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**Falling Behind and Catching up: India's Transition from a  
Colonial Economy**

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## **Falling Behind and Catching up: India's Transition from a Colonial Economy**

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### **Abstract**

India fell behind during colonial rule. The absolute and relative decline of Indian GDP per capita with respect to Britain began before colonization and coincided with the rising textile trade with Europe in the 18<sup>th</sup> century. The decline of traditional industries was not the main driver Indian decline and stagnation. Inadequate investment in agriculture and consequent decline in yield per acre stalled economic growth. Modern industries emerged and grew relatively fast. The falling behind was reversed after independence. Policies of industrialization and a green revolution in agriculture increased productivity growth in agriculture and industry, but Indian growth has been led by services. A strong focus on higher education under colonial policy had created an advantage for the service sector, which today has a high concentration of human capital. However, the slow expansion in primary education was a disadvantage in comparison with the high growth East Asian economies

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<sup>1</sup> This paper is based on the Tawney lecture of 2017. My debts are to my coauthors Steve Broadberry, Latika Chaudhary, Tirthankar Roy and Anand Swamy as fellow travellers in thinking of long run economic development in India. I thank Nick Crafts and James Fenske for their comments on an earlier draft and Duol Kim and Sun Go for sharing the data on Korea. The errors are mine.

At midnight of 15<sup>th</sup> August 1947, India became an independent country. It ended 200 years of colonial rule under the British Empire. It altered the borders of India. Two distinct regions from the Western and the Eastern sides were carved out as a separate political entity of the state of Pakistan.<sup>2</sup> Indian independence also led to a major change in the direction of economic policy. From a globalized economy integrated into the British Empire, the next 30 years saw a retreat from policies of free trade and capital flows. The newly independent state embraced the idea of development through industrialization. In an economy, where capital was scarce and entrepreneurship was concentrated in a few communities, the state stepped in to fill the gap. India was not unusual in this. Many parts of the underdeveloped world, both colonies in Asia and independent countries in Latin America moved towards protectionist policies to develop an industrial sector. This was not simply the infant industry argument, which had characterized industrialization in the United States and Europe 19<sup>th</sup> century. The role of the state in the newly independent countries, in the second half of the 20<sup>th</sup> century, was developmental and directly interventionist. While the industrialized world in Europe and North America began to rebuild the institutions of free trade after 1945, the underdeveloped world moved in a different direction, where the idea of a “Developmental State” became an intrinsic part of policy making.

This paper will take a long run view of Indian economic development. I will start with Mughal India under the emperor Akbar in 1600. This was the high point of economic prosperity measured by average living standards. I will look at the changes in the economy over the next 400 years, first in response to increasing trade with Europe through the global network of European trading companies, then through the formal political rule of the East India Company and the British Crown and finally the new phase of development after independence. As the title suggests, I will argue that there is a story of falling behind over a long period in which Indian GDP per capita declined or stagnated, a trend only to be reversed after independence. The falling behind coincided with integration into the global economy, while the foundations for catching up were set as India moved away from globalization. The periodization touches on the broader theme of the effect of colonization. However, this paper is not a contribution to the theoretical literature on colonial underdevelopment. It will put together quantitative

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<sup>2</sup> In this paper, the term India will refer to different geographic regions before and after the partition. It will refer to the united regions of India and Pakistan under the common term of British India and will mainly refer to the India as a nation state after independence.

evidence on indicators of living standards and economic growth and assess the causes of the long run decline and the factors that led a reversal of fortune in this important Asian economy.

I will argue

1. Trade was not a driver of fortunes in colonial India. Rising trade with Europe coincided with declining living standards. It coincided with deindustrialization in the face of rising imports of industrial goods from Britain and specialization in agricultural products under colonization, but neither can explain the falling behind.
2. Underinvestment in agriculture led to stagnation in productivity. This was the main failure of the colonial government and can explain why this colonial economy fell behind.
3. Traditional industries, particularly textiles declined. Modern industries developed partly as a result of British investment in sectors like tea and jute, but also through the initiative of Indian trading networks, who set up the modern cotton textile industry. Many traditional industries reinvented their organization and borrowed some types of European technology. Industrial development in colonial India was comparable to other peripheral countries. Planning for industrialization in independent India wiped out to a large extent the colonial legacy as it set up industries producing intermediate and capital goods under public ownership.
4. In 1947 less than one- fifth of the Indian population had basic literacy. Although literacy had risen in the first half of the 20<sup>th</sup> century, India's primary school enrollment was one of the lowest in the world. At the same time, the relative share of secondary education was high. Failure to prioritize primary education had long term consequences. India's recent growth led by the service sector has relied on the large pool of workers with secondary and tertiary education, but the industrial sector still has a high share of workers with low human capital.
5. The post-independence years saw technological change in agriculture and planned industrialization and these interventions moved the economy from stagnation to modern economic growth. The slow growth in the post-independence decades is a relative failure in the context of the rapid growth in East Asia, but a reversal in the context of the long run trend during colonial rule.

## **Falling behind**

### *A Decline in Living Standards*

The earliest systematic evidence on economic wellbeing of the Indian population comes from the carefully collected data by Shirin Moosvi (1987) based on the writings of Abul Fazal, a

member of Akbar's court, in 1595. At this point, the average living standard was well above subsistence. Using this data, a comparison of wages of unskilled urban workers in 1595 and 1961, show that purchasing power of wages under Akbar was higher in 1595. (Desai 1972) This is supported by evidence on higher land productivity. Desai shows that for most crops, yield per acre was higher in 1595 compared to 1910.

The time line of this decline can be seen from Broadberry and Gupta's (2006) series on urban unskilled wages from different parts of India from 1600 to 1870. Using the price of the staple food crop, they constructed the grain wage as an indicator of real wage. The trend is one of a decline through the 17<sup>th</sup> and 18<sup>th</sup> centuries and stagnation in the 19<sup>th</sup> century. (See Figure 1) Their conclusion is supported by evidence on real wage constructed with Allen et al's (2011) much improved consumption basket for the 19<sup>th</sup> century. The average Indian lived at bare bones subsistence from the middle of the 18<sup>th</sup> century to the early years of the 20<sup>th</sup> century.

The picture based on grain wage or real wage refers to the urban economy and may provide a distorted view of an economy that was primarily agricultural. To reflect the economic conditions of the entire economy, Broadberry, Custodis and Gupta (2015) estimated GDP per capita using methods from historical national accounting. The trend in GDP per capita is in line with the trends in wages. India began to fall behind from the middle of the 17<sup>th</sup> century. In 1600, Indian GDP per capita was 60% of British GDP per capita and well above Maddison's subsistence annual income of \$400. But Indian per capita GDP declined absolutely and relatively as shown in figure 2. The Great Divergence began partly due to India's decline and partly due to British Growth. The decline of the urban grain wage is at odds with the picture of a buoyant urban economy as shown in the work of Bayly. (1983) The high point of prosperity before modern economic growth in India was under Akbar. Indian living standards declined in the 18<sup>th</sup> century and stagnated in the 19<sup>th</sup> century.

### *Explanations*

#### *Textile trade and deindustrialization:*

The English East India Company acquired trading rights from the Mughal Emperor in 1612 as a monopoly trading company from Britain. So did other European companies. They competed for procurement of textiles. Trading posts were set up along the Indian coastline and became the centres of the textile market. The European trading companies bought textiles in India and traded it for spice in South East Asia. Large volumes of the textiles were sold in the European

market. Calico and Muslin symbolized a consumption revolution in Europe (Berg 2004, Lemire and Riello 2008)

Trade with the English and Dutch companies, the two main players in this market, grew rapidly. (K.N Chaudhuri 1978, Prakash 2014, Chaudhury 1995). The booming trade in cotton textiles was supported by a competitive industrial sector in India. Its competitive advantage lay in the skills of the weavers, the quality of cotton cloth and design and the low wages of the textile workers. The textile industry based on simple technology saw very little change over the two centuries (Habib 1976) but it dominated global markets right up to the end of the 18<sup>th</sup> century. The English East India Company struggled to find a suitable import to pay for the exports. The only commodity which was in great demand in India was bullion. There were large inflows of bullion into India up to the middle of the 18<sup>th</sup> century. It was only after the East India Company gained political control of Bengal 1757 by defeating the ruler of Bengal, the bullion inflow ceased. Land taxes raised by the company could now be used to pay for the textiles.

Although the East India company solved the problem of paying for exports, the textile market was to face a major shock that destroyed its position in the international market. This was the British industrial revolution.<sup>3</sup> British wage was five times the wage of Indian weavers in monetary terms and Indian weavers had an advantage using traditional technology. The labour saving technology of the industrial revolution changed this. Productivity gains made with the new machines made prices of cotton textiles tumble. As productivity continued to increase, wage advantage of Indian products began to disappear, first in the British markets, next in third markets, where Indian goods competed with British goods. (Broadberry and Gupta 2009) The entry of British goods in India happened only when British goods were cheaper in the Indian market. Ray (2009) comes to a similar conclusion that Indian textiles became uncompetitive with textile products of the industrial revolution and colonial commercial policy had little role in the entry of British goods in the Indian market.

The peak of the textile trade was in 1801 and after 1811, the exports declined sharply. By 1830 British goods began to displace Indian goods in the Indian market. One of the most dramatic technological change was in spinning. It took 10,000 operative hours to spin 100 lbs of cotton

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<sup>3</sup> Clingingsmith and Williamson (2007) emphasize the importance of supply side changes in the 18<sup>th</sup> century due to wars and weather shocks that moved the terms of trade against industry.

in India. Crompton's mule, one of the first machines of the industrial revolution in 1780, did this in 2000 operative hours. By 1825, the number was down to 125 with Robert's automatic mule. (Broadberry and Gupta 2009<sup>4</sup>) Indian yarn had lost their competitive edge well before cotton cloth, where the technological change was slower. Indian weavers substituted home produced yarn with cheaper and more durable imported yarn well before the Indian weaving industry took its first hit from imports.

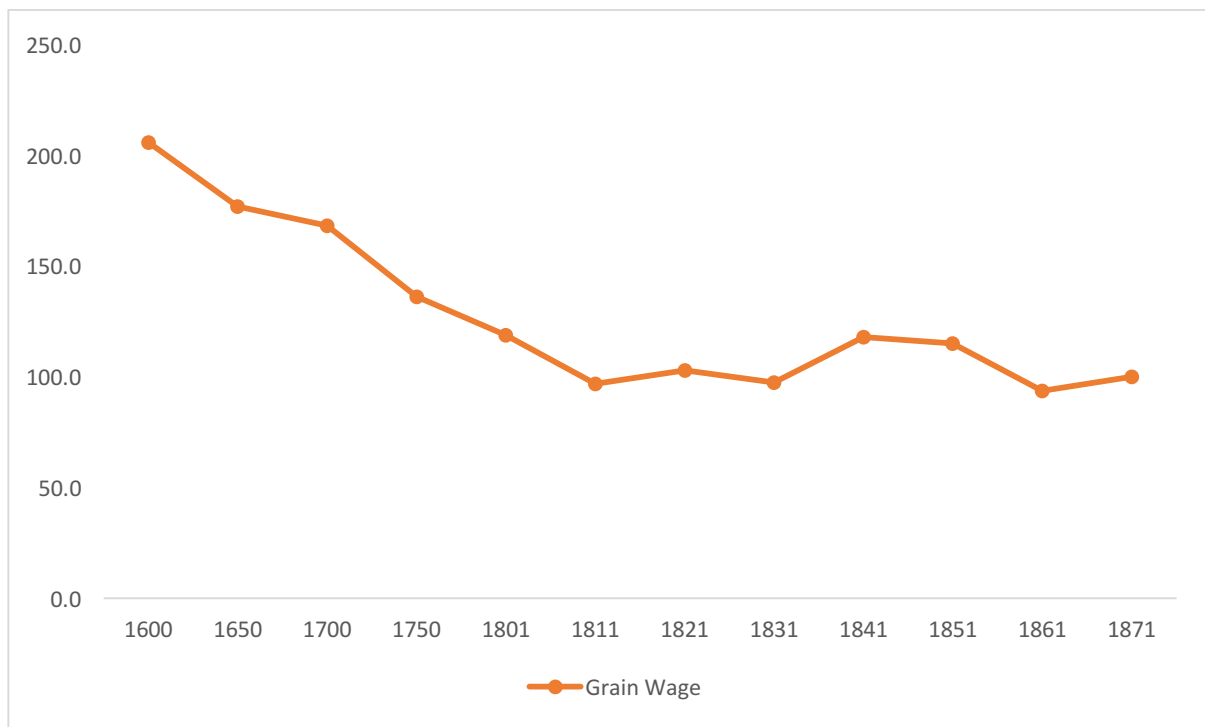
The decline in the share of Indian textile products in domestic consumption between 1830 and 1880 saw *deindustrialization*.<sup>5</sup> (Twomey 1983, Ray 2011) Thousands of textile weavers lost their livelihood. Ray's (2009) estimates for Bengal put the figure at a quarter of industrial employment over several decades. The share of industry and commerce in GDP shrank. Urbanization declined from 15% to 9% over the 19<sup>th</sup> century. From an industrial exporter, India slowly integrated into the global economy of the British Empire as an agricultural exporter. British imports were 60% of domestic consumption in 1880, but per capita consumption increased as imported cotton cloth was cheaper. With the development of a modern textile industry after 1880, Indian textile producers gradually began to recover market share in the home market. The traditional industry survived and even prospered in niche markets.

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<sup>4</sup> Derived from Catling, H., *The spinning mule* (Newton Abbot, 1970).

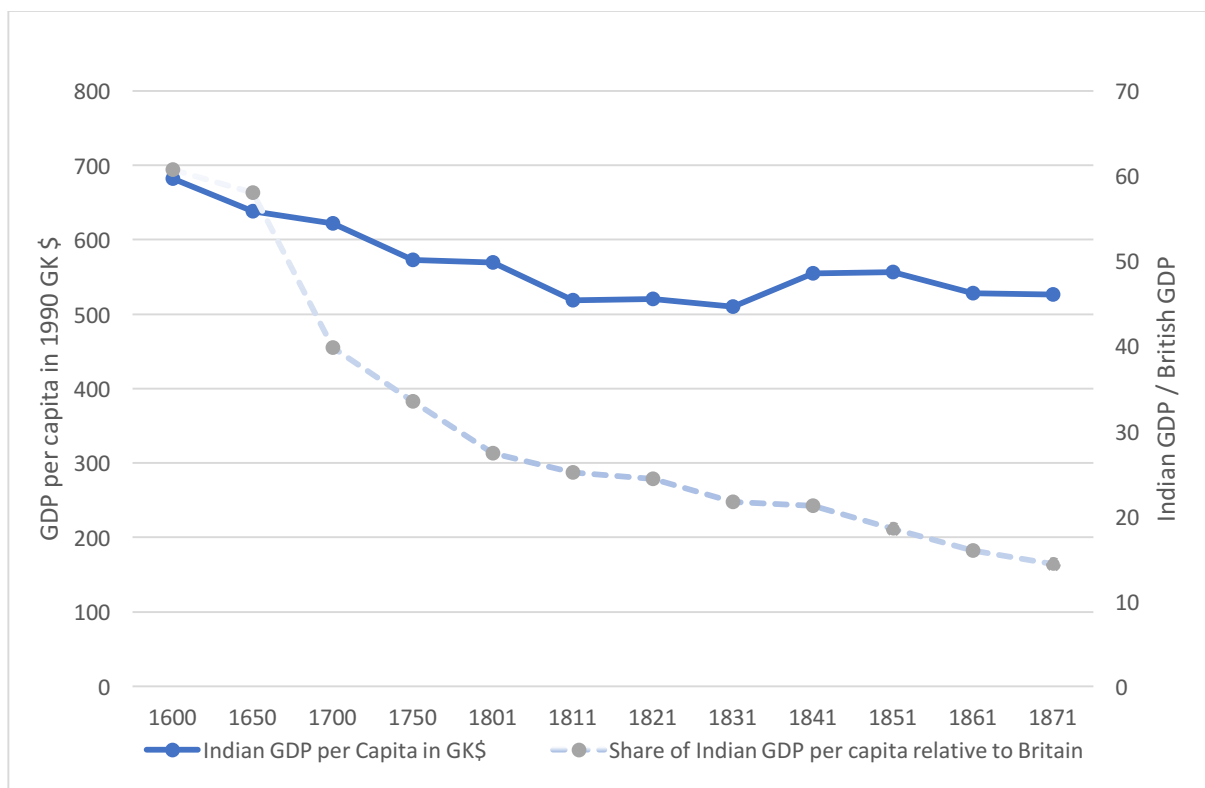
<sup>5</sup> Clingingsmith and Williamson (2008) see the beginning of deindustrialization from 1760 as the terms of trade shifted against industry due to the political disruption as the Mughal Empire declined as well as crop failures.

Figure 1: Indian Grain Wage (1870=100)



Source: Constructed using data from Broadberry and Gupta (2006, 2009)

Figure 2: The Great Divergence (1600-1871): Per Capita GDP in 1990 Geary Khamis \$



Source: Constructed using data from Broadberry et al (2015)



While textile exports had dominated the world market, industry in India had never been the dominant sector of the economy. Employment in the export sector in Bengal has been estimated to have been 11% of total employment in 1750. (Prakash 1976). Bengal was the most industrialized part of the country and the main source of exports by early 18<sup>th</sup> century. Bagchi (1976) estimated a decline in industrial employment in Bengal from 21% in 1801 to 9% in 1901. The estimated share of industry and commerce in GDP was roughly 25% (Broadberry et al 2015), but the share exports in 1801 was less than 5% of GDP. The massive growth in industrial exports between 1750 and 1800 was no mean achievement, but its impact on per capita GDP was small. (Figure 3A) The decline in Indian GDP per capita and urban wages coincided with rising textile exports. The share was agricultural output in GDP in 1800 was just over 60%. Figure 3B shows that the trend in per capita GDP tracked the trend in per capita agricultural output and not per capita industrial output. The thriving world of Indian trade and commerce barely touched the vast majority of people. In the 19<sup>th</sup> century, the rising trade in agricultural products coincided with a stabilization of GDP per capita and even saw a small increase. (See table 1) Deindustrialization caused unemployment among textile weavers and drove many back to agricultural occupations. But it did not have a big impact on the average living standard.

Figure 3A: Trends in GDP per capita and its Export Components from 1600-1871 (1871=100)

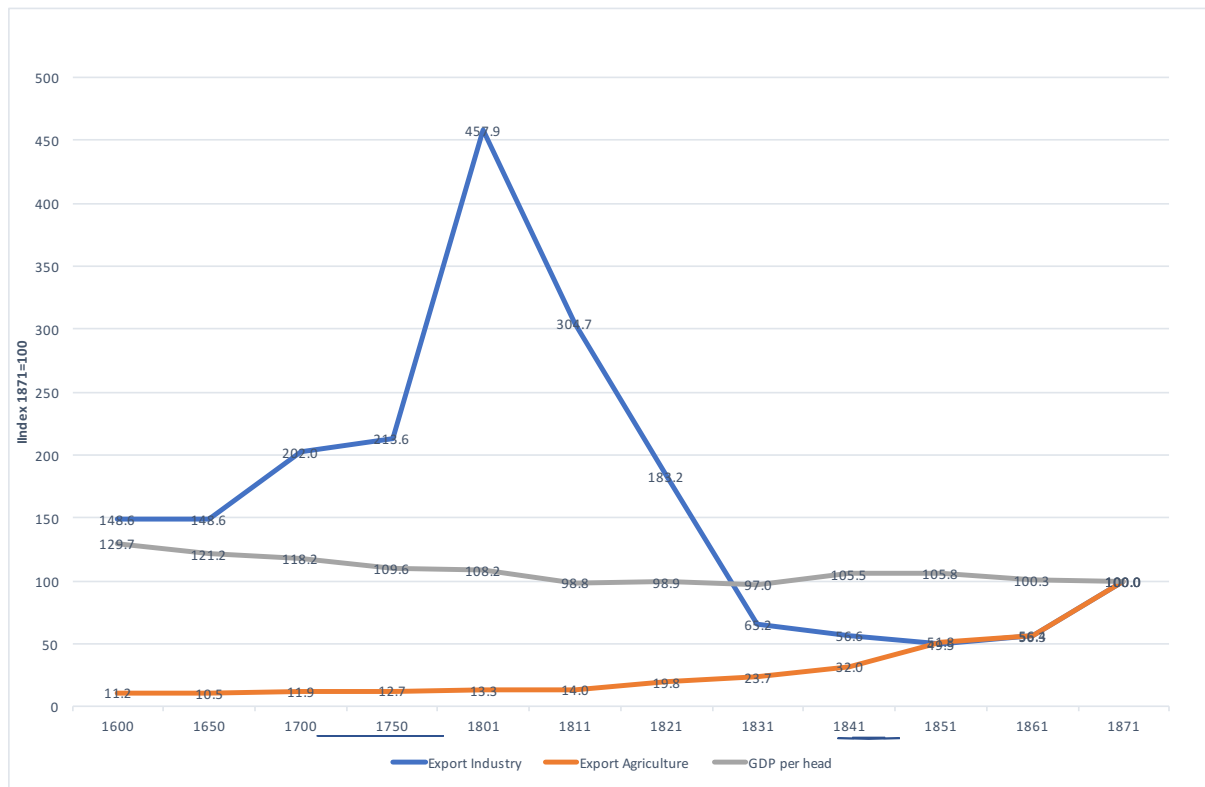
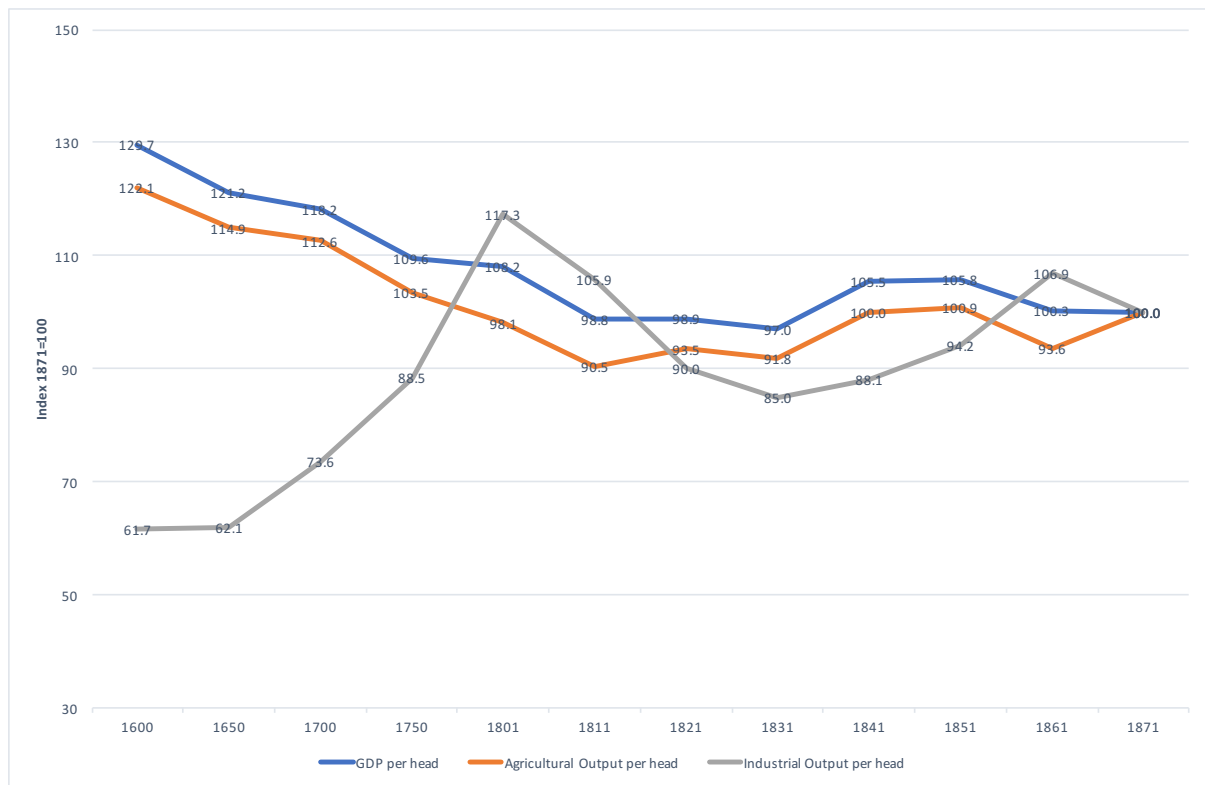


Figure 3B: Trends in GDP per head and Per capita Agricultural and Industrial Output from 1600-1871 (1871=100)



Source: Calculated from Broadberry et al (2015)

### *Globalization and Structural Change*

The battle of Plassey in 1757 marked the beginning of European rule in Bengal. The right of taxation passed from the Nawab of Bengal to the East India Company. The Company set out to change the land revenue system to create what the Europeans perceived as “well defined property rights”. The “Zamindari” or landlord system was introduced in 1793 in Bengal that gave the land owners property rights in land and made them the taxpayer. The cultivators were to pay a rent to the landlord, who in turn paid taxes to the Company. The rate of tax fixed in perpetuity in 1793 was a way to incentivize the landlord to improve land productivity and become the entrepreneurial landlord.

The system did not work as planned and created a class of absentee landlords, who spent their wealth on conspicuous consumption. As the Company gradually expanded its rule to the rest of India, it introduced an alternative system of taxation, by directly taxing the cultivator, who also became the legal owner. The tax rate was a proportional to output and was in principle subject to change. The non-landlord systems dominated the western and northern parts of India. In this system, the state had a greater incentive to improve land productivity. The cultivators were too poor to undertake large improvements of land.

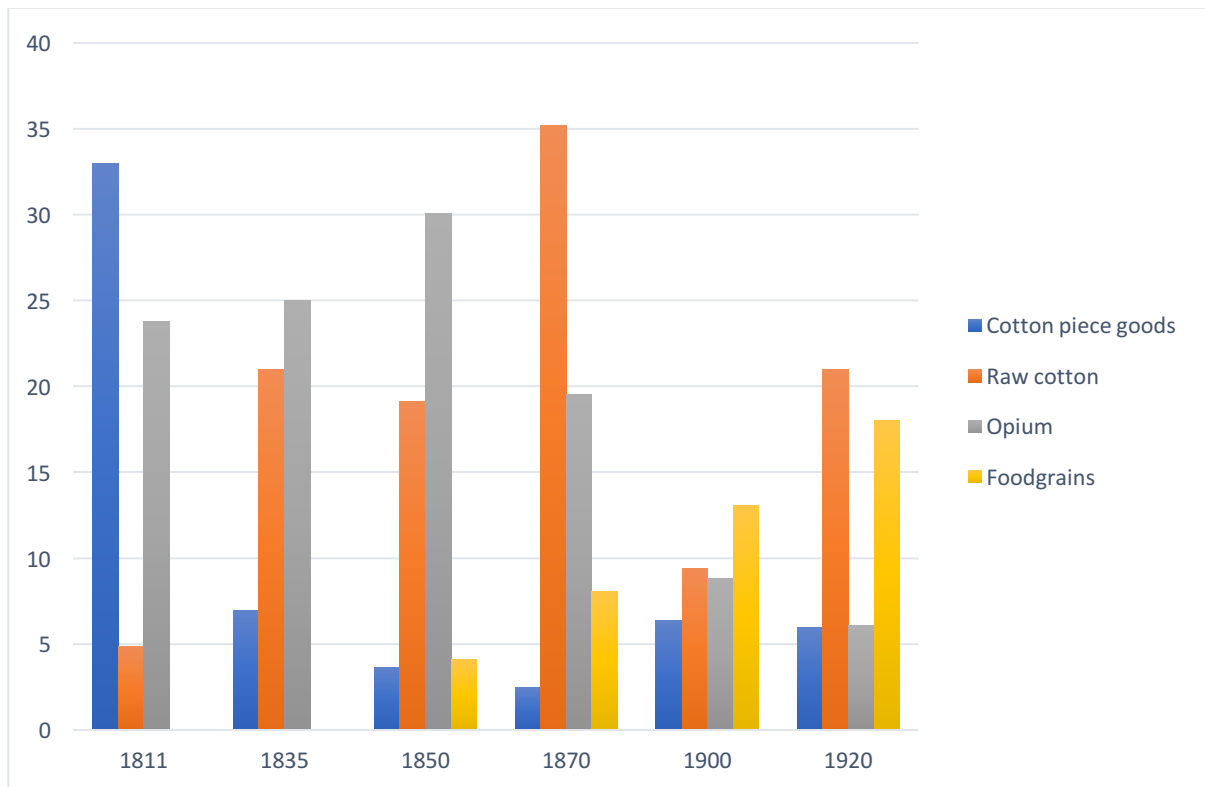
In 1858, when India came under Crown rule, the East India Company looked more like a ruler than a trading firm with well-defined objectives of raising revenue and expenditure. The transition to the Crown rule, therefore did not introduce major changes to the revenue structure, but India was formally integrated into the global economy of the British Empire with far reaching implications for trade, capital flows and migration.

The 19<sup>th</sup> century brought about major changes in the structure of foreign trade and in the structure of the economy. Textiles had dominated exports in 1811, but by 1835, they were only a small fraction. (See figure 5) The figure shows that in 1850, opium was the single largest export, mainly sold to China to buy tea for export to Britain. The opium trade was a symbol of the exploitative aspect of colonial trade. India exported mainly agricultural goods, with opium declining in importance and raw cotton and food grains playing their part in the Empire trade.

In the Indian balance of payments, a category called *home charges* appeared as an outflow from India to Britain, which was paid to Britain partly for debt service and partly as the cost of administration and security of the colony. It has been largely seen as *drain of resources* from

India and the cost of colonization. At the same time, India also became a recipient of British capital flows. This was small relative to total capital flows from Britain to the rest of the world. Most of this went to the railways. Industry had a very small share. British private investors, bought shares in companies set up in India. The main industry that developed with British capital was tea, largely an empire good sold in the British market. There were large flows of migration too. Thousands of indentured workers migrated to distant parts of the Empire to work on plantations and constructions of railways in the post slavery world facing labour shortage. They worked in sugar plantations in the Caribbean, Fiji and Mauritius, tea plantations in Ceylon and construction of the railway lines in South Africa.

Figure 4: Composition of Trade (% Share)



Source: Statistical Abstracts of British India for post 1850 data and CEHI, Chapter 10, table 10))

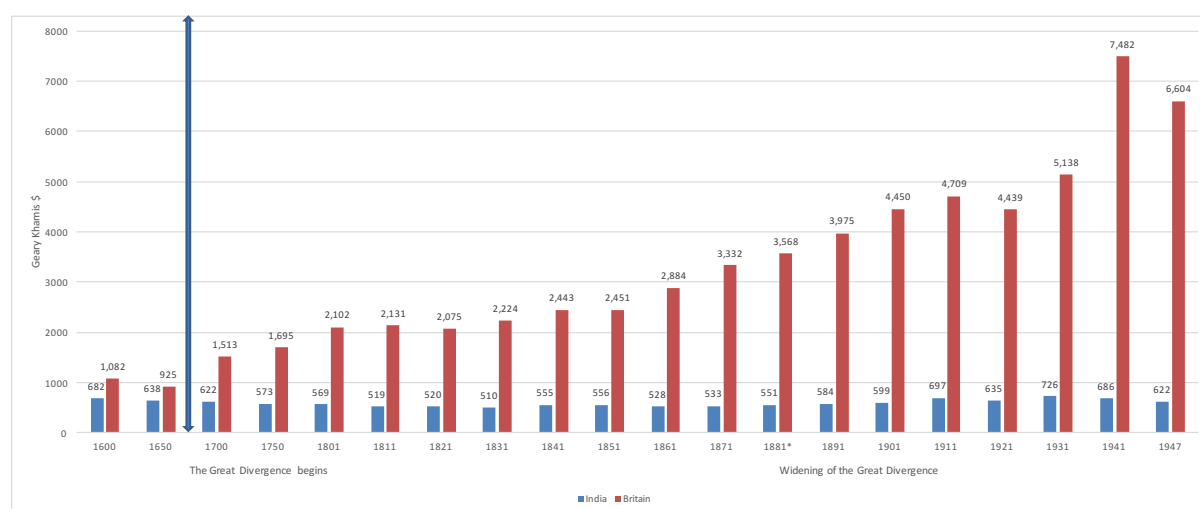
### Stagnation in a globalized economy

The globalized economy of colonial India did not see sustained growth. Industrial output per capita declined and agricultural output per head increased in the middle of the 19<sup>th</sup> century, but this was not sustained. Agricultural exports were only 10% of agricultural output.

Ideas of “development of underdevelopment” (Frank 1966), “world systems” (Wallerstein 1974) and “unequal exchange” (Amin 1976) for primary producers involved in colonial exchange, have been influential in the discourse on the adverse impact of colonization. Prebisch and Singer (1950) provided empirical evidence to suggest a long-term decline in terms of trade between agricultural and industrial products. Recent work by Pascali (2016) shows that in the first phase of globalization, 1870 to 1914, not all countries gained from globalization and trade may have contributed the Great Divergence.

For India, undoubtedly, the 19<sup>th</sup> century and the first half of 20<sup>th</sup> century marked a widening of the divergence with Britain, as Indian incomes stagnated, while British incomes increased. (See figure 5) However, the empirical evidence does not suggest that this gap was driven by deindustrialization and specialization in primary products. The period 1870 to 1900 of rising agricultural exports coincided with 0.5% - 0.8% per capita growth. This was short lived. From 1900, the economy stagnated. (See Table 1).

Figure 5: Increasing Divergence between India and Britain (1600-1947: Per Capita GDP in 1990 International Geary Khamis \$



Source: Broadberry et al (2015) and Maddison Project database  
<http://www.ggdc.net/maddison/maddison-project/data.htm>

Table 1: Changes in Annual Growth Rate in per capita GDP (%)

	GDP per capita
1870-1885*	0.5
1885-1900*	0.8
1900-1947	0.1
1950-1980	1.4
1980-1990	3.0
1990-2000	4.1
<b>1950-2000</b>	<b>1.9</b>

Source: \* Heston (1982) table 4.5. Sivasubramonian (2000) table 6.11.

### *Agricultural Stagnation*

Land under cultivation expanded over the 19<sup>th</sup> century. There were big increases in land under cotton and sugarcane. For most crops, yield per acre was lower in 1910 compared to 1600 (See Table 2) This does not tell us exactly when the decline began. Table 2 also shows the growth rate in yield per acre in different periods from 1891, when reliable agricultural statistics became available (Blyn 1966). The stagnation after 1916 was driven by decline in land productivity in food crops. The declining yield per acre in food grains led to declining per capita food availability, but it was uneven across regions. Eastern India saw a decline, while the canal irrigated regions of the northwest saw an increase.

The declining in yield per acre resulted from the failure to provide irrigation systems or better quality seeds and fertilizers.<sup>6</sup> Roy (2007) sees this as an ecological crisis arising from market failure. The introduction of the landlord system of taxation that sought to incentivize landlords to carry out improvements in land, had failed to deliver. Areas under the landlord system, especially the rice growing belt, saw a decline in land yield. Cultivators themselves in both landlord and non-landlord systems were too poor to make large investments and needed some mechanism to ease the credit constraint small cultivators. Colonial India did not have institutions in place to provide access to credit to cultivators, who were dependent on local money-lenders for any type of credit with high interest rates. Therefore, building of local wells under private initiative did not materialize.

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<sup>6</sup> The contrast with East Asia is discussed in a following section.

Irrigation canals became the main source of water. The colonial state built irrigation canals in some parts of the country. It was one of the largest irrigations systems, but only 20% of land under cultivation was irrigated in 1935. There was large variation across regions and the regions with a high share of irrigated land saw an increase in yield. (Chaudhury et al 2015, chapter 7) Irrigation canals increased land under cultivation, but also increased output per acre through a shift to higher value crops. (Kurosaki 2003) Yield per acre for food crops, such as wheat on irrigated land, was higher across different regions and also comparable to European levels. Average yield on rice fields in India in 1900 was lower than in Japan and Indonesia. (See table 2B)

Canal irrigation required large investments. Capital formation during the colonial period was as low as 5-7% of GDP.<sup>7</sup> In comparison to railways, irrigation attracted very little government spending. Irrigation received less than 5% of the expenditure from revenues, while the railways got over 20%. In the capital account, irrigation had less than 10% of the expenditure on railways. (Chaudhary et al 2015, chapter 7) Returns on railway bonds was guaranteed at 5% by the state and was considered safe investment in the capital market in Britain. The nationalists saw this as exploitation that cemented the India's relationship with the Empire as a supplier of agricultural products and a market of British industrial goods. Sweeny (2011) argues that the colonial emphasis on railways was socially inefficient because of the relationship between irrigation and agriculture and overall economic development Railways on the other hand were better for the strategic interests of the Raj. Returns on public investment in irrigation were comparable to returns on railways. (Chaudhary et al 2015, chapter 7) The irrigated regions of north-western India, grew faster than other parts of the country. (Kurosaki 2017: 29-31)

While lack on investment in agriculture had consequences for growth, the contribution of the railways cannot be underestimated. By the end of the 19<sup>th</sup> century, India had a large railway network. The literature shows unequivocally that the railways integrated markets. Not only did price gaps across markets decline (Hurd 1975, Donaldson forthcoming), the railways reduced the possibility of famines (Burgess and Donaldson 2010) and increased agricultural incomes in districts with access the railway (Donaldson forthcoming) There were large social saving too (Bogart et al 2015) But the railways had little impact on agricultural productivity and the lack of investment in agricultural infrastructure had far more serious consequences for the

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<sup>7</sup> This figure doubled soon from 1950 and was 3 times by 1980. (Gupta and Roy 2017)

economy in the early 20<sup>th</sup> century than deindustrialization did in the 19<sup>th</sup> century. Agricultural stagnation in colonial India was only reversed with new policies in independent India. (See table 3)

Table 2A: Changes in Yield per Acre (1910 as a proportion of 1600)

Ratio 1910/1600 of Lbs./acre		Change in Yield per Acre 1891-1946			
<b>Wheat</b>	0.75		1891-1916	1916-21	1921-46
<b>Rice</b>	0.69	All Crops	0.47	-0.36	-0.02
<b>Sugarcane</b>	2.21				
<b>Cotton</b>	0.24	All Food	0.29	-0.63	-0.44
<b>Average Yield</b>	0.91				
<b>Acreage</b>	1.89	All Non-Food	0.81	0.34	1.16
<b>Output</b>	1.57				

Source: Desai 1972, Roy 2012, table

Table 2B: Variations in Land Productivity in Comparative Perspective

	Wheat Yield in India 1911 (lbs per acre)		Wheat Yield in Europe 1910 (lbs per acre)	
	Irrigated	Unirrigated	Europe	
United Provinces	1250	850	UK	1909
Punjab	898	555	Germany	1651
NWFP	874	559	France	1178
Bombay	1340	510	Italy	856
Sind	1340		Portugal	835
Rice Yield in 1900 (lbs per acre)				
India	Japan	Indonesia		
944	1702	1076		

Note: NWFP North-West Frontier Province

Source: Wheat: Agricultural Statistics of British India 1911

Europe: Bairoch (1997), 'New estimates on agricultural productivity and yields of developed countries 1800-1990', table 2.2, in: A. Bhadrui & R. Skarstein (eds.), *Economic Development and Agricultural Productivity*, Lyme, NH: Ed

Rice: Roy (2007)



Table 3: Changes in Sectoral Growth (% per year)

	Primary	Secondary	Tertiary
1910-1940	0.0	2.3	2.2
1950-1964	3.0	6.8	3.8
1965-1985	2.5	4.3	4.4
1986-2007	3.4	6.8	7.1

Source: Roy 2012, table 12.1

### *Failure to industrialize?*

The decline of old industries was followed by the emergence of new ones. Industrial capacity developed using modern technology in several sectors. Tea and jute industries in eastern India were set up with British capital and a modern cotton textile industry developed in western India mainly with Indian capital. This sector imported machines from Britain and set up factories in the Bombay region. Indian trading groups from various communities, who had been involved in opium and cotton trade, now moved into industry. This industry though always in conflict with the cotton interests in Lancashire, has easy access to the British manufacturers of textile machinery. Despite the absence of protective tariffs the industry began to gain domestic market share from British imports. By early 20<sup>th</sup> century, the modern cotton textile industry was the second largest industrial sector in India. The largest industrial processing sector was tea. Unlike cotton textiles, this industry was almost entirely in the hands of British capital and exported most of its output. The other modern industry in the 19<sup>th</sup> century was jute, which was also in the hands of British business and exported large share of its output. British capital in industry was concentrated in the export sector and Indian capital dominated the main import substituting industry, cotton textiles. (See Gupta 2014 for a discussion)

Though case studies of these individual industries paint a picture of growth and expansion (Morris 1982, Gupta and Roy 2017) critics point to the absence of a machinery industry at the time of independence. The railways did not generate significant backward linkages to capital and intermediate goods industries as most equipment was imported from Britain. (Parthasarathi 2011) Unlike in countries, such as Germany and the United States, where development of the railway network had a significant effect on industrial development, in India the railways did not play a similar role. The reliance on imports is one part of the story. The other is that an economy that was scarce in both physical and human capital did not have the capability to

exploit backward linkages from the railways. India lacked the kind of ‘useful knowledge’ (Mokyr 2012) that had fostered the industrial revolution in Britain. Most of the workers came from agriculture and were first generation industrial workers. For technical skills, industries such as cotton and jute textiles relied heavily on European technicians or members of the small community of Parsis, who had unusually high literacy levels and had been in urban occupations for generations.

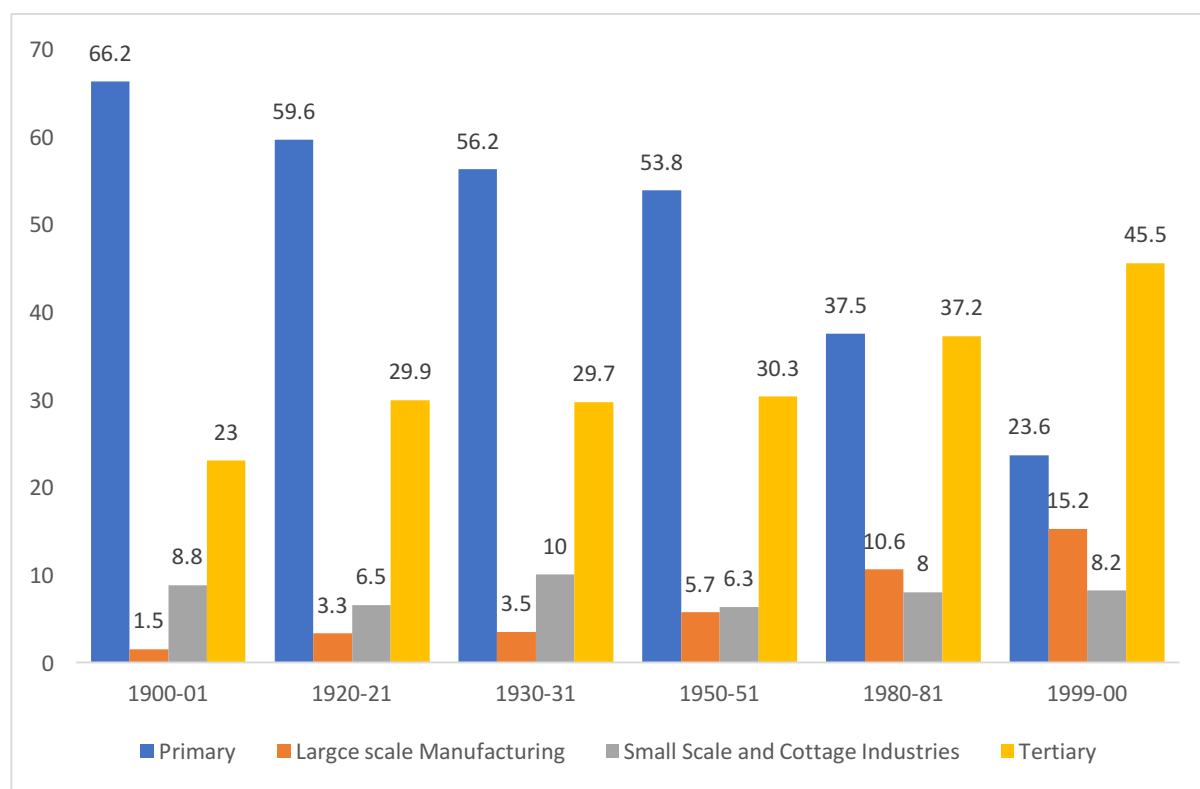
Industry was the fastest growing sector. It generated 12% of GDP, but accounted for less than 10% of employment. Most of this employment was in the small-scale sector using traditional technology. The history of survival, technological change and persistence of this sector has been well documented in the work of Tirthankar Roy (1999) and Douglas Haynes. (2012) In 1900, the large scale industrial sector produced less than 20% of industrial output. By 1947 both sectors had equal shares of industrial output. (See figure 6) The introduction of tariffs in the 1930s provided a boost to industrial investment in the large-scale sector. New industries developed and expanded such as paper and chemicals. The picture of the industrial economy in colonial India is one of some dynamism rather than failure. Table 4 shows sectoral productivity growth. Industry grew faster than the other sectors. The drag on economic growth came from agriculture. Despite the failure to develop a machinery industry, India did not look that different from a comparable Asian country, such as Korea (See table 7)

Table 4: Changes in Sectoral Labour Productivity (% per year)

	<b>Output per Worker</b>			
	Agriculture	Industry	Services	GDP
<b>1900-1946</b>	0.0	1.4	1.0	0.5
<b>1950-1970</b>	0.9	3.4	2.8	1.9
<b>1978- 2004*</b>	1.4	2.5	3.5	3.3

Source: Broadberry and Gupta (2010)\* Bosworth and Collins (2008) table 3

Figure 6: Changes in Sectoral Shares in GDP (%)



Source: Sivasubramonian (2000)

### *Human Capital*

At the time of independence, 17% of Indian population was literate. The colonial period has seen a rise in school enrollment, but it was still one of the lowest in the world. Public investment in education was also one of the lowest in the world. It was lower than in other British colonies and other non-industrial economies, such as Brazil and Mexico, and lower than the princely states in India that were outside colonial governance. (Chaudhary 2016) There were large regional variations as spending on education was under the remit of district boards. In 1931<sup>8</sup>, 142 out of 1000 school age children were at school. (See table 5) Compulsory primary schooling did not become a national policy at a time when it was being adopted in Britain. It was not unusual for British laws to be adopted in India. Many of the labour legislations involving hours of work and working hours for women and children as well as Masters and Servants laws were transplanted from Britain to India. But on primary education, the colonial government did very little.

<sup>8</sup> The figures from 1931 are reported as the census of 1941 is not reliable.

India followed a different path in developing human capital from the rest of the world. Although the overall public expenditure on education was low, expenditure on secondary education was disproportionately high. Secondary school enrollment was high relative to the primary school enrollment and comparable to countries in Europe. Nearly 60% of the education budget went to secondary education in 1930, while in Japan it was less than one-third. (Van Leeuwen 2007) In the middle of the 19<sup>th</sup> century universities were set up in the large metropolitan cities: Calcutta, Bombay, Madras and Delhi. The colonial government aimed to create an English-speaking elite, who could run the administration. Education spending in India reflected this elite bias of colonial education policy and not expansion of primary education for all. Low primary school enrollment had implications for growth and development and lasted beyond the colonial period.

To summarize, GDP growth in colonial India did not keep pace with population growth. Though output per worker rose in industry and services in the first half of the 20<sup>th</sup> century, both land and labour productivity in agriculture stagnated. Large scale modern industry grew faster than any other sector from a small base. The industrial workers did not benefit greatly from the expansion of education, but many service sector workers did.

Table 5: Comparative Enrollment Rates (Number enrolled per 1000 school age population)

	India	Brazil	Japan	France	UK
Primary					
1900	53	102	507	859	720
1910	78	123	599	857	729
1920	102	147	602	704	701
1930	142	215	609	803	745
Secondary					
1900	10	0	13	11	7
1910	14	5	74	14	21
1920	20	6	108	24	44
1930	34	8	165	32	58

Source: Chaudhary 2016, chapter 10

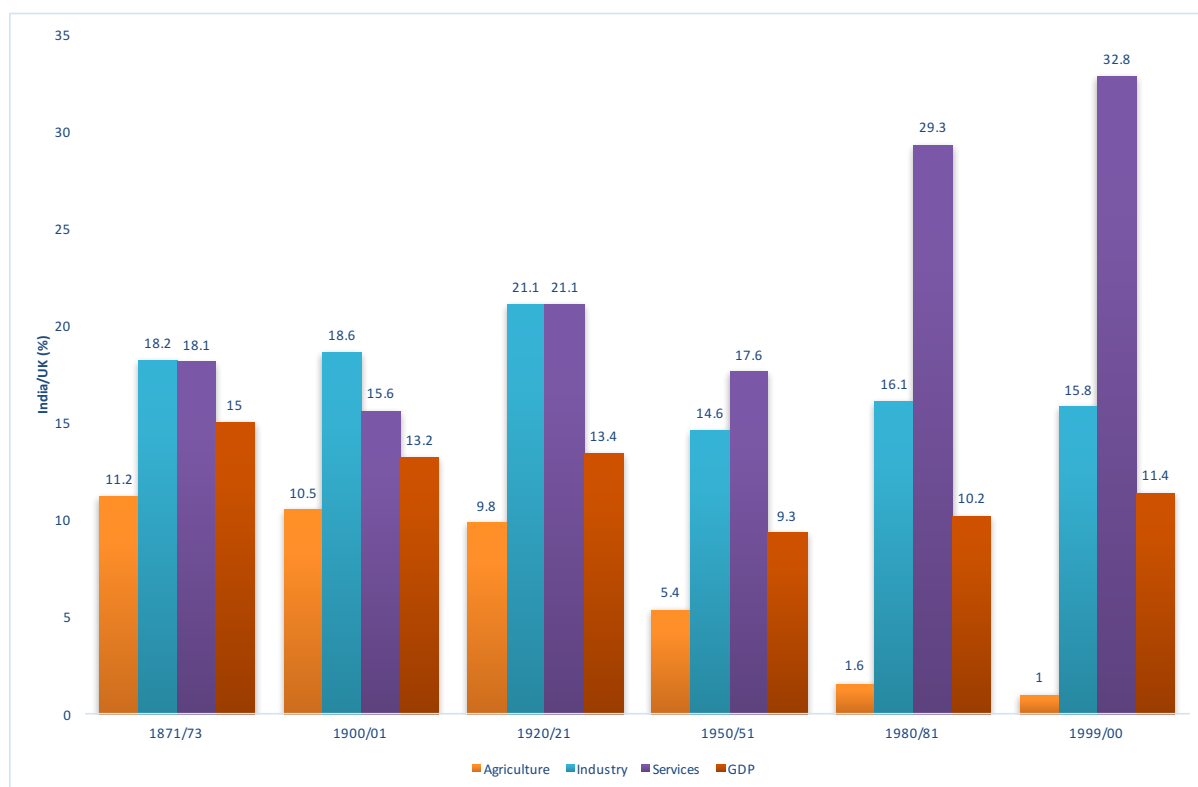
## ***Catching up***

### *Transition from a colonial Economy*

The transition began with the policy of industrialization under the new government of Jawaharlal Nehru, the first prime minister of independent India. A *dirigiste* state adopted Five Year Plans to transform a colonial economy to a self-sufficient one. The focus of this transition was to build a large industrial sector not through protecting the infant industry, but with the state as an entrepreneur. The developmental state sought to break with the international specialization of colonial economy. Countries in Latin America under the leadership of Raul Prebisch as the director of the Economic Commission of Latin America moved towards import substituting industrialization. Newly independent countries in East Asia, such as South Korea and Taiwan, emerging from Japanese colonization initially followed policies of industrialization through protection from international trade. The African colonies gaining independence a decade later would follow a similar path too. Import substituting industrialization was the policy choice of post-colonial economies in the 1950s and 1960s. In the short-term it raised the rate of growth in many countries. The medium and long term effects depended on policies towards integration to a global economy. While East Asian countries moved quickly to policies of export promotion, the Indian economy remained protectionist with adverse consequences for growth.

Studies of the Indian economy under planning see it as a failure in comparison to the East Asian successes. (See figure 9). For the economic historian 1950 was a turning point in *falling behind*. The catching up was slow and the growth rate between 1950-80, came to be known as the *Hindu equilibrium*. The economy was overburdened with regulation and efficiencies pulled down productivity growth (Bhagwati and Desai 1970, Ahluwalia 1985) However as figure 7 shows, the decline in output per worker relative to the UK shows a reversal after independence.

Figure 7: Sectoral Productivity Differences with UK (% India/UK)



Source: Broadberry and Gupta (2010)

### *Rise and Fall of Regulation*

Five year plans were drawn up to change the structure of the colonial economy. The first plan focused on building infrastructure. In 1954, at the opening of one of the largest dams in India, Nehru outlined his vision of “dams as temples of modern India.” The Second Plan 1956-61 adopted a Soviet style development model of industrialization. The Mahalanobis Plan, as it came to be known, put capital goods at the centre of an industrialization strategy. In the Mahalanobis framework, the economy consisted of two sectors: capital and consumer goods. By developing production of capital and intermediate goods, termed as *heavy industry*, there would be a rise in the overall rate of investment of the economy. However, this entailed a *coordination problem* between private entrepreneurs not certain about the future rates of return. The emerging capitalist class in 1950 was represented by the social networks in trade and industry. Many sections of the business interests had supported the Congress in the struggle for independence and in the drawing up of the Bombay Plan of 1944 that sketched the picture of economic development at the end of colonial rule. It indicated that the private sector was not

hostile to government involvement. (Tomlinson 1993: p166, Ray 1994: p334, Rothermund 1993)<sup>9</sup>

The objectives of the second plan were achieved through regulating trade and industrial investment through quantitative controls. Quotas rather than tariffs were the basis trade policy. Industrial investment required private entrepreneurs to apply for licenses to enter any particular industry. Several industries of strategic interest as well as capital and intermediate goods remained out of bounds for the private sector. State enterprises dominated many industries. The myriad of regulations came to be known as the *License Raj* that followed the dismantling of the *British Raj*.

The strategy paid off initially as industrial growth increased for a short period, but from the mid 1960s, the growth rate began to decline. It had pulled India out of stagnation of the colonial economy. One of the criticisms of the policy was the continued neglect of agriculture. Although the first plan had invested in agricultural infrastructure and a few large-scale irrigation projects, agricultural productivity was low and the fortunes of agriculture continued to rely on Monsoon rains. The share of agriculture in public investment was below 15% in the 1960s. (Balakrishnan 2010, p117) With the introduction of high yielding varieties of seeds and the green revolution from the mid 1960s, that agricultural productivity began to rise. Yield per acre doubled in rice production between 1955 and 1990, tripled in wheat production increasing per capita availability of cereals. (Rothermund 1993) The rate of growth of output per worker though much higher than in the colonial period has been lower than in industry and services. (See figure 7) The share of agriculture remained at 64% of total employment in 2000. Indian growth in the first thirty years after independence, was less than 2% a year when comparable economies in East Asia were growing at 5- 6% per year.

This was to change following dismantling of the regulatory system. The first policy change was the gradual removal of industrial licensing in the 1980s and replacement of import quotas with tariffs. Both policies opened up opportunities for the private sector. Rodrik and Subramanian (2005) distinguish the “pro-business” reforms of the 1980s from the “pro-market” reforms after the devaluation of the Indian rupee in 1991. The attitudinal shift of the

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<sup>9</sup> Chibber 2003 has a different view and argues that the Indian business interests were opposed to the level of state intervention that underlined the Bombay Plan.

policy makers towards the private sector saw a big increase in output per worker in manufacturing and total factor productivity growth (Bosworth et al 2007). The “pro market” reforms of the 1990s led the economy towards a high growth regime, but TFP growth in manufacturing slowed down.

Per capita GDP growth doubled from 1980 and rose above 4 percent per year after 1990 (See table 1) Estimates of structural break in GDP from 1950 to 2000, put the break point in 1979-1980. (Wallack 2003, Balakrishnan and Parameswaram 2007 and Rodrik and Subramanian 2005) A picture of Indian growth from 1950 show the years of planning as a growth failure. A long run perspective that analyzes growth from 1900 to 2000, puts the structural break in GDP growth at 1952 (Hatekar and Dongre 2005) and confirms that the transition from the colonial economy coincided with a reversal of falling behind. As figure 7 shows, the decline in Indian output per worker relative to the UK reversed from 1950/51.

The path of Indian economic growth has not followed the pattern of structural change seen in the industrialized countries, where the share of industry in GDP and employment increased as the share of agriculture declined. The secondary sector in India did not emerge as the largest sector at any time both in terms of output and employment over the 20<sup>th</sup> century. This pattern is not so unusual in the late industrializing countries. (See table 7) Where India has taken a different path is, in the leading role of services in growth since 1980. Bosworth and Collins (2008) show that total factor productivity growth has been high in services from 1978 to 2004 and well above that in China. The high growth of the Indian economy in recent years has not led to the outflow of workers from agriculture to more productive sectors as in other industrial economies. The share of agriculture in employment declined from 75% in 1900 to 64% in 2000. (Sivasubramonian 2000, tables 2.8 and 9.31) In the 1980s the fastest growing sectors in industry did not create many unskilled jobs. The expansion of sectors, such as, trade and construction in the 1990s absorbed more unskilled workers. (Kotwal et al 2011) India stands out as an early example of a service- sector led growth and high total factor productivity growth in services. (See table 6) This growth is broader based than just modern business services. (Bosworth et al 2007)



Table 6: Sectoral Growth 1960-2000 (Percent per year)

	Output	Employment	Output per worker	Total Factor Productivity
<b>Agriculture</b>				
1960-80	1.9	1.8	0.1	-0.1
1980-2004	2.8	1.1	1.7	1.1
1983-87	0.1	0.5	-0.5	-1.0
1987-93	4.8	2.0	2.8	2.7
1993-99	2.6	0.2	2.4	1.3
<b>Industry</b>				
1960-80	4.7	3.1	2.0	-0.4
1980-2004	6.4	3.4	4.0	1.1
1983-87	6.0	4.6	1.4	0.2
1987-93	5.9	1.7	4.2	2.2
1993-99	6.9	2.4	4.5	1.1
<b>Manufacturing</b>				
1960-80	4.6	2.7	2.0	0.2
1980-2004	6.6	2.7	4.0	1.5
1983-87	6.2	2.4	3.7	2.0
1987-93	5.8	1.8	4.0	2.2
1993-99	7.2	1.6	5.5	0.4
<b>Services</b>				
1960-80	4.9	2.8	2.0	0.4
1980-2004	7.6	3.8	3.8	2.7
1983-87	6.9	3.3	3.5	1.5
1987-93	6.3	4.1	2.2	5.0
1993-99	10.2	3.1	7.0	2.5

Source: Bosworth et al (2007) Table 5

How bad was Indian performance during planning? Delong (2001) sees India's performance under planning as average rather than a disaster. India did as well as the average developing country during 1960-1992 in terms of output per worker and the share of investment in GDP. Delong argues that despite the loss of efficiency the increase in resource mobilization had a positive effect. Gross domestic capital formation rose 6-7% of GDP before 1940 to 13% in 1951, rising to 20% in the 1970s. (Gupta and Roy 2017) Delong argues that small changes in regulation in the 1980s generated a large response in GDP growth. The Nehruvian regime was a response to the inadequacies of the colonial period, but had an efficiency cost. The pro-business reforms increased total factor productivity growth.

India growth failure after independence is with reference to the East Asian miracle. But did

India have the initial conditions in 1950 to embark on the same path as a comparable East Asian country, such as South Korea? In the following sections, I will suggest that there were differences in colonial legacies and the colonial legacy had long run effects.

### *Long run Effects of colonial policies*

Colonization left a deep imprint on the development of the post-colonial decades. The literature discusses three different persistent effects of colonial rule:

**Land tenure institutions:** There were enduring effects of the colonial land tenure system. In 1980 there were systematic differences in agricultural productivity between landlord and non-landlord regions (Banerjee and Iyer 2005) The latter did better. Provision of public goods was also higher in non-landlord regions. (Banerjee et al 2007). The different economic outcomes in the provinces of Bombay presidency (Maharashtra and Gujarat today) and Bengal (West Bengal today) are examples of the differences outlined above.

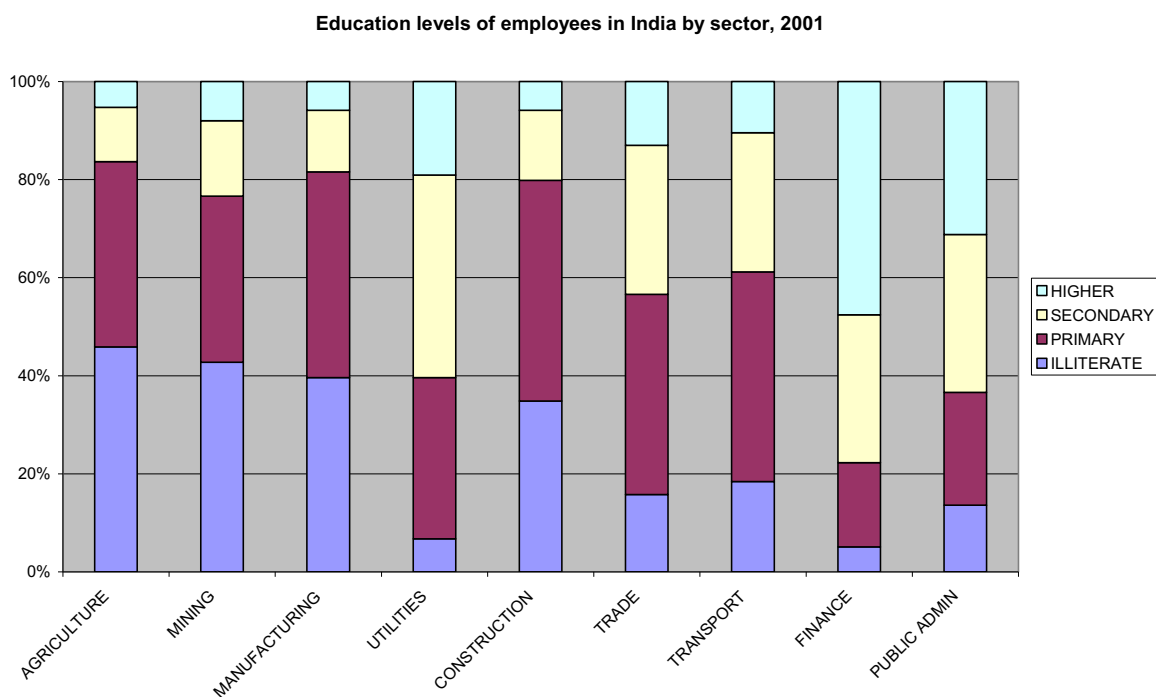
**Human Capital:** The impact of colonial policies for education has been most visible through regional variation in primary schooling and the importance of higher education. The effect of education spending in 1911 persisted until 1971 (Chaudhary and Garg 2015). The high share of secondary and tertiary education in education spending also remained a feature of the education system with implications for human capital of the workforce.

**The relative advantage of the Service sector:** The high share of secondary and tertiary education relative to primary education was an advantage to the service sector and may explain the high productivity in the service sector. The 2001 census shows a concentration of workers with secondary and tertiary education in services. (See figure 8) Agriculture had the largest number of workers without basic education. Surprisingly a large proportion of industrial workers also lacked primary education. Kochhar et al (2006) suggest that the emphasis on tertiary education in the early decades of planning, gave skill intensive sectors an advantage. Such emphasis on tertiary and secondary education had colonial origins. Secondary and tertiary education had an unusually high share in education spending under British rule.

The census of 1901 does not provide a breakdown of literacy by occupation. Broadberry and Gupta (2010) have used the literacy levels in occupation based caste groups in the census of

1901 as a proxy of human capital across sector. The trading castes had high literacy across regions. The concentration of human capital in the service sector and the lack of it in other sectors, may explain the relative advantage this sector has enjoyed over the 20<sup>th</sup> century. Labour productivity of the service sector relative to the UK rose from 16% in 1900 to 33% in 2000. Relative labour productivity in industry has declined. (See figure 7) The shortage of human capital in industry may also account for the relative disadvantage in manufacturing compared to other Asian countries. Indian literacy rate was lower than in comparable Asian countries, South Korea, Taiwan and Malaysia in 1960 and has remained low over time (Bosworth et al 2007)

Figure 8: Human capital by Sector (2001)



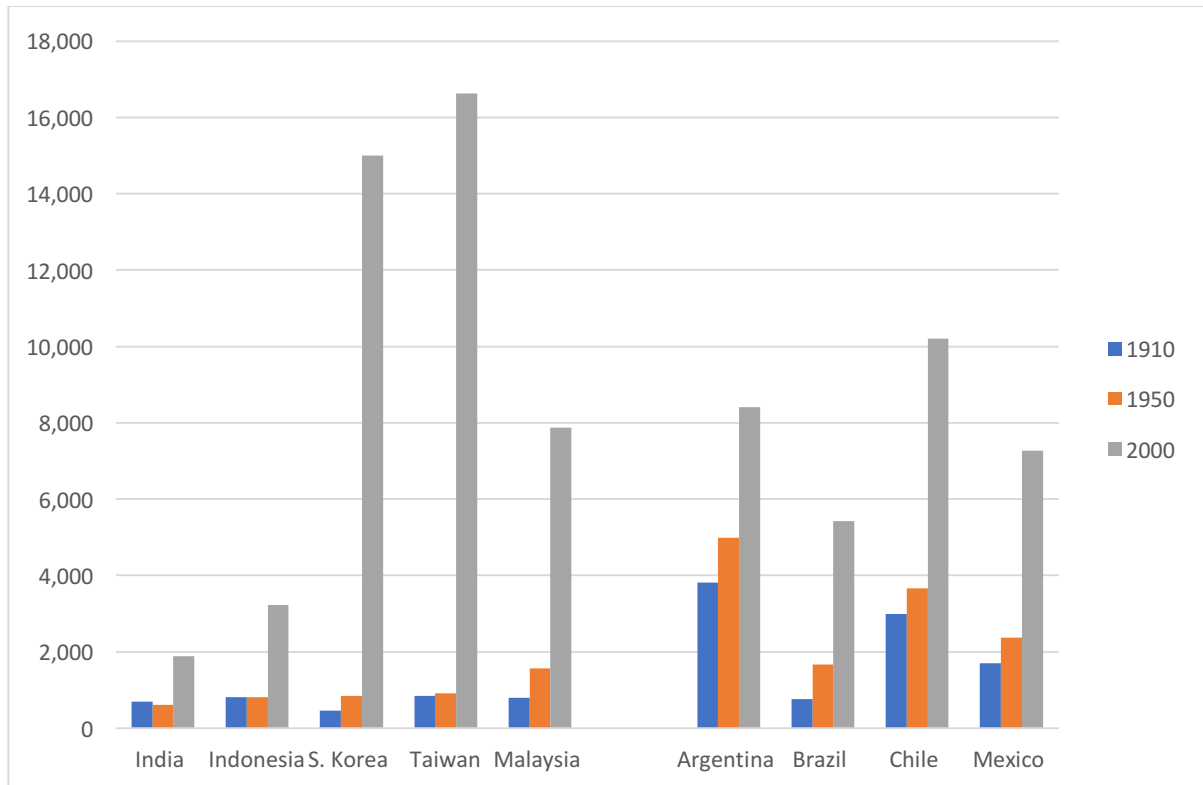
Source: Census of India 2001

*Falling Behind: Comparison with East Asia*

South Korea and Taiwan emerged from Japanese colonization also in the middle of the 20<sup>th</sup> century and moved to a high growth regime. Figure 9 shows Indian GDP per capita in comparison with other non-industrial countries in 1950. South Korea and Taiwan did not look significantly different from India in 1910. Independent countries in Latin America were better off than the colonies in 1950. In the second half of the 20<sup>th</sup> century, the East Asian Economies

have forged ahead and overtaken comparable countries not only in Asia, but also in Latin America. Did East Asia have different initial conditions in 1950?

Figure 9: Changes in GDP per capita in International Geary Khamis 1990 \$ (1910- 2000)



Source: Maddison Project database.

Kohi (2004) argues that indeed this was the case for Korea. The developmental state of the post war period had origins in the Japanese colonial state. Taiwan became a Japanese colony in 1895 and Korea in 1905. Both countries saw positive growth in agriculture during the colonial period and a push for extension of primary education. Neither was different from India in terms of industrial capacity.

Was Japan different as a colonizer? The nationalist historians have argued, as in the case of India, that links with Japan destroyed local industry and Korean development aided the interests of the Japanese economy.<sup>10</sup> Cha (2004) takes a different view and shows that the ecological crisis in Korea in the 19<sup>th</sup> century, was reversed by technological change in agriculture under the Rice Production Development

<sup>10</sup> The literature is summarized in Cha (2004)

Programme of the colonial regime. Rice production grew at 3.8% per year in the colonial period. (Kim and Park 2012) Agricultural productivity increased in colonial Korea and Taiwan with the availability of Japanese varieties of rice and the building of a rural infrastructure for rice cultivation often with private initiative. Over 80% of land under cultivation was irrigated in Taiwan and 68% in Korea by 1939. (Booth 2007) Exports of rice to Japan increased.

New estimates of Korean per capita GDP show a positive picture of the colonial economy with a growth rate of over 2% per year between 1911 and 1940. (Cha and Kim 2008) Table 7 shows that the share of agriculture in GDP declined significantly in colonial Korea, while the share of manufacturing industry increased. Japan invested in modern factory industry in Korea in the 1930s, mainly in the northern part. Most of the industrial growth before 1930 can be attributed to rising total factor productivity in the small local firms. (Kim and Park 2008) The share of industrial output in Korea at the time of independence was not very different from that in India, but the rate of growth had been higher. (See table 7) Where East Asia and India differed was not in industry, but mainly the developments in agriculture and investment in human capital.

Table 7: Changes in Sectoral shares in India and Korea (1910-2000)

	Primary		Manufacturing*		Tertiary	
	India	Korea	India	Korea	India	Korea
1910	64.5	67.8	11.4	4.4	23.5	25.5
1940	53.7	42.0	13.6	13.7	32.0	32.0
1960	46.8	39.6	14.5	12.1	30.2	41.4
1980	33.2	16.0	19.9	24.6	38.2	48.0
2000	22.6	4.6	23.4	28.3	45.5	57.3

Source: Sivasubramonian (2000) for India Kim, Nak Nyeon ed., National Accounts of Korea 1911-2010 (Seoul: SNU Press, 2012)

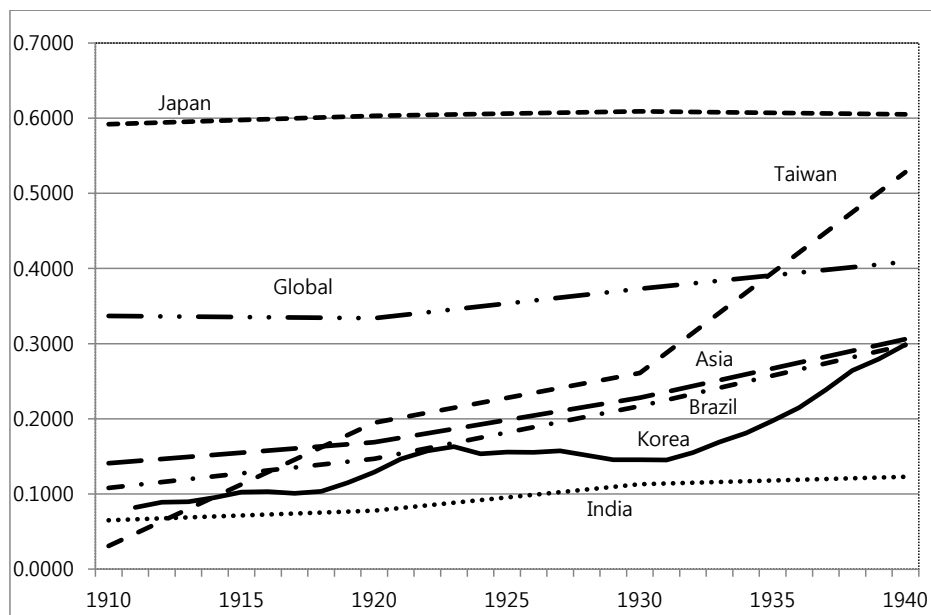
Note- 1910-1940 includes the combined regions of North and South Korea

\*Share of sectors other than manufacturing within the secondary sector are not reported

Although neither Korea nor Taiwan attained universal primary education under colonial rule, policy towards education targeted primary school enrollment. At the time of independence, Korea and Taiwan, had higher education levels than predicted by their per capita GDP. Figure 10 shows rising school enrollment in Korea, Taiwan and India. All three were below the world average at below 10 per cent of school age population in 1910. However East Asia expanded primary schooling faster and by 1940 Taiwan's enrollment rate was over 50% and Korea's over 30%. The outcomes in agriculture and education in East Asia were different under colonial rule. A comparative perspective does point to a failure of Britain as a developmental state for the largest colonial economy in Asia.

Figure 10: Primary School Enrollment in a Comparative Perspective

Figure 2. Public school enrollment rates, 1910-1940 (% of 5-14 year-old children)



Sources: Korean data are from *The Annual Report of Statistics*; Others are from Benavot and Riddle (1988)

Note: The Korean enrollment rate includes pupils of all the types of elementary schools such as public, private, and traditional elementary schools.

Source: Sun Go and Ki-Joo Park, "The elite-biased growth of elementary schooling in colonial Korea", Working Paper, 2017. I am grateful to Sun Go for the use of this graph from the paper.

A discussion of comparative economic performance of India and East Asia will be incomplete without a reference to the different policies adopted after decolonization. Korea and Taiwan adopted policies toward import substitution in the 1950s using multiple exchange rates and

tariffs. However, from the early 1960s, both countries adopted policies to increase exports targeting specific sectors by subsidized credit and easy access to foreign exchange. They followed an infant industry policy of protecting a domestic industry only in the “learning” phase. (Perkins and Tang 2017) Industries such as petro chemicals, shipbuilding and automobiles in South Korea and electronics in Taiwan gained competitive advantage in the international market as a result of the regulatory role of the state. Where India failed under the heavy hand of regulation and protection of the home market, the East Asian states built a competitive manufacturing industry.

Collins et al (1996) argue that external conditions explain very little of the growth difference between South and East Asia. Education is a more important explanatory variable. In South Korea and Taiwan, the average years of education of the workforce rose from 3.2 in 1960 to over 8 in 1994. In India, the change was from 1.3 to 3.4. (Collins et al 1996) The importance of initial conditions in education and low inequality in the two East Asian economies has also been emphasized by Rodrik (1997) The long run consequences of colonial policy may have contributed to the different paths of development in South and East Asia.

### ***Conclusion***

This paper has argued that India fell behind during colonial rule. The decline in Indian GDP per capita began before colonization and coincided with the rising textile trade with Europe. India was the largest producer of cotton textiles before the industrial revolution in Britain. However, this sector was a small part of the economy. The continued decline and stagnation of per capita GDP during 200 years of British rule widened the divergence between India and Britain. The failure of the colonial government to raise agricultural productivity led to the stagnation. The decline of traditional industries was not the main driver Indian decline. Modern industries emerged and grew relatively fast.

The falling behind of the Indian economy was reversed in independent India. Policies of industrialization and a green revolution in agriculture increased productivity growth in both sectors. However, the most successful sector in Indian growth dynamics is the service sector. This sector has the largest share of GDP, the largest share of literate and skilled workers and has been the fastest growing sector in recent times. The service sector has led the process of structural change rather than industry. India is one of the first examples of a service sector led growth. Indian advantage in the services has historical origins.

## **References:**

- Allen (2007), "India in the Great Divergence", in Hatton, T.J., O'Rourke, K.H. and Taylor, A.M. (eds.), *The New Comparative Economic History: Essays in Honor of Jeffrey G. Williamson*, Cambridge, MA: MIT Press.
- Ahluwalia, I.J., (1985) *Industrial Growth in India: Stagnation since the mid-sixties*. Oxford University Press, USA.
- Amin, S. (1976), *Unequal Development: An Essay on the Social Formations of Peripheral Capitalism*, Hassocks: Harvester.
- Bagchi, A. K. (1976), 'Deindustrialization in India in the Nineteenth Century: Some Theoretical Implications', *Journal of Development Studies*, **22**: 135–64.
- Bagchi, A.K, (1972) *Private Investment in India*, Cambridge: Cambridge University Press
- Banerjee, A., and Iyer, L. (2005), 'History, Institutions, and Economic Performance: The Legacy of Colonial Land Tenure Systems in India', *American Economic Review*, **95**(4): 1190–213.
- Balakrishnan, P (2010) *Economic Growth in India*, Delhi: Oxford University Press.
- Balakrishnan, P., and M. Parameswaran. (2007). "Understanding Economic Growth in India: A Prerequisite." *Economic and Political Weekly*, 42(27–28): 2915–22.
- Bayly, C.A. (1983), *Rulers, Townsmen and Bazaars: North Indian Society in the Age of British Expansion, 1770-1870*, Cambridge: Cambridge University Press.
- Berg, M., (2004) "In pursuit of luxury: global history and British consumer goods in the eighteenth century". *Past & present*, 182: 85-142.
- Bhagwati, J.N. and Desai, P., (1970) *India; planning for industrialization; industrialization and trade policies since 1951*, Delhi: Oxford University Press
- Blyn, G., 1966. *Agricultural Trends in India, 1891–1947: Output, Availability, and Productivity*, Philadelphia: University of Pennsylvania Press.
- Bogart, D., & Chaudhary, L. (2015). "Railways in Colonial India" in . Chaudhary, L., Gupta, B., Roy, T. and Swamy, A.V. eds., *A new economic history of colonial India*. London: Routledge
- Booth, A. (2007). *Colonial legacies: Economic and social development in East and Southeast Asia*. University of Hawaii Press.
- Bosworth, B. and Collins, S. (2008). "Accounting for Growth: Comparing China and India", *Journal of Economic Perspectives*, 22(1): 45-66.
- Bosworth, B., Collins, S.M. and Virmani, A., 2007. *Sources of growth in the Indian economy* (No. w12901). National Bureau of Economic Research.
- Broadberry, S. N. and B. Gupta, (2006), "The early modern great divergence: wages, prices and economic development in Europe and Asia, 1500–1800", *Economic History Review*, 59(1): 2–31.



Broadberry, S.N and B. Gupta, (2009). Lancashire, India, and shifting competitive advantage in cotton textiles, 1700–1850: the neglected role of factor prices. *The Economic History Review*, 62(2): 279-305.

Broadberry, S.N and B Gupta, (2010). “The Historical Roots of India’s Service-Led development: A Sectoral Analysis of Anglo-Indian Productivity Differences, 1870-2000”, *Explorations in Economic History*, 47(3): 264-278.

Broadberry, S., Custodis, J. and Gupta, B., (2015) “India and the great divergence: An Anglo-Indian comparison of GDP per capita, 1600–1871” *Explorations in Economic History*, 55(1): 58-75.

Burgess, R., & Donaldson, D. (2010). “Can openness mitigate the effects of weather shocks? Evidence from India's famine era”. *The American economic review*, 100(2): 449-453.

Cha, M. S., & N. N. Kim, (2012). Korea's first industrial revolution, 1911–1940. *Explorations in Economic History*, 49(1): 60-74.

Cha, M. S, (2004). Facts and myths about Korea’s economic past. *Australian Economic History Review*, 44(3), 278-293.

Chaudhuri, K.N., 1978. *The Trading World of Asia and the English East India Company, 1660–1760*, Cambridge: Cambridge University Press.

Chaudhuri, K.N., 1983. Foreign trade and balance of payments (1757–1947). In: Kumar, D., Desai, M. (Eds.), *The Cambridge Economic History of India.*, vol. 2. Cambridge University Press, Cambridge, pp. 804–877 (c. 1757–c. 1970).

Chaudhary, L. and M. Garg, M., (2015), “Does history matter? Colonial education investments in India”, *The Economic History Review*, 68(3): 937-961.

Chaudhary, L., Gupta, B., Roy, T. and Swamy, A.V. eds., (2015) *A new economic history of colonial India*. London: Routledge.

Chaudhury, S., (1995), *From Prosperity to decline: Eighteenth Century Bengal*, Delhi: Manohar.

Clingingsmith, D. and Williamson, J.G., (2008) Deindustrialization in 18th and 19th century India: Mughal decline, climate shocks and British industrial ascent. *Explorations in Economic History*, 45(3): 209-234.

Collins, S.M., Bosworth, B.P. and Rodrik, D., (1996) “Economic growth in East Asia: Accumulation versus assimilation” *Brookings papers on economic activity*, 1996(2): 135-203.

Delong, B. (2003). “India since Independence: An Analytical Growth Narrative” in Rodrik, D (ed) *In Search of Prosperity: Analytical Narratives on Economic Growth*, Princeton University Press, Princeton.

Desai, A.V., (1972). Population and standards of living in Akbar's time. *Indian Economic and Social History Review* 9(1): 43–62.

Donaldson, D, *Railroads of the Raj: Estimating the Impact of Transportation Infrastructure*, *American Economic Review*, forthcoming.

Frank, A.G., (1966) *The Development of Underdevelopment*, Monthly Review Press

Go Sun and Ki-Joo Park, “The elite-biased growth of elementary schooling in colonial Korea”, Working Paper, 2017

Gupta, B., (2014) “Discrimination or Social Networks: Industrial Investment on Colonial India”, *Journal of Economic History*, 74 (1): 141-168.

Gupta, B and T. Roy (2017) “From Artisanal Production to Machine Tools: Industrialization in India over the Long Run” in O’Rourke K. H. and J. G. Williamson (eds.), *The Spread of Modern Industry to the Periphery since 1871*, Oxford: Oxford University Press

Habib, I., (1976) “Notes on Indian textile technology in the seventeenth century”, in B. De, ed., *Essays in honour of Professor S. C. Sarkar* (New Delhi)

Haynes, D. E. (2012). *Small Town Capitalism in Western India: Artisans, Merchants and the Making of the Informal Economy, 1870-1960* (Vol. 20). Cambridge: Cambridge University Press.

Heston, A. (1983). “National Income”, in Kumar, D. and Desai, M. (eds.). *The Cambridge Economic History of India, Volume 2: c.1757-c.1970*, Cambridge: Cambridge University Press, 463-532.

Hurd, J. (1975). “Railways and the expansion of markets in India, 1861–1921”, *Explorations in Economic History*, 12(3): 263-288.

Kim, D., & K. J. Park, (2008). Colonialism and industrialization: factory labour productivity of colonial Korea, 1913–37. *Australian Economic History Review*, 48(1): 26-46.

Kochhar, K., Kumar, U., Rajan, R., Subramanian, A., & Tokatlidis, I. (2006). India's pattern of development: What happened, what follows? *Journal of Monetary Economics*, 53(5), 981-1019.

Kohli, A., (2004) *State Directed Development*, Cambridge: Cambridge University Press

Kotwal, A., Ramaswami, B., & Wadhwa, W. (2011). Economic liberalization and Indian economic growth: What's the evidence? *Journal of Economic Literature*, 49(4), 1152-1199.

Kurosaki, T. (2003). “Specialization and diversification in agricultural transformation: the case of West Punjab”, 1903–92. *American Journal of Agricultural Economics*, 85(2), 372-386.

Kurosaki, T. (2017). *Comparative economic development in India, Pakistan and Bangladesh: agriculture in the 20th century*. Economic Research Series Hitosubashi University N. 45, Tokyo: Maruzen Publishing Company.

Lemire, B., & Riello, G. (2008). East & west: Textiles and fashion in early modern Europe. *Journal of Social History*, 41(4), 887-916.

- Maddison, A. (1995). *Monitoring the World Economy, 1820-1992*, Paris: Organisation for Economic Co-operation and Development.
- Moosvi, S., 1987. *The Economy of the Mughal Empire c. 1595: A Statistical Study*, Oxford University Press, Delhi.
- Morris, M.D. (1983). "Growth of Large-scale Industry to 1947." In Dharma Kumar, ed., *The Cambridge Economic History of India, vol. 2*, Cambridge: Cambridge University Press, 553-676
- Morris, M.D (1994). 'European and Indian Entrepreneurship in India 1900-30', in R.K. Ray, ed., *Entrepreneurship and Industry in India 1800-1947*, Delhi: Oxford University Press.
- Pascali, L. (2017) "The wind of change: Maritime technology, trade, and economic development" *American Economic Review*, 107(9): 2821-54.
- Parthasarathi, P. (2011). *Why Europe grew rich and Asia did not: Global economic divergence, 1600–1850*, Cambridge University Press.
- Perkins D.H and J.P. Tang (2017) in in O'Rourke K. H. and J. G. Williamson (eds.), "East Asian Industrial Pioneers: Japan, Korea and Taiwan" *The Spread of Modern Industry to the Periphery since 1871*, Oxford University Press
- Prakash, O. (2014). *The Dutch East India Company and the Economy of Bengal, 1630-1720*. Princeton University Press.
- Prakash, O. (1976). Bullion for Goods: International Trade and the Economy of Early Eighteenth Century Bengal. *The Indian Economic & Social History Review*, 13(2), 159-186.
- Prebisch, R., 1(950). The economic development of Latin America and its principal problems. *Economic Bulletin for Latin America* 7, 1-12.
- Ray, I., (2009) "Identifying the woes of the cotton textile industry in Bengal: tales of the nineteenth century, *The Economic History Review*, 62(4): 857-892.
- Raychaudhuri, T., and Habib, I. (eds) (1982), *The Cambridge Economic History of India, Vol. I: c. 1200–1750*, Cambridge, Cambridge University Press.
- Rodrik, D and Sunbramanian (2005). "From Hindu Growth to Productivity Surge: The Mystery of the Indian Growth Transition", *IMF Staff Papers*, 52 (2):193-228
- Rodrik, D. (1995)" Getting interventions right: how South Korea and Taiwan grew rich." *Economic policy* 10(20): 53-107.
- Rothermund, D. (2002). *An economic history of India*. Routledge.
- Roy, B. (1996). *An Analysis of Long Term Growth of National Income and Capital Formation in India (1850-51 to 1950-51)*. Calcutta: Firma KLM Private
- Roy, T. (1999). *Traditional Industry in the Economy of Colonial India*, Cambridge: Cambridge University Press.

- Roy, T. (2002). Economic history and modern India: redefining the link. *The Journal of Economic Perspectives*, 16(3): 109-130.
- Roy, T. (2007). A delayed revolution: environment and agrarian change in India. *Oxford Review of Economic Policy*, 23(2), 239-250.
- Roy, T., (2011). *The Economic History of India 1857-1947*, Third Edition, Delhi: Oxford University Press
- Singer, H., (1950) Comments to the terms of trade and economic development. *Review of Economics and Statistics* 40, 84-89.
- Sivasubramonian, S., 2000. *The National Income of India in the Twentieth Century*, Oxford University Press, New Delhi.
- Sweeney, S. (2011). *Financing India's Imperial Railways, 1875–1914.*, London: Pickering and Chatto
- Twomey, M.J., 1983. Employment in nineteenth century Indian textiles. *Explorations in Economic History* 20, 37–57.
- Wallack, J. 2003. “Structural Breaks in Indian Macroeconomic Data.” *Economic and Political Weekly*, 38(41): 4312–15.
- Wallerstein, I. (1974). *The modern world-system: Capitalist agriculture and the origins of the European world-economy in the sixteenth century*. Academic Press.