

Kinship Institutions and Sex Ratios in India⁺

Tanika Chakraborty

Washington University in St. Louis

and

Sukkoo Kim

Washington University in St. Louis and NBER

July 2009

⁺We thank Bob Pollak, Karen Norberg, David Rudner and seminar participants at the Work, Family and Public Policy workshop at Washington University for helpful comments and discussions. We also thank Lauren Matsunaga and Michael Scarpati for research assistance and Cassie Adcock and the staff of the South Asia Library at the University of Chicago for their generous assistance in data collection. We are also grateful to the Weidenbaum Center and Washington University (Faculty Research Grant) for research support.

ABSTRACT

This paper explores the relationship between kinship institutions and sex ratios in India at the turn of the twentieth century. Since kinship rules vary by caste, language, religion and region, we construct sex-ratios by these categories at the district-level using data from the 1901 Census of India for Punjab (North), Bengal (East) and Madras (South). We find that the male to female sex ratio varied positively with caste-rank, fell as one moved from the North to the East and then to the South, was higher for Hindus than Muslims, and was higher for the northern Indo-Aryan rather than the southern Dravidian speaking people. We also find that the female deficit was greater in areas with higher rainfall and alluvial soil. We argue that these systematic patterns in the data are consistent with variations in the institution of family, kinship and inheritance.

INTRODUCTION

Ever since Sen (1990) proclaimed that more than 100 million women are missing around the world, the case of “missing women” has generated considerable interest. In contrast to Europe and North America where the male to female sex ratio is 0.95, which favors the presence of females, the ratio in many Asian countries in India, China, Taiwan, Hong Kong and South Korea is as high as 1.06, significantly favoring the presence of males.¹ Moreover, in many of these countries, the male to female sex ratio seems to have risen over the second half of the twentieth century with development, declining family size and the advent of modern technologies which facilitate self-selective abortion or sex-selection (Park and Cho (1995)).

In India, and probably elsewhere in Asia, however, the case of “missing women” has deep historical roots. While it is difficult to identify when the problem of “missing women” first arose in India, British officials were well aware of the problem in North India during the mid-nineteenth century.² More reliable evidence from the British India censuses conducted during the late nineteenth century shows that the problem of “missing women” was clearly a northern rather than a southern or an eastern problem. The male to female sex ratio was highest in northern regions such as Punjab, relatively equal in eastern regions such as Bengal, but was relatively low

1 Sex ratio is determined by biological as well as economic and cultural factors. From a biological perspective, scholars generally believe that biology favors the births of males, but the subject is under considerable debate. After birth, because females possess biological advantages in resisting disease, they are more likely to survive than males given equal levels of nutrition and health care. Thus, for any cohort, sex ratios at birth favor males, but favor females over time. Because Europe and North America seem to follow this pattern, scholars tend to treat the trends in sex ratios in these places as largely determined by biological factors. In many parts of Asia, however, where the male sex-bias is prevalent, biological factors are likely to play a minor role in explaining sex ratios. It is beyond the scope of this paper to summarize the large emerging literature on sex ratios, but we refer the reader to Norberg (2005), Qian (2006), Kishor (1993), Murthi et. al (1995), Dyson and Moore (1983), among others.

2 In North India, the British officials suspected that the Rajputs were practicing female infanticide during the mid-nineteenth century (Parry (1979), Miller (1981)). In 1852, data show that among some of the highest royal clans, the sex ratios of boys to girls ranged from 2.5 to 4.6 (Parry (1979, 216)).

and favored women in southern regions such as colonial Madras (Visaria (1961), Dyson and Moore (1987)).³

Although the regional difference in sex ratios has narrowed between the northern and southern regions over the twentieth century, the narrowing is largely due to the convergence of southern sex ratios toward the northern figures. For all of India, the overall sex ratio has risen from 1.03 to 1.07 between 1901 and 2001. Over this period, however, the sex ratio in the historically most masculine Punjab region in the North remained significantly higher than the national average as it ranged from 1.13 to 1.28. While some regions in the South such as Kerala continue to exhibit a significant feminine bias, the figure in Tamil Nadu converged toward those of the North as it went from 0.96 to 1.01 over the twentieth century.

Because the problem of “missing women” in India has existed for more than a century and a half and is an endemic and persistent feature of the Indian society, there are strong reasons to believe that the causes of “missing women” are both historically determined and slow-moving. For many scholars, the family and kinship systems, which often determine the rights of women in traditional societies, are the most likely factors for the historically persistent pattern of “missing women” in India. In a well cited paper, Dyson and Moore (1987) argue that northern kinship system based on village exogamy led to lower autonomy of women, lower age at marriage, higher fertility, higher childhood female mortality and higher sex ratios.⁴ By contrast,

3 For patterns of sex ratios around the world, see Coale and Demeny (1983) regional model life tables.

4 Dyson and Moore (1987) argue that in North India, village female exogamy, male household cooperation, male only property inheritance, marriage based on inter-group alliance and low parental benefit from daughters all conspired for poor treatment of girls and women. Indeed, the reduced autonomy of women under the North Indian kinship system has been a persistent theme in the Indian anthropological literature (see Mandelbaum (1970)). Argarwal (1994) explores the importance of kinship and inheritance systems on the autonomy of women in India. She finds that female autonomy, sexual freedom, ownership rights in land were all closely correlated with kinship and inheritance systems where women’s rights were stronger. For the post-independence period, Kishore (1993) finds that patrilocal exogamy, measured by the marriage distance of women, is positively correlated with female to male child mortality ratio. Since identifying the causal kinship factors is extremely challenging, Foster and Rosenzweig (2001) attempt to identify the importance of patrilocal exogamy on sex ratios by using India’s green

the southern kinship system based on cross-cousin marriages increased the autonomy of women and contributed to sex ratios which favored females rather than males.

In this paper, we delve more deeply into the relationship between kinship and sex ratios by studying sex ratios by caste, language, religion and region at the turn of the twentieth century in India.⁵ From a kinship perspective, the examination of data by caste is essential since castes at the jati-level were endogamous and because kinship behavior was enforced along caste lines.⁶ As the castes were further distinguished by social hierarchy, occupation and income, data by castes also provide useful information on whether kinship behavior varied by status and income. We also explore sex ratios by language and religion since marriage and kinship relationships are likely to differ across people who speak different languages and practice different religions. Language not only facilitates communication, but it often codifies norms of kinship behavior.⁷

revolution as an exogenous technological shock. Since sons contribute to parental incomes and daughters do not, local advances in agricultural productivity are likely to favor boys; however, they also show that in a general equilibrium framework with a marriage market, a productivity increase may also improve the chances of girls as returns to human capital of women increases. Das Gupta et. al (2003) argue that the commonalities in the kinship systems in India, China and Korea help explain the persistence of low sex ratios in these countries. Finally, according to Anderson (1986), the European Fertility Project consistently finds that nonsocioeconomic factors such as religion, language, ethnicity and region explain much of variability in marital fertility and other demographic variables (see additional papers from the Princeton European Fertility Project in Coale and Watkins (1986)).

⁵ Miller (1981) represents one of the few studies which examine the link between caste and sex ratios. She argues that upper castes were likely to have lower sex ratios based on their history of female infanticide and the pressures on property-holding families to bear sons as heirs. Based on the examination of 12 major castes in the United Provinces and Madras at the aggregate provincial level in 1931, she finds three patterns of juvenile sex ratios: northern propertied castes had extreme masculinity, southern propertied castes exhibited equality or femininity, and that all-India unpropertied castes exhibited masculine sex ratios. However, she does not explore the link between caste and kinship systems.

⁶ Blunt (1931, p.48): "Caste endogamy is absolutely rigid and immutable, permitting no open evasion. Sometimes even high castes are compelled by a lack of women to make a practice of taking low castes as wives: but in such cases both the husband and his caste connive at their own deception, and if they are willing to ignore custom, are very unwilling to be generally known."

⁷ For American anthropologists such as Morgan (1871) and Kroeber (1909), language reveals the nature of social and kinship organization. In the South where cross-cousin marriage is practiced, Trautman (1993, p.80-81) writes: the "Tamil [word] *māman* is mother's brother, father's sister's husband, and spouse's father, a geneological relationships which are equated by a presumption that every marriage is between cross-cousins... The Indo-Aryan [northern] scheme could not be more different. Hindi *māma*, almost certainly a cognate of the Tamil word, also means mother's brother, but Hindi has quite separate terms for father's sister's husband (*phūphā*) and spouse's father (*sasur*), and the remaining contents of this generation are differently ordered than in the Tamil... [T]he rules of marriage, the Indo-Aryan system frames these in terms of a notion of proximity, a kind of law of prohibited degrees rather like our own: near kinsmen may not marry. In Dravidian, on the other hand, it is not proximity but

Religious institutions also imposed strong restrictions on kinship and inheritance rules. Finally, since regions possess different factor endowments, economic structures and political institutions, marriage and kinship behavior may differ by geography.

We construct our data from the 1901 Census of India for the provinces of Punjab (North), Bengal (East) and Madras (South). These three provinces were chosen as they represent the three major regions in India. Using detailed sub-caste or jati-level data for each province at the district level, we find that sex ratios differed significantly by caste, language and region. The most significant feature of the data is the variation in sex ratio by region. Sex ratio was the highest in the North followed by the East and then the South where the sex ratio favored females. This regional pattern was extremely robust. The pattern was observed even after controlling for district fixed-effects and when we control for differences in caste composition. In addition, even for each caste, language and religious categories, the same regional pattern emerged. Sex ratio also varied systematically by caste rank, language and religion but less so with soil and climate. The ratio varied positively with caste-rank, was higher for Hindus than Muslims, was higher for the northern Indo-Aryan rather than the southern Dravidian speaking people, and was higher and in areas with higher rainfall.

While it is difficult to distinguish between the economic and cultural factors, we believe that that these systematic patterns in the data seem consistent with variations in the institution of family, kinship and inheritance. Because caste rank is highly correlated with land ownership and income, sex ratio variation along caste lines are consistent with both economic and cultural factors. However, the extremely robust regional variations in sex ratios seem much more consistent with regional variations in kinship institutions rather than economic factors. For example, among those of similar castes, sex ratios are consistently higher in the North and the

kind of relationship which constrains marriageability.”

East compared to the South, even after controlling for geographic factors which should capture variations in agricultural practices across the regions.

This paper is organized as follows. In section II, we present our theoretical framework for studying the relationship between family and kinship institutions and sex ratios. We also examine the relationship between kinship institutions and gender bargaining power in India. In section III, we present data on sex ratios by caste, religion, language, and regions for three provinces. In section IV, we use a regression framework to estimate the impact of these variables on sex ratios, controlling for a variety of factors including district-level fixed-effects. In section V, we explore the origins of the regional divergence of family and kinship institutions in India. In section VI, we conclude with a short summary.

A FRAMEWORK FOR STUDYING KINSHIP INSTITUTIONS AND SEX-RATIOS

Pre-modern India can be usefully characterized as a “natural state.” In a natural state, as defined by North et. al (2006), the political elites form alliances with economic elites to create rents by limiting economic entry and then use those rents to stabilize the political system to limit violence and provide order.⁸ In India and elsewhere, the elites, in addition to their economic and military resources, used religious and kinship institutions to establish informal norms and beliefs to define property rights and resolve problems of cooperation and conflict (Greif (2004)). Because the formal bureaucratic organization of the elites was relatively limited in India, the

⁸ In India, the political elites, the Royals, the Mughals, and even the British, formed alliances with local landowning elites. In return for land taxes from landowners, the political elites provided order and stability. However, India was characterized by many “natural states.” Since the levels of military and bureaucratic powers of the political elites varied considerably over time and across space, natural states varied in their geographic scope and in their nature of alliances between the political and economic elites. While India under British rule became more centralized over time, India at the turn of the twentieth century was very much organized as a natural state (Kapur and Kim (2006)).

informal institution of religion, caste, and kinship played a paramount role in the lives of local peasants.

Importantly, the family and kinship institutions possessed significant distributional consequences for different members of society, especially between men and women (Stone (1998)). In Europe, a kinship system based on bilineal descent, nuclear family and an inheritance system which gave women the right to inherit property contributed to a relatively strong autonomy of women. In many parts of Asia, however, a kinship system based on patrilineal descent, the importance of joint family, inability of women to inherit property, restrictions on widow remarriage, and severe restrictions on women's sexual behavior and general conduct all contributed to relatively weak autonomy of women. Because the distribution of family resources between the sexes depends on the bargaining power of men and women within marriage and kin-group, the kinship systems are likely to influence sex ratios.⁹

In Table 1, we summarize our proposed relationship between Indian kinship institutions and women's' internal and external threat points as motivated by the models of family bargaining. In many instances, we believe that the kinship institutions reduced both the internal and external threat points of women simultaneously. We refer the reader to McElroy (1990) for a comprehensive treatment of the empirical content of family bargaining model, including the comparative statics results for pure threat point shifters.

Kinship Institutions and Female Bargaining Power

9 There are two types of family bargaining models: the separate spheres model (Lundberg and Pollak (1993) and the divorce-threat model (Manser and Brown (1980) and McElroy and Horney (1981)). In India, where divorce is highly restricted, especially for the higher castes, the divorce-threat model in which the threat point, the maximal level of utility attainable outside of marriage is determined by opportunities after divorce may be less applicable. By contrast, in the spheres bargaining model, the threat points are internal to the marriage and are determined by the control of resources within marriage. For empirical evidence on the correlation between female bargaining power and the distribution of family resources which affect the relative health, nutrition and mortality of female members of the family, see Thomas (1990, 1995), Hoddinott and Haddad (1995) and Lundberg, Pollak, and Wales (1997).

Kinship institutions, by placing restrictions on marriageable partners, rules of descent, and rules of residence, define the nature of the bargaining power among different family, kin-group and endogamous members. Moreover, numerous scholars believe that these traditional kinship institutions play a major role in determining the bargaining power of women which in turn affect the health and economic welfare of women and female children of developing countries such as India (Miller (1981), Agarwal (1994, 1997), Folbre (1997) and others).

Anthropologists believe that the bargaining power of women is lower in patrilineal, patrilocal as compared to matrilineal, matrilocal societies.¹⁰ In patrilineal society, since consanguine women cannot reproduce the lineage, they are less valuable as allies; however, in matrilineal societies, since sisters reproduce lineages, they are likely to form strong bonds.¹¹ Women's bargaining power is also likely to be lower in patrilocal rather than in matrilocal societies. When residence is patrilocal, women tend to live further away from their natal homes and have less support of her natal family as compared to when residence is matrilocal.¹²

Women's bargaining position seems to be better in societies where cross-cousin marriages are allowed as compared to societies which restrict marriages to non-kins. Since women marry into familiar kin-networks rather than to strange families, they are likely to have more allies. Women's property rights seem to be positively correlated with marriages where

10 In anthropology, there are two major themes: descent and alliance (Fox (1967)). The descent perspective, identified with the British school of social anthropology, sees kinship as the primary mechanism for recruiting property-owning, residential and political groups. The alliance perspective, identified with Claude Levi-Strauss, emphasizes the role of alliance formation through the trade and distribution of women. The bargaining power of family members are likely to be influenced by the restrictions on the alliance formation within and across families and kin-groups as defined by different kinship systems. Also see Stone (1997).

11 Thus, according to Fox (1967), the essence of the patrilineal society is to 'gain control over the wife,' whereas for the matrilineal society, it is to 'hang onto sisters.' In patrilineal systems, men attempt to gain rights over sexual, domestic and reproductive services of the wife; in matrilineal systems, men do not have an incentive to do so since they cannot control lineage reproduction.

12 Most patrilineal societies are patrilocal, but there seems to be a greater residence variation for matrilineal societies. In the latter societies, Fox (1967) argues that women's bargaining power is higher in matrilocal as compared to avunculocal societies where the married couple resides with the man's mother's eldest brother. The alliance group in matrilocal societies is mother-daughter-sister whereas in the avunculocal societies, it is brother-sister-nephew.

women are in close physical proximity to their natal home which is often the case in cross-cousin marriages (Agarwal (1994)). In addition, in cross-cousin marriages, due to the double-descent system, family property always remains within the kin group even if women are granted rights to property as the joint family property is not threatened to devolve with marriage.

Kinship Institutions in India

In India, kinship organization and female autonomy also varied by caste, language, religion and region (Karve (1953)). While scholars continue to debate as to why the institution of caste arose and persisted over time, the caste, with few exceptions, was an endogamous group whose members were often related to each other by ties of blood or marriage.¹³ Within any given locality, endogamous caste leaders or caste assemblies enforced the family, marriage and kinship norms.¹⁴ In an agricultural village economy where land was important, the higher castes owned much of the land whereas the lower castes were artisans, agricultural laborers, and service providers. The kinship ideals are held by all groups, but have more influence among the higher castes (Mandelbaum (1970)).¹⁵ In addition, a woman's bargaining position within a family or kin-group is thought to have been higher among the lower rather than the higher castes.¹⁶

13 According to Lal (2005), the caste system arose in India around the end of the sixth century because it provided an enduring political and economic solution for the Aryans who migrated and settled in the Indo-Gangetic plains. Because the Aryans faced abundant land but shortage of labor, the caste system provided a method of incorporating native tribes as agricultural laborers. Most importantly, it was a decentralized system of control based on local enforcement through the endogamous castes. More recently, Freitas (2006) argues that the caste system persisted because it facilitated trade in services as it lowered the costs of sharing information and enforcing service contracts. Castes may also persist because they provide mutual social insurance (Munshi and Rosenzweig (2005)).

14 Dasgupta (1986), in his study of the lower caste bagdies of villages in Bengal, report that caste councils dealt with various offenses including marriages and sexual relationships which deviated from kinship norms. While caste kinship rules are not entirely rigid, deviants are punished either through fines or ex-communication. Of the 560 marriages for which data were collected in 1960-1961, only 23 deviated from kinship norms.

15 Kolenda (1987) investigates the variations in the prevalence of joint-families by caste and region. She finds that the share of families organized as joint families is positively correlated with the prohibition of legal divorce initiated by the wife, the dowry system, control of land and resources by patrilineages as well as few other factors. In general, these factors are negatively correlated with caste rank so that the prevalence of joint families are least observed among the lowest caste groups.

16 Gough (1956) argues that in a Tamil village in Tanjore, the women of the low castes, especially the adi dravidas, were almost equal to men. Unlike the local Brahmans, their patrilineal group is very shallow, residence is not strictly patrilocal, women are economically independent, receive bridewealth at marriage, and break the authority of the

The fact that parents had significantly greater bargaining power over their children in India also contributed to the lower bargaining power of women. Throughout most of India, a woman's social status and identity was significantly correlated with marriage and most marriages were arranged by parents. Forced, arranged marriages generally lowered the bargaining power of women relative to parents and extended kin-group (Mathur (2007)). In addition, the extremely low age of Indian women at marriage, which ranged from 11.4 to 15.3 in 1901 (Agarwala (1951)), also contributed to their lower bargaining power.

From a regional perspective, scholars believe that the most distinctive difference in kinship organization was between North and South India (Karve (1953), Dyson and Moore (1987)).¹⁷ Because the northern system was patrilineal and patrilocal whereas the southern system was based on cross-cousin marriages, it is generally believed that women's autonomy was significantly lower in the North than in the South. In addition, a woman's position was further compromised in the North by the gotra-system (or the marriage avoidance with sapinda-kin), hypergamy, early arranged marriages, village exogamy, restrictions on daughters marrying into same villages, levirate, restrictions on widow remarriage, importance of joint family, the strict restrictions on the behavior and movement of women, and the severance of relationship between the women and her natal family.¹⁸

fathers shortly after puberty. In these low caste families, rank is underplayed, there is equivalence of brothers since they do not fight for inheritance and women are not cut-off from their natal families and the residence unit is more likely to be an elementary- rather than a joint-family. By contrast, the Brahman women could not initiate divorce and could not work outside of the home. Also see (Kolenda (1987), Mandelbaum (1970), Miller (1981)).

17 In her important study, Karve (1953) identified four regional systems - northern, central, eastern and southern - which overlapped with the dominant languages in these regions - Indo-Aryan (north and central), Austro-Asiatic (east) and Dravidian (south and central). The most distinctive difference in kinship organization occurred between north and south as close-kin marriages were forbidden in the former but allowed in the latter. Yet, despite this significant difference, scholars such as Dumont (1983) and Trautmann (1981) see many structural similarities between the northern and southern kinship systems (Uberoi (1993)). The central region exhibited a mixture of northern and southern systems whereas the less important eastern system was identified with tribal peoples such as the Mundari.

18 In the North, high castes in good position are bound by the rule of Sapinda which prohibits marriage of two persons who have a common ancestor not more than 6 degrees removed on the male side or 4 degrees removed on

The southern kinship system varied more considerably. While most societies were patrilineal and patrilocal, some such as the Nayars in Kerala were matrilineal and matrilocal. However, the prevalence of close-kin marriages significantly increased the autonomy of women in the South. For large numbers of castes, a man's marriage preference was as follows: first, his elder sister's daughter; second, his father's sister's daughter; and third, his mother's brother's daughter. Marriage between close-kin narrowed the circle of kin-groups and married women lived near their natal families and continued to have close relationships with them after marriage. While levirate was prohibited, widow remarriage, except for the Brahmins, was allowed.

The regional differences in inheritance practices also provided lower access to property for women in the North than in the East and the South (Agarwal (1994)).¹⁹ In North India, according to the customary Hindu inheritance laws found in the ancient legal treatises, the Dhamashastras and their commentaries, except for the succession of kings, inheritance was multigeniture rather than primogeniture.²⁰ Under the Mitakshara legal doctrine which held sway in most of this region, sons became equal co-parceners of the joint family or ancestral property (as opposed to self-acquired individual property) at birth whereas daughters were only entitled to maintenance and marriage expenses.

the female side. Since relatives were likely to be in closer proximity, the Sapinda rule increased the distance of marriage for brides. For lower castes, the rules were less restrictive and followed the avuncular rule which prohibits unions of paternal and maternal uncle and aunt. It bars marriages between any first-cousins or between a woman and any descendant of any of her first cousins (Blunt (1931, p.60)). Also see Miller (1954) and Gould (1960) for discussion and evidence of marriage distances of high and low castes.

19 Kolenda (1987) argues that the regional variations in inheritance laws had a significant impact on when joint families dis-integrated. In the South, the break-up occurs when sons, shortly after marriage, seek their shares of land and establish separate nuclear families; in the East, the break-up occurs upon the marriage of brothers or upon the father's death; in the North, however, the joint family of brothers tended to be much more stable. Thus, the existence and stability of the joint family was the strongest among the northern Rajputs, Thakurs and the Jats. For empirical analysis on joint family structure and household partitions, see Caldwell, Reddy and Caldwell (1984), Khuda (1985) and Foster (1993).

20 The two legal treatises are based on the Yajnavalkya-smṛti. The Mitakshara, written by Vajñanesvara around the 11th century is an elaborate commentary on Yajnavalkya-smṛti; however, the Dayabhaga was written sometime after the 11th century by Jimutavahana.

In the East, however, under Dayabhaga law adopted in Bengal and Assam, sons did not acquire rights to property by birth but only at the death of the father. As a result, fathers possessed significant bargaining power over their children as he could control the size and share of property obtained by sons.²¹ For women, their rights to property were slightly more favorable under Dayabhaga as a chaste widow in the absence of sons inherited the rights to manage the property although she was not given the rights to alienate it. While property rights of women were limited throughout most of India including the South, there were at least three regions in South India where pockets of communities practiced matrilineal and bilateral inheritance.²²

While some scholars such as Goody (1973), Tambiah (1973) and Botticini and Siow (1993) interpret dowries as a form of pre-mortem inheritance for women, Agarwal (1994) argues that only a handful of groups in South India practiced dowry in this form. Miller (1981), based on a survey of ethnographic evidence, finds that while dowry was practiced throughout India, its practice was more prevalent in the North and among the propertied classes. In addition, in the North, Agarwal (1994) writes that the dowry was transferred to the groom's parents whereas in the South, it remained the property of the wife.

Finally, there were significant differences in kinship and inheritance rules between the Hindus and Muslims in India. The Muslim kinship system shared similarities with the southern Dravidian system in that close cousin marriages were preferred and women were allowed to inherit property.²³ However, male-biased social hierarchy also existed in Muslim families as a

21 The doctrine of customary right of property by birth limited the father's power over property. Jimutavahana favored smṛti-texts which gave sole property rights to the father (Sontheimer (1977)).

22 In South India, Nangudi Vellalars of Tamil Nadu practiced bilateral inheritance and several groups including the Nayers and Tiyyars of Kerala, and the Mappilas of north Kerala practiced matrilineal inheritance. In Northeast India, the Garos, Khasis and the Lalungs also practiced matrilineal descent (Agarwal (1984)).

23 Bittle (2002) reports that 23% of Muslims in India practiced consanguineous marriages in 1992-1993. For other religious groups, the figures were 17.1% for Buddhists, 10.6% for Hindus, 10.3% for Christians, 4.3% for Jains, and 1.5% for Sikhs.

son inherited twice as much a daughter, a brother twice as much as a sister, and a husband twice as much as a wife (Nasir and Kalla (2006)).

DATA ON SEX RATIOS BY CASTE, LANGUAGE, RELIGION AND REGION IN INDIA

This section presents the data on sex ratios by caste, religion, language and regions for three British India provinces – Punjab (North), Bengal (East) and Madras (South) – using the 1901 Census of India. While the British collected data on castes in the earlier censuses of 1865, 1872 and 1881, the caste definitions were based on the four-fold Varna categorization of Brahmans, Kshatriyas, Vaishyas and Sudras.²⁴ In 1891, however, due to the influence of Nesfield (1885), Ibbetson (1881) and others, census officials collected detailed caste data at the ‘jati’ level.²⁵ The ‘jati’ sub-caste definitions used between 1891 and 1931 are useful for our study because a ‘jati’ is endogamous.

Since data on population by caste, language and religion are available only for the aggregate female and male persons rather than by different age-groups, we construct sex ratios as the male to female ratio. Using the anthropological documents of the British Census we categorize the numerous sub-castes into broad social or occupational categories: religious, landowner, cultivator, professional, trader, artisans (and service), agricultural laborer, and unknown (see Appendix I for detailed classification).²⁶ Similarly, using the 1901 Census reports and various other sources we classify the different languages into the following categories:

24 Census procedure for collecting data on caste changed from decade to decade. In 1881, the census enumerators were instructed to collect data for 207 castes for whose populations were 100,000 or more. Castes were organized under the varna classification, but were also grouped into various occupations.

25 Two important views of castes emerged in India. Risley (1892) and Thurston (1909) held a racial view whereas Crooke (1896), Ibbetson (1916), Logan (1887), and Blunt (1931) held an occupational view.

26 For Punjab, we follow Ibbetson (1916); for Bengal, Risley (1892); for Madras, Thurston (1909).

Aryan (North, East, South), Dravidian, Munda, Tibetan, Hilly (North, East), Tribal (North, East, South), foreign and unknown (see Appendix II). For religion, we examine sex ratios by Hindus and Muslims as the other religious categories were sufficiently small.

Since sex ratio is measured using the aggregate population figures for females and males at the district level, it can be influenced by a variety of factors. Visaria (1961) presents a detailed investigation of the causes of variations in sex ratios found in the Censuses of India between 1901 and 1941. Based on a rich array of direct and indirect evidence, Visaria concludes that the root cause of high male to female sex ratio is most likely due to female disadvantage in mortality after birth.²⁷ While the data on age-specific death rates indicate that female disadvantage is concentrated between the ages of 15-40, the data also show that the regional differences in male/female mortality is concentrated in the early ages between 0-15.

Table 2 presents the descriptive statistics for the population of three provinces under review. The average district population was around 0.4 million in Punjab, 1.4 million in Madras, and 1.5 million in Bengal.²⁸ Population density was highest in Bengal with 413 people per square mile, followed by Madras, 270, and Punjab, 179. In terms of the religious diversity, Punjab's population was composed of 42% Hindus and 50% Muslims whereas the figures for

27 Visaria (1961) systematically investigates the various potential determinants of the aggregate population sex ratios including the omission of females from the censuses, migration, differentials in sex ratios at birth, and differentials in sex ratios after birth. First, based on special censuses conducted in regions where reported sex ratio was particularly low, there is considerable evidence that the sex ratio is not caused by under-reporting of females. Second, given that internal migration in India was extremely low, migration is unlikely to significantly affect aggregate population sex ratios. For example, in Punjab, in-migration from villages of the same district constituted only 2.8% of total population whereas in-migration from other districts constituted a mere 0.05%. Moreover, migration was evenly distributed between female and male migration (see Report on Census of India 1901, Punjab). Third, while birth registration data seem to suggest that there are significant variations in sex ratios at birth, Visaria concludes that these differences are likely caused by biases in registration rather than in actual births. In particular, in maculine biased regions, births of girls are likely to be under-reported. When sex ratios are calculated using live birth records from hospital centers, the regional variation in sex ratios diminish considerably. Finally, at least for Punjab, there seems to be reliable evidence that female disadvantage in mortality is experienced throughout the entire lifespan. While it is difficult to determine the exact causes of excess female mortality, Visaria considers the effects of childbearing, famines and diseases such as tuberculosis.

28 The summary statistics for Punjab include North West Frontier Provinces although in our analysis we focus only on the part of Punjab in the British territory.

Bengal were 63% and 33%, respectively, and for Madras was 89% and 6%, respectively.²⁹ In terms of caste and language, however, Punjab was culturally more homogenous than the other two regions. Punjab had significantly fewer languages and caste groups than Bengal and Madras. Although Bengal had a much larger number of castes, it is likely that Madras was culturally more varied as a region, its people spoke 75 different languages as compared to 45 for Bengal. However, within any given district, the average number of different languages spoken was slightly higher for Bengal than for Madras.

As noted by numerous writers, India was a land of agricultural villages. In 1901, there were 32,663 villages in Punjab, 203,476 villages in Bengal and 54,605 villages in Madras, and each village contained about 622, 367 and 706 persons, respectively (Table 2). While village-level data on caste are unavailable for 1901, anthropologists have conducted numerous village-level studies during the mid-twentieth century (see Appendix IV in Chakraborty and Kim (2008)). These studies provide a useful picture of caste organization at the village-level. In the villages in all regions, the higher castes own most of the land, but the landowning castes differ by region. In the North, the landowning castes are dominated by Rajputs, Jats, and Thakars; in the East and the South, the landowning castes are dominated by Brahmans. In addition, especially in Punjab, the landowning castes significantly outnumber other castes in their villages whereas in the East and the South, the upper castes are significantly outnumbered by those in the middle and lower castes.

Because the caste categories, at least from an occupational point of view, are not strictly comparable across regions, we must exercise some caution when interpreting the variations in sex ratios by castes. For example, the composition of the religious and landowning castes differ

²⁹ Other religious groups - Sikhs, Christians, Jains, Parsis, Buddhists, Jews and Tribals - formed a very small minority in most regions.

somewhat across the regions. In the East and the South, as noted above, the Brahmans, who have been included in the religious category in our study, also owned significant amounts of land but not in the North. As a result, the landowning castes in the North (Rajputs and Jats) are likely to be somewhat higher in rank than the landowning castes in the East (Sadgop, Chaudhuri, Ahir etc.) and South (Vellala, Lingayats etc.). Also, some occupational castes such as fishers and traders are prevalent in the South but not in the East and the North. Nevertheless, these broad caste categories should provide a useful picture of sex ratios by kinship, status and occupation.

Table 3 presents data on sex ratios by caste constructed at the district-level for Punjab, Bengal and Madras. Despite some concerns on the comparability of the caste categories across regions, the data show a remarkable pattern of sex ratios by caste and region. Sex ratios varied systematically by both caste rank and by region. For all regions, sex ratios improved in favor of females as one moves along the caste rank from the higher landowners to lower ranking menial service castes. There were on average 1056 and 1067 males per 1,000 females for religious and landowning castes respectively; however, for artisans and service workers, the respective figures were 1013 and 974. Within each region, sex ratios also varied positively with caste rank. Sex ratios were significantly higher for the religious and landowning castes but significantly lower for the artisans, laborers and service castes.

The variation in sex ratios by region was even more pronounced. Within each caste category, sex ratio declined systematically as one moved from the North (Punjab) to the East (Bengal) and then to the South (Madras). For the religious caste, males per 1,000 females declined from 1216 in Punjab to 1025 in Bengal to 996 in Madras; similarly, for the service caste the figures went from 1145 in Punjab to 967 in Bengal to 890 in Madras. Thus, for the study of sex ratios in India, it is important to study the data by castes.

For Bengal, based on Risley's (1892) ethnographic evidence, we investigated whether there was a systematic link between dowry and sex ratios. Risley's volumes contain information on the practice of dowry or bride price for about 111 castes.³⁰ We find limited correlation between caste rank and the practice of dowry suggesting only a partial correlation between dowry and sex ratios. While 100% of the religious and professional castes practiced dowries the frequency of dowry practice among the other higher castes such as landowners, cultivators and traders and the lower castes was relatively low. In addition, all of the tribal castes in the sample practiced bride price but their sex ratio was lower than that of the cultivating and professional castes.

Table 4 presents the population sex ratios by religion for the three regions. The data suggest that regional differences in sex ratios seem more important than the religious differences. For each religious group, sex ratio rises from Punjab to Bengal to Madras. However, there were important differences in sex ratios by religion in Punjab and Bengal. In Punjab, the Sikhs who comprise about 9% of the population had by far the highest sex ratio of 1.298, and were followed by Hindus at 1.183 and then Muslims at 1.140. In Bengal, however, where the Muslim figure might be influenced by migration, Muslims had a higher sex ratio than Hindus. In Madras, the sex ratios of the three religious groups – Hindus, Christians and Muslims- were relatively similar.

Table 5 presents data on sex ratios by language. Since regional populations are relatively homogenous in terms of language, it is difficult to disentangle the effects of language and the effects of geography. For example, in Punjab, most of the population, except for those of tribal

30 For those castes for which the practice of dowry or bride price could be identified in Risley (1892), we find the following distribution. The number of castes who practice dowry rather than bride price out of the total identified castes by groups are as follows: for religious, 5 of 5; for landowner, 1 of 8; for cultivator, 4 of 19; for for trader, 2 of 8; for professional, 2 of 2; for agricultural laborer, 3 of 26; for service, 2 of 6; and for tribal, 0 of 20.

origins, speaks only the northern Indo-Aryan language. However, when we examine the sex ratio of the Central Aryan language speaking people who are found throughout India, the data suggest that the dominant factor in sex ratio is geographic rather than language orientation. In Madras, the sex ratio of the Central Aryan speaking people was 1.062 whereas in Bengal and Punjab, there was a higher fraction of males.

Thus, even though the most important difference in sex-ratio may be geographical, there seems to be some variation in sex ratio by language as well. In general, the sex ratio is much higher for the languages of Northern origin compared to those of Southern Dravidian or Eastern origin.

EMPIRICAL ANALYSIS OF SEX-RATIOS IN INDIA

While the data presented in the above section suggest significant differences in sex ratios by caste, language, religion and region in India, the summary data do not shed light on their independent impact on sex ratios after controlling for other factors. To address this problem, we run three sets of regressions. First, we run a regression which controls for caste, religion, region and geography; unfortunately, we cannot control for language in this regression as data on language are provided on a separate basis. Second we run a regression which controls for language and region. Since people generally speak a common language within a geographic area, we also present a district-border analysis for language. Third, we aggregate our data to run a regression based on district averages of all the relevant variables, including language.

The econometric specification for the caste regression takes the following form:

$$S_{ijkl} = \alpha_0 + \sum_m \alpha_{1m} D^m_{ijkl} + D^r_{ijkl} + Z_k + \delta_k + \gamma_l + \varepsilon_{ijkl} \quad (1)$$

where i indexes castes, j indexes religion, k indexes districts, and l indexes provinces.³¹ The dependent variable S_{ijk} denotes the sex ratio for caste i , religion j , district k and province l . For independent variables, D^m represents a dummy variable for each caste category m (religious, landowner, cultivator, trader, professional, agricultural labor, service and other menial castes, with artisans as the omitted category); D^r is dummy for religious category, Hindu and Muslim with the latter as the omitted category. Z_j represents district-level geographic variables like rainfall, soil type and coastal indicator. The δ_k and γ_l are district and province fixed-effects. Since district fixed-effects control for district variations in geographic factors such as rainfall and other factors which are constant at the district-level, we generally prefer the specification with district fixed-effects. The ε_{ijk} is the unobserved error component.

The specification for the language regression has the following form:

$$S_{ijk} = \beta_0 + \sum_n \beta_{1n} D^n_{ijk} + \delta_j + \gamma_k + \varepsilon_{ijk} \quad (2)$$

where the subscript i represents language categories, j indexes districts, and k indexes provinces. The dummy variable, D^n , represents language dummy for sixteen language categories with the southern Dravidian as the omitted category. The δ_j and γ_k are district and province fixed-effects.

Finally, the aggregated district average regression specification which combines the caste, language, religion and geographic variations is as follows:

$$S_{jk} = \eta_0 + \sum_m \eta_{1m} P^m_{jk} + \sum_n \eta_{2n} P^n_{jk} + \sum_r \eta_{3r} P^r_{jk} + \gamma_k + \varepsilon_{jk} \quad (3)$$

where S_{jk} denotes the average population sex ratio in district j , in province k . The m indexes caste, n indexes language and r indexes religion. The P^m_{jk} , P^n_{jk} and P^r_{jk} represent the proportion of each caste, language and religious categories, respectively, in district j and province k . γ_k is the province fixed-effect and ε_{jk} is the unobserved district level error component.

31 We thank our reviewers for this suggestion.

In Table 6, we present the weighted least squares regression results of equation (1) with the weights for S_{ijkl} being the square root of the population of caste i , religion r in district j . Column 1 indicates that compared to the artisan castes, religious, landowner, agricultural laborers and tribal castes had higher sex ratios but that the opposite was true of service and other menial castes. When we control for district fixed-effects in column 4, the religious, landowner, trader and tribal castes continue to exhibit lower sex ratios than the artisans whereas the pattern disappears for agricultural laborers. The slight difference in the results could be due to the concentration of different castes in differing districts. We further include the province dummies with Madras (South) as the excluded category in column 5. The estimates show that Punjab and Bengal had higher proportion of males to females compared to Madras even after controlling for caste variations across these regions.

While district fixed-effects are likely to control for district characteristics which stay constant over time, there is considerable interest on the impact of geographic factors on sex ratios as they may affect the relative demand for women in agriculture and other activities. For example, Bardhan (1974) suggests that the economic value of women is driven by differences in female intensity of agricultural production. Since rice cultivation is more intensive in female labor compared to that of wheat, the survival chances of girls may be higher in rice growing areas as compared to wheat growing areas. In column 2, we include the various geographic and climatic characteristics such as rainfall, soil (alluvial, red, black), and a coastal dummy. Due to the lack of data availability of these geographic factors for some districts, our number of observations drops by about 16% for these specifications.

We find that female deficit is significantly positively correlated with rainfall. Since rainfall is likely to be correlated with rice production and with food grain production more

generally (Kapur and Kim (2006)), the regression suggests that sex ratios in 1901 may have worsened for females in districts with higher rice or food production.³² Importantly, these regressions indicate that the coefficients on caste and region were robust and unchanged even after controlling for geographic factors, suggesting that cultural factors such as kinship systems are likely to be important even after controlling for economic factors. Moreover, when we compare the regressions including geographic variables with the district fixed-effect specification in (2), we find that the coefficients on caste and region are very similar. Finally, the addition of the religious category in column 6 indicates that Hindus had significantly higher sex ratios than Muslims after controlling for other factors.

Because similar castes and religious groups in different regions may possess different caste rank and kinship behavior, we re-estimate equation (1) for each of the three provinces and for the Hindus and Muslims. Indeed, the estimates reported in Table 7 hint at important regional differences in caste kinship behavior which affect the sex ratios. In the north - Punjab - where male to female sex ratio is the highest, the religious, landholder, trader and cultivator castes all had significantly higher sex ratios than artisans. In the east - Bengal - the pattern was slightly different as the religious, landowner and trader castes had higher sex ratios than artisans but the professionals, agricultural laborer, and other castes had lower sex ratios. In the south - Madras - however, the pattern was very different. In this region, the religious, professionals and tribal castes had the highest sex ratios although the differences are not significant. In addition, whereas Hindus had higher sex ratios than Muslims in both Punjab and Bengal, the pattern was not significant in Madras where there were few Muslims. Finally, when we run caste-wise

³² When we use area under crops data from 1901 to see how sex ratio varied with rice or wheat intensity of agriculture, we find that as the proportion of area under wheat cultivation increased, sex ratio in a district increased. However, no significant relationship emerged between rice cultivation and sex ratio.

regressions for Hindus and Muslims separately, the overall results are relatively similar although the joint significance of castes based on the F-statistics is not significant for Muslims.

In Table 8A, we analyze the relationship between sex ratios by language groups. Since there is little geographic overlap of languages in different regions, the regressions do not include geographic dummy variables. We find that sex ratios among people who spoke the southern Dravidian languages differed significantly from those who spoke Aryan languages in the Northern and Northwestern regions, but not for those who spoke languages of Aryan origin in the East or the South. In column (1) we omit all the Dravidian languages. Compared to Dravidian languages, Central Aryan and North Aryan had 170 and 222 more males per 1000 females respectively. The northern hilly languages had 133 more males. In column (2) we further break the Dravidian languages into the 4 major southern languages of Canarese, Malayalese, Tamil and Telegu. In this case the omitted category is all other Dravidian languages. Again we find the Northern languages had proportionately fewer females than Dravidian. Moreover, there were no observable differences compared to people who spoke languages in the other eleven categories. However, since there is little geographic overlap of languages in different regions, these language differences are most likely capturing differences across regions. This is evident from column 3, where the variation across languages does not significantly affect the sex ratios when we include province fixed-effects.

Because of the little geographic overlap of languages across broad regions, it is difficult to identify the impact of language on sex ratio. In Table 8B, we overcome this constraint to an extent by using the 1921 Census data to construct groups of bordering districts which enable us to track people of the same language across different provinces. For the districts in the provinces of Rajputana, Kashmir and United Provinces which bordered the districts in the provinces of

Punjab, we constructed sex ratio by different language groups. Since all of these districts should exhibit little geographic variation, we should be able to identify the effect of language controlling for geographic effects. The data show that sex ratios differ by language. As compared to the Punjabi language speaking societies (the omitted language category), there were relatively more females within the Hindi (Hindustani), Hilly, Rajasthani and Gujrati (Western) speaking communities. However, even after controlling for the language variation, the geographic variations persist. Punjab and United Provinces both had significantly more males than Kashmir, the omitted province.

Since our caste and language-wise data on sex ratios are not interlinked, we cannot control for language variations in the caste-religion-district regressions. However, as we saw above, accounting for district and province fixed-effects possibly controls for all time invariant regional variations, including those of language. That apart, we also run an aggregated regression at the district-level combining caste, religious and language variations as in equation 3. The results are provided in Table 9. Interestingly, even with very few units of observation the landholder and cultivator castes continue to show a higher fraction of males compared to artisans in all regressions. Moreover, after accounting for caste variations, neither language nor the specific geography variables contribute much towards explaining the variations in sex-ratios (see column 7 or column 8; the latter uses as weights square root of the population in each district). However, we should be careful about the interpretation of these results as they do not include the district fixed-effects and the complete model is based only on 85 observations.

In summary, we argue that the data confirm the view that family, kinship and inheritance institutions in India contributed significantly to determining sex ratios in India. As noted by numerous scholars, sex ratio was the highest in the North (Punjab) where the society was

patrilineal, patrilocal and extremely exogamous and was lowest in the South (Madras) where the practice of close kin marriages provided more favorable kinship relationships for females. Moreover, in the East (Bengal), where the northern kinship and inheritance rules were modified, female proportion improved over those in the North but remained lower than those in the South.

Since the ideal norms of kinship were held more strongly by the higher castes, the positive relationship between sex ratios and caste rank provides additional evidence on the importance of kinship. However, because caste rank is also correlated with wealth and income, it is difficult to separately identify the effects of wealth and kinship on sex ratios. Women from low castes often earned significant family income so that their bargaining power within the family and kin-group were likely to be high whereas women of high caste typically did not bring in any income. Yet, it is also important to note that kinship norms had a significant influence on the labor market of women. High caste women were forbidden to work outside of the home and their bargaining power was based on the rearing of children, especially sons.

In the South, however, the high sex ratio of the upper castes poses a puzzle. If the cross-cousin marriages were taken more seriously by the higher castes, then one might expect a lower sex ratio for the higher castes. We believe that the high sex ratio of the upper caste Brahmans in the South may be accounted for by the fact that the Brahmans brought with them the vestiges of northern family norms when they migrated south. Even though the southern Brahmans adopted cross-cousin marriages, Gough (1956) argues that the Brahman family relationships were characterized by northern family hierarchy.³³

33 In contrast to the relatively egalitarian relationships among the lowest castes, for the southern Brahmans “the father was superordinate to the son, the elder brother to the younger brother, the husband to the wife ... (Kolenda (1987)). In addition, the rates of close kin marriages among the Brahmans seem to be lower than those of other castes (Mandelbaum (1970, p.70), Caldwell, Reddy and Caldwell (1984)).

Finally, the examination of sex ratios by language and religion seem to indicate the importance of kinship. Even when we control for geography, societies who speak the northern Indo-Aryan language, like Punjabi and Kashmiri, exhibited significantly higher sex ratios. Similarly, even in the North and East, Muslims whose kinship norms were similar to those of the Dravidian South possessed lower sex ratios than their Hindu counterparts, even after we control for caste rank. However, while our data analysis do not include the Sikhs, the high sex ratios observed for the Sikhs in Punjab present a significant puzzle as their religious principles were based on the equality of men and women.

ON THE ORIGINS OF KINSHIP SYSTEMS IN INDIA

Why did kinship and inheritance systems differ across the regions in India? Most scholars believe that the origin and the spread of the northern kinship system can be traced to the historical path of the Indo-Aryan conquest. When the indigenous Indus civilization disintegrated around 1500BC, Aryans started migrating into northwestern India and brought with them new technologies of agriculture as well as military and political organization. However, the diffusion of Indo-Aryan civilization in India did not arise in one “natural state” but many different natural states as the Aryans adapted to different local geographic, economic and political factors. The variations in the relationships between the political and economic elites in different regions also led to variations in their family, kinship and inheritance institutions.

In the northwestern Indo-Gangetic plain, the Aryans developed a stable, decentralized, lineage-based, political, and kinship system which survived for centuries. Yet, as the Aryans marched to the eastern Bengal frontier, their political and kinship institutions were modified to form a more centralized state bureaucracy. The royal political elites formed alliances with local

Brahmans who in turn formed alliances with local elites. However, in the South, the slow diffusion rather than the invasion of Aryans and their ideas created a distinctly different Aryan-Dravidian society that was much more varied, localized and segmentary (Stein (1994)). In the South, the Aryans adopted the southern practice of cross-cousin marriages.

Political and Kinship Organization in Punjab

The Indo-Aryan culture arose in the Northern Gangetic plain where the monsoon rainfall was moderate and irrigated agriculture prior to British rule was limited. From a pastoral society that raised cattle, a mature settled agricultural society emerged in this region. The dominant form of agriculture was wheat and millet, but in places of sufficient water supply, rice was also cultivated. According to Thapar (1982), the rise of settled agriculture coincided with the rise of a kinship lineage society which was to last for centuries. By the medieval period, the local and regional political structure was based on the warrior Rajputs kinship clans and their networks. Each clan composed of its maximal lineages controlled a compact area of 12-84 villages.³⁴ Even when the territory was organized under the Mughal Empire, these Rajput clans retained significant control of their local territories.

Given the importance of the kinship clan as a political and economic institution in the North, its kinship system fostered the alliance of kin-networks over its maximal lineages. However, the kin political alliance system achieved stability by significantly reducing the bargaining power of women. At the clan level, marriages between the families of the same maximal lineage can threaten the political balance within the clan as these families can use

³⁴ Rajputs, Jats, Bhuinhar, and Ahir, were militarily and politically powerful at the regional and local level (Pradhan (1966) and Fox (1971)). At the apex of the caste hierarchy was the rajput raja or jat chauthry who was the head of an extended territory. For the jats, each clan, composed of a maximal lineage, thok, controlled a compact area of 12-84 villages known as khap (Pradhan (1966)). In an era of a weak centralized state, property rights of any individual warrior caste member depended greatly on the strength of his kin-group both as protection from outsiders and to control lower castes villagers who provided labor and services for the exploitation of land.

marriage to build a more powerful political coalition. By requiring women to marry outside of her gotra or sapinda and by requiring her to marry outside of the villages of the maximal lineages, the northern system insured the political stability of the maximal clan lineage. At the level of the joint family, marriages also threatened the break-up of the family property since wives had an incentive to seek partition of joint property. By severely restricting the rights of women, the northern system limited the power of women to exercise her autonomy over her husband and her joint family.³⁵

Political and Kinship Organization in Bengal

In the fifth and sixth centuries, the Indo-Aryan culture gradually marched eastward toward the Bengal jungle frontier. The Hindu Brahmans brought with them the technology of settled agriculture, but due to the abundance of rainfall, the new Bengalis adopted wet rice agriculture. Unlike the pastoral, wheat and barley agriculture of the Indo-Gangetic plain in Punjab, wet rice agriculture was intensive in capital and labor as it involved building and maintaining tanks and irrigation channels, planting, transplanting, monitoring of water levels, and harvesting. While wet rice agriculture was probably associated with a significant increase in productivity, it was also much more risky as few other crops could be grown in submerged water. As a result, the lives of villagers were more likely to be tied to the fortunes of the annual rice crop.

The regional political structure which emerged in Bengal differed in important respects from Punjab. In Bengal, the imperial state seems to have achieved significant level of

³⁵ The role of women in the break-up of the joint family property is a common theme in Indian literature. Mandelbaum (1970, p.103) writes: "Village exogamy seems to be an outcome not only of a special need for filial-fraternal solidarity, but also of special fear for the fragility of those bonds. The wives in a family and their natal kinsmen are apparently perceived as potential sources of family disruption. Hence the wives should be isolated from their original kin which also means that their husbands, in their role as brothers, are equally isolated from their own beloved sisters." Also see Mathur (2007).

centralization by building alliances with Brahmans and other dominant castes who were granted land and protection for tribute and taxes. The Brahmans, in turn, formed local alliances with other dominant Sudra castes to strengthen their local power. Thus, individual Brahmans were able to acquire large territories through the imperial and local alliance.

In Bengal, the northern kinship system was modified. Since the political stability of the maximal lineage was not important, evidence suggests that the gotra or the sapinda rule and the rule of village exogamy were not enforced in Bengal. In addition, as noted earlier, the inheritance rule was modified in Bengal from the rights of equal division of property by sons at birth to rights of the father to divide property at his death. Given that the patriarchal father had significant rights over his property, marriages did not threaten the devolution of family property. Thus, in Bengal, there were fewer benefits from suppressing the autonomy of women. In addition, Bengal was much more diverse in terms of ethnic groups as evidenced by the greater numbers of language and castes as compared to Punjab. The greater indigenous cultural diversity may also have mitigated a stricter enforcement of a uniform kinship system in Bengal.

Political And Kinship Organization In Madras

In the South, the mountainous track which runs from east to west along the Tropic of Cancer impeded the march of the Indo-Aryan culture to its region. Despite the various military excursions from the North, the northern Indo-Aryan culture diffused slowly throughout the Dravidian South by slow absorption rather than by conquest. In the fertile irrigated river valleys, several major kingdoms – Pallavas, Cholas and Pandyas – achieved centralized tributary states whereas in the less fertile drier areas, they were ruled by numerous minor kingdoms and chiefdoms controlled by dominant land-holding groups (Stein (1981, 1998), Ludden (1985),

Dirks (1993)). In the fertile regions, local elites such as the Vellalas granted villages to Brahmans (brahmadeya) and adopted the Sanskritic traditions.

According to Stein (1994), the political organization in the South was much more localized and segmentary due to its geography. However, there were no Kshatriya lineage-based territories in the South. Instead, territorial integrity was based on alliances between kings, local chiefs and dominant land-owning castes. For tribute and military alliance with the king, local chiefs and villagers received protection. At the village level, the higher land-owning castes built alliances with dominant Sudra castes such as the vallala to control the lower caste laborers, artisans and service workers.

In the South, the kinship system diverged significantly from that of the North.³⁶ Even for the Brahmans who migrated from the North, the preferred marriage arrangement was between cross-cousins which were not allowed by traditional Hindu law. Stein (1994) argues that the adoption of cross-cousin marriages was consistent with the widespread existence of political and social localism caused by the South's segmentary political organization. Because wet rice agriculture in the South required the development of extensive irrigation works and the close

36 In South Kerala, the political and kinship systems differed significantly from the rest of Madras (Gough (1961)). The land in each village was owned by either a chieftain of the Raja, the royal lineage itself, a Brahman-managed temple, or a Nambudiri Brahman family. The indigenous Nayars, however, held hereditary rights of long-term tenure called *kanam* from the landlord and leased the land to *Tiyyars* or farmed the land using lower caste serfs who were attached to Nayar lineages. Unlike the rest of the South India, the Nayar men formed a military caste who served the royals. Because the Nayar men were often away from their homes and villages for extended periods, the Nayar women formed the nucleus of the land-holding group. For the Nambudiri Brahmans, their kinship system was patrilineal, patrilocal and through their marriage rule practiced primogeniture (Gough (1961), Mencher and Goldberg (1967)). Only the eldest son was allowed to marry with other Nambudiri Brahmans and inherit family property; the younger sons married Nayars and had no rights to family property or its lineage. For the Nayars, however, their kinship was matrilineal and duolocal. The hereditary *kanam* rights to land was inherited through the female line. For Mencher (1966), the Brahman-Nayar political alliance and local geography explain the rise of Nayar's matrilineal system. Since Nayar boys were recruited and trained as soldiers and left their natal homes at early ages, only Nayar women provided local continuity. However, Mencher argues that geographic factors were also very important. In South Kerala, where rainfall was abundant and reliable and where its lateritic soil absorbed moisture rapidly, there was no need for cooperation between families for agriculture. Thus, the villages and settlements were dispersed rather than nucleated.

working cooperation of the landholding group, cross-cousin marriages may have increased the efficiency of the agriculture in Madras.³⁷

More importantly, Trautman (1981) suggests that the main reason for adopting the Dravidian kinship system in the South was for the royal lineages to preserve their localized hereditary kingships. Unlike the northern Indo-Aryan marriage rule of exogamy, the Dravidian cross-cousin marriage system allowed the formation of strong family alliances which lasted over time. As evidence for his hypothesis that kinship systems in the South were servants of the political elites, Trautman shows how the Dravidian cross-cousin marriage system was altered in Kerala and Sri Lanka to serve the local political elites. In Kerala, where the prevalent kinship system was matrilineal, the royal rule of succession became matrilineal rather than patrilineal; in Sri Lanka, however, the marriage of patrilineal parallel cousins was consistent with a lateral – brother-to-brother – royal succession.

CONCLUSION

This paper explores the relationship between kinship institutions and sex ratios in India at the turn of the twentieth century. Using district-level data from the 1901 Census of India for Punjab (North), Bengal (East) and Madras (South), we construct and examine data on sex ratios by region, caste, religion and language. We find that sex ratios in 1901 India varied systematically by region, caste, language and religion, but less so with climate, soil and other district characteristics. First, sex ratio was the highest in the North followed by the East and then the South. Moreover, this regional pattern was extremely robust. Second, sex ratio varied positively with caste rank. In each region, the higher religious or landowning castes possessed

37 For the Kallars in Pudukkottai, Dirks (1993, p.206) writes that lineages within a natu, which averaged between twelve and eighteen villages, were not allowed to marry lineages outside of their natu. Thus, the rule of natu endogamy as well as cross-cousin marriages contributed to stable lineage-based territorial subdivisions.

the highest sex ratios whereas the lower artisan and menial service castes had the lowest. Third, sex ratios varied by language although there was significant overlap between region and language. Sex ratios were lower among those who spoke the northern Indo-Aryan languages as compared to those who spoke the southern Dravidian language. Fourth, the Hindus had significantly higher sex ratios than Muslims in Punjab and Bengal, but not in Madras where the Muslim population was extremely small. Fifth, sex ratios were significantly higher in districts with higher rainfall.

While it is difficult to differentiate economic from cultural factors, we believe that the examination of sex ratios by caste, language, religion and region generally confirm the view that kinship systems played a major role in determining sex ratios in India. Regional differences in family and kinship institutions were the most important factor. The sex ratio was highest in the North where the kinship system provided the least autonomy of women, intermediate in the East where the northern kinship was slightly modified, and was the lowest in the South where the women's autonomy was thought to have been the strongest. The strong positive correlation between sex ratios and caste rank also suggest the importance of kinship. Women's autonomy was significantly lower for the higher as compared the lower caste women. The former were not allowed to work outside of the home, not allowed to initiate divorce, and their sexual and social behavior were highly regulated by the kin-group. Finally, the variations in sex ratios by language and religion strongly suggest that northern kinship system contributed significantly to higher sex ratios in India.

In India, as discussed in section V, the regional and caste kinship systems arose in pre-modern times when political and economic elites utilized cultural institutions to established a working "natural state" as defined by North et. al (2006). Because of social economies to

institutions, most societies adopted a uniform kinship system. Yet, just as many formal institutions favor political elites at the expense of the general population, the informal kinship systems are also likely to have significant distributional consequences. To the extent that the kinship rules favored the higher caste elites in each region, the adoption of one kinship system may have reduced the welfare of low castes in each region. Relative to their optimal kinship rule, the low castes may have too few women in the North and too many women in the South. In the North, the low castes may have forgone the benefits of economically productive women whereas in the South a cross-cousin marriage system may have increased the genetic costs without providing much alliance benefits.³⁸

The continued persistence of the importance of pre-modern cultural institutions such as the kinship systems remains a puzzle as the role of formal institutions have grown in modern times. Even though the family and kinship systems arose in ancient India, these institutions continue to influence the lives of modern Indians. Even as the economic value of women has risen over time with the growing importance of education as well as employment opportunities in manufacturing and services, the traditional family and kinship institutions have contributed to a growing “son” rather than “daughter” preference in Indian society. Unfortunately, modernization and the introduction of formal western institutions seem to have reduced the importance of the southern indigenous kinship system and introduced the emergence of “son preference” even in southern India. Thus, a better understanding of the causes of the persistence northern kinship system is likely to provide insights on how to foster greater gender equality in India and other north Asian countries.³⁹

38 See Bittle (2002) for evidence on the link between consanguinity, genetic disorders and morbidity in India.

39 Greif (2006) and Carsten (1996) provide insights as to why informal institutions based on personalized exchanges may persist even when they become inefficient. Also see Munshi and Rosenzweig (2005).

Table 1

Kinship and Bargaining Power of Women

Kinship Institution	Internal Threat Point of Women	External Threat Point of Women	Region, Caste, Religion
Patrilineal	Declines	Declines	North
Patrilocal	Declines	Declines	North, South
Matrilneal	Rises	Rises	South (Kerala)
Matrilocal	Rises	Rises	
Duolocal	Rises	Rises	South (Kerala)
Close-Kin	Rises	Rises	South, Muslims
Exogamy	Declines	Declines	North
Gotra/Sapinda	Declines greatly	Declines	North, Brahmins/High Caste
Joint Families	Declines	-	Land Owning Castes
Arranged marriage	Declines	-	India
Low age at marriage	Declines	-	India, East
Inheritance			
Mitakshara	-	Declines	North
Dayabhaga	-	Declines Slightly	East
Dowry	Declines	-	North, High Caste
Bride price	Rises	-	South, Low Caste
Women's right to Property	Rises	Rises	South
No Divorce	Declines	Declines	High Caste
No Market Labor	Declines	Declines	High Caste
Behavioral Restrictions	Declines	-	High Caste

Figure 2: Sex Ratio Distribution across Provinces of India, 1901

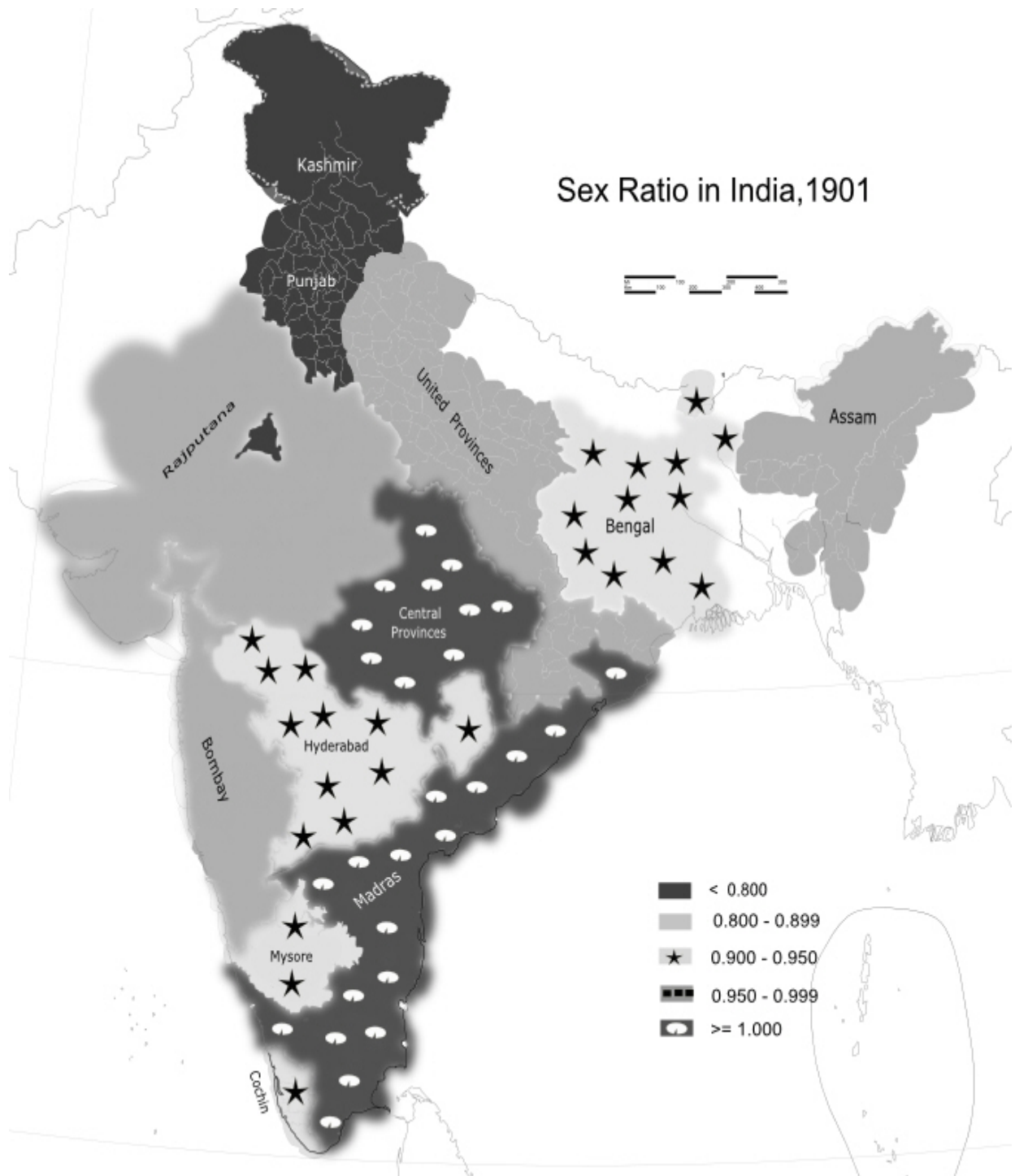


Table 2
Descriptive Statistics: Punjab, Bengal and Madras, 1901

	Punjab	Bengal	Madras
Province Total			
Total Population	24,754,737	78,493,410	38,623,066
Area (sq mile)	150,207	189,837	143,221
Density	179	413.5	269.7
Total Hindu	10,344,333	49,687,362	34,436,586
Total Muslim	12,159,394	25,495,416	2,477,610
Total Sikh	2130987	-	-
Total Christian	-	278366	1038854
Proportion Hindu	0.42	0.63	0.89
Proportion Muslim	0.49	0.33	0.064
Proportion Sikh	0.09	-	-
Proportion Christian	-	0.004	0.061
Female	11,402,223	39,215,224	19,584,070
Male	13,352,514	39,974,744	19,038,996
Sex Ratio (female/male)	1.171	1.020	0.972
Total Number of Castes	121	380	321
Total Number of Languages	24	45	75
Total Number of Villages ⁺	32,663	203,476	54,065
Mean Pop per Village	622	367	706
District Averages			
Districts	29	53	25
Population	485,387	1,494,215	1,379,395
Number of Castes	47	78	65
Number of Languages	5.5	8.5	7.5

Note: The figures for Punjab include Northwest Frontier Provinces; + British territory

Table 3
Descriptive Statistics: Mean Sex Ratio by Caste and Province, 1901

	Punjab	Bengal	Madras	All
Religious	1.216545	1.025641	0.996016	1.055966
Landowner	1.184834	1.086957	0.980392	1.067236
Cultivator	1.180638	1.010101	0.957854	1.038422
Professional	1.132503	1.005025	0.981354	1.031992
Trader	1.158749	1.043841	0.992063	1.041667
Artisans	1.106195	1.006036	0.956023	1.013171
Agri Labor	1.152074	0.994036	0.98912	1.041667
Service	1.145475	0.967118	0.890472	0.974659
Tribal	1.119821	1.061571	1.009082	1.058201
Other	-	0.98912	0.967118	0.979432
Unknown	1.172333	0.959693	1.071811	0.978474
Total	1.150748	1.009082	0.97371	1.023541

Note: Sex ratio is defined as female divided by male total population. To eliminate outliers, we dropped observations if sex ratio is greater than 3 or less than 0.3 and if the caste population was less than 300 from all our analysis.

Table 4
Descriptive Statistics: Sex Ratios by Religion, 1901

	Punjab	Bengal	Madras	All
Hindu	1.183432	0.995025	0.971817	1.02459
Muslim	1.140251	1.017294	0.969932	1.01833
Sikh	1.298701			1.298701
Christian		1.057082	0.968054	0.986193
Total	1.17096	1.002004	0.972763	1.023541

Note: The data for Punjab includes North West Frontier provinces.

Table 5
Descriptive Statistics; Mean Sex Ratios by Language, 1901

Language	Punjab	Bengal	Madras	Total
Aryan (Central)	1.398601	1.264223	1.062699	1.254705
Aryan (North)	1.298701		1.060445	1.272265
Hilly (North)	1.16144			1.16144
Tribal (North)	1.20919			1.20919
Malyalese			1.262626	1.262626
Aryan (East)	1.41844	1.05042	0.99108	1.052632
Aryan (South)		1.226994	1.043841	1.05042
Tamil		1.512859	1.046025	1.060445
Telegu		1.166861	1.006036	1.030928
Canarese			1.025641	1.025641
Dravid (Other)		1.071811	1.027749	1.031992
Munda		0.94518	1.015228	0.953289
Hilly (East)		1.092896		1.092896
Tribal (East)		1.05042		1.05042
Tribal (South)			1.075269	1.075269
Tibetan		1.096491		1.096491
Foreign	1.142857	1.01833		1.084599
Unknown	1.390821	1.039501	0.983284	1.228501

Note: In the Census of 1901, 122 distinct languages were identified in the 3 provinces of Punjab, Madras and Bengal. As shown in the Appendix, these languages were grouped into categories shown above. To eliminate outliers, we dropped observations if sex ratio was greater than 3 or less than 0.3 and if population in a language category was less than 500.

Table 6

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Religious	0.0595*** (0.012)	0.0551*** (0.012)	0.0546*** (0.012)	0.0544*** (0.010)	0.0544*** (0.010)	0.0547*** (0.0100)	0.0547*** (0.0100)
Landholder	0.0297*** (0.0086)	0.0347*** (0.0088)	0.0331*** (0.0088)	0.0434*** (0.0074)	0.0434*** (0.0074)	0.0422*** (0.0074)	0.0422*** (0.0074)
Cultivator	0.0186 (0.012)	0.0102 (0.012)	0.00260 (0.012)	0.00515 (0.0098)	0.00515 (0.0098)	0.000178 (0.0098)	0.000178 (0.0098)
Trader	0.0200 (0.013)	0.0495*** (0.013)	0.0456*** (0.013)	0.0375*** (0.011)	0.0375*** (0.011)	0.0341*** (0.011)	0.0341*** (0.011)
Professional	0.0143 (0.015)	0.0265 (0.016)	0.0231 (0.016)	-0.00355 (0.013)	-0.00355 (0.013)	-0.00682 (0.013)	-0.00682 (0.013)
Agri Labor	0.0135 (0.012)	-0.00483 (0.012)	-0.0148 (0.012)	-0.0138 (0.0097)	-0.0138 (0.0097)	-0.0214** (0.0098)	-0.0214** (0.0098)
Service	-0.0148 (0.015)	-0.00209 (0.016)	-0.00280 (0.016)	0.00246 (0.013)	0.00246 (0.013)	0.00172 (0.013)	0.00172 (0.013)
Tribe	0.0179 (0.016)	0.0294* (0.016)	0.0212 (0.016)	0.0146 (0.014)	0.0146 (0.014)	0.00869 (0.014)	0.00869 (0.014)
Other	-0.0358*** (0.011)	-0.000522 (0.012)	-0.00111 (0.012)	-0.00422 (0.0098)	-0.00422 (0.0098)	-0.00332 (0.0098)	-0.00332 (0.0098)
Rain		0.00004*** (0.0000053)	0.00005*** (0.0000053)				
Coast		-0.00725 (0.0086)	-0.00934 (0.0086)				
Alluvial		0.0489*** (0.0070)	0.0497*** (0.0070)				
Black		-0.0114 (0.013)	-0.0119 (0.013)				
Hindu			0.0558*** (0.0096)			0.0466*** (0.0080)	0.0466*** (0.0080)
Punjab		0.163*** (0.011)	0.179*** (0.012)		0.275** (0.11)		0.270** (0.11)
Bengal		0.0167* (0.0095)	0.0173* (0.0094)		0.205 (0.17)		0.196 (0.17)
District FE	No	No	No	Yes	Yes	Yes	Yes
F-stat (caste)		5.15	5.39				
F-stat (geog)		34.18	34.94				
F-stat (relg)			33.66				
Constant	1.031*** (0.0055)	0.898*** (0.012)	0.849*** (0.014)	1.221*** (0.021)	0.946*** (0.11)	1.181*** (0.022)	0.912*** (0.11)
Observations	5714	4792	4792	5714	5714	5714	5714
R-squared	0.01	0.13	0.13	0.33	0.33	0.33	0.33

Note: Muslim is the omitted religion category; Artisan is the omitted caste group; Bengal is the omitted province. All regressions are weighted with weights= square root of population in caste i, religion and district j. We also repeat the full specification in column 5 without putting weights in the equation. The unweighted coefficients are only slightly bigger than weighted coefficients but they are not statistically different. Fewer observations in columns 2 and 3 are due to the unavailability of geography data for the full set of districts. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 7: Religion and Caste

	(1)	(2)	(3)	(4)	(5)
	Punjab	Bengal	Madras	Hindu	Muslim
Religious	0.112*** (0.016)	0.0440*** (0.017)	0.0180 (0.013)	0.0574*** (0.011)	0.0244 (0.018)
Landholder	0.0772*** (0.012)	0.0673*** (0.013)	0.00307 (0.0092)	0.0459*** (0.0083)	0.0274* (0.016)
Cultivator	0.0282* (0.017)	-0.00384 (0.013)	0.00390 (0.028)	0.00192 (0.011)	0.0123 (0.028)
Trader	0.0462** (0.023)	0.0422** (0.018)	0.0105 (0.012)	0.0388*** (0.012)	0.0147 (0.035)
Professional	0.0130 (0.021)	-0.0204 (0.020)	0.0206 (0.019)	-0.00286 (0.014)	-0.0191 (0.028)
Agri Labor	-0.000230 (0.015)	-0.0376** (0.016)	-0.00376 (0.014)	-0.0236** (0.011)	0.00402 (0.032)
Service	0.0112 (0.028)	-0.00114 (0.018)	-0.00357 (0.018)	-0.00475 (0.014)	0.0289 (0.025)
Tribe	-0.0397 (0.032)	0.00571 (0.020)	0.0237 (0.018)	0.0107 (0.014)	-0.0960 (0.14)
Other		-0.0242 (0.016)	-0.000757 (0.011)	-0.00236 (0.011)	-0.0350 (0.023)
Hindu	0.0758*** (0.010)	0.0268* (0.014)	0.00826 (0.013)		
District FE	Yes	Yes	Yes	Yes	Yes
F-stat (caste)	11.79	6.27	0.63	8.98	1.22
Constant	0.969*** (0.080)	1.202*** (0.027)	0.998*** (0.052)	1.236*** (0.023)	1.134*** (0.046)
Observations	1117	3187	1410	4795	919
R-squared	0.23	0.30	0.15	0.34	0.45

Note: Muslim is the omitted religion category; artisan is the omitted caste category. All regressions are weighted. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 8A: Language

	(1)	(2)	(3)
Aryan (Central)	0.170*** (0.028)	0.149** (0.072)	0.0677 (0.079)
Aryan (North)	0.222*** (0.030)	0.201*** (0.073)	0.0346 (0.091)
Aryan (East)	0.0264 (0.027)	0.00520 (0.072)	-0.0622 (0.080)
Aryan (South)	0.0652 (0.091)	0.0440 (0.11)	0.0529 (0.11)
Foreign	0.115 (0.12)	0.0939 (0.14)	-0.0330 (0.15)
Munda	0.0148 (0.061)	-0.00640 (0.090)	-0.0603 (0.094)
Tibetan	0.121 (0.20)	0.100 (0.21)	0.0287 (0.22)
Hilly (North)	0.133* (0.069)	0.112 (0.096)	-0.0578 (0.11)
Hilly (East)	0.0866 (0.100)	0.0654 (0.12)	-0.00617 (0.13)
Tribal (East)	0.0505 (0.043)	0.0293 (0.079)	-0.0423 (0.088)
Tribal (North)	0.240 (0.21)	0.219 (0.22)	0.0488 (0.23)
Tribal (South)	0.164 (0.16)	0.143 (0.17)	0.153 (0.17)
Canarese		-0.0123 (0.093)	-0.00221 (0.092)
Malayalese		-0.00270 (0.11)	0.00742 (0.11)
Telegu		-0.0130 (0.076)	-0.00436 (0.075)
Tamil		-0.0414 (0.077)	-0.0315 (0.077)
Punjab			0.180*** (0.059)
Bengal			0.0817* (0.044)
Constant	0.990*** (0.020)	1.011*** (0.069)	1.001*** (0.069)
Observations	631	631	631
R-squared	0.12	0.12	0.13

Note: Dravidian (southern) is the omitted category. All regressions are weighted with weights=square root of population in language *i* and district *j*. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 8B**Sex Ratio by regional Language groups (Neighboring Districts of North India)**

	(1)	(2)
Hilly	-0.884** (0.44)	-0.734* (0.44)
Hindustani	-0.706* (0.38)	-0.836** (0.40)
Kashmiri	1.311** (0.51)	1.491*** (0.52)
Western	-0.816* (0.46)	-0.621 (0.48)
Punjab		0.836* (0.44)
Rajputana		0.620 (0.58)
United Provinces		1.120* (0.61)
Constant	1.959*** (0.30)	1.182** (0.50)
Observations	66	66
R-squared	0.29	0.33

Note: Western language group comprise different Gujrati and Rajasthani languages. Punjabi is the omitted language category and Kashmir is the omitted province. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 9: District Level Aggregates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Religious	0.141 (0.23)	-0.0987 (0.25)	0.0211 (0.27)	-0.0244 (0.31)		-0.0232 (0.39)	0.0584 (0.47)
Landholder	0.135 (0.091)	0.0494 (0.12)	0.299** (0.14)	0.290** (0.14)		0.330* (0.19)	0.282 (0.21)
Cultivator	0.312** (0.13)	0.150 (0.16)	0.541*** (0.20)	0.512** (0.22)		0.517* (0.27)	0.522* (0.28)
Trader	-0.147 (0.33)	0.220 (0.48)	0.382 (0.49)	0.454 (0.54)		0.593 (0.60)	0.494 (0.61)
Professional	3.773*** (0.68)	3.161*** (0.72)	4.719*** (0.74)	4.706*** (0.75)		4.884*** (0.83)	4.496*** (0.87)
Other	-0.296* (0.17)	-0.0496 (0.25)	-0.343 (0.25)	-0.340 (0.26)		-0.279 (0.30)	-0.168 (0.30)
Tribe	0.183 (0.15)	0.214 (0.15)	0.367** (0.16)	0.368** (0.17)		0.560** (0.24)	0.437* (0.24)
Agri Labor	0.258 (0.17)	0.0121 (0.21)	0.203 (0.22)	0.195 (0.23)		0.306 (0.29)	0.271 (0.31)
Service	-4.09*** (1.04)	-2.441* (1.26)	-3.178** (1.34)	-3.067** (1.38)		-3.561** (1.69)	-3.728** (1.85)
Punjab		0.159** (0.075)	0.0738 (0.093)	0.0222 (0.11)		0.0592 (0.17)	0.0219 (0.18)
Bengal		0.0331 (0.065)	-0.0765 (0.075)	-0.0718 (0.077)		-0.105 (0.12)	-0.0703 (0.12)
Rain			0.000081*** (0.000025)	0.00008*** (0.000025)		0.00009** (0.000033)	0.00007* (0.000034)
Alluvial			0.0106 (0.029)	0.0118 (0.029)		0.0179 (0.035)	0.0173 (0.034)
Black			-0.0872 (0.053)	-0.0853 (0.054)		-0.0798 (0.058)	-0.100* (0.059)
Coast			-0.0338 (0.047)	-0.0296 (0.049)		-0.0181 (0.059)	-0.0119 (0.059)
Hindu				0.0527 (0.15)		0.0647 (0.17)	0.0282 (0.21)
Aryan (Central)					0.0560 (0.041)	0.0824 (0.14)	0.0603 (0.14)
Aryan (North)					0.215*** (0.042)	0.0906 (0.15)	0.0565 (0.16)
Aryan (East)					0.0314 (0.042)	0.0516 (0.14)	0.0238 (0.14)
Aryan (South)					-0.222 (0.75)	-1.406 (2.40)	-0.238 (5.17)
Munda					-0.271 (0.40)	-0.316 (0.45)	-0.246 (0.45)
Hilly (East)					0.215 (0.17)	-0.0530 (0.33)	0.0622 (0.41)
Hilly (North)					0.156*** (0.050)	0.164 (0.16)	0.108 (0.22)
Constant	0.949*** (0.056)	0.922*** (0.10)	0.757*** (0.13)	0.704*** (0.20)	0.981*** (0.028)	0.633*** (0.23)	0.702** (0.27)
Observations	95	95	85	85	95	85	85
R-squared	0.45	0.49	0.62	0.62	0.31	0.63	0.57

Note: In column 7: The F-stats for the group of caste variables is 2.55, for languages it is 0.44, for geography variables it is 1.90, and for religion it is 0.12. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. Column 8 uses square root of the district population as weights.

Appendix I: Definitions of Castes by Occupation

Occupations of castes were defined using the censuses and various ethnographic studies of India: Ibbetson (1916) for Punjab, Risley (1892) for Bengal, and Thurston (1909) for Madras.

Castes of Punjab:

Agricultural labor:	chamar, chuhra, dhanak, jhinwar, khatik, mus_chuhra, mus_jhinwar, mus_machhi, bawaria, changar
Artisan:	basketmaker (dumna), blacksmith (lohar, mus_lohar), carpenter (mus_tarkhan, tarkhan), leather (jaiswara, kori, mus_mochi), mason (barwala), metal worker (mus_sunar, sunar), other/labor (mazbi, mus_jhabel, batwal, chanal, dagi, garri, ghai, kalal, mus_kalal, mus_kanchan, mus_lilahi, mus_penja, mus_qassab, mus_rangrez, mus_teli, nungar, sarera), potter (kumhar, mus_kumhar), tailor (darzi, mus_darzi), village watchmen (mina), weaver (gadaria, julaha, meg, mus_julaha)
Cultivator:	ahir, chang, gaddi, ghirath, ghosi, kachhi, kamboh, kanet, lodha, mus_kambogh, mus_mallah, pun_mali, reia, saini, gakkhar, khattar, taga
Landowner:	bodla, gujjar, jat, karral, kharral, mahtam, mus_awan, mus_biloch, mus_dogar, mus_gujar, mus_jat, mus_khokhar, mus_meo, mus_pachhada, mus_pun_pathan, mus_pun_rajput, mus_qureshi, mus_rawat, mus_shekh, pun_rajput, rathi, ror
Religious:	mus_faqir, mus_pun_jogi, pun_jogi, bishnoi, faqir, mus_sayad, pun_brahman
Professional:	kaiath, mirasi, mus_khoja, mus_mirasi, mus_nai, nai
Service:	washermen (chimba, dhobi)
Trader:	banjara, bhabra, bohra, khattri, labana, mus_kunjra, mus_maniar, naik, nat, pahari_mahajan, sud
Tribe:	agari, aheri, bazigar, mus_beldar, mus_harni, od, sansi
Unknown:	gurkha, mus_kashmiri, mus_pun_moghal, sirkiband

Castes of Bengal:

Agricultural labor:	banwar, bauri, dhunia, doai, gangauta, hari, kadar, kaora, kotal, musahar, nagar, nagesia, nagesia_ani, naiya, namasudra, oraon, oraon_ani, pargha, rajwar, sair, savar
Artisan:	basketmaker (baiti, bantar, bari, dalu, dhamin, dhanua, karanga, majwar_ani, panpanika, patial_patikar, patni, rajbansi_total, turi_ani, turi, dafadar), blacksmith (kamar_lohar, kami,marya), carpenter (barhi, kharadi, sutradhar, kharadi_mus), goldsmith (sonar, mir, sonar_mus), leather (chamar, muchi, sarki, muchi_mus), mason (kandu, barhi_mus, datiya, thawai), metal worker (kansari, thathera, kalaigar) other (bedea, bediya, bhaskar, dosadh, ghasi, gorait, halalkhor, halwai, jhora, kalu, laheri, mahuria, malakar, niyari, nuniya, nuri, palwar, patwa, sankhara, sinduria, sokiar, sunrishaha, teli_total, tiklihar, abdal, atashbaz, bediya_mus, besati, bhanr, bhatiya_mus, chik, dhari_mus), potter (kharura, kumhar, mehtar, chunari, kumhar_mus), tailor (damai, darzi, darzi_mus, nagarchi), weaver (bagdi, gareri, jogi_jugi, kapali, karni, patra, tanti, chhipigar, dafali, jolaha, patwa_mus),
Cultivator:	agaria, atith, atith_ani, bhar, bhat, bhogta_ani, bhogta, chain, chakma, chasi, dhanuk, dhimal, ghani, gorrhi, kahar, kaibartta_total, kaur, kawat, khandait, khatik, khatwe, khawas, kora, koshta, magh, magh_buddhist, mal, malpaharia, malpaharia_ani, markande, mech, mech_ani, naik, pasi, pod, pundaripuro, rajbhar, rarhi, sukli, telaga, turaha, yakha, bhat_mus, dewan, kulu
Landowner:	aguri, ahirgoala, ahir_gaura, babhan, bandawat, barui, kachari, kalita, kapuria, katha, khaira, khambu, kharia, kharwar, khatia, kuki, kurmi, kurmi_ani, mahar, manjhi, rajput, rautia, sadgop, sarak, sunuwar, surajbansi, tamaria, ashraf, chaudhuri
Other:	fishermen (banpar, berua, lohaitkuri, mallah, malo, muriyari, naliya, tiyar, mallah_mus, naliya_mus), other (besya, deohar, gandharb, kathak, khelta, pawaria, surahiya, telinga, dai, fakir, hijra, khanjar, madaria, nikhari, pawaria_mus, sardar, amat, arakh, nabya, aghori), labor (ajlaf, agri, bahelia, behara, beldar, bhuinmali, dhimar, dom, gharti, kan, lalbegi, murmi, murmi_bud, sudha, sudra, thami, behara_mus, beldar_mus, dhawa, golam, lalbegi_mus, mali, mandal, masalchi, mehtar_mus, sikalgar)

Professional:	baidya, ghatwal, kachra, karan, kayastha, rajbhat, sahar, subarnabanik, vaisya
Religious:	aoghar, aya, banjara, brahman_hindu, brahman_agradani, brahman_barna, brahman_daibajan, brahman_nepali, dasnami, gaur, gosain, jagwa, jyotish, kabirpanthi, khandelwal, samanta, sannyasi, seo_narayani, taula, thakuri, kazi, khwandkar, saiad
Service:	barber (bhandari, gola, hajjam, napit, bhagawani, hajjam_mus, khan, nau_muslim), washermen (dhoba, dhobi), music and dance (bhatiya, dhari, gain, kawali, nat, bakho, bhatthiara, halalkhor_mus, miriasin, nat_mus)
Trader:	naik_mus, adarki, agaria_ani, agarwala, agarwala_jain, agraphari, asur, bais_baniya, banaudhia, baniya, barnawar, bhakat, gandhabanik, ganrar, gujar, guria, kacharu, kalwar, kasarwani, kathbania, khatri, khi, madhunapit, mahesri, mahuri, marwari, mayra, nichondia, oswal, oswal_jain, rastogi, rauniar, sadhu, saraogi, saraogi_ani, tambuli, bakali, banjara_mus
Tribe:	lodha, toto_ani, bathudi, bhotia, bhotia_buddhist, birhor, garo, gond, gulgulia, gurung, ho, juang, kandh, kandh_ani, kanjar, korwa, korwa_ani, lepcha, limbu, mahli, mahli_ani, malar, malesauria, malesauria_ani, mangar, maulik, munda, munda_ani, murung, parhaiya, santal, santal_ani, tharu, tipara
Unknown:	ajnasi, baghuti, baishnab, balija, banjogi, baola, bhoi, dariadasi, datia, dogara, ghantra, ghusuria, girgiria, godra, gokha, gonr, guni, gurer, hadi, hajang, hayu, irika, jadupetia, kachhi, kadma, kahalua, kallar, kaltuya, kandra, kantabudiya, kartta, kasaundhan, kela, khami, khas, kheturi, khitibansa, khoiri, khyang, kichar, koli, konal, kukihalam, kumuti, kurariar, lushei, malhar, morangia, nahura, nekua, pahira, pankhu, porawal_jain, raju, sabakhia, sanai, shagird, shamri, siamese, sikh_sikh, sinhalese, sitaliyasiyal, siyalgir, surbhang, thoria, tulabhina, ujia, ajat, akhundi, bhisti, chaklai, chamba, chatua, ghazi, habshi, jadupetia_mus, kalandar, kasbi, khoja, mahifarosh, mahimal, mallik_mus, mangta, mehana, mirdah, mirza, miyan, moghal, nalband, nanbai, sabangar, shah, shekh, thakrai, tikulihar, tutia, assamese, barnasankar, bengali, bhuiya, brahmo, buddhist, burmese, dhenuar, gangai, guzrati, jain, japanese, madrasi, manipuri, maratha, nanakshahi, nepali, newar, newar_bud, oriya, sikh, tibetian, afghan, afridi, biloch, kashmiri, manipuri_muslim, musulman, pathan, shiah, sunni

Castes of Madras:

Agricultural Labor:	cheruman, holeya, mala, malasar, muppan, pallan, paniyan, valayian, vedan
Artisans:	basketmaker (bavuri, bellara, gudala, katasan, kichagara, medara, nalakeyava, savara), blacksmith (badhyoi, muli), carpenter (chaptegara, charodi), domestic servant (muvvard, sudra), drummer (haddi, relli), leather (chakkiliyan, godari, jaggali, madiga, muchhi, samagara, semman, tolkollan), mason (eruman, kamsala, kolayan), oil presser (chakkan, gandla, ganiga, sappaliga, telli, vaniyan), other (ashtalohi, kaniyan, konsari, kattumahrati, pambaikkaran, valluvan, ghontora, katike, chemhotti, sayakkaran, nodha, sunnari, lohara, noliya, magura, chakkiliyan, tondaman, pulluvan, kuttadi, dudekula, tiyan, kadan, pothriya, kallon, kanisan, gudigara, kurumban, jetti, chandala, dammula, kota, meria, ori_ashtalohi, puliyan), potter (anduran, kumbara, kumbharo, kummara, kusavan, mal_anduran, mal_kammalan, somara, kuravan), tailor (mal_panan, panan), village watchman (dandasi, mutracha), weaver (chaliyan, dombo, kaikolan, karnabattu, khatri, kolyan, kurni, kuruba, pano, patvegara, ronguni, tonti)
Cultivator:	seppilivan, agaru, ambalakaran, arakala, bonka, gaudo, gayinta, khoira, kondadora, kottiya, kuluvan, malayali, mali, mudugar, odiya, panisavan, pombada, pondra, rona, tel_agaru, tel_arakala
Landowner:	arasu, ballala, agamudaiyan, aiyarakam, alia, aruva, badaga, bant, bhatrazu, bhayipuo, bhumia, boda, bolasi, bosantiya, bottada, chinda, chuvano, devanga, dhakado, dhulia, doluva, gatti, gauda, gayara, heggade, ilamagan, kalingi, kamma, kamunchia, kappiliyan, kapu, khuduba, kolata, kshatriya, kudubi, kudumo, kunnavan, lingayat, majjulu, malaiman, malava, mattia, muriya, muttiriyan, nagaralu, nagavasulu, nattaman, nattan, navayat, omaito, ori_alia, ori_aruva, palli, patra, pentiya, poroja, rajput, sadar, sheik, sudarman, suddho, tel_ayarakam, udaivan, vakkaliga, valuvadi, vellala
Other:	fishermen (arayan, bagata, bestha, chuditiya, jalari, kabbera, karaiyan, kevuto, kharvi, kondra, kukkundi, mal_arayan, mappilla, mogar, mukkuvan, neyyala, nulayan, paravan, pattanavan, sembadavan, toreya), labor (bedaru, billava, gamalla, halepaik, idiga, iluvan, indra, karumpurattan, shanan, siolo, boya, kudiya, mal_vettuvan, paidi, pulaiyan, samantiya, sonkari, alavan, koraga,

	kotari, kuruman, parivaram, uppiliyan, urali), lower religious (ambalavasi, andi, boishnobo, dasari, devadiga, janappan, jangam, jogi, killekyata, mal_ambalavasi, maravan, marayan, moili, muni, occhan, pandaram, pattapu, ravulo, sanjogi, sannasi), shepherd (gauli, golla, idaiyan),
Religious:	brahman, can_brahman, elayad, mal_brahman, mussad, ori_brahman, other_brahman, pujari, saiyad, stanika, tel_brahman, can_brahman
Professional:	kanakkan, kadupattan, kammalan, karnam, kotegara, mahanti, nise, panchala, pandito, patnulkaran, puluvan, samantan
Service:	barber (ambattan, bhandari, bhondari, kavutiyan, kelasi, mangala, melakkaran, velakkattalavan), dancing girl (dasi, guni, patramela), washermen (velan, agasa, agasu, dhobi, nekkara, vannan, veluttedan),
Trader:	agarwala, anappan, arab, balija, banajiga, benia, bepari, bondili, bora, can_anappan, chetti, jonagan, kadukonkani, kannadiyan, kavandan, komati, labbai, lambadi, marakkayar, marvari, memon, muttan, panikkan, pathan, rajapuri, senaikkupaiyan, sondi, tarakan, vettuvan
Tribe:	aranadan, chenchu, gadaba, hasala, irula, jatapu, karimpalan, kattunayakkan, khond, koyi, kuriochan, mal_aranadan, mannan, mellikal, paliyan, solaga, yerravala
Unknown:	godiya, arsan, dakni, gond, ite, kongan, konkani, moghal, musulman, nutar, saiva, sharif, tohala, vallamban

Appendix II: Definitions of Language Categories

Languages of Punjab: Central Indo-Aryan (hindustani, bikaneri, marwari, mewati, hindi), North Indo-Aryan (multani, bahawalpu, punjabi, dogri, bagri, gujari, ahirwati, hariani), East Indo-Aryan (bengali), Foreign (balochi, pashto), Pahari-North (pahari), Tribal-North (jangli), Other (??)

Languages of Bengal: Central Indo-Aryan (hindi, marwari, mahli, gujrati, kachchhi), North Indo-Aryan (panjabi, sindhi, kashmiri), East Indo-Aryan (bangali, oriya, assamese), Dravidian (malto, malhar, telegu, tamil, canarese, malayalm), Foreign (singhalese, burmese, arakanese), Munda (agaria, asur, birjia, kharia, mundari, bhumij, turia, birhor, kora, korwa, singli), Pahari-East (toto, limbu, lepcha, dhimal, mumi, gurung, mangar, khambu, newar, thami, yakha, sunuwar), South Indo-Aryan (marathi, goanese), Tibetan (tibetian, sikkim_bhotia, sharpa_bhotia), Tribal-East (khas, gipsy, ho, santali, karmali, oraon, gondi, manjhi, hayu, mech, kachari, garo, tipara, koch, kuki, manipuri, banjogi, pankhu, khyang, khami, lushei, mru, khasi, hallam), Unknown (juang, kandh)

Languages of Madras: Central Indo-Aryan (laria, hindostani, hindi, marwari, gujrati, kachchhi), North Indo-Aryan (lambadi, punjabi, sindhi), East Indo-Aryan (bengali, oriya), South Indo-Aryan (konkani, marathi, goanese), Dravidian (khond, irula, kota, kurumba, korava, toda, tulu, kodagu, konda, koraga, canarese, malayalam, tamil, telegu), Foreign (mahl, burmese, parsi), Munda (gadaba, savara), Tribal-South (badaga, gondi, koya), Unknown (sanskrit, bellara, gattu, kasuva, patnuli, poroja, bastari, chatgaiya, others)

References

- Agarwal, Bina. 1994. *A Field of One's Own: Gender and Land Rights in South Asia*. New Delhi: Cambridge University Press.
- Agarwal, Bina. 1997. "'Bargaining' and Gender Relations: Within and Beyond the Household," *Feminist Economics* 3:1-51.
- Agarwala, S.N. 1957. "The Age at Marriage in India," *Population Index* 2: 96-107.
- Bardhan, Pranab K. 1974. "On Life and Death Questions," *Economic and Political Weekly*, August, 9 (32-34), Suppl.: 1293-1305.
- Bittle, A. H. 2002. "Endogamy, Consanguinity and Community Genetics," *Journal of Genetics* 81: 91-98.
- Blunt, E. A. H. 1931. *The Caste System of Northern India*. London: Oxford University Press.
- Botticini, Maristella and Aloysius Siow. 1993. "Why Dowries?" *American Economic Review* 93: 1385-1398.
- Caldwell, John C., P.H. Reddy, and Pat Caldwell. 1984. "The Determinants of Family Structure in Rural South India," *Journal of Marriage and the Family* 46: 215-229.
- Chakraborty, Tanika and Sukkoo Kim. 2008 "Caste, Kinship and Sex Ratios in India," NBER Working Paper No. 13828
- Coale, Ansley J. and Paul Demeny. 1983. *Regional Model Life Tables and Stable Populations*. Second Edition. New York: Academic Press.
- Coale, Ansley J. and Susan C. Watkins. Editors. 1986. *The Decline of Fertility in Europe*. Princeton: Princeton University Press.
- Crooke, William. 1896. *The Tribes and Castes of the North-Western Provinces and Oudh*. Calcutta.
- Das Gupta, Monica, Jian Zhenghua, Li Bohua, Xie Zhenming, Woojin Chung, and Bae Hwa-Ok. 2003. "Why is Son Preference so Persistent in East and South Asia? A Cross-Country Study of China, India and the Republic of Korea," *Journal of Development Studies* 40: 153-187.
- Dasgupta, Satadal. 1986. *Caste Kinship and Community: Social System of a Bengal Caste*. Madras: University Press.
- Dirks, Nicholas B. 1993. *The Hollow Crown: Ethnohistory of an Indian Kingdom*. Second Edition. University of Michigan Press.
- Dumont, Louis. 1957. "Hierarchy and Marriage Alliance in South Indian Kinship," *Occasional Papers of the Royal Anthropological Institute of Great Britain and Ireland* No.12. London: Royal Anthropological Institute of Great Britain and Ireland.
- Dumont, Louis. 1986. *A South Indian Subcaste: Social Organization and Religion of the Pramalai Kallar*. Oxford: Oxford University Press.
- Dyson, Tim and Mick Moore. 1983. "On Kinship Structure, Female Autonomy, and Demographic Behavior in India," *Population and Development Review* 9 (1): 35-60.
- Folbre, Nancy. 1997. "Gender Coalitions: Extrafamily Influences on Intrafamily Inequality," in *Intrahousehold Resource Allocation in Developing Countries: Models, Methods, and Policy*, edited by L. Haddad, J. Hoddinott, and H. Alderman, Johns Hopkins University.
- Foster, Andrew D. 1993. "Household Partition in Rural Bangladesh," *Population Studies* 47: 97-114.
- Foster, Andrew D. and Mark R. Rosenzweig. 2001. "Missing Women, the Marriage Market and Economic Growth," mimeo.

- Fox, Richard. 1971. *Kin Clan Raja and Rule*. Berkeley: University of California Press.
- Fox, Robin. 1967. *Kinship and Marriage*. Middlesex: Penguin Books.
- Freitas, Kripa. 2006. "The Indian Caste System as a Means of Contract Enforcement," mimeo.
- Goody, Jack. 1973. "Bridewealth and Dwry in Africa and Eurasia," in *Bridewealth and Dowry* edited by J. Goody and S.J. Tambiah. Cambridge University Press.
- Gough, E. Kathleen. 1952. "Changing Kinship Usages in the Setting of Political and Economic Change Among the Nayars of Malabar," *Journal of Royal Anthropological Institute* 82: 71-87.
- Gough, E. Kathleen. 1955. "The Social Structure of a Tanjore Village," in *Village India*, M. Marriott, editor. Chicago: University of Chicago Press.
- Gough, E. Kathleen. 1956. "Brahmin Kinship in a Tamil Village," *American Anthropologist* 58: 826-853.
- Gough, E. Kathleen. 1960. "Caste in a Tanjore Village," in *Aspects of Caste in South India, Ceylon, and North-West Pakistan*, E. R. Leach, editor. Cambridge: Cambridge University Press.
- Gough, E. Kathleen. 1961. *Matrilineal Kinship* (edited with David M. Schneider). Berkeley: University of California Press.
- Gough, E. Kathleen. 1979. "Dravidian Kinship and Modes of Production," *Contributions to Indian Sociology* 13 (2): 265-291.
- Gould, Harold A. 1960. "The Micro-Demography of Marriages in a North Indian Area," *Southwestern Journal of Anthropology* 16: 476-491.
- Greif, Avner. 2005. "Family Structure, Institutions and Growth: The Origin and Implication of Western Corporation," mimeo.
- Greif, Avner. 2006. *Institutions and the Path to the Modern Economy: Lessons from Medieval Trade*. Cambridge University Press.
- Hershman, Paul. 1981. *Punjabi Kinship and Marriage*. Delhi: Hindustan Publishing.
- Hoddinott, John and Lawrence Haddad. 1995. "Does Female Income Share Influence Household Expenditures? Evidence from Cote D'Ivoire," *Oxford Bulletin of Economic and Statistics* 57: 77-96.
- Ibbetson, Denzil. 1916 [1974]. *Panjab Castes*. Lahore: SH Mubarak Ali.
- Kapur, Shilpi and Sukkoo Kim. 2006. "British Colonial Institutions and Economic Development in India," NBER Working Paper #12613.
- Karve, Irawati. 1990. *Kinship Organization in India*. Third Edition. New Delhi: Munshiram Manoharlal Publishers.
- Khuda, Barkat E. 1985. "The Nuclearization of the Joint Family Household in Rural Areas of Bangladesch," *Journal of Comparative Family Studies* 16: 387-400.
- Kishor, Sunita. 1993. "'May God Give Sons to All': Gender and Child Mortality in India," *American Sociological Review* 58: 247-265.
- Kolenda, Pauline. 1987. *Regional Differences in Family Structure in India*. Rawat Publications.
- Lévi-Strauss, Claude. 1969. *The Elementary Structures of Kinship*. Boston: Beacon Press.
- Lundberg, Shelly J. and Robert A. Pollak. 1993. "Separate Spheres Bargaining and the Marriage Market," *Journal of Political Economy* 101: 988-1010.
- Lundberg, Shelly J., Robert A. Pollak, and Terence J. Wales. 1997. "Do Husbands and Wives Pool Their Resources? Evidence from the United Kingdom Child Benefit," *Journal of Human Resources* 32 (3): 463-480.

- Mandelbaum, David G. 1970. *Society in India*. Two volumes. Berkeley: University of California Press.
- Manser, Marilyn and Murray Brown. 1980. "Marriage and Household Decision-Making: A Bargaining Analysis," *International Economic Review* 21: 31-44.
- Mathur, Divya. 2007. "What's Love Got To Do With It? Parental Involvement and Spouse Choice in Urban India," mimeo.
- McElroy, Marjorie B. 1990. "The Empirical Content of Nash-Bargained Household Behavior," *Journal of Human Resources* 25 (4): 559-583.
- McElroy, Marjorie B. and Mary J. Horney. 1981. "Nash-Bargained Household Decisions: Toward a Generalization of the Theory of Demand," *International Economic Review* 22: 333-349.
- Mencher, Joan P. 1966. "Kerala and Madras: A Comparative Study of Ecology and Social Structure," *Ethnology* 5 (2): 135-172.
- Mencher, Joan P. and Helen Goldberg. 1967. "Kinship and Marriage Regulations Among the Namboodiri Brahmans of Kerala," *Man* 2 (1): 87-107.
- Miller, Barbara. 1981. *The Endangered Sex: Neglect of Female Children in Rural North India*. Second Edition. Oxford University Press.
- Miller, Eric J. 1954. "Caste and Territory in Malabar," *American Anthropologists* 56: 410-420.
- Morgan, Lewis H. 1871. *Systems of Consanguinity and Affinity of the Human Family*. Washington DC: Smithsonian Institution.
- Majumdar, D. N. 1958. *Caste and Communication in an Indian Village*. Bombay: Asia Publishing House.
- Munshi, Kaivan and Mark R. Rosenzweig. 2005. "Why is Mobility in India so Low? Social Insurance, Inequality and Growth," mimeo.
- Murthi, Mamta, Anne-Catherine Guio, and Jean Dreze. 1995. "Mortality, Fertility, and Gender Bias in India: A District-Level Analysis," *Population and Development Review* 21 (4): 745-782.
- Nasir, Rosina and A. K. Kalla. 2006. "Kinship System, Fertility and Son Preference among the Muslims: A Review," *Anthropologist* 8: 275-281.
- Nesfield, J. C. 1885. *Brief View of the Caste System of the North-Western Provinces and Oudh*. Allahabad.
- North, Douglass C. 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge University Press.
- North, Douglass C. 2005. *Understanding the Process of Economic Change*. Princeton University Press.
- North, Douglass C., John J. Wallis, and Barry R. Weingast. 2006. "A Conceptual Framework for Interpreting Recorded Human History," mimeo.
- Park, Chai Bin and Nam-Hoon Cho. 1995. "Consequences of Son Preference in a Low-Fertility Society: Imbalance of the Sex-ratio at Birth in Korea," *Population and Development Review* 21 (1): 59-84.
- Parry, Jonathan P. 1979. *Caste and Kinship in Kangra*. London: Rutledge & Kegan Paul.
- Pradhan, M.C. 1966. *The Political System of the Jats of Northern India*. London: Oxford University Press.
- Qian, Nancy. 2006. "Missing Women and the Price of Tea in China: The Effect of Sex-Specific Earnings on Sex Imbalance," mimeo.

- Risley, H. H. 1892. *The Tribes and Castes of Bengal*. 2 volumes. Calcutta: Bengal Secretariat Press.
- Sen, Amartya. 1990. "More Than 100 Million Women Are Missing," *New York Review of Books*, Volume 37, Number 20, Dec. 20.
- Sontheimer, Günther-Dietz. 1977. *The Joint Hindu Family: Its Evolution as a Legal Institution*. New Delhi: Munshiram Manoharlal Publishers.
- Stein, Burton. 1994. *Peasant State and Society in Medieval South India*. Delhi: Oxford University Press.
- Stein, Burton. 1998. *A History of India*. Malden: Blackwell Publishing.
- Stone, Linda. 1997. *Kinship and Gender: An Introduction*. Boulder: Westview Press.
- Tambiah, S. J. 1973. "Dowry and Bridewealth and the Property Rights of Women in South Asia," in *Bridewealth and Dowry* edited by J. Goody and S.J. Tambiah. Cambridge University Press.
- Thapar, Romila. 1984. *From Lineage to State: Social Formations in the Mid-First Millennium B.C. in the Ganga Valley*. New Delhi: Oxford University Press.
- Thomas, Duncan. 1990. "Intra-Household Resource Allocation: An Inferential Approach," *Journal of Human Resources* 24: 635-664.
- Thomas, Duncan. 1994. "Life Father, Like Son; Like Mother, Like Daughter: Parental Resources and Child Height," *Journal of Human Resources* 29: 950-988.
- Thurston, Edgar. 1909. *Castes and Tribes of Southern India*. 7 volumes. Madras.
- Trautmann, Thomas. 1993. [1979]. "The Study of Dravidian Kinship," in *Family, Kinship and Marriage in India*, P. Uberoi, ed., Delhi: Oxford University Press.
- Trautmann, Thomas. 1981. *Dravidian Kinship*. Cambridge: Cambridge University Press.
- Visaria, Pravin M. 1961. *The Sex-ratio of the Population of India*. Census of India, Volume 1: Monograph 10. New Delhi: Ministry of Home Affairs.