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2023

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The Financialization of Puer Tea and Land Use Changes in Southwest Frontiers of China

By

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THESIS

Submitted in partial satisfaction of the requirements for the degree of

MASTER OF ARTS

in

Geography

in the

OFFICE OF GRADUATE STUDIES

of the

UNIVERSITY OF CALIFORNIA

DAVIS

Approved:

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2023

Abstract

This thesis examines Puer tea as a culturally specific cash product to understand the agricultural transitions occurring alongside a sequence of political and socio-economic changes in China's contemporary history. This research interrogates how Chinese state institutions integrate national food security strategies and local land use policies into the global neoliberal corporate food regime. This thesis also develops a narrative of the financialization of Puer tea based on an in-depth study of the Puer tea trading and resale markets that employ digital platform and blockchain technologies. I argue that China has aligned its food security strategies and agrarian reform policies with the neoliberal food regime by reducing the emphasis on food sufficiency for staple foods and shifting to a moderate food import strategy. Meanwhile, in-country agricultural production favors cash crops as main crops, which are expected to be more profitable for local farmers. The financialization of Puer tea has demonstrated that even though digital and blockchain technologies tend to promote a decentralized democratic economic market structure, their operational mechanisms still perpetuate a form of extractivist capitalism, resulting in highly polarized and unequal wealth distribution in the Puer tea industry. The financialization and potential digitalization of Puer tea creates a distancing effect within the Puer tea industry, exacerbating inequality among farmers and trading intermediaries as more actors become involved. The financialization of Puer tea abstracts the value of food as substance into highly complex commodity derivatives markets and extends the reach of extractivist capitalism beyond material forms into intangible social and cultural heritage forms of value as well.

Acknowledgments

I would like to express my gratitude to my committee members, Drs. Cooper, Crump, and Fields, for their valuable insights, constructive criticism, and unwavering patient support. Their expertise and guidance have been instrumental in shaping the quality of this research.

I am also thankful to my lab mates and friends for their support and stimulating conversations throughout the research process, particularly during the writing phase.

I would like to acknowledge the financial support provided by the Henry A. Jastro Graduate Research fund. All of the aforementioned support and encouragement have been a constant source of inspiration that has enabled me to conduct research and contribute to the advancement of knowledge in this field.

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The Economic Geography Tradition

Economic geography was one of the original subdisciplines of geography, which combined the distinctive traditions of geography and social sciences by describing and explaining the varied places and spaces where economic activities are carried out and how economic activities remake space and place (Castree et al., 2012, p.178). Economic geography evolved from commercial geography in the late eighteenth century. As with other core subdisciplines of geography, early work in economic geography was deeply influenced by Eurocentrism, environmental determinism, masculinism, and colonialism (Castree et al., 2012; Handley, 1982). A forerunner of economic geography, commercial geography, was described by the German philosopher Immanuel Kant (1724-1804) as one of the six divisions of geography, which specializes in describing, tableting, and cartographically representing the geographical facts of commercial trading for practical business ends (Handley, 1982). The prevailing characteristics of economic geography in eighteenth century were entangled with the great expeditions of British Empire, which linked religious piety and the omnipotent creator to trade and commerce in order to justify the legitimacy of wide ranging expeditions and colonialism (Hanley, 1982; Livingstone, 1992). The increasing exchange of both staple and exotic agricultural products among the British Empire, its colonies, and settler states created substantial demand for experts with geographical knowledge of navigation, transportation, and market exploration. Economic geography's rapid development was furthered by colonization, migration, and expeditions of the British Empire, which also underlaid primitive accumulation and growing populations in Europe and new settler states.

Many geographical societies, including the Royal Geographical Society (RGS) and the Association of American Geographers (AAG), were patronized and supported by governments and trading classes to conduct new expeditions to the far-reaching corners of the world in the 19th and early 20th centuries (Livingstone, 1992; Handley, 1982). The work of Russell Smith, Ellsworth Huntington, and Frank William firmly linked economic geography to environmental determinism, which suggested that the geographical physical environment plays a critical role not just on their culture and society, but also on individuals' psychological mindset. Since this time, environmental determinism has been widely discredited and censured for its oversimplifications and its implicit and explicit justification of imperialism and racism.

From the emergence of capitalism in Europe through the period of the industrial revolution, the idea of an “economic sphere,” proposed by Adam Smith and David Ricardo, dominated Western thought. This idea, which claimed that the economic sphere was separate from political, social, and cultural spheres — had a significant impact on earlier forms of economic geography (Sayer, 2000). The idea of an economic sphere underlied the development of economic theories of value, price, and distribution, as well as supply and demand, but the assumptions of these theories were premised on the economy operating as an invisible hand, or as a self-organizing system.

From the 1920s through the middle of the 20th century, economic geography shifted its focus to idiographic regionalism (Castree et al., 2012). In this mode, studies in economic geography tended to be limited to a bounded region, which would later lead to contentious debates over the conceptualization of region and scale in geography. During economic geography’s period of idiographic regionalism, neoclassical economics rose to dominate economic thought and embraced the core ideas of economic sphere theory and supported popular

beliefs that individuals behaving in a self-oriented manner within a market would lead to beneficial outcomes overall (Bateman, 1998). During the post-World War II period, studies in economic geography were firmly grounded in empirical regional studies based on simplified mathematical and spatial models. During this period the discipline of geography faced a perennial identity crisis, with many American universities and research funding institutions cutting support for geography and regional studies (Barnes & Matthew, 2006; Scott, 2000). In response, a new movement within this discipline sought to make geography more “scientific” through the so-called quantitative revolution, which led to a radical transformation of geographical approaches based on the incorporation of advanced statistical techniques into spatial analysis (Bagchi-Sen and Lawton, 1994). As a consequence of this, the nature of research in economic geography transformed from a “field-base inquiring method to a desk-bound technical one” (Scott, 2000, p.553).

The dominance of neoclassical framings of economic activity and quantitative research methods within economic geography faced increasing contestation in the early 1970s. Earlier work, such as Karl Polanyi’s social embeddedness theory described in his book *The Great Transformation* questioned the fundamental assumptions of neoclassical economics. Polanyi (1944/2001) argued that economic activity is always embedded within and affected by various social, political and institutional forms. Polanyi’s work offers a refutation of the market fundamentalism of neoclassical economics; Polanyi (1994/2001) claims that the economy is a manifestation of social relations within political conditions, which means that economic relations cannot be determined only at the individual level. Polanyi conceptualized the dialectic fluctuations between disembeddedness and embeddedness with the double movement concept and claims that counter-movements are necessary to prevent social and economic crises and

counterbalance the rampant and dysfunctional self-regulating market. These counter-movements often take the form of state and civil society interventions in the economy, strengthening regulatory institutions, and increasing democratic participation in economic decision-making.

A new generation of economic geographers including David Harvey criticized the quantitative revolution's narrow focus on technical issues in urban and regional planning and neglect of deeper questions about how society and the economy are organized (Mackinnon et al., 2009). Harvey, along with a number of other geographers, sought to overturn the self-presumed neutrality of neoclassical spatial analysis and positivist regional studies by critiquing how those theories served "to mask the structurally determined injustices of capitalism" (Scott, 2000, p.487). Instead, critical economic geographers started to analyze how the forces of capitalist accumulation and associated systems and structures create and recreate new economic geographies for different classes of people.

Another notable branch of radical geography study is Marxist feminist geography, which sought to examine the unequal spatial distribution of economic activity and interrogate the relationship between economic development and gender relations within capitalism (Sharp, 2011). Marxist feminist geography has played an important role in radical urban geography by revealing the links between production and reproduction in capitalist modes of production (Hanson, 2006).

Last but not least, the uneven natural resources extraction activities and economic imperialism in the post-colonial period was another remarkable subfield of Marxist economic geography study. According to Wallerstein's (1998) world-systems theory, globalization has forged an interconnected network of nations, rearranged the global hierarchies, and established a dominant control over the world's resources and production. In this framework, core countries

distinguished with advanced economic developments and strong state institutions tend to extract and exploit the natural and labor resources from the periphery countries, which are generally correlated with less economic developments and influence in global politics. This structuralist framework has a profound impact across multiple academic disciplines in sociology, geography, and anthropology studies on examining the geo-political relationships between countries divided into core, semi-periphery, and periphery categories. Moreover, the framework has been pivotal in shedding light on global inequalities in power, wealth, and development under the context of accelerating globalization.

The 1980s marked the ascendancy and dominance of neoliberalism. Within national economies, neoliberalism advocates deregulating markets, minimizing state intervention in the economy, privatization of state-owned enterprise and institutions, and emphasizing individual responsibility over collective solutions (Scott, 2000). At the global scale, neoliberalism advocates increasing global economic integration and cutting national subsidies for export sectors (Barnes, 2000). Within this period of neoliberal dominance, rapid developments in internet, computer, and transportation technologies contributed to globalization and the remaking of the global division of labor. Economic geography during this period sought to understand inter-industrial transnational networks and both local and global divisions of labor divisions in the context of globalization. High tech manufacturing and the economic geography of local and regional development and the agglomeration and clustering of industry in regions such as Silicon Valley, Shenzhen, and Orange County were important themes within this research. Capital liquidity and new transnational flows of capital, goods, and services and the conception of geographic space as a system of dynamic flows, rather than a static structure of locations, were key topics and themes of this work (Scott, 2000).

Historically, geography was not the main subject of economists to consider the economy topics, However, their attitudes started to turn in the early 1990s as economist Paul Krugman started to combine the economic method with the spatial models to engage with economic geography topics (Gaspar, 2020). This innovative approach developed a new branch of economic geography, so-called new economic geography. The field was rapidly growing in science then, and was seen as the second wave of quantitative revolution in the economic geography field (Barnes, 2001; Gaspar, 2020).

In contrast with the economists' positivist and mathematical modeling approaches, geographers since the 1990s have strived to restore their unique position, bridging the hard sciences and social sciences, and shifting to the cultural turn and post-structuralist approaches that demand and justify new ways of looking at geography and the production of geographical knowledges. On a theoretical level, the cultural turn led economic geographers to look at the influence of economies on cultural practices, symbolic meanings, and embodied knowledge. This has led geographers to employ and refine qualitative methods such as participatory action research, interviews, ethnography, and participatory mapping which emphasize the real interactions between people to gain valuable embedded social insights.

In the past century, economic geography and its subfields have undergone a number of transformations. The field is constantly evolving with the course of history; it has developed multiple branches as a response to the contemporary historical contingencies and movements. As Trevor Barnes noted in his description of economic geography in the *Dictionary of Human Geography* (2012), "Inconstancy is the only constant, inconsistency the only consistency.

Research Questions and Positionality

Growing up in Yunnan, China, tea was always a significant socio-cultural convention embedded in our daily life. My family and I visited tea houses and tea plantations on a regular basis. As I became older, I realized that tea houses were not only places for people to enjoy tea but also served as an indispensable social connecting function as a social gathering place of community. During my latest visit, however, I was surprised to discover that most of the tea houses with which I was acquainted, had been withdrawn from the Puer tea retailing business and their tea houses closed. As Taiwanese and Hong Kongese joined the Puer tea trade around 2005, the price of Puer tea skyrocketed. As with most exotic agricultural cash crops, the Puer tea industry underwent rapid transitions in multiple aspects, including attracting multiple large financial investments and becoming conspicuously consumed among the new wealthy class and social elites. In recent years, with the development of digital platform technologies and the growth of e-commerce digital platforms, fewer customers visit tea houses to sample varieties of tea before purchasing. In addition, more capital has flooded into the industry, making it difficult for the individual, small-scale, and local retailers to hold on to their business. It was difficult for me to see this change occurring as tea culture is an essential component of our Yunnanese way of life. The uncertainties and conflicting feelings surrounding the financialization of Puer tea motivated me to undertake this research. My personal curiosity drove me to explore how I could position myself in a constantly evolving world and utilize my expertise to comprehend the impact of capitalism on the environment that is closely related to my cultural background.

Puer tea, also known as Pu-erh tea, originated in Puer, Yunnan, a far-reaching township near the southwest frontiers of China. Puer tea was named after the township because the town was the major distributing center of the Puer tea, but based on tea factory censuses and the

location of related tea supporting resources, the major active tea producing region is actually in Xishuangbanna Dai autonomous prefecture, Yunnan, China. Initially, Puer was an outlier in the tea world; only a small portion of Southeast Asian countries and Tibet consumed and stored the Puer tea on a daily basis. However, in the last two decades, Puer tea has become the most popular tea in China and its neighboring southeastern nations and regions, including Burma, Thailand, Vietnam, Hong Kong, and Taiwan (Zhang, 2014). The economic implications of the rising popularity of Puer tea is increasing year by year, accompanied by a deepening understanding and appreciation for its cultural and historical symbolism. Today, the price of Puer tea is four to five times higher than other varieties of teas, including green, black, and oolong tea (Zhang, 2014). There is no doubt that Puer has become the most prevalent and well-known tea in China. Its rapid expansion and distinctive status is inextricably linked to Puer's exquisite termination process and cultural and historical heritage, and inseparable from the clustering effect of the Puer industry and the tourism industry.

First, different from other varieties of tea such as green tea, black tea, or herb tea, Puer tea is a fermented tea, which undergoes a process of fermentation and oxidation after the leaves are dried, toasted, and rolled into a compressed shape. These exquisite and complex processes allow Puer tea to have its distinctive astringent taste and richer infusion color. Puer tea is available in two forms: raw (Sheng) and ripe (Shou), which are differentiated by the different drying, roasting temperatures, and fermenting techniques. Both of their flavors will evolve over time along with the fermentation process.

Second, Puer tea has its unique cultural heritage status and strong connections with specific ethnic minority groups. The ethnic minority groups in Yunnan including Dai, Yi, Hani, and Bulang have been involved in the cultivation, production, and consumption of Puer tea for

centuries, their indigenous knowledge and practice have shaped the unique characteristics of the Puer tea and cultivation of tea forest has preserved the the biodiversity is of the tropical forest. Twenty-five various ethnic minorities make up 30 percent of Yunnan’s total population, and the Han majority makes up the other 70 percent (Zhang, 2014). Yunnan is the most remote province in China with 394,000 square kilometers with 44.5 million total population (Zhang, 2014). Xishuangbanna prefecture borders Burma, Vietnam, and Laos (Figure 1).

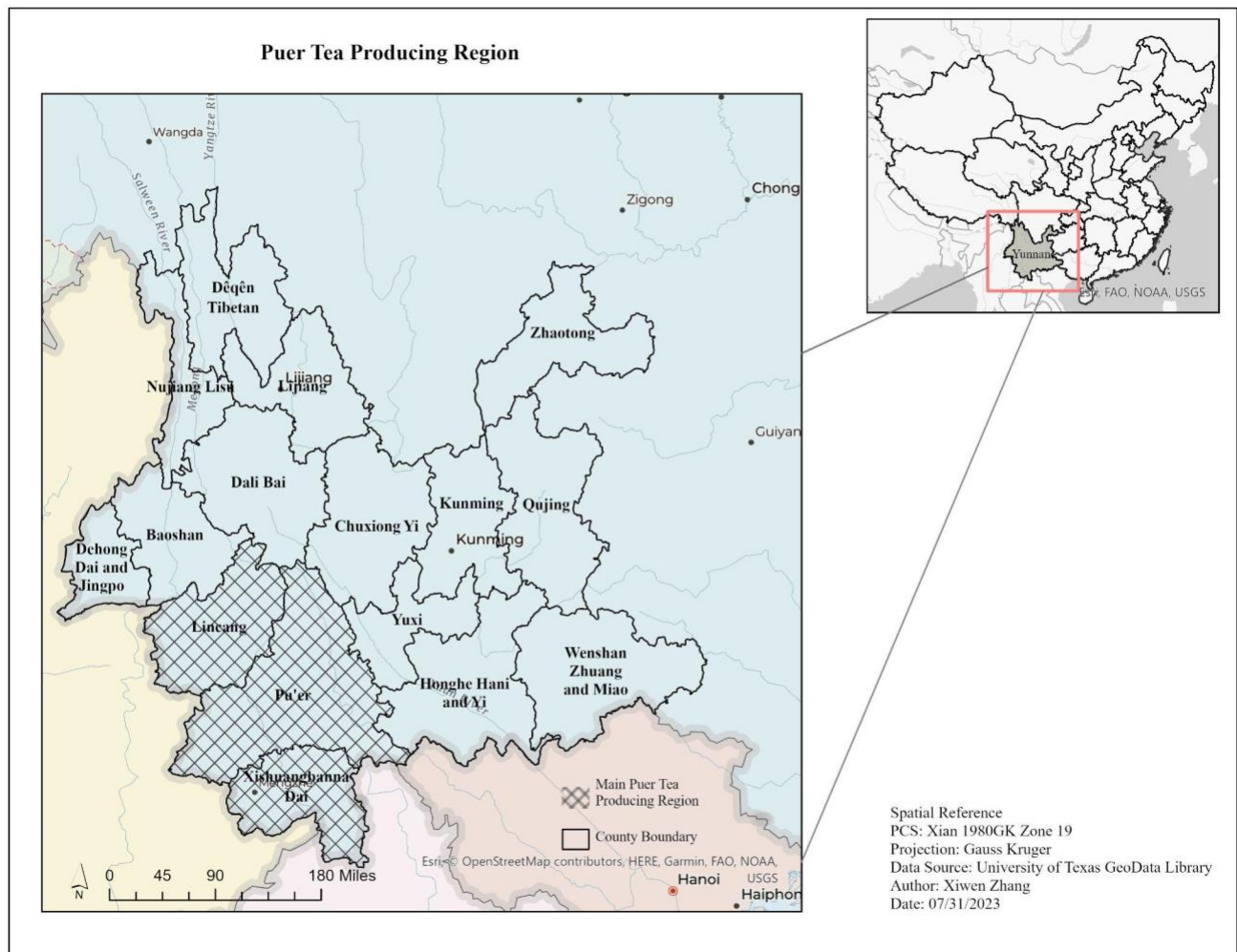


Figure 1: Puer tea producing region map Source: University of Texas GeoData Library (2015)

There are abundant and high-quality tea tree resources along the Mekong River, mainly located in Xishuangbanna, Simao, and Lincang. The minority ethnic groups such as Buland, Deang, and Hani have been cultivating and producing tea in those regions for at least a thousand years (Li, 2008). Significant migration of the Han population to Yunnan did not occur until the 14th century (Giersch, 2006). Additionally, it was not until the early eighteenth century that Chinese merchants started entering the tea-growing regions and subsequently gained dominance in the tea trade between inland China and the neighboring Southeast Asian regions in the late nineteenth and early twentieth centuries (Giersch, 2006; Hill, 1989). Later, Han immigrants introduced new tea processing techniques and established trade networks beyond Yunnan. The Han community played a crucial role in the expansion of Puer tea trading and its widespread popularity. However, the traditional indigenous knowledge of tea forest cultivation and tea processing practices remains at the heart of Puer tea's cultural heritage and uniqueness.

With increasing capital flowing to this industry, the once cherished tea culture and the social ties fostered within tea houses have been commercialized and undermined. The tea culture and indigenous tea processing practices have become promoted as a selling point for packaging, marketing, and speculation. As Puer tea undergoes financialization and digitalization, the meaningful social connections between tea houses and consumers have eroded, leading to the exclusion of indigenous ethnic groups and small-scale tea growers from the tea market. They are left with limited participation, mainly confined to consigning raw material processing.

Observing the structural changes occurring in my home region was the primary impetus for me to rethink the social and environmental implications of modernization, the globalization of agro-food trading, and cutting-edge developments in digital platform technologies in China's southwestern urban-rural transitional regions. My thesis aims to follow the traditions of

economic geography by taking the financialization and digitalization of Puer tea an entry point to understand the implications of global value chains of agro-food products under neoliberal globalization, the role of digital platform technologies in the financialization of food and the plantation economy, and the role of Chinese state governments in this transition. Simultaneously, I want to investigate how these global processes affect local social and political relations of class, gender, ethnicity, within and across generations, as well as their effect on local agrarian landscapes, land use and property relations, livelihoods, and the changing interface between rural and urban in Southwest China and Southeast Asia. These processes, in conjunction with coercive state and provincial Ecological Civilization policies and the Belt and Road initiative from the Chinese government, are rapidly transforming rural China as independent farmers and smallholders face both global and local capital forces, and state-led authoritarian environmentalism. I aim to use empirical evidence to further the current theoretical conversation around the Third Food Regime and debates around techno-optimism and pessimism.

This thesis aims to make several contributions. First, this thesis aims to fill a gap in the literature on Chinese food strategies in food regime theory, and provide a detailed historical account of how China has aligned its food security strategies and land use policies with the neoliberal food regime. Second, this thesis documents the ripple effects of digital platform e-commerce in the agricultural retailing and financial sector. Third, this thesis also seeks to subvert long-standing masculinist, objectivist, and positivist traditions in economic geography by examining Puer tea – as a culturally specific agricultural product – to shed light on the hidden geographies of underrepresented groups under neoliberal globalization. The findings contribute to a comprehensive understanding of the dynamics within the Puer tea industry in Yunnan and

offer valuable insights for stakeholders and policymakers in the domain of tea production and marketing.

Analytic Framework and Methods

Economic geography is traditionally concerned with the spatial organization of economic activities on different scales. After the cultural turn, economic geography's analytical framework expanded to focus on issues such as cultural, social, symbolic meaning, providing a more holistic picture of the various economic impacts across geographical locations. This study's primary analytic framework is the spatial interaction and interdependence framework, which examines how different regions interact and depend on one another economically (Hewings & Parr, 2007). This framework helps make sense of the socio-spatial disparities of the economic and financialization effects of Puer tea in various regions of China, as well as the connections between the trade flows of these regions and how they influence one another. The second analytic framework used in this study takes inspiration from food regime theory and Polanyi's concept of social embeddedness. These theoretical frameworks are both based in a historical political economy approach that analyzes the legitimacy of the state within capitalism and the formation of global hegemony within stable political economic regimes. While food regime theory has been criticized as a grand theory which neglects regional variation, this historical political economy approach is useful to interrogate the role of Chinese state power in the process of the Puer tea's digital revolution, and provides a holistic historical **narrative** for analyzing how the Chinese government is revising their national food security and land use policies to integrate China into neoliberal globalization.

In addition, the research also incorporates the general social poststructuralism and postmodernism approaches in order to include the various social factors into consideration which includes ethnicity, culture background, and social ideologies. Instead of capturing a singular static conception of truth, I believe that the social scientific work should accept the fluidity, multiplicity, and constantly evolving nature of political power, and socio-economic relations that constructed the social practices and identities. Therefore, this thesis tends to serve as a historical testimony documenting the empirical facts of the development of the Puer tea industry since the founding of the People's Republic. In addition, the inclusion of the comprehensive empirical is intended to transcend the binary, dichotomy oppositional ontology ingrained in Western thought.

This thesis is divided into two parts. The first part of the thesis uses the case of Puer tea, a culturally specific agricultural product, to trace how the Chinese government and its local institutions coordinate food security and land use strategies to integrate China into the neoliberal globalization.. In this part, I analyzed secondary documents to unravel the complex historical and cultural context of the land reform and landscape changes in the Puer tea producing region. To complement this analysis I conducted semi-structured interviews with local residents to understand how those policy changes influenced their decision making in tea farming and production. The second part of this thesis traces the history of the Puer tea trade to its current state to demonstrate how digital platform technologies affect the Puer tea industry. I undertook an inductive research approach starting with secondary data and document analysis, which led to the identification of salient themes throughout the Puer tea industry. I then conducted a small number of in-depth semi-structured interviews with local tea farmers, retailers, and tea brokers to gather detailed information about their experience with the digital platform economy.

Abstract

This chapter provides a systematic review of food regime analysis, beginning with the colonial-diasporic food regime and progressing to the various debates on the third food regime. The objective of this chapter is to outline the transactions and shifts of each food regime in order to gain a comprehensive understanding of the international labor division and patterns in the agricultural sector, the explicit and implicit rules of different food regimes to organize commodity supply chains, the socio-political forces and tensions within or across the food regimes, and the profound political and economic implications of these shifts. Most importantly, this chapter will also interrogate how the Chinese government's food security strategies, land use, and ecological civilization policies are integrated into the global neoliberalism corporate food regime by taking Puer tea as a culturally specific cash product to understand the agricultural transitions alongside a sequence of political and socio-economic changes in the context of China's contemporary history. Furthermore, this chapter provides insightful analysis on the far-reaching implications of those changes on agricultural practices at the local scale. The case study of Puer tea will provide empirical narratives on food security and land use policy reform in contemporary Chinese development, particularly in the frontier region, to understand China's position within the food regime theoretical framework in recent decades. Thus, I argue that China has aligned its food security strategies and agrarian reform policies with the neoliberal food regime by reducing the emphasis on food sufficiency for staple foods and shifting to a moderate food import strategy. Meanwhile, inland agricultural production is favored to cultivate cash crops as main crops, which would be more profitable for local farmers.

Introduction

Food trading was one of the traditional topics of economic geography which related to the global political structural and domestic food security policies. The notion of food regime was originally proposed by Harriet Friedman and Philip McMichael in "Agriculture and the State System" in 1989 to unfold the international political and economic hegemonies of organizing transnational food and labor relations through the world-historical political and economic perspective. The primary purpose of the food regime theory was taking world-historical political and economic approaches to explore "the role of agriculture in the development of the capitalist world ecology, and the trajectory of the state system" (Friedman & McMichael, 1989, p.93). The food regime could be interpreted as a series of successive stages of capitalist accumulation. Each

food regime is regarded as a historical period characterized by relatively stable political and economic relationships, with an emphasis on global stability in organizing the agro-food system (Friedman, 2005, McMichael, 2009). Friedman and McMichael (1989) conceptualized the first two food regimes: the colonial-diasporic food regime during the British hegemony era (1970-1914), and the mercantile-industrial food regime during the period of U.S hegemony (1945-1973). As the development of neoliberal globalization, many scholars extended the food regimes framework to comprehend and unveil the complex internal and external tensions, crises, and dynamics of the contemporary agrofood system, which is characterized as the third food regime from the late 1980s to the present.

Both Friedman (2005) and McMichael (2009) pointed out that each food regime was the combined outcome of various social movements interacting with state profit-seeking strategies for primitive capital accumulation. The transactions and shifts of each food regime were initiated by a series of internal and external social and political tensions and crises. Thus, this chapter takes the chronological approach to scrutinize the distinctive features, characteristics, fundamental formulations, internal and external tensions, and restructurings of each food regime to present a systematic review of food regime analysis. Meanwhile, this chapter also includes the case of Puer tea's certification transitions and its land use changes as a representative culturally specific food agricultural product to contextualize the unstable and divergent dynamics of the third food regimes on the global and local scale. Furthermore, this paper aims to open the discourses of the potential counter-movement strategies to provide alternative solutions of the monocultural exploitative, and export-oriented agricultural system and exploring the alternatives system structure besides market oriented capitalism.

The Colonial-Diasporic Food Regime, 1870-1914

The colonial-diasporic food regime burgeoned with the culmination of colonialism. In the late nineteenth and early twentieth centuries, following the industrial revolution, the British Empire rapidly expanded its colonies and nation-state system (Friedman & McMichael, 1989). The colonies of occupation were constituted by regions and countries in Asia and Africa, such as Burma, Malaya, and India. In contrast, the colonial settlements were founded by the European settlers who were fleeing economic deprivation and political persecution in Europe, and they established family farms in the United States, New Zealand, and Australia (Friedman, 2005). Both colonial settlements and colonies of occupation were subject to centralized rules, directly governed by a centralized bureaucratic complex that administered colonial affairs from the metropole (Friedman & McMichael, 1989). However, the settler colonies acquired greater degrees of flexibility and independency compared to the colonies of occupations, which retained robust political and military control over the colonial territories.

With the emergence and expansion of European colonialism, the liberal theory of capitalism became the prominent governing principle of the nation-state agrofood system. In order to maximize productivity and efficiency, take advantage of different areas' comparative advantages, and reduce the opportunity cost of global agrofood production, the vision of the international division of labor was deployed within the imperial colonialism system through international patterns of specialization (Bernstein, 2015). On the one hand, the international specialization division designated settler colonies to produce inexpensive staple foods and raw materials for the European market, including wheat, corn, maize, livestock, timber, and cotton (Friedman and McMichael, 1989). In contrast, the colonies of occupation supplied metropolitan economies with exotic tropical products such as silk, rubber, tobacco, coffee, tea, cocoa, sugar,

and bananas (Friedman and McMichael, 1989). The distinctive characteristics of specialization between settler states and colonies were determined by their geographical and climatic conditions, but the underlying logic is consistent: to maximize the efficiency of the organization in the global agro-food market and cheapen the wage labor food through regional specialization in order to reduce the social reproduction cost and various types of capital expenditures of capitalist accumulation (Araghi, 2003, Moore, 2010).

Meanwhile, both settler states and occupied colonies constituted the external territorial expansion of the British. Due to the increasing demands of transporting specialized commodities, the construction of railways, ports, and roads serve as indispensable consuming outlets of the European manufacturing products and tools to support the construction of state infrastructures (Friedman, 2005). In other words, the settler states and occupied colonies are not merely external political territories supplying foodstuffs and raw industrial materials to sustain the British hegemony, but also emerged as vigorously promising economic market frontiers for Britain and European capitalist accumulation.

During the first food regime, the agricultural hinterlands (settler states and colonies) were subordinate to industrial metropolises (European countries and Britain) due to the world's restrictive political-economic vertical hierarchy. As Britain was the international trading center for food crops, the sterling/gold standard determined the dominant form of capital (Friedman and McMichael, 1989). As a result of sterling's role, Britain retained considerable authority and flexibility to arrange international markets by manipulating balances to maintain liquidity in the multilateral trading system (Friedman and McMichael, 1989). With the combination of regional specialization, vertical political power structure, economic liberalism governing principles, sterling as the dominant form of capital tied to the gold standard, expansions of farming and

trading frontiers, and advanced technological development during the industrial revolution, Britain surged as the leading power in the world for the subsequent decades.

Through the occurrence of the international division of labor, the family farms of export-dependent settler states played a crucial role in the formation of the first food regime (McMichael, 2009, Friedman, 2005, and Bernstein, 2015). The primary difference between this form of organization and the prior form based on a self-sufficient peasantry is that these family farms were based on the settlement of expropriated land and relied on the underpaid labor of family workers, which enabled them to generate marginal profits and lower production costs than farms in England or elsewhere (Friedman, 2005, McMichael, 2016). According to McMichael (2009) and Friedman (2005), the entire national framework of capitalism was itself contentious, as it thrived on the international specialization that constructed an exploitative prototype of large-scale monoculture and export-oriented production practices, paradoxically based on "notorious exploitation" of agricultural labor in the settler states and occupied colonies (Friedman, 2005, p.236). The immediate effect of the model of exploitative specialization was a decrease in food prices in European metropolises. However, in the long run, it triggered an agricultural production crisis in Europe, resulting in a downward spiral of domestic agricultural production, which reinforced the immiseration and eviction of small farmers and agricultural workers from the countryside. On the other hand, it created a complementary upward spiral of immigration to staples exporting regions in settler states such as the United States, Australia, and New Zealand (Friedman, 2005). With the explosion of agricultural growth in settler nations, particularly the United States, and the emergence of the nation-states system, the British-centered international economy came to an end with the outbreak of World War I and the subsequent economic recessions of the 1920s (Friedman and McMichael, 1989).

The Mercantile-Industrial Food Regime, 1945-1973

After three decades of endless wartime and economic recession, the second food regime was recognized and began with a series of economic restructuring, accompanied by the establishment of sovereign governments in former settler states and arising decolonization upheavals and independence movements in South America, Asia, and Africa (Friedman and McMichael, 1989). In response to the economic recession and prevented countries from embracing socialism and joining the Soviet Union, the U.S. federal governments set up the New Deal and Marshall Plan around the same time as major political pillars to sustain and expand its exported market through providing foreign aid to the postwar European countries and post-colonial countries (Friedman, 2005). Moreover, in 1944, the United States formed the Bretton Woods international monetary system with the other 44 countries to govern the fixed exchange rate of foreign currencies. Since the United States held two-thirds of the world's gold reserves after World War II, the agreement mandated that all currencies convertible to the US dollar and the US dollar linked to the gold standard in order to prevent periphery countries from unregulated developing through export-led growth supported by undervalued exchange rates, capital controls, and official capital outflows in the form of reserve asset claims on the center country (Dooley et al., 2004). These three significant events fundamentally restructured the global political and economic structures; in conjunction with the rise of the nation-state system, the United States ascended to global hegemony in the capitalist world economy, aided by the US dollar serving as the medium of international trade and financial transactions (Friedman and McMichael, 1989, Friedman, 2005, and Dooley et al., 2004).

As the decolonization and independence movements in Latin America, Asia, and Africa, undermined the British international colonial division of labor, the United States was pressed to

enhance its leadership role in governing global food relations and the political, economic capital system. Thus, the second food regime's primary theme centered on "food aid," exporting subsidized foodstuffs to European and developing nations in the name of economic restoration and modernizing civil infrastructure, transforming the United States into the second food regime's dominant exporting country. Friedman and McMichael (1989) named this period the mercantile-industrial food regime of 1947-1973. As the United States took the unique role of the US dollar to trade with the developing countries and supported post-war European countries restoring their economy and stabilizing political status, it had temporarily succeeded in reestablishing trading partners and redefining the emerging implicit colonial rules that symbolized the fundamental characteristics of mercantile-industrial food regime (Friedman, 2005, McMichael, 2006).

The U.S. mercantile-industrial policies in the agricultural sector were led by the classic liberal ideology, which believed in the omnipotence of a laissez-faire market. In contrast to the socialist centrally planned economy, it places a premium on the capital market success of individual self-determination and competition (McMichael, 2006). However, in comparison to the first food regime's free trade relations, the U.S. government went a step further by implementing a parsonage-based subsidize strategy to maintain chronically low global food prices, destroying many developing countries' self-provisioning agricultural systems, transitional agricultural practices, indigenous cultures, and epistemologies through dumping their ever-increasing wheat surplus to developing countries (Campbell and Dixon, 2009). On the other hand, the U.S. government enacted protectionist restrictions on food imports to prevent foreign nations from discouraging and undermining American agricultural production by introducing a handful of cheap food to the U.S. domestic agrofood market. Later on, Japan and many other European

countries adopted the same mercantile-industrial approach to reduce their food prices and joined the export competition of the international agrofood trading market (Friedman, 2005). The food aid dumping feature is one of the most prominent features of the second food regime, selling the commodity at a price lower than its domestic prices. In the long-term, the most conspicuous implication of the dumping strategy was disrupting receiving countries' self-sufficiency agricultural systems and displacing the commodification of traditional food, which has been widely observed in developing countries, particularly in South America and Africa.

Simultaneously, in the Global South, mercantile agricultural strategies were adopted locally as well, governed by World Trade Organization (WTO) and International Monetary Fund (IMF). However, in the Global South, the practice of mercantile-industrial approaches is emphasized on the industrialization of agriculture, so-called Green Revolution, which dramatically revolutionized food production practices, by deploying genetically modified organisms, chemical fertilizers, pesticides, and herbicides (Cleaver, 1972). As technology and farm machinery continue to improve, it appears as though the global south countries were slipping into the circuit of the debt traps, where they were subjected to the Global North's technical and financial constraints and suffered from displacing their traditional agricultural production system and increasing proletarianization (Friedman and McMichael, 1989). From the global perspective, the practices of the Green Revolution deepened the metabolic rift between the bases of production and consumption by reducing reliance on human labor for food production and causing countless unsustainable ecological and environmental injustices issues which posed a potential contentious crisis for the second food regime (Campbell, 2009). Furthermore, as Bernstein (2014) stressed, there are no "peasants" in the context of current capitalist globalization and agricultural production mode because the processes of commercialization of

subsistence in capitalism have shifted petty commodity producers to labor forces of large-scale agricultural production.

The rise of the second food regime not only changed the agricultural food production system, labor relations, and traditional agrarian practices, but also introduced new agro-industrial relations. Unlike the rigid mechanistic connectivity between rural and metropolitan areas, the restructured agro-industrial relation in the second food region had developed into a large network complexity (McMichael, 2016). The distinctive change was that agricultural products were no longer merely used directly as industrial inputs or manufactured goods; rather, as agricultural specialization and integration of specific crops and livestock intensified, agricultural productions expanded across national borders, culminating in more corporations and industry integration (Friedman and McMichael, 1989). The main hallmarks of these interactions and commodity chain transformation are represented as durable food complexes, intensive meat specialization complexes, and artificial substitutions of sweetness and oil. The restructuring around agro-food complexes were centered on the feedstuffs industries such as meat, sugar, oil, and soybeans, which resonated to the third world proletarian process, aim to cheapen the food prices for the working classes, and lower the social reproduction cost for capitalist accumulation.

From the supply and consumption chain perspective, the restructured agro-food industry created externalities between consumption and production, disconnecting consumers from the resources and commodities on which they rely on a daily basis. This echoes Marx's commodity fetishism, which predicted that as capitalism embedded in every aspect of the society, wage labor and commodity consumers would become alienated from the commodity producing process, and the consumers would only connect with commodities by prices (Marx, 1867). The mechanics of capitalism's agro-food supply chain conceal the origins and continuous labor relations under the

mask of reduced food prices, alienating those exploited laborers who produce the commodity as the increasing specialization of labor division is being deployed. Additionally, from an environmentalist perspective, the system operated on increased industrial inputs, reduction in internal natural cycles on farms, and increased pressure on landscapes and animal bodies, all of which increased environmental externalities and widened the metabolic rift between human and nature culturally and ecologically (Davis, 2002, Friedman, 2005, and Campbell and Stuart, 2007). Thus, McMichael (2009) used the term "Food from Nowhere" to characterize the anonymous feature of the second food regime. The new arrangement of world food production based on neoliberalism operated in endless substitutive and transnational product chains obscured the social, geographical, economic, and technical bases of its production regime.

The restructured agro-food interactions have a range of consequences for the global south and north, but they have different impacts on the developed and the developing worlds. Since the global north food aid and financial supports had destroyed the autonomous, self-sufficient agricultural system in the global south, engined hunger, starvation, and food insecurity in developing countries. In the long run, as the U.S. currency devalued, many governments in the global north were unable to afford to support their own exports (Friedman, 2005).

Simultaneously, multiple human rights, food security, and food sovereignty social movements were taking hold throughout the global south to advocate for democratic food policies, redistributing food production and decentralizing decision-making in the agro-food system (Friedman, 1993, Campbell, 2007, and Friedman, 2005). Meanwhile, environmentalists and feminist ecologists were constantly challenging the legitimacy and severe environmental consequences of the mercantile-industrial food regime and the United States' predominance in

arranging agro-food relations. These political-economic crises, as well as mounting societal tensions and criticisms, are conclusive evidence of the second food regime's downfall.

The “Food from Somewhere” Regime, late 1980s- present

Following the demise of the second food regime in the late 1980s, the third food regime has been engineered with a variety of environmental, human health, and public nutrition concerns toward exploitative, monocropping, export-oriented, highly centralized, intensive specialization agrofood production modes. Along with the rapid implementation of globalization, the third food regime is transitioning from the monopoly hierarchy structure, which symbolized a more monolithic and homogenous global socio-political dynamics, to a multipolar and heterogeneous world system structure. It broke the linear history of food industrialization; the numerous analyses attempt to capture one of the most vexing characteristics of contemporary agricultural production systems. In general, the debates can be categorized into five accountable perspectives: corporate food regimes (McMichael, 2012), corporate-environmental food regime (Friedman, 2005), financialized food regimes (Burch and Lawrence, 2009), Nutrition Transition food regime (Dixon, 2009), and Green capitalism and "Culture turn" food regimes (Campbell, 2009). These narratives are not mutually exclusive, but rather differentiated based on their geographic focus and observed food types; they complement each other and provide a comprehensive view of the contemporary agro-food production system.

In contrast to the concept of "Food From Nowhere", the overall socio-political transition of the third food regime seeks to raise awareness of "Food From Somewhere." Additionally, the third food regime tends to re-embed social legitimacy and locally and ecologically based concerns to restructure the relations of the agro-food industry. The term “corporate food regime”

is a widely recognized concept in the literature of the third food regime, which refers to a variant aspect of the third food regime, characterized by the increasing privatization and dominance of large multinational corporations and agribusiness governed by neoliberalism policies to control various aspects of food production, processing, distribution, and retailing (Friedmann 1993, Friedmann 2005, McMichael 2005, and Campbell, 2005). Along with the implementation of large scale agriculture industrialization, rapid development of genetically modified organisms (GMOs) technologies, the supermarkets and local agro-food retailing stores were undergoing rapid growth and transformations in the 1990s which were examined in many empirical studies of supermarket revolution, across the global north and south. Northern grain exports to the south and southern grain exports to the north were presented as distinct patterns (Bernstein,2015). The supermarket revolution drastically exacerbated the international labor divisions in agriculture products and expanded the transnational classes of wealthy and impoverished consumers (Friedmann, 2005, and Reardon & Swinnen, 2004).

In the third food regime, Friedmann and McMichael's individual focuses were on distinct geographical regions and social transitions. McMichael took the global political economy approach which grounded the traditions of the world system focusing on understanding the world's history of capitalism is undergoing profound transformation as a result of the politics of neoliberalism, privatization, and world-scale globalization. The de-regulation of financial relations, calibrated monetary and credit relations, privatized international debts, corporatization of agriculture and agro-exports, and a world-scale casualization of labor, all of which are causing the actual agricultural food price strikingly divorce from its real costs (McMichael, 2005, p.273). McMichael's theory is a broader and encompassing definition on the global scale, especially when considering the empirical cases in South Africa, America, and southeast Asia, with the rise

of farmer's social movement, La Via Campesina, and everyday resistance depicted in *Weapons of the Weak*, the tensions caused by various global neoliberalism politics and overwhelmed technology dominance of the Green Revolution have caused land and food sovereignty to slip out of farmers' and peasants' hands. The intense unequal power dynamics have compelled peasants and even the marginalized groups to find their ways to resist and against the exploitation through everyday subtle actions (Scott, 1985). Furthermore, McMichael (2005) observed that local resistances have evolved into a collective international grassroots movement fighting for food sovereignty, agrarian reform and land use rights, sustainable agriculture practice, gender equality and women's rights, and climate justice and environmental protection, which strives for a more inclusive environments in global forums such as the United Nations (UN), Food and Agriculture Organization (FAO) and the World trade Organization (WTO) to promote alternative visions of agriculture and food systems that take the social justice, sustainability, and the right of small-scale farmers into considerations (McMichael, 2009).

On the other side of the globe, Fridmann, Campbell, and Petrini observed the emergence of the upper-class consumers' consciousness of food safety, environmental sustainability, and farm workers' rights, which initiated a consumer to producer social transition characterized by various certification processes, including green labeling, standard qualities, place branding strategy, organic labeling, and fair trade labeling. All of the above are representatives of the inception of green capitalism and green protectionism. Moreover, as the general trust declines in technological optimism and technology solutionism, the notion of "Food from somewhere" opens up the alternative discourse over the new agricultural production relations and practices aimed at maintaining the sustainability and resilience in social-ecological systems (Campbell, 2009). Friedmann (2005) suggested that green capitalism on the one hand, represented the rising

environmental sustainability awareness among upper-class consumers in the majority of global north countries; on the other hand, the certification process symbolized the unequal power relations between the global north and south, in which the global north countries are imposing the "right" ideology and values to interfere with the local agrarian practices. As Campell's (2001) study of the organic label in New Zealand indicated, the organic agricultural movement will inevitably become commoditized and corporatized, which may impose substantial barriers for small-scale farmers to enter the export market and be overwhelmed by the costly up-front costs.

As McMichael (2009) suggested the global food regime offers a theoretical framework to capture the fundamental agrarian transitions underlying the global capitalism accumulation and political economy hegemony hierarchy. The theory made a significant contribution to the understanding of the patterns of global food circulation as well as the political-historical power structure (McMichael, 2009). However, the theory itself still received variant criticisms based on its inherent Eurocentric Anglo American perspective and over-simplifies history of the complex dynamics of the global food system. First, it was somewhat criticized as a grand positivism theory for emphasizing the periodized stable, ruled, and governed structures of agro-food trade and regime stability while omitting the alternative subcultural agro-food system throughout the world (Green, 2022). In other words, while acknowledging the importance of transnational corporations and international organizations like the WTO and IMF, the theory as a whole tends to emphasize global or transnational structural forces and power relations while ignoring local agency and their resistance to the development of alternative food systems. Thus, as Watt (1996) critiques that it is crucial to acknowledge that capital is always valorized locally, which encourages future researchers to focus more on comprehending how global power altered local social relations in the process of food commodification. Second, on the geographical scale, the

entire North America, Middle East, North Africa, Northeast Asia continent, and countries that are not part of the British Colonial system were barely granted any credit in the discussion. The traditions of food regime theories are criticized by Araghi (2003) for adhering to the Eurocentric Developmentalism ideology, which inherently upholds the legitimacy of subordinate hierarchical local power structures. Instead of concentrating on the extensive global power relations, Araghi (2003) stresses the significance to understand the interrelationships between global and local scales in agrarian production arrangement. Araghi (2003) suggested that theoretical work should avoid conflating connections between developmentalist/positivist concepts of Marx, colonization, and imperialism. Instead, scholars should focus more on contemporary relations of neoliberal capitalism, particularly how global relational values are valorized in the various regional empirical studies' contexts. Last but not the least, the theory of food regime suggested the linear trajectory of rural changes, however, the historical progression of food regimes was not linearly progressed; rather, each food regime was discrete to one another, and the transitional impetus was also involved with external contingencies of agro-food trading (Green, 2022, Campbell and Dixon, 2009) .

As Campbell and Dixon (2009) concluded since the 1990s, the food regime has given rise to numerous attempts to validate and extend its theory's arguments and restates its positionalities in response to those strong critiques of the food regime's approach and its grand orthodox structuralism ambitions. Food regime approach was muted in the early 2000s. Until the AFHVS and ASFS panels in 2007, the discussion of the food regime took post-structuralism approaches resurged along with the thrive of the New Rural Sociology which transitioned the debate over family farm survival to a broader consideration of the capital relations between on-farm and off-farm and how its change the agrarian practice and configuration of agricultural capitalism under

broader context (Campbell and Dixon, 2009). As many scholars suggested that even though, there is no path dependency or linear inevitability in the undergoing the history of food, agricultural and food politics, with the post-structuralist approaches, there is no doubt that the food regime theory remains as a key statement and lens to unfold the historical contingencies and its manifestations and relations to the dynamics of the natural and social ecologies.

Among all the discussions and debates regarding the third food regime, there is a most striking question that interested me: why was China, as the second largest economy and major food producer and consumer of the world, not involved in much of the conversation in the first and second food regime? How China's food strategies and land use policies were integrated with the global food system starting the late second food regime? What kind of agrarian transitions are taking place at the local scale in response to those strategies and global food trading capitalism? I believe the historical transitions of the Puer tea industry could be a unique empirical case to provide insight into the indirect connections between the global food system and Chinese local frontier land management strategies.

Emerging Chinese Food Regime

The rising dominance of China in global food trade and the reconfiguration of global political and economic relations have garnered increased attention in recent years. Green (2022) indicated that recent literature on the third food regime has identified and extensively discussed three trends. First, China has adopted neoliberal economic strategies to ensure domestic food security by increasing the agro-food imports overseas (Green, 2022). Second, Chinese state companies and state governments are adopting mercantile corporate strategy to secure food supply in multiple continents by channeling national funds and providing subsidies to multiple

developing countries to support their local infrastructure and agrarian developments in order to increase China's international influences over transnational corporations' control over agro-food production, processing, and distribution processes by extending its market frontiers (Green, 2022, Jia et al., 2021). Third, China's recent food strategies were rooted in neoliberalism's market rule and restructured the global hegemony structure by virtue of its enormous market share due to its giant market sharing percentages (Green, 2022). Overall, China's engagement in the global food trade system has increased, and it has been identified as a potential dominant force in the arrangements of the food production system.

It is worth noting that in recent Chinese food regime literature, there has been increased criticism of the Chinese government's overseas agricultural and infrastructure investments, with accusations that Chinese state government food strategies have a significant impact on food sovereignty and local ecological environments in countries where it has invested, particularly in most Southeast Asian nations such as Thailand, Cambodia, and Burma, along with the Belt and Road Initiative (Green 2022, Michael 2020). Number of scholars have observed that the Chinese government and its state-owned agricultural firms benefited from neoliberal market rule and further integrated their agro-food trade into the global market, as well as taking advantage of local policy laxity and geographical production advantages to accumulate raw materials for domestic production and consumption (Green, 2022). Various studies have examined how Chinese state forces are altering the overboard agrarian system, including rice production in Cambodia (Green, 2022), ChemChina's acquisition of Swiss Syngenta and entry into the digital platform agricultural business (Belesky and Lawrence, 2019), and exploitative rubber production in Myanmar (Woods, 2012). All of those empirical studies centered on how China as a rising global hegemony affected the agricultural production systems and political-economic outcomes

of its neighboring nations; however, in this chapter I tend to anchor from the local perspective within the Chinese national frontier in order to comprehend the historical contingencies that are shaping Chinese agro-food strategies and how these events are altering local agrarian systems. In this manner, I would use Puer tea as a unique culturally specific product to analyze the transition of the food regime on multiple scales. The case of the commodification and certification of Puer tea would provide an insightful account of how global food productions, Chinese food strategies, and green environmental capitalism are pivotal external forces of local agrarian transitions.

The Pre-modern Commodification History of Puer Tea

As the previous chapter mentioned, China has an extensive history of tea consumption, and Puer tea is one of the distinctive varieties of tea that originated during the Tang dynasty. Puer tea was particularly popular through the Song dynasty. Zhu Yuanzhang, the first emperor of the Ming dynasty (1368-1644 CE), banned compressed tea to alleviate tea growers' labor burdens (Zhang, 2014). By the fourteenth century, loose tea had supplanted compressed tea as the dominant form of tea. Notably, because Xishuangbanna, Yunnan is located far from the central plains of China, the emperor's order never reached Yunnan, and as a result, Yunnan Puer tea continued to be produced in compressed form and traded with Tibet along the Ancient Tea Horse Road. The Ancient Tea Horse Road, also known as the "Southern Silk Road," connected the lush landscapes of southwest China with the bleak wastelands of Tibet and the barren plains of northern India (Forbes, 2011). In contrast to the Silk Road, which followed relatively well-defined routes, the Tea Horse Road was more of a tangle of tracks, a network of paths that changed over time and under various political entities (Forbes, 2011).

By the eighteenth century, the Qing administration extended its control into Yunnan province, conquering local officials and replacing them with imperial bureaucrats, and established an imperial office in Puer (a township in Simao prefecture) to manage the tea trading business in the Great Six Mountain regions (Hill, 1989; Zhang, 2014). Puer tea was never grown in Puer; instead, Puer township served as a center for processing, bulking, and taxing tea cultivated in the Great Six Tea Mountains located on the east bank of Mekong River, Xishuangbanna (Hill, 1989). Puer tea was transported out of Puer township in three directions through caravan or human couriers (Figure 2).



Figure 2: The cognitive map of Ancient Tea Horse Road (Zhang, 2014, p.87)

First, Puer tea was transported for domestic consumption and reached Chengdu by way of Puer to Kunming (Hill, 1989). Along the way, Puer tea was transported to Beijing as a tribute to the Qing emperor. Second, the northern route was directed to Tibet. That route was frequently blocked by hostilities on the Sino-Tibetan border (Hill, 1989). The third route was towards

southwestern Asian countries, through British Burma, Vietnam, and Laos (Hill, 1989; Zhang, 2014). When the northern route was blocked, Puer tea would ship to Rangoon along the southwestern route, then took waterway to India and then overland to Tibet (Hill, 1989).

In the nineteenth century, Menghai in the Xishuangbanna was a well-developed center for cultivating, bulking, and processing tea, located on the west bank of the Mekong River (Hill, 1989). Although Puer, with its two custom substations in the Six Great Tea Mountains area including Yiwu, continued to serve as a depot for raw tea from the east of the Mekong River, its commercial potential was diminished by the rise of Menghai to the south, owing to Menghai's geographical proximity to Burma (Zhang, 2014). Meanwhile, the traditional northern Tibetan market began to dwindle, and Puer gradually lost absolute control over tea trading in Yunnan (Hill, 1989). The first tea company was established in Menghai in 1909, and seventeen additional family-owned tea trading enterprises were established during the next thirty years (Hill, 1989). Menghai's rise as a hub for tea processing and trading was primarily due to British Burma. A significant amount of tea demand came from Britain through Burma, placing orders for tons of crude processed tea in Menghai (Hill, 1989). On the other side of the Mekong River, apart from supplying tribute tea to Beijing, the Six Great Tea Mountains region overseen by a Puer imperial office was also engaged in continuous trade with British Burman and neighboring Southeast Asian territories like as Lai Châu (now in Vietnam), Phongsali (now in Laos), and Bangkok (Zhang, 2014). Despite the high cost and complexity of transporting tea from Menghai and Puer, the tea production yield and revenue steadily increased during the first quarter of the nineteenth century (Hill, 1989).

The Contemporary Commodification Transitions of Puer Tea and Land Use Changes

Survival Mode in the Communist Period (1930s-1970s)

The prominence of the tea trading business was dealt a severe blow in the early 1940s, when China entered into the War of Resistance, followed by Civil Wars and a series of political upheavals over the next thirty years. Almost all the family-owned tea businesses were demolished during political conflicts and wars. During World War II, tea transportation was disrupted by the War of Resistance (1937-1945), as the Japanese occupied Burma in 1942 and

barred the northwest route; thus, the tea trade between Xishuangban and Tibet almost ceased (Zhang, 2014). Although the tea trade recovered somewhat during the civil war between the Nationalists and Communist Party in the 1940s, because the major civil war battleground was not in Yunnan, the tea producing scale continued to diminish (Hill, 1989).

Following the establishment of the People's Republic of China in 1949, the radical emancipation movement preluded to the long-lasting, systematic, economic, industrial, and agricultural restructuring led by the Mao administration. First, to achieve the goal of the first Five Year Plan, which aims to transfer China's lagged agrarian economy into an industrialized nation. Unlike Kausky's bifurcated class opinion among the peasantry class, Mao and his administration office's opinion and procedures were more aligned with Lenin's perceptions that neither the peasant nor their holdings could or should be preserved, as they believed that peasants would eventually lose competition with global competitors and would inevitably transition to capitalist large-scale production. The land reforming restructure measure intended to expropriate land from landlords and redistribute it to landless peasants, which resonates with the traditional agrarian question regarding the origins of capitalism, the forms of capitalist agriculture, the transition from feudalism to capitalism, and the subsistence of peasantry (Watts and Goodman,

1997). Therefore, according to Mao and the communist party the only solution is to convert peasants into future proletariats by mandating collective ownership, unified collective operation, and nationalization of industry and commerce. In response, the state government seized control over the purchase and sale of foodstuffs, including tea, effectively shutting down all privately owned businesses by mandating the nationalization of industrial and agricultural production (Zhang, 2014). The planned-economy state control distribution policy's crackdown on landlord-owned tea producing enterprises in Puer and neighboring tea mountains rendered the only means of subsistence in the tea-growing region as the production of basic rough tea materials for processing by state-owned tea factories (Zhang, 2014).

During the reign of Mao (1949-1976), the tea growers endured tremendous hardship, severe turmoil, and struggled to survive. On the one hand, the farmers were suffering from the Great Famine, a period of food scarcity during the 1950s and 1970s, when at least one-third of local families were deficient in grain (Zhang, 2014). Some of the tea growing fields were replaced to plant rice, corn, and legumes. On the other hand, during the food shortage period, the Cultural Revolution (1966-1976) was taking place simultaneously. Tea farmers and civilians were suppressed by the exclusive emphasis on political struggle. During this time period, any consumption motivated by the desire to improve an individual's standard of living or way of life was condemned as "negative capitalism" (Zhang, 2014). Numerous public tea houses were demolished, and domestic tea consumption was largely restricted to individual households. Nevertheless, tea production did not entirely cease. The state-owned tea factories continued to export a limited quantity of Puer tea to Tibet to maintain inter-ethnic relations, as well as to Hong Kong, Marco, and other countries in order to earn foreign currencies (Zhang, 2014).

From the global perspective, since China was involved in the Korea and Vietnam war, and being the largest trade partner with the Soviet Union in the Cold War region, led the American government imposing a total trade embargo on China from 1950-1971 (Zhan, 2022). Due to these complex political economic interventions and the impact of the internal political turmoils, including the Great Famine, the Great Leap Forward, and the Cultural Revolution, the primary food strategy, land and resource distribution strategies were designed to feed the population and increase domestic production in order to attain hundred percent of self-sufficiency in industrial and agricultural production. Consequently, Puer tea was not recognized for its unique cultural and social heritage values during this time period, and some of the primitive ancient tea forests were converted into other agricultural product fields in accordance with the primary food strategies and self-reliance political orientation.

Early Reform of Household Contract Responsibility System (1970s-1990s)

After years of decoupling from the capitalist economic world, China launched the market reform and implemented the opening-up policy in 1978 (Zhan, 2022; Zhang, 2014). During the period of economic Reform, the entire Chinese society again underwent an upside-down reorganization, which transferred Chinese society slowly to the pre-capitalist system. The restructuring was not solely confined within the industrial and commercial sectors, but also in the agricultural sector, in an effort to restructure the land accessibility and ownership of the production means. Due to the poor performance of the commune system, the Communist party realized that the centrally controlled property rights had severely dampened farmers' enthusiasm for production, consequently, a systematized agrarian reform was deemed essential for reviving economic development.

The household contract responsibility (family-based contract responsibility) land redistribution program officially started in the mid-1970s in response to the aforementioned problems. The primary objective of the household contract responsibility system was to generate production incentives by reallocating land use rights and decision-making based on farmers' performance (Chen and Davis, 1998). The vast majority of communal land was distributed to smallholder farmers as agricultural land. The remaining non-agricultural land is managed by the state, including national forests and state parks, with actual stewardship delegated to township and village committees (Hammond et al., 2015). The distribution of agricultural land is wholly dependent on the egalitarian principle that every member of the township and village had an equal claim to land property rights, and the size of the smallholder farm was based solely on the size of the peasant family, without regard to differences in soil conditions and land topography. The household contract responsibility shattered decades of agricultural and economic stagnation. Prior to the 1980s, grain, cotton, and oil-bearing crops increased at annual rates of 4.8 percent, 7.7 percent, and 13.8 percent, respectively (Chen and Davis, 1998). However, from the national food security perspective, the opening-up policy created the conditions for China to utilize overseas resources as a side plan, but due to the previous trade embargos and global isolated policies, the Chinese government didn't fully restore the faith of trusting the global market. Meanwhile, the success of the household contract responsibility and substantial growth in domestic production also confirmed the Chinese government's resolution to pursue the self-reliant path in terms of its food supply. Thus, during this period, the scale of food imports still remains small.

Due to the household contract responsibility in the Pure tea-producing region, numerous smallholder farms reclaimed their land property rights and acquired autonomy over farming

decisions. Historically, the indigenous people in Xishuangbanna had benefited from diverse landscapes and bioclimatic zones due to the region's advantageous geographical topography and humid climate, which has an abundance of water and rainforest natural resources. In accordance with the regional bioclimatic zone, the ethnic minority indigenous groups had evolved with diverse agricultural practices. In addition to tea, indigenous people also cultivate rice, rubber, banana, sugar cane, and maize as cash crops. Despite gaining the right to self-determination over farming practices during the early stages of economic reform, farmers typically took short-sighted actions. In other words, farmers merely considered economic incentives when making decisions and over-exploited the soil to pursue short-term returns (Chen and Davis, 1998). Moreover, while the agricultural land has been distributed, the nationalized industrial factories remain state-owned national enterprises. As the government actively promoted self-sufficiency in agriculture and industrial production, many farmers decided to convert the primitive tea forests into rubber plantations. Due to the fact that the tea factory was still a national enterprise at the time, for those tea farmers who didn't fully comprehend of Puer tea processing techniques leaving them without other alternatives but to provide raw materials to the state-owned tea factory; however, in this way it only generate limited profits making it difficult for farmers to take tea business seriously as a means to support their families. In addition, despite the fact that China was implementing opening-up policies in all sectors at the time, Puer was still a subculture in the majority of countries, so there weren't sufficient incentives for farmers to take extra strength to take care of their tea resources. Overall, during the 1970s-1990s, the Puer tea industry continued to operate, albeit on a much smaller scale, primarily driven by state-owned tea factories. The majority of the final Puer tea cake were exported to Hong Kong, Taiwan and Southeast Asian countries, which played a significant role in initiating the resurgence of the Puer

tea industry and were highly valued in the Puer tea trading market in the subsequent two decades, (Hung, 2016).

Western Development Program and the Resurgence of Puer Tea (late 1990s -2008)

The household contract responsibility system and economic reform have facilitated China's entry into the capitalist world. Over the years, those policies had profoundly influenced the Chinese rural economy and society in multiple ways including increasing agricultural productivity, promoting economic growth, reducing poverty, and smoothly transitioning to the market economy. Even though the household contract responsibility land tenureship has been lauded as one of the most successful institutional innovations to address land distribution and the equality of land accessibility in the Socialist countries, the system's benefits appeared to have been exhausted by the late 1980s, as grain production remained stagnant and even declined. (Chen and Davis, 1998; Zhan, 2022). There were two contributing reasons, first was accused by lack of agricultural technology investments; second was blaming the egalitarian land allocating principle attributed the over diversification of crop production and the fragmentation of land ownership caused barriers for large-scale production. Moreover, after the first stage of economic restructuring adjustment, the economic disparities between coastal areas and remote hinterland regions were exacerbated. In order to address the regional inequality of economic development, the Chinese government enacted the Western Development Program in the late 1990s, which aims to accelerate the opening-up paces in the central and western provinces, and promote agricultural technology investments and local infrastructure development to achieve modernization of production (Lai, 2022).

The Western Development Program is committed to reinforcing the opening-up strategy in order to attract more foreign direct investment (FDI) in the western provinces. In addition to state subsidies, the central government demanded coastal areas and cities to choose underdeveloped areas and cities as economic partners to assist the interior region, which echoes to Deng's famous economic reform slogan "those having got prosperous first to help others catch up and expanding the middle-income group to steadily achieve the common prosperity for all"(Lai, 2022, p.433). Shanghai, as one of the most developed cities at the time, was arranged to be the economic partner with the capital city of Yunnan, Kunming.

Over the years, China experienced rapid GDP growth, averaging around 10% per year since the 1980s, which corresponded with two notable transformations in the Puer tea industry (Figure 3).

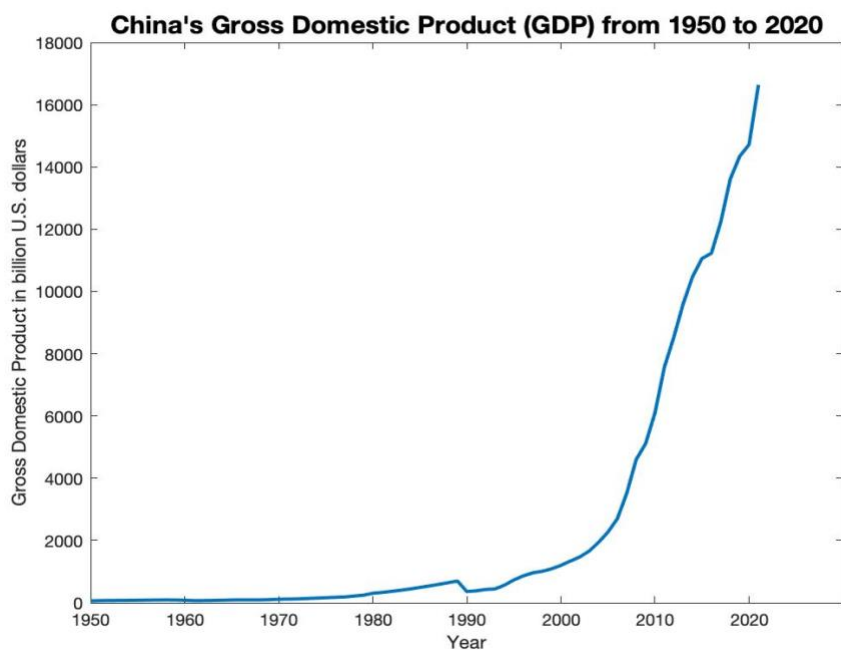


Figure 3: China's gross domestic product statistics from 1950 to 2020 Source: NBS 2023

First, along with the surge of economic development and the progressively improving living conditions standards, entertainment consumption was no longer treated as negative

capitalism. Rather than that, various forms of entertainment were encouraged and revitalized. Meanwhile, as in the previous chapter's tea cultural statement, tea consumption is deeply ingrained in Chinese culture and society. On top of its health medical beneficial functions of anti-oxidizing, reducing blood sugar and lowering cholesterol, Puer tea's rise in popularity began in the coastal region and spread to overseas regions such as Hong Kong and Taiwan. Notably, Hong Kong traditionally has most stocks of aged Puer tea (Zhang, 2014). In 1997, when Hong Kong returned to mainland China from British rule, many Hong Kong residents emigrated and sold their Puer stockpiles, which they had accumulated and stored for years. Taiwanese were the subsequent largest Puer tea consumers. Their involvement was a pivotal turning point in the revitalization of the Puer tea industry in the Six Great Tea Mountain regions. After Taiwanese connoisseurs obtained aged Puer tea from Hong Kong, they were drawn by Puer tea's exquisite flavor and the cultural heritage narratives (Zhang, 2014). Some of these enthusiastic connoisseurs traveled to Yiwu, a village in the Six Great Tea Mountain region, in 2002, where the local government granted them permission to restore the original manual tea processing technique and invest in the local private tea business (Zhang, 2014). Around the same time, the privatization of Puer tea state-owned factories was taking place, which finally breached the decades of national planned economy and state controlled commerce economic model in the Puer tea industry. In the following years, as demand from Taiwanese tea merchants and collectors increased, small household tea houses in the Puer and Six Great Tea Mountain region were reconstituted and began producing not only the raw material for tea factories, but also the original manually processed, fine compressed Puer tea. On the other side of the Mekong River, the privatized tea factories invented a new artificially fermented technique to accelerate fermentation through a rapid large-scale industrialized production process. In contrast, the former manual processing

represented an indigenous and small-scale conventional production tradition; nonetheless, the privatized artificially fermented techniques symbolized the adaptation of efficiency and productivity to capitalist imperatives.

Second, besides the economic influence of the Western Development Program, the modernization agriculture political orientation had a substantial impact on the local agrarian practices of tea cultivation, as one of the primary tenets of the Western Development Program was to upgrade agricultural and industrial practice and adopt modernization of production. Due to the terrain topography in the western part of China, the degree of the agricultural diversification in the southwest was relatively high, thus, the arable land was not suitable for large-scale industrialized cultivation (Han and Lin, 2021). In combination with the land stewardship fragmentation caused by the egalitarian land distribution system, the agricultural practice of southwest China was mainly dependent on human and livestock labor. Before the rise in popularity of Puer tea, the tea harvesting was twice a year from the primitive ancient tea forest. Until the late 1990s to early 2000s, the Chinese state started to promote terrace tea plantations, in which all the tea bushes were neatly trimmed and managed in arrays(Hung, 2016). In contrast, the ancient tea forests are naturally grown in the mid to high elevation rainforest for hundreds to thousands of years with minimal human-interference(Hung, 2016). The ancient tea forests were regarded as lagged practice with low efficiency and productivity. On the contrary, the terrace tea plantations are easier to manage and could harvest multiple times through a year. Moreover, since the terrace tea garden cultivates dwarf shrubs, the tea harvesting work is less labor-intensive compared to the ancient tea forest which requires a long distance hike and climbing trees without any safety precautions to obtain tea leaves. Therefore, at the time, converting the ancient tea forest into a terrace tea plantation appeared to be the most

economically profitable decision for the majority of farmers, as the global popularity of Puer tea increased the demand for raw tea materials, resulting in a dramatic increase in the price of Puer tea. According to government records, the total area of terraced tea plantations in Yunan was approximately 4,545,000 mu (303,000 hectares) in 2007, but it was only 2,406,000 mu (160,400 hectares) in 1990 (Hung, 2013).

Quality Standards of Puer Tea, Ecological Tea Garden (2005- present)

As there are two sides to every coin, the efficiency and productivity of terrace tea plantations are accompanied by the similar environmental issues as other types of monocultural farming, which are typically associated with soil degradation, water pollution due to the excessive use of pesticides and fertilizers, and the loss of biodiversity. Additionally, the frequent harvesting would also affect the flavor of the tea. During the resurgence of Puer tea, the Six Great Mountain Region's tea trading business finally went back to its heyday. Numerous small-scaled, family-owned tea houses were founded in the early 2000s. As the market and size of cultivation scales expanded exponentially, the Yunnan provincial government notarized the chaos of Puer industry which was inundated with fraud and scams of feak products and the over used chemical inputs in terrace tea plantations; thus, in 2006, the provincial government issued the Quality Safety (QS) standard to regulate and standardize the tea cultivation and processing practices. The QS standard regulated that the tea processing house need to be at least 4 to 10 square meters, and each tea processing step should be processed in separate rooms (Zhang, 2014). The rough processing includes harvesting tea, cleaning tea leaves, toasting fresh tea leaves, rolling, and drying leaves, which means besides the process of harvesting tea leaves, the private tea houses should have at least four spare rooms in their houses to process the raw tea

leaves in the rough processed product, so-called *Maocha*. To remain in the Puer tea processing business, they must invest additional funds or obtain a business mortgage in order to construct new tea processing family factories. Otherwise, they must abandon the tea business and pursue other cash crop cultivations. Notably, the rough processed product, *Maocha*, is not the final product; it must undergo the fine processing steps to get the final product, including steaming *Maocha*, shaping and compressing a plate to brick shape, packaging, and a time period to induce the fermentation process, which requires precise control over the temperature and humidity of tea storage. Thus, the majority of ethnic minorities and village residents are only involved in the rough tea processing, and sealing *Maocha* to the larger corporated tea factories to manage the rest of the fine processing steps.

There is no doubt that the QS standards placed small-scale family tea houses in a difficult position, as not all small-scale teahouses have sufficient and stable financial support to expand their processing scale. In addition, a number of families had incurred substantial upfront expenses to convert the ancient tea forest into terrace tea plantations. As a result, some of them have to give up the tea processing business and move into rubber, banana, and sugar cane cultivation. The rest of the tea growers who decided to take the extra financial burden to continue in this business were not able to make a significant profit from rough material processing. The QS standards only confined the food quality and safety practices in the tea processing stage, while neglecting the potential threats of ecological destruction posed by the intensive agriculture practices of over-applying pesticides, synthetic chemical inputs, and fertilizers on terrace tea fields. At the time, the rising public awareness of health and wellness had tended to consume more naturally grown organic foods with less artificial product input, but the Puer tea industry hasn't established any organic standards on tea growing and producing stages, which was one of

the triggers of the Puer tea bubble burst in 2007. Other causes of the bubble bursting were ascribed to the oversaturated market in which more Puer tea than ever had been produced and stored by tea connoisseurs and speculators in order to increase its market values for future sale. Consequently, when demand decreased, the entire market took a hit, causing the price of Puer tea to plummet from 800 RMB per kilogram to 20 RMB per kilogram for rough processed tea material.

Not only has there been a shift in public consciousness, but western societies and governments have increasingly raised concerns about China's growing ambitions for global leadership and its role as the world's largest emitter of greenhouse gases over the past several decades. Given the global trend of focusing on sustainable and low carbon innovation while maintaining economic development, President Xi proposed the idea of Ecological Civilization, which underpinned China's policies regarding sustainable development and technological innovations within the context of broader narratives of reform (Geall and Ely, 2018). In promoting environmentally friendly sustainable development, the Chinese government has proposed striking green ambition in various social campaign slogans, including “clear waters and green mountains are as valuable as mountains of gold and silver (*lǜshuǐ qīngshān jiù shì jīnshān yīnshān* 绿水青山就是金山银山); "greenization" (*lǜsèhuà/lǜhuà* 绿色化 / 绿化); and the "war on (air, water and soil) pollution" (*xiàng dà qì, shuǐ, tǔ mǎi wū rǎn xuānzhàn* 向大气, 水, 土壤污染宣战)” (Geall and Ely, 2018, p.1179). In a variety of ways, the aforementioned political initiatives significantly transform and shape social, institutional, and cultural practices. It is worth noting that the Ecological Civilization was not solely aimed to promote environmental protections, but also meant to maintain economic growth as well.

In the context of Puer tea cultivation and processing, the terrace tea plantation was formerly regarded as the modernized agrarian practice due to its efficiency and productivity, whereas the ancient tea forest symbolized backward economic and agricultural development. However, in recent years the state government started to constrain the conversion of terrace tea plantations, instead, the government redirected the farmers to protect and restore the ancient tea forests in accordance with the central government's Ecological Civilization advocacy. Moreover, in order to combat the environmental degradation caused by the extensive use of agro-chemicals and deforestation over the past several decades, which resulted in a significant loss of biodiversity, the provincial government of Yunnan expanded its local national nature reserve parks and established conservation corridors to connect the fragmented nature reserve parks in order to limit further damage and land encroachment (Hammond et al., 2015). In the Puer tea market, the market value of ancient forest tea was relatively stable compared to the fluctuating price of terrace tea, and aged ancient (gushucha) tea was regarded as the most valuable product due to its distinctive flavor, which had undergone a lengthy aging fermentation process, and its origin from a pure, organic, ecologically balanced environment. The Yunnan provincial government proposed new regulations and guidelines for the management of terrace tea plantations to accommodate market preferences and align with the central advocacy for promoting sustainable development. The most cost-effective strategy for transforming the monocultural terrace tea plantation into a more sustainable and ecologically adaptable landscape was to implement intercropping farming practice and constructing ecological tea gardens. The local government encouraged intercropping farming on tea farms and recommended intercropping tea shrubs with five local tree species, including agilawood, houpu, compoortree, white bauhinia, and downy cherry, in order to assimilate the ecological environment as the

ancient tea forest (Hung, 2013). In actual practice, some farmers choose to intercrop rubber and tea trees which could generate more profits. However, the rubber could lead to further soil degradation and water pollution which posed an uncertain environmental threat. Overall, the viability of regulating intercropping ecological tea gardens has been extensively discussed due to its ambiguity and lack of systematic scientific support.

In order to maintain the economic growth in rural areas, one of the main objectives of Ecological Civilization is to diversify the income sources of farmers. In conjunction with infrastructure development, the ecological tea garden also serves as a tertiary service sector, which was stimulated by the consumption of entertainment (Davis, 2000). As a result of the reappraisal of Puer tea's market value, its inherent social and cultural values have become the symbols used to promote its local tourism. The provincial government of Yunnan launched a series of events and activities, such as tea ceremony, tea auction, tea serving performance, tea tasting competition, and ethnic minority tea worship rituals, to elevate the artistic status of daily tea consumption. It also promotes Puer tea as the emblematic symbol of Yunnan, which encapsulates the province's unique terrain, rainforest landscape, and diverse indigenous ethnic cultures. Investing in the construction of vacation resorts, high-speed rails, and rental car stations, which are all accelerating the urbanization process, has unquestionably altered the landscape of the Puer tea-producing region. However, how the local indigenous population adapts to these rapid changes remains a major concern for the local government, echoing the gentrification problem in western countries, which is associated with the displacement of lower-income local residents, unequal wealth distributions, and the loss of cultural identities. These are the potential threats to the lower income and education level of local residents.

Conclusion

In this chapter, I took the historical political economic approach from the food regime theoretical framework to trace the commodification histories of Puer tea from the Ming dynasty to the establishment of the People's Republic of China, as well as a series of political historical contingencies that profoundly altered the cultivation and processing practices of Puer tea. The empirical case of Puer tea may have implications for the cotton, rubber, and sugarcane cash product industries in the western region of China on the policy driven land use changes study. The distinction is that Puer tea is not only a commonly consumed staple food, but also embodies distinct ethnic minority social and cultural heritages that have been utilized to promote and elevate artistic and financial investments, which made it worthwhile to examine its industry transitions in general. Notably, because this research only used qualitative methods to understand how state policies influenced the farming decisions of local farmers, it contributed to the historical narratives of land use change over the years, instead of providing accurate landscape coverages in different historical periods conducted by the quantitative satellite imagery study.

The commodification history of Puer tea is intrinsically tied with various historical and political contingencies in the contemporary history of China which also explained why the Chinese food system was barely mentioned in the first and second food regime discussion. Despite the fact that, since the 19th century, Puer tea trading was inextricably linked to the British imperial colonial government by supplying tea materials to British Burma, the tea trading business ceased during the war and has not yet returned to its pre-war level. Especially, during the post-Mao period the Chinese government was subjected to a trade embargo imposed by the American government, which completely isolated China from the rest of the capitalist world.

In the following decades, the Chinese government was haunted by the aftershocks of

trade embargoes and always had concern with underproduction crisis of food which convinced that "Chinese people should hold rice bowls in their own hands" (Zhan, 2022); the food security strategies continued to pursue self-reliance political orientations until the early 2000s even though China was getting into economic reform since 1970s. During the first two food regimes, China did not heavily participate in the global food trade and was not able to export too much surplus grains overseas (Figure 4).

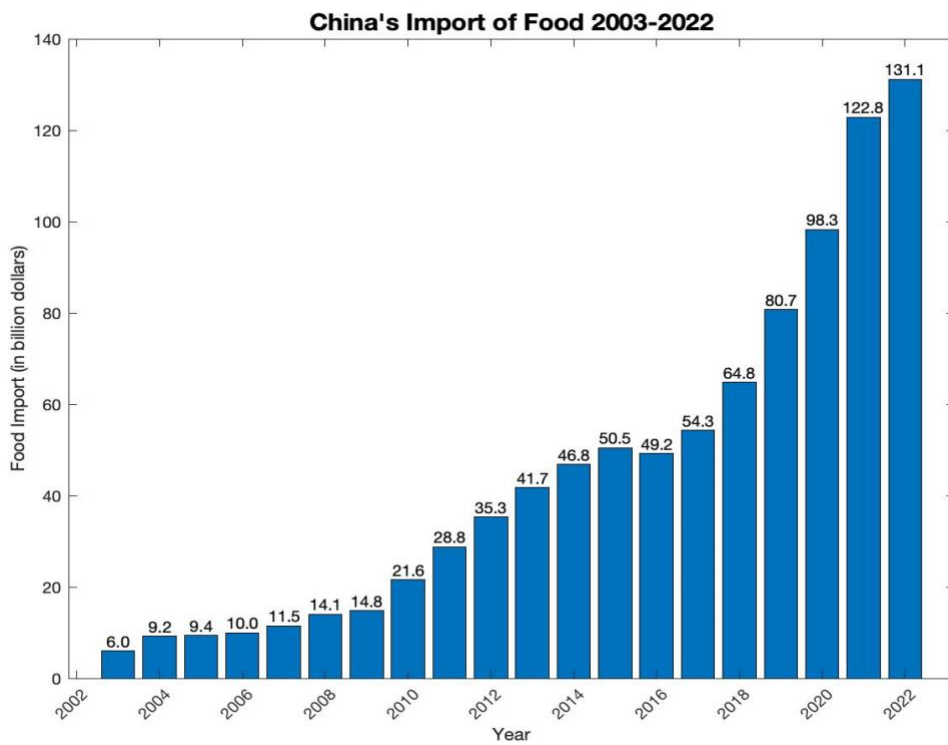


Figure 4: China's food import statistics from 2003-2022 Source: NBS (2022)

The aforementioned historical contingencies along with the planned economic socialist background in the early stage of establishment of the People's Republic of China has significantly influenced land use decisions related to Puer tea cultivation. Since Puer tea production was mainly viewed as a means to acquire foreign currency, Puer tea cultivation was assigned lower priority in terms of land use and labor allocation compared to the production of

grains and vegetables. The case of Puer tea provides the empirical case of how the Chinese government organized the domestic cash product production in response to global political forces during that particular time. In recent years, as a result of rapid urbanization and population growth, China has loosened its structural food security strategies by increasing grain imports and encouraging domestic farmers to pursue alternative economic opportunities by shifting to cultivate cash crops, develop the tertiary sector, or migrate to the city for wage income. To alleviate environmental deterioration, the central government planned to reduce domestic grain production while increasing agricultural investment in Africa and Southeast Asia in order to secure its grain supply.

With the implementation of the Western Development Program and the opening up economic restructuring policies, the resurgence of Puer tea trading is paralleling with the “culture turn” of the third food regime in the western agro-food retailing market, that food shifted at the margins of elite consumption in wealthy markets (Sundkvist et al., 2005). As more capital has been invested in the industry, the landscape transformation from primitive ancient tea forests to terrace tea plantations and the further development of ecological tea gardens and tourism resorts portray not only the physical changes of the landscapes, but also a symbolic change in how people perceive modernity and the practice of modernization (Hung, 2013). However, the market-driven changes to the landscape exposed tea farmers to the challenging situation of ever-increasing up-front expenses and fluctuating market prices, and integrated the indigenous agrarian practice into the context of the neoliberal globalization agro-food production system, which placed a premium on efficiency and productivity through the adoption of industrialized, exploitative, monocropping, and highly specialized agricultural production practices. In conjunction with the QS certification process, the small-scale farmers were actually not directly

benefited from the capitalized market; rather, it increased the barriers to entry for the smaller holdings into the tea trading market. All the evidence supports Friedman's (2005) argument regarding the unequal relationships between states, capitalists, businesses, and consumers, as well as how green capitalism may exacerbate the divide between privileged and impoverished consumers, deepen the commodification of existing peasants, and marginalize existing small-scale farmers. Thus, the government's economic development strategies ought to extend far beyond physical infrastructure alone, and should additionally think about offering ethnic groups with long-term community support to help them adjust and integrate into the market economy.

Abstract

Digital platforms and blockchain technologies have expanded rapidly in recent years. A number of studies have analyzed the introduction of digital technologies into the agricultural sector to improve productivity and efficiency, but there is a dearth of research on the effects of digitalization on production of a culturally specific cash crop. In this chapter, I provide an in-depth study of the Puer tea trading and resale markets that employ digital platform and blockchain technologies. I begin by detailing the distinctive features and socioeconomic effects of these digital platforms and blockchain technologies. I then analyze markets for first-hand trading and resale of Puer tea, which include digital platform and blockchain technologies. I then assess the profound socio-environmental effects and political embeddedness of platform capitalism on the digital financial market for Puer tea. My research demonstrates that even though digital and blockchain technologies tend to promote a decentralized democratic economic market structure, their operational mechanisms are still aligned with extractivist capitalism, resulting in highly polarized and unequal wealth distribution markets in the Puer tea industry. This case study of the financialization and potential digitalization of Puer tea provides a validation for Clapp's (2017) distancing theory, which states that the financialization of food increases the number of agencies involved in food trading and abstracts the actual substance of food into highly complex commodity derivatives markets.

Introduction

In recent years, following the implementation of Web 2.0 and the inception of the Web 3.0 revolution, the use of data and information is becoming increasingly crucial for the development of technology in different fields. The agricultural sector is one of the leading sectors for the adoption of digital platform technologies that purport to improve its competitiveness, productivity, and sustainability. In the past decade, a number of scholars have described the environmental and social implications of digital platform technologies, and the integration of digital management and surveillance technologies in farming practices such as precision agriculture (Clapp and Ruder, 2020), digital farming management (Sarker et al., 2019), and supply traceability (Centobelli et al., 2022). By employing social, environmental, and labor justice lenses, this research has offered insightful conceptual frameworks for examining the intermediate and lingering effects of digital technology applications in the agricultural industry.

Although precision agriculture and digital farming management could enhance the traceability, and reduce the usage of pesticides and fertilizers to alleviate the environmental degradation, they still raised the concerns surrounding data privacy and security, and the accessibility of the highly automatically operated digital platform controlled machines. One of the common social impacts of digital agriculture practices is entrenching lock-in effects of technological systems that establish path dependency for subsequent technological innovations (Clapp and Ruder, 2020; Miles, 2019).

Although there has been extensive research on the impact of the digital revolution on agriculture, there is a notable gap in the literature regarding the social and environmental implications of digital platform technologies on small-scale farmers in the global south. The majority of studies have centered on large-scale agriculture and the production of staple foods in North America, while cash crops and the global south have received little attention. Existing research has also concentrated heavily on analyzing the social and environmental repercussions of digital technologies that have directly altered farmers' agricultural practices. The application of digital platform technologies to agricultural trading has received little consideration. There is a lack of multi-method research examining the macroeconomic effects of digital platform agricultural trade transactions and how these economic activities directly or indirectly affect farmers' livelihoods and social wealth distributions. This study uses in-depth semi-structured interviews and quantitative analysis on secondary data to examine the evolution of Puer tea trading and retailing practices and the socio-economic and environmental implications of the digitization of the Puer tea trade. This approach provides a more nuanced understanding of how digital platform technologies affect the supply chain of cash crop trading by applying Polanyi's

concept of the double movement to highlight the necessity of political regulation in managing the market.

The Digital Platform and Blockchain Technology and Socio-Environmental Impacts

Over the past several decades, China's economy has experienced consistent growth, largely due to the neoliberal economic reforms initiated in the 1970s. More recently, the country has made remarkable strides in the development and application of blockchain and digital platform technology across various sectors. In 2019, President Xi Jinping declared blockchain technology as a "significant breakthrough in the independent innovation of core technologies" (Kharpal, 2022). This policy incentive has not only channeled increasing funding for the establishment of a national blockchain center, but also generated a surge of digital platform startup innovations.

In spite of the fact that digital platform technology and blockchain technology each have their own set of distinctive features and operational mechanism, these two technologies are intertwined in the context of the transformation of digital data. Digital platform technology refers to powerful intermediaries supported by a series of software that provides two-way interactions online and allows digital platform companies to extract data from users (Srnicsek 2017). In other words, platforms are introduced to the world to "facilitate and maximize the social interactions, co-creation, and participation by their users" (Barns 2019, p.4). Digital platforms are linked to the processes of data-driven commodification and value extraction, which is achieved through the application programming interface (API). Over time, APIs grew into a sophisticated market for software developers, and advertisers leveraged their users' social media activities to generate profit (Barns 2019). It created a paradoxical reality in which, on the one hand, digital platform

companies use APIs to build an "open" software infrastructure that enables third-party developers to extend their platforms' content and services on their platforms; however, on the other hand, APIs enable digital platform companies to establish an absolute monopoly on the use of activity data generated through the platform interactions (Barns 2019). The API architecture produces a snowball effect in which the more services and functionalities the platform expands, the more users are drawn and locked into the ecosystem, and the more users are attracted to join the platform owing to the social networking effects. Eventually, the increased number of users and their data will become the most crucial leverage for digital platform companies to benefit from different data extraction, processing, and analysis methods.

Blockchain technology is one of the subfields of digital technology that employs computer and software programming to construct decentralized and distributed ledgers that record transactions across multiple computers (Yaga et al., 2019). The blockchain technology enables a community of users to record transactions in a community-wide shared ledger, which could record any transaction and publish the changes within the system. Once the operation is processed in the blockchain network, no single entity has control over the entire work to make the change. Rather than saying blockchain as a technology, it is indeed an innovative economic system with the decentralizing concept to challenge the traditional centralized control of economic activities, such as the gold standard monetary system and the financial organization led by the US dollar. Identical to the digital platform technology, it has been marketed as a virtual-based financial service that promotes greater financial inclusion and economic participation. Bitcoin and other cryptocurrencies are the representative cases of blockchain technology application.

Bitcoin was invented as a decentralized alternative to the centralized banking system, which means that the trading or exchange system can function and transfer funds between accounts without the need for central authority verification (Nakamoto, 2008). The fundamental functioning logic of the Bitcoin blockchain is to match the publicly accessible key, which may be used to solve some complex mathematical equations. When the correct public key and private key solution are matched, a new node is added to the Bitcoin blockchain and one Bitcoin is added to the Bitcoin wallet (Nakamoto, 2008; Lally et al., 2017). Meanwhile, when the public key is validated as a node added to the Bitcoin wallet, it also transacts and adds to the Bitcoin blockchain (Lally et al., 2017). Since the blockchain is designed to always accept as valid the longest chain in terms of processing power consumed, these alternatives diminish over time until an algorithmic consensus is reached. When the formula reaches its end point, it will develop a longer formulation, necessitating the use of more potent computing resources to generate new Bitcoin (Lally et al., 2017, Roberts, 2018). Therefore, as Lally et al., (2017) argued, the entire proliferation of the Bitcoin blockchain is materially related; as it simultaneously created intangible new bitcoin, utilized tangible resources such as electricity, and increased energy consumption demand over time as the blockchain grown longer and requires more powerful computational ability to solve the correct answer.

The inventor of Bitcoin, Satoshi Nakamoto¹, also added the halving rule to the Bitcoin mining algorithm, which reduces the block reward by half approximately every four years. This was intended to control the supply of new bitcoins entering the market and mimic the process of gold mining, as gold is a finite resource (Lally et al., 2017). Thus, together with the aforementioned bitcoin mining algorithm, it has compelled miners to invest in additional

¹ Satoshi Nakamoto is likely a pseudonym. The identity of the person or persons behind the pseudonym is not publicly known.

computing infrastructures and consume more energy and electricity in order to maintain profits in the bitcoin mining industry (Roberts, 2018). This prominent process is identical to the lock-in effects of digital economic circulations, which demand continuous investment to sustain digital infeasibility to gain diminishing returns.

In addition, the existence research also examines the socio-environmental effects of the blockchain economy. Lally et al. (2017) noted that Bitcoin mining is a natural resource conversion industry that mainly depends on state subsidies and cost-effective hydropower and electrical energy in places such as Chelan County, China, and Mongolia. Due to the need for cold air to regulate the temperature of overheating hardware, Bitcoin mining factories have a distinctive geographic distribution pattern. The case of Bitcoin mining subverted the original aspiration of creating a democratized economic system, instead, it validated the significance of location in the globalization process by demonstrating that the contrast between location and resources remains significant in blockchain and digital platform economy. Overall, the decentralized characteristic of digital platforms and blockchain technologies could not conceal the fact that both are an extension of traditional extractivism economic activities, which include self-reinforcing power differentials and rationalizing socio-ecological destructive modes of value extraction (Chagnon et al., 2022). The only difference is that the digital platform and blockchain economy are extracting materialized values and converting them into virtual forms. This then raises the question of what other publicly recognized physical forms of value could be converted to represent value in virtual form?

Food Financialization

Prior to the trend of digitalization and dot-com digital platform entrepreneurship, financialization has been characterized as the critical economic restructuring in the post-neoliberal era for creating an independent realm of global finance s (Van der Zwan, 2014). With agriculture serving as a site of capital accumulation, in conjunction with the 2008 property market collapse, speculators sought a new market to channel their financial flows into, and many of them were drawn to agriculture (Sippel, 2021). Therefore, food financialization has emerged as a pressing issue, revealing new avenues for understanding broader international political and economic dynamics within the agro-food sector.

In contrast to the decentralized economic structure of the digital and blockchain economies, food financialization is a traditional centralized market for the exchange of specific goods at a specific price and according to a set of delivery requirements. The objective of the development of the food futures market was to enable farmers to hedge against the risk of price fluctuations and match supply and demand on the food trading market (Clapp, 2018). In its most basic form, farmers and millers can stipulate a price and future delivery information for the purchase or sale of a commodity (Clapp, 2018). When grain prices fell, the contractor acted as a mediator, preventing farmers from going bankrupt; when grain prices rose, the contractor offered the same deal to the miller, mitigating the effects of price changes. In general, the futures market for foodstuffs is viewed as a stabilizing factor in the market; additionally, speculators engage with hedgers based on their willingness to accept risk, disperse risk, or increase the risks and possibilities associated with the original contracts (Clapp, 2018).

The futures market for foodstuffs is divided into two segments: hedge funds and index funds. By acquiring massive numbers of futures, index funds attempt to replicate the physical

market. However, it is widely accepted that they push prices upward since they mostly invest in futures contracts that speculate on increasing prices. Hedge funds operate differently; they speculate on the financial market in a variety of ways and apply a variety of tactics that enable them to benefit even when the market collapses (Clapp, 2018, Van der Zwan, 2014). This novel kind of futures speculation is gaining traction in Europe, most notably in the London and Paris stock markets. However, it is most developed in the United States; there, the share of producers, consumers, and dealers engaged in futures contracts plummeted from 39% in 2000 to 15% at the start of 2008 (Sippel, 2021). The ratio of US wheat futures to actual output in the United States has shifted significantly. Futures were 11 times more numerous in 2002, 16 times more numerous in 2004, and 30 times more numerous in 2007 (Sippel, 2021). Consequently, there is apprehension that food financialization could lead to a global food crisis as a result of price volatility and fluctuations that increase uncertainty and instability for both consumers and producers.

The growth of speculators increases the number of contracts that have nothing to do with the physical form of commodity trading circumstances. Speculators often seek to influence markets to their own advantage. The majority of speculators speculate on the behavior of other speculators or exploit short-term trends, resulting in modest price changes becoming enormous trends—speculation results in price increases that primarily benefit speculators (Clapp, 2018). As speculation in futures contracts for food commodities increases, exchange value and financial investment displace use value and marginalize the nature of food commodities as food (Clapp, 2018). This phenomenon is known as financialization: prices become increasingly influenced by financial market fluctuations and are no longer determined by the needs of consumers, farmers, and commercial institutions (Van der Zwan, 2014). Increasing interactions between the agrifood

and financial sectors can have an enormous impact on agricultural practices and the food trading system. As Clapp (2017) highlighted, food financialization creates a more "distant" food system by increasing the number of agencies involved in food trading and by abstracting the actual substance of food into highly complex commodity derivatives markets.

In addition, the rampant food speculation echoes Polanyi's critiques around the idea of laissez-faire, self-regulating markets, which challenged the legitimacy of liberal capitalism and suggested the necessity of state intervention in market regulation. Polanyi (1944/2001) identified land, labor, and money as fictitious commodities, which were not produced for market trading; both land and labor contain non-economic functions and could not be quantified as monetary value. Polanyi (1994/ 2001) asserted that the commodification of fictitious commodities inevitably leads to social and environmental degradation. Polanyi (1994/2001) also suggested that the economy is embedded in social relations, norms, and cultural backgrounds. The commodification of fictitious commodities – so-called “disembedded actions” – isolates economic activities from the social and political sphere, which leads to social dislocation and market upheaval. Therefore, Polanyi suggested the necessity of government involvement as a countermovement to protect the whole of society from the deleterious effects of disembeddedness. While much of the discussion within Polanyian literature centers on the ideological tug-of-war between capitalism and socialism, his concepts of countermovement and double movement continue to invigorate debates around the alternative measures concerning the commodification of land and labor, that also apply to food speculation.

In contrast to the majority of explanations discussed in the aforementioned literature that focuses on staple foods, Puer tea is a culturally specific agricultural product that is produced at a lower volume and in a relatively small geographical area relative to staple foods. The analysis of

food financialization and its social-environmental effects nonetheless provides a framework for deciphering the digitalization and financialization of Puer tea. The financialization of Puer tea, however, has not established the restrictive market structures of index funds and hedge funds as exists for food futures and it operates in an entirely different social and political context. The recent trade of Puer tea is deeply involved with the digital platform and blockchain technology. It is therefore worthwhile to investigate how the digital platform and blockchain technologies are incorporated into the tea trading business, which facilitated the transition of Puer tea from a traditional indigenous agricultural product to a prevalent financial investment in China and the surrounding Southeast Asian nations.

Growing Tea Market and Changing Social Morality

China was the first country to domesticate and produce *Camellia Sinensis* plants, as well as to begin drinking tea (Zhu, 1996; Mari and Hoh, 2009; Forbes, 2011). Tea consumption culture has spanned thousands of years, dating back to Tang Dynasty (618-907 CE) which mainly served for medicinal purposes. During the Song Dynasty (960-1279 CE), tea became great popular in highly-classed society, and was integrated as a major part of Chinese culture, so called Cha Dao (Tea Ceremony), which were manifested with a number of artistic genres, including poetry, calligraphy, and painting. Among the literati, social elites, and nobilities, tea drinking symbolized a modest, frugal, pure, and exquisite lifestyle, eschewing political conflicts and embracing freedom in a self-created utopia (Shen, 2007). In the Qing Dynasty (1644-1912 CE), tea became a common drinking beverage in working and farming classes. Later, the British introduced the practice of adding sugar and milk into tea, which is widely adopted by HongKong and Taiwan, and nowadays milk tea has become the most popular and representative Asian

drinking beverage across the world. Today, tea remains a staple and fully integrated into the Chinese daily diet. It also evolved to fragment into various different sub tea culture groups, with different regions favoring different types of tea, reflecting the richness and diversity of Chinese tea culture.

The tea industry has grown rapidly on a global scale in the past two decades. According to the current global tea statistics report, the global market for hot drinks, which includes coffee and tea, is expected to reach US\$69.77 billion in value and 10.57 million tons in volume by 2025 (Basu Majumder et al., 2010). Tea cultivation is restricted to selective locations of the world due to specific climatic and soil requirements. The quality and flavor of the tea are greatly influenced by the tea growing environment. The ideal tea growing environment preferred a subtropical, humid climate with consistent moderate temperature. The majority of tea cultivation regions and tea producing countries are located in tropical and subtropical regions of southeast Asia, such as China, India, and Sri Lanka. China's tea production accounts for 52% of the world's total tea production, ranking first in the world, and It's primarily grown in the provinces of Yunnan, Guangdong, and Zhejiang (Figure 5).

Tea Production Percentage by Country in 2020

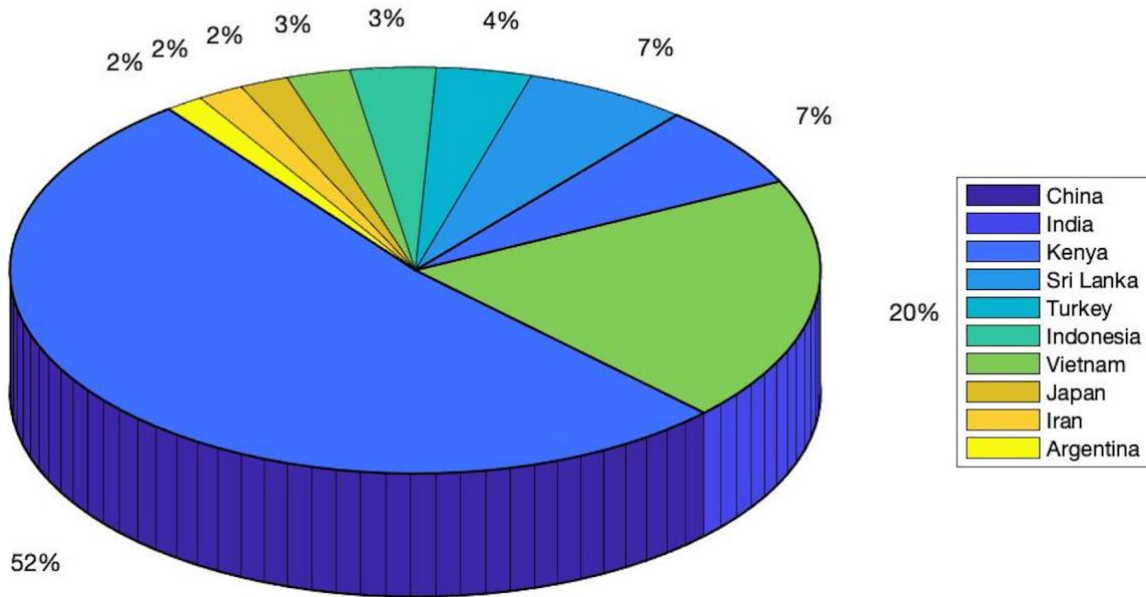


Figure 5: The top 10 tea producing countries in 2020, Source: ITC Annual Statistic Yearbooks, various years.

Most tea plantation regions are categorized as developing or low-income rural regions. The plantation sector is considered the primary source of livelihood and employment for the regional economy. Tea producing activities are extremely labor-intensive, from tea harvesting to fine tea processing, and most of the tea processing steps cannot be automated. The female labor force is largely concentrated within the industry, and tea workers in particular specific tea producing regions are regarded as the lowest wages with the poorest working conditions (Pradhan, 2017).

China’ tea cultivation areas and production scales have expanded substantially throughout the years, in lockstep with the global tea trade. Among cultivation and producing countries, China and India are the largest tea cultivators and producers globally; in the meantime, both countries also drink away most of their products and contribute 20% of production for world export needs (Basu Majumder et al., 2010). Yunnan province takes the largest share of the tea producing industry in China (YPTIWG, 2022). Since the 1980s, China’s domestic tea

consumption has undergone substantial changes, along with the rapid economic development and shifting social and cultural trends brewing under the all around economic restructuring context. There were remarkable improvements in people's living standards and increasing demands for consumption. Since then, people are not only focused on eating food for fulfilling daily calorie or nutrient intake, but also cares about the cultures and social linkages that embedded with the foods; thus, there was a resurgence of traditional teas such as green tea, oolong, and Puer in around late 1990 to early 2000s. The tea connoisseurship gradually came to represent a healthy, up-scaled, and tasteful lifestyle which boosted the tea trading business and its lingering economic sectors including tourism, health supplement industry, and cultural creative economy over the years which has hugely re-configured the organization of the tea industry per se, as well as the landscapes in the tea producing regions.

Puer Tea's Financialization and Digital Platform Retailing

With the exceptional growth of digital and technology-based forms of entrepreneurship, China has undertaken unprecedented development and transaction in a variety of sectors, including sharing economy, e-commerce, and gig work. Those transitions are not merely restricted in metropolitan regions but also initiated in relatively peripheral rural regions. The Puer tea was one of the most representative examples of the remarkable economic and financial practice innovation in rural China, transforming from an indigenous agricultural product to a speculative financial investment. According to the Yunnan Puer Tea Industry Work Group (YPTIWG, 2022) report, the gross production of Puer tea has steadily increased over the years, but only half of it is sold in the domestic market and a quarter percent is exported, leaving about a quarter of the tea in warehouses each year. This shows an ironic flipside of Puer tea trading that

even though the market is saturated and oversupplied with Puer tea, its trading price remains high. Additionally, uncountable amounts of sold and exported Puer tea are stored for speculation. Thus, it is imperative to comprehend the mechanisms and dynamics of how the digital platform and blockchain technologies are consolidating the speculation of Puer tea, which could be helpful to provide insightful suggestions for the government to prevent market disorder.

The financialization of Puer tea has an extensive trajectory of development. The supply chain of Puer tea has rigorous distributing retailer hierarchies, which involves a dozen or more entities and agencies to complete the entire trade circle which encompass tea farmers, tea factories (tea enterprise), distributing agencies, individual shareholders, and resale market brokers. Until 2021, there are 699 Puer tea enterprises in the Yunnan province, including 12 large-scale and 283 medium-scale ones, and 404 small scale (YPTIWG, 2022). The large-scale tea enterprises are the most prominent Puer tea brands on the market with complete production chains. The majority of the medium and small scale tea enterprises are family-run tea houses that may have their own fully operational production chain or might solely concentrate on producing the rough processed materials for the larger enterprises. The term “distributing agency” refers to the business entities that are on behalf of the large tea factories to earn a commission from selling Puer tea. The regional distributing agencies are divided into three classes by different administration levels. The provincial level of the administrative region is first-class agents, municipal administrative regions are second-class agents, and counties, townships are third-class agents. Each level of distributing agency is tasked with selling a certain quantity of Puer tea products on the market to either regular consumers or large stock investors. Notably, the distributing agency must pay the full price for the final tea product and place a certain deposit reserve with the large-scale tea factories in order to obtain selling permissions and access to the

goods. Typically, a higher level of distributing agency corresponds with a higher level of registry deposits to tea factories. Each year, the brands will release collectible limited edition series that are popular within tea collectors and investors. In return for heavier deposit reserve requirements, the higher level distribution agency has earlier access to the products, allowing them to resell the products at a higher price in the market. The distributing agencies retailing hierarchies seems to be a win-win strategy for both large-scale tea enterprise and Puer tea official certified retailers. The certified retailers not only distributed the enterprises' risk of stackpiling, but also were able to get first access to rare and collectible products.

Since 2005, the Puer tea market has undergone multiple rounds of plummeting to coaxing. A portion of the cause was attributable to climate variations; for instance, the price skyrocketed during drought years, but the unregulated market rules and lack of information transparency were the leading causes. In the interim, tea companies are employing a hunger marketing strategy to control market price by limiting market product circulation. In order to alleviate market chaos and enhance market transparency, the Puer tea industry is progressively implementing digital platform and blockchain technologies. The major platforms could be divided into two forms that cater to distinct target audiences.

The first type of digital platform application targets Puer tea consumers and functions as a standard e-commerce marketplace, allowing customers to purchase the product online and receiving shipment to their preferred address. Consumer-to-consumer (C2C) and business-to-consumer (B2C) models are two distinguished e-commerce models supported by different API. The primary C2C API is supported by Taobao, which is similar to eBay, enabling individual sellers and small businesses to set up their own virtual store and sell products directly to consumers. In contrast, the B2C digital platform models enable medium or large enterprises to

source products in bulk directly from the manufacturer, as well as allow brand stores to establish authorized online distributors, thereby providing a more reliable option for consumers seeking authentic products. All APIs support a buyer rating system that permits buyers to provide feedback and rate sellers based on their experiences. The ratings include product quality, seller communication, shipping speed, and overall customer service satisfaction. Similar to a Google review, once a consumer writes a review, it will be published and accessible to all. Subsequent buyers frequently count on these reviews to inform their purchasing decisions. Despite that e-commerce marketplace provides valuable marketing opportunities, particularly for small-scale teahouses, some of online tea vendors have still voiced some concerns about the rating system and the platform recommendation algorithm. Some small-scale teahouses may still not be able to compete with the brand-certified brand (large-scale tea enterprise) due to the fact that the authenticity and credibility of comments lack verification, meaning sometimes when they have no discourse power when they receive negative or biased comments. One negative comment will have larger ripple effects on small and large tea businesses compared to the large-scale tea enterprise. Since the large-scale tea businesses have established a strong online presence through their enduring reputation and consistent services and flavor, small-scale teahouses typically do not have large customer bases, thus, if they received one negative comment, it will lead to more selling loss. In addition, the majority of API platforms use popularity-based recommendation algorithms, which only suggest the most frequently and highly rated and sold product vendor, making it difficult to view small-scale tea house products on the platform.

The second application incorporates digital platform technology and blockchain operating concepts that are specialized in monitoring the trade index of the Puer tea resale market for speculators and investors in an effort to democratize Puer tea trading access and

improve transparency. There are three major APIs supporting this service, including Dayihangyingwang, Zhaozhaocha, and Donghe, all of which operate on a similar operating system and provide the most extensive database of freely accessible sales data for the different brands' and different series of Pure tea for the Puer tea resale market, which is frequently used as a reliable reference for the Puer tea resale value. They can provide the current state of the resale market for a specific series of Puer tea and its historical trading data from previous transactions. However, it was unable to provide an exhaustive overview of the Puer tea resale market due to it couldn't record offline trade transactions, which always involved verbal price negotiation. The API also permits the filtering of transaction records within a specified time frame, which may be useful for Puer tea investors analyzing and predicting price trends for the broad market index and the popularity of specific products on the market. Moreover, since the Puer tea has a high requirement of storage conditions to preserve the quality and aging potential of the Puer tea, the storage environments have to avoid extreme temperature under moderate humidity and keep away from strong orders. The API also provides offline storage service to help preserve Puer tea, which means the Puer tea don't have to go through long-way transportation, but the transaction will be automatically updated on individual ledgers once the transactions are done. This practice is comparable to blockchain-based cryptocurrency exchanges, which elevated the material exchange of Puer tea into a virtual form of value exchanges. However, during interviews, many tea investors voiced concern over these practices, arguing that API would dominate the resale market by virtualizing and digitizing all commodities, and they worried that API would duplicate the sale of Puer tea in order to earn more commissions. Thus, a great deal of tea traders used these APIs to monitor the real-time market price for each Puer tea product, but they still relied on their social networks to conduct business. In interviews, other tea vendors have noted that the

transaction records of the Resale Market API are not sufficiently reliable because it only captures online transactions and does not account for regional variations in each product. However, since the API can present real-time market values and product values, it is more compelling to attract additional capital to this game.

Discussion and Quantitative Analysis

In order to gain a comprehensive understanding of the scales and the wealth distribution of the Puer tea industry in Yunnan, this chapter also adopted the quantitative method to compare multiple statistical values of Puer tea industry from 2016 to 2021, based on the data obtained from the Yunnan Provincial Department of Agriculture. The finding reveals a steady expansion of Puer tea cultivation area in Yunnan province. By 2021, the tea plantations covered an expansive area of 7.4 million mu (equivalent to 493,380 hectares), exhibiting a notable increase of 2.8% compared to the previous year (Figure 6). Moreover, the overall value of the Puer tea industry chain witnessed significant growth, reaching a remarkable 107.1 billion RMB (15.3 billion US dollars) in 2021. This figure presented a substantial increase of 7% over the previous year's value. It is pertinent to note that the industry chain's valuation encompassed revenues derived not only from the core Puer tea production but also from the tourism and creative industries associated with Puer tea culture (Figure 7).

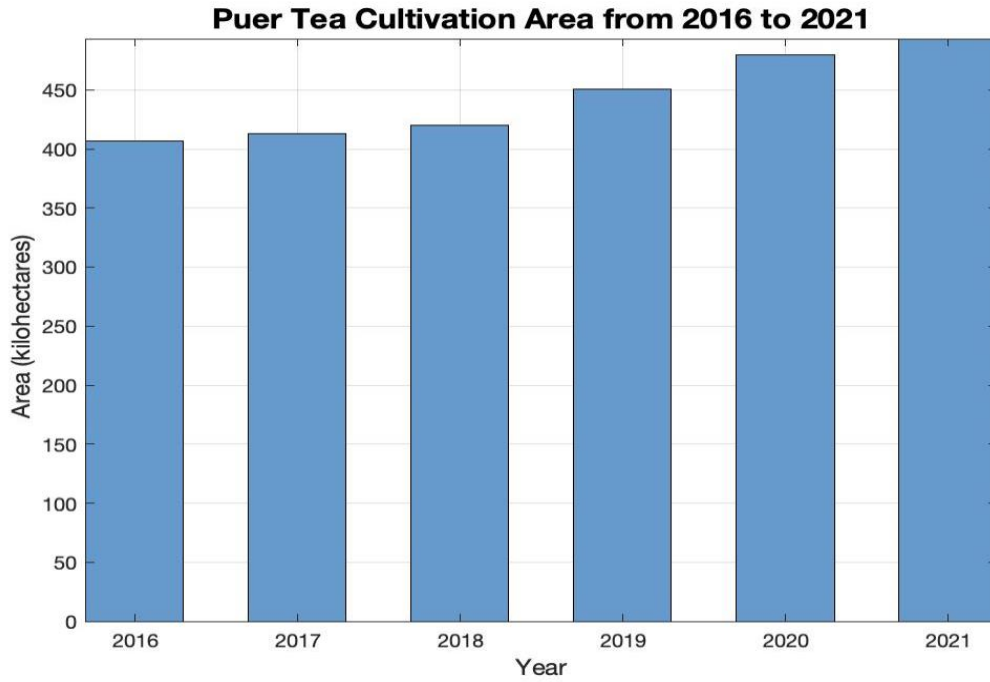


Figure 6: The Puer tea cultivation area 2016-2021 Source: Source: YPTIWG Statistic Yearbooks, various years.

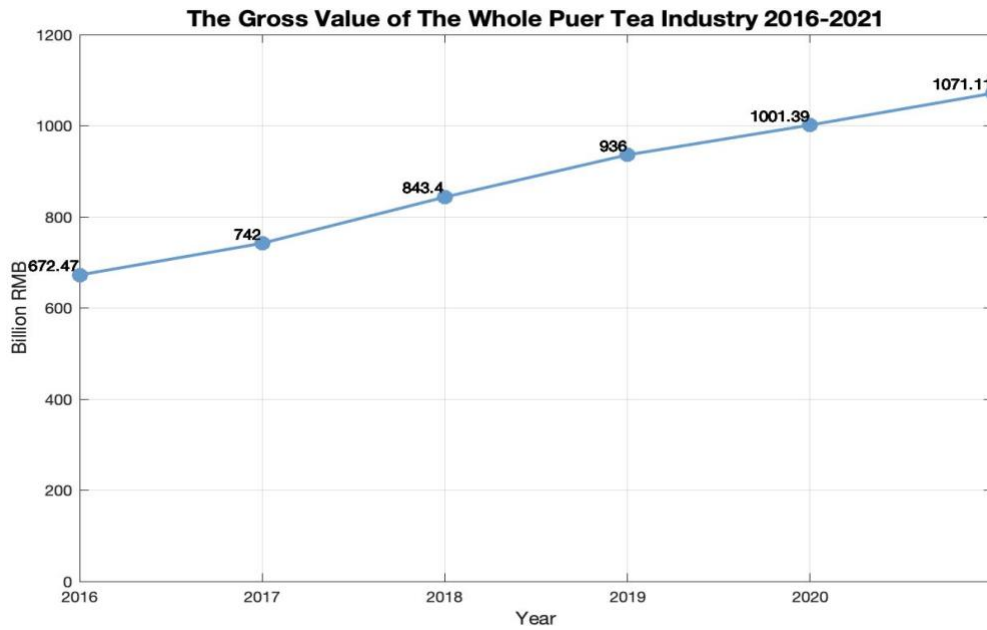


Figure 7: The gross value of the whole Puer tea industry 2016-2021 Source: YPTIWG Statistic Yearbooks, various years.

A critical observation pertains to the revenue distribution within the Puer tea industry. Specifically, the gross output value of rough processed Puer tea was recorded at 20.99 billion RMB (2.99 billion USD), while that of fine processed Puer tea stood at an estimated 71.49 billion RMB (10.21 billion USD). This indicates a notable disparity between the rough and fine processed output values, with a ratio of approximately 1:3 (Figure 8). Furthermore, an analysis of the average retailing prices of Puer tea in 2021 revealed noteworthy trends. The average unit price of rough processed tea was observed to be RMB 42.9 per kilogram (6.1 USD per kilogram), reflecting a 7.4% year-on-year increase. The average unit price of fine processed Puer tea was RMB 122.8 per kilogram (17.54 USD per kilogram), indicating a substantial 18% year-on-year increase (Figure 9).

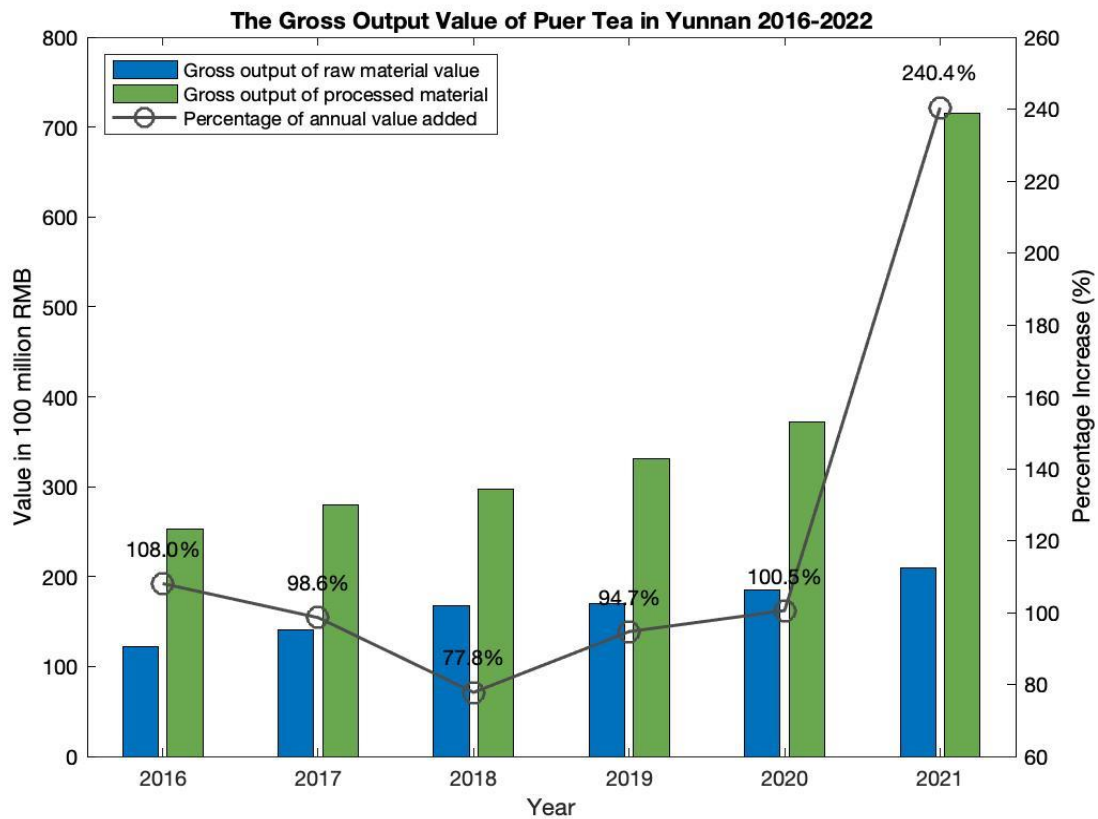


Figure 8: The gross output value of the Puer tea in Yunnan 2016-2022 Source: YPTIWG Statistic Yearbooks, various years.

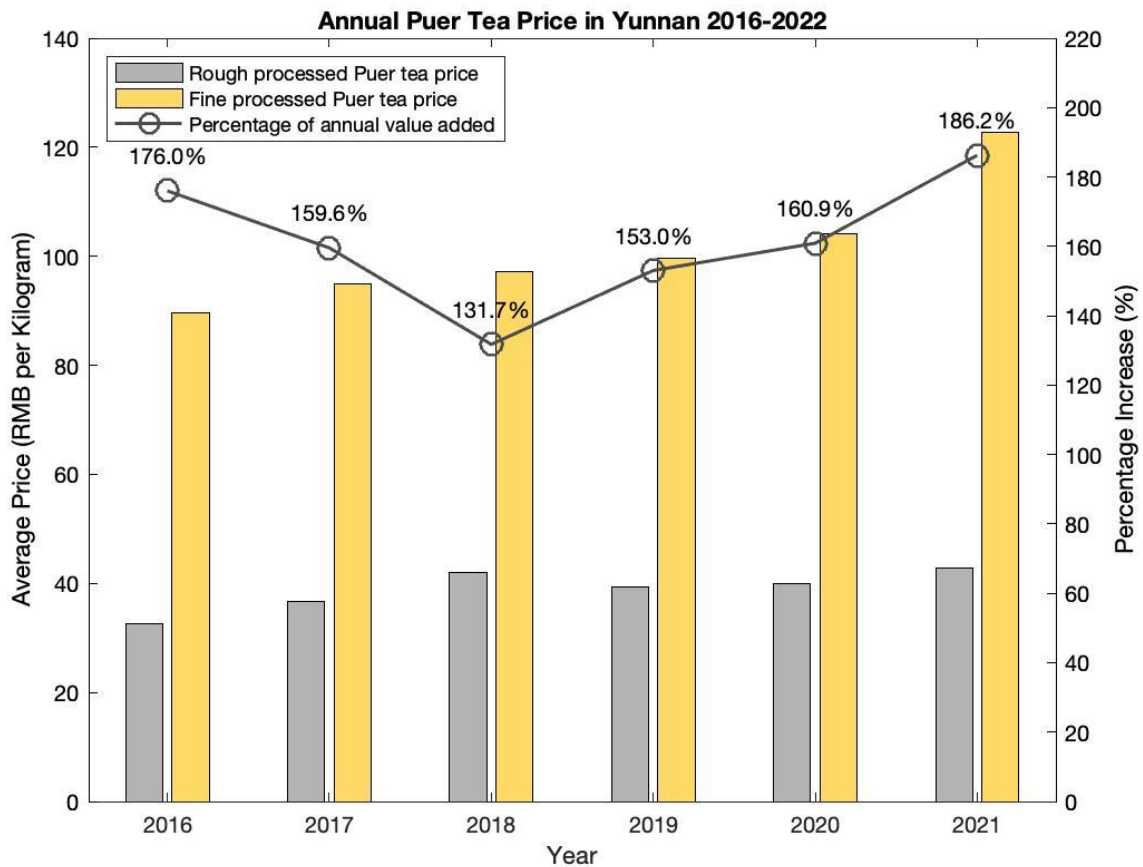


Figure 9: Annual statistics of Puer tea price in Yunnan 2016-2022 Source: YPTIWG Statistic Yearbooks, various years.

As the statistical graphs suggested, the Puer tea industry exhibited considerable growth over the studied period. However, it is evident that the wealth distribution within the supply chain of Puer tea is uneven, with a declared disparity in the gross output values between rough and fine processed Puer tea products. There are a series of value-added processes of Puer tea which not only includes the actual tea producing process but also refers to the commodity trading process involving storing, authentication and QS certification, branding and marketing, and the aforementioned digitalization speculations. According to the presented graph, the tea farmers were not able to get much profits out of the speculation of Puer tea, instead each layer of the fine processing and commodity trading grab the majority of profits in the Puer tea industry. However,

as the second chapter stated due to the series of historical contingencies, the tea farmers are taking the most financial burdens and physical risk of harvesting raw materials as supply for Puer tea making.

Additionally, with the growth of e-commerce digital platforms, fewer customers visit the physical tea shops to sample varieties of tea before purchasing. With increased financial investment in this business, the tea culture and social relationships ingrained in tea houses have been commercialized, while indigenous, ethnic, and small-scale tea producers have been excluded from tea market trade and consigned to raw material processing. Tea culture and indigenous tea processing methods have become a source of differentiation for packaging, marketing, and speculation. Not only have digital e-commerce platforms been introduced to the Puer tea business in recent years, but they have been accompanied by the introduction of various crowdfunding, peer-to-peer (P2P) financialization digital platforms by the dominant tea companies. These digital platforms function as electronic financial derivatives markets, claiming to promote a decentralized, collaborative, democratizing, and authentic guarantee trading market for the Puer tea industry in order to attract more private funding and individual investors.

Those large tea companies make contracts with Alibaba, JingDong, and Pingduoduo, taking the “off the shelf” platform construction tool to build plug-and-play extensions for crowdfunding platforms on Wechat API social media infrastructure, which has the same working logic applicable to Instagrams of its e-commerce platforms but with a more complex trading network. As is the case with the majority of crowdfunding platforms in the Global North, the tea trade crowdfunding platforms emphasized their transparency, horizontal economic circulation, democratic financing, and collaborative co-production rather than their platform business model consolidation (Langley and Leyshon, 2017). It transformed traditional two-sided e-commerce,

which was predominately centered on location-based commodity trade, into a multi-sided coordinating network, consisting of social media, online marketplaces, crowdfunding, crowdsourcing, and electronic payment systems. The platform developers claimed that the trading platforms are broad connotations that provide an open, neutral, egalitarian, and progressive way to encourage more individual investors to join the business to escalate the tea prices. This speculative game is comparable to bitcoin mining for small-scale tea houses and individual investors, which requires constant capital investments to sustain their business and investments with continuously diminishing profit margins. In addition, local tea farmers are concerned that their cultures have been appropriated as a result of a series of marketing and digitalization practices. The financialization of Puer tea actually creates another layer of distancing features of digital platform economy, validating Clapp's (2017) argument that the food financialization increased the number of agencies involved in food trading, but abstracted and alienated the actual substance of food and its producers, thereby elevating the martial food trading and its culture into highly complex commodity derivatives markets.

Through the lens of Polanyi's (1994/2001) double movement theory, the emergence of the market in a liberal capitalist society relies in large part on the commodification of labor and land. Polanyi identified the disembedded economy in capitalist society, characterized by self-regulating markets organized by price, and driven by the pursuit of monetary advantage and the fear of scarcity operating through the supply and demand mechanism. The disembedded economy fragmented society into distinct economic and political spheres, granting the market autonomy to operate according to its own logics and requiring the society to adapt to the mechanism of supply and demand (Goodwin, 2018). However, the economic crisis in the 1930s has proven that the economy was not completely free of political influences. However, the Great

Depression demonstrated that the economy was not entirely free of political influences. In addition, according to Polanyi (1994/2001), land, labor, and money are not true commodities because they were not produced for sale on the market; rather, he defined them as fictitious commodities that serve multiple non-economic purposes in society. Therefore, fictitious commodities cannot be reduced to plain objects of exchange values represented and quantified in terms of monetary values. Polanyi was the first scholar to recognize that disembedded economic activities would eventually contribute to social disintegration and environmental destruction. In the case of financialization of Puer tea on digital platforms, Puer tea's value is extracted extensively from its use values by over-stating its exchange value. Even though indigenous culture and Puer tea's profound social and cultural inheritance have been one of the primary marketing strategies, tea traders and speculators in the financialization market primarily base their decisions on market value versus potential stockpiling costs. The speculative intentions have isolated Puer tea from other social factors, which could lead to another Puer tea bubble to burst, or may further extractivism from the environment and local tea cultivation groups. While the state government has implemented environmental initiatives such as the ecological civilization, it seems these efforts primarily place additional responsibilities on tea farmers. These measures don't seem to innovate or address the trading and speculative practices within the Puer tea industry.

In contrast to traditional Marxists who focus heavily on social class divisions, Polanyi shifts the attention towards market structures as the root cause of economic exploitation, rather than the alienation of the productive classes. This approach provides a novel perspective to conceptualize an alternative economic system that could reinforce the equity of wealth distribution throughout the market. In the context of the financialization of Puer tea, the majority

of profits are generated from value-added processes and subsequent speculative trading. Tea farmers typically have limited leverage in setting consignment prices. Viewed through Polanyi's framework of the "double movement," restructuring the market could serve as one method to mitigate this unequal distribution of wealth. For instance, tea farmers could restore social trust within the industry and establish collective institutions to strengthen individual bargaining power. Additionally, they could advocate for general health insurance as a safety net to protect their rights, all of which could be an initial step in a protectionist strategy aimed at re-embedding the tea trade within a social framework to forestall broader market instability.

The financialization of Puer tea also extended the understanding of capitalism's extractivism, revealing that sources could be extracted not only in material form, but also through intangible forms such as social relations and cultural heritage. This phenomenon also transcends the polarized categories between hinterland and heartland, highlighting that in the context of the Capitalocene, there is no singular hinterland. Instead the remote region also actively participated in the commercial exchange of global metropolitan networks, emphasizing the significance of understanding the linkages between rural and urban as in horizontal, multilateral networks. Despite the resurgence of Puer tea commodification was initiated by external capitals from Hong Kong and Taiwan, local tea enterprise and tea brokers spontaneously drive the inventions of trading blockchain technologies to promote market information transparency and proactively engaged in online vendor digital platforms to diversity their sales channels and maximize profits to compete with the eternal capital agencies. Nevertheless, within the Puer tea industry, there exists an imbalance in power relations, leading tea farmers to have minimal influence over profit distribution. This resonates with Hung's (2016) interpretations of the symbolic meanings of the changing landscapes and the forces of opposition organizing the

Puer tea production. The financialization of Puer tea embodied a clash of objectives, encompassing the conflicting goals of entrepreneurial growth, rapid urbanization transactions, and blurry boundary between hinterland and heartland, as well as the dual nature of indigeneity and modernity.

Conclusion

Throughout the examination of the operational dynamics of digital platform capitalism, Bitcoin mining, and food financialization, it is difficult to confine the financialization and digitalization processes of Puer tea to a single category. The financialization and digitalization of Puer tea combine the characteristics of three of them: the implementation of democratic peer-to-peer financial transactions systems, financial speculation based on the conversion of natural resources to finance capitals, and socially and politically disembeddedness of financial speculations. However, the financialization of Puer tea has not significantly increased the income of tea farmers; rather, the profits pass on among the value-added process, particularly to tea enterprises and tea speculators. The unequal distribution of wealth in the Puer tea industry revealed both the distancing effects of the financialization of agricultural cash products and the intangible value extractions of the digital economy.

Chapter 4: Conclusion

In this thesis, I sought to understand the landscape changes in the Puer tea producing region, which are affected by the neoliberal globalization and Chinese governments' food security, land use policies, and economic development strategies. By taking the historical political economic approach, I found out that the land use changes within the Puer tea cultivation area is triggered by a series of historical contingencies which are deeply entrenched with its internal political dilemmas and affected by the growing influence of globalization. During the course of my research I observed that in order for tea farmers to adapt to the unpredictability of policy shifts, they lack detailed scientific support and must endure continually increasing upfront expenses in order to meet consumer demand and align with the current political orientations for land management and food production. Meanwhile, the innovative economic models such as tourism and cultural and creative economy also bring up new opportunities and challenges for local residents.

In addition, in the second part of my thesis I sought to understand how digital platform and blockchain technologies are incorporated with Puer tea financialization during the recent Puer tea trade boom since 2007. In this chapter I tease out the basic operating mechanism of digital platform and blockchain technologies and their socio-economic implications. In result, I found out that although both of technologies claimed in purpose of promote to democratize and decentralize the traditional economic and monetary system, the operational mechanism of the technologies per se still pertain reinforcing the extractivism capitalism. The empirical case of finalization and digitalization of Puer tea demonstrated that the food financialization, especially for the value added agricultural cash product, will lead to an increasing involvement of agencies which will significantly distancing the connection between consumers and producers and the

substance of food. With the statistical evidence approved that this distancing effect is not directly profits to the tea growing and harvesting farmers, instead the majority of profits are taken away in the value added processes, which caused a huge wealth disparity among tea farmers, tea traders, and tea investors. The case of Puer tea financialization and digitalization also opens up the potential discussion on exploring the intangible form of value extractions in capitalism.

The entire research is an inductive course which starts with participatory observing and documentary analyzing, and tracing the clue to develop semi-structured interviews. The interviewees are based on the social connections not randomly selected, thus, the gathered information may be partially subjected. The interviewees span the entire supply chain of Puer tea, including tea farmers, traders, and tea investors; hence the research documents genuine, insightful perspectives from all levels of the supply chain in the Puer tea industry. Due to the pandemic, all interviews were conducted virtually; therefore, there are no interviews with government officials in the Puer tea industry. This research started off during the pandemic, and took approximately two years longer than anticipated. I would like to express my sincere gratitudes to all those who have agreed to accept my interviews through phone calls and virtual meetings during the pandemic. I am also grateful to my committee members, Drs. Cooper, Crump, and Fields, for their valuable insights, constructive criticism, and unwavering patient support. Their expertise and guidance have been instrumental in shaping the quality of this research. I am also thankful to my labmates and friends for their support and stimulating conversations throughout the research process, particularly during the writing phase. I would like to acknowledge the financial support provided by the Henry A. Jastro Graduate Research fundings. All of the aforementioned support and encouragement have been a constant source of

inspiration that has enabled me to conduct research and contribute to the advancement of knowledge in this field.

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