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Publication Date

2012-11-30



WORKING PAPER

2012 - 7

Development, Disparity, and Colonial Shocks: Do Endowments Matter?

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November 2012

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Development, Disparity and Colonial Shocks: Do Endowments Matter?

Idrees Khawaja*

The province of Punjab – home to 56 percent of Pakistan’s population, is marked by regional disparity. This paper argues that the socioeconomic disparity observed today between the South-West of Punjab and the rest of the Province is largely owed to the historical differences in regional endowments. During the colonial rule over India, the North and Center of the province benefitted from Canals, Cantonments (military garrisons) and enlistment in the Indian army to fight on the side of the Britain in the two world wars. These shocks rested upon endowments unique to the two regions. The barren but cultivable land and sparse population of the Center facilitated canal colonization. The geo-strategic location of the North allowed the establishment of military headquarters and smaller garrisons in the region. The hardy men of the North, experienced in warfare since the 12th century, were suitable for the army. The South-West of the Punjab lacking the endowments of interest to the British, failed to benefit. Hence, the socioeconomic disparity observed today.

Key words: Colonialism, Inequality, Endowments
JEL Classification: N000, N550, O100

1. Introduction

The British ruled over India for around two centuries (1765-1947) and the Punjab, was annexed to India in 1849. The colonial rule over the Punjab, among other things is known for three important shocks to development of the province. These include; (i) the construction of canals that brought water from the rivers and irrigated a large tract of uncultivated land and the construction of the migratory settlements around these lands (ii) the establishment of the cantonments (military garrisons) coupled with strategic-cum-commercial road and rail network and (iii) the recruitment from the province into the then Indian army, especially the enlistment for the two World Wars. The socioeconomic development that these shocks brought about has largely been discussed in related literature as the Punjab-wide development and often at the level of united Punjab³ that it was, before the partition of India. The within province variation in the impact of the shocks and the disparity that the variation might have caused has not been emphasized in literature. This study examines the regional variation in the impact of the shocks. The British while leaving India partitioned her into two and thus Pakistan came on the world

* Acknowledgments:

The study has been undertaken while doing research as a visiting scholar at the Institute for Research on Labor and Employment (IRLE), University of California Los Angeles (UCLA). I am thankful to the UCLA, the IRLE and especially its Director, Chris Tilly for inviting me as visiting scholar. Thanks are also owed to Chris for useful comments on the proposal of this study and discussion off and on during my stay and again to him and the IRLE staff for their excellent hospitality. I would also like thank the participants of a discussion forum at the UCLA, including Leah Boustan, Chris Tilly, Steve Cummins and Alina Din for offering very useful comments on an earlier version of this paper. I owe debt of gratitude to the Higher Education Commission of Pakistan (HEC) for selecting me as Post-Doctoral Scholar to fund this study.

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³ For example, Muzamder (2003).

map. The Punjab was also partitioned — the eastern part went to India and the western one became a part of Pakistan. This study is focused on the then western part of the united Punjab, which is now a part of Pakistan, is named Punjab, is home to around 56 percent of the country's population and is the most prosperous province in the country.

Classifying the Pakistani Punjab⁴ into three distinct geographic regions; North, Center and the South-West⁵, I argue that the impact of the three colonial shocks referred above were concentrated in the North and Center of the Punjab. The South-West of Punjab benefitted very little from the shocks, relative to rest of the province. The shocks were state-sponsored and gave the host regions a head-start. Time and again, demand has been raised to carve out a new province or even two within the existing Punjab, comprising the districts of the south-west Punjab. Whether or not the demand is politically motivated, the proponents of the demand have almost always couched their argument in the lagging socioeconomic development indicators of the south-west Punjab⁶. The concentration of the colonial shocks in North and the Center may explain the disparity that we see today, between the South-West Punjab and rest of the province. The shocks mostly occurred after 1885. The canal colonization of the Punjab was initiated in 1885, the strategic importance of the North was realized after the second Afghan war in 1878 and the construction of the cantonments began towards end of the 19th century. The recruitment for the military on a large scale began first in 1914 and then in 1939 for the two world wars. It is worth emphasizing here that the disparity that we witness today is not the compounding effect of the disparity, if any, prevailing prior to the shocks. Given the kind of historical data available, I use literacy rate as an indicator of the state of development prior to the occurrence of the colonial shocks discussed in this study. Multan a district in the South-West had the highest literacy rate in entire Punjab in 1881. However by 1961 a number of districts in the North and Center had marched ahead of Multan so that she stood relegated to the 10th position⁷. Similarly Muzaffargarh another district in the South-West stood 5th in 1881 but had one of the lowest literacy rates in the entire Punjab by 1961. This clearly shows that the present day disparity is the result of something that happened after 1881. (See table 3 for district rankings based on literacy rate). Literature also suggests that all the three regions were more or less equally in bad shape prior to the shocks. For example, the canal hosting central region was termed 'pastoral savanna, at best'⁸, Rawalpindi, the most prosperous and literate in the North today, being 'singularly devoid of towns at annexation'⁹ and the South-West as 'poverty stricken' before the

⁴ Henceforth we use the word 'Punjab' for the Pakistani part of the United Punjab under the colonial rule.

⁵ The part of Punjab under study had 16 districts till 1920. The northern region had only 3 districts, the Center had 8 districts and the South-West had 5. For specific districts included in each region see table 1. (The classification is based on Cheema *et.al.* (2008).

⁶ The south-west Punjab lags behind the other two regions on socioeconomic development indicators. See table 2.

⁷ The rankings are based on the data on literacy as of 1881 available for 13 out of a total of 16 districts of Punjab.

⁸ Ali (1988), p. 3.

⁹ Dewey (1988),p. 146. Rawalpindi, situated in the North, is now the second largest city of Punjab in terms of population.

annexation¹⁰. Finally even if there were some initial differences in economic conditions, today's disparity could not merely be the compounding effect of those initial differences, for I show in this study that significant improvement in socioeconomic conditions of the North and Center, is owed in part to the head-start given by the colonial shocks.

It is worth asking why the three colonial shocks were concentrated in the Center and the North of Punjab. I argue that regional endowments determined the shock's geographic location or incidence. Central Punjab had two unique endowments: vast tract of barren but cultivable land and sparse population – the endowments typically viewed a bane, proved to be a boon when coupled with another endowment – the five rivers. The rivers, when channeled into especially constructed canals, brought water to the land uncultivated then. The sparse population allowed settlement of land grantees from other districts, some of whom were among the best agriculturist in the then united Punjab. The rest is the typical development story, except that state was all too willing to intervene. Driven by the then state's administrative, political and strategic objectives, the intervention in Punjab went way beyond the provision of public goods to such an extent, to earn the label of 'paternalistic' for the governance strategy adopted by colonial government in Punjab.¹¹

The northern Punjab was endowed with a geographic location most suitable to house the headquarter of the Indian Army – whose primary occupation, conceived in late 19th century, was to deter the feared Russian threat to India from the north-west frontier (Dewey, 1988). The North possessed yet another endowment – the hardy men, experienced in warfare, who had joined almost every invader, from 12th -20th century, who came to India through the north-west frontier¹². It was only natural for the British to classify them among the 'martial castes'¹³ and enlist them massively when the need to do so arose, during the two world wars. Even the *nothernites* experience in warfare may have roots in the region's little agricultural prospects – the tangled ravines, the unreliable rainfall and low water table made agriculture all too difficult (Dewey, 1988). In this scenario, it was not too illogical for them to join the invaders, on the march to Delhi – the seat of power then. Unlike the North and the Center, the south-western part of the Punjab had nothing of the sort, which would interest the British. Thus while the unique endowments of North and the Center facilitated their march ahead, the South-West lacking such endowments, stood and watched. Hence today's disparity. It can be argued that the elite-entrenchment, which was relatively stronger in the South-West at the annexation and was further encouraged by the British, caused the disparity. However to examine the disparity in Punjab the

¹⁰ Darling (1928), p. 105-107

¹¹ Paradoxically, this happened in late 19th and early 20th century, a time, when British seem to know no other economic school, but *laissez faire* (Islam, 1999).

¹² Dewey (1988), p.96

¹³ In 1857 the Indian army comprised the Bombay, Madras and Bengal army. The Bengal army, largely comprising the '*Hindustani musalmans*' mutinied against the British in 1857. Once the rebellion was quashed the martial castes theory was coined to select the soldiers from amongst the 'suitable' ones, not only militarily, but perhaps politically as well (Muzamder, 2003).

right question to ask is: would the South-West have been anywhere close to the rest, minus the entrenchment, and off course minus the colonial shocks, which rested upon endowments unique to the North and Center? Perhaps not!

This study follows a series of influential papers by Engerman and Skoloff (1997, 2002, 2006) relating development experience of the regions with their factor endowments. What I argue here is that, two of the three regions examined, possessed the endowments required to benefit from the shocks at hand while the third one lacked such endowments and this caused the disparity among the regions. The study is also related to the debate; is colonialism good or bad? I consider that barring colonization for religious reasons, to expect benevolence for the sake of benevolence from colonialism is naïve. This implies that extraction is at the root of colonialism. Given this realization, the framework that emerges to examine the effects of colonialism is of looking for the by-products of colonialism that emerge while the colonizers are extracting. In the jargon of economics this means looking for the doings of the ‘invisible hand’ while the colonizers assign themselves to extraction. This paper looks at the doings of the invisible hand in Punjab, while she was under the colonial rule. To contain the scope of the study, I restrict myself to the outcomes considered purely economic. Political or administrative consequences of the colonial rule, though of immense importance, are beyond the scope of this study.

Canal Colonization

Nine canal colonies were established in Punjab during 1885-1947. While making land settlements¹⁴, right after the annexation in 1849, the state had assigned most of the then uncultivated land to itself and declared it ‘crown waste’. The canal colonization involved construction of canals to bring water to the ‘crown waste’ allotment of land in the ‘crown waste’, chiefly to migrants from the more dense districts of united Punjab and their settlement around the ‘crown waste’, including allotment of residential plots to the settlers and provision of some public goods in the villages created on the area uninhabited then. According to Ali, canal colonization, “transformed this region (i.e. Punjab), from desert-waste, or at best pastoral savanna, to one of the major centers of commercialized agriculture in South-Asia” (Ali, 1988, p.3). The canal irrigated area in the (united) Punjab increased from 3 million acres in 1885 to 14 million acres by the end of the British rule in 1947— an increase of 366 percent. Bulk of this increase took place in the canal colonies (Ali, 1988, p.10). The likely positive impact of the colonies on the region’s socio-economic conditions is but obvious. Almost all the colonies were located in the districts located in the central Punjab. Only one district in the South-West, namely Multan, had a canal colony. Why almost all the colonies were in central Punjab? To understand the regional location or incidence of the canal colonies it is important to understand why the British constructed the canals in the first place and why the canals were so important, as to

¹⁴ Before the arrival of British the land titles in India were ill-defined. The land settlement involved making decision regarding as to who will be responsible for paying the land revenue of a specific piece of land but it had the consequence of conferring land titles upon those held responsible for payment of land revenue.

justify raising capital for these in the London's market?¹⁵ Host of reasons have been put forth, including benevolence of the colonial rule, famine control, creation of model villages and reduction of population density in the more dense areas. Islam (1997) convincingly refutes such explanations¹⁶. Imran Ali suggests that agricultural development, revenue extraction (i.e. land revenue; a close equivalent of the tax on agricultural income), political support for the colonial rule and encouraging military recruitment as the objectives of canal colonization¹⁷. Islam concurs with Ali, but goes a step ahead. After tracing the debate in the concerned British circles, he argues that the real objectives of the canals and the construction of rail network were to increase the production and export of agricultural raw material from India to the United Kingdom. He further argues that it is for this reason that the Railways gained primacy over the canals¹⁸ — to export what was being produced even without the canals¹⁹. However he hastens to add that raising revenue was also an objective of the canal colonization as sufficient funds were not forthcoming to run the government and to maintain the Indian army that at times was to be used outside India as well (Islam, p. 19). A careful reading of Paustian (1968, p.30) also suggests that revenue generation and exports of agricultural products were the two primary objectives of the canal colonization. Paustian while dilating upon the viability of one of the earlier canals²⁰, states that it was expected to yield revenue from sale of waste land, revenue from water rates, rent from mill sites, which used water power and toll highway from native boats using the canal for transportation of agricultural products. Regarding exports, Paustian states that the very gradient of the canal hosting portion of the river entertained high hopes of navigation schemes to be developed as a by-product of the irrigation project proper²¹. He goes on to say that it was felt that the flat-bottomed boats constructed to navigate in two feet of water, could transport agricultural produce through the canal into the river Ravi and eventually to the sea for export. I use revenue extraction and exports to UK as the primary objectives of the canal colonization, at least till the time, when the canal colonies were being conceived in mid 19th century.

Now we can answer why almost all the canal colonies were in the central Punjab. The planned supply of water from the canals assumed an average rainfall in the area served by a canal — greater the rainfall lesser the water required. In other words one unit of canal water would irrigate more land where the average rainfall is say two units relative to the area in which the average rainfall is one unit. The ten year average rainfall during 1921-1931 in the 8 central districts, put together, was 460 millimeter (mm) as against the average of 315 mm in the 5 districts of the South-West and if we take out one outlier district²² from the South-West this leaves us with an average of 158 mm — one-third of the rainfall in the Center. This explains why

¹⁵ Islam (1997).

¹⁶ Islam (1997) p.14

¹⁷ See Ali (1988), p.5

¹⁸ Construction of Railway was initiated in 1840s whereas canal colonization began in 1885.

¹⁹ See Islam (1997), p.17

²⁰ Huslee canal.

²¹ The boat scheme eventually did not succeed for long due to unforeseen technological difficulties.

²² District Mianwali, with a 10 year average rainfall of 310 mm in 1931.

there were more canals in the central districts. It was more profitable to have these there — more irrigated land, more output for the farmers and more land (tax) revenue for the government. Of course engineering considerations, cost of canal construction and cost of carrying water to the fields and some other factors too would have determined the location of canal colonies. Given the revenue generation motive of the canals one can imagine that these factors too worked to the advantage of the central districts. Whether rainfall, engineering requirements or cost considerations, it is apparent that the determinants were hinged to regional endowments which worked in favour of the central region.

Cantonments

The military headquarter of the then Indian army, under the British, was located at Rawalpindi, a district in the northern region of Punjab. Out of a total of 6 cantonments in Punjab, under the British rule, 4 including the military headquarter were in the relatively smaller northern region²³ and played a crucial role in its socio-economic development. Why the cantonments should enjoy a special significance for the economy? Cantonments, the permanent military stations, were enclave like gated communities, under the British, which housed the military offices, residences of English officers and off course all the military equipments. One of the objectives of the cantonments under the British was to provide a suitable place for the residence of English officers, in the calm of suburbs, away from the teeming *bazaars* and segregated from the natives. Being meant to serve as residential-cum-office space for the British officers, the provision of public goods was bound to be better in the cantonments, relative to the inner city. It is this special status of the cantonments that makes these important in economic perspective.

The cantonments had in a number of ways influenced the region's economy. The strategic rail and road network constructed to connect the cantonments was used for commercial carriage as well as civilian transport. The excess capacity available in the health and educational infrastructure established for the soldiers and their families was made available for use by civilians. The consumption within the cantonments and the construction of all sorts of infrastructure required within and around cantonments generated innumerable employment opportunities for the civilians. The socio-economic effects of the cantonments have been discussed at length in a later section, suffice it is to mention here that the overall impact of cantonments on the region's socioeconomic conditions is likely to be positive. The question here is why the northern region was host to the military headquarter and majority of the cantonments?

After the second Afghan war of 1878 the British became obsessed with the 'great game'²⁴ and feared that Russia may invade India through the Afghanistan (Dewey, p.97). This made defending India against Russia the major business of the Indian army. Rawalpindi was chosen, in the late 19th century, to house the headquarter of the then Indian Army because it was close

²³ The northern region is roughly one-third the size of the Center and half of South-West in terms of area.

²⁴ The 'Great Game' refers to the strategic rivalry between the British Empire and the Russian Empire for supremacy over central Asia. The period is generally regarded as between 19th century and early 20th century.

enough to the full range of passes in the north-west, and was yet far away to be overrun in the very first offensive. As the British proceeded with establishment of the military headquarter at the place now known as *Rawlpinidi*, the villages of *Rawal* turned into the second largest city in Punjab, next only to Lahore (Dewey, p.123). Three smaller cantonments were set up in the northern region²⁵, two of these were located on the way to Peshawar cantonment²⁶ — the most important one strategically, as it was the last one in the settled area, only 50 miles from the border with Afghanistan. Thus the areas which hosted cantonments were geographically placed such that the army had to be stationed there to face the Russian threat — it was the geographic endowment of the area that influenced the decision to establish a cantonment there.

Military Recruitment

The British had been recruiting soldiers for the Indian army from the Punjab right after the annexation. The recruitment prior to 1857 was minimal and was only for the ‘Frontier Irregular Force’. After the events of 1857 it was decided to gradually replace the mutinous *Hundustanis* in the army with the ‘martial castes’ and the recruitment from Punjab picked-up somewhat (Dewey, p.97). However the recruitment saw real spike only in 1914 with the onset of the World War I, in which the Britain was a major player. Around 200,000 soldiers from Punjab served in the Indian Army till 1919, 43 percent of whom were the natives of only three northern districts²⁷. Mere 8 percent belonged to the South-West and the 10 central districts contributed the balance. Looked at in another way makes the regional difference more clear and stark. By 1919, 33 percent of the men of military age from the northern districts had served in the army. The corresponding figures for the South-West and the Center were only 3 and 9 percent respectively. The land grants to the war veterans in the canal colonies²⁸ and to an extent the pay and pensions enormously alleviated the lot of the otherwise poor peasantry. What accounts for the predominance of the *nothernites* in the army? Endowments! Their experience in warfare, an endowment in its own right, induced and made them eligible to join. Their pro-enlistment attitude was perhaps grounded in the historical littleness of other employment opportunities. The prospects of allotment barren land in the canal colonies, made cultivable by canals, again an endowment — not essentially of the North but of the neighboring central districts, also induced the soldiers to join. Those enlisted knew that they were going to the war front and that they would be fighting, not for their own country but for a foreign power. Joining army, during war is different from joining in peace time, with only a small probability of war in future. Fighting for one’s own country is different from fighting for a foreign power. Each should have different price! The then cash strapped imperial power, which

²⁵ Attock, Jhelum and Murree

²⁶ Attock and Jhelum

²⁷ Given high demand for recruits, the ‘martial caste’ principle was relaxed during the two Wars and all those willing to be enlisted were considered.

²⁸ 180,000 acres was reserved in the canal colonies for the soldiers. Dewey (1988) states that between the wars the Punjab government allotted about a third of a million acres of prime irrigated crown land to military grantees, and that in 1945/6 its value stood around Rs. 370 million.

was raising War Loans in India²⁹, could not have paid enough in cash (pay and pension) to induce the required enlistment in this kind of situation — it was the unwritten promise of allotment of land in the prized canal colonies that made voluntary recruitment possible³⁰.

The foregoing discussion suggests that canal colonies would have positively influenced the socio economic conditions of the central districts while the cantonments and the recruitment for the military would have similarly influenced the socioeconomic conditions in the North. The road and rail network would have influenced the conditions in the North as well as the central districts because in the former region it was laid for strategic reasons and in the latter commercial considerations were dominant, though strategic aspects also had a role. We devise the empirical model keeping in view the discussion in this section.

The rest of the paper is organized as follows. Section 2 describes the empirical framework, data and the results. Section 3 narrates, at length, the socioeconomic consequences of the three colonial shocks; canal colonies, cantonments and the recruitment for the military. Section 4 concludes.

2.1 Empirical framework

To examine the impact of the colonial shocks upon contemporary socioeconomic development in the Punjab we have constructed an index of socioeconomic development comprising variables reflecting, access to education, health, electricity and drinking water in the villages of Punjab. This index forms the dependent variable. Access to these facilities reflecting socioeconomic development have been aggregated to form a single variable, which I refer to as the Socioeconomic Development Index (SDI). The index has been constructed using the principal components method (PCM). The regional averages of the index are reported in table 3. To examine the impact of colonial shocks we specify the following model:

$$SDI_{i,t} = \alpha_0 + \beta mr_{i,t} + \delta mc_{i,t} + \gamma cc_{i,t} + \lambda x_{i,t} + \varepsilon_{i,t} \quad (1)$$

Where SDI is the socioeconomic development index and mr , mc and cc respectively represent military recruitment, military cantonments (garrisons) and canal colonies — the three colonial shocks and x is a vector of control variables. Military recruitment is from the 16 district of the Punjab. This variable represents the recruitments as proportion of the men of military age in the district³¹. Military cantonments are the cantonment established under the British rule in Punjab and canal colonies are the canals plus the migratory settlements established in different districts of Punjab. Other than the colonial shocks referred above a number of contemporary as well as

²⁹ For details see Leigh (1922), p.79-103.

³⁰ Those who had helped the British quash the rebellion of 1857 were rewarded with land grants and this made the unwritten promise, credible. Moreover the insufficiency of the pay and pensions alone and the prospects of allotment of land in canal colonies also explain the lack of interest of the urbanites to join the army. They may not have been interested in the agricultural land in rural areas, especially when residency conditions were attached to it.

³¹ For the low ranked soldiers the military age was defined by the British as 20-40 years.

historical variables might have influenced socioeconomic development of a district. The contemporary variables included in the investigation are; access of a village to a mettaled road³², bank, and grain market. I have also included the historical occupational shares of labour force as of 1931 as proportion of the population. The occupational categories included are; agricultural workers, commercial workers and professionals.

I have used panel data with 16 cross section (districts in this case) and six time periods (1983, 1988, 1993, 1998, 2003 & 2008). The values of the colonial shocks; military recruitment, cantonments and canal colonies are time invariant. The values of the rest of the explanatory variables are lagged by one period, i.e. to explain the SDI of 1983 we use the values of contemporary explanatory variables from 1978 and so on. As some of the variables are time invariant therefore I have used the random effect model for estimation.

2.2 The Data

The data for the variables used to construct the Socioeconomic Development Index is from the *Mouza* (village statistics) of Punjab. The data on health facilities reflects the percentage of villages in a district that enjoy access to a health facility within a radius of 8 kilometers. Typically this health facility is a small dispensary offering only out-patient services. Similarly the data on access to educational institutes is in terms of percentage of villages that enjoy access to a school and college within a specific radius³³. The data on access to electricity and drinking water is in terms of percentage of villages of a district that enjoy these facilities. The data on these facilities has been used to construct the socioeconomic development index in the manner referred earlier. The Central region of Punjab with an index value of 82.3 in 2008 ranks the highest among the three regions on socioeconomic development while the South-West with average value of 65.1 is at bottom. Moreover the gap between the Center and the North is smaller but the corresponding gap between the Center and the South-west is fairly large. Also the rankings do not change overtime from 1983-2008. The data on the explanatory variables reflecting economic development is also from the *Mouza* Statistics. These include; access to bank, mettaled road and grain market within a radius of 8 kilometers from a central point in the village. We have used the village statistics because the military recruitment was almost entirely a rural phenomenon (urban areas generally refrained from enlistment). Similarly the direct impact of the canal colonies too was upon the rural areas. The data on military recruitment is from Leigh (1922). Military cantonments and canal colonies are captured with dichotomous variable. The variable, *mc* takes the value 1 if the district had military cantonment under the British rule and zero otherwise. Similarly the variable *cc* is 1 if the district had a canal colony and zero otherwise. Out of the 16 districts of Punjab under the British rule 6³⁴ had cantonment and 10 had a canal colony³⁵ (all the

³² A road fit for use of automobiles.

³³ One kilometer in case of primary school (which is upto 5th Grade), 4 kilometers for middle school (upto 8th Grade) 8 kilometers for high school (upto 10th Grade) and 16 kilometers for college (upto 12th Grade)

³⁴ The Punjab had 6 cantonments under the colonial rule. The districts of Rawalpindi had two.

³⁵ Ali (1988), p. 9

districts of central Punjab and one district in the south-west). The data on the historical occupational shares in the labour force is from population census of India, 1931.

The districts are administrative units and a certain population is considered optimal for being under a single district management. As the population of a district increases, new districts are carved out of the existing districts to keep them manageable. The change in district boundaries overtime makes it difficult to compare like with like. The Punjab had 16 districts in 1919 while she had 34 in 2008, with all the new districts being carved out of the existing ones. This tells the extent of change in the district boundaries. As I am using district level data from 1919 (military recruitment) as well as from 2008 (data on variables reflecting socioeconomic development), therefore to make the data comparable, some kind of aggregation is required in recent time periods. To this end, I have added up the data of the newly created district to her parent district in 1919. For example if a district X was carved out of district Y then the contemporary data on district X has been added to the data on district Y. In this manner I have reduced the 34 districts in 2008 to 16 districts. Similar exercise has been adopted for other time periods.³⁶

2.3 Results

The results suggest that military recruitment from Punjab during the colonial period, canal colonization and the cantonments established during the British rule, in Punjab, positively influence the socioeconomic development index. All the three variables are statistically significant at the level of 1 percent in the five different specifications that have been estimated. Among the control variables, the access of a village to a mettaled road within a radius of 8 kilometers, in contemporary periods, also exercises positive impact upon the index. The variable is significant at either 1 percent or 5 percent in different specifications. The impact of other development indicators like access to a bank and access to grain market is insignificant. The fixed effect for the South-West negatively influences the socioeconomic development. The results suggest by implication that the districts which did not have a major contribution in military recruitment, the districts which did not have had a canal colony and the districts which did not house a cantonment in the British period lagged behind others to the extent that socioeconomic development has been facilitated by the three colonial shocks. The results are reported in table 4.

3.1 Socio economic consequences of canal colonization: Central Region

To achieve the colonial objective of maximizing revenue generation and exports, allotment of agricultural land to the colonists and provision of water was not enough — transporting the produce from farm to market was crucial for achieving the twin colonial objectives of revenue generation and exports. To market and export the produce, road and rail network to inland markets and up to the port city of Karachi was required. First we demonstrate below the then government's keen interest in agricultural output in general and cotton in particular and then take

³⁶ The information on the creation of new districts is available in the population censuses of Pakistan.

up the transport infrastructure, as the two are intimately linked. An Agriculture college and research institute was established at Layallpur in 1909³⁷. The agriculture department successfully introduced the high quality long staple American Cotton at Layallpur after initial failures (Muzamder, p.76). A large land grant of 7,500 acres was made to the British cotton growing association to encourage the production and export of the better varieties of cotton to the Lancashire mills in United Kingdom (Muzamder, p.85). The cotton prices prevailing in Bombay were transmitted to the canal colonies through the telegraphic system installed at canal's headworks. The collection and transmission cost of the prices was born by the government (Muzamder p.87). To protect the farmers from the manipulative practices of middleman the government facilitated the trading of cotton through establishment of a cooperative shop in Layallpur — the largest producer of cotton. The kind of interest evinced in the marketing and export of cotton and other crops, as reflected above, required an efficient transport infrastructure and it was constructed. Transport infrastructure was planned and constructed right from the farmer's residence to the Karachi port and the inland markets. Typically the intra village roads in the colonies were 11-22 feet wide and provided free-way to each farmer's individual holdings. (The free-way was not always available in non-colony fragmented holding strips). The inter village roads which connected the adjacent villages were 22 feet wide (Bajwa, 2010). The railways, commercial as well as strategic, were considered so important to India that capital for it was raised in the London's market (Islam, 1999) with a guaranteed return of 5 percent (Andrabi and Kuehlwein, 2010). The railway projects typically attempted to have the farmer's market town, at least in the plains, within a radius of 12 miles. Instruction to the railways to ensure the marketing of the produce from Shahpur and Gujrat colony when the colonies were as yet under construction shows how meticulously the transport infrastructure was planned to market the output of the colonies. (Muzammdar, 2003), Dewey (1988), and Calvert (1936) have shown that the large volume of trading activity had made the Railways viable on numerous commercial routes and this was also true of Grand Trunk road — the main highway that connected the colony districts with the inland markets and with the port at Karachi.

The size of the landholdings in the canal colonies was typically larger than the fragmented holding in the non-colony areas. A colonist never started with less than 12.5 acres (and in Shahpur³⁸ he started with 50 acres or more) whereas in majority of the non-colony areas the average holdings were around 10 acres or lesser (Darling, 1928). The larger size of the holdings in the canals, the transport infrastructure and other marketing facilities had a large positive impact on the farmer's income. Islam (1999) argues that the producer began to produce to sell rather than produce just for his most immediate needs. This is supported by Muzamder (2003) who shows that the production of cash crops like wheat, sugar cane and cotton increased in Punjab, under the colonial rule, and this was mirrored by the decrease in the production of the food grains. Darling (1928) argues that before the colonization the increase in agricultural prices

³⁷ See History of my city Faisalabad-The Manchester of Pakistan.

file:///E:/data_Dell%20Mini/UCLA%20Project/Literature/Faisal%20Abad.htm

³⁸ Now Sargodha.

would usually work to the disadvantage of the typical farmer of Punjab, because with his small holdings he would barely produce enough for his subsistence and was usually a net buyer. Even if the produce was bounteous it would go waste due to the lack of marketing facilities, including transport infrastructure (Calvert, 1936). The large size of the holdings and the commercialization of agriculture coupled with the transport infrastructure changed all this for the better, now the farmer was typically a seller and the increment in prices worked to his advantage.

The increase in population density alone is a huge indicator of the economic prosperity of a region. It is argued that, forced as well as voluntary migration, is determined, at least in part, by the better future prospects of the region [(Acemoglu, 2002), (Nunn, 2007), (Kuznets, 1968)]. The canal colonies witnessed a massive increase in population densities during and immediately after the colonization. The opening up of the canal colonies led to substantial migration within the united Punjab — not only of the land grantees but of many other occupational groups that flocked to the canal districts to take up ancillary employment generated by the colonization. Calvert (1936) has shown that during 1881-1931 the population of 5 colony districts increased at twice the rate of the non-colony districts (increase in: 5 colony districts; 281 percent, non-colony districts; 130 percent)³⁹. Ali (1988) also shows that the population growth of many districts of the united Punjab was well above the provincial average of 47.6 percent during 1891-1941— the proximate period of canal colonization (Ali,1998 p.61). During this period, out of the eight districts that registered above average increase in population densities, 6 hosted a canal colony. District Layallpur, the creation of canal colony, registered the largest increase of 2,540 percent. Almost all the colony districts witnessed a jump in population growth, during or immediately after the colonization. Table 4 supports this. (I have indicated in bold font the values reflecting the jump in population, during a particular census period which correlates with period of colonization or the following period in which the ancillary employment openings were most likely).

The canal colonies also proved to be the chief industrializing agent of the province. As agriculture flourished trade also sprang up in the colony districts. The occupational composition of the population supports this view. By 1921 the proportion of population supported by agriculture was lesser in the colony districts relative to in the non-colony districts, because a significant population in the colony districts was engaged in industrial pursuits. Bajwa (2010) has shown that in 1921, 2.1 million people in the united Punjab were engaged in the following industries: Cotton ginning, spinning & weaving, furniture, iron works, earthen pipes and wig making. He states that these industries absorbed 44 percent of the workforce engaged in all the industries. The local distribution of these industries was a T-shaped distribution, with the head of the T stretching along Rawalpindi in the North to Ambala (in East Punjab) and the leg of the T down to the Layallpur colony⁴⁰, but not beyond to the south Punjab. In Layallpur alone 326

³⁹ In Calvert's analysis colony districts include: Montgomery, Layallpur, Multan, Jang and Shahpur while non-colony districts included: Jhelum, Rawalpindi, Attock and Minawali.

⁴⁰ Population census, 1921, quoted in Bajwa (2010)

ginning factories had sprung up that were served by her own cotton fields. The ginned cotton would make its way to Lancashire cotton mills in UK, either directly or via the spinning mills of Karachi. The correlation between canals and industrialization is hard to miss.

Almost every farmer used to be in debt to the traditionally exploitative moneylender before the colonization however due to the increase in income in canal colonies the debt due to the traditional money lender was considerably lower there. In canal colonies it was only 4 times the land revenue⁴¹, and in 5 out of 8 *tehsils*⁴² of Layallpur it was only 0.5 times the land revenue, while in Mianwali it was 28 times and 22 times each in Muzaffargarh and Dera Ghazi Khan — all non-colony district in the South-West (Darling, 1928, p.117 and p. 145). Darling also states that the colony land was granted to the colonists at nominal prices and subsequent success of the colonies had appreciated the land prices enormously, yielding windfall gains to the farmers⁴³. He also quotes substantial evidence to show that the agriculturists who were poverty stricken before the canal colonization were much better-off by late 1920s.⁴⁴

To close the discussion on socioeconomic effects of canal colonization I briefly describe the greatest beneficiary of canals, the city of Lyallpur, then and now. The Lyallpur, at annexation, was a treeless waste covered with thorny bushes. In 1891 the region had a population density of mere 7 persons per square mile. Characterized only by nomadic tribes and den of notorious dacoits — even a town was named after a famous dacoit⁴⁵. There were no cities, no factories and nothing of the sort in the region. By 1901, in just a decade, the population had reached 187 persons per square mile, was 301 in 1921 and 927 in 1998. One estimate suggests that now Layallpur is third most prosperous city of Pakistan in terms of GDP per capita.⁴⁶ How this wilderness was transformed into a highly prosperous agricultural-cum-industrial-cum-trading center that it is today? The short answer is: Canal colonization. Chenab colony, that served Layallpur, was the largest of the canal projects with an allotted area of 2 million acres. The

⁴¹ The land revenue was considered a burden by the peasantry and it was thought that debt burden of the farmer is due to burdensome land revenue that he has to pay. By showing that the debt burden was greater than land revenue the colonial officials sought to show that debt burden could not be due to land revenue alone, if at all it was due to it.

⁴² *Tehsils* are sub-administrative units of a district and can be considered equivalent of a 'county'.

⁴³ The land grantees were allotted land at the nominal price ranging between Rs. 8-12 in the canal colonies. The largest gain to the land grantees came in the form appreciation in price. Since the initiation of canal colonization in 1885, the land prices had arisen enormously over the next thirty years. Darling states that by 1920s the average land price in Layallpur was Rs. 1200/- in Shahpur Rs. 600/-, implying a capital gain of 9,900 percent and 4,900 percent respectively.

⁴⁴ He argues that anything that signifies a change in the standard of living had changed for the better in the canal colonies; food, dress, housing and its décor all had changed for the better. Darling states that in 1850s the shirt (or *kurta*) was not worn by anyone even in a prosperous district like Sialkot and it was rare to have three meals a day. By 1920s this had changed all together — everyone was wearing a shirt and three meals a day were common. In canal villages wide streets, designed by the State had replaced the 10 feet cramped streets, and spacious rooms in mud plastered houses had replaced the cramped, poorly ventilated rooms seen elsewhere, where humans and livestock lived together. A Jeweler in Gujranwala (a district in center) told Darling that he was selling more gold in a week than he would sell Silver in a month prior to the colonization.

⁴⁵ Sandal bar an area in the district is named after a notorious dacoit, Sandal.

⁴⁶ Economic Outlook November 2009, Price Waterhouse Coopers, UK.

colony was developed during 1892-1905 with extensions during 1926-1930. It covered the district of Layallpur in its entirety and served portions of three other district⁴⁷. The establishment of Agriculture and Research institute in the Layallpur, the introduction of American cotton in the district, the ginning factories that sprang up on their own in the district and the present-day share of the district in the country's cotton exports, the railway line that passes through the district and the railway workshop located in the district all owe their origin to the canal colonization. What happened to Layallpur was repeated on a smaller scale in other canal colonies.

2.2 Socioeconomic consequences of Cantonments and Recruitment: Northern Region

The relatively small northern region, comprising just three districts, had four cantonments under the colonial rule. If we exclude the four cantonments of Rawalpindi, Jhelum, Attock and Murree from the northern region, even today it is not easy to figure what worthwhile remains in the northern region. It is not difficult then to imagine the scene before the cantonments were established under the colonial rule. The northern region and especially Rawalpindi — now the most populace district in the region was almost devoid of towns at the annexation (Dewey, 1928, p. 131). The military headquarter, the smaller cantonments in the vicinity and the Railway workshops turned the villages of *Rawal* into the city called *Rawalpindi*. The district's literacy rate at 12.64 percent in 1931, the time when the cantonments and military recruitment had shown some impact, was the second highest in what comprises Pakistan now, next only to Karachi (and matched by Lahore). Today, Rawalpindi is also the second most populous city of Punjab. How the change from a district devoid of towns to the district with a second most populace city in the province occurred? The positive impact on the northern region came in two ways. One, through availability of a secondary sources of income to the poverty riddled agriculture dependent families and secondly through construction and availability of better infrastructure meant for cantonments.

The employment opportunities other than traditional agriculture came in three ways. First the military recruitment itself, secondly the construction of cantonments and strategic/commercial road and rail network threw up numerous jobs in the engineering, construction and related sectors. Finally the consumption demand in the cantonments also opened up various employment avenues. We take up first the effects of military recruitment and then the impact generated by the cantonments.

The direct impact of the military recruitment was the increase in income of the households by way of military pay and pensions and through the allotment of agricultural land in the canal colonies. The allotment provided an opportunity to the otherwise subsistence farmers to produce, sell and earn on cash crops. The indirect impact came through the change in outlook of the soldiers and the consequent generation of consumption and the investment demand. Military service had changed the outlook and hence the consumption pattern of the recruits. The recruits

⁴⁷ Jhang, Gujranwala and Lahore (Shaikhpora was created out of the colony portion of the Lahore in 1921).

from Punjab, a large majority of whom were *northernites*, served on almost all the war fronts in the First World War including; France and Belgium, Galliope and Salonika, Aden and the Persian Gulf, Mesopotamia, Egypt, East Africa and North China. This enormously improved their outlook and the increase in income allowed them to adopt consumption pattern corresponding with the changed outlook. Numerous studies suggest that the soldiers contracted expensive habits during military service and that they lived with these after the retirement/demobilization⁴⁸. Accordingly the consumption demand in the region increased for imported as well as local goods, for fine as well coarse cloth and for textiles as well as jewelry. The expenditures on marriages had also increased, both in terms of throwing marriage parties as well paying the bride price⁴⁹. Dewey argues that at the time of annexation of Punjab in 1849, other than religious scholars, perhaps no one from the northern region would go for *Haj*⁵⁰. However by 1931 people, by hundreds from the northern region were undertaking the pilgrimage at a cost of Rs. 200-630 for deck passengers (no small amount in those days). Most of these passengers would, most probably, belong to the military families, as the military pay, pensions and income from the land allotted was the major source of increase in incomes. The increase in consumption obviously had a multiplier effect. However, the soldier would not spend their entire income on consumption. A survey of the expenditure pattern of the soldiers' undertaken in 1920s showed that they spent 20 percent on debt retirement, 18 percent on building houses, 16 percent on agricultural improvements and 13 percent on buying land (Dewey, p.99). The survey also showed that agricultural land was the most sought for asset by the soldier families'. The enormous increase then in land prices corroborated the survey. The land price would vary in every area depending upon the number of land hungry military pensioners, reported a settlement officer.⁵¹ The net effect of the trading in land was that, if at all, there was a change in the holding pattern, it was towards egalitarianism. Given military needs the class restrictions for induction into army had been relaxed allowing the share croppers and even menials to join. Upon demobilization this class was also able to buy and own land. The alienation data from the northern region suggests a gradual and slight shift of ownership from landlords⁵² to the middle ranking cultivator tribes⁵³. The result was that by 1938, in Rawalpindi and Jhelum, only 25 percent of the land revenue was paid by those paying Rs. 20 or more. In the united Punjab on the whole the corresponding figure was around 67 percent. One can expect that the egalitarian landholding structure would have at least circumscribed the negative effects commonly associated with dominance of large landlords.

Next to land, the most popular investment was housing. Darling, while on a visit, after the depression of 1930s, to one of the salt range settlements (district Jhelum, in the north) found that

⁴⁸ Darling (1928) Dewey (1988), Mazumder (2003).

⁴⁹ It was customary, rather mandatory, in Punjab, to pay certain money to bride's family upon marriage. The price varied with social status of the parties.

⁵⁰ The holy pilgrimage to *Mecca* that Islam obligates upon the rich, at least, once in life.

⁵¹ Quoted in Darling (1934),

⁵² like *Ghakkars* and *Janjuas*

⁵³ like *Gujjars* and *Jats*

approximately one third of the houses have been rebuilt with stone, since the First World War and some construction reflected a sense of aesthetics – a luxury only the wealthy can afford. This was a sharp contrast to the mud plastered houses found there before the War. The increase in income had also enabled the peasants to pay off the debt due to the exploitative money lender. The debt burden in the northern region as multiple of land revenue was 13 times the land revenue in 1920s compared to the high levels found in the South-West (Dera Ghazi Khan, 28 times Muzaffargarh and Mianwali, 22 times each of the land revenue). The emergence of agriculturist money lender, whose practices were less exploitative than the traditional money lender, was yet another welcome development of the increase in income of the region's inhabitants. The agriculturist money lender, in the northern region, had more than 70 percent of the mortgages in possession and the money for lending obviously came from military income. Given enough money available, some military families entered into the business of lending and were even able to drive away the traditional money lender from the market. The agriculturist money lender was willing to lend at a much lower rate because he was more interested in seeking the use of the mortgaged land rather than to earn profit.

The indirect benefits of military recruitment included the positive impact on literacy. First the increase in income allowed the soldiers to spend on the education of their children. Secondly the soldiers understood the importance of literacy while interacting with literate soldiers from other countries and finally serving on the war fronts in foreign countries created in them a desire for learning, especially when some of them felt handicapped to communicate with their families from the war fronts. The soldiers, assigned to foreign missions also observed the practices of foreign farmers. Darling, on his visit to the northern area, found that some native officers, who had served in France and Palestine, were putting into practice the methods of Norman peasants and Jewish kibbutzin. Tractors particularly fascinated them⁵⁴. The *nothernites*, like the Sikhs of Amritsar dominated the transport industry in the region. One reason for this could be that being trained in army as drivers and with cash available from retirement benefits upon demobilization, they were the natural candidate to buy the surplus vehicle that army was selling after the Wars. To quote Dewey (1998, p.142) “ enterprise, capital, skill and equipment had flowed out of the armed forces into the haulier's firms”.⁵⁵

Now we take up the impact generated by the cantonments. The cantonments generated employment by increasing the market for construction as well as for consumer goods. The road and rail network led to engineering, construction and host of other jobs and the usual economic effects associated with the transport infrastructure. The presence of military in the region generated demand for host of ancillary services. Construction related industries were booming, building contractors were making huge profits and wage rates in the region had gone up. The wages survey conducted in 1930s suggests that with exception of the canal colonies, the masons and carpenters were paid higher wages in Rawalpindi than in any other region of the province.

⁵⁴ Paragraph based on Dewey (1988).

⁵⁵ Paragraph based on Dewey (1988)

Railway lines of very crucial nature passed through the Rawalpindi; the strategic line northward to connect with the Peshawar cantonment and the commercial-cum-strategic line southward to connect with the Lahore, Multan and Karachi. Despite the initial non-viability of some of strategic lines the impact of railways on employment and commerce was enormous. The railways, after the army was the biggest employer in Rawalpindi. It employed an average of 3,500 employees in the early 20th century⁵⁶ (Dewey, 1988, p.143). The railway workshop at Rawaplindi constituted the single largest factory in the province with only the railway workshop at Lahore being bigger. Built in 1880, nothing that goes by the name of engineering could compete with the workshop in terms complexity of the product, range of skills and the use of machinery, at least till 1930 (Dewey, 1988, p.143). The employment opportunities thrown up by the Railways and the Cantonments, made the population of Rawalpindi more mobile than that of any other city in Punjab. In between the two Wars two-third of the Rawalpindi's population was immigrant and more than 80 percent of the immigrants came from outside the district. As the nature of jobs thrown up by the militarization required some minimum level of literacy e.g. mechanics at the railway workshops, relatively literate people from all over, converged into Rawalpindi. The cosmopolitan nature of the city's population, also lends evidence to this — in 1921 there were only 305 buildings in the city that housed more than 5 occupants per room as compared to 5,700 such buildings in Lahore. The cosmopolitan population in turn had an influence upon literacy in the region — No wonder, as early as 1931, Rawalpindi enjoyed the second highest literacy rate in what constitutes Pakistan today and even today maintains the lead position in the province.⁵⁷.

The Railways could not penetrate inside the city and villages, which accept for the narrow rail link were impassable even after the completion of the rail link. Though the first road to be made passable was the Grand Truck Road — the main highway, but a whole network of military roads soon converged on Rawalpindi. Some of these were purely local which connected the outlying defense works with the cantonments. In 1947 still a large number of villages in the country could be reached only on foot but the northern region on the whole had one of the best communication networks in India (Dewey, 1988), thanks of course to the cantonments. The result of the military road-building was the immediate increase in the number of carts to be replaced later on with motor vehicles.

Murrree, a *thesil* of Rawalpindi and a hill station also had a cantonment. A strategic road which was built in the early 20th century to connect Rawalpindi and Kashmir passed through the Murrree. As the hill station was just 38 miles from Rawalpindi therefore popping up of the large number foreign troops residing in Rawalpindi, who were not used summer conditions of the country, was but natural. To quote Dewey “it was the Indian army at rest and play”. This certainly influenced the local economy. Local tourists have since then flocked to Murrree – today the town's large tourist economy is owed to the strategic Kashmir road built during the colonial

⁵⁶ Precise data is not available.

⁵⁷ Paragraph based on Dewey (1988).

period⁵⁸. Moreover Murree's prospering economy during the colonial period was heavily dependent on military expenditures. Almost all the roads leading to it were either built or improved by the army and the town could be approached only through camps and cantonments. The biggest buildings in town were the barracks and the great sanitarium was reserved for soldiers and their families. The only school worth its name was the Lawrence school, which concentrated on educating the sons of British of 'other ranks'. The only large scale industry, Dyers' brewery, sold the bulk of its output to the troops only.

3.3 The South-west

The South-West did not benefit much from the shocks. However some description of the South-West as it was during the colonial period is essential to allow the reader to compare with the other two regions. Minimal rainfall, low population density, minimal presence in army, elite dominance (tribal chieftains, landlords and religious imposters) low landholdings for the majority, water scarcity and immobility of labor — all constraints to development, characterized the south-west of the 1920s. The water was so scarce that property in water arose before the property in land. For agriculture people relied upon inundation canals and well water. This is partly the reason why most of the land was held by the rich — sinking well requires capital, which only the rich had. Bulk of the land was and is held by the rich and majority cultivated either less than or close to subsistence holding. Despite the low population density and lack of means of employment people did not want to migrate or even be away from their home for just a few days⁵⁹. This perhaps also accounts for their near-absence from the army then. Their love for home or lack of travel is best expressed in a local proverb 'The *Multani* (natives of Multan) travels no further than the *Idgah*⁶⁰ — a Muslim place of worship, typically at a central place in a neighborhood, visited for large festive congregations only twice a year. Not surprisingly poverty was and is endemic⁶¹.

One could argue that poverty of the South-West is due to the smallness of average landholdings. True to an extent, but landholdings were smaller in the northern region as well. What then made the northern region different from the Southern? The secondary means of earnings — the cantonments, the army and the road and rail network had generated enough opportunities to allow a *nothernite* to make a living for himself if the traditional agriculture failed to yield enough. It was the absence of secondary means of earning that made poverty so endemic in the south-west. Multan, a district in the South-West, is much different from the other four districts in the region. Incidentally it is served by two canal colonies and an extensive road and rail network passes through it — because; firstly, it had colonies of its own, so it had to have the transport infrastructure to market the output and secondly, it is on the route that the road and rail network

⁵⁸ An expressway that now connects Islamabad and Murree was built in 2007.

⁵⁹ A colonial settlement officer reported that when he tried to engage a camel man for a fortnight's tour, the man bursts into tears upon the thought of being away from home for so long (quoted in Darling, 1928, p.106).

⁶⁰ Quoted in Darling (1928, p.106).

⁶¹ Paragraph based on Darling (1928), 9.105-127.

had to take to port city of Karachi from other colonies in the Center — again a testimony in favour of endowments.

4. Conclusion

I have argued that the three specific colonial shocks have influenced the socioeconomic development of the three regions of Punjab differently. The shocks had an enormous positive impact upon the development of the regions where their incidence was felt. The incidence of the shocks was a function of regional endowments. The British motivated by the desire of maximizing land revenue and exports were encouraged to construct canals, to irrigate the barren but cultivable land primarily in the central Punjab. The region's relatively greater rainfall and perhaps engineering consideration encouraged the British to construct the canal colonies there. The sparse population of the area facilitated the settlement of migrants, some of whom were among the best of agriculturists of the time. Rail and road infrastructure was constructed to market the output of the canal colonies. As the majority of the districts of the South-West did not have had a canal colony therefore these could not benefit much from the transport infrastructure either. Incidentally except one district of the South-West i.e. Multan, the remaining are not even located on the route to the transport infrastructure required to link the colonies in the Center with the port in Karachi. Thus the barren but cultivable lands and the sparse population of central Punjab — unique endowments indeed, worked to its advantage. The northern region was located such that it was ideal to host the military headquarter and the smaller garrisons to deter the Russian threat to India from the North-West frontier. The northern region had another unique endowment as well — its hardy men were used to warfare since the 12th century. This experience made them eligible to be preferred for induction into the army, to fight for the British in the two World Wars. Lack of enough employment opportunities coupled with prospects of land grants in the prosperous colonies made them all too willing to join. Again it was the endowments — warfare experience and little agricultural opportunities that made them join. The South-West of the province lacked such endowments, even its home-loving population was not too inclined to enlist. Understandably, the incidence of the shocks was not felt in the South-West. The difference in endowments explains the regional incidence of the colonial shocks and hence the present-day disparity between the South-West and the rest of Punjab.

References

Acemoglu, Daron, Simon Johnson, and James A. Robinson, "Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution," *Quarterly Journal of Economics*, 117 (2002), 1231–1294.

Andrabi, T. Michael K. "Railways and Price Convergence in British India", *Journal of Economic History*, 70:2, 2010, pp. 351-377.

Ali, Imran, *The Punjab Under Imperialism, 1885-1947*, Princeton: Princeton University Press, 1988.

- Bajwa, K.S. “A study of the Economic Effects of the Punjab Canal Colonies”, PhD thesis, University of Leeds. White Rose eThesis Online, 2010. <http://etheses.whiterose.ac.uk/967/>
- Cheema, A. Lyyla K. and Manasa P. The Geography of Poverty: Evidence from the Punjab, *The Lahore Journal of Economics* (Special Edition), pp. 163-188, 2008.
- Calvert, H., *The Wealth and Welfare of Punjab*, Lahore: The Civil Military Gazette Ltd., 2nd ed., 1936.
- Darling, M.L., *The Punjab Peasant in Prosperity and Debt*, London: Oxford University Press, 1925.
- _____, *Wisdom and Waste in the Punjab Village*, London: Oxford University Press, 1934.
- Dewey, Clive J. ‘Some Consequences of Military Expenditure in British India: The Case of Sind Sagar Doab, 1849-1947 Arrested Development in India’ in Dewey, Clive J. (ed.), *Arrested Development in India: The Historical Perspective*, New Delhi: Manohar, 1988.
- Engerman, Stanley L., and Kenneth L. Sokoloff, “Factor Endowments, Institutions, and differential Paths of Growth Among New World Economies: A View from Economic Historians of the United States,” in Stephen Harber, ed., *How Latin America Fell Behind* (Stanford University Press, Stanford, 1997), 260–304.
- _____, “Factor Endowments, Inequality, and Paths of Development Among New World Economies,” Working Paper 9259, National Bureau of Economic Research, 2002.
- _____, “Colonialism, Inequality, and Long-Run Paths of Development,” Working Paper 11057, National Bureau of Economic Research, 2005a.
- Islam, M. Mufakharul, *Irrigation, Agriculture and Raj: Punjab, 1887-1948*, New Delhi: Manohar, 1997.
- Leigh, M.S., *The Punjab and the War*, Lahore: Superintendent of Government Printing, Punjab, 1922.
- Muzamder, Ranjit K., *The Army and The Making of Punjab*, Delhi, Permanent Black, 2003.
- Nunn, Nathan, Slavery, Inequality, and Economic, Development in the Americas: An Examination of the Engerman-Sokoloff Hypothesis, 2007.
- Paustian, P.W. *Canal Irrigation in the Punjab*, AME Press, New York, 1968.



Table 1
Districts of Punjab in 1919: Regional Classification*

	North
1	Attock
2	Jhelum
3	Rawalpindi
	Center
1	Gujranwala
2	Gujrat
3	Jhang
4	Lahore
5	Layallpur (now Faisalabad)
6	Montgomery (now Sahiwal)
7	Shahpur (now Sargodha)
8	Sialkot
	South-West
1	Bahawalpur
2	Dera Ghazi Khan
3	Mianwali
4	Multan
5	Muzaffargarh

* Classification is based on Chema (2010)

Table 2
Socioeconomic Development Index: Regional Average

Regions of Punjab	Year					
	1983	1988	1993	1998	2003	2008
Center	55.4	69.5	80.2	81.7	79.7	82.3
North	54.1	67.9	75.2	77.2	75.7	76.8
South-west	40.1	53.7	60.6	66.9	63.7	65.1

Table 3
Districts of Punjab: Ranking by Literacy
Rate

		Literacy rate		Ranking	
		1881	1961	1881	1961
South-West					
1	Multan	5.23	11.70	1st	10th
2	Muzaffargarh	4.18	10.50	5th	12th
3	Dera Ghazi Khan	3.48	8.50	9th	13th
North					
4	Rawalpindi	4.27	31.60	3rd	1st
5	Jhelum	2.84	24.00	11th	3rd
Center					
6	Jhang	4.62	13.90	2nd	9th
7	Lahore	4.23	26.10	4th	2nd
8	Gujranwala	4.01	16.10	6th	6th
9	Shahpur (Sargodha)	3.89	14.70	7th	7th
10	Montgomery (Sahiwal)	3.48	11.60	8th	11th
11	Sialkot	3.00	16.40	10th	5th
12	Mianwali	2.61	14.50	12th	8th
13	Gujrat	2.59	17.60	13th	4th

Table 4
Population Growth and Period of Canal Colonization

	Growth in Population (%)					Period of Colonization	Name of Colony
	1901	1911	1921	1931	1941		
Central Region							
Layallpur	876.7	42.7	15.8	20.6	19.6	1892-1905	Lower Chenab
Montgomery	3.1	12.1	42.3	45.8	32.9	1914-1924	lower Bari Doab
Shahpur	2.1	32.2	11.6	14.0	21.7	1902-1906	Jhelum
Shaikupura	30.4	3.3	17.4	9.8	22.6	1892-1905	Chenab
Jhang	6.0	23.2	8.8	16.5	32.6	1902-1906	Jhelum
Gujranwala	12.0	-18.1	3.0	17.9	23.9	1926-1930	Upper Chena
Gujrat	-1.7	-0.5	4.6	11.9	19.8	1916-1921	Upper Jhelum
Lahore*	11.7	-0.4	13.0	22.0	22.9	1896-1904	Chunian
Sialkot	-3.0	-6.5	0.7	11.6	21.4	1915-1919	Upper Chenab
South-West							
Multan	12.7	14.4	9.7	32.0	27.9	1926	

Source: Constructed using table 2.1 (p. 9) and table 2.9 (p.60) in Ali (1988)

Note: For Chunian Colony, situated in Lahore, the peasant grantees were selected from the Lahore itself (Ali, 1988, p.48). This could be one reason why Lahore does not reflect a major increase in population during the colonization period.

Table 5

Socioeconomic Development Index

	(1)	(2)	(3)	(4)	(5)
Military Recruitment	0.09 0.02***	0.07 0.01***	0.08 0.01***	0.07 0.01***	0.04 0.01***
Canal Colony	0.11 0.02***	0.09 0.01***	0.10 0.02***	0.10 0.01***	0.10 0.02***
Cantonment	0.03 0.01***	0.03 0.001***	0.03 0.01***	0.03 0.004***	0.04 0.004***
Metalled Roads		0.65 0.07***	0.92 0.46**	0.95 0.46**	0.97 0.45***
Bank			-0.17 0.26	-0.18 0.26	-0.23 0.28
Grain Market			0.001 0.02	0.001 0.02	0.04 0.03
Agricultural workers				0.01 0.04	0.01 0.04
Commercial workers				0.02 0.08	-0.10 0.07
Professionals				0.00 0.05	0.03 0.05
South-West Region					-0.10 0.04**
Central Region					-0.06 0.04
Constant	1.66 0.05***	0.40 0.15***	0.18 0.44***	0.12 0.49	0.29 0.39
R-squared	0.29	0.57	0.58	0.58	0.6
Number of Observations	96	96	96	96	96