Disentangling Kinship: Post-marital residence and Household Decision-Making in Timor-Leste*

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Abstract

Kinship traditions play an important role in intra-household interactions by influencing how members of a family interact on a daily basis. In this paper, I explore the relationship between different kinship traditions and couples' decision-making patterns. I focus on the contrast between matrilineal and patrilineal (descent emphasising the mother's/father's bloodline) and in particular two specific practices accompanying different descent systems: inheritance and post-marital residence. I first show using a global sample from the Demographic and Health Survey (DHS) that historical post-marital residence practices are significantly correlated with modern-day involvement in decision-making of both spouses after controlling for other cultural characteristics. Then with primary survey data collected from Timor-Leste offering information on modern-day kinship practices, I provide evidence that matrilocality (the tradition where a married couple resides with the wife's family) is associated with increasing involvement in decision-making for both couple, due to fewer husbands and wives being excluded from the decision-making process of their household, and more couples making decisions jointly. On the other hand, no association is found between inheritance and decision-making, except that husbands are less likely to be the sole decision-maker. Said results are mainly driven by households living with the wife's family in matrilocal communities, indicating that the wife's parents play a pivotal role in shaping the dynamics between a couple.

Keywords: Kinship norms, Timor-Leste, Fertility, Matrilocality

JEL Codes: J12, J16, Z13

1 Introduction

The family plays a fundamental role in people's life as the main locus of economic production and resource allocation. This is especially true in developing world, where the lack of effective formal

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institutions prompts people to search for informal substitutes (Greif, 1993). The extended family serves as a natural provider of informal institution, with kinship traditions informing people who are considered part of their extended family, and what their obligations to each other are. Understanding how different kinship systems influence people's behaviour inside the household is crucial to guide policy making that promotes gender equality in households of the developing world.

In this paper, I study how kinship traditions influence the decision-making patterns of a couple. In particular, I focus on the contrast between male-centred kinship (patriliny) and female-centred kinship (matriliny). Under patriliny, all men and their offspring are considered parts of the same descent, while under matriliny the descent is organised women and their offspring. This distinction between the two falls on which gender is viewed as crucial for the subsistence of the lineage, and hence enjoys a potentially higher status in the kinship. While various existing studies have established the association between matriliny and a range of outcomes favouring women (Gneezy, Leonard, and List, 2009, Liu and Zuo, 2019, Robinson and Gottlieb, 2021, Lowes, 2022, Walker, Grosjean, Cristia, and Delavende, 2025), the mechanism of such differences is complicated by the fact that matrilineal descent is bundled with various practices (Lowes, 2020, Robinson and Gottlieb, 2021).

To better understand which aspects of kinship shape a couple's decision-making patterns, I utilise two specific aspects of matriliny: Inheriting from the maternal kin, and co-residing with the wife's family after marriage. Inheritance under matriliny indicates that assets are passed down along the maternal bloodline, while post-marital co-residence under matriliny (also known as matrilocality) indicates that a married couple lives with the bride's family and the groom relocates after marriage. The two aspects would impact a couple's individual resources and constraints differently as inheritance traditions determine who has more access to assets via inheritance, while post-marital co-residence traditions determine who has greater access to the support of their natal family after marriage. It is ex ante ambiguous which would be more crucial to one's say in household decision-making.

I first provide motivational evidence by linking global Demographic and Health Survey (DHS) data with the *Ethnographic Atlas* (Murdock, 1967) using method proposed in Giuliano and Nunn (2018). By assessing the correlation between decision-making outcomes in the DHS and kinship measures in the *Ethnographic Atlas*, I show that couples from areas with historically matrilineal ethnic groups exhibit different decision-making patterns from their patrilineal counterparts. Furthermore, a substantial portion of this difference is related to the difference in post-marital residence patterns.

The analysis using DHS global sample also exposes crucial heterogeneity between Asia and Africa, the two main continents that house modern-day matrilineal ethnic groups: Matriliny in Asia is associated with an increase in wives' involvement in decision-making, a pattern completely absent in the African subsample. This distinction mirrors the difference in matriliny in the two continents: Matriliny in Africa emphasises the role of maternal uncles, while matriliny in Asia revolves more around the mother-daughter tie. Such differences between different practices of matriliny mean that a thorough understanding of the different kinship practices' implications requires analysis with a cultural context where each practice involves a specific, unambiguous family member.

I then explore the implications of matrilineal inheritance and matrilocal residence on household decision-making utilising modern day Timor-Leste context. A country with great ethnic diversity, Timor-Leste is home to several matrilineal ethnic groups that emphasise the role of women in the formation of lineages. Timor-Leste offers a unique cultural context with both a strong emphasis on post-marital co-residence and an unambiguous matrilineal inheritance rule favouring daughters over sons. Furthermore, matrilocal post-marital co-residence is more common than matrilineal inheritance in modern-day Timor-Leste, with only a subsample of clans where people reside matrilocally after marriage still strictly prefers daughters for land inheritance. Such unique cultural characteristics offer scope for teasing apart the co-residence and inheritance aspects of matriliny.

The analysis is made possible by primary survey data collected in 2022, covering 100 communities in 7 of the 14 municipalities in Timor-Leste. The survey targets households with married couple and children, and collects a range of household and community level characteristics. Most importantly, the survey elicits the predominant post-marital co-residence and inheritance practice in each sampled community. Coupled with detailed information on household structure and all a matrix of parties involved in various aspects of household decision-making, this dataset allows me to investigate which aspect of matrilineal descent plays a more pivotal role in shaping household decision-making patterns.

I address the endogeneity of cultural adoption by providing evidence that the modern day kinship traditions in Timor-Leste are not strongly correlated with factors such as agricultural suitability (Alesina, Giuliano, and Nunn, 2013, Talhelm, Zhang, Oishi, Shimin, Duan, Lan, and Kitayama, 2014, Alesina, Giuliano, and Nunn, 2018) and terrain ruggedness (Nunn and Puga, 2012). I then show that community and household level socioeconomic characteristics are fairly balanced across communities with different inheritance and post-marital traditions, and control for all unbalanced characteristics in the subsequent analyses.

I find that post-marital co-residence plays a more pivotal role in shaping a household's decision-making pattern than inheritance. Compared to couples from a patrilocal community in my sample, both the wife and the husband from a matrilocal community would be more involved in household decision-making. On the other hand, matrilineal inheritance shows no significant correlation with the couple's involvement in decision-making. This increase in level of involvement from the couple under matrilocality is accompanied by a decrease in involvement from all other family members combined, albeit at a smaller scale.

The seeming contradiction between my findings and the prediction of the collective household model of Browning and Chiappori (1998) reflects how involvement in decision-making is not a perfect proxy for decision-making power. Under efficiency, the collective household model predicts that the increase in decision-making power for one party comes with a one-on-one decrease in decision-making power for other parties. However, the involvement in decision making does not directly measure decision-making power as couples can choose to make decisions jointly. I provide evidence that the increase of both couple's involvement in decision-making under matrilocality is can be explained by an increase in the proportion of decisions made jointly between the couple. Furthermore, matrilocality is associated with the wives making less decisions solely, and less exclusion from the decision-making altogether for both couple.

I next investigate whether the difference between matrilocal couples and patrilocal couples

comes from the difference between the social norms themselves or the behaviours matrilocality entails. By simultaneously controlling for the community level "norms" and the household level practices, I compare the difference in decision making outcomes under each combination of community level traditions and individual level practices. Findings here support the claim that matrilocality increases the involvement in decision-making for both the husband and the wife, yet such effects are seemingly not driven by either norms or practices solely. Instead, the combination of living in a community with matrilocal norms and practising matrilocality jointly impacts the decision making of both husbands and wives.

This paper contributes to the literature in the following aspects. Firstly, the existing economics literature on kinship traditions focus on a wide range of outcomes including competitiveness (Gneezy et al., 2009), political participation (Robinson and Gottlieb, 2021), child outcome (Lowes, 2022, Walker et al., 2025), risk preference (Liu and Zuo, 2019), and spousal (Lowes, 2022) as well as general (Andersen, Bulte, Gneezy, and List, 2008) cooperation in experimental settings. However, household decision-making has not been studied yet, and post-marital residence (matrilocality) is seldom the focus of the research. On the other hand, existing literature exploring the implications of matrilocality specifically mainly focus on the aspects of domestic violence (Tur-Prats, 2019, Alesina, Brioschi, and La Ferrara, 2021) and child investment (Bau, 2021). I contribute both literature by analysing household decision-making outcomes leveraging tailored questions in my survey, in a context with both variations in matrilocality and matriliny.

Furthermore, while the aforementioned researches have established a correlation between matrilineal descent and better female outcomes, matriliny is usually evaluated as a bundled good of several different practices that entails different incentives for different family members. By distinguishing between the inheritance and post-marital residence aspects of matrilineal descent, I provide evidence that inheritance and residence patterns requires separate analysis as they corresponds to different incentives and are correlated to distinct outcomes. Most of existing researches also source their variation in kinship traditions from the *Ethnographic Atlas* (Murdock, 1967), which is a record about different ethnicity's historical practices when they first got into contact with the coloniser. The primary survey data from Timor-Leste used in my analysis offers the advantage of directly measuring modern-day kinship practices. Lastly, most existing literature focuses on the African context, namely the "Matrilineal belt" (Gneezy et al., 2009, Alesina et al., 2021, Robinson and Gottlieb, 2021, Lowes, 2022). My work, on the other hand, joins the emerging literature focusing on the Asia-Pacific context (Walker et al., 2025).

The rest of the paper is organised as follows: Section 2 illustrates the difference between matriliny and matrilocality as well as the specific Timorese cultural context in detail. Section 3 offers a rudimentary conceptual framework concerning how matirliny and matrilocality might have different effects on a married couple's decision-making. Section 4 provides motivating evidence using global DHS data. Section 5 offers an overview of the inheritance and co-residence aspects of matriliny in the specific Timor-Leste context. Section 6 describes the survey dataset and the construction of kinship tradition measures. Section 7 outlines the empirical strategy for the Timorese survey data, with results discussed in Section 8. Section 9 concludes.

2 Background

2.1 The Importance of Kinship Traditions

In societies where the formal institution is unable to provide sufficient social support, the family steps in as a provider of informal institutions as substitutes. Families govern various aspects of people's life, from the allocation of everyday resources to major decision-making (Bau and Fernández, 2021). Kinship traditions define who are considered as part of the family and the liabilities between different family members (Lowes, 2020), and are thus crucial in guiding people's actions in everyday life.

While modern families in the developed world are organised around the nucleus of a couple and their children, families in the developing world generally extend outside said nucleus. In various specific contexts, the concept of "family" may even refer to the entire clan or bloodline, which makes the concept of kinship vital. The most common kinship systems are based on unilateral descent, where a family is organised along a bloodline tracing down through descents of the same gender.

In this paper, I focus on the contrast between unilateral kinship along the father's and mother's bloodline. Even though the system tracing down the paternal bloodline is more familiar to most people, kinship traditions that emphasise the maternal line can still be found in the developing world. The most prominent example of communities practising such traditions would the "matrilineal belt" in Sub-Saharan Africa. However, various South-East Asia and Pacific Islands nations are also home to ethnic groups that possesses similar traits.

Compared to kinship system emphasising the paternal line, a kinship system that emphasises the maternal line would intuitively be associated with better outcomes for women as they play a more important role culturally. This has been documented by existing researches, including but not restricted to Gneezy et al. (2009), Robinson and Gottlieb (2021), Lowes (2022), and Walker et al. (2025). However, it is important to acknowledge that kinship traditions are guided by specific culture of each ethnic group. Therefore, there exists great heterogeneity within groups of kinship traditions that could be easily overlooked. To understand the implication of different kinship traditions, it is hence important to first understand what a kinship tradition specifically entails.

2.2 Matriliny and Matrilocality

The discussion of kinship traditions that emphasises the female line starts with the matrilineal descent system, where a woman and all of her offspring are considered in the same kinship. This creates the biggest distinction between matrilineal and patrilineal descent: Under patrilineal descent, a woman is considered part of her husband's family after marriage, while under matrilineal descent a married man is either considered part of both families or still a member of his natal family. This difference in roles of men and women in the kinship after marriage creates the biggest distinction between the two traditions: Matriliny strengthens a woman's tie with her natal family as she is part of the family regardless of her marital status.

Existing work on kinship traditions have already established a link between matrilineal de-

scent and better child outcome (Lowes, 2022, Walker et al., 2025), greater autonomy (Lowes, 2022), less experience of domestic violence (Lowes, 2022), higher female political engagement (Robinson and Gottlieb, 2021), higher female competitiveness (Gneezy et al., 2009) and higher risk-preference (Liu and Zuo, 2019). However, few paper thoroughly explores the mechanism beyond the general observation summarised in Lowes (2020) and Robinson and Gottlieb (2021): Matrilineal descent is a bundle of 1) matrilineal inheritance, which offers women greater access to production resources; 2) matrilocality, which allows women to live close to her family and obtain support from kin; and 3) other minor aspects, such as female authority and the lack of bride price. Unpacking the mechanisms of matrilineal descent's effect on outcomes of women and her family requires careful examination of both the inheritance and the post-marital residence aspect of matriliny, where this paper focuses on the latter for reasons elaborated in later sections.

Matrilineal inheritance implies that inheritable properties are passed down along the maternal bloodline. However, such inheritance rules do not mandate mother-daughter inheritance. Among matrilineal ethnic groups in sub-Saharan Africa, uncle-nephew inheritance (where a woman's son inherits from his mother's brother) is actually a more predominant pattern. Matriliny in Asia and the Pacific islands, on the other hand, revolves almost solely around the mother-daughter tie. This distinction once again reflects the importance of acknowledging cultural heterogeneity when studying kinship traditions.

Post-marital residence patterns are similarly categorised into matrilocality and patrilocality, depending on the side the couple is living after marriage. The difference between the two concepts is illustrated in Fig 1: Under matrilocality the couple lives with the bride's family, and the family gets to keep their daughters in the kinship even after marriage while the sons are sent to live with their wives. The exact opposite takes place under patrilocality, where daughters leave their parents after marriage while sons remain in their natal family.

(a) Matrilocality (b) Patrilocality

Figure 1: A couple's co-residence pattern after marriage under different traditions

Note: Women are represented with circles with red outlines and men are represented with squares with blue outlines. People living in the wife's family after marriage are filled with red, and people living in the husband's family after marriage are filled with blue.

It seems logical that matrilocality is also highly correlated with matrilineal descent just like the inheritance patterns - women would find it less necessary to relocate after marriage if they are not considered part of their husbands' families. However, the most prevalent post-marital residence pattern among ethnic groups with uncle-nephew inheritance is actually a pattern referred to as avunculocal, where a newlywed couple relocates to live with the groom's maternal uncle. Such a pattern clearly has its roots from the matrilineal descent, but from the standpoint of who

retains the social network pre-marriage, avunculocal residence falls more in line with patrilocal residence as it is the bride who relocates after marriage.

3 Conceptual Framework

3.1 Difference between inheritance and post-marital residence norms

As foreshadowed in Section 2, the inheritance and post-marital residence traditions call for being analysed separately as the two apply to different aspects of life. Inheritance determines whether the husband or the wife would be able to inherit from their own parents/kin, and how the inherited assets would be passed down to the next generation. On the other hand, post-marital residence pattern determines whether the husband or the wife is required to relocate after marriage, while their spouse retains their social network in daily life.

While property ownership plays a crucial role in individual autonomy, matrilineal inheritance alone might not be sufficient to improve a wife's power in household after marriage. As mentioned previously, a substantial portion of matrilineal ethnic groups practice uncle-nephew inheritance, where boys are still favoured over girls for inheritance. If this is the case, women might not benefit much from matrilineal inheritance as they are not the direct recipient of the properties. Even when women are the direct recipient of family inheritances, the form of the inheritance as well as household production still plays a crucial role in determining how much a woman would benefit from her inheritance. Namely, with land inheritance being the most predominant in the developing world, it's not uncommon for men to "supervise" their female kin with the use of her inheritance, undermining her overall say.

On the other hand, post marital co-residence traditions determines whose family will the couple be living and interacting with on a regular basis after marriage. Moving away from kin means forgoing access to support from existing social network, potentially putting the individual in a disadvantageous position against any post-marriage risk as they have to face the cost of relocation alone if the relationship dissolves. As documented by Anukriti, Herrera-Almanza, Pathak, and Karra (2020), married women from patrilocal communities in rural India have less access to social networks outside of their households. Meanwhile, the social network from living with one's natal family members after marriage implies a broader access of support if necessary. For instance, Schatz (2005) records women from matrilocal tribes in Malawi using divorce as a credible threat to prevent their spouses from cheating.

By focusing on matrilocality, I simplify the question by focusing on the more unambiguous trait of kinship traditions. With adequate design, it would be possible to isolate the effect of different co-residence patterns from other confounding aspects of kinship practices. The following subsection discusses the different channels how matrilocality might be beneficial to women.

3.2 Potential mechanisms of matrilocality

To understand the potential mechanisms of matrilocality, it makes sense to start with the implications from the canonical collective household model of Browning and Chiappori (1998).

More specifically, as outlined in Chiappori, Fortin, and Lacroix (2002), improvement in the outside option of marriage for one spouse would increase their bargaining power inside the household. Under the scenario of matrilocality, the improvement in wives' outside option comes from the increase in familial support for the wife and a reduction in relocation costs if the marriage dissolves.

Furthermore, living with the wife's family after marriage could imply that the wife's kin can effectively punish her husband if he decides to deviate from cooperation. While not a direct case study of kinship, Jacoby and Mansuri (2010) documents how reciprocal threats could prevent inefficient marriage outcomes in rural Pakistan, where families practice bride exchange so that a husband's coercive power is balanced by the fact that his sister is married into his in-law's family. More generally speaking, matrilocality could also alter who are treated as "in-group" and who are not in the family repeated game. As mentioned in Habyarimana, Humphreys, Posner, and Weinstein (2007), shared membership of a group can facilitate the group members to identify and punish the non-cooperators and utilise strategies otherwise infeasible.

Lastly, matrilocal ethnic groups might pass down gender norms different from their patrilocal counterparts. In the work of Anderson, Bidner, and Sadania (2021) exploring husband's commitment problem, the authors argue that divorce settlement rules that does not favor the husband improves husbands' commitment to the marriage. In particular, they find that norms that raise husbands' commitment are those emphasising husband's decision-making power inside household and women's status outside the household.

4 Global Relevance of Matrilocality

In this section, I provide motivating evidence that matrilocality is correlated with the patterns of intra-household decision-making patterns using the Demographic and Health Survey (DHS) data linked to the *Ethnographic Atlas* (Murdock, 1967). Different from existing research that combines the two data source to assess the relationship between kinship and female well-being (Alesina et al., 2021, Lowes, 2022), I focus on matrilocal residence tradition instead of matrilineal descent itself and expand the scope to include Asian countries to address cultural heterogeneity between matrilineal ethnic groups in Africa and Asia.

4.1 Data

I use available geo-coded DHS waves worldwide for the analysis in this section. The sample includes 78 waves from 46 different countries worldwide. A summary of countries and waves included in my sample can be found in Table A1. This geo-coded DHS individual level data is then linked to the *Ethnographic Atlas* (Murdock, 1967) following the same procedure as Giuliano and Nunn (2018). I use the *Ethnologue* shape file to identify the ethno-lingo group native to each DHS cluster, and the *Atlas* cultural characteristics are then matched to the individual observations according to the ethno-lingo groups.

Focusing on the women's survey of the DHS, I generate measures of involvement in decision-making using all decision-making related measures available in the universe of survey questions. The decision-making related questions in DHS follow the following format: For each of the

decisions included in the analysis, the wife chooses from the options of 1) Husband decides solely; 2) Wife decides solely; 3) The couple decides jointly; 4) Someone else makes the decision for the question "*Who has the final say in the family on the decision of...*". Dummy variables indicating the husband/wife/others being involved in the final decision making are generated for each question and summed into 3 respective indices of involvement in decision making. The decisions used in the analysis includes how to spend money, the wife's healthcare, large household purchases, visits to families, food to be cooked on each day, and what to do with the husband's earnings.

The measures of kinship traditions come from the descent and post-marital residence variables in the *Ethnographic Atlas*. I use matrilineal descent as a proxy for the inheritance in this section for the following reasons. First of all, a substantial portion of ethnic groups recorded in the *Ethnographic Atlas* lack a recorded land inheritance rule. Second, in the subsample of ethnic groups with record on land inheritance, matrilineal descent and inheritance are highly correlated, with a correlation coefficient of 0.92. I code ethnic groups that are unambiguously matrilineal/matrilocal (Referring to when the couple moves to live with the wife's family only) with value 1, and all other practices as 0. Distributions of matrilineal descent and matrilocal residence among my sample can be found in Figures A1 and A2.

Control variables from the DHS survey include age and age squared, years of education, as well as urban-rural status as controls, using Lowes (2022) as a benchmark. I also control for all unbalanced cultural characteristics as listed in Table A2.

4.2 OLS Evidence

To explore how matrilocality and matriliny may have different implications on decision-making patterns, I assess the following regression:

$$Y_{ie} = \beta_1 \mathbb{1}(Matriliny)_e + \beta_2 \mathbb{1}(Matrilocality)_e + \mathbf{X}_{ie}\gamma + \delta_{n,t} + \varepsilon_{ie}\,,$$

where Y_{ie} includes indices for the involvement in decision-making for the wife/husband/all other family member. $\mathbb{1}(Matriliny)_e$ and $\mathbb{1}(Matrilocaliy)_e$ are dummy variables that take value 1 if the ethnic group an observation is classified as matrilineal or matrilocal in the *Ethnographic Atlas*. $\mathbf{X}_{ie}$ is a vector of individual and ethnic group level characteristics as defined earlier, and $\delta_{n,t}$ is the country-by-year fixed effect to account for the use of multiple countries and survey waves. The standard errors are clustered at the ethnic group level. I run the regressions on the full, African and Asian sample to illustrate any potential heterogeneity between kinship traditions across continents.

Table 1 presents the effect of matrilineal kinship on household decision-making in my overall DHS sample. At first glance, being from a region with historical matrilineal ethnic groups have minimal effect on a household's decision-making pattern, as no coefficient in Columns (1), (4) and (7) is statistically significant. The pattern changes with the introduction of matrilocality: Keeping historical descent system fixed, men from where a matrilocal ethnic group historically resides are more involved in decision-making, while the extended family members are less involved. Including an interaction term further shows that this increase in male involvement is associated with communities that historically practices both matriliny and matrilocality. This

Table 1: Kinship traditions and decision-making: DHS global sample

	Wife Involved			Husband Involved			Others Involved		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Matri. descent=1	−0.06	−0.04	−0.04	0.07	0.02	−0.01	0.00	0.02	0.02
	(0.05)	(0.06)	(0.06)	(0.05)	(0.05)	(0.05)	(0.01)	(0.02)	(0.02)
Matri. coresidence=1		−0.05	−0.08		0.12**	−0.03		−0.04**	−0.04
		(0.07)	(0.13)		(0.05)	(0.07)		(0.02)	(0.04)
Matri. descent × Matri. coresidence=1			0.04			0.21**			−0.00
			(0.15)			(0.10)			(0.04)
Country × Year f.e.	Y	Y	Y	Y	Y	Y	Y	Y	Y
Individual Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cultural Characteristics	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sample	All	All	Asia	All	All	Asia	All	All	Asia
Outcome Mean	2.78	2.78	2.78	2.56	2.56	2.56	0.24	0.24	0.24
Obs.	749,076	746,586	746,586	749,076	746,586	746,586	1,549,469	1,545,539	1,545,539
No. of Ethnic Groups	516	510	510	516	510	510	517	511	511

Notes: From the raw questions where the wife chooses from 1) Husband decides solely; 2) Wife decides solely; 3) The couple decides jointly; 4) Someone else makes the decision, two dummy variables indicating the husband/wife being involved in the decision making are generated for each question, and aggregated into the number of items out of 6 where the husband/wife is involved as a final decision maker. The dummy variables for matriliny and matrilocality are retrieved from the Ethnographic Atlas, linked to DHS according to the language group located at each DHS cluster.
Standard errors are clustered at the ethnic group level.

is indicative of co-residence being more pivotal on shaping the decision-making pattern of a household.

Further investigation exposes important heterogeneity between continents. With two subsample of Asian and African countries, Tables 2 and 3 show the correlation between kinship traditions and decision-making patterns in the two continents respectively. The two tables depict largely different relationships. In Asia, matrilineal descent is associated with an increase in female involvement in decision-making, which is completely absorbed by the inclusion of an indicator of matrilocality. On the other hand, matriliny is associated with lower female involvement in decision-making in Africa, which cannot be explained by matrilocality. As a matter of fact, matrilocality seem to have conflicting effects depending on whether it is concurring with matriliny in Africa. Keeping historical descent fixed, women from historically matrilocal ethnic groups are on average involved in 0.22 more items of household decision-making. Meanwhile in the Africa subsample women in ethnic groups with historical matrilineal decent are on average involved in 0.13 fewer decision-making items even after controlling for co-residence tradition, and men from matrilocal ethnic groups are on average involved in 0.19 more decision-making items.

This distinction is likely due to the difference in the implications of matriliny between ethnic groups from the two continents. While a matrilineal descent system emphasises the female bloodline, it does not necessarily grant a higher status to the female members of the bloodline. This is exactly the characteristic that defines matriliny in Africa, where the tie between a man and their maternal uncle/nephew is stressed over the tie between a woman and her daughter. Conversely, matriliny in Asia usually operates through the mother-daughter tie. This cultural heterogeneity is a plausible explanation of the patterns observed in Tables 2 and 3, and calls

Table 2: Kinship traditions and decision-making: DHS Asian subsample

	Wife Involved			Husband Involved			Others Involved		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Matri. descent=1	0.18*	0.04	−0.02	0.02	0.02	0.05	0.00	0.01	0.01
	(0.10)	(0.09)	(0.08)	(0.06)	(0.07)	(0.06)	(0.01)	(0.01)	(0.01)
Matri. coresidence=1		0.22***	0.08		−0.00	0.06		−0.01	−0.03
		(0.08)	(0.09)		(0.06)	(0.11)		(0.01)	(0.02)
Matri. descent × Matri. coresidence=1			0.26*			−0.12			0.02
			(0.14)			(0.13)			(0.02)
Country × Year f.e.	Y	Y	Y	Y	Y	Y	Y	Y	Y
Individual Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cultural Characteristics	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sample	Asia	Asia	Asia	Asia	Asia	Asia	Asia	Asia	Asia
Outcome Mean	3.13	3.13	3.13	2.92	2.92	2.92	0.08	0.08	0.08
Obs.	322,748	322,695	322,695	322,748	322,695	322,695	997,481	997,428	997,428
No. of Ethnic Groups	118	117	117	118	117	117	119	118	118

Notes: From the raw questions where the wife chooses from 1) Husband decides solely; 2) Wife decides solely; 3) The couple decides jointly; 4) Someone else makes the decision, two dummy variables indicating the husband/wife being involved in the decision making are generated for each question, and aggregated into the number of items out of 6 where the husband/wife is involved as a final decision maker. The dummy variables for matriliny and matrilocality are retrieved from the Ethnographic Atlas, linked to DHS according to the language group located at each DHS cluster.
Standard errors are clustered at the ethnic group level.

for separate analysis of different cultural setups to avoid conflating different mechanisms.

5 Inheritance and Post-Marital Residence in Timor-Leste

In the following sections, I utilise primary survey data from Timor-Leste to assess the relationship between modern-day kinship practices and intra-household decision making. Resting in the east end of the Indian Ocean, Timor-Leste takes up the eastern half of the island named Timor. Albeit a small country, Timor-Leste houses a surprisingly diverse culture ecosystem, with as many as 27 ethno-lingo groups and a notable portion practising matrilineal descent. Timor-Leste offers a unique context to isolate the effects of inheritance and post-marital residence (matrilocality) aspects of matrilineal descent as the two practices are not perfectly collinear in modern day Timor-Leste.

The key characteristics of Timorese matrilineal clans are reflected by how different traditions are named in the local language, Tetun. The Tetun language does not differentiate practices based on descent or inheritance specifically. On the contrary, kinship traditions are categorised by how marriages, and relocations after marriages, are carried out. The two predominant types of marriage are called *kaben tama* ("marry (a son) in") and *kaben sai* ("marry (one's daughter) out"), where *kaben tama* refers to when the groom leaves his family after marriage, and *kaben sai* refers to when the bride leaves her family (Khan and Hyati, 2012).

On the other hand, land inheritance traditions in Timor-Leste do not go hand in hand with the post-marital residence traditions. While sons are always preferred for inheritance in patrilineal clans, similar things cannot be said for the matrilineal clans. As indicated by the example

Table 3: Kinship traditions and decision-making: DHS African subsample

	Wife Involved			Husband Involved			Others Involved		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Matri. descent=1	−0.16***	−0.13**	−0.13**	0.03	−0.01	−0.01	0.03	0.04	0.04
	(0.06)	(0.06)	(0.06)	(0.07)	(0.07)	(0.07)	(0.04)	(0.05)	(0.05)
Matri. coresidence=1		−0.15	−1.06***		0.19**	0.18		−0.02	−0.03
		(0.10)	(0.12)		(0.09)	(0.12)		(0.04)	(0.06)
Matri. descent × Matri. coresidence=1			0.92***			0.00			0.01
			(0.19)			(0.19)			(0.09)
Country × Year f.e.	Y	Y	Y	Y	Y	Y	Y	Y	Y
Individual Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cultural Characteristics	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sample	Africa	Africa	Asia	Africa	Africa	Asia	Africa	Africa	Asia
Outcome Mean	2.22	2.22	2.22	2.33	2.34	2.34	0.51	0.51	0.51
Obs.	319,299	316,862	316,862	319,299	316,862	316,862	415,249	411,372	411,372
No. of Ethnic Groups	374	369	369	374	369	369	374	369	369

Notes: From the raw questions where the wife chooses from 1) Husband decides solely; 2) Wife decides solely; 3) The couple decides jointly; 4) Someone else makes the decision, two dummy variables indicating the husband/wife being involved in the decision making are generated for each question, and aggregated into the number of items out of 6 where the husband/wife is involved as a final decision maker. The dummy variables for matriliny and matrilocality are retrieved from the Ethnographic Atlas, linked to DHS according to the language group located at each DHS cluster.
Standard errors are clustered at the ethnic group level.

offered in Thu, Scott, and Niel (2007), a classical Timorese matrilineal clan favours daughters over sons for inheritance. However, the modern day inheritance rules of matrilineal clans are more complicated - in some clans, the married couple is responsible for earning everything by themselves, while in other clans the wife can inherit from her family (Khan and Hyati, 2012).

As a result, matrilocality is actually more prevalent than matrilineal inheritance in modern-day Timor-Leste. Another advantage of the Timorese context is that matrilineal kinship emphasises the mother-child lineage than the uncle-nephew one as commonly seen in several African ethnic groups, which eliminates the potential ambiguity of the matrilineal inheritance and matrilocal post-marital relocation rules. This makes it possible to isolate the effect of matrilocal residence from other confounding channels of matriliny since the two practices are not collinear yet both pin down specific practices unambiguously.

6 Data

6.1 Overview

The data utilised in this paper are collected in 2022 as part of a household survey in Timor-Leste. During the data collection, we selected 60 *suku*s (villages) outside the country's capital city Dili, and 40 *aldeia*s (sub-villages/hamlets) in Dili. This total of 100 communities are randomly sampled, stratifying along the dimension of kinship traditions proxied with the language spoken

locally.[1] This creates a sample of 499 Households with at least one prime-age adult[2] surveyed, with 4.99 households per community on average.[3]

The survey consists of two questionnaires, one targeting the village leaders (hereafter referred to as the community questionnaire) and the other targeting the sampled households (hereafter referred to as the household questionnaire). In the analysis, the community questionnaire provides measures of the kinship practice in a *suku/aldeia* (hereafter referred to as communities) and community level characteristics, while the household questionnaire provides information on if a couple is coresiding with any extended family members and the outcomes of interest.

In each community, two community questionnaires are collected, one from the community chief and the other from a knowledgeable member of the community from the opposite gender. While some village characteristics are collected from the village head only, most characteristics are elicited from both respondents. I collapse community questionnaires by taking the average between the two entries per village to account for any inconsistencies.

In the household questionnaire, I focus on the involvement in decision making the prime age married respondents of the adult module in our survey, their spouse, and other relatives. The household decision-making questions are elicited once per household, with little restriction on the identity of the respondent apart from that they need to be knowledgeable about the household. Figure A3 illustrates the format of the decision-making module in our survey, adopting the format used in the Indonesia Family Life Survey. The respondent of the household module is asked to nominate all parties in the family that are involved in the decision-making of the following matters: 1) Children's education and health, 2) large expensive purchases, 3) sending remittances, 4) gifts for parties or weddings, 5) spending government transfers, 6) savings, and 7) use of contraception. The subsequent analysis excludes the item about sending remittances to "your parents/family", as the uncertainty of the respondent's identity makes it hard to track if the family is implied to be the husband's, or the wife's family.

With this flexibility in the identity of respondent, I restrict the analysis to where the relationship between the respondent of the decision-making module and the couple surveyed can be backed out. This enables me to identify for each household which person codes correspond to the husband, the wife, and their extended families. This allows me to construct for each decision-making item if the husband, the wife, or both of my prime-age couple is involved in the decision of the aforementioned aspects. After the decision-making involvement measures of each individual for each item has been generated, I aggregate the individual items into indices by summing over all indicators. To further understand any implications of differences in the spousal decision-making pattern, I also generate measures for the number of decision items where the husband or the wife is the sole decision-maker, the number of decision items where other family members are involved in the decision-making, and if either of the spouses is the sole decision-maker of the family or completely excluded from decision-making.

[1] The languages *Tetun Terik* and *Bunak* are considered as languages spoken by *kaben tama* clans during the sampling process. The sampling treats municipalities Bobonaro, Covalima, Manatuto and the sub district Viqueque of Viqueque as "Matrilineal".

[2] Defined as a married adult below the age of 50.

[3] Different communities ended up having different number of eligible households as the sampling for the original survey targeted two different program evaluations, with different sampling criteria.

6.2 Measures of Kinship Traditions

In the community-level survey, two questions are asked to elicit community-level kinship traditions: "From whom do people inherit land?" and "When people in this village marry, does the couple live in the bride's village or in the groom's village?". For the inheritance question, a respondent is free to choose from the following five options: 1) Only father; 2) Mostly father; 3) Both father and mother; 4) Mostly mother; 5) Only mother. For the post-marriage residence question, the four options offered are 1) Only groom's village; 2) Mostly groom's village; 3) Mostly bride's village; 4) Only bride's village.

I construct 1-5 indices for inheritance and post-marital residence using the two questions, with 1 standing for unambiguously patrilineal inheritance/patrilocal residence (Corresponding to options 1 for both questions) and 5 standing for unambiguously matrilineal inheritance/matrilocal residence (Corresponding to options 5 for the inheritance question, and option 4 for the co-residence question). I use 5-level indices for both question to make the two measures comparable, and account for any potential inconsistency in reported co-residence traditions between the two surveys from each community.[4]

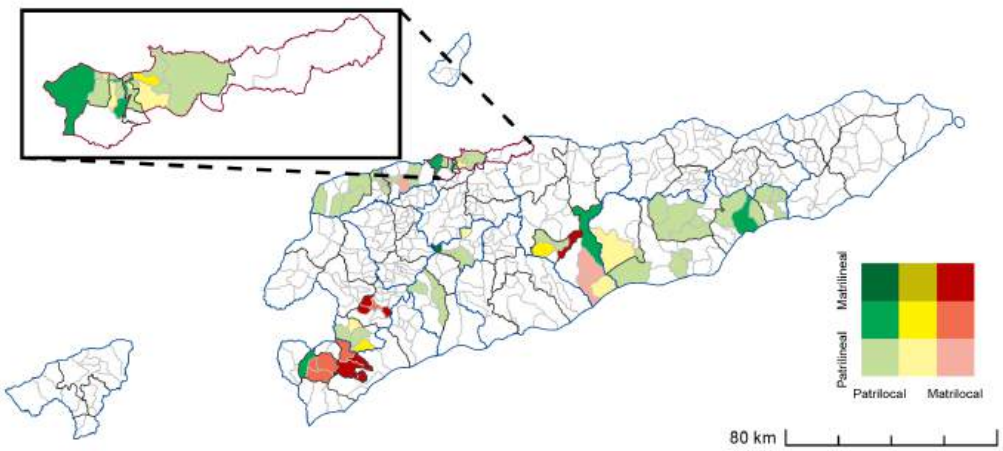

Figure 2: Geographical Distribution of Inheritance and co-residence Traditions, Timor-Leste

Note: The top-left box shows an enlarged depiction of the Dili municipality (Highlighted in red borderlines). District borders are shown with solid blue lines and sub-district borders are shown with solid grey lines.

The distributions of the two kinship traditions across our survey sample are shown in Figure 2.[5] As can be seen from the figure, the practice of matrilineal inheritance is rarer than matrilocality, and there exist matrilocal villages where inheritance is patrilineal but no villages that are patrilocal with matrilineal inheritance. There exists some extent of geographical clustering, with modern day matrilineal clans almost only showing up in Bobonaro, Cova Lima and Manatuto (In the middle of the country). The rarer occurrence of actual modern-day practice compared

[4]The 1-5 index is constructed such that 1 stands for the most patrilineal/patrilocal possibility, 5 stands for the most matrilineal/matrilocal possibility, and 3 stands for indifference. Value 3 is intentionally left blank when constructing the raw matrilocality index. Then the imputed indices are averaged between the two survey responses in each community.

[5]Figures showing the distributions of inheritance and co-residence practices separately can be found in the Appendix Figures A4 and A5.

with the assumption during sampling based on languages indicate that there is still ongoing transition out of the practice of *kaben tama*.

In the subsequent analysis, the indices are further rescaled to between 0 and 1 for the ease of interpretation. An alternative measure of matrilineal inheritance and matrilocality is also used if a continuous scale is not suitable to the specific setup, which involves collapsing the two indices into binary variables. Under this approach, I categorise any communities with a matrilineal inheritance/matrilocality index of 4 or higher with value 1.

6.3 Validity of Kinship Tradition Measures

Next, I assess whether the community-level reports are capturing people's actual practice at the household level. I summarise information from a household's roster about couple's co-residence with both sides' parents, and supplement the information with the wife's report on the presence of family members that live in the same community but not the same household. As for household level inheritance patterns, information is collected from all respondents of the adult module, eliciting if the husband/wife currently holds any inherited land, and from whom the land is inherited. All differences are shown using the dichotomous measures of the kinship traditions instead of the continuous indices for the sake of a easier interpretation of the raw data patterns.

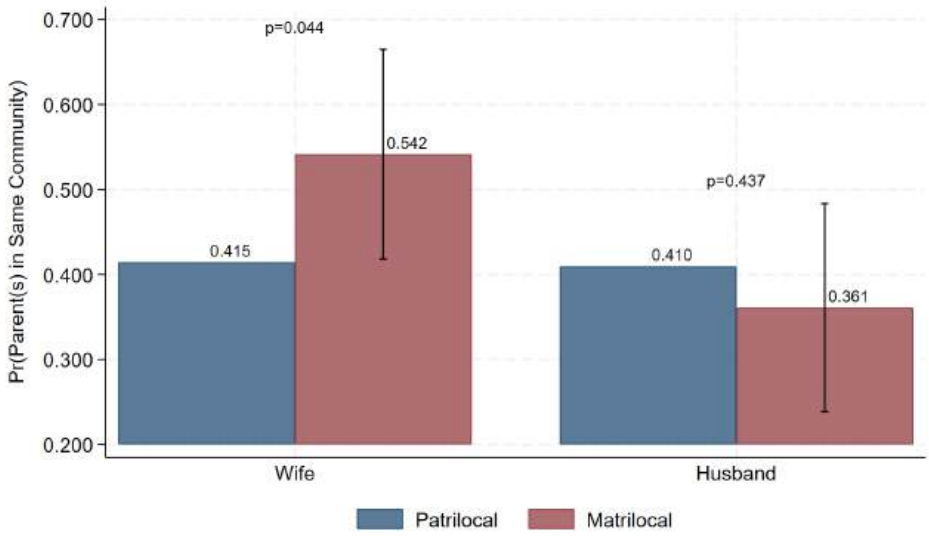

Figure 3: Presence of Own Parents in Matrilocal vs. Patrilocal Communities

Note: The first and second pairs of bars show the average likelihood for the wife's/husband's parents living in the same community as the married couple respectively, with blue indicating the subsample of patrilocal communities and the red indicating matrilocal communities. The p-value of two sample t-tests between the two kinship practices for each side are shown at the top of each group.

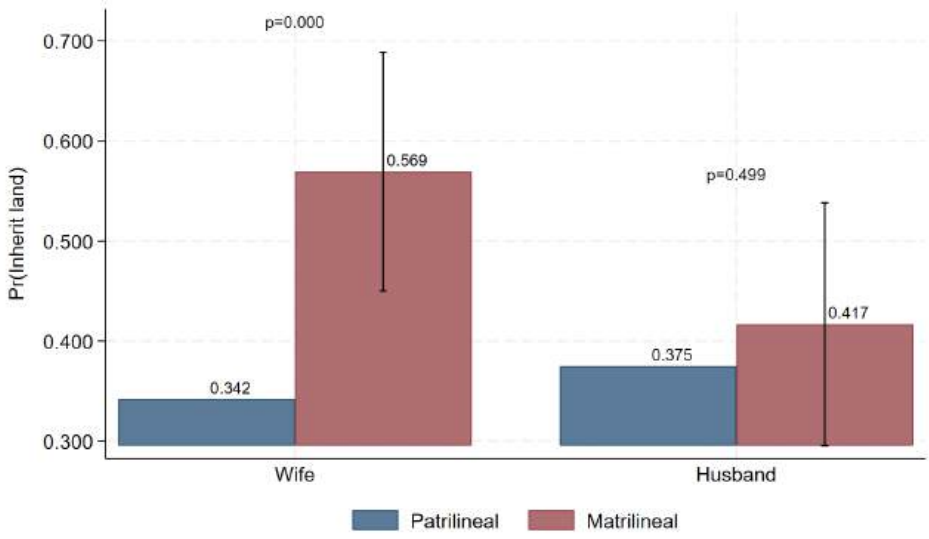

Figure 4: Land Inheritance under Matrilineal vs. Patrilineal Inheritance

Note: The first and second pairs of bars show the average likelihood for the wife/husband to inherit land from their kin respectively, with blue bars indicating the subsample of communities with patrilineal inheritance and the red bar indicating communities with matrilineal communities. The p-value of two sample t-tests between the two kinship practices for each side are shown at the top of each group.

The patterns shown in Figures 3 and 4 indicate the association between my community level measures of kinship practices and the individual level adoption of the practices entailed by the two concepts. It is worth noting that even though being in a community reported practising matrilocality/matrilineal inheritance is associated with a higher likelihood of individual level practice, the sample mean of each specific practice is still relatively low. It can be argued that a significant proportion of couples in my sample are too young to inherit from their parents, yet the mean for the co-residence patterns could indicate that modern-day families in Timor-Leste are becoming more nuclear as a result of economic development.

7 Disentangling Kinship in Timor-Leste

7.1 Determinants of Kinship Practices

Being the collective evolutionary response to the environment, culture should never be viewed as exogenous to local geo-agricultural characteristics. Albeit not set out to explain specifically the historical roots of matriliny and matrilocality, abundant literature exists that seek to tease out the historical roots of modern day practices and cultural differences (Nunn and Puga, 2012, Alesina et al., 2013, Talhelm et al., 2014, Alesina et al., 2018), proposing mechanisms such as crop suitability (Alesina et al., 2013, Talhelm et al., 2014, Alesina et al., 2018) and terrain ruggedness (Nunn and Puga, 2012).

In this section, I assess the correlation between whether a community practices matrilineal inheritance/matrilocality and various geo-agricultural characteristics, including the standardised terrain ruggedness index provided by Nunn and Puga (2012), soil and terrain suitability under

low input from FAO and IIASA's Global Agro Ecological Zones version 4 (GAEZ v4) dataset, and the distance between the centroid of each community to the nearest coast within the country border. Following the hypotheses of Alesina et al. (2013), higher agricultural suitability implies suitability for plough agriculture (as crops requiring the use of a plough generally requires better soil and terrain conditions as well), which gives rise to more male-dominant gender norms. Meanwhile, places that are more inland and rugged are more likely to preserve ancient norms, due to the increased difficulty in establishing contact with foreign influences.

To assess whether such hypotheses hold in the Timorese context, I regress the two different measures of the two practices on all aforementioned characteristics. The results are shown in Table 4. Across all columns, it's clear that communities further away from the coast are more likely practising matrilineal inheritance/matrilocal residence in the modern day. Given how relatively uncommon the practices are, the effects are not massive in size,[6] yet still statistically significant. However, the correlation between terrain ruggedness and the two practices is less pronounced, with it only being marginally significant when the left hand side variable is the matrilocality index. Furthermore, the intuition provided by Nunn and Puga (2012) indicates that ruggedness shields a community from foreign shocks, which in the Timorese context would imply communities with higher ruggedness are more likely to remain matrilineal in inheritance or matrilocal. The fact that the coefficients in Table 4 indicate otherwise implies that ruggedness is not a historical determinant of kinship traditions. Soil and terrain agricultural suitability, on the other hand, is not statistically significant in any specifications. In the subsequent analysis, I control for terrain ruggedness, distance to coast, and all characteristics that are not balanced in the following subsection to account for potential confounders.

Table 4: Correlation between kinship traditions and geographical characteristics

	Matrilineal Inheritance Index (1-5)	Matrilocal Co-residence Index (1-5)	Mostly Inheritance	Mostly Matrilineal Matrilocal
Terrain Ruggedness Index (Standardised)	-0.00	-0.09*	-0.07	-0.07
	(0.04)	(0.04)	(0.04)	(0.06)
Soil & Terrain Suitability	-0.01	-0.02	-0.02	0.01
	(0.03)	(0.04)	(0.03)	(0.05)
Log Distance to Coast	0.03*	0.05*	0.07***	0.09***
	(0.02)	(0.02)	(0.02)	(0.03)
Mean of outcome var.	0.23	0.33	0.08	0.17
Obs.	100	100	100	100
Adj. R^2	0.039	0.031	0.005	0.042

Notes: Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.01
Average terrain ruggedness is calculated using grid-cell level terrain ruggedness data from Nunn and Puga (2012), and standardised Agricultural suitability data are retrieved from FAO's Global Agro-Ecological Zones v4 dataset

7.2 Balance of Community and Household Characteristics

Next, I compare various community-level socioeconomic characteristics between matrilineal (matrilocal) and patrilineal (patrilocal) communities to assess if any modern-day economic development could be confounding with the kinship practices. The characteristics assessed include the

[6] A 1% increase in a community's distance to coast is associated with a 0.0014 unit increase of the matrilineal inheritance index, a 0.0018 unit increase of the matrilocal co-residence index, 0.029% higher chance to be mostly matrilineal in inheritance, and 0.092% higher chance to be mostly matrilocal.

geographic characteristics, size, and economic development of a community. Geographic characteristics include indicators being in Dili and in the the *Loro Sae*[7] region. Economic development indicators include the maximum night light in 2022 from Elvidge, Zhizhin, Ghosh, Hsu, and Taneja (2021), a 1-5 scale subjective measure of socioeconomic condition reported by the respondent, whether the village suffers from shortage of water or lack of access to credit, whether more than 75% of the community population rely on subsistence economy, and an infrastructure index constructed based on whether the community houses a kindergarten/primary school/secondary school/health centre/market/bank. Other miscellaneous characteristics include the sex of the village chief, the prevalence of conflict, natural disasters, and trust among community members.

I present balance of each community level characteristic between matri/patrilocal communities and matri/patrilineal communities in Table 5. According to the table, matri/patrilocal and matri/patrilineal communities in my sample are largely comparable, with the exceptions being that both matrilocal and matrilineal communities are less likely to be in Dili, have lower night light level, and matrilineal communities having slightly worse socioeconomic conditions.

Table 6 shows balance of several indicators of a household's socioeconomic status between matri/patrilocal and matri/patrilineal communities. Similar to previous patterns, the pattern between the two set of comparisons are similar, with matri- and patri- households being statistically comparable except that matrilocal and matrilineal households are less likely to have access to piped water and good-quality roofs.

7.3 Empirical Framework

The existing literature indicates that matriliny contributes to female empowerment and higher child investment (Gneezy et al., 2009, Robinson and Gottlieb, 2021, Lowes, 2022), while matrilocality offers women a source of credible threat for their husbands' cooperation (Tur-Prats, 2019, Alesina et al., 2021). However, due to data constraints, it's hard to tell if the "benefits" of matriliny are indeed driven by the difference in inheritance, or an artefact due to the correlation between matriliny and matrilocality.

Utilising the unique context of Timor-Leste where 1) patrilineal but matrilocal communities exist, and 2) matrilocal communities differ in the extent of matriliny, I seek to assess the effect of matriliny and matrilocality leveraging this unique variation. The variation along the extent of matrilocality keeping matriliny fixed allows me to estimate the effect of matrilocality, while the variation along the extent of matriliny keeping matrilocality fixed allows the estimation of the effect of matriliny.

First of all, I estimate the following OLS regression:

$$Y_{ic} = \beta_1 Matrilocal\ index_c + \beta_2 Matrilineal\ index_c + \mathbf{X}_{ic}\gamma + \varepsilon_{ic}\,, \tag{1}$$

where $Matrilocal\ index_c$ and $Matrilineal\ index_c$ are rescaled 0-1 continuous indices measuring the kinship tradition in community c, with a larger value indicating the community being more matrilocal/matrilineal. The continuous scale is preferred over dichotomising to provide more variation considering the relatively small sample size of our survey, and to avoid the arbitrary

[7]The *Loro Sae* region, covering municipalities Manatuto and Viqueque in the sample, historically hosts a slightly different culture from the rest of the country.

Table 5: Balance of community characteristics across different co-residence traditions

	Matrilocal vs. Patrilocal (17 vs. 83 Communities)			Matrilineal vs. Patrilineal Inheritance (8 vs. 92 Communities)		
	Matrilocal	Patrilocal	Diff.	Matrilineal	Patrilineal	Diff.
	(1)	(2)	(3)	(4)	(5)	(6)
Community located in Dili	0.12	0.46	−0.34***	0.00	0.43	−0.43**
	(0.33)	(0.50)	(0.13)	(0.00)	(0.50)	(0.18)
Community located in *Loro Sae*	0.18	0.25	−0.08	0.12	0.25	−0.12
	(0.39)	(0.44)	(0.11)	(0.35)	(0.44)	(0.16)
Community has female chief	0.12	0.18	−0.06	0.12	0.17	−0.05
	(0.33)	(0.39)	(0.10)	(0.35)	(0.38)	(0.14)
No. of households	470.29	453.02	17.27	511.71	451.67	60.04
	(226.17)	(352.16)	(89.42)	(310.87)	(334.89)	(130.97)
No. of residents	2117.82	2015.91	101.91	2752.14	1976.59	775.56
	(1237.22)	(1681.51)	(432.26)	(1533.96)	(1604.89)	(628.74)
Maximum night time light (2022)	4.30	16.54	−12.25**	2.10	15.54	−13.43*
	(7.55)	(21.73)	(5.35)	(3.12)	(21.05)	(7.48)
Socioeconomic condition (1-5)	2.82	2.95	−0.12	2.38	2.97	−0.60**
	(0.75)	(0.75)	(0.20)	(1.03)	(0.70)	(0.27)
Water shortage	0.29	0.27	0.02	0.44	0.26	0.18
	(0.44)	(0.39)	(0.11)	(0.50)	(0.39)	(0.15)
No access to credit	0.24	0.19	0.04	0.31	0.19	0.12
	(0.44)	(0.36)	(0.10)	(0.46)	(0.37)	(0.14)
75%+ of rely on subsistence	0.12	0.12	−0.00	0.00	0.13	−0.13
	(0.22)	(0.27)	(0.07)	(0.00)	(0.27)	(0.09)
Infrastructure index (1-5)	3.26	3.30	−0.04	3.12	3.31	−0.18
	(1.74)	(1.44)	(0.40)	(1.25)	(1.51)	(0.55)

Notes: Columns (1) through (3) shows the difference for each characteristic between matrilocal communities and patrilocal communities.
Columns (4) through (6) shows the difference for each characteristic between matrilineal communities and patrilineal communities.
Standard deviations (standard errors for columns (3) and (6)) are shown in parentheses.

decision for the dummies' cutoff. β_1 captures the effect of matrilocality, while β_2 captures the effect of matriliny. $\mathbf{X}_{ic}$ includes the terrain ruggedness, log distance to coast, dummy variables for Dili and *Loro Sae*, maximum night light in 2022, socioeconomic condition for community c and dummies for access to piped water and good quality roof for household i. I also control for the identity of the respondent to the decision-making questions in the household module due to the uncertainty about who responds to the household module. As shown in Ambler, Doss, Kieran, and Passarelli (2021), husbands and wives generally have disagreement over women's extent of involvement in household decision-making, which likely extends to other family members' perception of the wives' role in decision-making as well.

As mentioned in section 6.1, the outcome variables Y_{ic} for household i in community c include the following measures of household decision making: the involvement in decision making of the husband and the wife, in each category and aggregated. The standard errors are clustered at community level. I also provide 95% confidence intervals estimated with wild cluster bootstrapping to account for the small number (100) of clusters.

Table 6: Balance of household characteristics across different co-residence traditions

	Matrilocal vs. Patrilocal (17 vs. 83 Communities)			Matrilineal vs. Patrilineal Inheritance (8 vs. 92 Communities)		
	Matrilocal	Patrilocal	Diff.	Matrilineal	Patrilineal	Diff.
	(1)	(2)	(3)	(4)	(5)	(6)
Household income bracket (Last month)	3.92	3.82	0.10	3.71	3.84	−0.13
	(1.41)	(1.83)	(0.23)	(1.04)	(1.82)	(0.30)
Electricity connection	1.04	1.04	−0.00	1.05	1.04	0.01
	(0.20)	(0.20)	(0.03)	(0.23)	(0.20)	(0.03)
Household's toilet have septic tank	0.21	0.24	−0.03	0.21	0.23	−0.02
	(0.41)	(0.43)	(0.05)	(0.41)	(0.42)	(0.07)
Household have access to piped water	0.61	0.76	−0.15***	0.58	0.75	−0.17**
	(0.49)	(0.43)	(0.06)	(0.50)	(0.43)	(0.07)
Dwelling having baked brick/concrete wall	0.85	0.77	0.08	0.76	0.78	−0.02
	(0.36)	(0.42)	(0.05)	(0.43)	(0.41)	(0.07)
Dwelling having concrete/metal/tile roof	0.93	0.98	−0.05***	0.87	0.98	−0.12***
	(0.26)	(0.13)	(0.02)	(0.34)	(0.12)	(0.03)
Household assets (Scale 0-6)	8.54	8.47	0.07	8.68	8.46	0.22
	(1.26)	(1.36)	(0.17)	(1.07)	(1.36)	(0.23)

Notes: Columns (1) through (3) shows the difference for each characteristic between matrilocal communities and patrilocal communities.
Columns (4) through (6) shows the difference for each characteristic between matrilineal communities and patrilineal communities.
Standard deviations (standard errors for columns (3) and (6)) are shown in parentheses.

8 Results

8.1 Household Decision-Making Outcomes

Table 7 depicts the results from running the regression outlined in Equation 1 on the involvement in decision-making for the husbands and wives in my sample respectively. Including both matrilocality and matriliny indices in the same regression allows me to isolate the effect of each kinship tradition while keeping the extent of the other fixed.

Compared to men from the most patrilocal communities in my sample, men from the most matrilocal communities in my sample are involved in almost one more item of decision-making, an effect statistically significant at 5% level. The positive correlation between matrilocality and involvement in decision-making for the wives is smaller, yet still marginally significant.

On the other hand, the coefficient on the inheritance index for both spouses are insignificant with large standard errors. This is in line with the patterns in Table 2, indicating that co-residence traditions have a more profound association with decision-making patterns than inheritance traditions.

The association between matrilocality and increase in decision-making involvement of both the husband and the wife seem to contradict the predictions of canonical collective household model at first glance. As predicted in Browning and Chiappori (1998), the increase in decision-making power of one party in an efficient household must come with a corresponding decrease in decision-making power of the other party. If the involvement in decision-making is an accurate

Table 7: Kinship and spousal involvement in decision making

	Wife Involved		Husband Involved	
	(1)	(2)	(3)	(4)
Matrilocal Co-residence index	0.35**	0.32*	0.89***	0.90**
	(0.16)	(0.18)	(0.34)	(0.36)
Matrilineal Inheritance index	0.20	0.19	−0.41	−0.13
	(0.21)	(0.21)	(0.50)	(0.47)
Indentity of Resp.	Y	Y	Y	Y
Region & Dili f.e.	Y	Y	Y	Y
Community & Household controls	N	Y	N	Y
Outcome Mean	4.38	4.38	3.58	3.58
Obs.	476	476	476	476

Notes: The unit of observation is one per household. Standard errors are clustered at the community level.

Outcome variables are number of decision-making items out of 6 where the wife/husband is involved.

Other control variables include the standardised terrain ruggedness index from Nunn and Puga (2012), log distance to nearest coast in country, indicator for whether the community is in the hills, a dummy variable for the Loro Sae region, a dummy variable for Dili, and the maximum nighttime light level in 2022.

proxy of bargaining power, increase in involvement of both spouses should be compensated by a decrease in decision-making involvement of all other parties.

To assess if the increase in both spouses' involvement in decision-making is accompanied by an equivalent decrease in involvement from all other parties, Table 8 reports the relationship between matrilocal co-residence, matrilineal inheritance and the involvement in decision-making from the extended family. As shown in columns (1) and (2), while the extended family is less involved in the decision-making in both more matrilocal and more matrilineal communities, the effects are both less significant and smaller in size. Columns (3) - (8) further decompose the involvement of other parties into the extended family from the wife's or the husband's side. While the rarity of cases where the extended family plays a notable role in decision-making do not offer enough statistical power for significant differences, matrilocality is associated with a slightly higher level of involvement for the wife's family, and a lower level of involvement for the husband's family.

One potential explanation why evidences in Table 8 are not in support of a bargaining power shift in an efficient household is that involvement in decision-making is not a adequate proxy of bargaining power. Table 9 explores this seemingly paradoxical occurrence with further scrutiny. Instead of involvement in decision-making, I evaluate the number of decisions the wife/husband is a sole decision maker for, and the number of decisions the couple make jointly. The results indicate that the self-reported participation in decision making is not a perfect proxy for decision making power, as multiple people can be the decision-maker of a same item: The increase in decision-making involvement for both the husband and the wife under matrilocality is driven

Table 8: Kinship and aggregated involvement in decision making

	Others Involved		Wife's Family Involved		Husband's Family Involved		Unassigned Relatives	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Matrilocal Co-residence index	−0.25**	−0.22*	0.11	0.04	−0.16	−0.10	−0.18**	−0.14*
	(0.11)	(0.12)	(0.15)	(0.17)	(0.15)	(0.16)	(0.08)	(0.09)
Matrilineal Inheritance index	−0.28**	−0.30*	−0.07	−0.07	−0.08	−0.08	−0.11	−0.13
	(0.14)	(0.16)	(0.14)	(0.16)	(0.15)	(0.14)	(0.10)	(0.13)
Indentity of Resp.	Y	Y	Y	Y	Y	Y	Y	Y
Region & Dili f.e.	Y	Y	Y	Y	Y	Y	Y	Y
Community & Household controls	N	Y	N	Y	N	Y	N	Y
Outcome Mean	1.17	1.17	0.22	0.22	0.53	0.53	0.39	0.39
Obs.	476	476	476	476	476	476	499	499

Notes: The unit of observation is one per household. Standard errors are clustered at the community level.

Outcome variables are number of decision-making items out of 6 where other parties are involved. The other decision-makers are categorised into wife's relatives, husband's relatives, and unassigned according to their and the couple's relationship to the respondent.

Other control variables include the standardised terrain ruggedness index from Nunn and Puga (2012), log distance to nearest coast in country, indicator for whether the community is in the hills, a dummy variable for the Loro Sae region, a dummy variable for Dili, and the maximum nighttime light level in 2022.

by the increase in the number of decisions the couple makes jointly. This is accompanied by a decrease in the number of items the wife makes decision upon alone, albeit the effect is insignificant after the inclusion of all controls. It is also worth noting that husbands are less likely to be the sole decision-maker in communities with matrilineal inheritance.

Table 10 further explore how decision making patterns differ between matrilocal and patrilocal communities, focusing on scenarios where one spouse dictates all decisions or is excluded from any decision-making. As shown in Columns (5) - (8) of Table 10, under matrilocality both the husband and the wife are less likely to be not involved at all in any decision-making. There exists sign of increase in combined decision-making power of the couple, though, as all other relatives combined are less involved in household decision-making in matrilocal communities.

Table 11 then presents the results for the individual items used during the construction of the aggregated decision making index. The results show a similar pattern as the aggregated outcomes, with matrilocality consistently having a positive correlation with all the items for both the husband and the wife, with the effect significant for the husband in all categories, and for the wife in child investment. Although insignificant due to how rare it is comparatively for other parties to be part of the decision-making, matrilocality is negatively associated with the involvement of other parties in all decision-making categories.

Figure A6 shows the 95% confidence intervals for estimates in Tables 7, 9, 8, and 11 with wild cluster bootstrapping to address the small number of clusters in my sample. The resulting confidence intervals are larger as expected, which attenuates the significance of the positive effect matrilocality has on both male and female decision-making. Nevertheless, the pattern remains the same: The effect is more significant on husbands than wives.

Table 9: Kinship and spousal decision-making patterns: Breakdown

	Wife Solely		Husband Solely		Couple Jointly	
	(1)	(2)	(3)	(4)	(5)	(6)
Matrilocal Co-residence index	−0.64*	−0.54	0.02	0.00	0.77**	0.69**
	(0.34)	(0.37)	(0.05)	(0.05)	(0.30)	(0.34)
Matrilineal Inheritance index	0.56	0.21	−0.11*	−0.12**	−0.19	0.14
	(0.52)	(0.51)	(0.06)	(0.06)	(0.48)	(0.45)
Indentity of Resp.	Y	Y	Y	Y	Y	Y
Region & Dili f.e.	Y	Y	Y	Y	Y	Y
Community & Household controls	N	Y	N	Y	N	Y
Outcome Mean	0.93	0.93	0.09	0.09	3.18	3.18
Obs.	476	476	476	476	476	476

Notes: The unit of observation is one per household. Standard errors are clustered at the community level.

Outcome variables are number of decision-making items out of 6 where the wife/husband is nominated as the only decision maker out of all possible options, or if both the husband and the wife and no one else are nominated as the decision-makers.

Other control variables include the standardised terrain ruggedness index from Nunn and Puga (2012), log distance to nearest coast in country, indicator for whether the community is in the hills, a dummy variable for the Loro Sae region, a dummy variable for Dili, and the maximum nighttime light level in 2022.

Table 10: Kinship and aggregated involvement in decision making

	Wife Dictates		Husband Dictates		Wife Excluded		Husband Excluded	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Matrilocal Co-residence index	−0.12**	−0.09	−0.00	−0.01	−0.11**	−0.09**	−0.16**	−0.15*
	(0.06)	(0.07)	(0.01)	(0.01)	(0.05)	(0.05)	(0.07)	(0.08)
Matrilineal Inheritance index	0.10	0.04	−0.01	−0.01	−0.02	−0.03	0.06	−0.01
	(0.08)	(0.09)	(0.01)	(0.01)	(0.04)	(0.04)	(0.10)	(0.10)
Indentity of Resp.	Y	Y	Y	Y	Y	Y	Y	Y
Region & Dili f.e.	Y	Y	Y	Y	Y	Y	Y	Y
Community & Household controls	N	Y	N	Y	N	Y	N	Y
Outcome Mean	0.14	0.14	0.01	0.01	0.16	0.16	0.29	0.29
Obs.	476	476	476	476	476	476	476	476

Notes: The unit of observation is one per household. Standard errors are clustered at the community level.

Outcome variables are dummy variables indicating if the wife/husband is the sole decision-maker in all 6 categories, or if the wife/husband is not involved in any of the 6 categories.

Other control variables include the standardised terrain ruggedness index from Nunn and Puga (2012), log distance to nearest coast in country, indicator for whether the community is in the hills, a dummy variable for the Loro Sae region, a dummy variable for Dili, and the maximum nighttime light level in 2022.

Table 11: Kinship and specific decision making items

	Child Investment			Monetary & Finance			Contraception		
	Wife	Husband	Others	Wife	Husband	Others	Wife	Husband	Others
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Matrilocal Co-residence index	0.07*	0.17**	−0.02	0.18	0.59**	−0.18	0.01	0.18*	−0.02
	(0.04)	(0.07)	(0.03)	(0.15)	(0.24)	(0.11)	(0.03)	(0.10)	(0.03)
	[0.37]	[0.23]	[0.82]	[0.63]	[0.18]	[0.45]	[0.87]	[0.41]	[0.74]
Matrilineal Inheritance index	−0.01	−0.01	−0.05	0.23	−0.06	−0.25**	0.02	−0.04	−0.02
	(0.04)	(0.09)	(0.04)	(0.16)	(0.32)	(0.12)	(0.03)	(0.13)	(0.03)
	[0.99]	[0.99]	[0.73]	[0.69]	[0.99]	[0.32]	[0.93]	[0.98]	[0.93]
Mean of outcome var.	0.82	0.70	0.22	3.00	2.44	0.87	0.88	0.69	0.12
Std. dev. of outcome var.	0.39	0.46	0.42	1.46	1.72	1.56	0.32	0.47	0.32
Obs.	474	474	474	476	476	476	308	308	308

Notes: One observation per household.
Other control variables include the standardised terrain ruggedness index from Nunn and Puga (2012), log distance to nearest coast in country, indicator for whether the community is in the hills, a dummy variable for the Loro Sae region, a dummy variable for Dili, and the maximum nighttime light level in 2022.
Standard errors are clustered at the community level and presented in parentheses. Romano-Wolf adjusted p-values for multiple testing are presented in square brackets.

8.2 Mechanism

Aside from the understanding impacts of a specific kinship tradition itself, I also attempt to distinguish the two following channels for a kinship tradition: The actual practice a tradition entails, and the norms that pass down in the community with a specific tradition.

Discussion in Section 3.1 has already outlined how different co-residence traditions could affect the positions of the wife and the husband after marriage. Yet with the rapid societal change of modernisation, younger generations from matrilocal communities start to divert from the traditional practice, seemingly in favour of more nuclear families and working in sectors other than subsistence agriculture. While the actual practice of matrilocality might be less applicable to them, growing up in matrilocal communities transmits the social norms to younger generations regardless.

If kinship traditions impact the dynamics of a married couple mainly via the actual practices, then similar outcomes should be expected from a couple who lives with the wife's family regardless of the prevalent community traditions. In other words, if the differences between matrilocal and patrilocal couples come solely from the fact that couples from matrilocal communities are more likely to be following the traditions, couples from patrilocal communities that end up living with the wife's family would behave similarly as their matrilocal counterpart.

Conversely, if kinship traditions impact the dynamics of a married couple mainly via the social norms, I expect seeing couples from matrilocal communities to show similar traits regardless of whether a couple is indeed co-residing with the wife's family after marriage.

In order to assess which channel plays a more dominant role in driving the results in the previous section, I estimate the following regression

$$Y_{ic} = \beta_1 Matrilocalilty_c + \beta_2 \mathbb{1}(Wife\ Parents)_{ic} + \beta_3 \mathbb{1}(Wife\ Parents)_{ic} \times Matrilocalilty_c + \mathbf{X}_{ic}\gamma + \varepsilon_{ic}\,, \quad (2)$$

where Y_{ic} and $Matrilocality_c$ are the same set of outcome variables and the matrilocality index as in Equation (1). $\mathbb{1}(Wife\ Parents)_{ic}$ is a dummy variable for if the couple i lives in the same community c as the wife's parent(s). I favour community-level co-residence over household-level co-residence due to the rarity of couples living with the wife's family in my overall sample. $\mathbf{X}_{ic}$ includes all the controls as in Equation (1), as well as the matrilineal inheritance index for community c, and an interaction of the inheritance index and $\mathbb{1}(Wife\ Parents)_{ic}$.

β_1 captures the difference in outcomes between the most matrilocal and the most patrilocal communities when the couple is not living with either the wife's or the husband's parents. β_2 captures the difference in outcomes between couple living with the wife's parent(s) and those not living with the wife's family in patrilocal communities. β_3 captures any extra difference between couple living with the wife's parent(s) and those not living with the wife's family in matrilocal communities. Henceforth, the sum $\beta_1 + \beta_2 + \beta_3$ gives the difference in outcomes between a household living with the wife's parent(s) in a matrilocal community, and a household not living with the wife's parent(s) in a patrilocal community, keeping everything else including the extent of matrilineal inheritance fixed.

It is worth mentioning that the results presented in this section should be viewed as suggestive evidence only. Living with parents in both patrilocal and matrilocal communities is a choice people self-select into. It should not be assumed that households with different selection into inter-generational co-residence are perfectly comparable. However, this suggestive evidence can still shed light on the mechanisms behind observed differences between matrilocal and patrilocal couples.

Table 12 reports the coefficients from estimating equation (2) on the decision making indices. The fact that the coefficients of matrilocality index are positive but insignificant is indicative of that matrilocal norms, not supported by the corresponding practices, are not sufficient to increase the involvement in household-decision making. With respect to co-residence practices, men in patrilocal communities who reside with their wives' family are less involved in household decision-making compared to if they are not living with their wives' families, indicating that previous positive effect of matrilocality on decision-making involvement is not driven solely by the action of living with the wife's family after marriage. The interactions of norm and practice, however, are positive for both wife and husband and marginally significant for the husband. Calculating the combined effect of practising matrilocality in a matrilocal community yields positive effects on involvement in decision-making for both couple which is statistically significant for the husband.

Columns (3) and (4) offer further insight on how matrilocal traditions influence the involvement in decision-making for the couple's extended families. Unsurprisingly, the wife's family are more involved in decision making when she is living in the same village as her family, intuitive as those extended family members benefit from simply being around. For the husband's extended family, their involvement in decision-making sees a decrease when the couple is living in the same village as the wife's family, but only under matrilocal traditions.

Table 12: Association between matrilocal norm & practice and decision-making

	Items involved			
	Wife	Husband	Wife's family	Husband's family
	(1)	(2)	(3)	(4)
Wife's Parents × Matrilocal Co-residence Index	0.29	1.52**	0.36	−0.72**
	(0.43)	(0.75)	(0.31)	(0.36)
Matrilocal Co-residence index	0.34	0.25	−0.12	0.27
	(0.25)	(0.48)	(0.17)	(0.18)
Wife's Parent(s) in the community	−0.16	−0.87***	0.31**	−0.11
	(0.19)	(0.27)	(0.15)	(0.16)
Combined effect: Matrilocal practice + norms	0.46	0.91**	0.54**	−0.56**
Joint test p-value	(0.12)	(0.04)	(0.01)	(0.02)
Mean of outcome var.	4.38	3.58	0.22	0.53
Std. dev. of outcome var.	2.10	2.46	1.03	1.52
Obs.	476	476	476	476

Notes: The unit of observation is one per household. Standard errors are clustered at the community level.

Outcome variables are number of decision-making items out of 6 where the party in each column is involved.

The inheritance index, a dummy for the husband's parent(s) living in the same community as the couple, and an interaction between the matrilocality index and co-residence with husband's parent(s) are also included in the regression and not reported.

Other control variables include the standardised terrain ruggedness index from Nunn and Puga (2012), log distance to nearest coast in country, indicator for whether the community is in the hills, a dummy variable for the Loro Sae region, a dummy variable for Dili, and the maximum nighttime light level in 2022.

9 Conclusion

Kinship traditions are crucial for guiding the interaction between family members. The importance is even more pronounced in the developing world, as people are more reliant on each other for social support when formal infrastructure is lacking. When two families bond via marriage, kinship norms play an implicit yet crucial role governing the interaction between the two families. While existing literature has established a link between matrilineal descent and better female outcomes, little is known about the detailed mechanism except that matrilineal descent is bundled with a multitude of practices that influences people's incentive interacting inside the household.

Using both a global dataset constructed using the DHS and primary survey data from Timor-Leste, I seek to distinguish between the effect of different kinship norms' effect on the decisions of a married couple. I specifically focus on two facets of matrilineal descent, inheritance and post-marital residence. I first show using DHS data that important heterogeneity exists between matrilineal ethnic groups in Africa, the more studied context, and those in Asia. Namely, matrilineal descent in Africa is associated with lower female involvement in household decision-making, while matrilineal descent in Asia is associated with higher female involvement in household decision-making. Furthermore, the inclusion of measure for matrilocality fully absorbs the correlation between matrilineal descent and female decision-making in the Asian sample. This

distinction indicates the necessity of analysing specific contexts, where a clear understanding of the exact practices can be achieved.

With this in mind, I next explore a specific case study of the distinction between matrilineal and patrilineal ethnic groups in Timor-Leste. Unlike the African context that is more frequently studied by the literature, matriliny in modern Timor-Leste puts a stronger emphasis on the post-marital aspect over the inheritance aspect. I first show with my data that the community level perceptions of practising matrilocality and matrilineal inheritance are associated with household level co-residence and inheritance patterns. Then I provide evidence that modern day practices of post-marital residence and inheritance are not strongly correlated with a range of geographical factors in Timor-Leste, and the community/household level socioeconomic characteristics are fairly balanced.

With this supporting the quasi-exogeneity of modern-day kinship norms, I next show correlational evidence that post-marital residence traditions in Timor-Leste play a more crucial role in the decision-making pattern of the couple: Compared with counterparts residing in patrilocal communities, wives and husbands in matrilocal communities are both more involved in their household's decision-making, with the coefficient larger for husbands. On the other hand, inheritance traditions have no significant correlation with changes in decision-making involvement. While this higher involvement of both spouses is accompanied by lower involvement of other family members, the two differences seem unable to offset each other. Further breaking down of spousal decision-making patterns provide evidence that the increase in both spouses' involvement in decision making is associated with more decisions being made by the couple jointly. Further exploration indicates that the aforementioned differences in decision-making patterns are not driven solely by the social norms behind matrilocality or the actual practice of living with the wife's family after marriage, but more of a combination of both norms and practices.

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Appendices

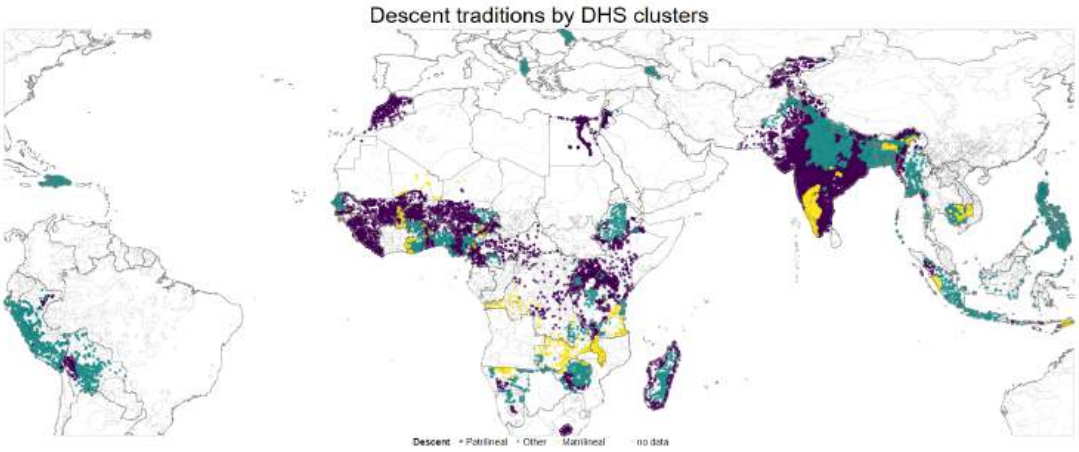


Figure A1: Distribution of descent patterns, DHS sample

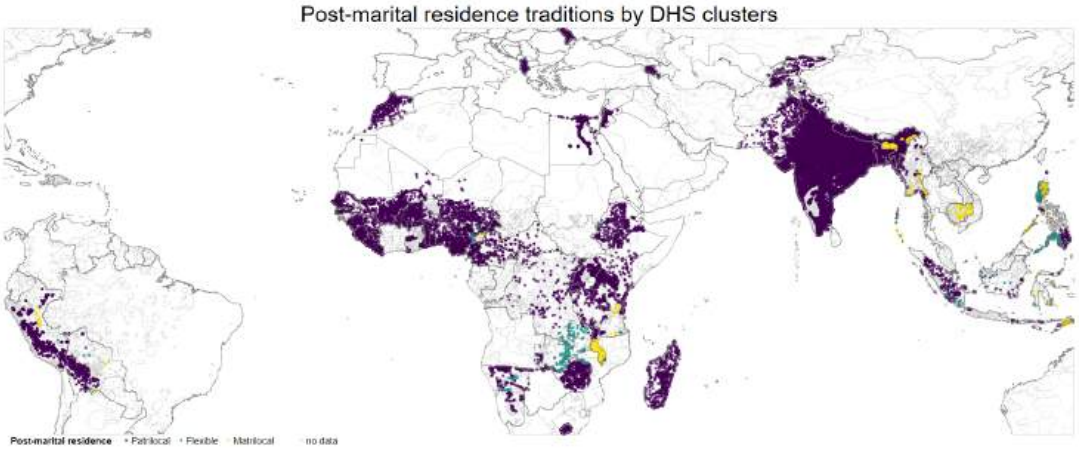


Figure A2: Distribution of post-marital residence patterns, DHS sample

Table A1: All countries and waves included in the DHS sample

Country	Wave(s)
Albania	2008-09 (DHS-V)
Armenia	2015-16 (DHS-7)
Bangladesh	2004 (DHS-IV), 2007 (DHS-V), 2017-18 (DHS-7)
Benin	2001 (DHS-IV)
Bolivia	2008 (DHS-V)
Burkina Faso	2003 (DHS-IV)
Cambodia	2000 (DHS-IV), 2005 (DHS-V), 2014 (DHS-7)
Cameroon	2004 (DHS-IV)
Central African Republic	1994-95 (DHS-III)
Congo Democratic Republic	2007 (DHS-V)
Dominican Republic	2007 (DHS-V)
Egypt	2000 (DHS-IV), 2005 (DHS-V)
Ethiopia	2000 (DHS-IV), 2005 (DHS-V)
Ghana	2003 (DHS-IV), 2008 (DHS-V)
Guinea	2005 (DHS-V)
Haiti	2000 (DHS-IV), 2005-06 (DHS-V)
India	2015-16 (DHS-7)
Indonesia	2002-03 (DHS-IV)
Jordan	2002 (DHS-IV), 2007 (DHS-V), 2017-18 (DHS-7)
Kenya	2003 (DHS-IV), 2008-09 (DHS-V)
Kyrgyz Republic	2012 (DHS-VI)
Lesotho	2004 (DHS-IV), 2009 (DHS-VI)
Liberia	2007 (DHS-V)
Madagascar	2008-09 (DHS-V)
Malawi	2000 (DHS-IV), 2004 (DHS-IV), 2010 (DHS-VI)
Mali	2001 (DHS-IV), 2006 (DHS-V)
Moldova	2005 (DHS-V)
Morocco	2003-04 (DHS-IV)
Myanmar	2015-16 (DHS-7)
Namibia	2000 (DHS-IV), 2006-07 (DHS-V)
Nepal	2001 (DHS-IV), 2006 (DHS-V), 2016 (DHS-7)
Niger	1998 (DHS-III)
Nigeria	2003 (DHS-IV), 2008 (DHS-V)
Peru	2000 (DHS-IV), 2004-06 (DHS-V)
Philippines	2003 (DHS-IV), 2008 (DHS-V), 2017 (DHS-7)
Pakistan	2017-18 (DHS-7)
Rwanda	2005 (DHS-V), 2007-08 (DHS-V), 2010 (DHS-VI)
Senegal	2005 (DHS-IV)
Sierra Leone	2008 (DHS-V)
Tanzania	2010 (DHS-VI)
Tajikistan	2017 (DHS-7)
Timor-Leste	2009-10 (DHS-VI), 2016 (DHS-7)
Togo	1998 (DHS-III)
Uganda	2000-01 (DHS-IV), 2006 (DHS-V)
Zambia	2007 (DHS-V)
Zimbabwe	1999 (DHS-IV), 2005-06 (DHS-V)

Table A2: Balance of Cultural Characteristics, DHS Sample

	Descent			Post-Marital Residence		
	Matrilineal	Other	Diff.	Matrilocal	Other	Diff.
	(1)	(2)	(3)	(4)	(5)	(6)
Dependence: Gathering (0-7 scale)	0.37	0.39	−0.02	0.46	0.39	0.07
	(0.57)	(0.89)	(0.11)	(0.78)	(0.88)	(0.18)
Dependence: Hunting (0-7 scale)	1.02	0.80	0.22*	1.04	0.82	0.22
	(0.72)	(0.89)	(0.12)	(1.08)	(0.87)	(0.18)
Dependence: Fishing (0-7 scale)	1.12	0.84	0.28*	1.29	0.86	0.43*
	(0.98)	(1.15)	(0.15)	(1.04)	(1.13)	(0.24)
Dependence: Animal husbandry (0-7 scale)	1.38	2.27	−0.89***	1.29	2.20	−0.91***
	(1.06)	(1.67)	(0.21)	(0.69)	(1.68)	(0.34)
Dependence: Agriculture (0-7 scale)	6.11	5.70	0.41*	5.92	5.72	0.20
	(1.20)	(1.82)	(0.23)	(1.91)	(1.78)	(0.37)
Sex differences: Gathering (1-6 scale)	4.94	4.88	0.06	4.80	4.90	−0.10
	(1.53)	(1.52)	(0.41)	(1.32)	(1.53)	(0.50)
Sex differences: Hunting (1-6 scale)	1.00	1.01	−0.01	1.00	1.01	−0.01
	(0.00)	(0.12)	(0.02)	(0.00)	(0.12)	(0.03)
Sex differences: Fishing (1-6 scale)	2.32	2.07	0.25	1.93	2.14	−0.21
	(1.49)	(1.44)	(0.27)	(1.22)	(1.47)	(0.39)
Sex differences: Animal husbandry (1-6 scale)	2.05	2.05	0.00	3.40	2.00	1.40***
	(1.08)	(1.28)	(0.30)	(1.71)	(1.21)	(0.40)
Sex differences: Agriculture (1-6 scale)	4.02	3.57	0.46**	3.90	3.61	0.29
	(1.34)	(1.37)	(0.22)	(1.22)	(1.39)	(0.31)
Existence of brideprice	0.54	0.74	−0.20***	0.25	0.74	−0.49***
	(0.50)	(0.44)	(0.06)	(0.44)	(0.44)	(0.09)
Polygyny	0.92	0.89	0.03	0.75	0.90	−0.15**
	(0.27)	(0.31)	(0.04)	(0.44)	(0.30)	(0.06)
First-cousin marriage allowed	0.81	0.47	0.34***	0.80	0.50	0.30***
	(0.40)	(0.50)	(0.07)	(0.41)	(0.50)	(0.11)
Agriculture Intensity (1-6 scale)	3.31	3.87	−0.56***	3.39	3.81	−0.42
	(0.89)	(1.30)	(0.17)	(1.08)	(1.28)	(0.27)
Settlement complexity (1-8 scale)	5.98	5.87	0.11	5.91	5.86	0.06
	(1.45)	(1.76)	(0.24)	(1.44)	(1.76)	(0.37)
Presence of plough	0.02	0.08	−0.06*	0.09	0.07	0.01
	(0.13)	(0.27)	(0.03)	(0.29)	(0.26)	(0.06)
Main crop: Cereal	0.72	0.74	−0.01	0.87	0.73	0.14
	(0.45)	(0.44)	(0.06)	(0.34)	(0.45)	(0.09)
Main crop: Tuber	0.25	0.16	0.09*	0.04	0.18	−0.13*
	(0.43)	(0.37)	(0.05)	(0.21)	(0.38)	(0.08)
Jurisdictional hierarchy (1-5 scale)	2.15	2.30	−0.15	1.48	2.31	−0.83***
	(0.85)	(1.14)	(0.15)	(0.59)	(1.11)	(0.23)
Moral high god	0.14	0.27	−0.13	0.00	0.27	−0.27**
	(0.36)	(0.44)	(0.09)	(0.00)	(0.45)	(0.12)
Obs.	65	456		24	498	

Notes: Columns (1) through (3) shows the difference for each characteristic between matrilineal communities and patrilineal communities.

Columns (4) through (6) shows the difference for each characteristic between matrilocal communities and patrilocal communities.

Standard deviations (standard errors for columns (3) and (6)) are shown in parentheses.

	3.84																	
	In your household, who are the main decision-maker about: (CIRCLE ALL THAT APPLY)																	
Expenditures and use of time+	**A. Respondent**	**B. Spouse**	**C. Son**	**D. Daughter**	**E. Mother**	**F. Father**	**G. Mother-in-law**	**H. Father-in-law**	**I. Brother**	**J. Sister**	**K. Brother-in-law**	**L. Sister-in-law**	**M. Grandparent**	**N. Son/daughter in law**	**O. Grandchild**	**V. Other**	**W, X, Y. Special Codes**	**95. Not applicable**
g. Your children's education and health	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	V	W	95
i. Large expensive purchases for the household (refrigerator, TV, ...)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	V		
j. Giving money to your parents/family	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	V	X	95
l. Gifts for parties/weddings	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	V		
m. How money from monthly government payments is spent? (bolsa de mae, pensao de veteranos,...)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	V	X	95
n. Money for monthly savings	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	V	X	95
r. Whether you and your spouse use contraception. INTERVIEWER NOTE: ASK FOR COUPLES USING AND NOT USING CONTRACEPTION.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	V	Y	95

Special codes
W. Do not have children
X. Never used money for this purpose.
Y. Never consider the use of contraception.
95. Not applicable

Figure A3: Format of the Decision-Making Module in the Timor-Leste Survey

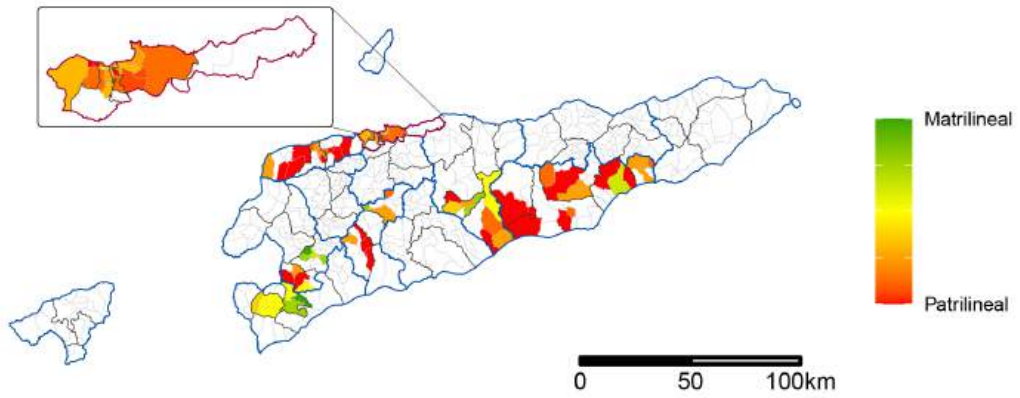


Figure A4: Geographical Distribution of Inheritance Traditions, Timor-Leste

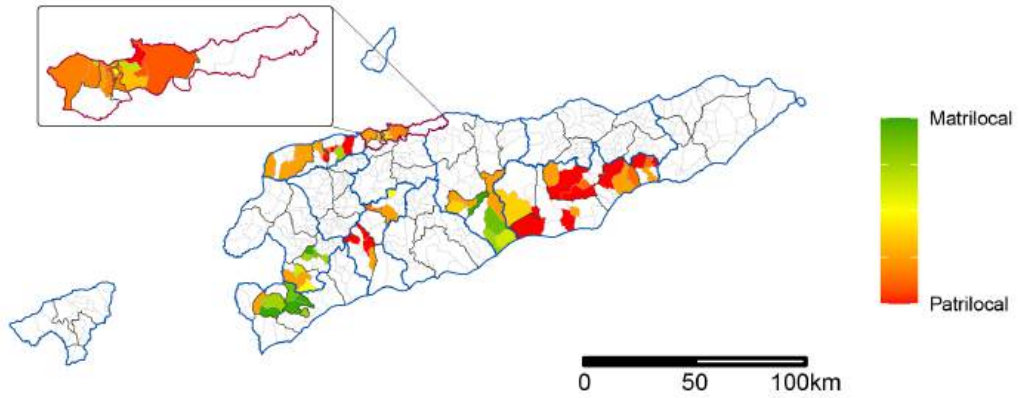
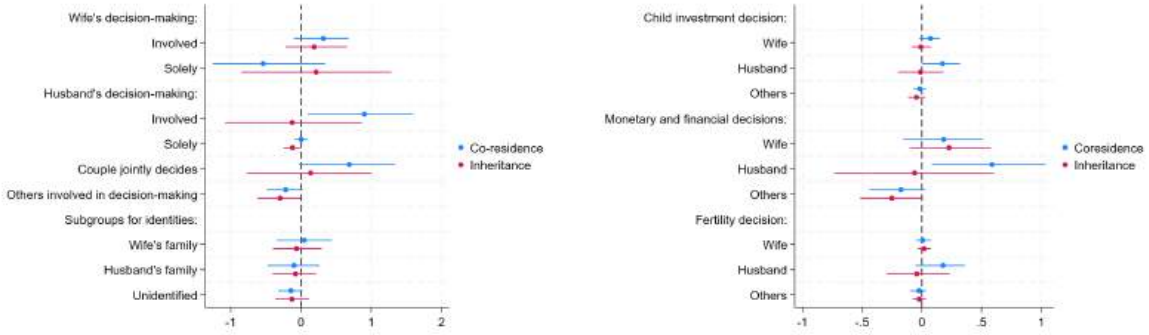


Figure A5: Geographical Distribution of Co-residence Traditions, Timor-Leste

Note: The top-left box shows an enlarged depiction of the Dili municipality (Highlighted in red borderlines). District borders are shown with solid blue lines and sub-district borders are shown with solid grey lines.



(a) By parties

(b) By categories

Figure A6: Wild cluster bootstrapping 95% CI for decision-making estimates