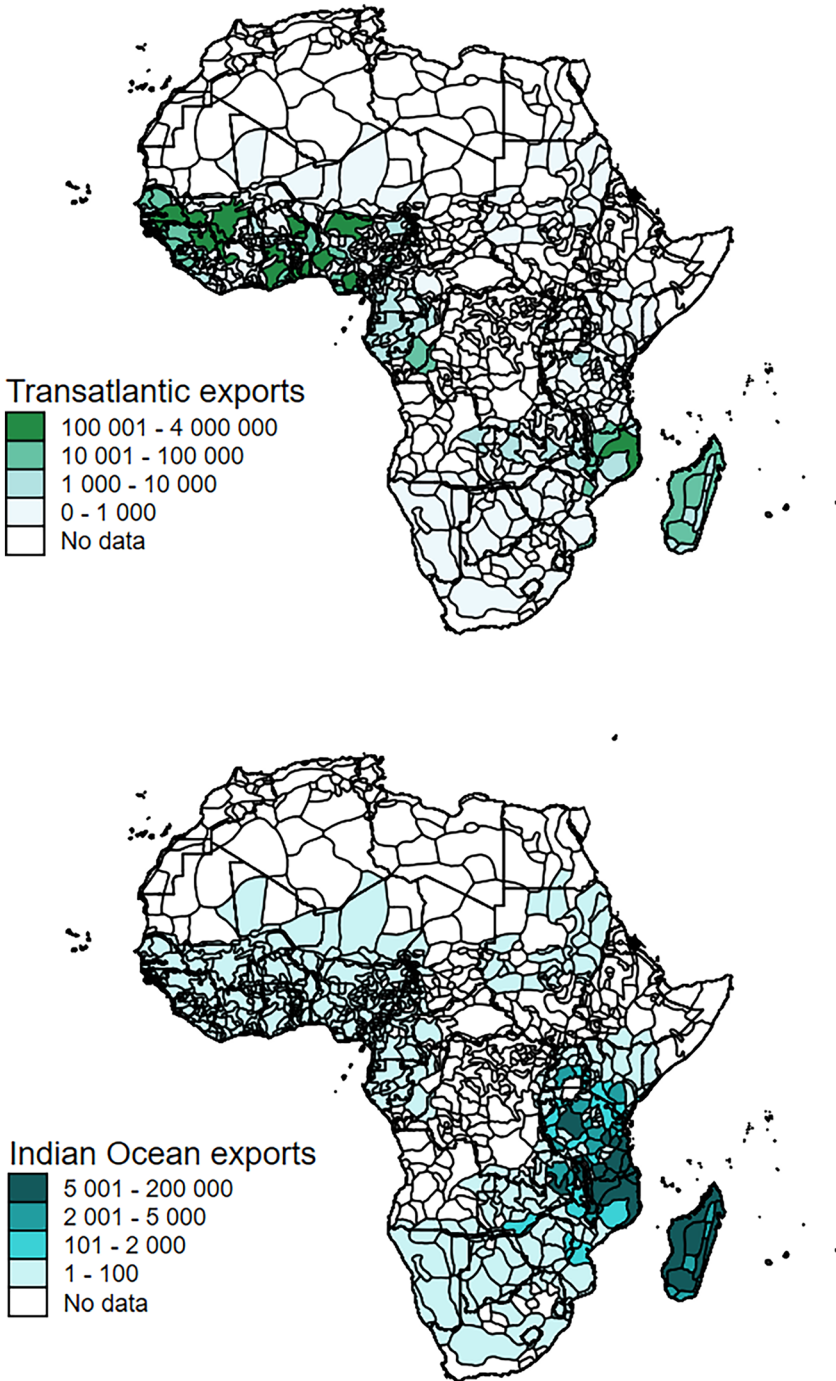
FIGURE 2   Slave exports. *Note*: Map illustrates the spatial distribution of the number of slaves exported from each ethnic region during the transatlantic slave trade (top) and Indian Ocean slave trade (bottom). *Source*: Based on Nunn and Wantchekon (2011). [Colour figure can be viewed at wileyonlinelibrary.com]
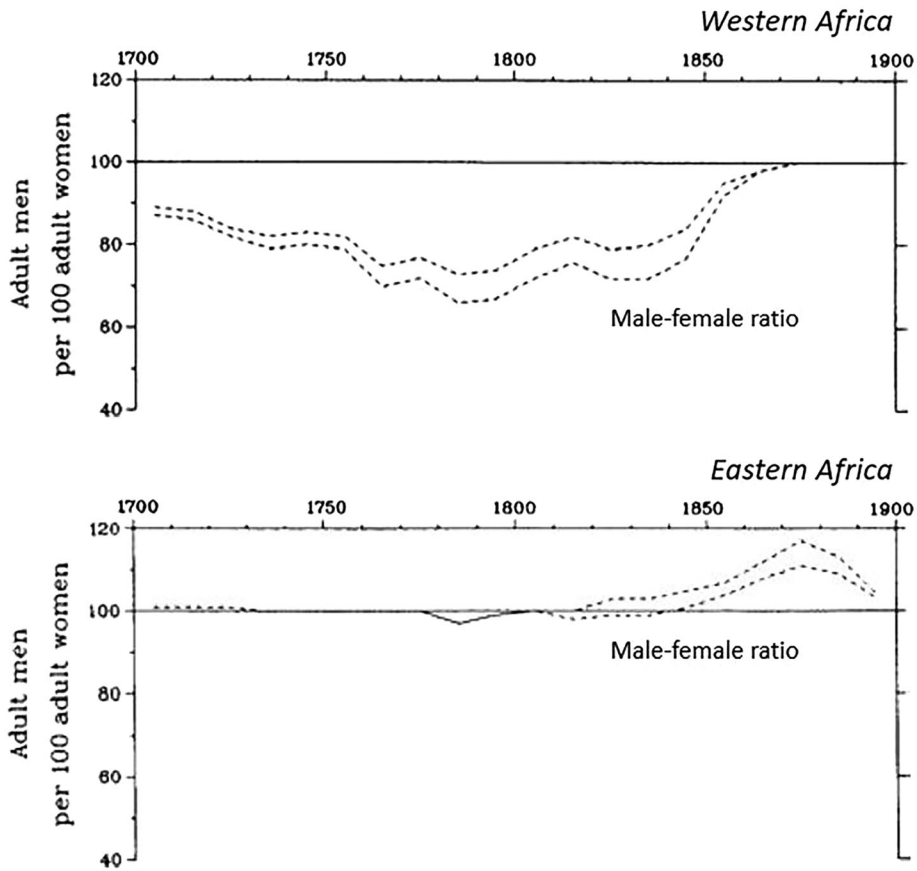
FIGURE 3 Impact of slave trades on gender ratio. *Note*: Figure illustrates the impact of the transatlantic slave trade on gender ratio from 1700 to 1900 in Western Africa (top panel) and the Indian Ocean slave trade in Eastern Africa (bottom panel). *Source*: Manning (1990).

2.3 | Conceptual framework

We follow the conceptual framework proposed by Guttentag and Secord (1983) and extended by South and Trent (1988). According to these scholars, gender ratio imbalances affect how women and men are valued by each other in a society. Gender ratio imbalances affect the dyadic power in interpersonal relationships, which specifically impact women's gender roles. Dyadic power, or bargaining power, is the relative power or influence that an individual has over the direction and nature of relationships with other individuals. When one gender is scarce, that gender will be more valued and less dependent on their partner as alternative relationship options are available to them. Contrary, the gender in oversupply will have a shortage of alternative partners they could enter into relationship with. The gender in short supply will therefore have greater bargaining power than the oversupplied gender.

Importantly, the Guttentag and Secord (1983) theory assumes that structural power within a society resides with men. Structural power, which is the control of legal, economic and political structures, determines customs and practices which societies adhere to. Structural power can therefore be thought of as the decision-making power within a society. Therefore, the ability of women to use their bargaining (dyadic) power in a situation where they are the scarce gender would be limited to some extent due to the structural power that men have. In our view, this is not the case in all societies, as we elaborate in the subsections below.

2.3.1 | Decreased gender ratio

Guttentag and Secord (1983) posit that in societies where men are scarce (decreased gender ratio), for example, due to the transatlantic slave trade, men gain bargaining power within the society. In these societies, women are less valued as alternative options are available to men. Commitment to monogamous relationships is low and women are likely to increase activities outside the family such as pursuing an education and entering into the labour force, as Teso (2019) also shows. Women become relatively more independent as they cannot rely on men remaining in monogamous relationships and providing for them. Additionally, in an attempt to oppose men's structural power within a society, women may increase political action and feminist movements may arise (Guttentag & Secord, 1983; South & Trent, 1988).

Findings by Dalton and Leung (2014) agree with this position. They show that women, historically and in the present day, enter into polygynous relationships due to a lack of available options. Polygyny in itself entails far-reaching implications for women within societies. The practice of polygyny is negatively associated to women empowerment and measures of women's health (Bertocchi & Dimico, 2019; Tertilt, 2005). Moreover, polygynous countries suffer more from gender inequality and have less power in national politics (Tertilt, 2006).

A study by Grant et al. (2018) on the long-run effects of the gender ratio imbalance caused by the Second World War on the market for politicians in Germany finds evidence that a decreased gender ratio is associated with higher shares of women voters. As political parties adopted more gender equal and women oriented policies, women increased their political participation and also entered into the political arena as candidates for political office. Similar to previous research, Grant et al. (2018) argue that as men were in shortage, women had to enter into jobs and roles that were previously occupied by men.

2.3.2 | Increased gender ratio

In societies where women are scarce (increased gender ratio), for example, due to the Indian Ocean slave trade, women are more valued. Due to the scarcity of women and less available options for men, men treat women with more 'deference and respect'. Yet, as women gain bargaining power, men use their existing structural power to limit women's economic and political participation. In this case, assuming that men have structural power within the society, women's activities outside the family are constrained. As women's traditional and familial roles are more valued, women are less likely to enter the labour force and pursue an education (Guttentag & Secord, 1983; South & Trent, 1988).

Examining the effect of historical increased gender ratio in Australia, findings by Grosjean and Khattar (2019) confirm the Guttentag and Secord (1983) hypothesis. During the 18th and 19th century, the British relocated more male convicts to Australia, increasing the gender ratio. They find that as a result, women are less likely to participate in the labour force today and are more likely to enter into marriage. Findings also suggest more conservative views regarding women in the workforce.

2.3.3 | Gender ratios and patrilineality

Although gender ratio imbalances can bring about changes in gender roles and norms as posited by Guttentag and Secord (1983), the pre-existing kinship structures, which allows us to measure the structural power within a society, would determine how these imbalances in gender ratios affect norms and gender outcomes that persist. We therefore examine whether the transatlantic and Indian Ocean slave trades, and resulting temporary gender ratio imbalances, can be associated with contemporary women's political participation within the framework of ethnic region kinship structures.

In non-patrilineal societies, such as those with matrilineal or *cognatic* kinship structures (hereafter referred to as non-patrilineal societies or ethnic regions), women have some degree of structural power as lineage and inheritance are traced through female group members as well, which increases women participation in societal decision-making. In this context, we expect exposure to both the slave trades to be positively associated with women's political participation, albeit as a result of varying mechanisms.

While the transatlantic slave trade led to an increase in men's bargaining power, women became economically independent and increased activities outside the family. With respect to an increase in the gender ratio as a result of the Indian Ocean slave trade, women's bargaining power increased together with their value in society. Extending on Guttentag and Secord theory, South and Trent (1988) highlights that women, with greater structural power in a society, are able to use their bargaining power to counteract men's attempts to limit their participation in activities and roles outside the family. A women's historical exposure to both these slave trades in non-patrilineal ethnic regions may therefore have led to increased political engagement and participation.

In patrilineal societies, we expect exposure to the transatlantic slave trade to be negatively associated with contemporary political participation by women. Although women increased their roles outside the family, and an increase in labour force participation is expected (as seen in Teso, 2019), men hold structural power and likely limited women's activities and participation in societal decision-making. In terms of exposure to the Indian Ocean slave trade, the expected association is not as clear and depends on the offsetting dynamics between bargaining and structural power. Even though women gain bargaining power, men can use their structural power to limit women's participation in activities outside of the family. Therefore, although women are more valued, the gender dynamics within patrilineal kinship structures may offset the expected gain in bargaining power. In the instance that structural power held by men outweigh the gain in bargaining power by women, we expect that there would be a negative association between exposure to the Indian Ocean slave trade and present-day women political participation.

3 | DATA AND METHOD

We use women's voting in the most recent national elections as our main measure of contemporary political participation by women citizens. Data on voting are obtained from the Afrobarometer Survey Round 5 (2011 to 2013), Round 6 (2014 and 2015) and Round 7 (2016–2018) (Afrobarometer Data, 2022).[5] Countries surveyed and included in our sample are Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cote d'Ivoire, Gabon, Ghana, Guinea, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Senegal, Sierra Leone, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia and Zimbabwe. The variable $vote_{iec}$ is a binary variable equal to 1 if an individual (i), residing in ethnic region (e) and country (c), voted in the most recent election, 0 if not.

We assign geolocated individual coordinates as captured by the Afrobarometer to ethnic group polygons reported in the Murdock Map (BenYishay et al., 2017; Murdock, 1959). We assume that the distribution of ethnic groups remains similar to the distribution captured in Murdock's Ethnographic Atlas. According to Afrobarometer individual-level survey data in 2005, the location of respondents is 0.55 correlated to their historical ethnic region (Nunn & Wantchekon, 2011). Similarly, recent research by Anderson (2018) indicates that in 11 DHS surveys capturing ethnic information, 60% of individuals reside in their historical ethnic region based on their reported ethnic group.

Estimates on the number of slaves exported from ethnic regions during the transatlantic and Indian Ocean slave trades are obtained from Nunn and Wantchekon (2011). The data set is constructed using data on the number of slaves exported from ports together with information on slaves' ethnic identity, georeferenced to the Murdock Map (Murdock, 1959). In line with Nunn and Wantchekon (2011) and Teso (2019), we measure the intensity of slave

---

[5]We use three rounds of geolocated surveys to mitigate the potential effect of a single election in a country on outcomes. We are restricted to these rounds of surveys, as earlier rounds cover fewer countries and Round 8 does not ask questions related to gender norms.

exports during the transatlantic trade, *atlantictrade$_e$*, and the Indian Ocean trade, *indianoceantrade$_e$*, by dividing the number of slaves from each ethnic region (*e*) with the historic land area of that ethnic region. To account for ethnic regions that did not experience slave trade and potential outliers, we use the natural log of the normalised slave trade measure plus 1.

To capture the role of pre-existing cultural norms regarding women within society, we account for major type of descent, inheritance rule of fixed and moveable property, and locality as captured in the Murdock Ethnographic Atlas (Murdock, 1967). Inheritance rule is patrilineal when the inheritance for fixed and moveable property favours sons or is distributed to both children, with daughters receiving less. Non-patrilineal inheritance would therefore entail women having more access to resources such as land and other resources. We additionally consider locality which is considered patrilineal when the marital residence after the first years of marriage is patrilocal.

The variable *patrilineal$_e$* is a binary variable equal to 1 if the ethnic group (*e*) is a patrilineal kinship by descent and patrilineal in at least two of the three other categories, 0 if otherwise. This metric enables a more nuanced understanding, capturing the depth and prevalence of patrilineal norms within a society. We argue that where lineage is patrilineal along with other institutions such as inheritance and locality, patrilineal norms are likely more entrenched in society and have historical roots pre-dating events such as the slave trades, which may have altered structures as suggested by Lowes and Nunn (2024). This measure therefore minimises potential simultaneity and endogeneity bias. As discussed, it is more likely for women to have some amount of structural power in ethnic regions that follow matrilineal or *cognatic* kinship structures.
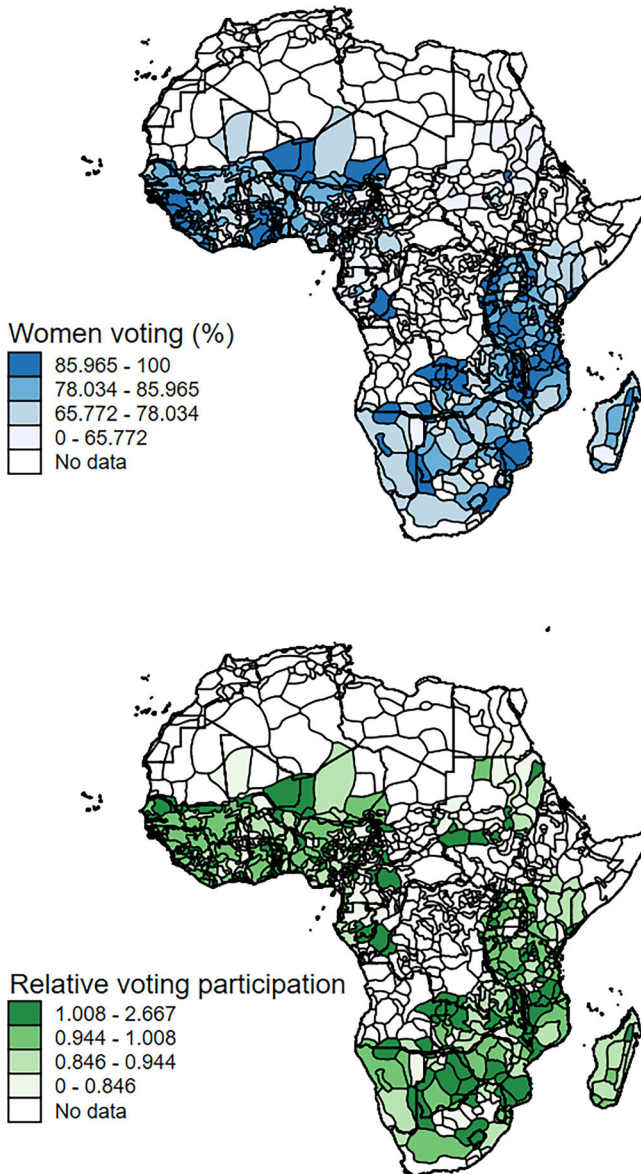
Figure 4 illustrates the share of women who voted in the most recent election and the relative voting participation, the share of women who vote relative to the share of men who vote, by ethnic region. From the figure, it is clear that there is still substantial variation in voting by women across sub-Saharan Africa, not only between countries but also within.

In Table 1, we present the average percentage of women voting by ethnic region exposure to the slave trades and kinship structures. As expected, average voting by women is higher in non-patrilineal relative to patrilineal ethnic regions. This is also true in ethnic regions that were exposed to the transatlantic and both the transatlantic and Indian Ocean slave trades. However, when we consider ethnic regions exposed to only the Indian Ocean slave trade, we see that the percentage of women voting in patrilineal ethnic regions is higher relative to non-patrilineal ethnic regions. These differences between women's voting in non-patrilineal and patrilineal ethnic regions motivates our notion that it is the interrelated association between kinship structure and historical exposure to the slave trades that explain contemporary outcomes.

Although the Murdock Ethnographic Atlas has been validated by Bahrami-Rad et al. (2021), we acknowledge that it has some shortcomings. First, ethnic groups were sampled during different time periods over 1850 to 1950, capturing their characteristics over various stages of colonisation. Second, although we classify indigenous institutions as pre-colonial ethnic institutions, there were earlier European influences such as during the slave trades that occurred prior to data capturing in the 19th century (Gennaioli & Rainer, 2007). Giuliano and Nunn (2018), however, note that as ethnic group characteristics are persistent and remain rather stable over time, Murdock's data are still of value. Finally, there are some missing observations in the Murdock Ethnographic Atlas (Figure 1). We are therefore not able to attribute kinship structure characteristics to individuals residing in these ethnic regions and these observations are dropped. Despite these weaknesses, Murdock's data remain a reliable and popular source of pre-colonial ethnic information in Africa (see, e.g., Alesina et al., 2013; Angeles & Elizalde, 2017; Gennaioli & Rainer, 2007; Michalopoulos & Papaioannou, 2013, 2014, 2016).

We are able to study the interrelatedness between slave trade exposure and patrilineality and their association to women's political participation by estimating a two-way interaction model. The main empirical specification is therefore

$$
\begin{aligned}
vote_{iec} = {} & \beta_1 patrilineal_e + \beta_2 atlantictrade_e + \beta_3 atlantictrade_e * patrilineal_e \\
& + \beta_4 indianoceantrade_e + \beta_5 indianoceantrade_e * patrilineal_e \\
& + \beta_6 X_{iec} + \beta_7 Z_{ec} + \alpha_{cs} + u_{iec},
\end{aligned} \tag{1}
$$

FIGURE 4 Women's political participation. *Note*: Map illustrates the percentage of surveyed women that voted by ethnic region and relative voting participation (percentage of women who voted relative to the percentage of men that voted in the most recent election). Data on voting are obtained from the Afrobarometer Survey Round 5 (2011 to 2013), Round 6 (2014 and 2015) and Round 7 (2016–2018). *Source*: Based on Afrobarometer Data (2022) and Murdock (1959). [Colour figure can be viewed at wileyonlinelibrary.com]

where the outcome variable, $vote_{iec}$, is whether a woman voted or not. To consider the association to women's political participation specifically, we follow Teso (2019) and Bertocchi and Dimico (2019) and estimate the empirical specification on the sample of women surveyed.

TABLE 1 Women voting (%) by ethnic region kinship structure and slave trade exposure.

	All ethnic regions	Non-patrilineal	Patrilineal
Average	80.31	81.76	79.64
No trade	77.32	77.25	77.33
Both trades	85.87	87.92	81.59
Transatlantic	79.86	80.46	79.57
Indian Ocean	84.41	82.28	84.87

Note: Table reports the percentage of surveyed women voting in ethnic regions, according to slave trade exposure (rows) and kinship structures (columns). Source: Based on BenYishay et al. (2017), Murdock (1967) and Nunn and Wantchekon (2011).

The variable X_{iec} is a vector of individual-level controls which include age (age_{iec}), age-squared (age_{iec}^2), whether an individual resides in an urban area ($urban_{iec}$), completed primary ($primary_{iec}$) and secondary school ($secondary_{iec}$), are Christian ($christian_{iec}$) or Muslim ($muslim_{iec}$) and fear political violence during election campaigns ($violence_{iec}$). We control for age, as older individuals are more likely to vote. Studying 10 African countries, Kuenzi and Lambright (2011) find that a 50-year-old is approximately 15% more likely to vote than an 18-year-old. However, as we expect individuals to be less likely to vote after retirement, we also control for age-squared.

We include a binary variable equal to 1 if an individual resides in an urban area, 0 if not. Individuals from rural areas are more likely to vote than those from urban areas, because political parties often focus their political campaigns in these regions (Bratton et al., 2005; Kuenzi & Lambright, 2011). We additionally include binary variables for primary and secondary school completion to measure education attainment, which also accounts for an individual's resource base (Isaksson, 2014). As secondary education completion amongst women is low relative to primary education, we expect a negative association to voting.

Belonging to a religion is found to enhance social capital and networking, which may increase participation in community activities such as voting (Isaksson, 2014). We therefore include binary variables for Muslim and Christian religion.[6] Finally, to account for political intimidation that may deter women from voting during elections, the violence variable is a binary variable equal to 1 if an individual fears becoming a victim of political intimidation or violence during election campaigns in their country, 0 if not.

Borrowing from Teso (2019) and Bertocchi and Dimico (2019), we account for geographic and demographic ethnic-country region characteristics. The variable Z_{ec} represents ethnic-country region controls that may influence political participation. These variables include soil suitability for agriculture ($soilquality_{ec}$), the presence of large domesticated animals ($largeanimals_{ec}$), malaria ($malaria_{ec}$), a city in 1400 ($1400city_{ec}$) and distance to the coast from the centroid of an individual's ethnic-country region ($coastaldistance_{ec}$). Historical agricultural features of ethnic regions have been found to play an important role in gender roles and women participation in politics (Alesina et al., 2013). The suitability of soil for agriculture is associated with economic development outcomes through the effect on technological diffusion, colonial reach and public infrastructure provision (Nunn & Puga, 2012). Additionally, we control for the presence of large domesticated animals that correlates with lower plough use and crop farming. Plough use has been linked to less equal gender norms and lower contemporary women's political participation (Alesina et al., 2013). We expect both these measures to be positively associated with women's political participation, as women are often dependent on subsistence farming.

We also account for ethnic-country region disease environment, by controlling for the malaria ecology. Malaria ecology measures the mean climatic conditions favourable for malaria. Although many studies have shown the negative effects of malaria on economic and socio-economic outcomes, the opposite may be true for political

---

[6]Relative to other religions such as traditional or ethnic religions and not belonging to a religion.

participation (Gallup & Sachs, 2001). In Tanzania, Croke (2021) finds that citizens residing in regions with higher malaria incidence increase their approval of political leaders as a result of increased anti-malaria campaigns and bed net distribution in these regions. We can therefore expect that these citizens may be more likely to vote as well.

Historical prosperity of ethnic regions is controlled for using a binary variable if there was a city with more than 20,000 inhabitants located within the ethnic region's boundaries in 1400 (Michalopoulos & Papaioannou, 2013; Pinkovskiy, 2017). Additionally, the distance to the coast from the centroid of the individual's ethnic-country region is included in our list of controls. This geographic measure has been found to be strongly linked with slave trade intensity, as slaves were shipped from coastal ports (Nunn, 2008; Nunn & Wantchekon, 2011). Wild and Stadelmann (2022), furthermore, show that individual's distance to the coast is also useful in explaining present-day development and welfare outcomes.

The variable α_{cs} captures the country-survey fixed effects. The variable u_{iec} is an error term. We include country-survey fixed effects and account for potential spatial autocorrelation on country and ethnic region level with multi-way clustered standard errors using methodology developed by Cameron et al. (2011). Clustering at ethnic region and country level allows for valid inference in the instance that errors within geographical units are correlated.

Summary statistics of sampled women included in our analysis are provided in Table 2. On average, approximately 80.3% of women voted in the recent election. In our sample, 55.9% of individuals reside in ethnic regions exposed to the transatlantic slave trade, while only 24.0% of individuals reside in ethnic regions exposed to the Indian Ocean slave trade. The intensity of the transatlantic slave trade is also higher than that of the Indian Ocean slave trade. In our sample, 68.2% of individuals reside in patrilineal ethnic regions.

4 | RESULTS

4.1 | Women's political participation

We consider the individual associations between contemporary women's political participation as measured by voting, patrilineality and exposure to the transatlantic and Indian Ocean slave trades in Table 3 columns 1 to 3. From these results, the associations are not clear. It is only when taking the interrelated association into account as per our estimating equation (1), in columns 4 to 6, that we are able to discern the varying effects of the slave trades.

The interpretation of individual coefficient estimates should be done with caution, as they are interdependent with other interaction terms and covariates in the model. For example, consider the relationship between historical transatlantic slave trade exposure and contemporary women's political participation: β_2 measures the effect of the slave trade exposure ($atlantictrade_e$) when $patrilineal_e$ is 0, therefore, in non-patrilineal ethnic regions. The two-way interaction $atlantictrade_e * patrilineal_e$ estimating coefficient β_3 measures the effect of historical exposure to the transatlantic slave trade in patrilineal ethnic regions ($patrilineal_e$ is 1). Results should furthermore be interpreted as associations and not causal estimates.

Results suggest that a woman's ethnic region exposure to the transatlantic slave trade is associated with an increase in her likelihood to vote in non-patrilineal ethnic regions. Interpreting results from the full model specification in column 7, we can say that a doubling of the historical number of slaves exported per area of a women's non-patrilineal ethnic region is associated with a 1.6 percentage point increase in the likelihood of voting today.[7] Historical exposure to the transatlantic slave trade is associated with a 2.1% increase in women voting in non-patrilineal relative to the average in ethnic regions not historically exposed to the transatlantic slave trades.[8] In patrilineal ethnic regions, however, this effect is mitigated.

---

[7]Calculated (Delta-method) standard errors of the conditional marginal effects at the mean: 0.005. Bootstrap standard errors provide similar results.
[8]Increase is calculated using the voting average in non-patrilineal ethnic regions, which is 79.7%. The average in patrilineal ethnic regions is 78.9%.

TABLE 2 Summary statistics.

Variable	N	Mean	SD	Min	Max
$vote_{iec}$	35,595	0.803	0.398	0	1
$patrilineal_e$	35,595	0.682	0.466	0	1
$patrilinealdescent_e$	35,595	0.685	0.464	0	1
$patrilineallocality_e$	34,791	0.839	0.367	0	1
$patrilinealinheritance(fixed)_e$	31,662	0.721	0.448	0	1
$patrilinealinheritance(moveable)_e$	32,671	0.749	0.434	0	1
$atlantictrade_e$	35,595	0.500	0.926	0	3.656
Binary $atlantictrade_e$	35,595	0.559	0.496	0	1
$indianoceantrade_e$	35,595	0.040	0.203	0	3.330
Binary $indianoceantrade_e$	35,595	0.240	0.427	0	1
age_{iec}	35,595	36.598	13.417	18	105
age^2_{iec}	35,595	1519.439	1190.424	324	11,025
$urban_{iec}$	35,595	0.354	0.478	0	1
$primary_{iec}$	35,595	0.546	0.498	0	1
$secondary_{iec}$	35,595	0.223	0.416	0	1
$muslim_{iec}$	35,595	0.292	0.455	0	1
$christian_{iec}$	35,595	0.689	0.463	0	1
$violence_{iec}$	35,595	0.326	0.469	0	1
$soilquality_{ec}$	35,595	0.477	0.206	0.002	0.935
$largeanimals_{ec}$	35,595	0.697	0.460	0	1
$malaria_{ec}$	35,595	0.738	0.278	0	1
$1400city_{ec}$	35,595	0.059	0.236	0	1
$coastaldistance_{ec}$	35,595	−1.336	1.220	−6.500	0.459

Note: $vote_{iec}$, $patrilineal_e$, $urban_{iec}$, $primary_{iec}$, $secondary_{iec}$, $muslim_{iec}$, $christian_{iec}$, $violence_{iec}$, $largeanimals_{ec}$ and $1400city_{ec}$ are binary variables. $atlantictrade_e$, $indianoceantrade_e$ and $coastaldistance_{ec}$ are logged variables. $soilquality_{ec}$ and $malaria_{ec}$ variables are indices.

Signs of the coefficients with respect to historical exposure to the Indian Ocean slave trade are as expected. Results are robust to the inclusion of individual and ethnic-country region controls. The association between these historical variables and women's voting is also in line with our expectations, as discussed in Section 3.[9]

As pointed out by Teso (2019), the slave trades may have produced structural changes in society. If these structural changes were to influence political participation in general, we would see similar associations between patrilineality, exposure to the slave trades and men's voting. To test whether our findings are as a result of the temporary gender ratio imbalances that altered gender norms and not general societal effects, we estimate equation (1) for men in the Afrobarometer sample in Supporting Information Section 1.1. Our findings do not hold for men. We can therefore attribute the association we observe to changes in gender norms that the slave trades produced in the context of already existing gender dynamics in patrilineal and non-patrilineal societies.

We show that our results are persistent across different birth cohorts and different slave trade periods in Supporting Information Sections 1.2 and 1.3. To account for the potential interrelated effect of the transatlantic and

---

[9]In column 4, we do not include any controls. In column 6, we estimate equation (1) with only ethnic-country region controls included, as some individual-level controls, for example, education, may be influenced by kinship structures. Such controls may therefore be additional channels through which political participation is affected (Robinson & Gottlieb, 2021). Our results, however, remain stable when including chosen individual controls in columns 5 and 7.

TABLE 3 Women voting results.

	Dependent variable: $vote_{iec}$						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$patrilineal_e$	−0.015			0.002	0.002	−0.001	−0.001
	(0.009)			(0.014)	(0.012)	(0.011)	(0.009)
$atlantictrade_e$		0.004	0.004	0.013	0.014*	0.017***	0.016***
		(0.005)	(0.005)	(0.008)	(0.007)	(0.006)	(0.005)
$atlantictrade_e * patrilineal_e$				−0.017*	−0.019**	−0.017**	−0.020***
				(0.009)	(0.009)	(0.006)	(0.007)
$indianoceantrade_e$		0.020	0.017	0.008	0.004	0.027*	0.020
		(0.017)	(0.016)	(0.005)	(0.008)	(0.015)	(0.016)
$indianoceantrade_e * patrilineal_e$				−0.037	−0.034	−0.047	−0.049*
				(0.034)	(0.023)	(0.035)	(0.026)
age_{iec}	0.021***	0.021***	0.021***		0.021***		0.021***
	(0.002)	(0.002)	(0.002)		(0.002)		(0.002)
age^2_{iec}	−0.000***	−0.000***	−0.000***		−0.000***		−0.000***
	(0.000)	(0.000)	(0.000)		(0.000)		(0.000)
$urban_{iec}$	−0.042***	−0.043***	−0.042***		−0.044***		−0.043***
	(0.009)	(0.009)	(0.009)		(0.010)		(0.009)
$primary_{iec}$	0.005	0.006	0.005		0.004		0.005
	(0.007)	(0.007)	(0.007)		(0.007)		(0.007)
$secondary_{iec}$	−0.013*	−0.013*	−0.013*		−0.013*		−0.013*
	(0.007)	(0.007)	(0.007)		(0.007)		(0.007)
$muslim_{iec}$	0.062	0.060	0.060		0.063		0.060
	(0.041)	(0.042)	(0.042)		(0.041)		(0.042)
$christian_{iec}$	0.037	0.038	0.038		0.036		0.037
	(0.037)	(0.037)	(0.037)		(0.036)		(0.036)

TABLE 3 (Continued)

	Dependent variable: $vote_{iec}$						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$violence_{iec}$	−0.014**	−0.014*	−0.014**		−0.017**		−0.014*
	(0.007)	(0.007)	(0.007)		(0.007)		(0.007)
$soilquality_{ec}$	0.062	0.060	0.065			0.058	0.076
	(0.053)	(0.051)	(0.051)			(0.049)	(0.049)
$largeanimals_{ec}$	0.007	0.008	0.008			0.011	0.010
	(0.011)	(0.011)	(0.011)			(0.010)	(0.010)
$malaria_{ec}$	0.017	0.008	0.012			0.028	0.013
	(0.022)	(0.020)	(0.018)			(0.021)	(0.017)
$1400city_{ec}$	0.041**	0.040***	0.041**			0.050***	0.042***
	(0.015)	(0.015)	(0.015)			(0.012)	(0.014)
$coastaldistance_{ec}$	0.013*	0.016**	0.016**			0.020**	0.016**
	(0.007)	(0.007)	(0.007)			(0.008)	(0.007)
Observations	35,595	35,626	35,595	39,254	36,921	37,745	35,595
R^2	.112	.112	.112	.071	.111	.073	.112
Country-survey FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: $vote_{iec}$ is a binary variable equal to 1 if a woman voted in the most recent election, 0 if not. $atlantictrade_e$ is the number of slaves exported during the transatlantic slave trade normalised by the historic land area of that ethnic region. $indianoceantrade_e$ is the number of slaves exported during the Indian Ocean slave trade normalised by the historic land area of that ethnic region. $patrilineal_e$ is a binary variable equal to 1 if the ethnic group is classified as patrilineal, 0 if otherwise. Standard errors in parentheses clustered by ethnic region and country level.

*p < .1.

**p < .05.

***p < .01.

Indian Ocean slave trade in regions that experienced both, we consider the slave trades in isolation in Supporting Information Section 1.4. Furthermore, our results remain robust to the inclusion of additional control variables, which are presented in Supporting Information Section 1.5.

In summary, although men gained bargaining power as a result of exposure to the transatlantic slave trade, women increased their activities outside of the household. These societal changes have persisted and are seen in contemporary participation in the economy as Teso (2019) shows, and now we show, in the political arena as well. Yet, the positive association is only observed in non-patrilineal ethnic regions, where women had and likely still have an extent of structural power. In patrilineal ethnic regions where women's structural power is limited, the positive association is diminished.

4.2 | Gender norms

Studying gender norms may assist us in explaining the potential societal changes through which women's political participation is affected. In Table 4, we examine the associations between historical exposure to the transatlantic and Indian Ocean slave trades and gender norms in patrilineal and non-patrilineal ethnic regions. We consider three measurements of gender norms using individual responses to questions regarding gender roles within society.

First, we analyse views on women in political leadership. The variable $womenleaders_{iec}$ is a binary variable equal to 1 if an individual is of the view that women should have equal opportunity to be elected into political office as men, 0 if not. The Afrobarometer survey question asks an individual respondent if they agree or strongly agree with one of two statements. We code the variable as equal to 1 if an individual agrees or strongly agrees with the following statement: Women should have the same chance of being elected to political office as men'. The variable is equal to 0 if an individual agrees or strongly agrees with the following statement: 'Men make better political leaders than women, and should be elected rather than women'. Results with respect to views regarding women as political leaders are reported in columns 1 to 3.

To measure norms regarding women's activities outside the family, we consider views pertaining to schooling and employment. The Guttentag and Secord (1983) theory posits that increased gender ratios, such as during the Indian Ocean slave trade, encourages women's traditional roles within the family and society. Men use their structural power to limit the bargaining (that may translate into economic and political) power gained by women. Contrary, a decrease in the gender ratio, due to the transatlantic slave trade for instance, is associated with an increase in women's participation in activities outside the family as women have to replace men's roles in society and cannot rely on monogamous relationships.

The variable $schoolgirl_{iec}$ is a binary variable equal to 1 if an individual prefers the child with the greatest ability be educated, and 0 if an individual prefers boys be educated rather than girls (when funding is limited). The Afrobarometer survey question asks an individual respondent to agree or strongly agree with one of two statements. The variable is equal to 1 if an individual agrees or strongly agrees with the following statement: 'If funds for schooling are limited, a family should send the child with the greatest ability to learn'. The variable is equal to 0 if an individual agrees or strongly agrees with the following statement: 'If funds for schooling are limited, a boy should always receive an education in school before a girl'. The variable $womenemploy_{iec}$ is a binary variable equal to 1 if an individual disagrees or strongly disagrees with the statement: 'When jobs are scarce, men should have more right to a job than women?'. The variable is equal to 0 if an individual agrees or strongly disagrees. Should an individual be of the opinion that the child with the greatest ability be educated (columns 4 to 6) and disagree that men should have more right to employment than women (columns 7 to 9), we can assume that these individuals have more progressive gender norms.[10]

---

[10]These questions were only asked during single Afrobarometer surveys (Round 7 for $womenemploy_{iec}$, Round 5 for $schoolgirl_{iec}$), and we therefore have fewer observations in these analyses.

TABLE 4 Gender norms results.

	Dependent variable:								
	womenleaders_iec			schoolgirl_iec			womenemploy_iec		
		Women	Men		Women	Men		Women	Men
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
patrilineal_e	−0.019**	−0.024**	−0.015	−0.034**	−0.040*	−0.028**	0.006	0.016	−0.003
	(0.009)	(0.011)	(0.011)	(0.013)	(0.021)	(0.011)	(0.018)	(0.020)	(0.021)
atlantictrade_e	−0.008	−0.001	−0.015	−0.027	−0.015	−0.040	0.036**	0.045**	0.024
	(0.012)	(0.013)	(0.012)	(0.026)	(0.026)	(0.027)	(0.017)	(0.020)	(0.016)
atlantictrade_e * patrilineal_e	0.006	0.002	0.011	0.008	−0.003	0.020	−0.045**	−0.054**	−0.033*
	(0.015)	(0.015)	(0.015)	(0.030)	(0.030)	(0.031)	(0.017)	(0.021)	(0.017)
indianoceantrade_e	0.005	0.002	0.007	0.031**	0.026	0.036**	−0.025	−0.011	−0.044*
	(0.006)	(0.008)	(0.006)	(0.014)	(0.015)	(0.014)	(0.022)	(0.023)	(0.022)
indianoceantrade_e * patrilineal_e	0.148*	0.217***	0.080	0.084	0.066	0.107	0.220***	0.159**	0.280**
	(0.078)	(0.069)	(0.085)	(0.084)	(0.093)	(0.086)	(0.058)	(0.064)	(0.103)
Observations	80,829	40,646	40,180	25,661	12,783	12,878	22,727	11,513	11,211
R^2	.054	.061	.063	.046	.053	.047	.052	.056	.062
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-survey FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: $womenleaders_{iec}$ is a binary variable equal to 1 if an individual is of the view that men make better political leaders than women. $schoolgirl_{iec}$ is a binary variable equal to 1 if the individual agrees that the child with the greatest ability to learn should be educated, 0 if an individual agrees that a boy should have preference to attend school. $womenemploy_{iec}$ is a binary variable equal to 1 in an individual disagrees that when jobs are scarce, men should have more right to a job than women, 0 if agree. $atlantictrade_e$ is the number of slaves exported during the transatlantic slave trade normalised by the historic land area of that ethnic region. $indianoceantrade_e$ is the number of slaves exported during the Indian Ocean slave trade normalised by the historic land area of that ethnic region. $patrilineal_e$ is a binary variable equal to 1 if the ethnic group is a patrilineal kinship, 0 if otherwise. Individual controls include age, age-squared, whether an individual resides in an urban area, completed primary and secondary school, are Christian or Muslim and fear political violence during election campaigns. Region controls include soil suitability for agriculture, the presence of large domesticated animals, malaria, a city in 1400 and distance to the coast. Standard errors in parentheses clustered by ethnic region and country level.

*$p < .1$.

**$p < .05$.

***$p < .01$.

We re-estimate our main model specification, equation (1), with these measurements of gender norms as the outcome variables. In Table 4 columns 1, 4 and 7, we report results for the full sample of men and women. We subsequently estimate for sampled women (columns 2, 5 and 8) and men (columns 3, 6 and 9) to evaluate gender norms for each.

First, results from columns 1 and 2 suggest a negative association between patrilineality and views regarding women's opportunity to be elected into political office, specifically, women's own views. Second, historical exposure to the Indian Ocean slave trade in patrilineal ethnic regions is positively associated with women's own views regarding their roles as political leaders.[11] The positive association to women's views regarding themselves as political leaders is not translated into active political participation. We do not find a statistically significant association between ethnic region exposure to the transatlantic slave trade and views regarding women as political leaders. Although the increased gender ratio is associated with an increase in how women value themselves, these findings confirm our hypothesis that men use their structural power to limit the gained bargaining power by women.

Regarding attitudes on women's roles outside the family, such as education and employment, results are in line with expected changes as posited by Guttentag and Secord (1983). With respect to views regarding schooling (columns 4 to 6), once more, results indicate that historical exposure to the Indian Ocean slave trades is of relevance. Interpreting results from column 4, we can say that a doubling of the historical number of slaves exported during the Indian Ocean slave trade per area is associated with a 3.1 percentage point increase in an individual's likelihood to have the view that the child with the greatest ability to learn to be educated in non-patrilineal ethnic regions.[12] Particularly, we can see this is true amongst men as well (column 6). In patrilineal ethnic regions, historical exposure to the transatlantic slave trade is negatively associated with views regarding equal schooling opportunities.[13] The association between more progressive norms pertaining to education and patrilineality is, again, negative.

The association between historical exposure to the transatlantic slave trade and views pertaining to women's employment (columns 7 to 9) further supports our findings from Table 3. In non-patrilineal ethnic regions, historical exposure to the transatlantic slave trade (and consequent decreased gender ratio) is associated with an increase in disagreement with the view that men should get a job rather than women. This is specifically true for women, as results from column 8 suggest.[14] This positive association is mitigated in patrilineal ethnic regions. Views on women's employment also illustrates the opposite outcome associated with historical exposure to the Indian Ocean slave trade. Amongst men residing in non-patrilineal ethnic regions, a doubling of the historical number of slaves exported during the Indian Ocean slave trade per area is associated with a 4.4 percentage point decrease in a man's likelihood to disagree that when jobs are scarce, men should have more right to a job than women.[15] This association is, however, not observed in patrilineal ethnic regions, as there is a positive association of 23.5 percentage points.[16] The increase in women's bargaining power is evident in this instance, yet it fails to surpass the structural dominance wielded by men in the political arena as results from Table 3 suggest.

The varying consequences of historical exposure to the slave trades due to the differences in the temporary shock to the gender ratios becomes more evident when studying gender norms. Results are supportive of our hypothesis that the slave trades and consequent changes in gender ratios affected the value of women and norms regarding women differently within patrilineal and non-patrilineal ethnic regions.

---

[11]Calculated (Delta-method) standard errors of the conditional marginal effects at the mean: 0.071. Bootstrap standard errors provide similar results.

[12]Calculated (Delta-method) standard errors of the conditional marginal effects at the mean: 0.014. Bootstrap standard errors provide similar results.

[13]Calculated (Delta-method) standard errors of the conditional marginal effects at the mean: 0.009. Bootstrap standard errors provide similar results.

[14]Calculated (Delta-method) standard errors of the conditional marginal effects at the mean: 0.020. Bootstrap standard errors provide similar results.

[15]Calculated (Delta-method) standard errors of the conditional marginal effects at the mean: 0.022. Bootstrap standard errors provide similar results.

[16]Calculated (Delta-method) standard errors of the conditional marginal effects at the mean: 0.102. Bootstrap standard errors provide similar results.

5 | ROBUSTNESS CHECKS

5.1 | Alternative specifications

In this section, we run robustness checks using alternative standard errors and model estimations reported in Table 5 and alternative measures of historical slave trade exposure reported in Table 6. In column 1, we account for spatial correlation by computing Conley (1999) spatial standard errors using individuals' location (latitude and longitude) for a window of 100 kilometres. In column 2, we cluster standard errors by ethnic region to account for correlation within ethnicities, as historical slave trade exposure measurements are constant by ethnic region level. Results using both these standard error adjustments are in line with those reported in Table 3 column 7.

TABLE 5 Alternative estimations results.

| | Dependent variable: $vote_{iec}$ | | | | |
| | Standard errors | | | Instrumental variables | |
	Conley s.e. (1)	Ethnic region s.e. (2)	Logistic model (3)	Lewbel IV (4)	2SLS IV (5)
$patrilineal_e$	−0.002	−0.001	−0.009	−0.002	0.082
	(0.010)	(0.010)	(0.067)	(0.009)	(0.057)
$atlantictrade_e$	0.013**	0.016***	0.102**	0.015***	0.103
	(0.007)	(0.006)	(0.041)	(0.006)	(0.087)
$atlantictrade_e * patrilineal_e$	−0.016**	−0.020***	−0.153***	−0.019***	−0.192***
	(0.007)	(0.007)	(0.047)	(0.007)	(0.060)
$indianoceantrade_e$	0.020	0.020	0.138	0.019	−0.058
	(0.013)	(0.013)	(0.092)	(0.016)	(0.049)
$indianoceantrade_e * patrilineal_e$	−0.030	−0.049	−0.452	−0.045*	−0.664
	(0.046)	(0.039)	(0.316)	(0.024)	(0.648)
Observations	35,595	35,595	35,595	35,595	35,595
R^2	.045	.112		.046	.019
Individual controls	Yes	Yes	Yes	Yes	Yes
Region controls	Yes	Yes	Yes	Yes	Yes
Country-survey FE	Yes	Yes	Yes	Yes	Yes

Note: $vote_{iec}$ is a binary variable equal to 1 if a woman voted in the most recent election, 0 if not. $atlantictrade_e$ is the number of slaves exported during the transatlantic slave trade normalised by the historic land area of that ethnic region. $indianoceantrade_e$ is the number of slaves exported during the Indian Ocean slave trade normalised by the historic land area of that ethnic region. $patrilineal_e$ is a binary variable equal to 1 if the ethnic group is a patrilineal kinship, 0 if otherwise. Individual controls include age, age-squared, whether an individual resides in an urban area, completed primary and secondary school, are Christian or Muslim and fear political violence during election campaigns. Region controls include soil suitability for agriculture, the presence of large domesticated animals, malaria, a city in 1400 and distance to the coast (columns 1 to 4). In column 5, distance to the coast and terrain ruggedness are used as instrumental variables. Conley (1999) spatial standard errors in parentheses in column 1. Standard errors in parentheses are robust in columns 3 and 5; clustered by ethnic region in column 2 and ethnic region and country level in 4.
*$p < .1$.
**$p < .05$.
***$p < .01$.

TABLE 6 Alternative slave exports results.

	Dependent variable: $vote_{iec}$			
	Area (1)	IHS (2)	Population (3)	Binary (4)
$patrilineal_e$	−0.002	−0.002	−0.010	0.002
	(0.010)	(0.009)	(0.008)	(0.014)
$atlantictrade_e$	0.004***	0.013***	0.109	0.021*
	(0.001)	(0.004)	(0.078)	(0.011)
$atlantictrade_e * patrilineal_e$	−0.005***	−0.015**	−0.116	−0.019
	(0.001)	(0.006)	(0.077)	(0.020)
$indianoceantrade_e$	0.004***	0.016	−0.032	−0.018
	(0.001)	(0.013)	(0.044)	(0.019)
$indianoceantrade_e * patrilineal_e$	−0.024	−0.036*	−0.161***	−0.018
	(0.016)	(0.020)	(0.057)	(0.013)
Observations	35,595	35,595	35,595	35,595
R^2	.112	.112	.112	.112
Individual controls	Yes	Yes	Yes	Yes
Region controls	Yes	Yes	Yes	Yes
Country-survey FE	Yes	Yes	Yes	Yes

Note: $vote_{iec}$ is a binary variable equal to 1 if a woman voted in the most recent election, 0 if not. $atlantictrade_e$ and $indianoceantrade_e$ are the respective measurements of slave trade intensity as discussed. $patrilineal_e$ is a binary variable equal to 1 if the ethnic group is a patrilineal kinship, 0 if otherwise. Individual controls include age, age-squared, whether an individual resides in an urban area, completed primary and secondary school, are Christian or Muslim and fear political violence during election campaigns. Region controls include soil suitability for agriculture, the presence of large domesticated animals, malaria, a city in 1400 and distance to the coast. Standard errors in parentheses clustered by ethnic region and country level.
*$p < .1$,
**$p < .05$.
***$p < .01$.

In column 3, we estimate a logistic regression result instead of a linear probability model.[17] Again, results suggest that a woman's ethnic region exposure to the transatlantic slave trade is positively associated with her likelihood to vote in non-patrilineal ethnic regions and negatively in patrilineal ethnic regions. Historical exposure to the transatlantic slave trade in non-patrilineal ethnic regions is associated with an increase in a women's probability to vote by approximately 1.4% and in patrilineal ethnic regions and a decrease by approximately 0.7% in non-patrilineal ethnic regions.

Our results thus far have not indicated a causal relationship between the slave trades and women's political participation. We acknowledge that our results may suffer from omitted variable bias, as noted in the slave trade literature. To account for unobserved factors, we additionally estimate instrumental variable (IV) regression models in columns 4 and 5. In column 4, we use Lewbel (2012) IV regression model approach, which offers heteroskedasticity-based instruments. The model constructs instruments as a function of our data without the need for an external instrument (Baum & Schaffer, 2012). The methodology offers a practical approach for estimating structural parameters in regression models with potentially endogenous regressors. This method is useful where traditional identifying strategies (such as external instruments or repeated measurements) are not suitable and employs regressors that

---

[17]Robust standard errors are clustered by ethnic region level.

demonstrate no correlation with the product of heteroskedastic errors. This model yields similar results to the linear probability model reported in Table 3. Our second IV strategy uses ethnic region distance to the coast, which is a control throughout our analysis, and terrain ruggedness as instruments for slave trade intensity (Nunn & Puga, 2012; Nunn & Wantchekon, 2011). Results from this IV estimation confirm the negative association between voting and a women's patrilineal ethnic region exposure to the transatlantic slave trade.

In Table 6, we estimate equation (1) using alternative measures of historical slave trade exposure borrowing from La Ferrara et al. (2021), Nunn and Wantchekon (2011) and Obikili (2016a). In column 1, slave trade exposure is calculated by normalising slave exports by the historical land area occupied by each ethnic group as reported by (Murdock, 1967).[18] From here, in column 2, we calculate the inverse hyperbolic sine (IHS) of the normalised slave trade intensity measure as suggested by Bellemare and Wichman (2020) to account for the skewed distribution of slave exports. Our slave trade data are skewed because there are ethnic regions that did not experience either of the slave trades and there are few ethnic regions that experienced quite intense exports. In column 3, we normalise slave trade exports using the size of the population of ethnic regions as reported in 1960 to account for prosperity of ethnic regions that may influence slave trade intensity (Michalopoulos & Papaioannou, 2013). Finally, to capture whether it was the occurrence of the respective slave trades rather than the magnitude thereof, we create binary variables that are equal to 1 if an ethnic region experienced either the transatlantic or Indian Ocean slave trades, 0 if not. Results from Table 6 support our main findings as reported in Section 4.1.

6 | CONCLUSION

While the transatlantic slave trade exported more men resulting in a temporary decreased male-to-female gender ratio, the Indian Ocean slave trade exported more women resulting in a temporary increased gender ratio. We study whether the resulting temporary gender ratio imbalances can explain contemporary women's political participation, taking pre-existing kinship structures into consideration.

To study the potential association between women's political participation and the slave trades in societies where women have different decision-making power, we use geolocated Afrobarometer survey data from 28 African countries and ethnic region-level data on the transatlantic and Indian Ocean slave trades, as well as kinship structures. Our results suggest that a woman's non-patrilineal ethnic region exposure to the transatlantic slave trade is associated with an increase in her likelihood to vote. In patrilineal ethnic regions, this association is mitigated, as men use their structural power to limit women's economic and political participation. The relevance of historical exposure to the Indian Ocean slave trade becomes evident when analysing gender norms.

This study substantiates literature on the long-run effect of slave trades. In forthcoming studies, there is an opportunity to explore the construction of a composite variable to measure the effect of the slave trades according to their intensity. Additionally, it is necessary to analyse potential heterogeneous effects by colonial rule. Work by Anderson (2018), for instance, highlight the role of legal origins in female property rights today.

Importantly, findings shed light on historical causes and considerations with respect to women's political participation. Our study speaks to Targets 5.1 and 5.5 of the Sustainable Development Goals (SDGs) that set out to end discrimination and improve opportunities for and participation of women in the political arena (United Nations, 2020). Addressing gender disparities in political participation requires a multi-level approach, encompassing both national and sub-national levels of governance. Policies need to consider the deep-rooted causes of gender norms within societies to be able to address gender gaps that persist and ensure that women have equal opportunities to participate in political processes.

---

[18]In this instance, we do not take the natural log plus 1.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ORCID

Leoné Walters https://orcid.org/0000-0003-1009-9510

REFERENCES

Afrobarometer Data (2022). Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cote d'Ivoire, Gabon, Ghana, Guinea, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Senegal, Sierra Leone, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia and Zimbabwe, Round 5 (2011 to 2013), Round 6 (2014 and 2015) and Round 7 (2016-2018). http://www.afrobarometer.org

Alesina, A., Giuliano, P., & Nunn, N. (2013). On the origins of gender roles: Women and the plough. *The Quarterly Journal of Economics*, *128*(2), 469–530.

Anderson, S. (2018). Legal origins and female HIV. *American Economic Review*, *108*(6), 1407–1439.

Angeles, L., & Elizalde, A. (2017). Pre-colonial institutions and socioeconomic development: The case of Latin America. *Journal of Development Economics*, *124*, 22–40.

Archibong, B. (2019). Explaining divergence in the long-term effects of precolonial centralization on access to public infrastructure services in Nigeria. *World Development*, *121*, 123–140.

Arriola, L. R., & Johnson, M. C. (2014). Ethnic politics and women's empowerment in Africa: Ministerial appointments to executive cabinets. *American Journal of Political Science*, *58*(2), 495–510.

Austin, G. (2008). Resources, techniques, and strategies south of the Sahara: Revising the factor endowments perspective on African economic development, 1500-2000. *Economic History Review*, *61*(3), 587–624.

Bagues, M., & Campa, P. (2020). Women and power: Unpopular, unwilling, or held back? a comment. *Journal of Political Economy*, *128*(5), 2010–2016.

Bahrami-Rad, D., Becker, A., & Henrich, J. (2021). Tabulated nonsense? Testing the validity of the Ethnographic Atlas. *Economics Letters*, *204*, 109880.

Baum, C. F., & Schaffer, M. E. (2012). ivreg2h: Stata module to perform instrumental variables estimation using heteroskedasticity-based instruments.

Bellemare, M. F., & Wichman, C. J. (2020). Elasticities and the inverse hyperbolic sine transformation. *Oxford Bulletin of Economics and Statistics*, *82*(1), 50–61.

BenYishay, A., Rotberg, R., Wells, J., Lv, Z., Goodman, S., Kovacevic, L., & Runfola, D. (2017). Geocoding Afrobarometer Rounds 1–6: Methodology and data quality. http://geo.aiddata.org

Bertocchi, G. (2016). The legacies of slavery in and out of Africa. *IZA Journal of Migration*, *5*(24), 1–19.

Bertocchi, G., & Dimico, A. (2019). The long-term determinants of female HIV infection in Africa: The slave trade, polygyny, and sexual behavior. *Journal of Development Economics*, *140*, 90–105.

Besley, T., & Reynal-Querol, M. (2014). The legacy of historical conflict: Evidence from Africa. *American Political Science Review*, *108*(2), 319–336.

Boxell, L., Dalton, J. T., & Leung, T. C. (2019). The slave trade and conflict in Africa, 1400-2000. Retrieved from https://mpra.ub.uni-muenchen.de/94468/

Bratton, M., Mattes, R., & Gyimah-Boadi, E. (2005). *Public opinion, democracy, and market reform in Africa*. Cambridge University Press.

Brule, R., & Gaikwad, N. (2020). Culture, capital and the political economy gender gap: Evidence from Meghalaya's matrilineal tribes. *The Journal of Politics*, *83*(3), 834–850.

Cameron, A. C., Gelbach, J. B., & Miller, D. L. (2011). Robust inference with multiway clustering. *Journal of Business and Economic Statistics*, *29*(2), 238–249.

Campbell, G. (2003). Introduction: Slavery and other forms of Unfree Labour in the Indian Ocean World. *Slavery and Abolition*, *24*(2), ix–xxxii.

Conley, T. G. (1999). GMM estimation with cross sectional dependence. *Journal of Econometrics*, *92*(1), 1–45.

Croke, K. (2021). The impact of health programs on political opinion: Evidence from malaria control in Tanzania. *Journal of Politics*, *83*(1), 340–353.

Dalton, J. T., & Leung, T. C. (2014). Why is polygyny more prevalent in Western Africa? An African slave trade perspective. *Economic Development and Cultural Change*, *62*(4), 599–632.

Fenske, J. (2015). African polygamy: Past and present. *Journal of Development Economics*, *117*, 58–73.

Fenske, J., & Zurimendi, I. (2017). Oil and ethnic inequality in Nigeria. *Journal of Economic Growth*, *22*(4), 397–420.

Gallup, J. L., & Sachs, J. D. (2001). The economic burden of malaria. *The American Journal of Tropical Medicine and Hygiene*, *64*(1,2), 85–96.

Gennaioli, N., & Rainer, I. (2007). The modern impact of precolonial centralization in Africa. *Journal of Economic Growth*, *12*, 185–234.

Giuliano, P., & Nunn, N. (2018). Ancestral characteristics of modern populations. *Economic History of Developing Regions*, *33*(1), 1–17.

Grant, I., Kesternich, I., Steckenleiter, C., & Winter, J. (2018). Historic sex-ratio imbalances predict female participation in the market for politicians. *Journal of Economic Behavior and Organization*, *156*, 144–165.

Green, E. (2013). Explaining African ethnic diversity. *International Political Science Review*, *34*(2), 235–253.

Grosjean, P., & Khattar, R. (2019). It's raining men! Hallelujah? The long-run consequences of male-biased sex ratios. *Review of Economic Studies*, *86*(2), 723–754.

Guttentag, M., & Secord, P. F. (1983). *Although policies are implemented and countries try to improve Too many women? The sex ratio question*. Sage.

Hessami, Z., & da Fonseca, M. L. (2020). Female political representation and substantive effects on policies: A literature review. *European Journal of Political Economy*, *63*, 101896.

Inter-Parliamentary Union (2020). Global and regional averages of women in national parliaments. https://data.ipu.org/women-averages

Isaksson, A. S. (2014). Political participation in Africa: The role of individual resources. *Electoral Studies*, *34*, 244–260.

Isaksson, A. S., Kotsadam, A., & Nerman, M. (2014). The gender gap in African political participation: Testing theories of individual and contextual determinants. *Journal of Development Studies*, *50*(2), 302–318.

Koelle, W. S. (1854). *Polyglotta Africana: Or a comparative vocabulary of nearly three hundred words and phrases, in more than one hundred distinct African languages*. Church Missionary House.

Kuenzi, M., & Lambright, G. M. S. (2011). Who votes in Africa? An examination of electoral participation in 10 African countries. *Party Politics*, *17*(6), 767–799.

La Ferrara, E., Corno, L., & Voena, A. (2021). Female genital cutting and the slave trade. No. 15577. CEPR Discussion Paper.

Lewbel, A. (2012). Using heteroscedasticity to identify and estimate mismeasured and endogenous regressor models. *Journal of Business and Economic Statistics*, *30*(1), 67–80.

Lovejoy, P. E. (2011). *Slavery on the frontiers of Islam Edited by* Lovejoy, P. E.: Markus Wiener Publishers.

Lowes, S. (2020a). Kinship structure and women: Evidence from economics. *Daedalus*, *149*(1), 119–133.

Lowes, S. (2020b). Matrilineal kinship and spousal cooperation: Evidence from the matrilineal belt. Retrieved from https://scholar.harvard.edu/files/slowes/files/lowes_matrilineal.pdf

Lowes, S., & Nunn, N. (2024). The slave trade and the origins of matrilineal kinship. *Philosophical transactions of the Royal Society of London. Series B, Biological sciences*, *379*(1897), 20230032.

Manning, P. (1990). *Slavery and African life: Occidental, oriental, and African slave trades*. Cambridge University Press.

Marien, S., Hooghe, M., & Quintelier, E. (2010). Inequalities in non-institutionalised forms of political participation: A multilevel analysis of 25 countries. *Political Studies*, *58*(1), 187–213.

Michalopoulos, S., & Papaioannou, E. (2013). Pre-colonial ethnic institutions and contemporary African development. *Econometrica*, *81*(1), 113–152.

Michalopoulos, S., & Papaioannou, E. (2014). National institutions and subnational development in Africa. *The Quarterly Journal of Economics*, *129*(1), 151–213.

Michalopoulos, S., & Papaioannou, E. (2016). The long-run effects of the scramble for Africa. *American Economic Review*, *106*(7), 1802–1848.

Murdock, G. P. (1959). *Africa: Its peoples and their culture history*. McGraw-Hill.

Murdock, G. P. (1967). Ethnographic atlas: A summary. *Ethnology*, *6*(2), 109–236.

Ndlovu, S., & Mutale, S. B. (2013). Emerging trends in women's participation in politics in Africa. *American International Journal of Contemporary Research*, *3*(11), 72–79.

Nunn, N. (2008). Shackled to the past: The causes and consequences of Africa's slave trades. In Helpman, E. (Ed.), *Institutions and economic performance* (pp. 148–180). Harvard University Press.

Nunn, N. (2017). Understanding the long-run effects of Africa's slave trades. In Michalopoulos, S., & Papaioannou, E. (Eds.), *The long economic and political shadow of history* (Vol. II, pp. 36–47). Africa: Centre for Economic Policy Research.

Nunn, N., & Puga, D. (2012). Ruggedness: The blessing of bad geography in Africa. *Review of Economics and Statistics*, *94*(1), 20–36.

Nunn, N., & Wantchekon, L. (2011). The slave trade and the origins of mistrust in Africa. *American Economic Review*, *101*(7), 3221–3252.

Obikili, N. (2016a). The impact of the slave trade on literacy in West Africa: Evidence from the colonial era. *Journal of African Economies*, *25*(1), 1–27.

Obikili, N. (2016b). The trans-Atlantic slave trade and local political fragmentation in Africa. *Economic History Review*, *69*(4), 1157–1177.

Okoye, D., & Pongou, R. (2015). Sea change: The competing long-run impacts of the transatlantic slave trade and missionary activity in Africa. (*MPRA Paper 66221*): University Library of Munich.

Pinkovskiy, M. L. (2017). Growth discontinuities at borders. *Journal of Economic Growth*, *22*(2), 145–192.

Ricart-Huguet, J. (2021). Colonial education, political elites, and regional political inequality in Africa. *Comparative Political Studies*, *54*(14), 2546–2580.

Robinson, A. L., & Gottlieb, J. (2021). How to close the gender gap in political participation: Lessons from matrilineal societies in Africa. *British Journal of Political Science*, *51*(1), 68–92.

South, S. J., & Trent, K. (1988). Sex ratios and women's roles: A cross-national analysis. *The American Journal of Sociology*, *93*(5), 1096–1115.

Tène, E. (2021). On the historical roots of gender norms: Evidence from matrilineal societies in Sub-Saharan Africa.

Tertilt, M. (2005). Polygyny, fertility, and savings. *Journal of Political Economy*, *113*(6), 1341–1371. https://www.jstor.org/stable/10.1086/498049

Tertilt, M. (2006). Polygyny, women's rights, and development. *Journal of the European Economic Association*, *4*(2/3), 523–530.

Teso, E. (2019). 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.

United Nations (2020). The sustainable development goals report 2020. (*Tech. Rep.*): UN DESA. https://sdgs.un.org/publications/sustainable-development-goals-report-2020-24686

Walters, L., Chisadza, C., & Clance, M. (2023). The effect of pre-colonial ethnic institutions and European influences on contemporary education in Sub-Saharan Africa. *Journal of Development Studies*, *59*(10), 1469–1490.

Whatley, W. C. (2014). The transatlantic slave trade and the evolution of political authority in West Africa. In Akyeampong, E., Bates, R. H., Nunn, N., & Robinson, J. (Eds.), *Africa's development in historical perspective* (pp. 460–488). Cambridge University Press.

Whatley, W. C., & Gillezeau, R. (2011). The impact of the transatlantic slave trade on ethnic stratification in Africa. *The American Economic Review*, *101*(3), 571–576.

Wild, F., & Stadelmann, D. (2022). Coastal proximity and individual living standards: Econometric evidence from georeferenced household surveys in sub-Saharan Africa. *Review of Development Economics*, *26*(4), 1883–1901.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.