

## 2 Agriculture, Commerce and Governance in the *Longue Durée*

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For over a millennium, settlement, governance and development patterns differed by region and ecology in South India. Farmers settled permanently in areas with fertile soils near naturally irrigated deltas. From pre-colonial times and up to the nineteenth century, areas in the dry hinterland remained temporarily settled, and when land was cultivated in these regions, households were producing to subsist. Accordingly, governance was more entrenched in the irrigated areas than in the hinterland. The Chola regime, for example, empowered local leaders to collect taxes and invest in land improvement across coastal plains and fertile valleys. Territories in the hinterland were more fragmented. Local chiefs established militias to rule these regions, often guarding against threats from sultanate regimes in the north. Public spending in the hinterland areas was small. As a result, land saw rising yields and became valuable in regions near the western and eastern deltas. The quality of land in the dry, central part of South India, however, remained low. The differences in land quality, and earnings from land, between the deltas and the hinterland continued well into British rule.

The chapter provides historical context to the rest of the book, focusing on the growth divergence between the better-developed wet regions and the underdeveloped dry regions in peninsular India. Ecology mattered for economic growth because public investment in land improvement remained low in the most underdeveloped areas throughout history. Without sufficient facilities for irrigation and water access, farms were rainfed and farmers, especially those in the hinterland, were vulnerable to weather shocks. Yields were adequate enough to feed local residents in years with stable rainfall and low enough to threaten starvation in years with scarce rainfall. Naturally irrigated areas better protected farmers from seasonal uncertainty. The chapter shows that ecology-driven regionalisation in economic development persisted in the *longue durée*.

By looking at economic progress in the nineteenth and early twentieth centuries, the chapter also provides general lessons on the impact of colonialism on the agrarian economy of South India. Colonial rule introduced a scale effect, from railways and commodity trade, of which there was no parallel earlier. In miles of track laid and volume of goods transported, the region saw significant expansion in trade. That the economy stagnated under colonial rule, therefore, poses a puzzle.<sup>1</sup> As subsequent chapters of the book will show, the colonial regime did not invest in agriculture nor did it encourage private investment in land improvement. Despite growth in trade, supply-side disruptions from low productivity growth continued, and farmers remained vulnerable to harvest failure and famine. As a result, livelihoods for the average household in South India saw only marginal improvement in the nineteenth century and the first half of the twentieth century.

The chapter is divided into two sections. The first provides a summarised history of agrarian settlement, from Chola rule to 1800, across different ecologies in South India. The second explores the development of the agrarian economy in South India during the nineteenth century, evaluating proposed causes of economic stagnation.

### **The Agrarian Economy in Pre-colonial South India**

The majority of cultivation in South India occupied three landscapes: fertile deltas near the coasts, mixed or garden areas partially inland from fertile deltas and the dry hinterland in the central parts. Two major rivers, the Cauvery and Godavari, ran from the west to the east coast. Other perennial rivers were concentrated near the south-east coast. Areas located near the east coast, and downstream the major rivers, contained the most fertile lands. The Cauvery delta in the south-east and the upland delta neighbouring the Godavari River in the north-east part of the region were major rice-producing areas. In colonial times, the Tanjore and Godavari districts were located in the rice-farmed valleys. Some areas partly inland from the deltas in the south-central parts of the province, the areas west of the Cauvery delta, had mixed land types. Within these areas, some localities were fertile while others were dry. The mixed areas, commonly referred to as the *Kongunad*, included the colonial districts of Madura and Trichinopoly, where contrasting soil types between neighbouring municipalities within the region allowed for the cultivation of both rice and millets. Canals and channels built in pre-

<sup>1</sup> Tirthankar Roy, *How British Rule Changed India's Economy: The Paradox of the Raj*. Palgrave Studies in Economic History (ebook, Palgrave Macmillan, 2019).

colonial times carried water from rivers to some inland districts. Soils in the *Kongunad* typically had more subsurface water supply than the entirely dry areas. Land in the central hinterland was dry, and soil types were not conducive to high-yield agriculture. This area formed the Ceded Districts during colonial rule and included the dry tracts in Bellary, Kurnool and Anantapur.<sup>2</sup> Wet and mixed areas had a different history of agrarian settlement than the dry hinterland.

The majority of South Indian territory was governed by two sweeping empires prior to British rule. The first was the Chola dynasty. The Chola empire survived three times longer than the British Crown in South India, governing vast parts of the peninsula from about the ninth century to the mid-thirteenth century. By the eleventh century, Chola kings ruled lands in the northern Malabar Coast in the west and the long Coromandel Coast in the east.<sup>3</sup> On the eastern side, the Cholas governed the majority of territory south of the Krishna River, including areas constituting present-day Tamil Nadu and Andhra Pradesh. They ruled over the most fertile lands, including the Cauvery delta and parts of the mixed *Kongunad* pastures. Chola rulers, however, did not control the entire peninsula. While Cholas controlled the majority of the eastern coastline, Chera rulers governed small kingdoms in the western parts of contemporary Tamil Nadu, including parts of *Kongunad*, and Pallava rulers controlled the western coastal territory in contemporary Kerala. During this period, the Hoysala and Kakatiyan dynasties took control of lands just north of Chola territory. Hoysala rulers oversaw a small empire extending from the dry uplands in contemporary central Karnataka, including the colonial districts of Bellary and Kurnool, to the western coastline, while Kakatiyan rulers governed over a marginally larger kingdom encompassing regions extending from contemporary south-western Andhra Pradesh to the south-Odisha coastline.

The second consolidated imperial power in South India was the Vijayanagara empire, ruling from the fourteenth to the sixteenth century. At its peak, Vijayanagara rulers governed an area that was larger than Chola rule, claiming territories previously governed by Chera, Pallava and Hoysala dynasties. Political and bureaucratic institutions were structured differently in each empire. The Vijayanagara empire was less centralised than Chola rule, containing fragmented, semi-autonomous kingdoms until its decline in the sixteenth century. Settlement and development patterns, however, followed similar trajectories across successive dynastic regimes.

<sup>2</sup> The region was termed the 'Ceded Districts' after the Nizam of Hyderabad conceded territory to the East India Company in 1800.

<sup>3</sup> Chola rulers also governed parts of Burma and Ceylon.

Historians studying inscriptions from ancient times suggest that early occupiers settled around the most fertile lands in South India. Deltas on either side of the Cauvery River, partially inland from the south-east coast, contained soils that retained moisture and are often cited as the desired location for early settlements. Over time, fertile areas became more densely populated. Once early settlers occupied the most fertile areas nearer the coasts, settlement spread inwards. As population density increased in the fertile areas, pastures inland from the deltas, those in the *Kongunad*, attracted more occupiers during Chola rule. Occupation spread south-west of the Cauvery delta. Chola rulers constructed wells and tanks in the *Kongunad* region, in areas surrounding colonial Trichinopoly, further attracting settlers to the 'mixed' region. The central, dry part of South India was temporarily occupied in the early modern period and earlier and became more densely populated only in the eighteenth and nineteenth centuries. Rice was grown in the deltas; a combination of millet, pulses and rice was grown in the mixed *Kongunad* areas; and dry millets were grown in the hinterland. Archaeological evidence shows that the naturally irrigated deltas, particularly those along the banks of the Cauvery and Godavari, nurtured rice cultivation in ancient times. Preceding the construction of artificial irrigation infrastructure, rice was cultivated in naturally irrigated fields during the Iron Age.<sup>4</sup>

How were settlements governed? During Chola times, well-settled parts of the region developed localised, hierarchical bureaucratic structures, with powers wielded according to caste and wealth.<sup>5</sup> Localities, or *nadus*, emerged as distinct administrative units in settled regions. *Nadus* literally translate to a portion of territory or a domicile and, in the context of pre-1700 South India, refer to a form of permanently settled neighbourhood. *Nadus* were small and densely populated when soil types were conducive to productive agriculture. Administrative proceedings in localities were conducted by groups of landowners, or *nattars*, as well as upper-caste religious titleholders. Historians debate the granular details, including the role of the king, *nattars*, and upper castes, and their respective relationship to the poorer peasants in localities within the wet and mixed regions. The traditional historiography views the Chola dynasty as a strong centralised state. Chola kings, in this interpretation,

<sup>4</sup> Eleanor Kingwell-Banham, "Dry, Rainfed or Irrigated? Reevaluating the Role and Development of Rice Agriculture in Iron Age-Early Historic South India Using Archaeobotanical Approaches." *Archaeological and Anthropological Sciences* 11, no. 12 (2019): 6485–500.

<sup>5</sup> Christopher Baker, *An Indian Rural Economy 1880–1955: The Tamilnad Countryside* (Oxford: Oxford University Press, 1984), 30–33.

appointed small cabinets and ruled vast territories with large armies.<sup>6</sup> Chiefs and *nattars* in the localities collected tax revenues on behalf of the king. A revised interpretation, championed by Burton Stein, paints a dichotomous, macro- and micro-political structure, one where the Chola dynasty governed as a 'segmentary state'.<sup>7</sup> Chiefs and *nattars* of local kingdoms were allied to kings, but *nadus* were fiscally autonomous. Local assemblies spent tax collections on the maintenance of temples, gifts to temple and administrative assemblies, and public works, including the maintenance of irrigation networks. Only small portions of tax revenues were allocated to the 'central state'. According to Stein, as settlements grew in size, larger assemblies, or *periyanaadus*, formed to administer local governance. Groups of *nattars* cooperatively governed *periyanaadus*, almost autonomously and independent of the interests of the central Chola royalty. Recent scholarship challenging Stein's distinction of local and central institutions in South India suggests that *periyanaadus* were not separate from the central regime. Instead, their formation reflected increasing commercialisation.<sup>8</sup> The growth of local markets and integration with markets overseas motivated supra-local groups of landowners and merchants to establish associations, partly aiming to increase profits from cultivation in fertile areas. Washbrook consolidates these various assessments, suggesting that there were varied routes to 'citizenship' in South India, each conferred by entrenched local institutions.<sup>9</sup> In other words, governments built on, rather than redesigned, localised rules of engagement in Chola-era South India.

Less historically contested is that governance was entirely decentralised with law and order, trade, and tax powers devolved to local rulers during the Vijayanagara period. Chola rule crumbled in the fourteenth century, disintegrating into multiple kingdoms governed by ruling families. Geographically, the northern edge of the Deccan Plateau was the

<sup>6</sup> T. V. Mahalingam, *South Indian Polity*. 2nd ed. (Madras: Rathnam Press, 1967); Arjun Appadurai, "Kings, Sects and Temples in South India, 1350–1700 A.D." *The Indian Economic and Social History Review* 14, no. 1 (1977): 47–73; R. Champakalakshmi, *Trade, Ideology, and Urbanization: South India 300 BC to AD 1300* (Delhi and New York: Oxford University Press, 1996).

<sup>7</sup> Burton Stein, *Peasant State and Society in Medieval South India* (Delhi and Oxford: Oxford University Press, 1980). Stein adapted the segmentary state framework from Aidan Southall's studies on urban East Africa. See Aidan Southall, "The Segmentary State in Africa and Asia." *Comparative Studies in Society and History* 30, no. 1 (1988): 52–82.

<sup>8</sup> Noboru Karashima, *South Indian History and Society: Studies from Inscriptions A.D. 850–1800* (Delhi: Oxford University Press, 1984); Noboru Karashima and Y. Subbarayalu, "The Emergence of the Periyandu Assembly in South India during the Chola and Pandyan Periods." *International Journal of Asian Studies* 1, no. 1 (2004): 87–103.

<sup>9</sup> David A. Washbrook, "Forms of Citizenship in Pre-modern South India." *Citizenship Studies* 23, no. 3 (2019): 224–39.

dividing line between southern kingdoms and Mughal rulers. The decline of the Chola dynasty left a power vacuum in South India as areas immediately south of the Deccan region were no longer protected by a centralised military. Mughal rulers leading vast armed forces in the north had new opportunities to expand southwards. Threats from the north motivated fragmented kingdoms to consolidate military resources. The ruling family of the Vijayanagar region, an area that included the stretch between the banks of the Tungabhadra River in modern-day Hampi and barren lands in Bellary, established the Vijayanagara empire in the 1330s, seeking the allegiance of rulers across the peninsula. Vijayanagar, the town capital of the empire, was located in a vulnerable zone just south of lands ruled by the Deccan sultanates. Vijayanagara kings stationed military garrisons just south of the plateau to protect the fragmented political kingdoms in the peninsula. Ruling families paid tribute, including small armies, to the Vijayanagara rulers. The fiscal regime was more decentralised than the Chola dynasty. Rulers maintained control over tax collection and local expenditure in their kingdoms.<sup>10</sup>

The Battle of Talikota in 1565 marked the beginning of the end for the Vijayanagara dynasty. Sultanate rulers breached the Vijayanagara stronghold in the mid-sixteenth century. Following Talikota, ruling families either rebelled or refused to offer their tribute to the imperial ruler. The change in alliances brought about the disintegration of large South Indian kingdoms, offering expansionary opportunities not just to sultanates but also to territorial rulers, including kingdoms aligned with the Nayaka dynasty in the *Kongunad*, as well as European powers in coastal parts of the region.<sup>11</sup>

How did the South Indian economy develop during dynastic rule? Commerce thrived in the coastal areas and those pastures well suited for rice cultivation. Land markets developed and the value of fertile land increased during Chola rule. Good quality land was in high demand, and once localities were formed, occupiers claimed rights to land. However, few had access to owning property. Ownership was conferred and ratified by local assemblies and religious officials. Administrators granted *mirasi* rights, or rights to shares of communal lands, to upper castes and, in some cases, merchants that officiated in *nattars*. Inscriptions record *brahmadeyas*, or royal gifts of land plots, sometimes even small

<sup>10</sup> Karashima, *South Indian History and Society*; Burton Stein, *Vijayanagara* (Cambridge and New York: Oxford University Press, 1989).

<sup>11</sup> Velcheru Narayana Rao, David Dean Shulman, and Sanjay Subrahmanyam, *Symbols of Substance Court and State in Nāyaka Period Tamilnadu* (Delhi and New York: Oxford University Press, 1992).

localities, to upper-caste Brahmins as ritual officeholders in local temples. Shares to communal lands were frequently traded among the elites.<sup>12</sup> Proprietors were not always cultivators, and sharecropping tenancy contracts were common. Lower-caste peasants were tied to land as bonded and paid labour as well as tenants in the *nadus* near the eastern deltas. Rice cultivation in the deltas and parts of the mixed areas remained more labour and capital intensive than millet cultivation in the hinterland.

Commodity trade flourished on the coasts and in the deltas. The more settled areas of South India were trading in local and export markets. Evidence of settlements near the Cauvery delta in the fourth century BC, for example, established trading networks, transporting goods to parts of Asia and Europe. The economy, as a result, started to monetise. Chola and Vijayanagara rulers enforced land taxes, as well as taxes on artisanal production, and inscriptions record the payments of these in coin in the major trading hubs. Indeed, settlers in the Cholamandalam territorial division, the area including the Cauvery delta, did pay part of their tax obligations in money.<sup>13</sup> Stein recounts goldsmiths in the same region also paying local taxes in coin.<sup>14</sup> In the period after the Chola dynasty, tax farming became more entrenched and the militarised Vijayanagara regimes were more reliant on tax revenue than previous rulers. Coin payments gradually increased, partly reflecting rising payments for domestic bills, including military defences, gift-giving, temple maintenance and public works, as well as reflecting rising trade with overseas markets.

In the same period, domestic markets for agricultural produce expanded. Washbrook notes the transport of rice from the eastern deltas to the western coast and the trading of cattle, bred in the hills and sold to farmers in the deltas.<sup>15</sup> Commercial centres emerged in the wet and mixed areas. Routes for bullock trains were built, allowing for the movement of goods between populated settlements.<sup>16</sup> Hall finds the introduction of lower denomination coinage to match the requirements of tax collections from both rising domestic trade and trade with European posts under the Chola regime.<sup>17</sup> Much of this commercialisation, therefore, was occurring in the areas near both the most fertile soils (also the

<sup>12</sup> P. B. Mayer, "The Penetration of Capitalism in a South Indian District." *South Asia* 3, no. 2 (1980): 1–24.

<sup>13</sup> Kenneth R. Hall, "Coinage, Trade and Economy in Early South India and Its Southeast Asian Neighbours." *The Indian Economic and Social History Review* 36, no. 4 (1999): 431–59.

<sup>14</sup> Stein, *Vijayanagara*, 100.

<sup>15</sup> David A. Washbrook, "Merchants, Markets, and Commerce in Early Modern South India." *Journal of the Economic and Social History of the Orient* 53, no. 1–2 (2010): 266–89.

<sup>16</sup> Stein, *Vijayanagara*, 100.

<sup>17</sup> Hall, "Coinage, Trade and Economy in Early South India."

areas with the highest tax revenue per capita) and the ports. Regions in the vicinity of the Cauvery delta satisfied all conditions. Throughout the fifteenth and sixteenth centuries, productivity of paddy lands increased, offering new market opportunities for agriculturists and merchants. The port in Negapatam, modern-day Nagapattinam, just east of the Cauvery rice deltas, continually served as a major trading hub. The port was a centre for Chola traders and naval expeditioners between the ninth and fourteenth centuries, and the capital of Dutch and Portuguese settlements in the sixteenth and seventeenth centuries.<sup>18</sup>

How regionally concentrated was trade expansion in medieval South India? The historiography paints a vibrant picture of the naturally irrigated zones. Coastal plains, fertile valleys and mixed or 'garden' agricultural regions saw permanent settlement, property rights for upper castes and political administrators, the erection of local and supra-local state administrations, fiscal systems and growth in commercial activities from ancient to medieval times.

What about the dry hinterland? The driest, centrally located parts of the South Indian peninsula have been less researched than the well-irrigated deltas. This is logical, given source constraints. The reliance on inscriptions to interpret the history of pre-modern South India procures a focus on areas that were densely populated. Indeed, the number of inscriptions can in itself be a good measure of development patterns. Growing population per square mile; rising tax collection; and the construction of temples, monuments and irrigation channels encouraged durable documentation of settlements in the better-developed parts of the region. Scarce documentation of permanent agrarian settlement in the hinterland was reflective of the underdeveloped nature of the region.<sup>19</sup>

Subbarayalu's mapping of *nadus* offers the most granular measurement of regional development patterns in Southern India during the Chola period. The data shows that *nadus* increased in size disproportionately to distance from water sources. Localities near irrigated deltas were smaller, clearly demarcated by boundaries in the inscriptions and densely populated. Localities further away from water sources and good quality land were larger, not clearly demarcated by boundaries and sparsely populated. In other words, early settlers were deterred by the poor quality of land.<sup>20</sup>

<sup>18</sup> For more on the political economy of trade with European powers in fifteenth and sixteenth centuries, see Sanjay Subrahmanyam, *The Political Economy of Commerce: Southern India 1500–1650* (Cambridge: Cambridge University Press, 1989).

<sup>19</sup> Stein, *Vijayanagara*.

<sup>20</sup> Y. Subbarayalu, *Political Geography of the Chola Country* (Madras: State Department of Archaeology, Government of Tamilnadu, 1973), cited in Stein, *Peasant State and Society*, 92–95.



The central hinterland was the underdeveloped part of larger political realms well before colonial rule. The Vijayanagar town in itself was a military stronghold with dry lands. Non-military, agriculturist settlers in the hinterland consumed what they farmed. Markets were few and cultivators merely subsisted in good years. Millet cultivation was common. Some cattle were bred. Once the animals matured, pastoralists typically transported cattle to the rice-producing areas.<sup>21</sup> Studies of governance in localities suggest that settlements in the hinterland were more monocratic. *Nattars* were not prevalent in these regions. Assemblies of legislators were non-existent and temples were few. Brahmins established kinship networks and practised ceremonial duties in areas that were most densely populated. Singular chiefs ruled over small, dry settlements.<sup>22</sup>

The Chola dynasty claimed ownership over dry areas nearest the southern tip; Hoysalan and Kakatiyan rulers claimed control over the northern parts. Hoysalan rule extended from the centre to the north-west, while Kakatiyan rule extended from the centre to the north-east. In each of these three cases, the central parts were not developing at the same pace as the deltas or coasts. Each of the three dynasties maintained strong military garrisons in the dry interior, primarily to protect against the troops of sultanate rulers that attempted to expand southwards, through the hinterland. Independent chiefs controlled military troops and contributed these to the different dynasties. In the fifteenth century, many chiefs of hinterland localities pledged allegiance to the Vijayanagara rulers. When forts were built in the hinterland, rulers constructed them to house armies. Occupational structure developed alongside military hierarchies. The cooperation between landowners, religious leaders and merchants that developed in the fertile plains was non-existent in the dry hinterland. Chiefs wielded absolute power over territories on account of their control of local militias.<sup>23</sup>

Chiefs levied taxes on the few producers that settled, however, public spending was low. Rulers did not construct irrigation channels or transport networks in the hinterland. In the Chola period, irrigation infrastructure was built in two forms and in two regions. Chola rulers invested in the construction of channels and dams to divert water from the Cauvery river to deltas in the south-eastern delta. The most famous example of such constructions was the Grand Anicut, built early in Chola rule. While large

<sup>21</sup> Washbrook, "Merchants, Markets, and Commerce," 266–89.

<sup>22</sup> Subbarayalu, *Political Geography of the Chola Country*, cited in Stein, *Peasant State and Society*, 92–95.

<sup>23</sup> Stein, *Vijayanagara*.

projects were concentrated in the deltas, tanks were common forms of water storage in the mixed, south-central districts, areas surrounding the colonial districts of Madurai or Trichinopoly. Historians also note sizeable investments into the construction of small irrigation projects, and general improvement of cultivated lands, in the mixed areas during the fifteenth and sixteenth centuries.<sup>24</sup>

In short, from ancient times, well-irrigated sections remained densely populated and settlers accumulated wealth. Dry sections remained dangerously rainfed, sparsely settled or occupied by local militias and relentlessly poor. Low investment meant that land quality remained poor and markets underdeveloped in the dry areas. Recent evidence suggests that the non-marketisation of the dry hinterland persisted until the nineteenth century. Expansion in railway networks and increase in cash crop cultivation brought little reprieve to the region. The majority of hinterland peasants suffered through frequent famines.

On the eve of British control in South India, two sweeping empires had ended and an assortment of regimes ruled over the broken-up region. Haider Ali and Tipu Sultan ruled the north-west, Marathas and sultanate regimes governed the north-east, independent kingdoms and militias reigned in the hinterland, and European powers controlled ports and collected taxes in parts of both coasts. The East India Company, through military conquest, consolidated and governed the various kingdoms as one administrative unit from the early nineteenth century. The Indian Rebellion ended the East India Company's reign in 1857, bringing the majority of the South Indian peninsula under the authority of the Crown. The development trajectories of different regions within South India, however, did not change much. Land became more productive in the wet areas and in parts of mixed areas. In the driest tracts, farmers barely managed to subsist, a problem that persisted well into the twentieth century.

### **Colonialism, Commerce and Agriculture, 1800–1920**

How did the Indian economy perform under colonial rule? National accounting estimates show a 'reversal of fortune', that Indians were richer under pre-colonial regimes than they were by the end of colonial rule. There is disagreement on the timing of this reversal. Scholars agree that the average Indian in 1600 was, in *real* terms, richer than the average Indian in 1900. Traditional historical contributions suggest that the reversal occurred during the early phases of British influence in India.

<sup>24</sup> Prasannan Parthasarathi, *The Transition to a Colonial Economy in South India: Industry and Commerce in the Eighteenth Century* (New York: Cambridge University Press, 2001), 53.

This interpretation, corroborating the California School's popularisation of the Great Divergence and spearheaded in the late 1990s by Parthasarathi, suggests that the eighteenth century marked a structural change in India's economy. Indian wages, according to Parthasarathi, were higher than those earned by British labour until the 1700s. In the transformative period, production of artisanal and labour-intensive manufactured goods declined while agricultural productivity, where once rising, began to stagnate.<sup>25</sup> Newer estimates of India's economy in the *longue durée* suggest a slower, more nuanced decline in India's economic performance. Incomes of Indian workers, as per amended estimates, declined from the seventeenth century.<sup>26</sup> The revised estimates disagree on Parthasarathi's timing of the 'divergence', suggesting that Indians were poorer than the British in the sixteenth century. Less disputed, however, is that India's 'fortunes' did reverse by the middle of colonial rule. Indeed, revised GDP estimates suggest that per capita income was 700 dollars in 1990 prices during Akbar's rule of Mughal India, falling to a low average annual earning of 500 dollars per capita in the early 1870s. Whereas the average worker in Mughal India earned close to 70 per cent of the average worker's income in Britain, this ratio fell to 15 per cent in 1870.<sup>27</sup>

GDP estimates show that the Indian economy performed poorly while ruled by the British Crown. Heston's estimates of price-adjusted GDP growth rates show a small yearly increase of 0.43 per cent between 1900 and 1946. Sivasubramonian's revised estimates suggest a more depressing story, with annual average (and price adjusted) per capita income growth rates of 0.22 per cent during the same period.<sup>28</sup> India's population size increased from a quarter of a billion to almost half a billion residents while estimates of sector-wise distribution of the labour force suggest that the number of adults employed in agriculture increased between 1881 and 1950.<sup>29</sup> By 1950, 76 per cent of India's labour force worked in the agricultural sector. Whereas manufacturing and services saw some

<sup>25</sup> Prasannan Parthasarathi, "Rethinking Wages and Competitiveness in the Eighteenth Century: Britain and South India." *Past & Present* 1998, no. 158 (1998): 79–109.

<sup>26</sup> Pim De Zwart and Jan Lucassen, "Poverty or Prosperity in Northern India? New Evidence on Real Wages, 1590s–1870s." *The Economic History Review* 73, no. 3 (2020): 644–67.

<sup>27</sup> Stephen Broadberry, Johann Custodis, and Bishnupriya Gupta, "India and the Great Divergence: An Anglo-Indian Comparison of GDP per Capita, 1600–1871." *Explorations in Economic History* 55 (2015): 58–75; Stephen Broadberry and Bishnupriya Gupta, "The Historical Roots of India's Service-led Development: A Sectoral Analysis of Anglo-Indian Productivity Differences, 1870–2000." *Explorations in Economic History* 47, no. 3 (2010): 264–78.

<sup>28</sup> S. Sivasubramonian, *National Income of India in the Twentieth Century* (Oxford: Oxford University Press, 2000), 273.

<sup>29</sup> Sivasubramonian, *National Income of India*, 13.

increase in net output, stagnation in the agricultural sector explains the low rates of GDP growth in colonial India.<sup>30</sup> How did the agricultural sector perform in Madras?

The Madras Presidency, drawn in Figure 2.1, extended from parts of the west coast to the entire south-east coast. The Company divided Madras into multiple districts and *taluks* or municipalities. The shift to Crown rule in 1857 created further administrative units, limiting the size of each district. In the post-colonial period, the province was divided and land was shared between five Indian states: Tamil Nadu, Andhra Pradesh and parts of Karnataka, Kerala and Odisha. Living standards of the average rural household across the region saw little improvement in the nineteenth and early- to mid-twentieth centuries. Real wages in Madras broadly stagnated or declined between 1873 and 1900.<sup>31</sup> Peter Mayer's estimation of living standards is equally cynical about wage patterns in the first half of the twentieth century. There was some increase in earnings between 1900 and 1920, however, growth was short-lived. According to Mayer's estimations, real wages declined substantially in parts of Madras between 1920 and 1970.<sup>32</sup> Anthropometric analyses offer similar results. Brennan et al. suggest that heights of South Indian emigrants to Fiji stagnated across the nineteenth and early twentieth centuries.<sup>33</sup> Famines devastated large parts of the region, particularly affecting dry terrains. The famine in 1876 led to widespread starvation in the driest tracts, the Ceded Districts of Bellary, Kurnool and Anantapur, in particular.<sup>34</sup>

The decline in living standards is surprising, considering the volume of trade grew exponentially in the same period. Transport networks and markets expanded across South Asia during the nineteenth century. Railway lines connected previously unconnected regions and reduced the costs of transporting people and goods between those regions previously connected by slower modes of transport, including bullock carts and palanquins. In kilometres of track, the area covered by railway lines increased by fifty times between 1850 and 1947. The cost of transporting

<sup>30</sup> Bishnupriya Gupta, "Falling behind and Catching Up: India's Transition from a Colonial Economy." *The Economic History Review* 72, no. 3 (2019): 803–27.

<sup>31</sup> Dharma Kumar, *Land and Caste in South India: Agricultural Labour in the Madras Presidency during the Nineteenth Century* (Cambridge: Cambridge University Press, 1965).

<sup>32</sup> Peter Mayer, "Trends of Real Income in Tiruchirapalli and the Upper Kaveri Delta, 1819–1980." *The Indian Economic and Social History Review* 43, no. 3 (2006): 349–64.

<sup>33</sup> Lance Brennan, John McDonald, and Ralph Shlomowitz. "Trends in the Economic Well-Being of South Indians under British Rule: The Anthropometric Evidence." *Explorations in Economic History* 31, no. 2 (1994): 225–60.

<sup>34</sup> Leela Sami, "Starvation, Disease and Death: Explaining Famine Mortality in Madras 1876–1878." *Social History of Medicine: The Journal of the Society for the Social History of Medicine* 24, no. 3 (2011): 700–19.

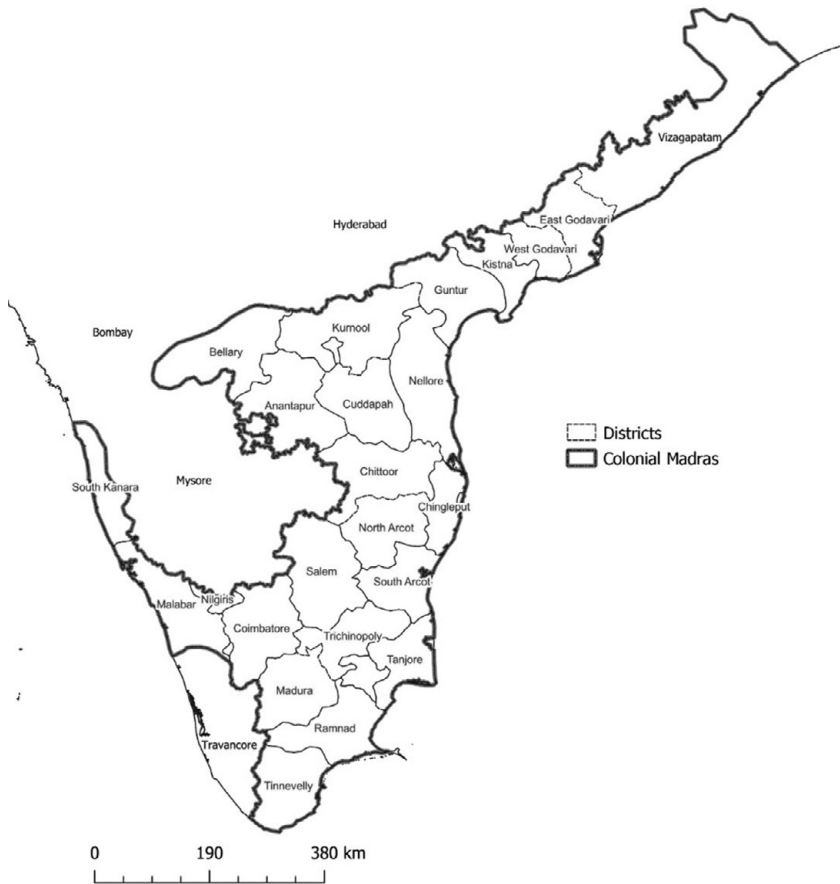


Figure 2.1 District boundaries in Madras, 1945

Source: Author.

Note: Figure modelled on the map in *Indian Agricultural Statistics* (Delhi, 1950), 103.

goods by rail, between markets substantially declined in the same period, affording substantial social savings to producers. Prices paid to transport one ton of goods for one kilometre by rail in the 1930s were 94 per cent lower than the same prices paid to carry goods by bullock cart in the early 1800s.<sup>35</sup> Markets expanded with the growth in railway construction.

<sup>35</sup> John Hurd, "Railways." In *The Cambridge Economic History of India*, edited by Dharm Kumar and Meghnad Desai, 2:878–904 (Cambridge: Cambridge University Press, 1983), 740.

Prices of grain, rice and cotton saw greater convergence across districts between 1860 and 1900.<sup>36</sup>

From the mid- to late-nineteenth century, new railway lines in South India connected farmers in the hinterland to markets in the deltas and export routes. The Madras Railway Company, established in 1845, built the first track, with carriages embarking from Madras city to Arcot in the mid-1850s. The goal of the company, and indeed the British Indian government, was to lay enough track to connect the centres of the major provinces. By the 1880s, a passenger could board a train in Madras city, and travel to Bombay and Calcutta with one connecting stop along the way. Internally, areas within the province also became better connected. Track laid by the Madras Railway Company offered direct connections between Madras city and Beypore near the western, Malabar coast. The hinterland was quickly integrated with the rest of the province. A single line connected Anantapur, Bellary and Kurnool in the driest parts of the hinterland to coastal Tanjore by the late nineteenth century.<sup>37</sup> Connections for the hinterland to the Deccan also increased. The Southern Mahratta Railway company constructed rail track between Bellary and southern parts of the Deccan in the 1870s and 1880s. Connections within the province and between provinces continued to increase after the Madras Railway Company merged with Southern Mahratta Railway Company in 1908. Rail lines also expanded in the southern parts of the province. The Great Southern of India Railway Company, established in 1858, linked parts of Tanjore to Trichinopoly, Salem and Coimbatore in the 1860s and 1870s.<sup>38</sup> Operating at a smaller level than the Madras Railway Company, Southern of India Railway continued to operate lines in the peninsular region until it was nationalised in the mid-1940s.

Between 1860 and 1891, the line of railway track operated by the Madras Railway Company and the Southern of India Railway increased from 137 miles to 1740 miles. Railway mileage open for the transport of goods and people increased by approximately eight times over the 1860s. The movement of goods expectedly increased at a similarly quick pace. Between 1871 and 1891, goods transported on rail lines operated by the aforementioned South Indian railway companies increased from 409,620 tons to 2.8 million tons.<sup>39</sup> In other words, the tonnage transported per

<sup>36</sup> Michelle McAlpin, "Railroads, Prices, and Peasant Rationality: India 1860–1900." *The Journal of Economic History* 34, no. 3 (1974): 664.

<sup>37</sup> David A. Washbrook, "The Commercialization of Agriculture in Colonial India: Production, Subsistence and Reproduction in the 'Dry South', c. 1870–1930." *Modern Asian Studies* 28, no. 1 (1994): 129–64, 129–130.

<sup>38</sup> *Madras Chamber of Commerce Centenary Handbook 1836–1936* (Madras, 1936).

<sup>39</sup> *Statistical Abstract Relating to British India* (London, 1870–1905).

railway mile within the Madras province alone increased by close to four times in the late nineteenth century. Railway connections to ports also increased commodity exports. The value of merchandise exports, in pound sterling, shipped out of Madras alone increased by about five times concurrently.<sup>40</sup> The expansion in railway networks provided peasants in Madras greater access to both regional and global markets.

Growth in transport connections between rural and urban areas led to increase in cultivated land in the nineteenth century. Millet, cotton and groundnut acreage increased from the 1850s. For prospective cotton farmers, the motivation was not just rail connectivity. Soaring cotton prices during the American Civil War encouraged an increase in cotton cultivation across the drier tracts.<sup>41</sup> Growing market demand overseas combined with declining costs of moving commodities from hinterland to coasts encouraged cultivators to seize the opportunity to profit from new export market opportunities. The stagnation in living standards, however, suggests that results from deepening market access were disappointing. Marketisation did not relieve destitution for the poorest.

Nationalists writing during colonial rule offered one explanation, that the commercialisation process encouraged crop substitution which, when combined with population growth, led to a decline in living standards. R. C. Dutt, among others in a group of Indian nationalist politicians demanding stronger protectionist policies, argued that cash crop acreage substituted food grain cultivation from the mid-nineteenth century.<sup>42</sup> At the same time, population size increased rapidly. The supply shortage of food production combined with rising demand, in the nationalists' opinion, led to widespread starvation. Supply shortages created an additional problem of increasing grain prices, which in the context of stagnating nominal wages put additional pressures on the rural poor. Some historians provide interpretations that corroborate this narrative. David Arnold suggests that increasing cash crop cultivation led to grain riots in the early twentieth century. The integration of local agriculture with export markets altered the supply chain of grain production. Grain was no longer sold in bazaars but stockpiled in warehouses and then exported, creating supply disruptions in the face of burgeoning demand. By hoarding grain, traders benefitted from price spikes, leaving peasants in the countryside with food supply shortages. Running through this narrative is the assumption that marketisation, a transformative process

<sup>40</sup> *Statistical Abstract Relating to British India*.

<sup>41</sup> Washbrook, "The Commercialization of Agriculture," 129–130.

<sup>42</sup> Michelle McAlpin, "Railroads, Cultivation Patterns, and Foodgrain Availability: India 1860–1900." *The Indian Economic and Social History Review* 12, no. 1 (1975): 43–60, 53.

in the nineteenth century caused by the expansion of transport networks, led to food shortages and peasant unrest. The grain riots across the province in 1918, according to Arnold, were motivated by 'popular resentment against the expanding grain trade'.<sup>43</sup> Historians believe peasants were rioting in the early twentieth century to protest the lack of protection against market forces, especially those that affected the prices of food. At first sight, the increase in railway mileage and expansion of domestic markets seemed to have marginalised the poor. Stopping the analysis here, however, would give us only a superficial explanation for persistent poverty in the region.

Historians writing in the 1970s and 1980s disputed some of the suggestions made by nineteenth-century nationalists. Though cash crop cultivation increased, it accounted for a small share of total agricultural output. In 1885, of the 22.5 million acres cultivated, rice, millets and pulses cultivation operated 19.6 million acres while acreage under cotton and oil seeds, the principal cash crops in the region, amounted to 2.7 million acres.<sup>44</sup> By the turn of the twentieth century, cotton area continued to contribute a small portion of total agricultural land, just 5 per cent of total area in the province.<sup>45</sup> This trend continued into the 1930s, as the next chapter will show. Crucially, evidence suggests that though cotton acreage did increase after 1860, it did not substitute rice or cereal cultivation. Cotton acreage increased and grain acreage did not decline throughout colonial rule. McAlpin's assessment of transported commodities suggests that though rail lines carried cash crops and some grains, the majority of grain was consumed in local markets. In the same period, population numbers declined in the dry tracts of Bellary and Kurnool, the areas most affected by nineteenth-century famines. In other words, neither crop substitutions nor demographic explosions created grain supply shortages in Madras.<sup>46</sup>

A possible addendum to the nationalists' hypothesis is that commercialisation left poor peasants exposed to market fluctuations. Those peasants cultivating cotton, in particular, were negatively affected because of rising grain prices. Peasants owning small parcels of land and growing a single cotton crop each year struggled to purchase grain as prices soared. The price of cotton increased for most of the period but at a slower rate than the price of grain. Earnings from cultivating cotton

<sup>43</sup> David Arnold, "Looting, Grain Riots and Government Policy in South India 1918." *Past & Present*, no. 84 (1979): 145.

<sup>44</sup> *Statistical Abstract Relating to British India* (London, 1896), 54.

<sup>45</sup> McAlpin, "Railroads, Prices and Peasant Rationality," 681.

<sup>46</sup> McAlpin, "Railroads, Prices and Peasant Rationality," 681.



declined relative to prices paid for food consumption. The outcome was declining real wages for one group of peasants.<sup>47</sup> However, the number of cotton cultivators remained a small portion of the total agricultural population. Additionally, the rise in cotton production throughout the period is then counter-intuitive. If cotton cultivators could not afford to purchase food, then why would the number of farmers acquiring land to cultivate cotton rise? Why did the countryside see food shortages, and rising grain prices caused by supply disruptions, despite rising production of both food and cash crops? Questions of stagnating growth, declining living standards and causes of widespread famines remain unanswered. Another explanation needs to be found to explain why market penetration did not leave farmers better off.

One suggestion is that improperly defined property rights channelled the benefits of marketisation to the rich while keeping the poor perpetually destitute. Spatial regimes changed with British rule. Colonial officers established territorial boundaries with hierarchical forms of governance, adding more bureaucratic layers than pre-colonial rule and embedding uniformity across previously different kingdoms, empires and dynasties. Spaces moved away from being organised communally towards ones organised legally and politically. Collective administrations governing *nadus* and *periyadus* declined or dissolved. Courts were established by the East India Company to oversee trade and criminal disputes. Contract laws were designed and enforced from the late nineteenth century. The British conceptualised India as a region with villages, municipalities, districts and major provinces, consolidating previously fragmented political units.<sup>48</sup> Boundaries were drawn to demarcate these units in the nineteenth century. Branches of government expanded. High-ranking colonial officers secured appointments in the provincial administration, while low-ranking officers worked in district government positions. The British bestowed district administrators with powers to collect land taxes. District officials recorded the size of land plots, providing titles to the owners of each plot. However, the land market did not function without encumbrance. The colonial government reverted to pre-colonial forms of property rights in some regions, granting elites ownership over large estates. Estates were at times as large as several hundred villages. The government also occasionally granted land rights to upper castes and temple officials. Land endowments distorted investment incentives and perpetuated rural inequality. Land proprietors paid

<sup>47</sup> Washbrook, "The Commercialization of Agriculture."

<sup>48</sup> David Ludden, "Spectres of Agrarian Territory in Southern India." *The Indian Economic and Social History Review* 39, nos. 2–3 (2002): 233–57.

taxes to the colonial regime, yet rarely cultivated lands themselves. Elites divided their estates into plots and leased them out to permanent tenants. Rents were higher than tax obligations, incentivising rentiers to profit from exploitative lease contracts instead of investing on improving the productivity of the lands being rented.<sup>49</sup> Land gifting also restricted occupational mobility. The wealthy inherited land, while the poor remained landless and relied on wage earnings. The bargaining power of labourers and tenants remained low, while the rents accumulated by the rich steadily increased.<sup>50</sup> Growth and productivity rates stagnated, while tenants who made profits from marketisation had no choice but to allocate surplus to rising land rents.

Property rights and elite capture, however, do not entirely explain regional growth patterns in the Indian peninsula. As the fourth chapter in the book will show, land grants to elites made up a small portion of total acreage in colonial Madras.<sup>51</sup> From the 1820s, land titles and the right to sell land were held by cultivators. Property rights were transparent as farmers had proprietorship over the majority of the estates in the province. As a result, the land market flourished. Growing trade increased the value of land from the 1850s. Land markets saw growth in the number and value of transactions at the same time that transport networks and commodity markets penetrated the countryside. Small- and medium-sized estates proliferated.<sup>52</sup> Previously landless labourers acquired uncropped lands to grow cotton in the dry districts. The number of new titles issued for lands in the lowest revenue class within the Bellary district almost doubled between 1890 and 1930. The majority of these new owners were labourers hoping to benefit from new cash crop cultivation. As expected, the value of cash-credit transactions increased at a similarly fast rate during the same period.<sup>53</sup> The change from subsistence-focused production to marketisation of commodities and rise in cash crop cultivation expectedly saw a rise in demand for cash loans across Madras from the mid-nineteenth century. Increases in the number and value of land sales and credit transfers should translate to higher growth rates – an assumption, however, that does not hold for

<sup>49</sup> Tirthankar Roy and Anand V. Swamy, *Law and the Economy in Colonial India* (Chicago: The University of Chicago Press, 2017).

<sup>50</sup> Ravi Ahuja, "Labour Relations in an Early Colonial Context: Madras, c. 1750–1800." *Modern Asian Studies* 36, no. 4 (2002): 793–826.

<sup>51</sup> Tsukasa Mizushima, "From Mirasidar to Pattadar: South India in the Late Nineteenth Century." *The Indian Economic and Social History Review* 39, nos. 2–3 (2002): 259–84.

<sup>52</sup> Washbrook, "The Commercialization of Agriculture."

<sup>53</sup> Bruce Robert, "Economic Change and Agrarian Organization in 'Dry' South India 1890–1940: A Reinterpretation." *Modern Asian Studies* 17, no. 1 (1983): 59–78; Washbrook, "The Commercialization of Agriculture."

South India. We return to the original problem. Why do we still observe stagnant output and productivity growth rates despite property rights protection and burgeoning demand for factor inputs?

The explanations so far discussed ignore one crucial supply-side factor – the quality of land that was cultivated to produce crops. Ecology and the constraints region-specific climate patterns placed on the efficiency of land offer an underlying explanation for the contradiction between rising trade and declining growth. Land quality changed little, and poor-quality land was unable to endure weather shocks without substantial loss in crop output. Drought, in particular, repeatedly damaged crop growth in Madras.

Indeed, cropped area followed climate patterns in the first half of the twentieth century. Total land area did not change. About the same quantity of land was available for sowing after 1900. Over the following decades, as shown in Figure 2.2, the area cropped, that is the sowed area that grew plants each year, incurred repeated negative shocks. Take the 1918 season, for instance. Low precipitation caused significant plant damage. Cropped area across Madras declined by 7 per cent relative to the previous year. Mid-way through the season, surveyors forecasted this land damage to cause food output to decline by approximately 25 per cent.<sup>54</sup> A substantial shock to the livelihoods of farmers. Expectedly, crop damage had a lagged effect on commodity prices. Prices increased after the harvest, a particularly noticeable hike in early 1919.

Markets offered new and profitable opportunities but ecology created deep supply constraints. As suggested by McAlpin, ‘clearly, the market structure and the transport system could not alleviate severe food shortages caused by repeated crop failures’.<sup>55</sup> Baker records the emergence of a conflict between rising demand and the scarcity of ‘productive resources’ in the colonial period, an especially ferocious conflict in the areas most vulnerable to crop failure.<sup>56</sup> The problem was more severe in some areas. Soils in the wet districts were nitrogen and phosphate deficient and did not drain easily. As the book will later suggest, low fertiliser use and frequent waterlogging constrained yield growth in rice fields. Despite these issues, wet zones were not prone to the same level of risk as the dry districts. Growth rates were low but famine was not a danger for peasants in wet areas. Dry lands, in contrast, continued to be both nutrient and water deficient throughout colonial rule, problems that continually threatened widespread starvation. Population grew faster

<sup>54</sup> *Season and Crop Report of the Madras Presidency* (Madras, 1919), 23. Decline in cropped area led to compounded decline in crop output.

<sup>55</sup> McAlpin, “Railroads, Prices and Peasant Rationality”, 681.

<sup>56</sup> Baker, “*An Indian Rural Economy*”, 136.

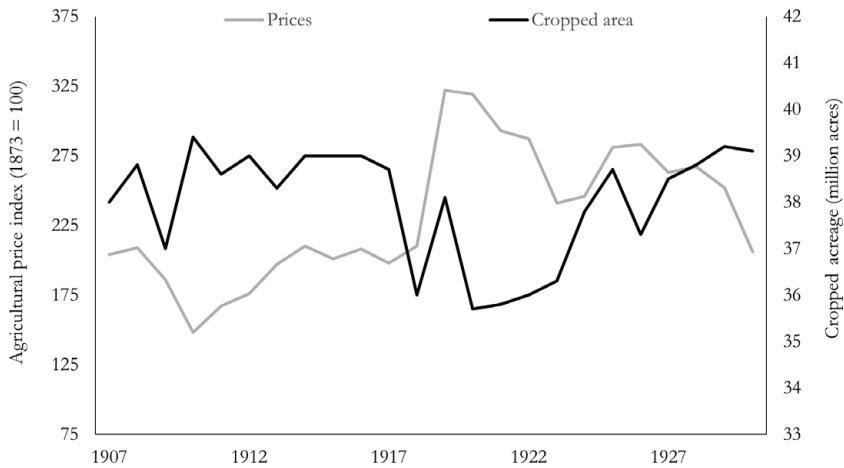


Figure 2.2 Fluctuations in cropped area and agricultural prices, 1907–30

Sources: “Season and Crop Report,” 1907–30; Michelle McAlpin, “Price Movements and Fluctuations in Economic Activity (1860–1947).” In *The Cambridge Economic History of India*, edited by Dharma Kumar and Meghnad Desai, 2:878–904 (Cambridge: Cambridge University Press, 1983).

Notes: Direct measures of crop output were inconsistently and unreliably collected by colonial officials in Madras. The amount of land cropped was systematically collected each year between 1904 and 1940, partly because this measure affected changes in the design and assessment of land taxes. Surveyors reported the amount of sowed land with plant growth after the sowing season and before the harvest. Changes in cropped land followed seasonal patterns. Cropped area increased in good seasons and decreased in bad ones. Prices follow McAlpin’s agricultural price index.

than output in the nineteenth and early twentieth centuries. Food grain production per capita declined steadily throughout the colonial period.

That land quality matters is evident in the fact that peasants in irrigated areas were less vulnerable to famine. Drought affected crop output across the province. Yet, the problem was more severe in unirrigated areas. Droughts, such as the one in 1918, quickly turned into famine in districts such as Anantapur and Bellary.<sup>57</sup> The government established famine camps and extended tax remissions to farmers in regions badly affected by the 1918 crisis, though crop failure of that magnitude had already caused significant harm.

Living standards were higher in the deltas than in the dry regions. Parthasarathi’s analysis of grain wages paid to landless labourers suggests

<sup>57</sup> *Season and Crop Report*, 1–2.

that wages in Madras' rice deltas were higher than wages in Britain throughout the eighteenth century.<sup>58</sup> The dry tracts were much poorer in the same period. Further, seasonal grain and cash wages in the driest tracts saw substantial declines in the nineteenth century. The better-developed mixed districts of Salem and Tinnevely had higher living standards, but real wages in these districts also saw declines during company and crown rule. The Tanjore delta saw a marginal rise in real wages paid to labourers during the late nineteenth century, but a decline in living standards in the early- to mid-twentieth century.<sup>59</sup> Irrigated regions were also more monetised than the drier tracts. Kumar records the payments of grain wages to labourers across the Ceded Districts, while cash was more widely accepted in the deltas in the early nineteenth century. By the eve of the twentieth century, monetisation penetrated the drier regions, due to rise in both the acreage under cash crops and trade of commodities in markets owing to the spread of railway networks. In this period, living standards stagnated and farmers with access to better quality land were less vulnerable to crises than farmers with access to dry lands.

The trend of low output growth was not unique to Madras and was an India-wide phenomenon during the colonial period. Using Heston's estimates of net domestic product at constant prices by sector, Figure 2.3 constructs annual rates of change in agricultural output between the 1880s and the end of colonial rule. The graph shows that output growth, adjusted for inflation at 1947 prices, showed little sustained growth throughout the period. Output increased at a rate between 0.7 and 1.4, where data points below 1 on the graph indicate negative growth rates between years  $n + 1$  and  $n$ . The agricultural sector saw negative output growth rates in thirty out of the sixty-one years in focus. The high amplitude of fluctuations in annual growth rates do reduce after 1925, however, we do not see uninterrupted periods of positive growth during colonial rule. Each quinquennium contained at least two years of negative growth between 1925 and 1947. When annual output growth was positive, rates of growth were not substantial enough to induce improvements in living standards. Sivasubramonian's estimates, adjusted for inflation, show a similar, if not more gloomy picture, for growth rates in the early twentieth century. From his calculations, the agricultural sector saw negative annual growth rates in twenty-five out of forty-six years between 1900 and 1946. When positive, output growth was too small to have any significant effects on living standards. The average rural Indian household remained poor

<sup>58</sup> Parthasarathi, "Rethinking Wages."

<sup>59</sup> Mayer, "Trends of Real Income."

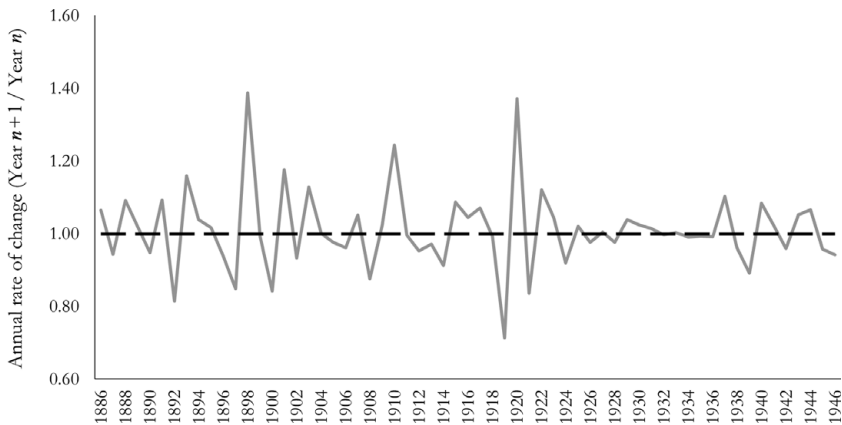


Figure 2.3 Annual change in agricultural output at constant prices in colonial India, 1885–1946

Source: Heston, *National Income*.

Notes: Output measured as net domestic product. Numbers originally presented in million rupees and inflation-adjusted to 1947 commodity prices. The author calculates the rate of change by dividing net domestic product in year  $n + 1$  by the same measure in year  $n$ . Change below 1 indicates negative output growth between years  $n$  and  $n + 1$ .

throughout the period, often barely able to subsist. Population size almost doubled, but grain production per capita declined by 30 per cent between 1901 and 1946.<sup>60</sup> Cash crop acreage increased and did not substitute grain production in the nineteenth century. Food crops remained the major source of agrarian output across South Asia.<sup>61</sup>

Property rights protection did little to help the tracts most vulnerable to the risk of harvest failure. The areas with non-transparent property rights were often located in fertile or mixed areas, ones that saw more growth than the dry districts. Land was transferable and frequently exchanged in dry areas from the late nineteenth century.<sup>62</sup> An institutional framework, if applied in isolation from the physical environment, offers little explanation for why parts of Madras were better off than

<sup>60</sup> A. Heston, "National Income." In *The Cambridge Economic History of India*, edited by Dharma Kumar and Meghnad Desai, 376–462 (Cambridge: Cambridge University Press, 1983), 410.

<sup>61</sup> McAlpin, "Railroads, Cultivation Patterns," 43–60.

<sup>62</sup> Robert, "Economic Change and Agrarian Organization"; Washbrook, "The Commercialization of Agriculture."

others. Food shortages were acute in areas with poor land quality. Other areas managed better. Laws and the design of rights to land did matter. However, they mattered in conjunction with ecology and the risks posed by volatile rainfall. As subsequent chapters of the book will show, climatic risks had region-specific consequences for the functioning of courts, the negotiability of contracted instruments and the informality of intra-village enforcement networks.

An approach that focuses entirely on market forces ignores the underlying issue – low land yields left peasants especially vulnerable to price fluctuations. Without the capacity to diversify production or adopt productivity-enhancing production techniques, small farmers could not budget for or recover easily from price shocks. The colonial government made matters worse but not by facilitating trade and commerce. Regressive land taxes affected peasants in bad years. A flat tax on low-yield land exacerbated the poverty cycle for peasants, a problem that was particularly acute for those peasants farming in the dry regions. Poor peasants were left with compounding tax bills in years where crops failed, further restricting their earning potential. Political officials and the judiciary combined regressive tax policies with laws to protect peasants from market forces, an approach that stunted growth rates while also failing to properly address inequities caused by the free market. In this context, what was needed was public investment in improving land, the lack of which stagnated yields.

In the absence of crop insurance and public investment, capital markets were vulnerable to ecological risk and institutions not suited to mitigate the risks faced by the providers of credit. The outcome was an illiquid credit market, one that saw growth in the supply of small, short-term and expensive loans and constraints on the supply of large, cheap and long-term loans, ones suited to land improvement. Before constructing the institutional narrative, that is identifying the impact of region-specific institutions on credit supply, in Chapters 4 and 5, the next chapter of the book will first compare risks faced by farmers in different ecological zones.

In summary, living standard estimates of the average agriculturist during colonial rule corroborate two patterns. One is that income per capita in most regions stagnated or declined over the course of the colonial and early post-colonial period. The other is that ecology continually mattered. Peasants in fertile regions had higher living standards than peasants in dry tracts. Access to cheap credit, to fuel private investment in land improvement, was needed to manage ecological risk better. In this context, the book provides an explanation for why credit remained supply-constrained and expensive.

## Conclusion

South India remained an agrarian economy well into the twentieth century. Some regions within the Madras Presidency were better suited to agriculture than others. From the ninth century, naturally irrigated areas saw higher land yields than dry areas, commercialisation and capital accumulation. Imperial rulers established tradable property rights for groups of landowners, invested in infrastructure to store water, as well as constructed and maintained temples. The colonial government built new forms of irrigation or refurbished old tanks and wells in the already well-irrigated tracts near the province's perennial rivers. Areas that were dry and rainfed 1,000 years ago remained underdeveloped by the twentieth century. Kingdoms in the hinterland were avoided by early settlers and became hubs for military garrisons in the medieval period. Rulers built forts and housed large armies in the dry regions to fend off opportunistic advances by rulers in the north. Any farming in the hinterland was largely subsistence focused before British rule.

During British rule, public investment remained low and policy choices inadequate to address the vulnerabilities of poor farmers exposed to a high risk of crop failure. Commercialisation and the rise of cash crop cultivation in the nineteenth century brought some reprieve but not enough to mitigate the risks of harvest failure in the driest regions. Acreage under cotton and millet cultivation increased simultaneously. As the next chapter corroborates, without adequate access to water and sufficient protection from seasonal instability, peasants farming small plots in the hinterland subsisted in good years and starved in bad ones.

Why, despite rising trade and commerce, did peasants not have enough capital to invest in land improvement? The rest of the book will focus on explaining why private investment was both needed and lacking in Madras. Structural transformation, one brought about by an expansion in cheaply supplied capital, was essential to alter the trajectory for dry, rainfed regions. The rise in cash crop cultivation and escalating land values did increase the demand for cheap credit. Credit supply did not match this burgeoning demand.