The Drain Gain: An investigation into how colonial drain helped keep British economy buoyant

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Abstract

The global hegemony of Britain in the 19th century is hardly a disputed fact. As a global hegemon, it oversaw the transfer of surplus from the underdeveloped world to its shores. The transfer of surplus was important in maintaining its status as a hegemon. In this essay, I underline the need for Britain to colonize India, its biggest possession. India's colonial history has been the subject of a lot of scholarly attention but rarely has the focus shifted from the drain of surplus as a cause of underdevelopment of India to a transfer of surplus from India to Britain as a cause of development of Britain. I shed light on this aspect of global surplus extraction and show empirically that this transfer of surplus was invaluable for the success of the British economy. Marx's macroeconomics and his well-known law of the falling rate of profit are my main sources of support. Accounting for spurious correlation using Hamilton(1994), I find that an increase in colonial drain by 1% increases the rate of profit of Britain by around 9 percentage points. My findings are corroborated by the several robustness checks I perform, including using different measures of domestic exploitation and a different method in Autoregressive Distributed Lag (ARDL). About the whole of the 19th century up until the First World War is included in my period of analysis.

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JEL Classi ication - N75, B14, N14

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Introduction

The world system has leaned heavily on the premise of exploitation of the peripheral countries by the core countries. Exploitation translates into the extraction of surplus from the former by the latter. Deployment of this surplus in the core countries enabled the core countries to earn monopolistic profits and function as centers of global accumulation (Wallerstein,2004). Deane(1965) maintains that the transfer of economic surplus catalyzed the first industrial revolution. Profits from colonial trade overflowed into agriculture, mining, and manufacturing consequentially financing industrial expansion and agricultural improvement. Jevons(1906) acknowledged the benefits of colonialism in his famous book *'The Coal Question'*. This book identifies colonialism as one of the major reasons for Britain's easy access to an abundance of resources. The several trading companies set up attest to the facilitation of the process of this transfer of surplus from the periphery to the core countries. The wealth amassed in the core countries can be attributed to this transfer of surplus. It can be attained either through coercion (alternatively colonialism) or unequal exchange (Arrighi,1972; Li,2017). The transfer was mostly accomplished through colonialism in the 19th century when Britain was seen to be the global hegemon. Scholarly attention, with a special emphasis on Britain, on global accumulation in the 19th century has been plentiful (McGowan & Kordan,1981; Wallerstein, 2011), and rightly so. The conquest of India by Britain in the 19th century was one of the important world events to which a lot of Britain's economic gain has been 'accredited'. The need for India's resources for Britain was multifold. The surplus appropriation from India varied from forced transportation of indentured labor to forced appropriation of output of labor. The initial phases of industrialization are painful as most of the laboriousness falls on the domestic workforce. Britain in the 19th century had access to a surplus that not many countries did. Fundamentally, India's role in the 19th century was to be the replenishable supplier of this surplus for Britain. Surplus extraction from Britain acts as a dual safety valve, not only does it give access to cheap resources but it also avoids having to draw surplus from the domestic workforce. Colonialism catered to a diverse set of classes including the domestic proletariat, in other words, colonialism consolidated a 'Labor Aristocracy' in Britain (Chase-Dunn,1999). Britain had maintained a trade deficit with the other core countries (chiefly its settler colonies) (Deane & Cole, 1962). It balanced this deficit by appropriating India's export surplus

(Cuenca Esteban,2001). My paper delves into this literature and presents a statistical examination of the aforesaid drain and the need for Britain to colonize India. Some authors have estimated the drain from India (Cuenca Esteban, 2007; Nogues Pilar, 2022) but none have gone into more detail about the majority of the 19th century and linked it to a broader macroeconomic setting. Digging into the accounts of the East India Company(EIC hereinafter) or the British government helps uncover the various channels through which the surplus was appropriated but it does not necessarily show causally the effect of colonialism on the health of an economy. Extricating oneself from the task of following every penny that flowed from India to its ultimate end is an impossible task. One way to bypass it would be to have a look at this drain and its effect on the macroeconomy of the country. To the best of my knowledge, there is no study that has talked about this supranational exploitation and its impact on the profit rates in the core countries. According to Marxist literature, the rate of profit is an important indicator of the health of an economy. When one thinks of the whole idea of capital accumulation, it is the willingness of the capitalist to invest that determines the fate of a capitalist economy. The systemic crisis that plagues capitalism can be dissected using measures and none more important than the rate of profit comes close to encapsulating it. The more buoyant an economy is the more investment we can expect. But a high profitability regime is required to sustain investment and a low-profit rate disincentivizes capitalists to invest. Thus, for a capitalist economy to be able to steer away from crisis a high-profit rate is required (Devine, 1987). British growth presupposed a stable profit rate. One of the ingredients of the rate of profit is a summation of the surplus extracted from either domestic forces or overseas. Hence, this profit rate in the 19th century was dependent upon the transfer of surplus from India. To complete the circuit, an understanding of the British rate of profit is necessary.

For this essay, I prove the claim that the transfer of surplus was significant in the functioning of the British economy in the 19th century by using sophisticated statistical methods. The first section introduces the reader to a brief history of Colonial India, simultaneously giving an indication of the time period of analysis. In the next section, I describe the concept of 'Drain of Wealth', correspondingly justifying the choice of my variable of interest. I also present some estimates of the drain as computed by other authors. I situate my research within a more Macroeconomic literature and also talk about the accounting of colonialism briefly, Then, I talk about the empirical strategy

I adopt, I will not delve into greater detail about this method as it has been used before by papers of a similar hue. I show the results and discuss the several diagnostic tests I undertook to arrive at them. Lastly, I conclude with a robustness check of the method applied in the previous section in the Appendix.

Brief History

Capitalism can be divided primarily into two broad phases, it is characterized by an increasing number of working hours in the first phase as shown empirically by Voth (2000) as Britain transitioned into a capitalist mode of production. The second phase is where relative surplus value achieves primacy. Competition between capitalists means a reduction in the costs of production and this is seen in how the colonial trade is also handled. The case of India has been well documented and it was the biggest possession of the British empire. For the sake of comprehensiveness, I should emphasize the role global economic factors played in it. It was in a period of economic doom and gloom that the East India Company(EIC) oversaw a reign that can be characterized as being overly exploitative, as described by Gunder Frank(2011). He was not alone in the list of famous names to call out EIC's immorality as Smith (1776) referred to the EIC as the body 'for the appointment of plunderers of India. The Battle of Plassey of 1757 handed control of Bengal to the British. The French which had set base in India much earlier than the British were directly controlled by the French while the EIC was private. In essence, there was much less regulatory authority over the English than the French. Additionally, the state coffers dictated the future forays while the EIC had no such constraints. The Court of Directors of the EIC granted their workers the authority to trade in Asia despite the Company having a monopoly on English overseas commerce to Asia. This unusual arrangement saw employees function as overseas merchants for both the Company and themselves as well as the Company (Erikson, 2014).
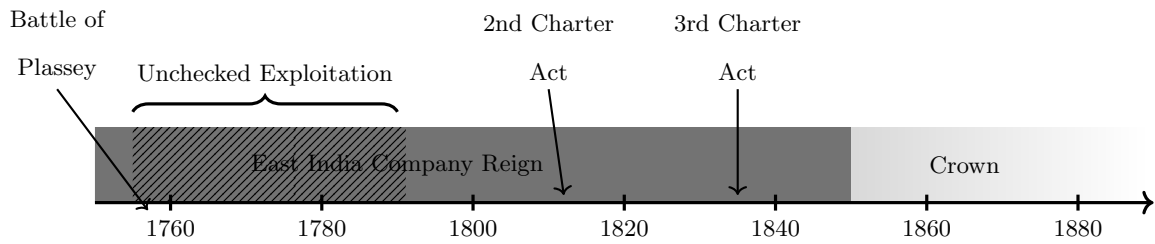
The British government was still alarmed at the exploitation that was taking place in the subcontinent albeit with a standoffish attitude towards it. The government stepped in to ensure that the subjects of its new colony were not put through such exploitation. In 1793, the Permanent Settlement Act was passed that formalized the revenue-sharing agreement between the EIC and the landlords (zamindars). This agreement was the first of many steps that the government took to limit the EIC's authority in the subcontinent. Since 1793 the state has had a restrictive effect on the powers of the EIC. The Charter Act of 1813 is one such legislation that acted as a stepping stone toward a freer market. The 1813 Act allowed British merchants to trade in India under a strict licensing system. It was the Charter Act of 1833 that spelled an end to the monopoly of the EIC and it is the unofficial legalization of the colonization of India. The Napoleonic Wars in Europe coincided with the opening of trade with India. It was subsequently followed by a rapid expansion in exports and imports. There had been a gradual evolution towards an EIC-less subcontinent. The final nail in the coffin came in 1857 right after the Sepoy Mutiny, where the Crown took all the matters related to the subcontinent into its own hands. Certain important changes have taken place since 1857 but for the purpose of this essay what is important is the Charter Act of 1813, which really opened the doors for *civilized exploitation*. The period of study has been the main focus for historians and economists alike for the nature of economic changes it witnessed. Deindustrialization is one of the major planks the case of the ills of colonialism is rested upon. This is hotly debated and rightly so as the push toward historical institutions to explain long-term growth gathers steam. But in the process of understanding deindustrialization, we neglect the impact of colonialism on the colonial master. Especially if we think of international trade as a zero-sum game then India being a peripheral country exporting raw materials to Britain stands to lose. Deindustrialization of India during this phase meant that India transitioned from a supplier of manufacturing products to a supplier of primary commodities. Even though India constituted a major share of the manufacturing

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Year	India	China	Rest of the Periphery	Developed Core
1750	24.5	32.8	15.7	27
1800	19.7	33.3	14.7	32.3
1830	17.6	29.8	13.3	39.5
1880	2.8	12.5	5.6	79.1
1913	1.4	3.6	2.5	92.5
1938	2.4	3.1	1.7	92.8

Table 1: Global Manufacturing Export Shares

product in the 18th century only for it to decline in the 19th century as Table I shows. It may not just be down to colonialism as there is plenty of evidence to suggest that the drain indeed could be caused by factors that are not entirely due to colonialization (Clingingsmith & Williamson, 2004).

However, my focus is not on this overly-researched branch of history. My focus is instead on how important was this drain in industrializing Britain. Table I still is important to highlight the increasing importance of the changing export basket. It is important in the context of how Britain evolved since its incursions into the underdeveloped world. That part of history is exiled to the annals of historical investigations. Yet this holds a lot of economic significance so this is an attempt from me to correctly put the economic argument to rest. As Patnaik (2017) also observes that the verbose authority on the economic colonial history of India - *Camdridge Economic History of India* there is not a mention of the unequal exchange between the two nations.

Drain of wealth

It has been popularized by economists today and the term has gained a lot of traction since as mainstream media has picked up on it (Hickel, 2018) too. It was initially expounded by nationalist writers Dadabhai Naoraji(1904) & RC Dutt(1904). Since then research on it has forged ahead and some have even presented estimates of the drain(Hamilton 1919; Sinha,1956). For the period of 1757-1815, the estimate Maddison(1971) provides is of £100 million which would amount to nearly £1.7 million every year. Habib (1974) provides us with an upper bound of my drain estimates, he puts the annual drain to be well over £2 million. Recently, Nogues-Marco (2022) discovered the peak occurred in 1822 and it totaled £4 million using EIC's financial books! A more moderate estimate in Cuenca Esteban (2001) is £1.01 million annually from 1784-1792. The foundation of the

drain hypothesis depends on the concept of unrequited exports, despite the fact that the estimates have varied. To understand it in brief I must invoke Utsa Patnaik's (2017) conception of the drain as hers to me remains the most lucid explanation. A substantial part of the total tax and other revenues from the colony was not spent in a manner you would expect an independent nation to spend. The modus operandi seems to be the following - the tax raised within the colony was used to reimburse the producers of the merchandise goods. At the same time being a colony also meant that most of the transactions had to go through the colonial government. This gave them a free hand in appropriating financial gold and foreign exchange earned through India's global net commodity exports.
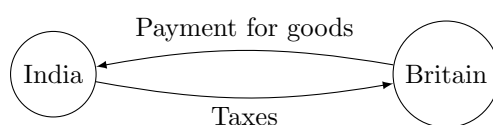
With the second charter Act in 1833, India's exports to Britain declined and imports increased as the stranglehold of the EIC was undone. After 1857, the Crown wanted to maximize India's merchandise exports to maximize gold and exchange earnings. The transfer of drain was essentialized by the fact that the product is equivalent to taxes paid in by colonized producers. External sale value was not accrued by the producers. In a setting where trade takes place with a non-colonized country, the surplus is negated with an outflow of specie. As the surplus in the case of a colonized country is not paid for, the surplus is the amount that is appropriated in toto. Britain's industrialization drive paid dividends in the 1840s as the imports of yarn and cloth increased. This reduced the initial export surplus enjoyed by India with Britain as we can see in Figure 1. But the global exports of India still remained. Now instead of rerouting the trade through the ports of Britain, the trade was directly conducted with the foreign destinations with which Britain maintained a trade deficit. Once the Crown took over in 1857, the British government issued rupee bills of exchange to foreign importers of Indian goods, against deposits of gold or their own currencies. This system of operation ensured that the exports out of India had deposits of gold to back up the bills issued. The producers that received these bills would receive the money from the amount already collected from the people of India in the form of taxes. The gold collected from foreign traders by the British left its shores. This was the essence of the colonial drain, where the payments to the producers took on a different role

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once the British became an industrial powerhouse. Hence, an approximation for the drain from the
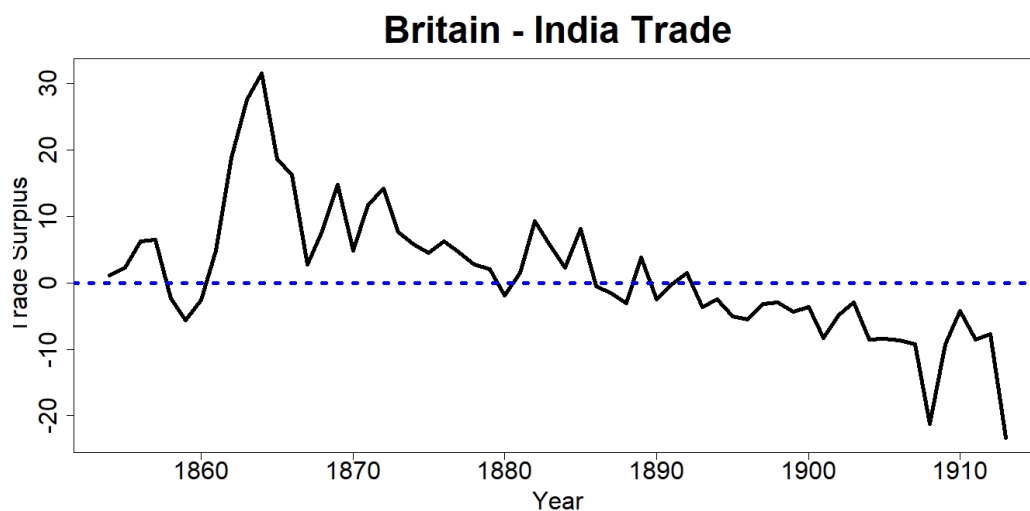

Figure 1: Declining exports, Source - *Mitchell, B. ed., 1998. International historical statistics: Europe 1750-1993. Springer.*

colony is the global net merchandise exports. I must also apprise the reader that all the aforesaid colonial drain theorists also formulated the drain as the excess of exports from India for which there was no equivalent import. Since the numbers from this period can be hard to measure, more so in the case of India I stick to minimizing the usage of subjective measures. Such subjective measures could be the wages or the general price levels of India during this period. Even the exchange rate of the Indian rupee underwent a depreciation in the 1870s. Adjusting for these changes and more so the consumer indices and wages earned seem to be too arduous a task especially when the accuracy of the measure is not the focus. Data collection prior to the British reign was minimal, but with the advent of British rule, data collection gained traction. Nominal figures from this period can be found in statistical abstracts recorded by officials then and compiled later by Chaudhari(1983). Converting any of these measures into real ones like terms of trade or real balance of payment would mean subjecting some of my research to subjectivity. To minimize this, I use a ratio of the nominal exports to nominal imports instead, this way I have a 'real' measure of some sort, while at the same time, I have a good estimate of the relative colonial drain from India. Eventually, I want to test the statistical significance on the Marxian growth indicators. The merchandise global exports surplus is

plotted in Figure 2. Some questions might be raised regarding the validity of this measure in terms of
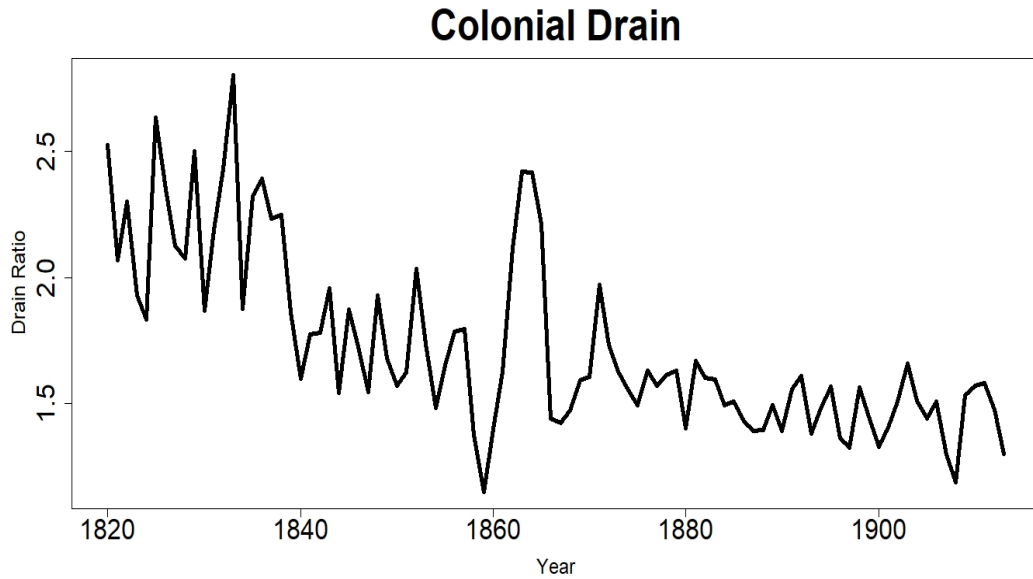
Colonial Drain

Figure 2: Colonial drain of wealth

magnitude. These concerns could be due to the magnitude being minimal. Based on the assumption that the trade was negligible, having a ratio of merchandise exports to imports will not be useful. The importance of India was not just as a supplier of raw materials but also as an absorber of British exports mainly cotton goods. India purchased approximately one-fifth of all British exports by 1870. India moved up from third to first among Britain's export markets between 1870 and 1913 (Moore, 1999). In reality, India held the key to Britain's whole payments pattern prior to the First World War, which is also the time of analysis for me, by balancing more than two-fifths of Britain's deficits (Saul, 1960). The magnitude of the drain can also be called into question in the grand scheme of things but the numerous drain estimations I have previously provided give much-needed credibility to my drain measure. I should also look to mainstream authors for inspiration and Bertocchi(2002) constructs her 'drain' variable as a ratio of GNP to GDP. She claims that " *The discrepancy between GNP and GDP reflects repatriated profits on foreign investment, royalties, and direct exploitation activities and therefore aims at the measure of the degree of penetration that the metropolis exerted, roughly, at the end of the colonial period*". My measure in a similar vein is a

measure of the exploitation of the colony. The difference between exports and imports represents unpaid income. Even though the ratio of GNP to GDP would have been ideal for me to test the robustness of my result, due to the unavailability of such data my ratio of exports to imports gives us the best alternative. After all, it lies in a sound accounting investigation done by drain theorists.
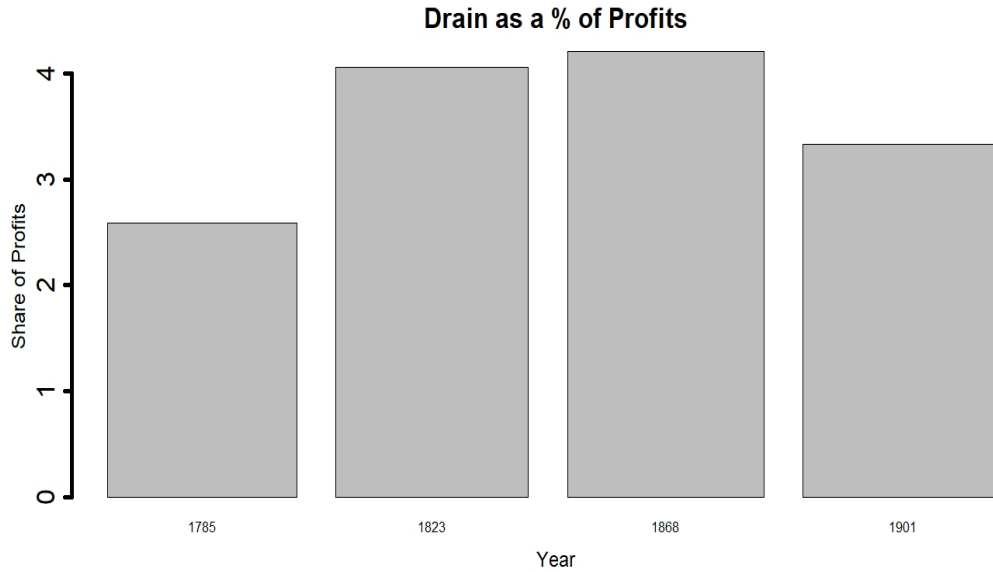

Figure 3: Computed by converting the rupee value to sterling

I must ask here what were the effects of this drain from India on the British economy? This Indian transfer appears to have had a significant impact, allowing Britain to pay off its foreign debt during crucial years before the French wars. Additionally, the transfer assisted Britain in creating the current account surplus required for foreign investment. At the same time, the unrequited transfers from Asia and the West Indies (Patnaik,2000) of the British empire was around 84.06% of British capital formation out of domestic savings. Even during the initial phases of British control of India, the drain was 'arguably least dispensable' & shows that it played a critical role in maintaining the British balance of payments which was under major stress in this period (Cuenca-Esteban, 2007). Nogues-Marco (2022) confirms this dispensability, the fiscal capacity of western nations has often been associated with their economic performance and the drain is a very plausible explanatory

factor for it. She discovers that by 1833, commercial debt had risen to about 10% of all British GDP, necessitating the transfer of almost 10% of British GDP from Britain to India. However, this did not occur, and the commercial debt evolved into unrequited exports. The broad case for a colonial stimulus is indeed very strong. There are some aspects that are indeed hard to quantify and one such aspect is the use of colonial manpower for the various activities Britain was involved in including the military outposts around the world and sugar plantations in the Caribbean. Lord Salisbury called India an English barrack from which the English may draw any number of troops without paying for them (Tomlinson, 1975)

The colonial drain constitutes an attempt by Britain to gain an advantage in commodity markets. This drain allowed Britain to export capital to Europe, North America, etc, there is certainly a link to be drawn between the prosperity in these regions and the drain from the tropical regions. It bifurcates the world economy into core and smaller peripheral countries. By and large, the world economy today has the same division that existed in the 19th century. The 18th century featured an expansion of unprecedented global trade and the roots of a clear division of countries into a core and a periphery appeared. My paper broadly deals with the tradition of research that seeks the historical origins of core-periphery. Unilateral free trade enabled Britain to consolidate and expand its role as a global hegemon and its empire bestowed upon it the riches of its lands despite running deficits (Arrighi et al, 2004). The world market was not exactly autonomous as made palpable by colonialism which restricted both capital and labor flows and Britain certainly uses it to its advantage of this positive balance of payments with India to sustain the world monetary role of sterling. (McMichael, 2000)

Many explanations for profitability exist but the role of trade has been downplayed until recently. As my paper deals with colonial drain, it is important to know the debates surrounding the role of trade. Mokyr(1977) emphasizes the 'homegrown' nature of growth while Harley (2004) asserts that "*self-sufficiency in 1860...would have cost Britain only...about 6 percent of national income*". McCloskey (2010) argues against the notion that trade was essential for British growth during the Industrial revolution. Mokyr (2009) says that even though trade was important it was ingenuity and innovativeness that drove exports and trade, not the other way around. Allen's (2009) thesis of a high-wage economy being the sole reason for the growth of Britain had placed success in international
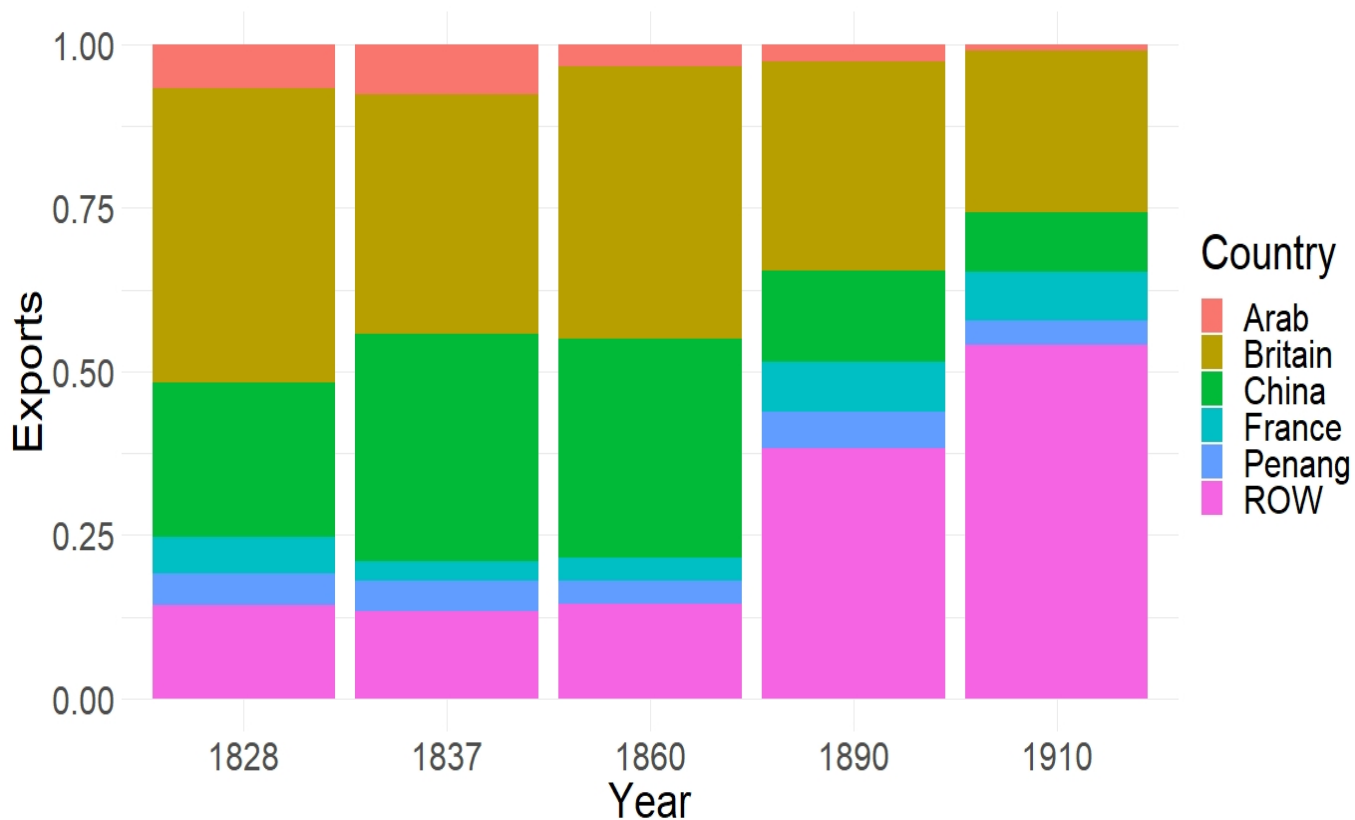
Figure 4: Global Export Shares of India, Arab = Arabian Peninsula; ROW = Rest of the World

trade as a predecessor of a high-wage economy. Profitability in the economy and gains from trade are also evidenced by the welfare effects of trade in the 1760s which were found to be very small but it had a large impact in the 1850s (Clark et al, 2014). My paper attempts to understand trade from a different perspective than that presented in other studies. Trade is seen as a process that propels economic growth and there is no denying that but what is lacking is the understanding of trade and exploitation of British colonies that were not entirely involved in the trade of human capital as other colonies were. How did the exploitation of such a colony help in averting economic crises in Britain? We shall see in the next section it was not merely a trade between two sovereign countries that led to a burgeoning economy. Rather, there is an appropriation of the total export surplus of India's economy. Figure 4 is a good representation of India's global export shares and it was not merely Britain that it was engaging in trade with. From a British point of view, the importance of

British sales of Indian opium to China rested in their facilitation of the transfer of Indian tribute to the metropolis. Bergensen (2015) illustrates the lacuna of multilateral complexity studies in world system research by pointing out this very triangular trade arrangement between Britain, India, and China. World systems researchers ought to be mindful of such complexities when considering an empirical investigation of the kind I undertake.

Crisis Theory & Colonialism

The theory of crisis is a core concept in the Marxist tradition. As aforementioned, the rate of profit is a key cog of a capitalist system and it is the foremost economic indicator used by Marxists of various strands in measuring the degree of crisis. The tendency of the profit rate is a Marxist law that has garnered a lot of attention from scholars over the years. Theoretically, the debate has evolved significantly while empirically this debate is still in its nascent stage. The profit rate is expressed as

$$r = \frac{s}{c + v} = s'(1 - q)$$

Differentiating the equation above totally

$$dr = ds' - (s'dq + qds')$$

Alternatively,

$$dr = -s'dq + ds'(1 - q)$$

where s is the surplus value, v is variable capital & c is the constant capital employed in an economy. q is the composition of capital. What we understand from all the debates surrounding the rate of profit is that there are components of s & q that vary over time and that determine the level of buoyancy in a capitalist economy. I restrain myself from engaging in the much-heated value theory debate as the investigation does not warrant much space and time for that debate. But what I would like to detail in this section is how s & q are loaded with both tendencies and countertendencies. It speaks directly to my broad project while it will also clarify to the reader the major determinants of the rate of profit in my context.

The tendency of the rate of profit to fall is mainly due to the nature of capitalist growth. Capitalism to Marx is a constant struggle for labor rights against the capital owners' wishes. When workers prevail in the economic class war, capital is more motivated to conduct one or more of the other speculative actions to raise the rate of profit. British history is enshrined with legislation that protects workers' rights. The factory acts that were passed throughout the 19th century are a case in point of the constant struggle for rights that Marx was alluding to in a capitalist system. This also makes capitalism a supranational idea, for exploitation can transcend borders. s in my formula above decreases owing to the promulgation of labor protection laws but it shows a counteracting force in the form of supranational exploitation. British imperialism shifted the arena for exploitation abroad with the petty commodity producer being the target. Going back to my formula, the decline of q is associated with labor-saving technical change as organizing capital to do the heavy lifting is a lot easier to do than labor. Additionally, Marx notes the possibility of capitalists taking steps outside of production to increase the rate of profit, by selling commodities overseas above their value, thus realizing an extra profit on the sale.

A firm is a profit-maximizing unit and when working atomistically, it threatens the very existence of capitalist society as it contributes to a decline in the rate of profit. Large enterprises process a larger amount of raw materials and semi-finished goods in any cycle of production, thereby contributing to the decline in the rate of profit. Nonetheless, collective action of capitalists can thwart any potential threat to its profits. It can collectively work together to lower the relative value of the machines and raw materials used in production. In addition, many Marxian economists (Moseley, 1997; Mandel, 1971) argue that the geographic spread of capitalism and the declining rate of profit are causally related. The desire for profits drives capitalists in more developed countries to look for markets with better profit margins by boosting international commerce and exporting capital. One argument for the increase in colonial trade investment is that it makes capitalists in developed nations wealthier because they can undercut rivals in developing nations who use inferior technology while still making a surplus profit by selling their goods above their own cost of production and below that of pre-capitalist producers. This has also been shown to be empirically true by Svedberg (1982). Another aspect of foreign trade is that it enables capitalists to source raw materials for cheap and it also helps in importing food from the colonized countries for cheap. Looking at it using math-

ematical notation, $W = VX$, X we have a vector of commodities that a worker consumes while W is the value of labor power and V is the value of the commodities the worker consumes. With foreign trade, we see a decrease in W as we see a decrease in V as the value of the materials expropriated from the colonies is cheaper. In Marx's own words - *"foreign trade partly cheapens the elements of constant capital, and partly the necessities of life for which the variable capital is exchanged, [thus] it tends to raise the rate of profit by increasing the rate of surplus-value and lowering the value of constant capital. It generally acts in this direction by permitting an expansion of the scale of production"*. Luxemburg (2015) contributes to it by highlighting the importance of acquiring cheap raw materials in the process of capital accumulation. Capital accumulation in advanced countries would come to a standstill due to the rising costs of raw materials. That being said, the role of foreign trade in the rate of profit dynamics is confusing. There are several reasons for it but the primary among them, to quote Marx again, *"the same influences which produce a tendency in the general rate of profit to fall, also call forth countereffects (via foreign trade and the export of capital), which hamper, retard, and partly paralyze this fall ... thus the law acts only as a tendency. And it is only under certain circumstances and only after long periods that its effects become more pronounced"*.

Although the crisis theory may help to explain the unequal relationship between trading partners, colonialism uses a different mechanism to maintain the relationship. Here I would like to present a very simple exposition from Patnaik(2017) for the benefit of the reader. Disregarding unequal exchange for a while, I have standard macroeconomic accounting of a country's budget of the following form

$$S - I = (G - T) + NX$$

where S & I are savings and investment respectively. G is government expenditure and T is the taxes on the producers of the colonized country. Here NX deserves our attention for it is through this very entry that wealth exited. Meanwhile, for every sovereign, there needs to be a balanced budget which is denoted by $T = G$. However, under colonization, balances are established differently. G is divided into GA & GD where GD stands for domestic government expenditure & GA is part of the budget set aside for expenditure abroad. The heading under which this was carried out as Home Charges and a very comprehensive discussion of it exists already(Naoraji,1904;Dutt, 1903; Tripathi,

1954). Coming back to NX, it is divided into NX_1 & NX_2 where the former is the standard export surplus that would exist in every sovereign nation, what differs in a colonized nation is the latter. 'NX_2 is the balance of invisibles imposed on the colony, arising solely from its colonial status and politically manipulated to be a large negative figure. The export earning expressed as NX_1 was offset by the invisibles imposed in the form of NX_2, this also implies $|NX_2| = GA$. Global export surplus earnings of the Indian producers were paid in council bills only, which were cashable in rupees. They were paid out of the budget set aside as GA, hence GA must equal NX_1, but this also meant a corresponding entry in a balance sheet, NX_2 fulfilled that role which as Patnaik(2017) mentions is a large negative entry. Paradoxically, the possibility of a nationalist accounting of the colonial power's exploitation of India was made possible by statistical data produced as part of colonial administration. Here, a more diligent take on the role of colonialism in averting crisis is needed. The addition of NX_2 into my analysis of colonialism makes the study all the more compelling on why colonialism ought to be studied. The countertendencies are usually seen in the export of manufactured goods or the import of raw materials into the country. The effect of both can be to a certain extent realized in capital stock or deviation of the real wage. Discerning that effect would entail simply looking at the exports and imports of Britain into and from India. The exploitation of a colony encompasses more than the trade between two partners. Instead, it is the usurpation of the total surplus accrued to the producers of India. Further research into a non-colonial world can dissect the effects of the more discussed underconsumptionist or overproduction Marxian theories. Therein also lies the beauty of Marx, it not only accentuates the theory of capitalist growth but it does so by realizing the place of historical specificity. Historical specificity considers the time period in focus, in this instance the period characterized by colonialism.

Empirical Investigation

Prior to a dive into the empirical details I would like to justify the need for such an exercise. It should be amply clear from Figure 3 that the drain constituted a not-so-insignificant chunk of profits in Britain. But the whole amount of the drain was not merely profits as "between 1858 and 1898, almost half of India's exports were used to settle its foreign debts: 20 percent went for the infamous

Home Charges, 30 percent covered payments to the private sector as interest and profits as their investments and other services to India" (Frank, 2014). These home charges were mostly used to pay debts, pensions, expenditures for the British India Office, and purchases of railroad equipment (Ziltener & Künzler, 2013). Disentangling the complex web of transactions is a herculean task, which is best for a different type of exercise. The channel through which it fertilized the economy is important as there could be different domestic consequences but what could be a precursor to it is to show there was a cumulative effect. Metaphorically, what is critical for my exercise is that these channels acted as distributaries that silted up the banks of the Thames.

As mentioned in the introduction how economic growth is understood in a Marxian sense, I try to capture profitability using the rate of profit. The computation of the rate of profit is explicitly stated in the next subsection. In a nutshell, I am interested in testing the statistical significance of the colonial drain on the rate of profit. It is important to control for all the confounding factors affecting the rate of profit. I can see here in Figure 3 that there seems to be a positive correlation between the rate of profit and colonial drain. Meanwhile, Daunton's (1989) period of analysis of the political economy of trade liberalization is the period of analysis for me as well, from 1820 to 1914. These are the years that really characterized the coming of age of the industrialist class. Since the preliminaries are out of the way, there are some other justifications that need to be provided for it to be clear to the reader why this method is correct. Running an OLS, though important to determine the long-run interpretation of it will not be conclusive as the error terms will be non-stationary and any inference based on the standard errors will not be valid. As my data is mainly time-variant and has only one unit I use two time series regressional methods, to account for spurious correlation. As laid down in Hamilton(1994), the cures for spurious correlation comprise taking lags of both the dependent variables and the independent variables. An OLS regression on this would yield consistent estimates. The second is to difference all the variables and estimate the relation. Lastly, differencing just the non-stationary variables would also yield consistent estimates. The issue with the first method could be that my standard t-test will still be valid as the coefficients of the estimated regression will converge to a normal distribution but the F test would be invalid as the limiting distribution will be non-standard. The importance will be clearer to us when I present the results of my model. I can produce a cointegrating vector in this manner(Hamilton, 1994). Under

Imagerialism and Growth
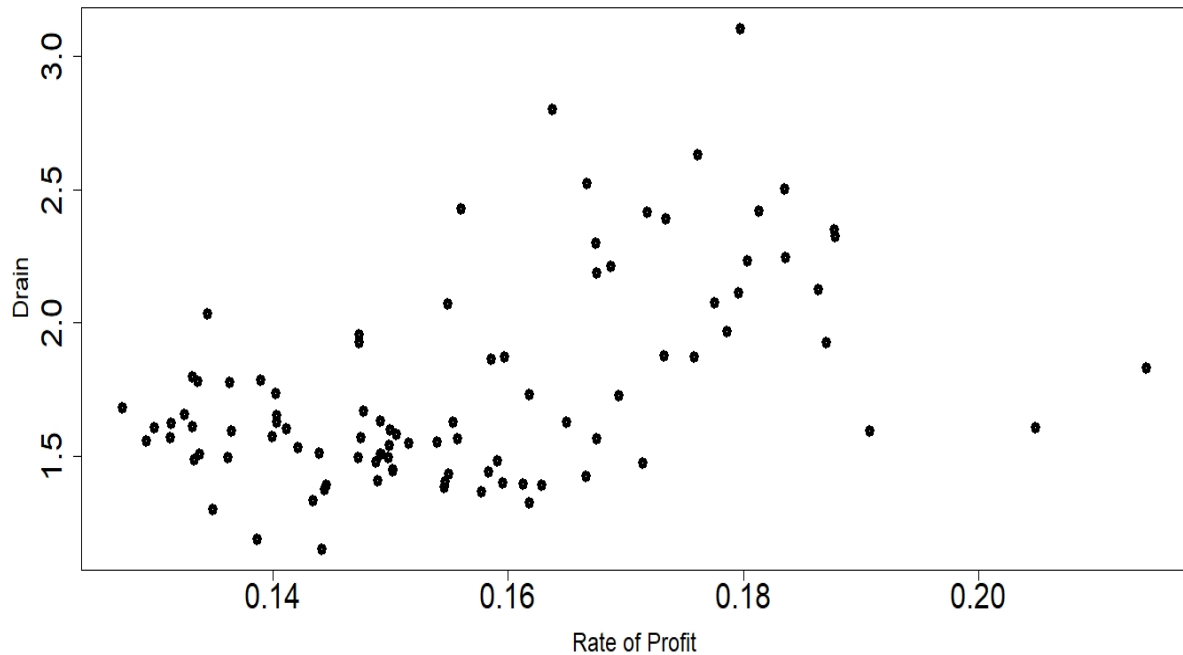
this method, I shall run a regression of the following form

$$y_t = \alpha + \gamma_1 y_{t-1} + \beta_p X_{t-p} + e_t \tag{1}$$

where X is the vector of independent variables and e_t is the error term while p is the number of lags. This will be the main regression for me while I provide a method as a robustness check for the method above. The reason I use the second method as a robustness check instead of it being a primary method has to do with the strong exogeneity assumptions it requires for it to be valid (Pesaran & Shin, 1995). This is the method of Autoregressive Distributed Lag (ARDL) model which is well suited for a set of variables where some do not have a unit root and some do first propounded by Pesaran & Shin(1995). For both methods, I need to lay out some tests of each of the variables. I need to ensure that none of the variables are integrated of order 2 i.e. they are not I(2), as that will deem the ARDL model unfit for this analysis. The ARDL model relies on error correction modeling.

The model can be specified as shown below

$$\Delta lny_t = \alpha_0 + \sum_{i=1}^{p} \alpha_1 \Delta lny_{t-i} + \sum_{i=1}^{p} \alpha_2 \Delta lnx_{1,t-i} + \sum_{i=1}^{p} \alpha_3 \Delta lnx_{2,t-i}$$
$$+ \sum_{i=1}^{p} \alpha_4 \Delta lnx_{3,t-i} + \sum_{i=1}^{p} \alpha_5 \Delta lnx_{4,t-i} + \sum_{i=1}^{p} \alpha_6 \Delta lnz_{t-i}$$
$$+ \lambda_1 y_{t-1} + \lambda_2 x_{1,t-1} + \lambda_3 x_{2,t-1} + \lambda_4 x_{3,t-1} + \lambda_5 x_{4,t-1} + \lambda_6 z_{t-1} + e_t$$

On the right hand side, the expression from λ_1 to λ_5 renders the long run relationship while α_1 to α_5 gives us the short run dynamics. α_0 is the drift component and e_t is Gaussian white noise. In the first step, I estimate my ARDL specification using OLS. I also test for the existence of a long-run relationship. This is also called the bounds test where I test the joint significance of the λ's and check the upper and the lower bounds critical values(Table in Appendix). If the statistic exceeds the upper critical value, then the null hypothesis of no cointegration will be rejected. If not rejected, I can proceed to estimate the long-run relationship using the ARDL model. The error correction model is estimated in the next step, the model can be written as

$$\Delta y = \beta_0 + \sum_{i=1}^{p} \delta_1 \Delta lny_{t-i} + \sum_{i=1}^{p} \psi_{1,i} \Delta lnX_{t-i} + \omega EC_{t-1}$$

Construction of Variables

To develop the model I need to control for the countertendencies and as is the case with historical studies, data is often scarce. First and foremost is the construction of the rate of profit. The rate of profit can be defined as the total profits divided by capital stock. Some rate of profit estimates from this period do exist but I arrive at my estimates by drawing from the latest developments in research in macroeconomic indicators for this period. The land income, which was large at the time and had a vital role in Ricardo's theory, is not taken into consideration in Maito's (2014) estimations. Allen's (2009) influential paper has the rate of profit estimates but they differ significantly from mine since he uses real indices rather than nominal figures that are collected from primary sources. Converting nominal figures to real implies an increase in the number of assumptions made by the author.

Especially when the rate of profit is a ratio I can make use of the nominal figures to manufacture a real measure. Moreover, in Clark(2009) I can find wage shares from this period so I do not have to resort to additional assumptions for the purpose of construction of my wage series. Using Profits = Total Income - Total Rent - Total Wages I should be able to get a rough measure of total profits. To a certain extent, I imitate Allen's method. Following Allen, I use land rents from Clark(2002), the quinquennial nominal rent per acre is presented in his paper. Allen uses the real index from the same paper while I turn to the nominal measures. I also use acreage of arable land from Allen(2005) for England & Wales. As is the case in Allen (2009) I account for Scotland by increasing the land acreage of England & Wales by 12%. Nominal capital stock measures and its depreciation can be found in Feinstein(1988). For the period before 1830, I assume a depreciation rate of 2.4%. Constructing

British Rate of Profit
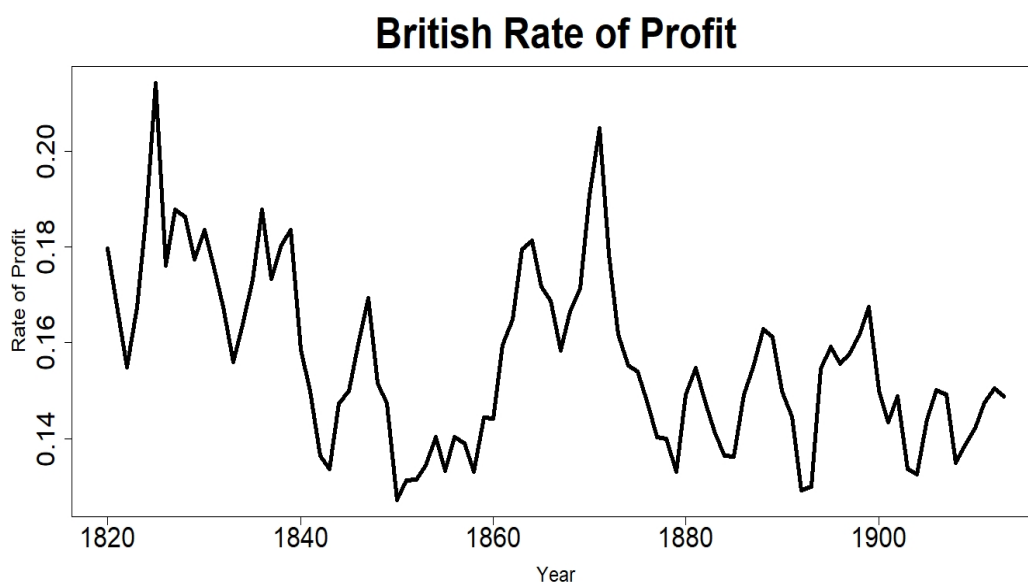
Figure 5: Rate of Profit - 1820 to 1914

Marxian variables can often be challenging and I certainly do not wish to challenge to status quo in this regard. I use long-standing techniques to do so. In light of the paucity of data some controls that are used in Alexiou(2022), who perform a very similar exercise to Basu & Manolakas(2013), can not be used hence I select the latter's techniques for my confounding variables. Here is a brief summary of it -

- Intensity of Exploitation - Using productivity of worker per hour, I calculate the deviations of the Hodricks Prescott(HP) filter with a smoothing parameter of 6.25. Additionally, I also use the Pigouvian rate of exploitation defined as the ratio of marginal product of labor and real wages. Another variable would be simply the monetary expression of labour time(melt) which is the ratio of the total money price of output to the total labour time value of the output. The factory acts in Britain put the spotlight on labor exploitation, more specifically the poor working conditions and long working hours. The collection of hours data is a relic of these factory acts but it begins much later than the starting year of my analysis. This precludes the usage of melt. I control using a different representation of exploitation, which is Pigouvian exploitation. This is calculated as the marginal product of labor divided by real wages (Persky & Tsang, 1974).

- Overpopulation - I use the unemployment statistics computed by Feinstein(1988).

- Relative Price of constant capital - Nominal capital stock divided by real capital stock is a rough approximation of the price of capital stock. To make it uniform across time I divide it further by the consumer price index. Alexiou's (2022) prefers capacity utilization for this signifies the productivity of capital in price terms and in order to consider inflation he introduces the consumer price index to his regression. This would mean introducing at most 4 new variables assuming both of them are non-stationary. To preserve degrees of freedom I select the relative price of capital as explained before. Moreover, I see a more direct relationship between capacity utilization and the drain of wealth. When we think about how aggregate demand in an economy is determined then the drain of wealth certainly pushes the demand frontier up. Most of the drain was distributed as salaries, repatriated profits etc. Whereas the link between the drain of wealth and my measure of relative price is more indirect.

- Deviation of real wage - Using the HP filter I find the deviations from the smoothed line and the real wages. This is used as added control and since I have already included an exploitation measure but for the sake of completeness I include this.

Diagnostics & Results

I perform the unit root tests for each of my variables. As stated earlier, determining the presence of a unit root is vital for the proper functioning of this regression. My results show that with the exception of the intensity of exploitation and deviation of real wage all other variables are non-stationary. This confirms the validity of my regressional method as I now have a combination of I(0) and I(1) variables.

Unit Root Tests			
Variable	ADF	KPSS	Order
Rate of Profit(y)	0.5775	0.6403**	1
Intensity of Exploitation(x_1)	-7.783***	0.0543	0
Overpopulation(x_2)	-0.8463	0.6827**	1
Price of Capital Stock(x_3)	0.5217	0.8798***	1
Deviation of Real Wage(x_4)	-7.5704***	0.0193	0
Drain(z)	-1.569	1.7794***	1
Pigouvian Exploitation	-2.4862**	0.2267	0

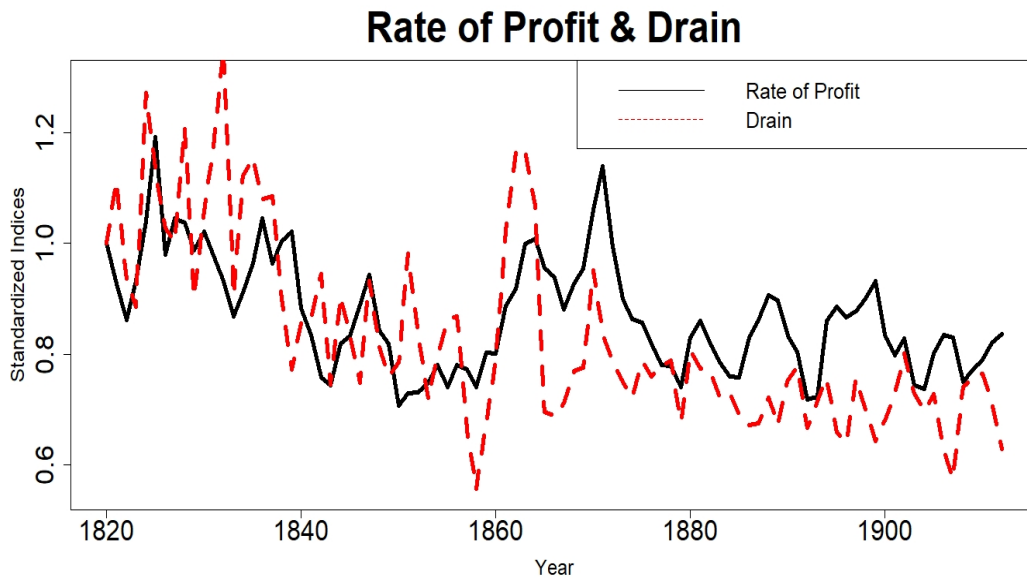Table 2: *** & ** denotes the level of significance at 1% and 5% respectively

Figure 6: Standardized Rate of Profit & Drain, both series standardized by setting year 1820 as 1

I receive a green signal from the unit root tests and I can now perform a test to find the direction

of causality. There could be an argument made about an increasing rate of profit translating into a higher drain which would make my estimates inconsistent. One way to gauge it would be through exploratory means and looking at the trends of each in Figure 6. Figure 6 is an damning graphical evidence of the close relationship between the rate of profit and foreign trade. The peak of colonial drain immediately after the crown takeover of 1857 is followed by a significant jump in the rate of profit. To the naked eye, the colonial drain precede rate of profit, though it is solely a visual test and nothing more. In order to confirm this I need to apply some rigorous tests instead. The standard Granger causality test uses a Wald test to test linear restrictions on the parameters of a VAR model, and when (some of) the data are non-stationary, then the Wald test statistic does not follow its usual asymptotic chi-square distribution under the null. To correct for that, I use the Toda & Yamomato(1995) approach to test causality between the two time series - rate of profit & colonial drain (results in Table 3). I validate my regression further as I determine the direction of causality between the two variables I are interested in.

Table 3: Toda Yamomato Test

Direction	χ^2	$P(>\chi^2)$
ROP -> Drain	1.7	0.19
Drain -> ROP	75.6	0.00***

My main regression from Table 4 confirms the hypothesis that colonial drain was indeed important in profitability. The result shows that an increase in colonial drain by 1% increase the rate of profit by nearly 9 percentage points. For the regression to be valid, we need to make sure that the residuals it generates are stationary. In Table A1, the test for stationarity proves that the residuals are indeed stationary. Another issue could be that of heteroskedasticity. Using the Breusch Pagan Test, the χ^2 test statistic shows that there are no problems of heteroskedasticity, thereby corroborating my findings. A more robust test would also be the test for serial correlation of residuals which are shown in Table A3. As suggested by Hamilton(1994), three ways of curing spurious regression could be differencing all the variables, taking lags of all the variables or the method I adopt i.e. lagging only the non-stationary variables. The advantage of the last method was its ability to produce limiting F distributions for us to carry out F tests. Figure 2 highlights the importance of an F Test,

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	Dependent variable: Rate of Profit		
	Lag I(1)'s	All Lagged	Differences
Trend	−0.0001	−0.0001	
	(0.0003)	(0.0003)	
Rate of Profit$_{t-1}$	0.731***	0.757***	
	(0.067)	(0.066)	
Surplus Population$_t$	−0.103***	−0.094***	−0.091***
	(0.014)	(0.014)	(0.014)
Surplus Population$_{t-1}$	0.073***	0.063***	
	(0.017)	(0.017)	
Drain$_t$	0.004	0.013	−0.037
	(0.044)	(0.043)	(0.036)
Drain$_{t-1}$	0.091**	0.080*	
	(0.043)	(0.042)	
Relative Price of Capital$_t$	−0.518***	−0.526***	−0.476***
	(0.111)	(0.108)	(0.098)
Relative Price of Capital$_{t-1}$	0.464***	0.474***	
	(0.107)	(0.105)	
Intensity of Exploitation$_{t-1}$	0.272***	0.229***	0.230***
	(0.068)	(0.068)	(0.044)
Intensity of Exploitation$_{t-1}$		−0.169**	
		(0.070)	
Constant	−0.267	−0.225	−0.002
	(0.390)	(0.380)	(0.005)
Observations	94	94	93
R^2	0.849	0.859	0.547
Adjusted R^2	0.833	0.842	0.526

Note: *p<0.1; **p<0.05; ***p<0.01

Table 4: Main Regression

since the drain did not have a smooth trend the question that becomes of interest is whether the colonial drain could be called to have a long-term effect on the rate of profit.

The long-run effect is tested with a joint significance test (Table A2) of $log(drain)_{t-1}+log(drain)_t = 0$. A long-run relationship does exist between colonial drain and the rate of profit as the null hypothesis of no relationship can be rejected at the 5% level of significance. The other countertendencies have the expected signs as Basu & Manolakas(2013).I choose the order of the ARDL model using the order suggested by the minimum Akaike Information Criterion(AIC). The suggested order was (1,1,1,2,1) with the order of rate of profit, overpopulation, relative price of capital stock, colonial drain & intensity of exploitation. I have only presented the long-run estimates for its otiose to mention the short-run estimates. It acts as a robustness check for my method above, this only strengthens my previous finding. The highly negative and statistically significant coefficient of error correction signifies a quick adjustment to the long-run equilibrium (Table A4). Another check of robustness would be the several indicators of exploitation I employ, the results of which are presented in Table A5.

Conclusion

Oftentimes an erroneous narrative is peddled by some authors that colonialism was a drain on the resources of the colonial master, most notably by Milton Friedman. Such a narrative is highly contested of course but colonial apologists often align in spirit with it. My paper adopts a Marxian approach to show that only did colonialism help Britain but the drain of resources from India that did so. Colonialism as we understand may not be a zero-sum game and this detail is an essential component of our understanding of the differences between a colonial country and a sovereign nation. The intertwining of theory and facts is spelled out in my essay, and a colonial country functions differently from a sovereign nation. Such differences call for different methods of examining the role of trade. The drain of resources from colonies may have differed and that needs accounting for. In my case, colonialism operated through some clever accounting of national accounts whereas the unequal exchange between the core and periphery today consists of a very different form of exploitation. The essay does not just aim to disprove the naysayers of the benefit of colonialism but

also to shift current discourse surrounding the role of colonialism and its effects on the colonized as the Indian Marxist tradition has certainly done so. One benefit of the method adopted by me is that the coefficients are interpretable, I find that an increase in colonial drain by 1% increases the rate of profit in Britain by 9 percentage points. This is confirmed by several robustness checks I run, including several quantitative measures of domestic exploitation and a different method.

Maintaining its status as a global hegemon ensues exploitation of the peripheral countries on a consistent basis. My results simply highlight the credibility of the world systems theory. This credibility in my essay is channelized through an examination of the rate of profit which is the foundation of what Marx claims is the single most important law of political economy - the falling rate of profit. There is certainly a lot to be uncovered when undertaking an exercise of this size and importance. There are many gaps to be filled in this line of research but I hope this essay stimulates a discussion that covers all the nuances of the study.

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Appendix

Unit Root Tests of Residuals		
Regression	ADF	Order
Lagging I(1)'s	-6.5294***	0
Deviation from Real Wage	-6.508 ***	0
Pigouvian Exploitation	-6.9438***	0

Table A1: *** & ** denotes the level of significance at 1% and 5% respectively

Table A2: Joint Significance of $Drain_t + Drain_{t-1}$

Variable	Statistic	P-Value
Pigouvian Exploitation	4.2375	0.043**
Intensity of Exploitation	3.7279	0.050**
Deviation from Real Wage	3.8775	0.05277*

Table A3: Breusch Godfrey Test for Serial Correlation

Variable	Statistic	P-Value
Pigouvian Exploitation	0.08122	0.994
Intensity of Exploitation	0.9009	0.8252
Deviation from Real Wage	0.8343	0.8412

Variable	Estimate	Std.Error	T-Statistic	P Value
Intercept	-1.1296	1.69067	-0.6681	0.505
Overpopulation	-0.1207	0.0463	-2.6055	0.0109*
Drain	0.4482	0.1289	3.47661	0.0001***
Intensity of Exploitation	-1.274	0.865	-1.4722	0.144
Relative Price of Capital Stock	-0.1785	0.3714	-0.4805	0.632
Error Correction Term	-0.222	0.051507	-4.312	0.0004***

Table A4: ARDL Long Run Estimates & Speed of Adjustment

	Dependent variable: Rate of Profit		
	(1)	(2)	(3)
Drain_t	0.004	0.024	0.002
	(0.044)	(0.043)	(0.044)
Drain_{t-1}	0.091**	0.078*	0.095**
	(0.043)	(0.043)	(0.044)
Intensity of Exploitation_t	0.272***		0.264***
	(0.068)		(0.069)
Pigouvian Exploitation_t		0.083***	
		(0.021)	
Deviation from Real Wage_t			0.004
			(0.005)
Constant	−0.267	−0.267	−0.059
	(0.390)	(0.391)	(0.489)
Observations	94	94	94
R^2	0.849	0.849	0.850
Adjusted R^2	0.833	0.832	0.832
Note:	*p<0.1; **p<0.05; ***p<0.01		

Table A5: Further robustness check by controlling for different kinds of exploitation with all other controls specified in my main regression as in Table 4