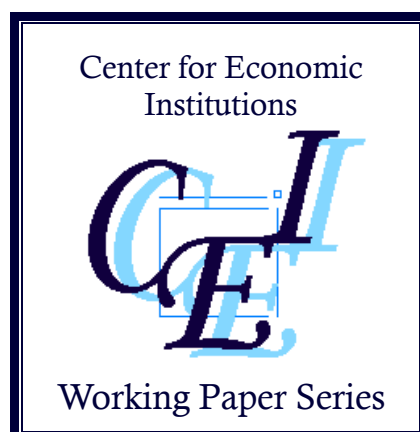


Center for Economic Institutions
Working Paper Series

No. 2016-11

“1930-1943: Agrarian Transformation and the Famine in Bengal”

Saumik Paul
December 2016



Institute of Economic Research
Hitotsubashi University
2-1 Naka, Kunitachi, Tokyo, 186-8603 JAPAN
<http://cei.ier.hit-u.ac.jp/English/index.html>
Tel:+81-42-580-8405/Fax:+81-42-580-8333

1930-1943: Agrarian Transformation and the Famine in Bengal

Saumik Paul*

Abstract

Since the advent of British rule in 1765, the colony of Bengal, once hailed as the most fertile and prosperous region of India, witnessed numerous incidents of food shortages. Apart from the supply and demand side factors are typically associated with a food shortage at an escalated or disastrous level (famine), the role of persistent and long-term factors is also critical. This paper, both qualitatively and quantitatively, provides a deeper understanding of the process of agrarian transformation in Bengal. It argues that the 1943 Bengal famine could have been less likely had there been a buoyant agricultural credit market and a better patronage system with less exploitative farming practices. Quantitatively, I find that frequency of distress sale of occupancy holdings in the 1930s is positively associated with the famine intensity throughout many districts, and this relationship increases in the presence of sharecroppers' struggles.

JEL Codes: N, O

Keywords: Famine, Land transfer, Bengal

*Corresponding author: Saumik Paul, Institute of Economic Research, Hitotsubashi University.
Email: paulsaumik@gmail.com

The author is grateful to Takashi Kurosaki, Cormac Ó Gráda, David Prentice, Mark Tauger and Anchali Singh for their insightful comments on an earlier version. Thanks to Joe Yee Bay for providing excellent research assistance. The usual disclaimer applies.

Introduction

Had a buoyant agricultural credit market and a better patronage system with less exploitative farming practices been in place, could the calamities of the 1943 Bengal famine have been avoided despite the harvest failure in 1942 and public inaction due to wartime emergencies¹? While the unavailability of accurate data remains the biggest obstacle, using the best available resources, this paper attempts to answer this question and generate new insights into the causes of the 1943 Bengal famine.

I begin by dwelling on a seemingly paradoxical case. Colonial Bengal was characterized by abundant water, fertile land, dense population, well-developed foreign trade and a relatively hierarchical social structure (Tirthankar Roy, 2002). At the same time, from the advent of British rule in 1765 till its end in 1947, Bengal witnessed numerous incidents of food scarcity and shortages (Census of India Report, 1951). Some of them escalated to the likes of the great Bengal famines of 1770 and 1943, together accounting for more than 10 million deaths (B.M. Bhatia, 1967; Tirthankar Roy, 2012; Cormac O'Grada, 2015). Understanding the ways in which historical institutions explain long-term development outcomes has received considerable attention over the past three decades². One way to reconcile these paradoxical outcomes is to hold institutions (or lack of efficient institutions for that matter) responsible. Studies show that historical property rights institutions in colonial India that favored the landlords (as in Bengal³), fared worse (Abhijit Banerjee and Laxmi Iyer, 2005). Another explanation could be along the

¹ These are the two main causes that have been predominantly discussed by researchers (Amartya Sen, 1981; Mark Tauger, 2009; Cormac Ó Gráda, 2015).

² Douglas C. North (1990) points to the need for detailed historical analyses to understand the impact of institutions that are likely to be felt for a very long time. Two recently edited volumes by Chaudhary, L., Gupta, B., Roy, T. and Swamy, Anand (2016) and Diamond, J. and J. A. Robinson, (2009) reveal the growing trend for research to focus on historical institutions as a determinant of long-term growth and development.

³ Colonial Bengal constituted the current state of West Bengal in India and Bangladesh (known as East Pakistan from 1947 until 1972).

lines of the reversal of fortune⁴. As emphasized by Tirthankar Roy (2002), due to Bengal consisting of fertile land able to sustain high rents, the commercialization of agriculture juxtaposed with a growing rent-earning class in turn created an agrarian proletariat. These findings point to a deeper understanding of the process of agrarian transformation and the ways it affected the socioeconomic outcomes, such as famines, in Bengal. In this study, I examine the association between the 1943 Bengal famine and agrarian transformation in the period 1930-1943 immediately preceding it.

Next, I clarify the use of the term agrarian transformation in this study. Agrarian transformation in the context of colonial Bengal was multifaceted. For example, the following occurred: a shift from the customary rights over hereditary land to property rights over owned land; a change from cultivation of food crops to more profitable cash crops; subsistence farming being replaced by the practice of sharecropping; a semi-feudal land transfer system changing to one of exchange through an established land markets; the spread of a monoculture from a diversified subsistence agriculture; and finally sporadic incidences of peasant conflicts being replaced by more organized peasant movements. These among others bear witness to some of the major changes in Bengal agriculture⁵. Despite the fact that these changes partially benefited some agrarian classes⁶, Bengal's agrarian economy endured a persistent decline its predominantly smallholding peasantry in the decade preceding the famine (Rajat K. Ray, 1973; Amit Bhaduri,

⁴ D. Acemoglu, S. Johnson and J. A. Robinson (2002) show that reversal in relative incomes took place during the late eighteenth and early nineteenth centuries when colonisers encouraged institutional development in regions that were previously poor. In the Indian context, Tirthankar Roy (2002) contends that regions that were less fertile (unlike Bengal) developed through the establishment of canal irrigation facilities. These helped combine rice with dry season crops in these regions (e.g., Madras presidency, the current state of Tamilnadu in India).

⁵ For a detailed discussion, see Romesh Chandra Dutt (1907), Tirthankar Roy (2002), Amit Bhaduri (1976), Ghosh and Dutt (1977), Narendra K. Sinha (1956), B. M. Bhatia (1967), Tirthankar Roy (2000), B. B. Chaudhuri (1975), Partha Chatterjee (1997), Sugata Bose (2008), M. M. Islam, (2012), Shinkichi Taniguchi (2000), Nariaki Nakazato (1996), and Rajat K. Ray (1973).

⁶ The agrarian transformation in Bengal to a large extent benefited the landlords, large landowners, occupancy *raiyats* and traders-cum-usurers with vested interests in landed property. See Ghatak, M. and S. Chattopadhyay (1986) and Ray, Rajat and Ratna Ray (1975).

1976; M. M. Islam, 2007; Cormac Ó Gráda, 2015). Furthermore, irregular movements in food prices, growing indebtedness of cultivators and polarization of the peasantry were a part of this problem (Amit Bhaduri, 1976; Debarshi Das, 2008). To this extent, a pioneering study by Prashanta Chandra Mahalanobis, R. Mukherjea, and Ambika Ghosh (1946), using a statistical survey conducted in 1944-45, observed that: (1) almost two-thirds of the total number of famine destitute were already in a desperate state even before the famine conditions became prominent; (2) agricultural laborers were the hardest hit among occupational groups; and (3) the famine's intensity varied considerably across Bengal's subdivisions. As Debarshi Das (2008, page 60) succinctly writes, "*the famine, in a way, was the culmination of a moribund agrarian system*".

I focus on two particular phenomena - distress sale of land and sharecroppers' struggle. I argue that as a manifestation of the secular decline in agrarian conditions⁷, both of these factors reveal a close link to the occurrence of the 1943 Bengal famine. Several studies document that following the Great Depression in the early 1930s, land changed hands more frequently and the proportion of sales over mortgages was growing at a considerable rate⁸. In the second half of the 1930s, the aftermath of the depression led to an excess supply of land which culminated in halving the land prices (B. B. Chaudhuri, 1975). It aggravated the growing distress of smallholder cultivators because they had to sell their land at a lower price (Nariaki Nakazato, 1996). This led to a sizable proportion of subsistent farmers losing their occupancy rights and becoming sharecroppers⁹. With its widespread growth, the terms of sharecropping often became associated with more exploitative arrangements. The landlords provided seeds and other facilities in terms

⁷ Two main factors behind this decline were the population growth and deepening crisis of agriculture since the early twentieth century. Between 1901 and 1921, Bengal experienced population growth of almost 11% while there was a decline in gross acreage of cultivation (including double cropping) by almost 9% (Rajat K Ray, 1973; Census of India, 1921). It also witnessed a decline in the percentage of males in the agricultural labor force (George Blyn, 1966).

⁸ See B. B. Chaudhuri (1975) and Nariaki Nakazato (1996) for a detailed discussion.

⁹ See Adrienne Cooper (1988) for a detailed analysis of the growth of sharecropping in Bengal.

of loans, and sharecroppers fell into perpetual debt obligations owing to their failure to repay on time. It led to sporadic outbreaks of tensions and conflicts between sharecroppers and landlords (Adrienne Cooper, 1988). As Partha Chatterjee (1989, page 49) states, “*the nature of the agrarian class struggle in this region in the first half of the twentieth century was conditioned by the process of change in the agrarian structure*”.

To properly understand how agrarian transformation led to differences in the degree of land transfer and sharecroppers’ struggle across regions, I draw upon a set of qualitative evidence on land transfer and its association with the stratification of the peasantry¹⁰. Land revenue was the major source of income for the British Empire in India¹¹, and in Bengal the colonial administrators fixed the *zamindar*’s (landlord) revenue commitment in perpetuity and conferred land rights upon them¹² (known as the Permanent Settlement of 1793). On one hand, it led to the commercialization of Bengali agriculture when a small coterie of local businessmen bought up the defaulted zamindari estates at auction. At the same time, the land rights system in Bengal emerged with multiple layers of resident sub-tenants each claiming proprietary rights over land and agricultural surplus. Over time the growth of agricultural production and its value fell short of meeting the growing rent obligation, and as a result indebtedness spread across the vast majority of small peasants. However, land revenue demand varied from region to region, and the growing pauperization of the smallholding cultivators moved closely with it (Nariaki Nakazato, 1996).

¹⁰ Nariaki Nakazato (1996) based on available statistical figures convincingly shows that the effect of large scale transfer of occupancy holdings varied across regions.

¹¹ In 1841, land revenue constituted almost 60% of the total government revenue earnings (A. V. Banerjee and Laxmi Iyer, 2009).

¹² The *zamindars* previously enjoyed customary rights to share the produce of the soil. The Permanent Settlement Act of 1793 gave them the proprietary right, so that the land could be sold, mortgaged and bequeathed (Rajat Ray and Ratna Ray, 1973).

The British administrators enacted a series of land reforms between the mid-nineteenth and the early twentieth centuries to alleviate the economic conditions of Bengal's poor farmers. However, these measures in effect safeguarded the richer subsection of the peasantry from any crisis (Ghatak, M. and S. Chattopadhyay, 1986). This further aggravated the economic conditions of the peasants. From the beginning of the nineteenth century, the whole of Bengal was slowly prepared for the worst outcomes in decades, and regions that witnessed more distress transfer of land became the hardest hit by the 1943 Bengal famine. Building on this set of qualitative evidence and constructing a novel dataset based on secondary sources¹³, I use the variation in distress sale of land and incidence of sharecroppers' struggles to explain the intensity of the famine across the subdivisions of undivided Bengal¹⁴. The empirical outcomes suggest that sharecroppers' struggles added to the abject misery in these subdivisions that experienced an acute sale of land, and these two factors are correlated with the famine intensity.

Despite its long pedigree, the debate on the causes of the 1943 Bengal famine remains unresolved¹⁵. In one early and pioneering work, Amartya Sen (1981) challenged the view of famine as being caused by the shortage of food. He famously asserted that: *'Starvation is the characteristic of some people not having enough to eat - it is not the characteristic of not having enough food to eat'*. His study concluded that Bengal contained enough food grain to ward off famine, and it was due to market failure and hoarding by merchants in Calcutta that led to the loss of entitlement to food mainly for the poor in rural areas. Later on, researchers including O. Goswami (1990) and Mark Tauger (2009) have criticized this view based on the evidence that in

¹³ See Appendix 1 for a detailed description of the data.

¹⁴ Undivided Bengal refers to Bengal before the partition of India in 1947.

¹⁵ See B. M. Bhatia (1963), Sugata Bose (1990), Lance Brennan (1988), Tarakchandra Das (1949), M. Mufakhurul Islam (2007), Arup Maharatna (1996), Ashok Mitra (1989), Omkar Goswami (1990), Cormac Ó Gráda (2015), Mark Tauger (2004), and Auriol Weigold (1999).

fact a decline in food availability occurred due to a harvest failure in 1942¹⁶. Cormac Ó Gráda (2007, 2009, 2015), in a number of studies, also stressed the supply side failures and added other reasons such as the Japanese conquest of Burma and the boat-denial policy¹⁷, which severely compromised the possibility of getting food aid on time. According to him, these factors contributed to the lack of food supply and led to skyrocketing rice prices especially in the rural areas¹⁸.

In a recent study, Madhusree Mukherjee (2011) argued that there was a large-scale entitlement failure mainly caused by many of British Prime Minister Winston Churchill's wartime decisions. In January 1943 he advised to remove 60% of the merchant ships from the Indian Ocean so that supplies of food and raw materials could reach the UK. According to M. Mukherjee (2011), this might have catalyzed the famine conditions as it made it difficult to get food supplies from elsewhere such as Australian wheat. At the same time, a persistent decline in the agrarian economy in Bengal's predominantly smallholding peasantry, in the decade preceding the famine, has been highlighted in several studies (Amit Bhaduri, 1976; Debarshi Das, 2008; M. M. Islam, 2007; Cormac Ó Gráda, 2015). While the debate continues, one major shortcoming arising from these studies is the dearth of credible quantitative evidence. The statistical analyses have been scant mainly due to the unavailability of precise data. This study aims to bridge this knowledge gap by combining qualitative evidence with some statistical analysis. The main theme emerging from this study is that while several factors triggered the catastrophe, a steadily declining agrarian system had simply helped prepare Bengal for the worst calamity in its colonial history.

¹⁶ Mark Tauger (2009) claims that due to fungal disease the amount of rice production was severely hit in the preceding year.

¹⁷ By 1940 almost 15% of the rice supply in Bengal came from Burma.

¹⁸ Cormac Ó Gráda (2007, 2009) using available data on destitution by occupational structure, argues that a large number of producers were also hurt, which only makes the case for a supply side failure stronger.

The rest of the paper is organized as follows. Section 2 provides a brief history on the origin and development of land rights in Bengal. In section 3, I discuss land transfer and the loss of occupancy status in the period from 1930-1943. Section 4 contains a brief description of the sharecroppers and their struggles in Bengal during the same period. I discuss the quantitative model and outcomes in section 5, followed by a concluding note in section 6.

2. The Origin and Development of Land Rights in Bengal

“There is no ownership of land, but simply a system of possessory interests, These interests are piled one on top of another, none can be got rid of unless the interest holder fails to pay his dues to his superior landlord”

– A British ICS officer’s remark on Bengal’s land tenure system (1946)¹⁹

The rural agricultural economy of colonial Bengal was predominantly characterized by small peasant families. Consequently, the land revenue system and customary land rights both played a crucial role in any form of agrarian transformation in that era. According to many historians, the origin of land rights in Bengal dates back to 1793, when the British conferred property rights to the landlords through the establishment of the Permanent Settlement Act (Binay Bhushan Chaudhuri, 1975). I here provide a brief overview of the land revenue systems that existed before the permanently settled revenue system to create the historical context. This will allow readers to compare and evaluate the permanently settled system against the time-honored land rights customs that had prevailed in Bengal since the Mughal era. For convenience, I divide the analysis into three chronological phases: (a) 1765 to 1793, (b) 1793 to 1859 and (c) 1859 to 1930.

¹⁹ Bell Papers, File No. 2, 1940-46, ‘Agriculture in India.’ University of Cambridge, Centre of South Asian Studies.

2.1. From 1765 to 1793

The system of collecting land revenue existed in Bengal well before the British era. Prior to the land rights being subjected to permanent settlement, there was no clearly defined proprietorship of land in Bengal (K. B. Saha, 1930). The state was only entitled to a revenue from the soil. There existed customary relationships between the landlord (*zamindars*) and tenants (*raiyats*). The *zamindars* held their landed property from generation to generation, and collected customary rents from the *raiyats*. On the other hand, *raiyats* had land rights to their holdings that were subject to the customary rents payable to *zamindars*. Thus, the state (as represented by the Mughal emperors) was entitled to a revenue from the *zamindars*, and *zamindars* were entitled to a customary rent from the *raiyats*. During the Mughal period, old coercive methods of collecting revenue arrears were frequent practiced, including the imprisonment of defaulters (Binay Bhushan Chaudhuri, 1975).

[Figure 2.1 is about here]

By 1760, the East India Company (EIC, from here on) emerged as a great territorial power in India following its victory at the Battle of Plassey in 1759²⁰. In 1765, the EIC obtained a charter from the feeble descendants of the Mogul empire, making it the administrator of Bengal. From 1767-1772, Bengal witnessed an acute drain of wealth (Romesh Chandra Dutt, 1907)²¹. The EIC under the leadership of Robert Clive administered a dual scheme, where it derived all the revenue profits but collection of revenue was still done under the Bengal Nawab's exchequer,

²⁰ See Romesh C. Dutt (1907) for a comprehensive study on this topic.

²¹ The drain from Bengal was never less than one million pounds sterling, and commonly around 1,200,000 per year (Romesh Chandra Dutt, 1907).

and all transactions were masked by his authority²². Throughout this period land revenue was exacted with the utmost rigor to meet the EIC's demand (Romesh Chandra Dutt, 1907). In 1770, Bengal suffered the worst famine of all time in which almost 35% of the total population and 50% of the agricultural population perished. However, as Figure 2.1 highlights, it did not have any impact on the EIC's revenue collection. In 1772, the exchequer and treasury were moved to Calcutta, and it settled a new land revenue collection for five years with a new system of law and order. The five-year revenue plan, however, also proved to be a failure. As Romesh Chandra Dutt (1907) stated, "*Greater parts of the Zamindaris were ruined, people of lower rank were appointed as collectors, more like farmers of revenue*".

Between 1772 and 1789, the collection of revenue based on short-term leases continued to hit the old *zamindari* estates hard²³. Consequently, the descendants of these traditional estate owners had no choice but to pass their land through public sale. Great transfers of landed property took place and a majority of them concentrated in the hands of money-lenders and speculators from Calcutta. This virtual demolition of *zamindari* estates continued unabated until 1789 (Census of India, 1951). As shown in Figure 2.1, the land revenue collection process steadily rose during the period from 1772 till 1793. Compared to the average collection during the Mughal era, the total collection more than doubled during the five-year settlement period, 1772-1777. As Radha kamal Mookerji (1938) puts it, the period from 1772 till 1793 represented "*a story of huge deficits, defaulting zaminders, deserting raiyats and absconding farmers*".

2.2. From 1793 to 1859

²² Md Reza Khan undertook revenue collections in lower Bengal and Sitab Roy did the same in Behar, whereas the covenant servants (Verlest, 1767-70 and Cartier, 1770-72) of the East India Company collected revenues only in the districts of 24-Parganas, Burdwan, Midnapur and Chittagong (Romesh Chandra Dutt, 1907).

²³ After the five-year plan, the land revenue settlement plan continued as annual lease for the period from 1778-1780 (Romesh Chandra Dutt, 1907).

In 1793, under the Act of Permanent Settlement, the revenue demand from Bengal was fixed at an approximately nine-tenths of the actual rental²⁴. With the enactment of this new system, the *zamindars* became hereditary proprietors of land on a perpetually fixed land revenue with rights over transfer of land. It was hoped that a fixed rent arrangement would induce the *zamindars* to improve the agrarian conditions of their estates and thereby gradually increase their scanty share of one-tenth (K. B. Saha, 1930) of the total rent. It improved the land revenue collection with an immediate effect (Figure 2.1). However, the inflexible arrangements of the permanently settled system also heightened the landlords' revenue obligation. In this rapidly changing environment *zamindars* had the option of becoming direct sellers of grain and retaining their feudal customary relationship with the tenants (Narendra Krishna Sinha, 1962). Yet, since no specific rent-collection mechanism was set up between the *zamindars* and the *raiyyats*, to hedge against the risks of defaulting, they opted for a more secure option by transforming resident tenants into rent-receiving intermediaries (Amit Bhaduri, 1976). It helped collection of rent especially from a far-flung tenantry, which otherwise involved burdensome organization and considerable risks²⁵.

²⁴ The actual rent was based on the revenue assessment done in 1789-90. The table below shows how permanent settlement brought changes to the revenue assessment in previous years for some districts data is available. As Bhaduri (1976) pointed out this rental income can be thought of as net income, the difference between the value of agricultural output and the circulating capital cost including consumption (wages) of direct producers.

	Revenue assessment in 1789-90	Permanently settled revenue in 1793	Percentage change
Birbhum	998028	1031848	3.4%
Dinajpur	1614499	1657228	2.6%
Jessore	785476	788888	0.4%
Mushidabad	1426210	1440106	1.0%
Mymensingh	612233	601141	-1.8%
24-Parganas	928293	865090	-6.8%
Midnapur	1032271	1252271	21.3%
Bengal	21743326	21829459	0.4%

Source: Ghosh and Dutt (1977)

²⁵ K. B. Saha (1930) emphasized that the growth of these intermediaries was more prevalent in regions full of waste lands, forests, rivers and streams where it was more difficult to collect rents.

[Table 2.1 is about here]

Over time, tenants with relatively large holdings formed a group of powerful moneylenders, while the smallholder cultivators became impoverished due to increasing rent obligations. According to Ghosh and Dutt (1977) “*the permanent Settlement initiated a transformation of the customary relation between the tenant and his hereditary landlord to a contractual relation between the tenant and the owner of a piece of land*”. The commercialization of the feudal agrarian system led to a rapid subdivision of property rights through free sale and purchase of these land rights at all levels (B. B. Chaudhuri, 1975; Amit Bhaduri, 1976). Through this process, the agrarian society also experienced the emergence of a new group of speculators or traders who saw agriculture as a source of profitable venture. Frequent transfer of land took place from the old *zamindari* estates to a newly developed moneyed class consisting of usurers and moneylenders. This subjected the *raiyats* to a more vulnerable economic state as this newly developed class of landowners was mainly driven by pecuniary motives (Ratna Ray and Rajat Ray, 1975).

By the early nineteenth century, the land rights system in Bengal emerged with multiple layers of resident sub-tenants each claiming proprietary rights over land and agricultural surplus²⁶. It is important to note that the process of *subinfeudation* preexisted the Permanent Settlement (W. W. Hunter, 1876). However, the permanently settled system brought changes in the power structure of the *zamindari* system that in turn made Bengal’s multi-tier land tenure system an integral part of British colonial administration (Shinkichi Taniguchi, 1975). Table 2.1 provides a snapshot of the intermediate tenure-holders in colonial Bengal across the three main

²⁶ The number of intermediaries increased by almost 62% in the period from 1921-31 (Bhaduri, 1976).

categories of landlords, tenants and cultivators²⁷. In an extensive study, J. C Jack (1915) described the reasons that necessitated the emergence of the intermediate tenures into six broad categories, these being development, promotion, revolt, interpolation, fraud and family arrangement. According to Ghosh and Dutt (1977), *subinfeudation* had two direct implications. It helped the original *zamindar* evade the managerial duties and they eventually became absentee landlords by migrating to urban areas. Moreover, it increased burden on peasantry the number of intermediaries grew over time with regular partition and sale of estates.

To sum up, while the merits of the permanently settled revenue system have remained a topic of debate among historians and researchers (Ramesh Chandra Dutt, 1907; Radha Kamal Mookerji, 1938), it can safely said that by the mid-nineteenth century Bengal witnessed some consequences of it through (1) the breakup of feudal socioeconomic structure, (2) growing investment in land in the form of acquisition of old *zamindari* estates through free sale and purchase of land²⁸.

2.3. From 1859 to 1930

From 1859 to 1930, a series of land reform initiatives were undertaken by the British government to ameliorate the growing distress of the poorer agrarian classes. Passing of the 1859 Land Act reestablished the basic rights of tenants but only to a limited section of the peasantry (Ghosh and Dutt, 1977). It gave the *rai-yats* some relief by classifying them into three categories. The first group consisted of fixed rent tenants, whose rents were fixed since the establishment of the Permanent Settlement in 1793 and continued to enjoy the same privilege. Then the *occupancy-raiyats*, who held land for at least 12 years at a fixed rent and could not be evicted so long they

²⁷ See Shinkichi Taniguchi (1975), pages 32-33, for a detailed discussion on this topic.

²⁸ In Bengal most land sales occurred between 1793-94 and 1806-7 (B. B. Chaudhuri, 1975).

paid the stipulated rent. Third and finally, there were the non-occupancy *rai-yats* who held land for less than 12 years. This reform was the first of its kind to protect the landed interests of less powerful agrarian groups, however, there were two major shortcomings that prevented it from achieving the desired goal. On the *rai-yats*' part, it became difficult for them to provide accurate evidence that they had, in fact, held their land for 12 years. On the other hand, the *zamindars* employed a new strategy to prevent tenants from becoming *occupancy-rai-yats* by evicting them before they had 12 years' tenure (K. B. Saha, 1930). Apart from this, it left the non-occupancy *rai-yats* unprotected and they continued to face frequent eviction threats.

Later in 1885, some amendments were put forward through the Bengal Tenancy Act. Provisions were made to provide the *rai-yats* with greater rights of ownership of the produce, so that they could retain a portion of the surplus. For the first time it gave legal rights to the settled and *occupancy-rai-yats* to sell and purchase land independent of the *zamindars*. They were also given rights to collect rents from the under *rai-yats* who worked immediately under the *rai-yats*. The requirements to become *occupancy-rai-yats* were made less strict. Since then, the *rai-yats* holding any land in a village for 12 years could obtain occupancy status over all the plots. The law courts were allowed to interfere in cases involving rent disputes, where any ad hoc increases in rent by the landlords were compared against average rents over the past 10 years. The new law also curbed the enhancement of rent by the newly created "rent-receiving" class of occupancy *rai-yats* and stipulated a further increase only after 15 years since the last one.

[Figure 2.2 is about here]

I summarize the main points below. The agrarian transformations that occurred in the eighteenth century linked a very backward agricultural economy to a capitalist market economy.

There were traditional (of a feudal nature) barriers to capital flow in agriculture as the merchant-capitalists maintained a traditional non-monetary relationship with the agricultural laborers. It is evident that a series of reforms with good intentions proved to be of a half-hearted nature. They did not benefit everyone in the agricultural population. Over a period of almost 150 years since the beginning of the British rule in 1765, the peasantry of Bengal became increasingly impoverished. With the help of Figure 2.2, one can observe a growing share of landless agrarian laborers rising from 3% in 1891 to almost 30% in 1931. While the share of rent receivers (*zamindars*, traders, upper *rai-yats*, etc.) remained around 5%, a sizable portion of the rent-payers (predominantly *rai-yats*) became landless agricultural laborers or sharecroppers between 1921 and 1931²⁹. I elaborate on this phenomenon in section 4.

[Figure 3.1 is about here]

3. Land Transfer and the Loss of Occupancy Status, 1930-1943

The Bengal Tenancy Act of 1885 initiated the formal process of land transfer in Bengal and consequently the turn of the nineteenth century witnessed a remarkable increase in the registered sales of occupancy holdings. Since the early 1880s, within a span of 25 years, the number of registered voluntary sales of occupancy holdings increased from 25,448 to 184,233 (N. Nakazato, 1996). The actual figures could be much higher as the recorded figures indicate only the voluntarily registered transfers. This continued to expand during the first three decades of the twentieth century, until the Great Depression hit the colonies. In the early 1930s, it lowered general prices and resulted in a damaging outflow of money from Bengal. Consequently,

²⁹ These figures are compiled from Census of India volumes, and the definitions of rent payers, rent receivers and agricultural laborers changed over time. While this may lead to some minor errors the overall trends are not misleading.

agricultural investments dropped and debt obligations increased as many smallholder cultivators mortgaged their land to obtain credit for agricultural inputs. The long depression also hurt the potential buyers³⁰. At the same time a number of government measures were implemented to protect the indebted peasants. The 1933 Bengal Money Lenders Act and the 1936 Bengal Agricultural Debtors Act gave some protection to mortgage holders, at least in terms of buying them some time to avoid selling their lands. This can be seen from Figure 1, where we observe a higher rate of mortgaging compared to sale in the early 1930s.

The average number of land transactions from 1930 till 1937 documented around 30 out of every 1000 households. However, the rate of registered sales of occupancy holdings dramatically increased (almost doubled) towards the end of the 1930s whereas the number of mortgages dropped by an almost equal proportion. This is partly because with the worsening economic conditions, an increasing proportion of debtors failed to repay their debts, and were forced to make direct sales of their mortgaged land. During the decade-long depression, the prices of nonfood agricultural products (jute, tobacco, etc.) in Bengal fell below the cost of production, and it became difficult for the landlords to collect even half of the total rent payable as agricultural depression affected all strata of the landed class (K. B. Saha, 1930). This aggravated the crisis further as many small land holders who became solvent irrevocably lost their land.

[Figure 3.2 is about here]

Next I discuss the heterogeneous outcomes of land transfers across the regions of Bengal, which is central to this study. In this context, I draw upon the literature on agricultural

³⁰ N. Nakazato (1996) documents that almost 70% of recorded purchasers were *raiyyats* themselves.

stratification³¹ to establish a link between this large scale transfer of occupancy holdings and regional variation of destitution. In the first half of the twentieth century, Bengal's stratified rural society experienced a new trend. Partha Chatterjee (1997) summarizes it as an apparent paradox, where the western part of Bengal (now West Bengal, a state of India) revealed a decline in the degree of stratification whereas in the eastern part of Bengal (now Bangladesh) in sharp contrast, the exact opposite occurred. In Figure 3.2, I compare the rate of transfer of occupancy rights between the east and west Bengal districts³². The average rate of transfer in west Bengal districts stood at 11% whereas the same rate of transfer for the east Bengal districts recorded 13.5% (Figure 3.2). The contrast was greater across the districts within the eastern part of Bengal. Land transfer was negligible in the districts of Jessore and Rajshahi. At the same time, it reached more than 30% in the districts of Tippera and Noakhali. Apart from that, the districts of Mymensingh, Dacca, Bogra and Pabna and Midnapur (from the west part of Bengal) were also severely affected by distress sale.

This phenomenon continued and reached an alarming level in 1942, with almost 17% of the total land holdings listed for sale (Das, 2009). As argued by N. Nakazato (1996), a number of additional factors along with the transfer of occupancy land also contributed to the heterogeneous outcomes concerning stratification. According to him, expanding economic activities could explain the large number of land sales in Tippera and Noakhali, however, these two districts were the least stratified in terms of land holding distribution. While consolidation of land by some moneylenders or the *jotedar* class could partially explain this puzzle, an overall growing stratification trend in the eastern part of Bengal could also be related to a stronger tendency of occupancy holdings to change hands within the peasant class from an inferior to a superior

³¹ Rural stratification in Bengal is related to the degree of inequality in land holding size. See S. Bose (1987), P. Chatterjee (1997) and N. Nakazato (1996) for a detailed discussion on this topic.

³² I make this distinction based on the 1947 partition that divided Bengal into India and East Pakistan (which later became Bangladesh).

farmer. The main implication of the stratification of Bengal agriculture in conjunction to land transfers lies in the socioeconomic transformation of rural Bengal. This univocally created regions with a more unequal distribution of wealth that became more susceptible to any crisis.

I conclude this section with a brief discussion on how the transferred lands were ultimately used, which also has a direct bearing on the distribution of welfare outcomes. In Figure 3.3, I show transferred occupational land holdings cultivated by different agrarian classes across districts in Bengal. On average, about 45% of the purchased land was directly cultivated by the owner and the rest by agrarian laborers comprising sharecroppers, laborers and *under-raiyats*. Again, these figures reveal a sharp contrast between the west and east Bengal districts. In the former, owners cultivated only 35% of the total purchased land whereas the latter cultivated 53%. The percentage of transferred land cultivated by sharecroppers betray relatively less variation, about 38% in the west Bengal districts compared to only 30% in the east Bengal districts.

[Figure 3.3 is about here]

4. Sharecroppers and their struggles, 1930-1943

The practice of sharecropping in Bengal has existed since ancient times (Adrienne Cooper, 1988). As discussed in section 2, throughout the colonial period, permanently settled property rights and subinfeudation spawned multiple layers of resident sub-tenants. A sizable proportion of these sub-tenants, mostly subsistent farmers holding small pieces of land, lost their occupancy rights

through distress sell of land and were forced to become sharecroppers³³. As shown in Figure 3.3, almost one-third of the transferred *raiyyati* land was sharecropped. The rights of occupancy *raiyyats* were gradually enhanced via a series of land reform programs, especially with the 1885 Bengal Tenancy Act. In sharp contrast, the question of sharecroppers was mostly ignored (M. Ghatak and S. Chattopadhyay, 1986). The widespread growth in sharecropping caught up in increasing rent obligations³⁴ became closely associated with the growing pauperization and polarization of the peasantry in the 1920s and 1930s (Adrienne Cooper, 1988).

[Figure 4.1 is about here]

In the second half of the 1930s, the aftermath of the Great Depression led to an excess supply of land halving the land prices (B. B. Chaudhuri, 1975). While the moneylenders gained from purchasing more land at a cheaper price, it aggravated the pressures on the smallholder cultivators since they had to sell their land at a lower price. In response to political pressure to improve the well-being of sharecroppers, the Bengal Land Revenue Commission conducted a sample survey of sharecroppers in 1938-40. The commission report found about 22% of the arable land was cultivated by sharecroppers. Figure 4.1 shows the distribution of sharecropped land (as a share of total land) and households depending on sharecropping across the Bengal districts for the period 1930 to 1939. The area of sharecropped arable land varied from 10% (in the districts of Mymensingh and Malda) to about 50% (Khulna district). However, the average percentage of sharecropping households stood around 14%.

³³ Adrienne Cooper (1988) provides a detailed history of sharecropping in Bengal, but accurate statistics are unavailable.

³⁴ The average rent in sharecropped land was much higher than the average rent in common *raiyyati* land (K. B. Saha, 1930).

Another aspect of sharecropping were the terms of the sharecropping system, which varied considerably across districts. Ordinarily, the landlord supplied the seed and bears other expenses, whereas sharecroppers returned half of the produce to the landlord. In places with more exploitative arrangements, the landlord provided such facilities in terms of loans, and sharecroppers fell into perpetual debt obligations. They struggled to secure interest-free seed and grain for consumption purposes and protested against illegal exactions (Adrienne Cooper, 1988). This situation led to rising tensions and conflicts between the sharecroppers and landlords. Bengal had a long tradition of peasant struggles³⁵ but sharecroppers' problems erupted on a large-scale given the impact of the ongoing agrarian transformation. Some sporadic incidents deserve a mention. In 1909 in Sadar subdivision of Jessore district sharecroppers demanded two-thirds share of the produce and refused to work under equal division. In a similar incident, in 1926 sharecroppers refused to carry harvested crops to the landlord's compounds in Pabna (Bose, 1990). During the period from 1930-1942, sharecroppers' struggles heightened in many areas, particularly in the subdivisions of Dacca, Midnapur, 24-Parganas, Khulna and Pabna districts.

[Figure 4.2 is about here]

I constructed a dataset on the events of sharecroppers' struggles based on the information available in Cooper (1988). The detailed description of the data is available in Appendix 1. In Figure 4.2, I plot the number of times each district experienced sharecroppers' struggles for two phases: 1900-1942 and 1930-1942. Since detailed information on the intensity of each event is not available, I consider each event to be of similar intensity. Three different typologies of

³⁵ These include, to name a few, the *Santhal Rebellion* in 1855, *Blue mutiny* against the Indigo planters in 1859-63, sporadic sharecroppers' uprisings in Jessore district in 1909, Pabna district in 1913, and Chatmohar in 1926 (Adrienne Cooper, 1988).

districts emerge from the data. First, districts where the frequency of conflict peaked before 1930, and then subsided later in the 1930-1942 phase. The districts of Dacca, Mymensingh, Birbhum, and Bakerganj fall into this category. In the second group of districts the frequency peaked during the period from 1930-1942, and examples are Midnapur, Jessore, 24-Parganas, Rangpur and Jalpirguri. The third category consists of districts that never experienced any conflict over the issue of sharecropping. To sum up, the heterogeneous distribution of conflict events across time and space manifests the varying pace of agrarian transformation throughout the regions of Bengal. To this extent, Partha Chatterjee (1989) nicely summarizes it as “*the nature of the agrarian class struggle in this region in the first half of the twentieth century was conditioned by the process of change in the agrarian structure*”

5. Quantitative Analysis

[Figure 5.1 is about here]

5.1. Empirical model and Data

In Appendix 1, I provide detailed description of the data used for empirical analysis in this paper. Figure 5.1 provides a map of undivided Bengal, where the land transfer data is plotted against the districts and the famine intensity is shown at the subdivision level. As discussed in section 3, the rate of land transfer was much higher in the eastern districts (Bogra, Mymensingh, Dacca, Tipera and Noakhali) and some districts in the south-west (Birbhum, Hooghly, Midnapur and Howrah) shown in panel A. Panel B illustrates that the districts of Dacca, Faridpur, Tippera and Noakhali were most severely affected by the famine. Based on the qualitative discussions so far, I empirically test the hypothesis that sharecroppers’ struggles added to the abject misery in

subdivisions that witnessed the loss of occupancy rights. I examine the effects of land transfer and sharecroppers' struggles on famine intensity, F_S , in subdivision s , using the model described as equation 1.

$$(1) \quad E(F_S | Land_D, Struggles_S) = \phi (\alpha_{DIV} + \beta_1 Land_D + \beta_2 Struggles_S + \beta_3 Land_D \times Struggles_S)$$

Here, α_{DIV} represents division³⁶ dummies effect, $Land_D$ is the percentage of occupancy holdings in each district transferred annually by registered sales from 1930-38, and $Struggle_S$ is a dummy variable indicating whether a subdivision witnessed sharecroppers' struggles in during 1930-1940. In the absence of a direct measure of famine intensity, F_S , I use a qualitative index (*one to four*) following Mahalanobis et al. (1946) where *one* indicates slightly affected and *four* represents very severely affected at the sub-district level. Data on land transfer is taken from Chatterjee (1997)³⁷ and data on sharecroppers struggles is constructed from Cooper (1988) as described in Appendix 1.

I use an ordered probit model to estimate equation 1. I am primarily interested in finding the marginal effect of the interaction term, i.e. whether the land transfer and sharecroppers' struggles jointly determine the famine conditions. In a nonlinear model, the estimation and interpretation of β_3 is not straightforward unlike the case of a linear model (Ai and Norton, 2003). In equation (1), $Land_D$ is a continuous variable measuring the percentage of land transfer

³⁶ During the British rule, Bengal was divided into seven divisions; each division consisted of multiple districts and each district was further divided into subdivisions.

³⁷ Appendix 2 provides a summary of the evidence on land transfer.

and $Struggle_S$ is a dummy variable indicating whether a subdivision experienced sharecroppers' struggles. Based on Lee (2013), I calculate the marginal effect of the mixed interaction term as:

$$\frac{\Delta}{\Delta Struggle_S} \left(\frac{\partial \phi}{\partial Land_D} \right) = \phi' (\beta_1 Land_D + \beta_2 + \beta_3 Land_D) (\beta_1 + \beta_3) - \phi' (\beta_1 Land_D) \beta_1$$

5.2 Empirical Findings

I report the coefficients and marginal effects in Table 5.1. The first column shows positive estimates for both β_1 and β_3 . Thus, subdivisions with more registered transfers of land were, on average, more likely to experience famine conditions. At the mean value of the explanatory variables, the chances of a subdivision being severely affected and very severely affected were 2.3% and 1.3%, respectively. The marginal effect of the interactive term is positive for all categories except the very severely affected subdivisions (Table 5.1). Overall, the findings support the contention that sharecroppers' struggles added to the abject misery in subdivisions of districts that experienced land transfer from the poor to the rich³⁸.

[Table 5.1 is about here]

If subdivisions with more land transfer and sharecroppers' struggles were already impoverished, then the famine conditions could possibly be a direct outcome of this scenario. To address this endogeneity issue, I use both the jute districts and the area of east Bengal³⁹ as proxies for more poverty-ridden areas (these appear as dummy variables in the regression). Jute was the main cash crop in the more commercialized eastern parts of Bengal and its price dropped by almost 61% during the Great Depression (Cooper, 1988). The catastrophic slump in jute prices

³⁸ It also indirectly points to the necessity of the development of a rural credit market as a safety net to avoid such disasters as argued by Martin Ravallion (1997).

³⁹ The area of east Bengal corresponds to the country that is now known as Bangladesh.

added to the misery of smallholder cultivators in the districts of Dinajpur, Rangpur, Dacca, Mymensingh and Tippera. Figure 5.2 provides partial support for this claim where I show changes in the ratio of total revenue collections to total revenue demand. The average figure for Bengal shows a downward trend for the period from 1923 to 1941. In the jute producing districts it is lower by almost 10 to 15 percentage points. In other words, the lower rate of revenue collection in the jute producing districts indicates poor economic conditions in this region. However, the empirical results suggest that the famine intensity was in fact lower in subdivisions of the jute districts where sharecroppers' struggles and the distress transfer of land were more prominent (Table 5.2, column 2).

[Figure 5.2 is about here]

On the other hand, the average distress sale of land from 1930 to 1940 was 3.5 percentage points higher in the eastern districts compared to the western districts of Bengal (Chatterjee, 1997). However, the regression outcomes (shown in Table 5.2, column 1) suggest that poverty is not correlated with the main variable of interest. Thus, endogeneity appears less of a concern here. Furthermore I use the percentage of sharecroppers as an alternative measure of poverty. It only measures the number of sharecroppers in 1939, and does not reflect the growth in sharecropping during the 1930s due to land transfer. On average, the estimated coefficients of sharecroppers suggest that subdivisions with more sharecroppers experienced less famine intensity. While it appears counterintuitive, it must be understood that sharecropping was prevalent in Bengal well before the 1930s and the sharecroppers-to-cultivators ratio may not be correlated with sharecroppers' struggles and land transfer rate across districts. The coefficients of land transferred (β_1) and the interaction term between sharecroppers' struggles and land transferred (β_3) remain positive and statistically significant in most of the models. Overall, the

findings suggest that distress transfer of land and sharecroppers' struggles were correlated with the famine intensity. However, I do not attempt to claim any strong causal relationships based on these findings.

[Table 5.2 is about here]

6. Conclusion

Between 1868 and 1951, based on the information compiled by the Census of India 1951, there were 33 reported incidents of food unavailability and shortages in 13 districts of Bengal, which are currently in West Bengal, India⁴⁰. However, none of these other food scarcity incidences was comparable to the catastrophic level of the 1943 Bengal famine. This paved the way for a vast literature to be published on this subject, which has already delved into numerous factors, ranging from public inaction to food availability decline. At the same time, 33 incidents of food shortages over a span of 80 years do suggest the role of persistent and long-term factors. The role of a declining agrarian system and how it was structured, as suggested by some researchers (Das, 2009; Ó Gráda, 2008) is a promising but relatively less researched area. To this extent, this paper studies the role of agrarian transformation in the 1930s in explaining the 1943 Bengal famine. Based on qualitative as well as quantitative evidence, I show that regions with more land transfers and frequent struggles of sharecroppers remained more vulnerable to the famine conditions. These findings voice similar concerns that have been noted in a recent study by Chaudhary, Gupta, Roy, and Swamy (2016): “*Famines could have been less likely had*

⁴⁰ After independence the part of Bengal that remained with India became the state of West Bengal. Unfortunately this data is not available for all the districts in undivided (before partition) Bengal.

agriculture in colonial India been more productive”. Why was the per worker productivity low in colonial Bengal despite its fertile soil and favorable agro-climatic conditions? The lack of state capacity building, as advocated by Tirthankar Roy (2012), establishes a direction for future research to answer this question. The main findings in this study also support the notion of a failure of the state in reversing Bengal’s gradually worsening agricultural conditions in the colonial era. One possible way to lead this discussion further is to consider misallocation of resources in conjunction with local institutional barriers and colonial administration, especially the formal and informal rules that impinge on institutional capacity building.

References

- Acemoglu, Daron, Simon Johnson, James A. Robinson (2002) "Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution" *The Quarterly Journal of Economics*, Vol. 117, No. 4, pp. 1231-1294
- Ai, Chunrong & Norton, Edward C. "Interaction terms in logit and probit models," *Economics Letters*, 80 (1) (2003): pp. 123-129.
- Banerjee, Abhijit V. and Lakshmi Iyer. 2005 "History, Institutions, and Economic Performance: The Legacy of Colonial Land Tenure Systems in India" *American Economic Review*, 95(4) 1190-1213.
- Banerjee, Abhijit V. and Lakshmi Iyer. 2009 'Colonial Land Tenure, Electoral Competition and Public Goods in India' in J. Diamond and J. Robinson eds., *Natural Experiments in History*, Cambridge, MA: Harvard University Press.
- Bhaduri, Amit. "The Evolution of Land Relations in Eastern India under British Rule," *The Indian Economic and Social History Review*, 13(1) (1976), pp. 45-53.
- Bhatia, B.M., *Famines in India 1860-1965: a study in some aspects of the economic history of India* (Delhi, 1963).
- Blyn, George (1966) *Agricultural Trends in India 1891 – 1947. Output, Availability and Productivity*, Philadelphia, page 206.
- Bose, S., 'Starvation amidst plenty: the making of famine in Bengal, Honan, and Tonkin, 1942–45', *Modern Asian Studies*, 24 (1990), pp. 699–727.
- Bose, Sugata. (1993) *Peasant Labour and Colonial Capital Rural Bengal since 1770* Cambridge University Press.
- Bowbrick, P., 'The causes of famines: a refutation of Professor Sen's theory', *Food Policy*, 11, 2 (1986), pp. 105–24.
- Boyce, James K. 1987. *Agrarian Impasse in Bengal: Institutional Constraints to Technological Change*. Oxford: OUP.
- Brennan, Lance. 1988. 'Government Famine Relief in Bengal, 1943'. *Journal of Asian Studies*. 47(3): 541-566.
- Chatterjee, Partha. *Agrarian Transformation in Bengal: Class Structure and Class Struggle*. In: *The Present History of West Bengal: Essays in Political Criticism*. Delhi: Oxford University Press. 1997.
- Chatterji, Joya. 1994. *Bengal Divided: Hindu Communalism and Partition, 1932-1947: Hindu Communalism and Partition, 1932-1947*. Cambridge University Press.

- Chatterji, Joya. 2001. 'The decline, revival and fall of Bhadrakol influence in the 1940s.' In S. Bandopadhyay, ed. *Bengal: Rethinking History. Essays on Historiography*. Manohar Publishers.
- Chaudhary, L., Gupta, B., Roy, T. and Swamy, Anand (2016) edited A New Economic History of Colonial India *Routledge*
- Chaudhuri, Binay Bhushan (1975) "Land Market in Eastern India, 1793-1940 Part 1: The Movement of Land Prices," *Indian Economic & Social History Review*, 12(1) (1975): pp. 1-42.
- Chowdhury, Benoy. 1964 *Growth of Commercial Agriculture in Bengal (1757-1900)*, Vol 1 Calcutta Indian Studies.
- Cooper, Adrienne. *Sharecropping and Sharecroppers' Struggles in Bengal 1930-1950*. Calcutta: K.P. Bagchi & Company. 1988.
- Das, Tarakchandra. 1949. *Bengal famine (1943) as revealed in a survey of the destitutes in Calcutta*. Calcutta: University of Calcutta.
- Diamond, J. and J. A. Robinson (2009) eds., *Natural Experiments in History*, Cambridge, MA: Harvard University Press.
- Das, Debarshi. "A Relook at the Bengal Famine," *Economic and Political Weekly*, 43(31) (2008): pp. 59-64.
- Dyson, T. and Maharatna, A. 1991. 'Excess mortality during the Bengal famine: a re-evaluation', *Indian Economic and Social Review*, 28: 281-97.
- Dutt, Romesh Chandra (1907) *The Economic History of India Under Early British Rule*, *Kegan Paul, Trench, Trubner & Co. Ltd.* (Fifth Edition)
- FAMINE INQUIRY COMMISSION. 1945. *Report on Bengal*. Delhi: Govt. of India.
- FOODGRAINS PROCUREMENT COMMITTEE. 1944. *Report*. New Delhi: Govt. of India.
- Ghosh, Ambika (1950) "Economic Classification of Agricultural Regions in Bengal" *Sankhya* 10 (1950) page 109-18.
- Ghosh A. and K. Dutt (1977) *Development of Capitalist Relations in Agriculture (A Case Study of West Bengal 1793-1971)*, People's Publishing House, New Delhi.
- Goswami, O., 'The Bengal famine of 1943: re-examining the data', *Indian Economic and Social History Review*, 27 (1990), pp. 445-63.
- Guha, Ranajit. 1963 *A Rule for Property in Bengal An Essay on the Idea of the Permanent Settlement* Pans Moulton and Co.

- Greenough, Paul R. 1982. *Prosperity and Misery in Rural Bengal: The Famine of 1943-44*. Oxford: OUP.
- Hunter, W. W. (1876) *A Statistical Account of Bengal*, Vol VI, pages 405 – 412.
- Islam, M. Mufakhurul. 2007. 'The Great Bengal Famine and the question of FAD yet again'. *Modern Asian Studies* 41(2): 421–440.
- Jack, J. C. (1915) *Final Report on the Survey and Settlement Operations in the Bakerganj District, 1900 to 1908*.
- Lee, Sangwon. 2009. *Interaction and Marginal Effects in Nonlinear Models: Case of Ordered Logit and Probit Models*, Master's thesis in Statistics, University of Texas at Austin.
- Mahalanobis, Prashanta Chandra, Mukherjea, R. & Ghosh, Ambika. "A Sample Survey of After-Effects of the Bengal Famine of 1943," *Sankhyā: The Indian Journal of Statistic* (1933-1960), 7(4) (1946): pp. 337-400.
- Mahalanobis, P. C. 1946b. 'The Bengal famine: the background and basic facts', *Asiatic Review*, XLII: 310–18.
- Maharatna, Arup. 1996. *The Demography of Famines: an Indian Historical Perspective*. Delhi: OUP.
- Mitra, Asok. 1989. 'Famine of 1943 in Vikrampur Dacca'. *Economic and Political Weekly*, February 4th.
- Mookerji, Radha Kamal (1938) *Food Planning for 400 Million*. London, Macmillan.
- Mukherjee, Madhusree (2011) *Churchill's Secret War: The British Empire and the Ravaging of India during World War II* Basic Books; First Trade Paper Edition.
- Nakazato, Nariaki (1996) "Regional Pattern of Land Transfer in Late Colonial Bengal," in Peter Robb, Kaoru Sugihara, and Haruka Yanagisawa (eds.), *Local Agrarian Societies in Colonial India: Japanese Perspectives*, London: Curzon, pp.250-279.
- Ó Gráda, Cormac. *Eating People is Wrong, and Other Essays on Famine, its Past and its Future*. Princeton University Press. 2015.
- Ó Gráda, C. 2007. 'Making famine history'. *Journal of Economic Literature*. 45, (1): 5-38.
- Ó Gráda, C. 2009. *Famine: a Short History*. Princeton: Princeton University Press.
- Ravallion, Martin. "Famines and Economics," *Journal of Economic Literature*, 35(3) (1997): pp. 1205-1242.

- Ray, Rajat K. (1973) The crisis of Bengal Agriculture, 1870 – 1927 – The Dynamics of Immobility, *The Indian Economic and Social History Review* Vol 10, No. 3, pages 244-279
- Ray, Rajat K. and Ratna Ray (1973) “The Dynamics of Continuity in Rural Bengal under the British Imperium: a Study of Quasi-Stable Equilibrium in Underdeveloped Societies in a Changing World” *The Indian Economic and Social History Review* Vol 10, No. 3, pages 103-128.
- Ray, Rajat K. and Ratna Ray (1975) “Zamindars and Jotedars: A Study of Rural Politics in Bengal,” *Modern Asian Studies*, Vol 9, No.1, 81-102.
- Robb, Peter. 1997 Ancient Rights and Future Comfort Bihar, the Bengal Tenancy Act of 1885 and British Rule in India Richmond, UK Curzon Press
- Roy, Tirthankar (2002) Economic History and Modern India: Redefining the Link, *Journal of Economic Perspectives*, Volume 16 (3), pp. 109-130.
- Roy, Tirthankar (2000) The Economic History of India, 1857-1947, Oxford University Press.
- Roy, Tirthankar (2012) Natural Disaster and Economic History, Oxford University Press.
- Saha, K. B. (1930) Economics of Rural Bengal *Chuckerverty, Chatterjee & Co., Ltd.*
- Sinha, Narendra Krishna (1962) The Economic History of Bengal, From Plassey to the Permanent Settlement (Volume II), *FIRMA K. L. MUKOPADHYAY*, Calcutta.
- Sen, Amartya. Poverty and famines: An essay on entitlement and deprivation. Oxford: Clarendon Press. 1981.
- Sen, Amartya 1986. "Food, Economics, and Entitlements." *Lloyds Bank Review* 160: 1-20.
- Taniguchi, Shinkichi (1981) “The Patni System – A Modern Origin of the “Sub-Infeudation” of Bengal in the Nineteenth century,” *Hitotsubashi Journal of Economics*, 22(1): 32-60.
- Tauger, Mark. "The Indian Famine Crises of World War II," *British Scholar*, 1(2) (2009): pp. 166-196.
- Tauger, M. 2004. ‘Entitlement, shortage, and the 1943 Bengal famine: another look’. *Journal of Peasant Studies*, 31: 45–72.
- Weigold, Auriol. 1999. ‘Famine management: the Bengal famine (1942-1944) revisited’. *South Asia*. 22(1): 63-77.
- Wright, H. R. C. 1961 East-Indian Economic Problems in the Age of Cornwallis and Raffles London Luzac and EIC Limited.

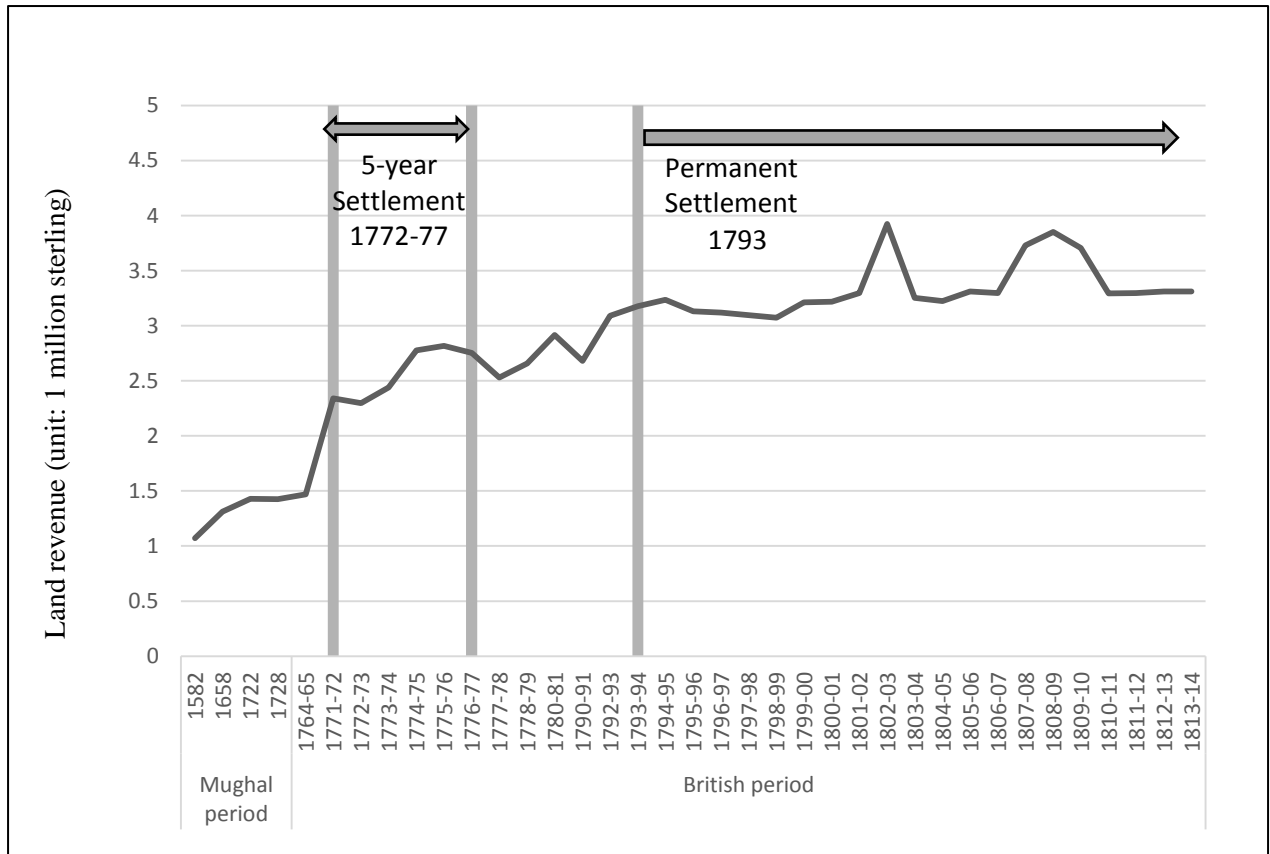


Figure 2.1. Land Revenue collection from Bengal, 1582 - 1814

Source: Authors' own compilation based on Chaudhuri, Binay Bhushan. "Land Market in Eastern India, 1793-1940 Part 1: The Movement of Land Prices," *Indian Economic & Social History Review*, 12(1) (1975): pp. 1-42.

Notes: In 1765, the East India Company obtained a charter from the Mughal Empire, which marks the beginning of the British rule as an administrator of Bengal.

Table 2.1. Sub-infeudation in Bengal

Categories	Existing landed classes in Bengal				
Landlords	Large Zamindars		Small Zamindars		
			Jotedars-traders / Jotedars-Userers		
Tenants	Superior Raiyats		Settled raiyats		
			Occupancy raiyats		
			Non-occupancy raiyats		
Cultivators			Lower raiyats		
			Sharecroppers		
			Agricultural laborers		
	1793	1859	1885	1930	1943
	Permanent Settlement	Rent Act	Bengal Tenancy Act	Depression	Famine

Source: Authors' own compilation based on various sources

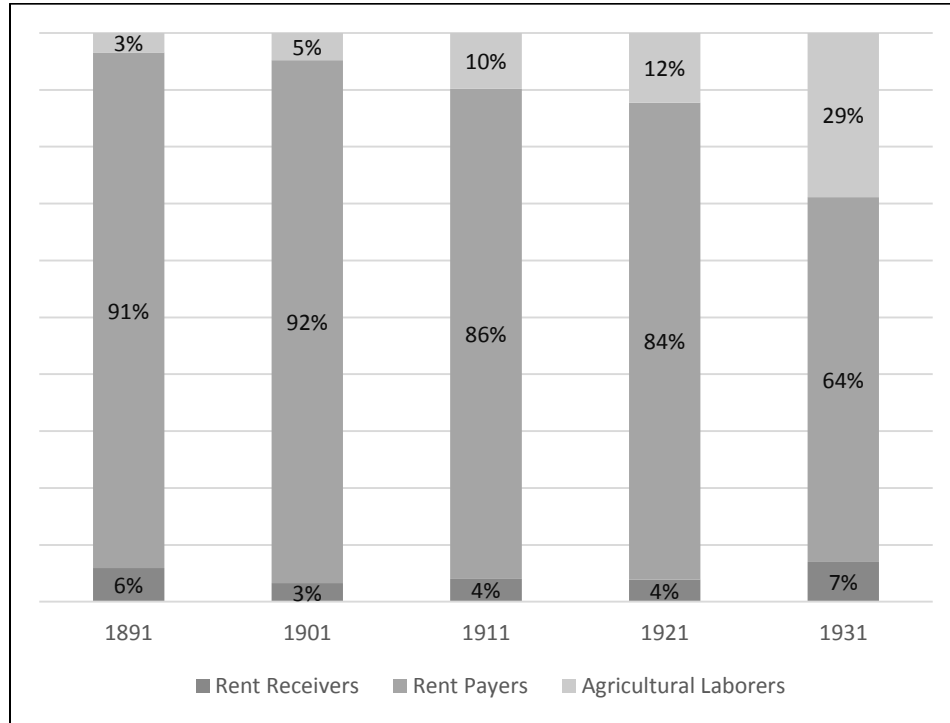


Figure 2.2 Agrarian classes in Bengal: 1891-1931

Source: Authors' own compilation based on agricultural occupation categories tables using Census of India 1891 (Volume IV), Census of India 1901 (Volume VI), Census of India 1911 (Volume V), Census of India 1921 (Volume V) and Census of India 1931 (Volume V).

Note: To make the data comparable over time, I use the following classification:

	Rent receivers	Rent payers	Field laborers
1891	Land occupants, not cultivating; Tenants, not cultivating	Land occupants, cultivating; Tenants and sharers, cultivating	Field laborers and crop-watchers
1901	Rent receivers	Rent payers	Farm servants; Field laborers
1911	Income from rent of agricultural land; Agents, managers of landed estates (not planters), clerks, rent collectors, etc.	Ordinary cultivators	Farm servants and field laborers
1921	Income from rent of agricultural land; Agents, managers of landed estates (not planters), clerks, rent collectors, etc.	Ordinary cultivators	Farm servants; Field laborers

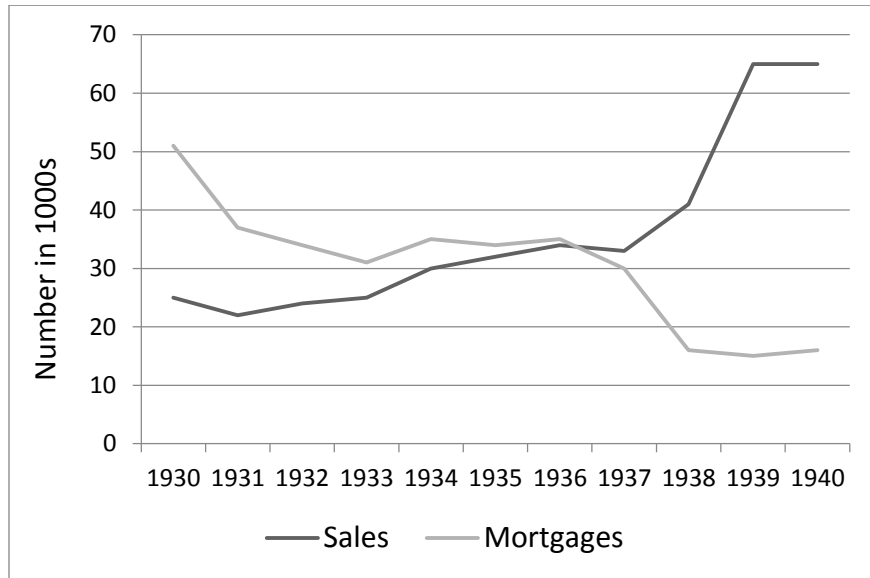


Figure 3.1. Number of Registered Sales and Mortgages of Occupancy Holdings, 1930-40

Note: The figure shows changes in number of registered sales and mortgages of occupancy holdings in the period from 1930 – 1940.

Source: Cooper, A., 1988. *Sharecropping and Sharecroppers' Struggles in Bengal 1930-1950*. Calcutta: K.P. Bagchi & Company.

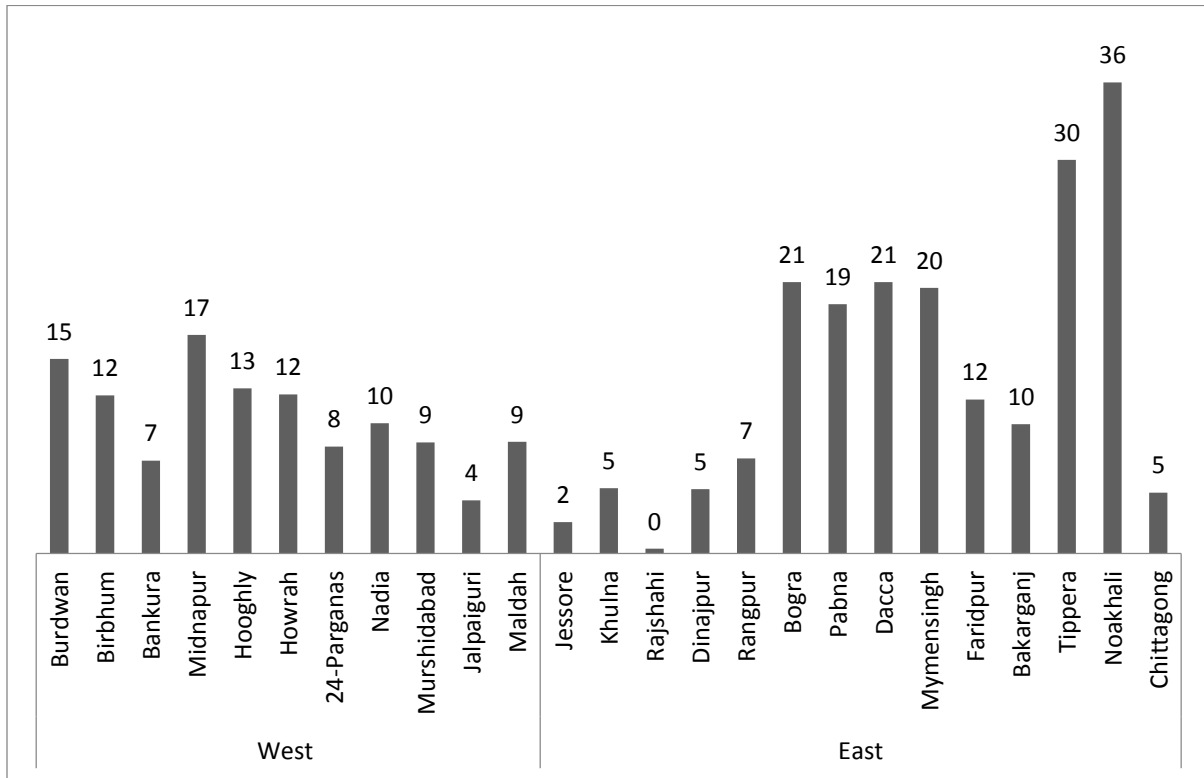


Figure 3.2. Percentage of Occupancy Holdings Transferred by Registered Sales, 1929-1938

The figure below shows the percentage of occupancy holding transferred by registered sales in the period from 1929 to 1938.

Source: Chatterjee, P., 1997. Agrarian Transformation in Bengal: Class Structure and Class Struggle. In: *The Present History of West Bengal: Essays in Political Criticism*. Delhi: Oxford University Press.

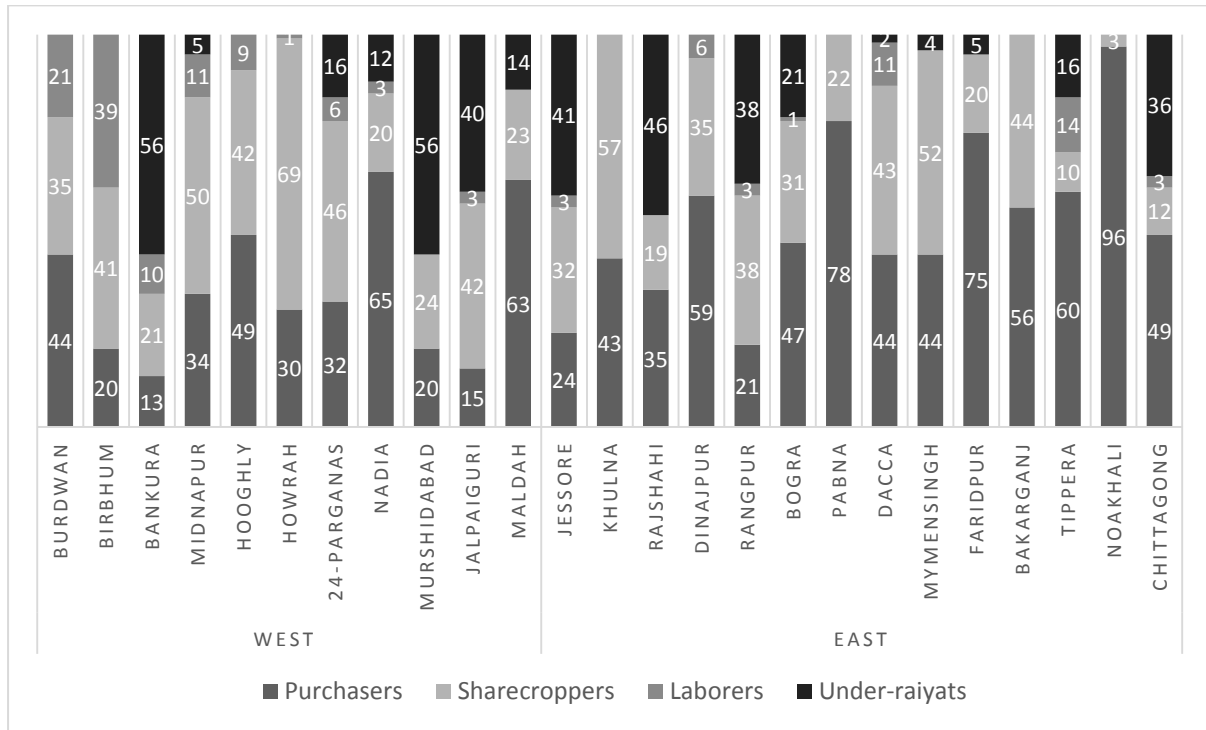


Figure 3.3. Transferred Land cultivated by different agrarian classes, 1927-1939

Source: Cooper, A., 1988. *Sharecropping and Sharecroppers' Struggles in Bengal 1930-1950*. Calcutta: K.P. Bagchi & Company.

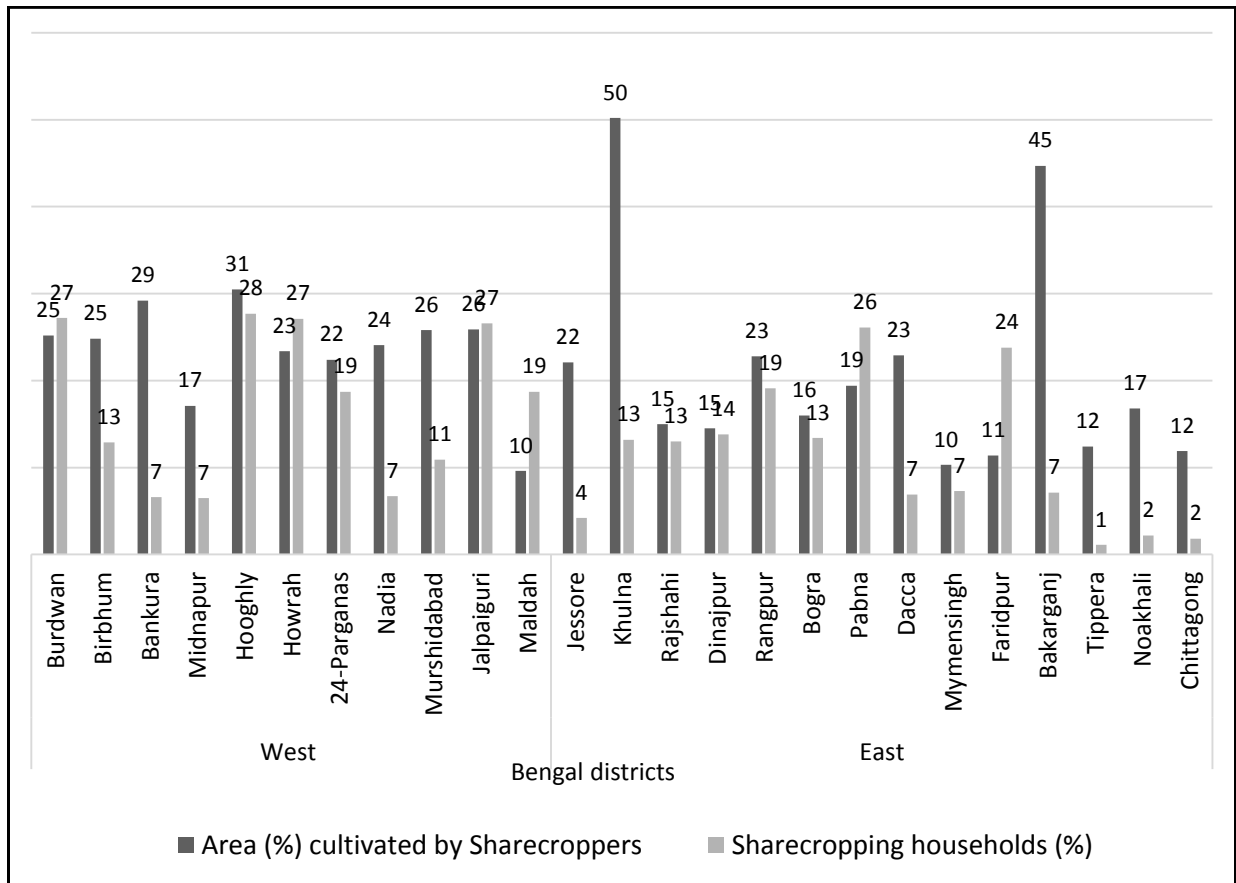


Figure 4.1 Area cultivated by sharecroppers, 1930-1939

Source: Cooper, A., 1988. *Sharecropping and Sharecroppers' Struggles in Bengal 1930-1950*. Calcutta: K.P. Bagchi & Company.

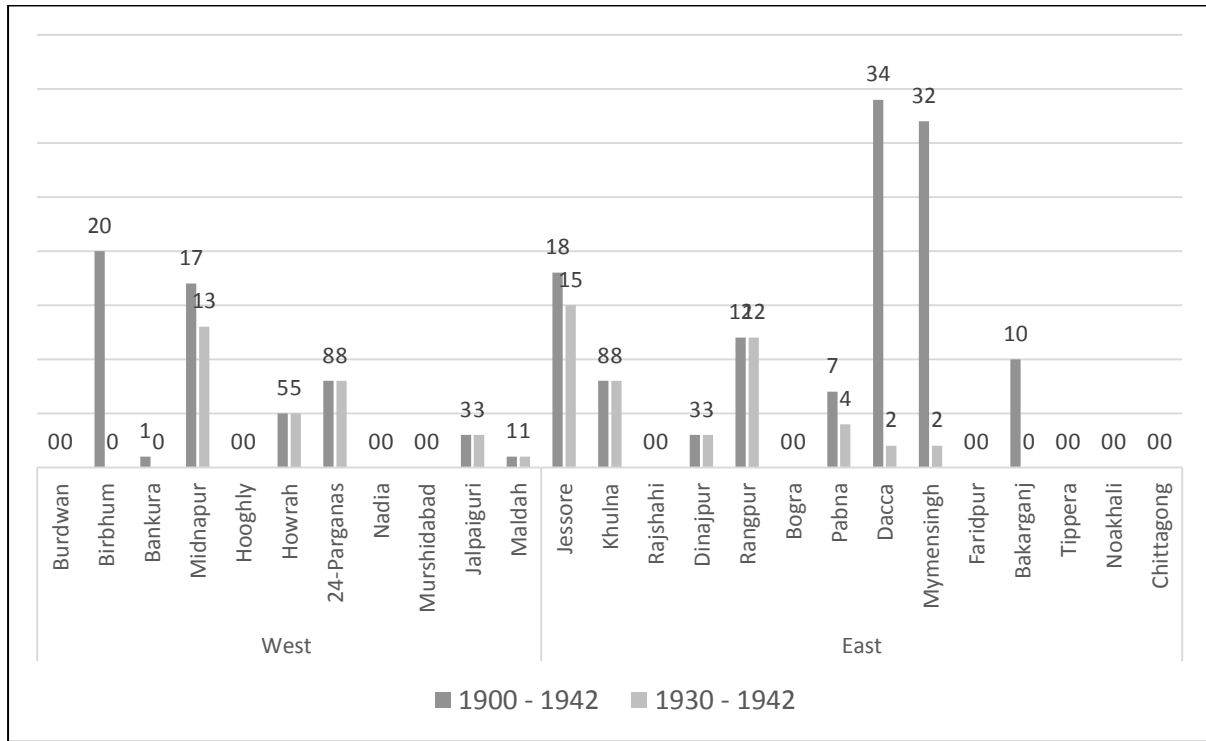


Figure 4.2. Sharecroppers' Struggle (Number of events)

Source: Cooper, A., 1988. *Sharecropping and Sharecroppers' Struggles in Bengal 1930-1950*. Calcutta: K.P. Bagchi & Company.

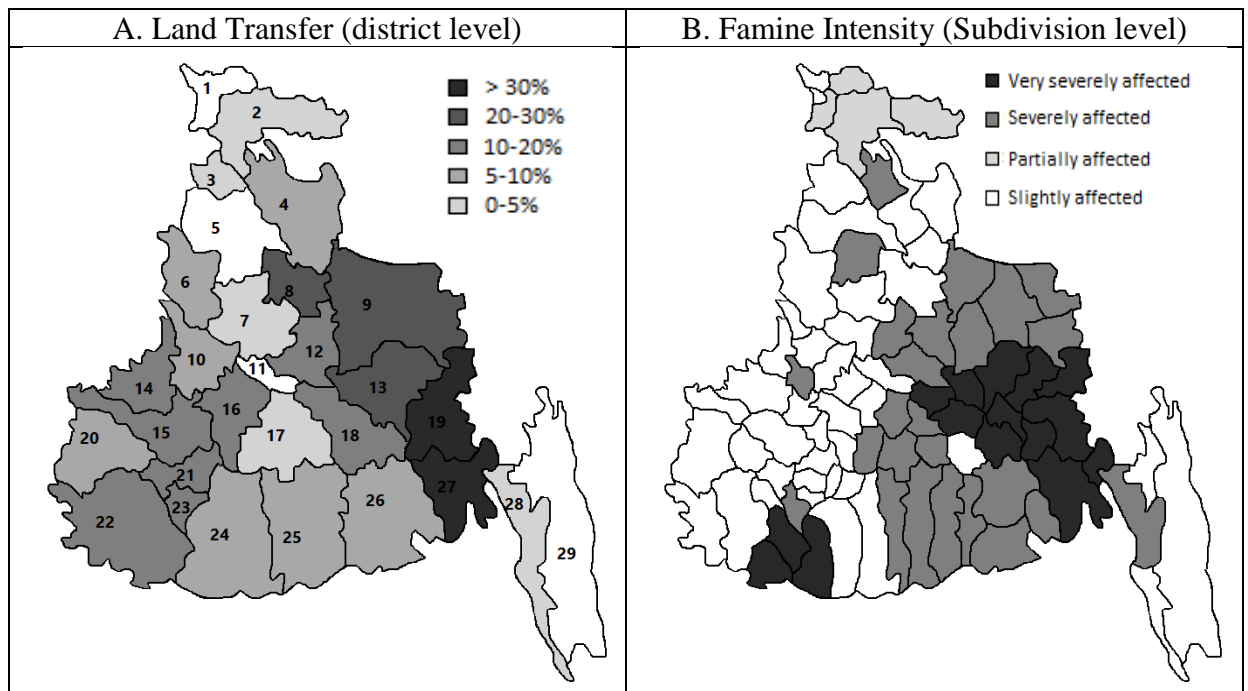


Figure 5.1. Land Transfer and Famine Intensity

Notes: Districts on panel A [1-Darjeeling, 2- Jalpaiguri, 3- West Dinajpur, 4- Rangpur, 5- Dinajpur, 6- Maldah, 7- Rajsahi, 8- Bogra, 9-Mymensingh, 10-Murshidabad, 11-Kustia, 12-Pabna, 13-Dacca, 14-Birbhum, 15-Burdwan, 16- Nadia, 17-Jessore, 18-Faridpur, 19-Tippera, 20-Bankura, 21-Hooghly, 22-Midnapur, 23-Howrah, 24-24Paraganas, 25-Khulna, 26-Bakerganj, 27-Noakhali, 28-Chittagong, 29-Chittagong Hill Tract]
 Data on land transfer not available for 1, 5, 11 and 29 (marked in white).

Source: Chatterjee (1997) and Mahalanobis, et al., (1946)

Table 5.1. The marginal effects of Land Transfer and Sharecroppers' Struggle

	Coefficients	Marginal effects			
		Slightly affected	Partially affected	Severely affected	Very severely affected
The probability at the mean value of all explanatory variables		-0.036*** (0.012)	-0.0007 (0.0011)	0.0235* (0.013)	0.013** (0.006)
Land transferred	0.093*** (0.032)	-0.0214*** (0.0060)	0.0000 (0.0002)	0.0065* (0.0039)	0.0148*** (0.004)
SC Struggles	-0.378 (0.436)	0.0865 (0.1070)	-0.0002 (0.0010)	-0.0264 (0.0314)	-0.060 (0.077)
Land transferred × SC Struggles	0.073** (0.033)	0.0004* (0.0002)	0.0002 (0.0002)	0.003* (0.001)	-0.004 (0.003)

Note: Clustered standard errors within parenthesis. *** Significant at 1%, ** Significant at 5% and * Significant at 10% level. Regression includes division dummies; the pseudo-R² is .34.

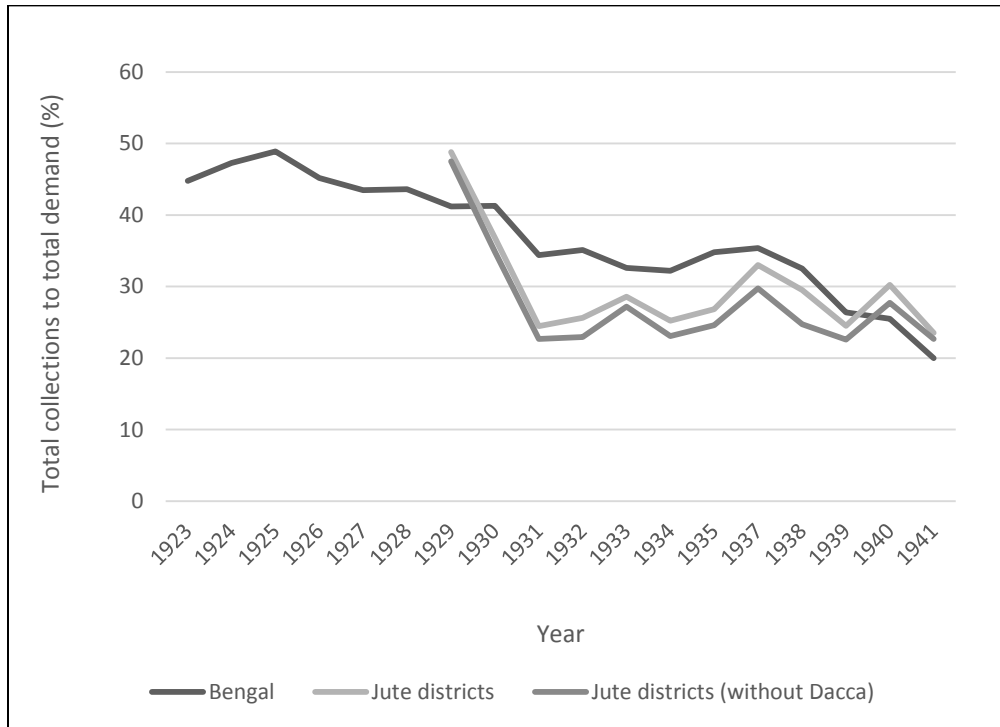


Figure 5.2. Revenue collection in Jute districts during the Great Depression

Table 5.2. The Bengal Famine, Land Transfer and Sharecroppers' Struggle

	(1)	(2)	(3)
Land transferred	0.090*** (0.030)	0.101** (0.042)	0.091*** (0.032)
SC Struggles	-0.371 (0.428)	-0.083 (0.493)	-0.415 (0.412)
Land transferred × SC Struggles	0.123*** (0.041)	0.083 (0.056)	0.075* (0.039)
East	0.987*** (0.346)		
Land transferred × SC Struggles × East	-0.031* (0.016)		
Jute		-1.354* (0.706)	
Land transferred × SC Struggles × Jute		-0.049** (0.023)	
Sharecroppers			-0.011 (0.011)
Division dummies	Yes	Yes	Yes
Observations	77	77	77
Pseudo-R ²	.406	.433	.381

Notes: *SC Struggles*, *East* and *Jute* are dummy variables. *Land transferred* and *Sharecroppers* are in percentages. Clustered standard errors within parenthesis; *** Significant at 1%, ** Significant at 5% and * Significant at 10% level.

Table 5.3. The Bengal Famine, Land Transfer and Sharecroppers' Struggle

	(1)	(2)	(3)
Land transferred	0.090*** (0.030)	0.101** (0.042)	0.091*** (0.032)
SC Struggles	-0.371 (0.428)	-0.083 (0.493)	-0.415 (0.412)
Land transferred × SC Struggles	0.123*** (0.041)	0.083 (0.056)	0.075* (0.039)
East	0.987*** (0.346)		
Land transferred × SC Struggles × East	-0.031* (0.016)		
Jute		-1.354* (0.706)	
Land transferred × SC Struggles × Jute		-0.049** (0.023)	
Sharecroppers			-0.011 (0.011)
Division dummies	Yes	Yes	Yes
Observations	77	77	77
Pseudo-R ²	.406	.433	.381

Notes: *SC Struggles*, *East* and *Jute* are dummy variables. *Land transferred* and *Sharecroppers* are in percentages. Clustered standard errors within parenthesis; *** Significant at 1%, ** Significant at 5% and * Significant at 10% level.

Appendix 1 Data Description

1. Famine intensity

Definition: After-effects of the Bengal famine of 1943

There are 4 levels that describe degree of incidence of famine conditions

1: slightly affected

2: partially affected

3: severely affected

4: very severely affected

Source: Mahalanobis, Prashanta Chandra, Mukherjea, R. & Ghosh, Ambika. "A Sample Survey of After-Effects of the Bengal Famine of 1943," *Sankhyā: The Indian Journal of Statistics* (1933-1960), 7(4) (1946): pp. 337-400.

2. Sharecroppers' struggles 1900-1935

Definition: There are 3 categories of sharecroppers' struggles, we generated numbers based on maps. District areas which are not shaded have no struggles. Districts areas which are partially shaded (eg: 1/2, 1/3, 1/4, 1/5, 1/10 of SD) have less struggles. Districts areas which are fully shaded means sharecroppers for the entire district were struggling.

0: without struggles

1: some sharecroppers struggled

2: all sharecroppers struggled

Source: Cooper, Adrienne. *Sharecropping and Sharecroppers' Struggles in Bengal 1930-1950*. Calcutta: K.P. Bagchi & Company. 1988.

3. Land transfer data at the district level

Definition: Percentage of occupancy holdings in each district transferred annually by registered sales, 1929-38

Source: Chatterjee, Partha. *Agrarian Transformation in Bengal: Class Structure and Class Struggle*. In: *The Present History of West Bengal: Essays in Political Criticism*. Delhi: Oxford University Press. 1997.

4. Number of sharecroppers

Source: Cooper, Adrienne. *Sharecropping and Sharecroppers' Struggles in Bengal 1930-1950*. Calcutta: K.P. Bagchi & Company. 1988.