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# Assessing the Role of Trade in Shaping the Great Divergence between Imperial China and Western Europe

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## **Abstract**

This paper examines the role of international trade in shaping the economic development of Imperial China and Western Europe, focusing on the 50 years following the Opium War, a pivotal moment in the Great Divergence. Utilizing newly discovered primary data from Chinese Customs records, this study explores how trade dynamics—including volume, volatility, and product categories—interacted with political, institutional, and colonial factors. While trade significantly boosted industrialization in Western Europe, China’s weak institutions and colonial exploitation made it particularly vulnerable to trade fluctuations. Unlike other peripheral economies that experienced deindustrialization, China faced economic instability without industrial decline due to deteriorating trade terms. Trade, acting as an influence amplifier, magnified China’s institutional weaknesses, further deepening the divergence between China and the West. This paper contributes fresh insights into the broader impact of trade on the Great Divergence and offers practical lessons for underdeveloped regions today.

## **1. Introduction**

The Great Divergence refers to the process by which Western Europe outpaced the Middle East and Asia in economic development, technological innovation, and overall societal advancement. Significant academic debate has surrounded the causes of this divergence, particularly between China and Western Europe, with scholars considering cultural, geographical, military and political factors. The primary goal of this paper is to assess the role of international trade in the economic development of Imperial China and Western Europe and how it contributed to the Great Divergence over a 50-year period following the Opium War. By utilizing newly unstudied primary data from Chinese Customs archival records on import and export tariffs, and comparing them with trade indicators

from Western Europe, this study will explore various trade perspectives including trade volume, volatility, balance, product categories, tax distribution, regional variations, and government trade policies to provide insights into how trade dynamics influenced the Great Divergence.

The selection of post-Opium War China as a case study is justified for several reasons. First, China is a representative example of peripheral economies involved in the Great Divergence.<sup>1</sup> At that time, China's limited industrialization, weak political institutions, technological lag, and experiences with colonialism and external control typified the challenges faced by other underdeveloped countries. Analysing China provides an opportunity to explore the broader impact of trade on peripheral countries during the Great Divergence. Second, China's situation after the Opium War is uniquely valuable for research. The war forced China to open its door to foreign trade, making a significant departure from its previous isolationist policy.<sup>2</sup> Prior to this, international trade had minimal impact on China's economy. Following the Opium War, China's trade policies and forms were heavily influenced by the global market and colonial powers, making this a pivotal moment in its history.<sup>3</sup> Studying this period allows for a deeper understanding of how trade, in combination with political, institutional, and colonial factors, contributed to widening the Great Divergence. Moreover, scholars have debated the timing of the Great Divergence. While conventional views hold that Western Europe began to distinguish itself in the 15th and 16th centuries, the "California school" argues that the most significant divergence occurred in the 19th century. The 19th century is not only the starting point of great changes in China and the opening of trade, but also

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<sup>1</sup> Jeffrey G. Williamson, "Globalization and the Great Divergence: Terms of Trade Booms, Volatility and the Poor Periphery, 1782-1913," *European review of economic history* 12, no. 3 (2008): 364, Web.

<sup>2</sup> Xianglong Tang, *Statistics of Customs Taxation and Distribution in China*. (Beijing: Zhonghua Book Company Press, 1992), 11.

<sup>3</sup> Wolfgang Keller, and Carol H. Shiue, "China's Foreign Trade and Investment, 1800-1950" (Working Paper 27558, National Bureau Of Economic Research, 2020), 11.

the time when the Great Divergence reached its climax, so this period seems ideal for examining trade's role in the Great Divergence. Therefore, focusing on this specific period of China will help fill gaps in the existing literature.

This paper aims to contribute several new perspectives to the current body of research. First, the most striking point is that it introduces a novel data set—Chinese customs tax records—to estimate trade quotas. This archival data offers a more reliable source and provides a fresh perspective for trade research. In other words, by analysing trade from the perspective of tax revenue, this study can address government trade management, types of trade, distribution of tax revenue, and regional differences among different customs offices. Studying trade in this way aligns with the “holistic approach” advocated in the literature.<sup>4</sup>

In addition, by focusing on China during the Opium War, this paper not only confirms and responds to existing literature on the general impact of trade on peripheral economies in the Great Divergence, but also analyses China's unique trade-related impact mechanisms. There are two common influences of trade on marginal countries in the Great Divergence in the literature: one is the deindustrialization due to specialization (the “asymmetry hypothesis”) and the other is economic instability caused by trade fluctuations. This paper argues that, given China's deteriorating terms of trade during this period, the first mechanism did not apply to China, though the second did. At the same time, combined with the actual situation of China, this paper puts forward the view that trade magnifies the impact of institutional weaknesses on China's economy, thus exacerbating the Great Divergence.

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<sup>4</sup> Kenneth Pomeranz, “Introduction: Comparisons, Connections, and Narratives of European Economic Development,” in *The great divergence: China, Europe, and the making of the modern world economy*, ed. K. Pomeranz (N.J: Princeton University Press, 2000), 11-12.

Lastly, the issues this paper addresses are of great practical significance, particularly for less developed countries. While this article does not seek to overstate the role of trade in promoting the Great Divergence or portray it as a decisive factor, it explores how trade interacts with other elements in shaping economic development. In the case of China, its weak economic structure and government institutions made the whole country especially vulnerable to the disruptive effects of trade, which in turn impacted education, human resources, public infrastructure, and living standards. These lessons should serve as a cautionary tale for other underdeveloped regions.

This paper is structured as follows: a review of relevant literature, an outline of the methodology, presentation and analysis of the results, followed by the conclusion.

## **2. Literature Review**

This literature review assesses the impact of trade on the Great Divergence between Imperial China and the West after the 1800s. First, it discusses studies focused on trade before the 19th century, followed by research examining trade's influence in the period after the 19th century, which tends to adopt a more theoretical and systematic approach. Lastly, it reviews literature on other contributing factors to the Great Divergence. While many studies emphasize the importance of a comprehensive approach, one of the main limitations in the existing literature is the lack of detailed research addressing the historical specifics and unique context of China during this critical period.

### 2.1 Trade effects on the Great Divergence before the 1800s

#### *2.1.1 The trade role in solving land shortages: Pomeranz's point of view*

Kenneth Pomeranz's seminal work, *The Great Divergence: China, Europe, and*

*the Making of the Modern World Economy (2000)*, highlights an interactive, holistic approach beyond Eurocentrism to view the influential factors, which is quite helpful to, for one thing, understanding how various elements worked together in shaping the whole picture, for another, differentiating the effect of trade between distinct periods.

This illuminating work stands out in the literature because it offers valuable perspectives on defining the timing of the Great Divergence, as well as viewing the question comprehensively. Instead of being Eurocentrism, he contends that up until the late eighteenth century, parts of China, particularly the Yangzi Delta, were comparable to the most advanced regions of Europe in terms of agricultural productivity, life expectancy, living standards, proto-industrialization developments and even institution sophistication.<sup>5</sup> These similarities between the West and East seem to convince that the Great Divergence occurred until nineteenth century and undermine the possibility of one dominant unit of factor in contributing to the divergence, calling for a more complicated explanatory method—‘encompassing comparison’.<sup>6</sup> Under this comprehensive comparison methodology, the role played by certain factors, such as market-driven growth, is no longer exaggerated to explain the whole story, but all factors are analysed in the context of global conjectures. The interacting system demonstrated by Pomeranz includes both internal and external factors, such as trade with the Americas, advantageous location of coal, government institutions and regional cultural practices, which collaboratively favoured Europe’s development path in solving the primary problem before the nineteenth century—land shortages.<sup>7</sup>

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<sup>5</sup> Kenneth Pomeranz, “Introduction: Comparisons, Connections,” 12-13.

<sup>6</sup> Harry G. Johnson, “Aspects of Tropical Trade, 1883–1965. The Wicksell Lectures,” *Journal of international economics* 1, no. 1 (1971): 131, Web.

<sup>7</sup> Kenneth Pomeranz, “Introduction: Comparisons, Connections,” 17-23.

From the perspective of addressing the limitations of land shortage is the main tone of this work to measure the role of trade in pre-19th century Europe. Specifically, before the steam age, long-distance trade in Europe played limited roles in addressing demographic obstacles because of expensive transport costs and low market demand; however, during industrialization, European trade with the New World significantly alleviated land constraints by acquiring American resources. This trade led to population growth, shifted labour and specialized manufacturing away from agriculture.<sup>8</sup> As a result, Europe relied more on increased imports rather than maximizing agricultural yields while the Asian World still confronted simple Smithian market dynamics. However, according to Pomeranz, it is worth noticing that trade effects varied between different time periods and should be considered within specific context with the interplay of factors. The following will discuss in detail what roles trade played in enabling Europe to develop along resource-intensive, labour-saving trajectories that were unavailable to China.

While Pomeranz argues that the divergence was not inevitable and emphasizes the role of contingency, it does offer some thoughts on different roles of trade in shaping the Great Divergence between West and East.<sup>9</sup> Until the nineteenth century, the biggest challenge for both western and eastern economic growth lay in conflicts between land shortages and population growth, or in other words, Malthusian constraints. As for Europe, although there are evident signs of proto-industrial poverty in both Europe and China before the nineteenth century, afterwards the former achieved unexpected progress in trade with the assistance of newly-invented transportation and land management techniques.<sup>10</sup> With its distinctive mix of relatively free labour, large and productive urban populations, merchants and governments that supported trade, Europe greatly benefited from

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<sup>8</sup> Kenneth Pomeranz, "Introduction: Comparisons, Connections," 17-23.

<sup>9</sup> Kenneth Pomeranz, "Introduction: Comparisons, Connections."

<sup>10</sup> Kenneth Pomeranz, "Introduction: Comparisons, Connections," 17-23.

trading manufactured exports for land-intensive products, which increased the flexibility of its limited land supply and reduced its significance as an issue during industrialization.<sup>11</sup> In this way, Europe acquired resources through trade, otherwise they could only keep increasing output in a traditional proto-industrial way. To some extent, it was the emergence of efficient trades and competitive markets that made Europe a capable economy.<sup>12</sup>

In comparison, Pomeranz also explains why China did not have the same trade pattern as Europe before the 19th century. Since population growth in China after 1750 was primarily concentrated in peripheral regions, there were fewer resource surpluses available in those areas for export to the resource-hungry cores regions.<sup>13</sup> For instance, as peripheral areas experienced their own population and proto-industrial growth, they were unable to supply enough materials to the leading region, such as the Yangtze River, in a complementary manner. Also, some of the growing population in the marginal regions became involved in proto-industries, which reduced the demand for trade with the core areas.<sup>14</sup> Additionally, while the demand for imports in European slave regions was significantly higher to maintain the subsistence of the enslaved population, local producers in Southeast Asia primarily met their own basic needs and rarely had the purchasing power for anything beyond that.<sup>15</sup> This means that not only did their need to import manufactured goods decrease, but the surplus of export products also diminished. As a consequence, the development of China's leading regions could not be further expanded and continued to be limited by land shortages.

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<sup>11</sup> Kenneth Pomeranz, "Introduction: Comparisons, Connections," 14-15.

<sup>12</sup> Daron Acemoglu, Simon Johnson, and James Robinson, "The Rise of Europe: Atlantic Trade, Institutional Change, and Economic Growth," *The American economic review* 95, no 3 (2005): 546, Web.

<sup>13</sup> Kenneth Pomeranz, "Introduction: Comparisons, Connections," 13-14.

<sup>14</sup> Kenneth Pomeranz, "Introduction: Comparisons, Connections," 13-14.

<sup>15</sup> Kenneth Pomeranz, "Introduction: Comparisons, Connections," 17-23.



In summary, Pomeranz's work enhances the foundation of my study. First, at the time point of the Great Divergence, it justifies my choice of studying the nineteenth century, because the divergence was not obvious before that. Second, from the unique perspective of solving land shortage, the impact of trade on China and the West before the 19th century is analysed, which provides a complete historical background for my study. Finally, it is insightful to move beyond Eurocentrism to a holistic approach.

Nevertheless, there are some research gaps leaving untouched. For one thing, the book highlights the role of trade in addressing land constraints, but it does not delve into its broader effects, such as improving resource allocation efficiency, accumulating wealth, alleviating poverty and exacerbating inequality. For another, although the book examines why trade demand in China did not follow the European pattern, it does not address the negative impacts of forced trade in China after the 1800s.

### *2.1.2 Globalization and the Great Divergence (Pim de Zwart's arguments)*

If Pomeranz's work describes the initial impact of early trade on the formation of the Great Divergence, de Zwart goes further. In his book, *Globalization and the Colonial Origins of the Great Divergence (2016)*, de Zwart challenges traditional perspectives and uncovers substantial evidence of global commodity market integration—an essential aspect of globalization—prior to the 1800s. Its investigation of the Dutch East India Company confirms the potential benefits of trade through absolute advantage and specialization, as argued by Adam Smith.<sup>16</sup> The impact of this early globalization, along with its accompanying colonialism, differed across and within regions, influencing economic outcomes and contributing to the Great Divergence.

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<sup>16</sup> Pim De Zwart, "Introduction," in *Globalization and the Colonial Origins of the Great Divergence: Intercontinental Trade and Living Standards in the Dutch East India Company's Commercial Empire, c. 1600-1800*. 1st ed. Leiden (Brill, 2016), 1-2.

De Zwart's development of views on international trade and the Great Divergence draws on the views of many previous scholars. Similar as Immanuel Wallerstein and Andre Gunder Frank suggested, this international trade altered intercontinental specialization and established a global division of labour.<sup>17</sup> This shift increased national incomes and reduced poverty in European countries, while disadvantaged peripheral regions, thereby exacerbating global economic inequality. Williamson also supports this link between trade and the Great Divergence, arguing that while the terms of trade shifted in favour of Western Europe, they had adverse effects on the rest of the world.<sup>18</sup> Additionally, Parthasarathi argues that from the standpoint of international market competition driving innovation, the UK would not have felt the same pressure to innovate in manufacturing without the competitive challenge posed by Indian textiles.<sup>19</sup> Other scholars have stressed the crucial role global trade played in Europe's progress, citing its influence on institutional transformation, urban growth, and the development of work ethics.<sup>20</sup> These elements provided significant advantages to the Western world and may have been key contributors to the Great Divergence.

Drawing inspiration from the aforementioned literature, de Zwart points out that the impact of trade on historical developments has not been linear; for instance, early colonization was often a consequence of shifts in trade

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<sup>17</sup> Immanuel M. Wallerstein, *The Modern World-System [Vol.1], Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century* (New York: Academic Press, 1976), Print; James et al. Pickett, "Book Reviews," *The Journal of Development Studies* 1980: 256, Web; Pim De Zwart, "Introduction," 2-3.

<sup>18</sup> J. G. Williamson, "The First Global Century up to 1913," In *Trade and poverty: when the Third World fell behind*. 1st ed by J. G. Williamson (Cambridge, Mass: MIT Press, 2011.), 11.

<sup>19</sup> Prasannan Parthasarathi, *Why Europe Grew Rich and Asia Did Not: Global Economic Divergence, 1600–1850*, 1st ed (Cambridge: Cambridge University Press, 2011), 2, Web.; Robert C. Allen, "Progress and Poverty in Early Modern Europe," *The Economic history review* 56, no. 3 (2003): 432, Web.

<sup>20</sup> Jan de Vries, "The Industrial Revolution and the Industrious Revolution," *The Journal of economic history* 54, no. 2 (1994): 256, Web; Jan de Vries, *The Industrious Revolution: Consumer Behavior and the Household Economy, 1650 to the Present*. 1st ed (New York: Cambridge University Press, 2008), 33, Web.

dynamics.<sup>21</sup> In any case, compared to Pomeranz, de Zwart provides a more detailed analysis of the role of trade through the lens of globalization.

Apart from discussing the clear association between globalization and the Great Divergence, de Zwart also employs an improved and up-to-date methodology when researching trade. Firstly, in international trade studies, researchers favour cross-country regressions to examine the link between trade and economic growth, which is often limited by data availability and quality. Pim de Zwart considers this approach less plausible and turns to a method of detailed and thorough case analysis to avoid over-reliance on data in his paper.<sup>22</sup> Secondly, adopting a historical perspective, he focuses on long-term patterns, which enables the tracing of time trends and enhances the robustness of the research. This approach allows de Zwart to explore how trade effects varied across different periods and countries, offering a more comprehensive analysis compared to Pomeranz's focus on just a few benchmark years.<sup>23</sup> Lastly, Pim de Zwart broadens the comparison by including other regions of Asia, rather than limiting the analysis to just the Yangtze River delta as Pomeranz did.<sup>24</sup> In this way, although China is not the primary focus of the study, the general mechanism of trade's impact on the Great Divergence before the 1800s explored in this article is valuable and insightful.

In my view, de Zwart's approach aligns better with modern international trade theories, providing a more comprehensive and accurate explanation of how trade contributed to the growing economic disparity between East and West. Moreover, his use of case study methodology and long-term comparative analysis is both

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<sup>21</sup> Pim De Zwart, "Introduction," 13-4.

<sup>22</sup> Pim De Zwart, "Introduction," 1-2.

<sup>23</sup> Pim De Zwart, "Introduction," 12.

<sup>24</sup> Pim De Zwart, "Introduction," 12.

inspiring and valuable for my paper on how trade influenced the Great Divergence between Europe and Imperial China.

Regarding the research gap, firstly, while the book offers a comprehensive examination of trade from a globalization perspective, it focuses on regions outside of China. This does not match my paper's aim to investigate the role of Imperial China, a key economy in Asia, in its trade patterns and performance during the Great Divergence. Secondly, the book covers the period before the nineteenth century, whereas my paper seeks to explore the impact of China's trade in the nineteenth century and beyond. Finally, although the book's examination of globalization through price convergence is insightful, my paper will also emphasize specific factors such as trade policy, trade types, and trade volume.

## 2.2 Theoretical analysis of trade effects on the Great Divergence after the 1800s

### *2.2.1 International trade theories*

The development of European trade has driven the evolution of international trade theory. To understand trade's impact on the economy and the Great Divergence, it is essential to review these theories. Mercantilism, the earliest, focused on trade surpluses and capital accumulation.<sup>25</sup> Adam Smith introduced absolute advantage, which David Ricardo refined into comparative advantage—a key concept in 19th-century trade, explaining the widening gap between core and peripheral nations.<sup>26</sup> In response to 20th-century trade protectionism, Liszt advocated for protecting domestic industries.<sup>27</sup> Modern trade theories, such as Heckscher-Ohlin, Intra-Industry Trade, and Technological Gaps, highlight

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<sup>25</sup> Thomas Mun, "England's Treasure by Forraign Trade (Book Review)," *Annals of the American Academy of Political and Social Science* 1895: 160-, Print.

<sup>26</sup> An Inquiry into the Nature and Causes of the Wealth of Nations. By Adam Smith, . In Three Volumes. vol. 2. Dublin: printed for Messrs; Henderson, John P et al. Heertje, "The Life and Economics of David Ricardo." *De Economist* 2001: 132–134. Print.

<sup>27</sup> Harald Hagemann, Stephan Seiter, and Eugen Wendler, eds. *The Economic Thought of Friedrich List*. Abingdon, Oxon ; Routledge, 2019. Print.

networks, technology diffusion, and government roles in trade.<sup>28</sup> In studying international trade between China and the West in the 50 years following the Opium War, the theory of comparative advantage is central. Additionally, theories concerning protectionism and other factors provide valuable insights.

### *2.2.2 Theoretical application to the research question*

More modern studies of the role of trade in the Great Divergence focus on the application of international trade theory. For the study of the influence of trade in the Great Divergence after the 19th century, the mainstream view is the asymmetry hypothesis, which is developed on the basis of the theory of comparative advantage. The first two articles provide a typical theoretical framework, but the last one is more relevant to the research question.

#### *2.2.2.1 Theoretical framework explaining the Great Divergence*

In *Trade, Demographic Transition, and the Great Divergence*, authors put forward a creative theory to explain trade effects on the economic gap and demographic structure between Europe and other non-industrial regions.<sup>29</sup> This theory suggests that the expansion of international trade had divergent effects on industrial and non-industrial economies, contributing to the Great Divergence (asymmetry theory). Industrial nations benefited from specialization in the production of skill-intensive goods, increased investment in human capital, and higher output per capita due to international trade. In contrast, non-industrial nations experienced population growth, specialization in unskilled labour-intensive goods, and the emergence of comparative disadvantages.

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<sup>28</sup> Eli Filip Heckscher, et al., *Heckscher-Ohlin Trade Theory*, Cambridge, Mass: MIT Press, 1991, Print.

<sup>29</sup> Oded Galor and Andrew Mountford, "Trade, Demographic Transition, and the Great Divergence: Why are a Third of People Indian or Chinese?" Abingdon, Oxon ; Routledge, 2019, Print.

From an evaluative perspective, this theory offers several advantages. First, it incorporates both economic indicators, such as per capita income, and demographic factors, like population growth, into its analytical framework, providing a universally applicable rule for any non-industrial country. Second, the authors develop a dynamic model that considers both human capital and technological progress, making the theory more aligned with reality.

However, this article primarily focuses on the case study of the 19th-century comparison between India and Britain, with limited discussion on the comparison between China and the West. It raises important questions: Does the same theory apply to the relationship between Europe and China? Did international trade similarly contribute to the widening demographic and per capita income gap between Europe and China? These questions remain unresolved and require further investigation.

### *2.2.2.2 Introducing technology to trade-and-grow model*

Similarly, in their work *Trade, Technology, and the Great Divergence (2020)*, the authors argue that international trade was a key factor in the economic divide between industrial and non-industrial nations.<sup>30</sup> While this paper explores the same relationships as the previous article—specialized trade, labour demand (both skilled and unskilled), human capital and demographics—it goes further by elaborating on the connections between international trade and technological advancements.

In addition to making similar claims about the impact of trade, the authors also innovatively suggest the important role of technological diffusion. The paper contends that the existing technological diffusion framework is crucial in determining whether trade leads to convergence or divergence in per capita

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<sup>30</sup> Kevin Hjortshøj, O'Rourke, Ahmed Rahman & Alan M. Taylor, "Trade, Technology, And The Great Divergence," NBER Working Paper Series, 2020.

incomes. With perfect technological diffusion, trade might initially increase divergence, but ultimately it will encourage convergence over the long term.<sup>31</sup>

One of the key advantages of this article is its trade-technology model's relevance in explaining the trade gap between China and the West. Due to institutional barriers and incompatibility in the early stages, China was unable to benefit from the diffusion of technological advancements, which further worsened its terms of trade. Additionally, the article offers a multi-dimensional perspective on globalization, highlighting that whether trade promotes convergence or divergence depends on national and historical factors. However, the study's limitation is the lack of detailed analysis, backed by historical evidence, on how trade specifically influenced the divergence between China and the West.

### *2.2.2.3 Terms of trade and volatility*

Lastly, the study *Globalization and the Great Divergence: terms of trade booms, volatility and the poor periphery, 1782-1913 (2008)* by Williamson, directly informs my research. His work offers additional perspectives beyond the asymmetry hypothesis. For one thing, regarding the asymmetrical effects of trade between poor and rich countries discussed by many scholars, Williamson's paper confirms that a prolonged boom in terms of trade would lead to de-industrialization in peripheral economies while promoting industrialization in core economies, thus helping to explain the Great Divergence.<sup>32</sup> For another, the authors also consider China an exception, as its terms of trade did not improve during this period.<sup>33</sup> This anomaly is attributed to China's distinctive mix of imports and exports. From the 1780s to almost 1880s, China imported increasingly expensive opium while exporting goods such as silk, cotton, and tea,

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<sup>31</sup> Kevin Hjortshøj, "Trade, Technology," 8-9.

<sup>32</sup> Jeffrey G. Williamson, "Globalization and the Great Divergence," 377-8; C. Blattman, Hwang, J. and Williamson, J. G. "The impact of the terms of trade on economic development in the periphery, 1870-1939: volatility and secular change," *Journal of Development Economics* 82 (January 2007), pp. 156.

<sup>33</sup> Jeffrey G. Williamson, "Globalization and the Great Divergence," 356-7.

which experienced falling prices.<sup>34</sup> As a result, China experienced less severe de-industrialization and ultimately found success in later periods, particularly in Shanghai.

In addition to shedding light on the situation in China, the article offers valuable insight into how trade fluctuations contributed to the Great Divergence.

According to Williamson, volatility was much greater in peripheral regions than in core economies, both before and after 1870, largely due to the higher price variability of primary products that were predominantly produced in these peripheral areas.<sup>35</sup> As a result, poorer and more vulnerable countries experienced slower growth rates and greater macroeconomic instability. For instance, trade fluctuations could harm investment, as households, businesses, and governments in these regions would cut spending to minimize risk. This reduction in expenditure diminished both physical and human capital, negatively impacting sectors like healthcare, education and infrastructure.<sup>36</sup> Since East Asia, particularly China, experienced some of the highest levels of volatility between 1820 and 1870, it is expected that this would have had a significant negative impact on GDP growth.<sup>37</sup> This was likely exacerbated by unpredictable policies, political instability, and weak financial institutions.<sup>38</sup>

In short, Williamson's paper is highly relevant to the research problem at hand.

In particular, the discussion on China's terms of trade and the impact of

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<sup>34</sup> David Clingingsmith, and Jeffrey G Williamson, "Mughal Decline, Climate Change," 11730-, Web.

<sup>35</sup> Jeffrey G. Williamson, "Globalization and the Great Divergence,"378-9; S. Poelhekke, and Van Der Ploeg, F. "Volatility, financial development and the natural resource curse," CEPR Discussion Paper 6513, Centre for Economic Policy Research, London (2007).

<sup>36</sup> Stefan Dercon, *Insurance Against Poverty*. 1st ed. Oxford: Oxford University Press, 2004, Web; M. Fafchamps, and Arjan Verschoor, "Rural Poverty, Risk and Development," *Journal of agricultural economics* 2004: 650.

<sup>37</sup> Jeffrey G. Williamson, "Globalization and the Great Divergence,"377-8.

<sup>38</sup> Garey Ramey, and Valerie A Ramey, "Cross-Country Evidence on the Link Between Volatility and Growth," *The American economic review* 85, no. 5 (1995): 1138, Print. Antonio Fatás, and Ilian Mihov, "Policy Volatility, Institutions, and Economic Growth," *The review of economics and statistics* 92, no. 2 (2013): 363, Print.



volatility is fully in line with the research direction of my paper. In addition to the previously discussed findings, the use of control variables in the paper is logical and offers a unique perspective on evaluating the role of trade. While economic fundamentals tend to be persistent, trade is more volatile, making it likely that trade influenced the Great Divergence. Furthermore, the paper considers the combined effect of several factors, such as the share of trade in GDP, technological advancements, and the magnitude of price shocks.<sup>39</sup>

However, there are still some unresolved research gaps. First, while the paper discusses China, it is only one of the 21 peripheral countries studied, and the analysis is based on averages. This approach does not fully capture China's unique characteristics. In fact, China stands out as an exception—while other countries saw improvements in their terms of trade, China did not. Therefore, it is essential to examine China's distinctive features in the context of the Great Divergence. Second, there are challenges in data processing and availability, often requiring the use of estimates and proxies, which can limit the precision of the findings.

### 2.3 Other factors

Since literature emphasizes a comprehensive approach, it is important to review other mainstream factors influencing the Great Divergence. Many scholars have highlighted other factors influencing the great divergence, such as intellectual, environmental, political and military advancement. Although these studies rarely address the role of trade in the development of disparities between China and the West, examining them can still provide valuable insights into the combined effects of various factors.

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<sup>39</sup> Jeffrey G. Williamson, "Globalization and the Great Divergence," 374-5.

Firstly, Joel Mokyr's book, *The Gifts of Athena: Historical Origins of the Knowledge Economy* (2002), emphasizes the critical role of intellectual and cultural elements.<sup>40</sup> Mokyr contends that, unlike China, Europe experienced a significantly more developed intellectual movement, bolstered by institutions dedicated to promoting and spreading knowledge. This movement not only drove technological innovation and economic expansion but also lowered the barriers to accessing knowledge.<sup>41</sup> Regarding the connection to trade, it is reasonable to infer that, throughout this process, trade institutions and the spread of knowledge would have been enhanced as well. Improved transportation would reduce the costs of trade, and the author also suggests that the full impact of advancements in knowledge across various fields cannot yet be entirely predicted.

Secondly, in *The European Miracle: Environments, Economies and Geopolitics in the History of Europe and Asia* (1981), Eric L. Jones attributes the Great Divergence to Europe's unique geographical and environmental conditions.<sup>42</sup> Jones argues that Europe's fragmented political landscape fostered competition and innovation, while its diverse climate and geography encouraged agricultural productivity and economic specialization. In contrast, he posits that China's centralized bureaucracy and relatively homogenous environment led to periods of stagnation and less incentive for innovation. It is worth noting from his work that Europe's decentralized governmental institutions likely created an environment conducive to free trade. Additionally, the interaction of various factors highlighted in this paper provides valuable insights.

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<sup>40</sup> Joel Mokyr, *The Gifts of Athena: Historical Origins of the Knowledge Economy*, Princeton, New Jersey; Princeton University Press, 2002, Print.

<sup>41</sup> Joel Mokyr, "The Industrial Enlightenment: The Taproot of Economic Progress," in *The Gifts of Athena: Historical Origins of the Knowledge Economy*, ed. Mokyr Joel (Princeton, New Jersey; Princeton University Press, 2002), 76-77.

<sup>42</sup> Joel Mokyr, *The Gifts of Athena*, 2.

There are other comparative studies extending the analysis and integrating broader perspectives. For instance, Jack A. Goldstone, in *Why Europe? The Rise of the West in World History 1500-1850 (2008)*, synthesizes various factors, including political, social, and economic elements, to explain Europe's rise. Goldstone emphasizes the role of political revolutions and state-building processes in creating a conducive environment for economic growth and technological progress.<sup>43</sup> From this explanation, it is evident that political and institutional factors have significantly influenced the shaping of trade terms and other factors may impact differentiation through trade channels. Additionally, this multi-dimensional study utilizes recent historical evidence, making its conclusions more compelling. Philip T. Hoffman, in *Why Did Europe Conquer the World? (2015)*, also explores the military and economic strategies that enabled European dominance. Hoffman highlights the importance of military competition and innovation, driven by constant warfare and the need for state financing, which led to advancements in military technology and organizational capacity.<sup>44</sup> These European advancements in military and warfare likely played a role in expanding the benefits of their colonies, thereby influencing their trade patterns. Hoffman also highlights the combined impact of various factors, suggesting that if certain variables had been different, Europe might not have been the first to initiate the Industrial Revolution.

### **3.Methodology**

This paper primarily employs qualitative research methods, including comparative analysis and case studies, while innovatively using Chinese customs tax data to conduct a multi-dimensional comparison of trade performance and economic outcomes between China and the West after the Opium War, with the

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<sup>43</sup> Jack A. Goldstone, "Either / Or—Why Ideas, Science, Imperialism, and Institutions All Matter in the 'Rise of the West,'" *Erasmus journal for philosophy and economics* 9, no. 2 (2016): 14, Web.

<sup>44</sup> Philip T. Hoffman, *Why Did Europe Conquer the World?* 1st ed. vol. 54. (United States: Princeton University Press, 2015), 3, Web.

aim to uncover the influence of trade on the Great Divergence. Although the choice of data is well justified, certain biases in the research still remain.

### 3.1 Research method

#### *3.1.1 Case study and comparative analysis*

This paper employs two qualitative research methods: case study and comparative analysis. The case study method involves an in-depth investigation of a single case or a small number of cases within their real-life contexts. Its purpose is to explore, understand, or explain phenomena in their natural settings, particularly in complex or multifaceted situations. To explore the role of trade in the divergence between China and the West, this paper focuses on international trade between China and Europe during the key period following the Opium War, from 1861 to 1910, analysing the various factors that influenced this interaction. The comparative analysis method systematically compares two or more cases, objects, or phenomena to identify similarities, differences, patterns, and relationships. Through this approach, the paper seeks to uncover variations or consistencies in trade patterns, economic performance, and other interconnected factors between Imperial China and Europe, aiming to reveal the underlying determinants of the Great Divergence.

#### *3.1.2 Advantages of the methodology*

There are several reasons why these methods are well-suited to the research question. First, as demonstrated in the works of Pomeranz, De Zwart, Oded Galor, and Andrew Mountford, case-based investigations take into account the contextual conditions of the case, providing more comprehensive insights.<sup>45</sup> Specifically for this paper's topic, the case study approach offers less biased and more reliable results regarding the trade effects on the Great Divergence

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<sup>45</sup> Kenneth Pomeranz, "Introduction: Comparisons, Connections," 17-23; Oded Galor and Andrew Mountford, "Trade, Demographic Transition," 20.

compared to regression methods.<sup>46</sup> This is because by considering multiple factors within the particular case of Imperial China for the specific period, the case study approach is less vulnerable to the limitations of data choice and quality. It also facilitates the exploration of global conjunctures, the description of complex situations, and the explanation of underlying causes and effects, leading to a deeper understanding of the phenomenon beyond a Europe-centred world system.<sup>47</sup> Secondly, the comparative method is well-suited to addressing the research question, which focuses on exploring the differences and disparities between China and Europe in the field of trade. This approach allows for the comparison of both quantitative data (such as numerical figures) and qualitative data (such as texts and observations) across various disciplines, including political science, sociology, economics, and education. By utilizing these methods, the research will provide a more comprehensive and nuanced analysis of the topic.

### *3.1.3 Challenges of the methodology*

It is essential to acknowledge the limitations of case analysis and comparative methods. Firstly, the research findings are constrained by the selected cases and their scope. In this study, only the data on exports and imports between Imperial China and Europe from 1861 to 1910 are considered, which may limit its applicability to other periods or regions. Secondly, while regression models are often criticized for bias when explaining causality between trade and economic growth, qualitative methods also face difficulties in establishing cause-and-effect relationships.<sup>48</sup> These methods must address complex phenomena involving interactions among multiple variables. Particularly, cultural, historical, and

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<sup>46</sup> Pim De Zwart, "Introduction," 1-2. Douglass C North, and Barry R Weingast, "Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England," in *Empirical Studies in Institutional Change*, ed. Douglass C North (United States: Cambridge University Press, 1996), 134, Web.

<sup>47</sup> Kenneth Pomeranz, "Introduction: Comparisons, Connections," 5-6.

<sup>48</sup> William Easterly, and Ross LeVine, "Tropics, Germs, and Crops: How Endowments Influence Economic Development," *Journal of monetary economics* 50, no. 1 (2003): 3, Web.

institutional factors—such as policy openness, technological diffusion, and colonial influence—tend to be static over time and are primarily assessed qualitatively, making direct comparison challenging.<sup>49</sup> Also, concentrating on the entire interacting system can make it difficult to isolate and separate the impact of individual factors. Furthermore, comparing trade volumes between economies with vastly different sizes can be impractical and may reduce the relevance of such comparisons. In order to address these issues, this paper will emphasize vertical comparisons (e.g., trade fluctuations within different regions of the same country) and will analyse various factors in detail using historical data and archival records.

## 3.2 Data selection

### *3.2.1 Archived data for Imperial China*

This paper aims to use Tang Xianglong’s “*Statistics of Customs Taxation and Distribution in China*” as a primary source to evaluate trade data from Imperial China following the Opium War.<sup>50</sup> The archival records cover both national and local tariff amounts under the Chinese Customs tax system from 1861 to 1910. During this late imperial period, China’s previous policy of trade isolation was dismantled, and the country began to exhibit characteristics of a semi-colonial and semi-feudal society. Following the First Opium War, the Treaty of Nanking allowed foreign powers to establish a taxation system in China to manage tariff collection and negotiate rates; after the Second Opium War, the Treaty of Tianjin further expanded Western control over Chinese customs through the establishment of the Department of Taxation.<sup>51</sup> These changes led to the imposition of low import and export tariffs, giving foreign goods a competitive

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<sup>49</sup> David S Landes, and Ann Walmsley, “The Wealth & Poverty of Nations: Why Some Are so Rich & Some so Poor,” Report on Business Magazine 1998: 27, Print; Clark, G. (2007) *A Farewell to Alms: A Brief Economic History of the World*, Princeton, NJ: Princeton University Press.

<sup>50</sup> Xianglong Tang, “*Statistics of Customs*,” 20.

<sup>51</sup> Xianglong Tang, “*Statistics of Customs*,” 11; Matsuichiro Takahagi, *China’s Tariff System*, Vol. 3 (Shanxi: People’s Publishing House Press, 2015), 26.

edge in the Chinese market. The legalization of opium imports further exacerbated this, while other goods like tobacco, perfume, wine, and furniture were imported duty-free.<sup>52</sup> The archives detail various taxes, including those on imports, exports, opium, and other goods, all influenced by the unequal treaties of the time. These treaties not only prevented the Chinese government from independently adjusting import and export tariffs, but also forced negotiations with foreign powers to make any changes.<sup>53</sup> Moreover, the allocation of customs revenue shifted. It was no longer solely used for domestic infrastructure but was also redirected towards paying reparations and foreign debt imposed by these treaties.

Among the archival documents mentioned above, this paper focuses on the total national customs tax revenue, the national import and export tax amounts, the opium tax, tax distribution, and the import and export taxes of seven major southeast coastal customs offices (Jiang Customs, Zhenjiang Customs, Zhejiang Customs, Fujian Customs, Guangdong Customs, Eastern Customs, and Tianjin Customs) of the Qing government during the period from 1861 to 1910 for research and analysis. As for Europe's trade data, trade volume and trade share in GDP of Western Europe are utilized.<sup>54</sup> Economic indicators include UK real GDP per capita, Western European countries' GDP per capita, and China's GDP per capita.<sup>55</sup>

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<sup>52</sup> Xianglong Tang, "China's Fiscal System on the Eve of the War, Finance and Economics," *Journal of Economics* Vol. 4 (1956).

<sup>53</sup> Chinese Compendium of the Charter, Regulations on the Recruitment of Foreign Tax Assistants by Various Branches of Commerce, Articles 3, 24, Vol.18.

<sup>54</sup> Federico, Giovanni; Tena Junguito, Antonio, 2018, "Federico-Tena World Trade Historical Database: Europe", <https://doi.org/10.21950/XBOWYN>, e-ciencia Datos, V1; International Historical Statistics - Brian Mitchell (2015).

<sup>55</sup> Broadberry, Campbell, Klein, Overton, and van Leeuwen (2015) via Bank of England (2020); Stephen Broadberry, and Alexander Klein. "Aggregate and per Capita GDP in Europe, 1870-2000: Continental, Regional and National Data with Changing Boundaries," *The Scandinavian economic history review* 60, no. 1 (2012): 80, Web.

Because of China's rural population, per capita GDP is a better indicator of the real economy than wages.<sup>56</sup>

### *3.2.2 Rationale for data selection*

There are several reasons for the data selection in this article. First, the period following the Opium War holds significant research value. Given the debate surrounding the timing of the Great Divergence, with some arguing it occurred after the eighteenth century, and considering that China was largely closed off from globalization before this time, the forced opening after the Opium War provides a clear opportunity to examine the effects of trade on China.<sup>57</sup>

Additionally, this period's uniqueness is highlighted by Williamson's observation that China was an exception to the widespread deindustrialization of peripheral countries in the nineteenth century.<sup>58</sup> This exception may be closely tied to the colonization, wars, and forced trade of the era, making it a compelling subject for study. Second, the decision to focus on customs archival records rather than trade volumes is based on the reliability and authenticity. Since the data come directly from the tax authorities of the time, they offer a more dependable source for analysis. Lastly, a significant reason is that this archival data has not been previously cited or studied, offering a fresh perspective on government customs tariffs. It helps to reflect the government's capabilities and institutional characteristics. Similar to Pomeranz's framework, this data incorporates the influence of the national system and government capacity, rather than focusing solely on external market forces.<sup>59</sup>

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<sup>56</sup> Ye Ma and Herman de Jong. "Unfolding the Turbulent Century: A Reconstruction of China's Historical National Accounts, 1840-1912." *Review of Income and Wealth* 00 (2017): 1-24. DOI: 10.1111/roiw.12314

<sup>57</sup> Kenneth Pomeranz, "Introduction: Comparisons, Connections," 17.

<sup>58</sup> Jeffrey G. Williamson, "Globalization and the Great Divergence," 377-8.

<sup>59</sup> Kenneth Pomeranz, "Introduction: Comparisons, Connections," 17-23



For the trade volume data of Europe, 14 Western European countries, including the United Kingdom, Germany, France, and the Netherlands, are considered.<sup>60</sup> Western European countries were chosen for comparison due to their prominent role in the Industrial Revolution.<sup>61</sup>

### *3.2.3 Data limitations*

It is worth noting that the data selection in this article is not without flaws. Firstly, certain tax categories such as re-import duties, inland duties, and ship duties, were excluded from the study due to insufficient data. Although these categories represent relatively small amounts, their omission may introduce some bias. Second, the paper uses a 5 percent tax rate to estimate total trade volume, but the actual effective tax rate during this period was often lower—typically around 3 percent—one of the lowest rates globally, as Western merchants had significant negotiating power.<sup>62</sup> This discrepancy could lead to an underestimation of the trade volume. Lastly, relying on aggregate tax and trade data limits the study's ability to differentiate between specific types of trade, as well as capture fluctuations and variations within individual subcategories, potentially overlooking important nuances.

### 3.3 Data analysis

This paper will compare trade data and economic indicators between Imperial China and Europe from 1861 to 1910 across different latitudes. The analysis accounts for unit conversions and price indices. First, using China's archival data on tariffs, the total import and export trade amount is calculated, assuming a 5% tariff rate. This data is then compared to European trade figures from the same period. Second, the analysis focuses on trade volatility and growth rates. Third, economic indicators from both regions are compared across multiple

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<sup>60</sup> Federico, "Federico-Tena World Trade Historical Database, V1.

<sup>61</sup> Daron Acemoglu, "The Rise of Europe," 546.

<sup>62</sup> Zhongping Yan, *Selected Statistical Data of Modern Chinese Economic History* (Beijing: China Social Sciences Press, 2012), 60.

dimensions. Fourth, the correlation between trade fluctuation and economic indicators in China and the West is examined. Fifth, the trade categories and balance of China are analysed. Finally, tax revenue distribution and internal variance between different Chinese Customs offices will be examined.

#### **4.Results and analysis**

This section compares total trade (imports and exports), trade growth rates and fluctuations, economic indicators, the correlation between trade and economic indicators, trade balances, trade types, and internal differences between Imperial China and the West. The analysis of these factors aims to test the hypothesis and provide a comprehensive perspective on the impact of trade on the Great divergence.

#### 4.1 Volume of import and export

Table 1 Descriptive analysis of volume of imports and exports in western European countries and China from 1861 to 1910

	mean	standard deviation	take UK as 100
N	50		
United Kingdom	2882.73	1142.16	100
Germany	1781.58	1125.03	62
France	1656.78	529.72	57
Netherlands	618.99	250.45	21
Italy	498.46	237.28	17
Belgium	418.38	192.16	15
China	308.99	131.80	11
Spain	286.88	112.42	10
Switzerland	268.05	121.81	9
Sweden	171.50	86.98	6
Denmark	146.77	83.09	5
Norway	96.53	45.52	3
Portugal	67.30	19.81	2
Finland	62.12	34.48	2
Iceland	3.68	1.93	0

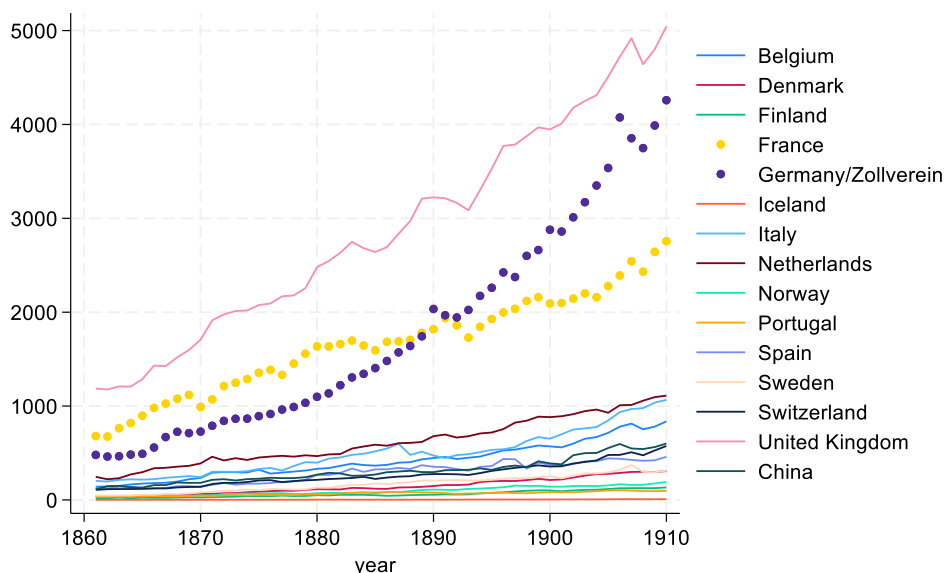
*Unit:* million dollar

*Source:* Tang Xianglong, Statistics of Customs Taxation and Distribution in China; Federico-Tena World Trade Historical Database: Europe.

As previously mentioned, dividing China's import and export tariffs by the 5% tariff rate provides an estimate of its total trade volume over the years. After adjusting for exchange rates and the price index, these figures were compared with the total trade volume of 14 Western European countries during the same period. The preliminary results, displayed in Table 1, indicate that over the past 50 years, the average trade volume of Western European countries—particularly Britain, Germany, and France—leaders of the Industrial Revolution—was significantly higher than China's. On average, China's trade volume amounted to only 11% of Britain's during this time. While the Netherlands, Italy, and Belgium had smaller trade volumes compared to the top three, they still

surpassed the other nations. In contrast, China's trade volume grew at a much slower rate.

**Figure 1 Trade volume trend from 1861 to 1910**



**Unit:** million dollar

**Source:** Tang Xianglong, Statistics of Customs Taxation and Distribution in China; Federico-Tena World Trade Historical Database: Europe.

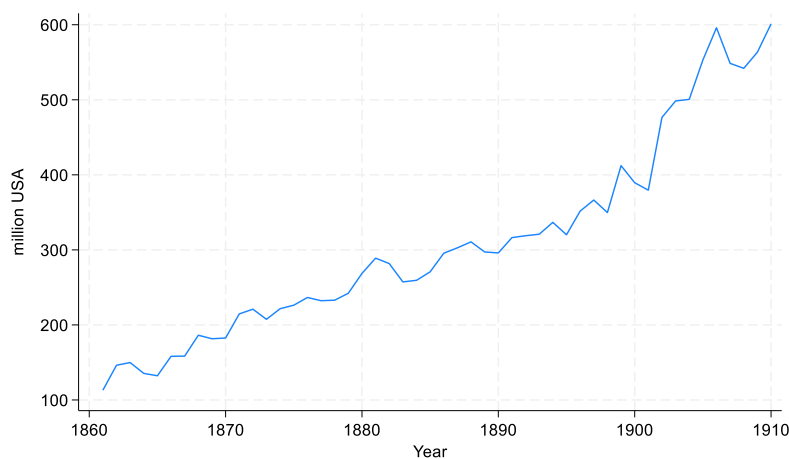
Figure 1 illustrates these trends, showing trade volumes between China and Western European countries over a period of 50 years. The graph reveals an upward trend for nearly all countries, though the pace of growth varied. The UK, France, and Germany experienced substantial increases in trade, maintaining their leadership positions. While the Netherlands, Italy, and Belgium had smaller trade volumes compared to the top three, they still surpassed the other nations. In contrast, China's trade volume grew at a much slower rate.

This comparison highlights the significant disparity in trade between China and the developed capitalist countries of Western Europe, even without accounting for trade surpluses or deficits. Over the 50 years, the trade gap between China and the leading Western nations widened considerably. As international trade in

Western Europe surged—especially in the UK, France, and Germany—China’s international trade remained relatively underdeveloped, with the disparity growing more pronounced over time, underscoring China’s increasing lag in global trade during this era.

The huge differences in trade between China and the West have many implications. For Western Europe, rapid trade growth boosted industrialization and increased economic incomes. For example, in 1870, Britain, known as the “workshop of the world,” produced 40% of global textile exports, while importing significant raw materials and agricultural products, boosting demand for manufactured goods and resulting in a large trade surplus.<sup>63</sup> In addition, the gap between China and the West also leads to a gap in trade practice, such as shipbuilding, shipping and other industries. Since the 19th century, Britain has been far ahead of China in maritime trade. China’s backwardness in trade has also laid the foundation for its technological and industrial backwardness.

**Figure 2** China's total import and export trade



**Source:** Tang Xianglong, *Statistics of Customs Taxation and Distribution in China*

<sup>63</sup> N.F.R Crafts, and C. K Harley, “Output Growth and the British Industrial Revolution: A Restatement of the Crafts-Harley View,” *The Economic history review* 45, no. 4 (1992): 703, Web; Kevin H O’Rourke, and Jeffrey G Williamson, *Globalization and History: The Evolution of a Nineteenth-Century Atlantic Economy*. 1st ed. (Cambridge: MIT Press, 1999), 2, Web.

In addition to the macroeconomic impact of China's trade backwardness, there are other implications. Despite the widening gap between China and the West, China's trade volume remains significant. As shown in the Figure 2, over the 50 years, customs revenue and trade volume have steadily increased—from initial 5 million taels in 1861 to 34.5 million taels in 1910, a 5.8-folds rise. Although this growth is small compared to the explosion of trade in the West, it is remarkable for a country like China, which has long been rooted in a smallholder peasant economy.<sup>64</sup> However, this growth was not driven by the natural development of agricultural or domestic trade but was largely influenced by external factors. On one hand, China's terms of trade deteriorated, leading to an influx of foreign goods and opium.<sup>65</sup> On the other hand, the tax system contributes to widespread corruption. These unfavourable factors caused a decline in China's overall economic situation, despite the increase in its foreign trade volume.

## 4.2 Trade volatility

### *4.2.1 Variation coefficient*

The coefficient of variation (CV) is calculated by dividing the standard deviation of trade volume for each country by its average trade volume. This indicator helps assess the relative variability of trade data between Western European countries and China. Since the CV normalizes the data, it allows for comparison across different units or means, so the impact of differences in economic size is less of a concern. Generally, a lower CV suggests less relative variability and more consistency in the data relative to the mean, while a higher CV indicates greater variability.

Although China's coefficient of variation is relatively low compared to Western European countries as shown in the Table 2, this does not necessarily imply that

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<sup>64</sup> Xianglong Tang, "Statistics of Customs," 20; Wolfgang Keller, and Carol H. Shiue, "China's Foreign Trade," 11.

<sup>65</sup> Dun J. Li, "The Fall of Imperial China," *The American Historical Review* 1976: 1197, Web.

China's trade was less volatile or less risky. Following the Opium War, China's trade situation was marked by both internal and external challenges. At that time, China was just beginning to open up, with a limited range of trade commodities, numerous external market constraints, and underdeveloped trade infrastructure. It is safe to assert that after a long period of isolation in foreign trade, China was compelled to enter the international market under unfavourable conditions. As a result, the stable growth of its trade volume, characterized by only minor fluctuations, did not reflect economic prosperity or stability, but rather a prolonged period of stagnation with minimal variation.<sup>66</sup>

Table 2 Variable coefficients of trade volume from 1861 to 1910

CV	SD/Mean×100
	63
Denmark	57
Finland	55
Iceland	53
Sweden	51
Italy	48
Norway	47
Belgium	46
Switzerland	45
China	43
Netherlands	40
United Kingdom	40
Spain	39
France	32

*Source:* Tang Xianglong, *Statistics of Customs Taxation and Distribution in China*; Federico-Tena World Trade Historical Database: Europe.

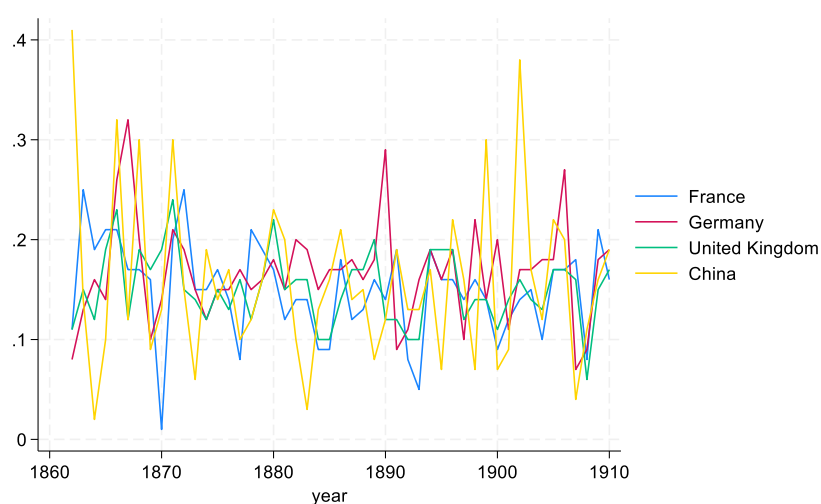
#### 4.2.2 Trade growth rates

In addition to analysing fluctuations in a country's trade volume over the 50 years since the Opium War, this paper also plots the annual trade growth rate, as illustrated in the Figure 3. By examining the growth rates of three major

<sup>66</sup> Xianglong Tang, "Statistics of Customs," 20.

Western European countries—France, Germany, and the United Kingdom—it becomes apparent that China’s trade growth rate was more volatile during this period. Furthermore, the paper seeks to provide additional evidence regarding the volatility of terms of trade. According to Williamson, between 1820 and 1870, peripheral countries experienced three times more volatility in their terms of trade compared to the United Kingdom, with this rising instability reflecting a persistent historical trend.<sup>67</sup> Specifically, he highlights that the large fluctuations in China’s terms of trade before 1870 likely impacted long-term economic progress. In comparison, during 1820-1870, China’s terms-of-trade volatility was 19.75, much higher than that of Japan (1.30), Southeast Asia (6.98), the European periphery (10.72), Latin America (6.43), and South Asia (9.63).

**Figure 3 Growth rates of trade volumes**



**Source:** Tang Xianglong, *Statistics of Customs Taxation and Distribution in China*; Federico-Tena World Trade Historical Database: Europe.

Such volatile trade would likely have adversely affected China’s already lagging economy and could have exacerbated the Great Divergence. On the one hand,

<sup>67</sup> Jeffrey G. Williamson, “Globalization and the Great Divergence,” 377-8.



Williamson supports this view, noting that trade fluctuations and globalization significantly impact economic growth, especially in poor countries.<sup>68</sup> Although his study may not specifically address China, Williamson suggests that the income growth gap between peripheral and central countries might narrow if both experienced similar terms-of-trade fluctuations.<sup>69</sup>

On the other hand, although deindustrialization due to specialization may not have been as pronounced in China—since China’s terms of trade declined relative to most peripheral countries after the Opium War—Williamson highlights that the negative effects of trade volatility were more significant than the long-term changes in terms of trade after 1870.<sup>70</sup>

Regarding the specific harm caused by volatility, trade shocks first contribute to macroeconomic instability. A decline in exports typically reduces profits for domestic enterprises, while a drop in imports can lead to shortages in domestic supply, further limiting economic development, particularly in an already impoverished China at the time.<sup>71</sup> Moreover, fluctuating trade and economic conditions increase investment risks for households, businesses, and governments, leading to reduced spending. For governments, trade fluctuations directly affect tax revenues. Large trade deficits can result in budget shortfalls, which diminish public investment in crucial areas such as education, healthcare, and infrastructure, ultimately hindering improvements in living standards. In the case of the Qing government at the time, customs revenue was a key source of funds for paying foreign debts and reparations. Trade instability caused fluctuations in this revenue, reducing the government’s capacity to invest in public services.<sup>72</sup>

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<sup>68</sup> Jeffrey G. Williamson, “Globalization and the Great Divergence,” 373-4.

<sup>69</sup> Jeffrey G. Williamson, “Globalization and the Great Divergence,” 373-4.

<sup>70</sup> Jeffrey G. Williamson, “Globalization and the Great Divergence,” 373-4.

<sup>71</sup> Robert, Jensen. “Agricultural Volatility and Investments in Children,” *The American Economic Review* 90, no. 2 (2000): 399, Web.

<sup>72</sup> Xianglong Tang, “*Statistics of Customs*,” 20.

Since trade fluctuations negatively impact economic development and may exacerbate the Great Divergence, understanding the factors that cause these fluctuations can reveal how deeper issues—such as institutions, policies, and war—affect economic growth through their influence on trade. Internally, political instability in peripheral countries plays a role. For instance, in Qing China, fluctuating trade tax revenue was compounded by widespread corruption among officials, with a considerable portion of tax revenue diverted to extravagant royal expenses and internal conflicts, further deteriorating the economy.<sup>73</sup> Additionally, a weak financial system can increase trade risks, potentially due to poor governance and low market confidence.<sup>74</sup> Moreover, volatile policies and conflicts can further contribute to trade instability. All of these characteristics were prevalent in peripheral countries like China.

Externally, fluctuations in global commodity prices and shifts in nominal exchange rates are key drivers of trade instability.<sup>75</sup> This is largely because peripheral countries typically rely on a narrow range of trade commodities, often dominated by primary products, whose prices fluctuate more than those of manufactured goods.<sup>76</sup> According to portfolio theory, the risks for these economies are amplified, as changes in the price of a few commodities can significantly impact the trade of an entire country.<sup>77</sup> For example, in China after the Opium War, its unbalanced economic structure, heavily reliant on agricultural primary products, means that fluctuations in global agricultural prices would have a huge impact on its export trade.

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<sup>73</sup> Xianglong Tang, “*Statistics of Customs*,” 11-12, 24-25 & 41-42.

<sup>74</sup> J. G. Williamson, “Explaining world tariffs 1870-1938: Stolper-Samuelson, strategic tariffs and state revenues,” In R. Findlay, R. Henriksson, H. Lindgren and M. Lundahl (eds.), Eli F. Heckscher, *International Trade, and Economic History*. Cambridge, MA: MIT Press. Press, 2006.

<sup>75</sup> S. Poelhekke, “Volatility, financial development,” 3.

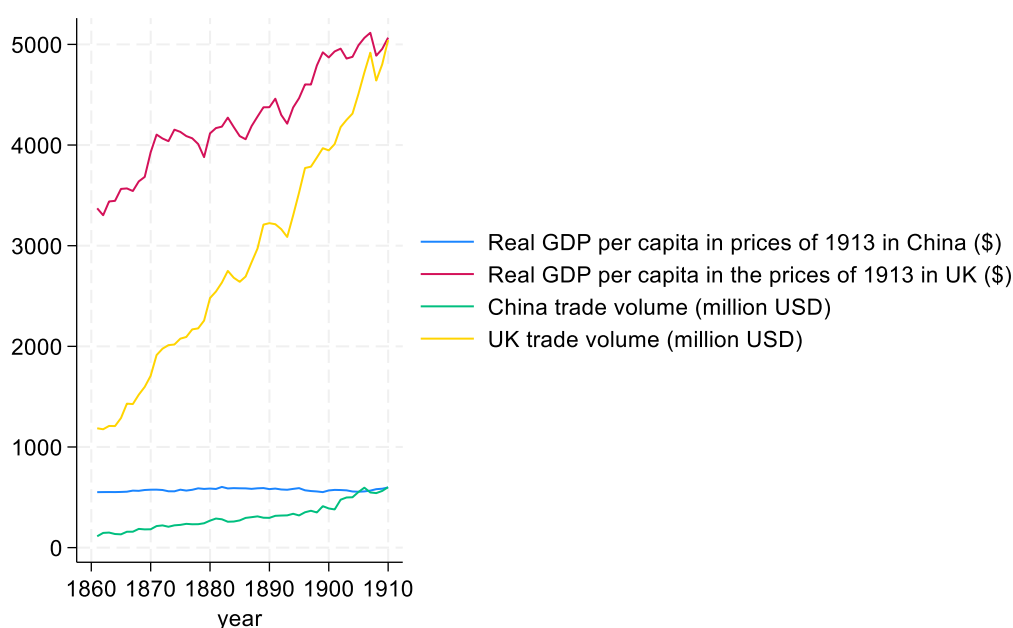
<sup>76</sup> Jeffrey G. Williamson, “Globalization and the Great Divergence,” 376.

<sup>77</sup> Harry Markowitz, “Portfolio Selection.” *The Journal of finance* (New York) 7.1 (1952): 77, Web.

### 4.3 Economic indicator

In comparing the economic indicators of Imperial China and Europe from 1861 to 1910, the lack of reliable data from the Qing Dynasty, particularly population records, poses a challenge. Therefore, this paper uses China's GDP per capita estimates reconstructed based on Maddison's work.<sup>78</sup>

Figure 4 Real GDP per capita and trade volumes of China and UK



**Source:** Source: Tang Xianglong, *Statistics of Customs Taxation and Distribution in China*; Federico-Tena *World Trade Historical Database: Europe*; Ma, Ye and Herman de Jong. “Unfolding the Turbulent Century: A Reconstruction of China’s Historical National Accounts, 1840-1912.” Broadberry, Campbell, Klein, Overton, and van Leeuwen (2015) via Bank of England, 2020.

As shown in the Figure 4, throughout the period, the per capita GDP of the United Kingdom steadily rose, while China’s per capita GDP remained largely unchanged. Moreover, throughout the period under review, the UK’s per capita GDP was consistently much higher than China’s.

<sup>78</sup> Ye Ma and Herman de Jong. “Unfolding the Turbulent Century,” Appendix Table 4.

Similarly, the results presented in the Table 3 include the per capita GDP of several Western European countries in 1870, 1890, and 1913. Based on data from these three years, it is evident that Western Europe experienced rapid per capita GDP growth, while China's growth remained flat. In the given year, Western Europe per capita GDP was significantly higher than China's. In particular, in relation to the UK's per capita GDP, China's accounted for 17%, 14% and 12% in 1870, 1890 and 1913, respectively. Similar findings are evident in Maddison's data: when using Western Europe as a benchmark, China's per capita GDP was 42.6%, 27.5%, and 20.0% of Western Europe's per capita GDP in 1820, 1870, and 1913, respectively.<sup>79</sup> These comparisons confirm that the gap between Imperial China and the Western world gradually widened in the 50 years following the Opium War.

Table 3 GDP per capita in the years 1870, 1890 and 1913

	1870	Take UK as 100	1890	Take UK as 100	1913	Take UK as 100
United Kingdom	3328	100	4055	100	5030	100
Belgium	2722	82	3443	85	4263	85
Denmark	1929	58	2428	60	3768	75
Finland	1290	39	1503	37	2288	45
Netherlands	2417	73	2786	69	3539	70
Norway	1370	41	1714	42	2454	49
Sweden	1247	37	1500	37	2806	56
China	576	17	582	14	598	12

*Unit:* \$ in 1913 international prices.

*Sources:* Broadberry, Stephen, "Aggregate and per Capita GDP in Europe, 1870-2000: Continental, Regional and National Data with Changing Boundaries." Ma, Ye and Herman de Jong. "Unfolding the Turbulent Century: A Reconstruction of China's Historical National Accounts, 1840-1912."

<sup>79</sup> Maddison, A. *Monitoring the World Economy 1820-1992*, Paris: OECD, 1995.

#### 4.4 Relevance

The previous section examined the growing gap between China and the West in terms of trade volume and per capita GDP, highlighting how both have expanded over time. Is there a correlation between the growth in trade and the growth in broader macroeconomic indicators? Could the widening trade gap help explain the increasing economic disparity? To explore the relationship between trade and the economic gap, this paper analyses the correlation between these factors from several different perspectives.

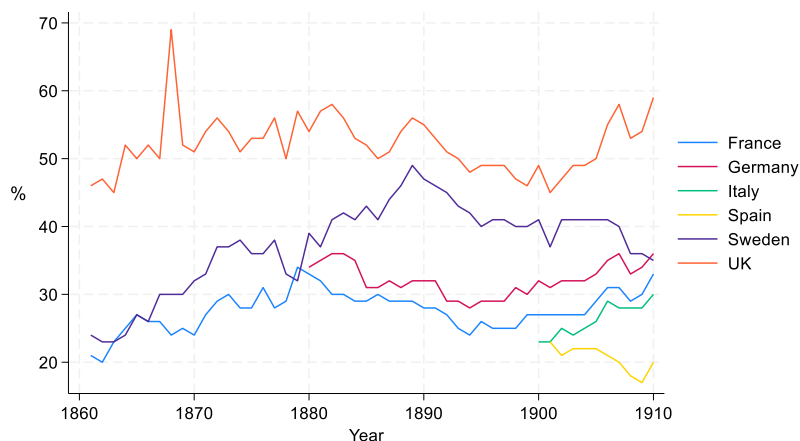
##### *4.4.1 Trade as share of GDP*

First, this paper examines the proportion of trade relative to GDP. As shown in the Figure 5, trade made up a significant portion of GDP in Western European countries from 1861 to 1910, although this proportion did not increase steadily over time. In the UK, for example, trade accounted for more than 50% of GDP, while in France, Germany, and Sweden, it ranged between 30% and 40%. For China, accurate GDP data for this period is limited to estimates, so no long-term trends in its trade share are provided. However, according to the literature, China's proportion was much lower compared to Western European countries.<sup>80</sup> This gap meant that Western European trade became an important engine of economic development. Trade not only brought great wealth to the West, it also enabled Western Europe to complete its transition to specialization in skilled labour-intensive production, which further promoted the development of its human capital and education. In China, by contrast, trade has not only just begun, but is also constrained by worsening terms of trade, and forced trade has undermined the economy.

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<sup>80</sup> E. Frankenberg, Beegle, K., Sikoki, B. and Thomas, D. "Health, family planning and well-being in Indonesia during an economic crisis: early results from the Indonesian family life survey," RAND Labor and Population Program Working Paper Series 99-06, Rand Corporation, Santa Monica, CA, 1999.

Figure 5 Trade (imports+exports) as share of GDP in Western European countries



**Source:** International Historical Statistics, Brian Mitchell, 2015.

#### 4.4.2 Correlation

From another perspective, this paper compares the correlation coefficients of four variables: per capita GDP, total trade volume, per capita GDP growth rate and total trade growth rate for both China and the UK.<sup>81</sup> The results show that over the 50-year period, the UK's trade volume had a strong positive correlation with its per capita GDP, with a coefficient of 0.97. Similarly, the correlation between the growth rates of trade and per capita GDP was also notably positive, at 0.68. This suggests that the UK's trade and economic indicators largely moved in the same direction during this time. In contrast, China's correlations were significantly lower: 0.12 between trade and per capita GDP, and -0.12 between trade and GDP growth rate, implying weak connections and even opposing effects of trade on the economy in China. Although correlation does not necessarily imply causation, a low correlation typically indicates a weaker or negligible relationship. Thus, based on these correlation coefficients, it appears that for the UK, trade growth positively influenced per capita GDP growth. For

<sup>81</sup> Ye Ma and Herman de Jong, "Unfolding the Turbulent," ; Broadberry, Campbell, Klein, Overton, and van Leeuwen (2015) via Bank of England (2020);

China, however, trade may not have helped or even worsened the overall economy.

This connection would be supported by some facts in Europe and China. For example, the growth rate of manufacturing goods in Britain during this period exceeded GDP, and this product was an important export.<sup>82</sup> China's foreign trade has long been a huge deficit, wealth outflow. Also, according to William Easterly, economic fundamentals—shaped by cultural, institutional, and geographic factors—are persistent and changed little during the nineteenth century. Given the substantial shifts in global trade during this period, it is more likely that changes in trade, rather than fundamental economic factors, explain the Great Divergence.<sup>83</sup>

#### 4.5 Trade categories and deficit

Following the Opium War, China imported expensive commodities like opium from the West while exporting cheaper goods such as tea, silk and porcelain, leading to a major trade deficit.<sup>84</sup> With local traders accounting for only about 10 per cent of total trade, this imbalance hindered local business development and worsened economic inequality with the West.<sup>85</sup>

##### *4.5.1 Opium imports*

Opium, heavily imported after the 1858 Treaty of Tianjin legalized the trade, became a critical revenue source for China. From 1861 to 1886, opium taxes were second only to general import/export duties. As shown in Figure 6, despite a later decline, opium tax revenue surged after 1887 and remained at a high level. As

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<sup>82</sup> Mitchell, B. R., *British Historical Statistics*, 1988.

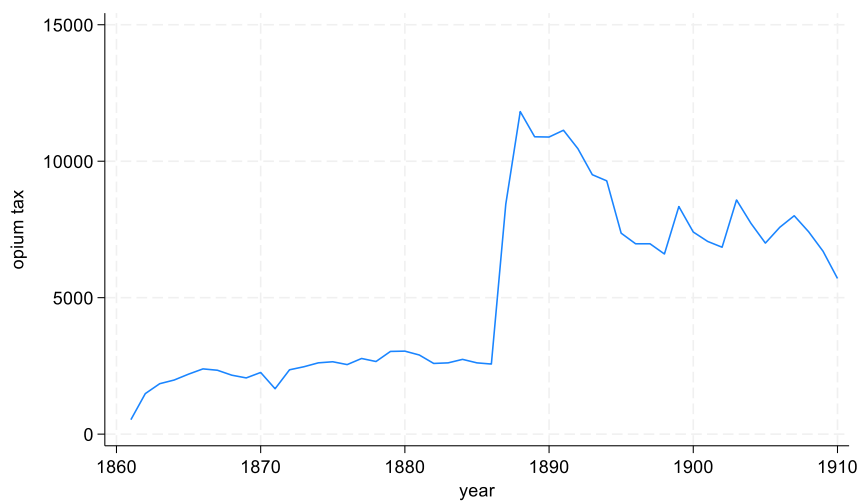
<sup>83</sup> W. Easterly, Kremer, M., Pritchett, L. and Summers, L. H., "Good policy or good luck? Country growth performance and temporary shocks," *Journal of Monetary Economics* 32 (1993): pp. 459.

<sup>84</sup> Jeffrey G. Williamson, "Globalization and the Great Divergence," 363-4; John H Coatsworth, and Jeffrey G Williamson. "The Roots of Latin American Protectionism: Looking Before the Great Depression." NBER Working Paper Series (2002): 8999-. Web.

<sup>85</sup> TXianglong Tang, "Statistics of Customs," 20.

opium taxes grew, as shown in the Figure 7, their share of total tax revenue increased, reflecting a rise in opium imports relative to other commodities. Specifically, between 1862 to 1904, opium taxes averaged 21.66% of China's total revenue, peaking at over 38% in 1889-1890 and still contributing 20-25% even after imports began to decline in 1894.<sup>86</sup>

Figure 6 Opium taxes from 1861 to 1910

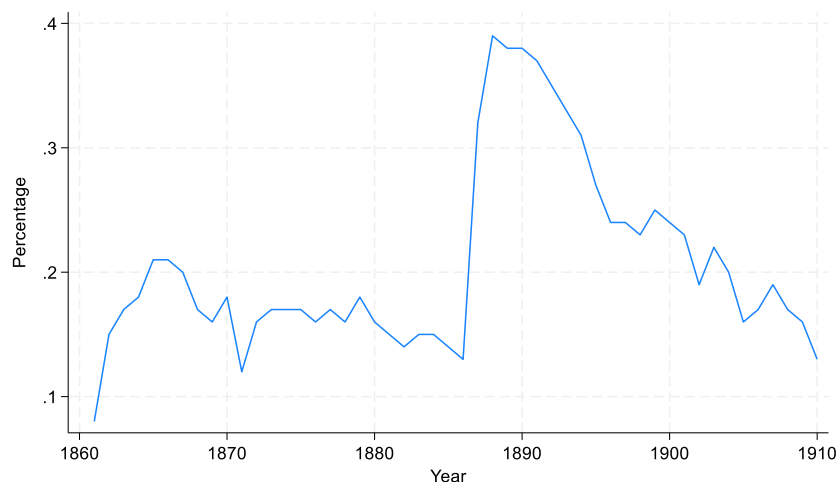


**Unit:** thousand dollar

**Source:** Tang Xianglong, Statistics of Customs Taxation and Distribution in China.



Figure 7 Opium tax as a percentage of total tax revenue



**Source:** Tang Xianglong, *Statistics of Customs Taxation and Distribution in China*.

The large-scale opium trade severely damaged China's economy while enriching the Western world, deepening the inequality between them. For one thing, opium, which accounted for 30-50% of China's imports, worsened China's terms of trade, creating a significant trade deficit and transferring wealth from East to West. According to Clingingsmith and Williamson, opium prices rose rapidly until 1820 and remained high into the 1880s.<sup>87</sup> Despite this, China was compelled to keep importing opium, exacerbating its economic losses. For another, although opium provided tax revenue for the Qing government, it did not enhance fiscal capacity. Instead, the government's reliance on opium taxes to cover war reparations and debt payments meant that public works and healthcare were neglected since opium had negative effects on public health.<sup>88</sup>

#### 4.5.2 Other imports

Besides opium, China imported various Western products during this period. First, British textiles, produced cheaply, flooded the market and adversely

<sup>87</sup> Jeffrey G. Williamson, "Globalization and the Great Divergence," 363-4; David Clingingsmith, and Jeffrey G Williamson, "Mughal Decline, Climate Change," 11730-, Web.

<sup>88</sup> Xianglong Tang, "*Statistics of Customs*," 15.

affected local craftsmen.<sup>89</sup> Second, China also imported machinery, equipment, and weapons to support the Westernization movement and suppress civil unrest.<sup>90</sup> However, due to backward human resources and technological development, these machines did not lead to effective technology diffusion.<sup>91</sup> Additionally, luxury items such as wine and perfume had a minor impact.<sup>92</sup> Finally, the introduction of Western medicines to treat infectious diseases also led to increased opium use.<sup>93</sup> Overall, this period saw a significant influx of Western goods into China, exacerbated by the country's inability to protect its industries due to colonial control, further deteriorating its economy.

#### *4.5.3 Exports*

During this period, China exported goods such as tea, silk, and porcelain to Western countries.<sup>94</sup> However, the prices of these exports fell sharply between the 1780s and 1880s—silk by 60%, cotton by 71%, and tea by 79%—leading to a significant trade deficit for China.<sup>95</sup> Additionally, as Western Europe advanced in mass production of cotton textiles and porcelain through industrialization, the demand for Chinese silk and porcelain declined. Consequently, the terms of trade worsened for China on the export side as well.

#### 4.6 Tax revenue distribution

During this period, the Qing government's customs tax distribution was accounted for a large proportion of reparations, repayment of foreign debts, and

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<sup>89</sup> John King Fairbank, and Merle Goldman, *China: A New History*. 2nd enl. ed. Cambridge (Mass: Belknap Press of Harvard University Press, 2006), 22, Print.

<sup>90</sup> James B Parsons, "The Last Stand of Chinese Conservatism: The T'ung-Chih Restoration, 1862-1874. Mary C. Wright," *The Journal of modern history* 29, no. 4 (1957): 389, Web.

<sup>91</sup> Oded Galor and Andrew Mountford, "Trade, Demographic Transition," 30.

<sup>92</sup> John King Fairbank, *China: A New History*. 30, Print.

<sup>93</sup> Wolfgang Keller, and Carol H Shiue, "China's Foreign Trade and Investment, 1800-1950," *NBER Working Paper Series*, n. pag, 2020, Web.

<sup>94</sup> P. J Cain, and A. G. (Antony G.) Hopkins. *British Imperialism: Innovation and Expansion, 1688-1914* Vol.1. Harlow; Longman, 1993. Print.

<sup>95</sup> Hanan G Jacoby, and Emmanuel Skoufias, "Risk, Financial Markets, and Human Capital in a Developing Country," *The Review of economic studies* 64.220 (1997): 311, Print.

royal funds. In the 1860s and 1910s, about 55% and 15% of reparations went to the West, respectively. The amount of foreign debt increased gradually after the 1890s, from 10% to 30%. The royal family accounted for about 10% of the total (just in records), which was extravagant in practice though.<sup>96</sup> In addition, in tax distribution, corruption often occurred, such as the tax department officials were highly paid.<sup>97</sup> All of this made the government, already constrained by Western influence, even more impotent.

#### 4.7 Internal variance

This paper selects seven major customs offices of the Qing government: Jianghai, Zhenjiang, Zhejiang, Fujian, Guangdong, East and Tianjin Customs. These customs offices, located in the southeastern coastal areas, were the largest in terms of revenue and had the most complete data among the 43 recorded customs offices. As shown in the figure, during the study period, while Fujian Customs experienced a decline in tariff revenue and Zhejiang and East Customs remained relatively flat, the other customs offices saw increased tax revenue, reflecting the country's growing import and export volume. However, significant differences in tax collection exist among the customs offices. Jianghai Customs collected the most revenue, followed by Guangdong and Fujian. The remaining customs offices collected significantly less. By 1910, Jianghai Customs was generating nearly twice as much revenue as Guangdong Customs and eight times more than any other customs office. Given the coastal location and more accessible trade routes in the southeast, trade activity was more frequent. It is reasonable to infer that the tax revenue disparity between inland customs and the coastal offices discussed in this paper would have been even greater.

The internal disparities in customs trade tax mentioned above would have a unique and complex impact on China. On one hand, due to China's vast size, the

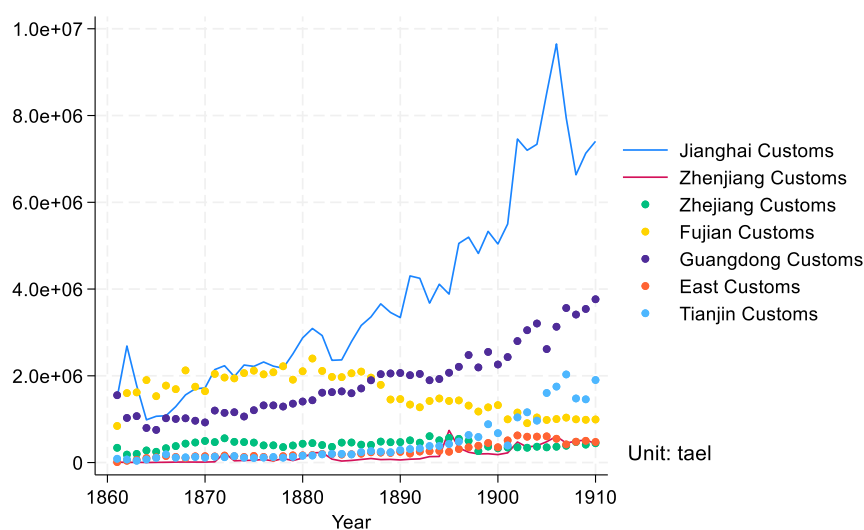
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<sup>96</sup> Xianglong Tang, "Statistics of Customs," 143.

<sup>97</sup> Xianglong Tang, "Statistics of Customs," 11-12.

high cost of administering 43 customs offices across the country likely contributed to corruption among customs officials. In addition, more developed coastal regions may have led the way in trade-driven development, such as urbanization, which widened the wealth gap with inland areas and increased inequality within the country.<sup>98</sup> On the other hand, many Chinese cities along the southeast coast, such as Shanghai, Shenzhen, and Guangzhou, have continued to open up to foreign trade and have become some of the most economically developed cities in China today—likely a legacy of their early involvement in trade.

Figure 8 Import and export tax of seven major Chinese Customs from 1861 to 1910



**Source:** Tang Xianglong, *Statistics of Customs Taxation and Distribution in China*.

<sup>98</sup> P. Aghion, Bacchetta, P., Rancière, R. and Rogoff, K., *Exchange rate volatility and productivity growth: the role of financial development*, CEPR Discussion Paper no. 5629, Centre for Economic Policy Research, London, 2006.

## 5 Conclusion

In conclusion, trade played a significant role in facilitating the Great divergence between Imperial China and the West in the 50 years following the Opium War. Rather than acting in isolation, trade interacted with various other factors—political, external, colonial, and technological—to shape this divergence. Trade served as an influence amplifier, intensifying the disadvantages faced by peripheral countries while reinforcing the advantages of industrialization in Western nations.

Looking at the timeline, trade influenced the entire course of the Great Divergence. For the West, from the 15th and 16th centuries through the 19th century, trade was crucial in the primitive accumulation of capital, industrialization and economic rise of the West. In contrast, China's isolationist policies meant that trade had a limited effect on its economy before the 19th century. However, after the 19th century, China was forced into the global market, where trade inflicted significant damage on its economy.

From a mechanistic perspective, trade typically led to deindustrialization and economic instability in peripheral countries. For nations like India, trade-induced deindustrialization was common and had negative effects. In China's case, following the Opium War, deindustrialization did not occur despite worsening terms of trade. Yet, the structure of China's trade and its institutions made its economy more vulnerable to trade fluctuations.

Trade's impact on the Great Divergence cannot be separated from other contributing factors. Although it is difficult to determine which factor had the most influence, trade undoubtedly amplified their effects. In China, for instance, the weak and corrupt Qing government magnified the impact of the trade deficit, further damaging the domestic economy. Additionally, colonial powers forced

China to import opium, creating an unequal trading relationship that deepened the divergence. Furthermore, trade is linked to the diffusion of technology.

China's outdated trading practices hindered its ability to adopt and benefit from Western technology.

Trade, therefore, tends to amplify a nation's existing characteristics. When a country has strong economic and institutional capacity, open trade can drive technological diffusion, industrialization, human capital growth, and resource efficiency. However, when a country's capacity is weak, overly open trade can present significant challenges. This is why, in later waves of globalization, many countries adopted trade protectionism to shield their industries.

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