Chapter 8
How to Finance Wars: The Crisis of Securities in Northern Song China During the 1040 s

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8.1 Introduction

In 1039 CE, the conflict between the Northern Song and the Tangut Xi Xia escalated into a large-scale war on the northwestern frontier. From 1039 to 1042, the Song armies suffered three major defeats on the battlefield: Sanchuankou, Haoshuichuan, and Dingchuan Fort. To provision the armies on the northwestern border, the Song state carried out a massive provisioning program *(ruzhong)* that enticed merchants to supply goods to the military at the frontier through vouchers redeemable in cash, tea, or salt. While the Song state suffered catastrophic defeats on the battlefield, it also underwent a financial crisis directly provoked by the war. It was not until the late 1040 s that the Song state largely overcame these crises and the domestic market regained prosperity.

This article aims to assess the state capacity of the Northern Song from a military-fiscal perspective, especially its fiscal capability of waging wars in the eleventh century. The current scholarship mainly contributes to the study of the military and political history and overwhelmingly focuses on the questions such as what policies led to the Northern Song's military defeats and the failure of the Qingli Reform (1043–45), why the Song court decided to fight against the Tanguts, whether the military

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defeats avoidable (Li 2010; Tsang 1997), and on whom the factional struggle that had permeated Northern Song's central politics should be blamed (Qi 2009, 215–235; Fang 2001, 186–288). This policy-centered narrative, though well justified on its own grounds, has largely ignored the important connection between military mobilization and state finance as an important factor that best indicates how the Chinese state power waged that war. By drawing on both quantitative and qualitative evidence preserved in primary sources such as *Xu Zizhi tongjian changbian*, *Song shi,* and *Song huiyao jigao,* this chapter aims to provide a comprehensive framework for understanding pre-modern China's state capacity by integrating military and financial history.[1]

A cross-dynastic comparison is adopted to demonstrate the full evolution of military financing up to the mid-eleventh century. We look specifically at how the military's market-based procurement of grains started with prepayments by the state in the seventh-century Tang dynasty, then grew until it ultimately evolved into more financing by traders, often in exchange for monopoly rights on key commodities such as salt or tea toward the end of the tenth century. In the succeeding century, as war and financial headwinds increased risks at the market, the merchants won the opportunity to trade those rights, leading to a de facto securities market as well as a new administrative body to essentially regulate growing military-financial-related securities and markets.

8.2 The Origin and Pattern of the Provisioning Policy in the Eighth Century

Military logistics occupied a central place in the administration of imperial China, as the court deployed many soldiers across its broad territory. In the early period of the Tang dynasty (618–907 CE), transferring grain taxes to the military posts, occasionally in combination with the military-run farms and the cultivation of land by the soldiers themselves, constituted the major supply of grain to the army. When the Tang court extended its military forces into Central Asia in the seventh century, however, the shipment of grain via long-distance land transportation to the northwestern frontier became a crucial challenge. To address this issue, the Tang local administrations in the northwest, particularly in the prefectures along the Silk Road,

[1] *Song huiyao jigao*, literally Song Compendium, was the official documents originally compiled by the statemen in the Song Dynasty China (960–1279). It included a great number of decrees and edicts. The current version was a collection made available in the early nineteenth century from the Yongle Encyclopedia. Both *Xu Zizhi tongjian changbian* and *Song shi* were historical narratives about the Song dynasty. The former was published in 1182 and focused on the Northern Song period (960–1127). The latter was compiled in 1343–1345 and covered the whole history of the Song dynasty. Currently, existing literature tends to treat these two themes separately. Guo's work (Guo 1990b, 741–56, 916–34), for instance, investigates how the Song state encouraged merchant involvement in the *ruzhong* provisioning program by adjusting the salt monopoly policy and granting considerable discounts to merchants. At the same time, Wang (2003, 528–542) outlines the financial crisis that occurred in Shaanxi following the minting and circulation of iron coins in the late 1040 s.

Table 8.1 Prices of military provisions in Dunhuang, 745 AD

Type	Market prices (*wen* cash per *dou*)	Official procurement rates (*wen* cash per *dou*)
Millet	27	32
Wheat	32	37
Barley	30	35
Unhusked rice	27	32
Pea	29	34

Sources Lu 2012, 124

set up granaries for purchasing the grain from farmers and merchants, in a new system of defense procurement known as "harmonious purchase".[2] Under this arrangement, the granaries acted as a lender, paying at a rate slightly above the market price in advance, up to six months, for a predetermined amount of grain such as millet, wheat, and barley. The prepayments were paid with textiles to the equivalent values. A record of a military granary discovered in modern Dunhuang indicates that most transactions involving the grain procurement were conducted at the exchange rates of 27–30 *wen* cash per *dou* (斗,a measure equivalent to about 10 L). That price was higher than the nominal market prices (see Table 8.1).

As the size of the garrisons grew, the Tang state began to recognize the increasing importance of public purchases in supplying military provisions, particularly in the capital region (Guanzhong) and at the northwestern frontier. By the mid-eighth century, the volume of grains procured through "harmonious purchases" from the private sector had surged to approximately 4.2 million *shi*, accounting for roughly 47%- of the total military supply (see Table 8.2).

As shown in Table 8.2, the grain provisions from the "harmonious purchases" were confined to the administrative districts along the Silk Road, especially from the three regions in the northwest. The purchased grain from Hexi, Shuofang, and Longyou amounted to 3412.5 *shi*, about 81% of the total. In contrast, the supplies of grain to troops in other regions, such as Pinglu and Fanyang (modern Beijing) in northeast China, Jiannan (modern Sichuan) and Lingnan (modern Guangdong and Guangxi) mostly came from both military farming and land taxes. Furthermore, credit had been rarely used in the official procurement before the tenth century. As discussed in the case of Dunhuang, the prepayment approach had been deployed when the granaries planned to purchase grain from local villagers and most transactions were often completed in small sums by short-term loans. A major step forward in the public purchase took place after the An Lushan Rebellion (755–763). As part of the salt monopoly reform, the court set up an annual provision quota of 150,000 *shi* (石)of rice (approximately 15 million liters) in 821, in exchange of which the grain-supply merchants were paid with the salt produced from the state-owned Wuchi Salt Pond at

[2] The authorities in traditional China often referred the cases of public purchases of grain for the military purposes to the term of "harmonious purchase" (*hedi*和糴). Regarding the study of "harmonious purchases" during the Tang dynasty, see Lu (2012, 90–107).

Table 8.2 Major sources of procurement quotas in China, 742–756 AD

Macroregion	Harmonious purchase (000 *shi*)	Percentage	Military farming (000 *shi*)	Percentage	Land tax or other sources (000 *shi*)	Percentage
Inner Asia						
Beiting	105	26.33%	293.8	73.67%	0	0
Anxi	158	37.57%	261.7	62.43%	0	0
Northwest						
Hexi	1050	71.12%	426.3	28.88%	0	0
Shuofang	1050	83.57%	206.4	26.43%	0	0
Longyou	1312.5	96.92%	41.7	3.08%	0	0
North / Northeast						
Hedong	525	47.06%	90.6	8.12%	500	44.82%
Pinglu	0	0	678	100%	0	0
Fanyang	0	0	828.2	54.19%	700	45.81%
Southwest						
Jiannan	0	0	0	0	513.1	100%
Southeast						
Lingnan	0	0	0	0	237.8	100%
Total	4200.5	46.79%	2826.7	31.48%	1950.9	21.73%

Note: For the administrative districts in the Tang dynasty, Hexi is roughly located in modern western Gansu and eastern Xinjiang regions, while Shuofang and Longyou are located in modern Ningxia and eastern Gansu respectively. Hedong corresponds to modern Shanxi, while Pinglu and Fanyang correspond to the areas of modern Liaoning and Beijing areas respectively. Jiannan corresponds to modern Sichuan. Lingnan correspond to modern Guangdong and Guangxi areas
Sources: Li 1995, 1231–1234. The geographical locations of the above regions are based on the works of Twitchett (1979, 362–368) and Tan (1982, 34–35, 46–49, 63–66, 69–70)

Yanzhou in the Guannei circuit (Yanzhou-G) (Wang 2006a, 1911; Maruhashi 2016, 43–47), the most important center of inland salt production in the north and located near the mid-Yellow River. This salt-for-grain procurement successfully secured one-third of the total supplies.[3] A few scholars such as Wu (1994, 97–98) have speculated that this exchange could be the precursor to the *ruzhong* provisioning system as it integrated the salt monopoly into a public purchase program. However, there is also a lack of evidence indicating the use of transferable securities, typically associated with loan interest, in the public purchases conducted by the Tang court. Nor were the imperial mints able to provide enough copper coins to meet the needs for the circulation of goods.

[3] The armies stationed at the capital district and Northwest in 836 AD totaled 0.4 million and their annual grain consumption exceeded 450,000 *shi* (Li 2001, 750–751).

After the An Lushan Rebellion, monopolies in salt and tea were already adopted by the Tang court to increase state revenues and becoming more important to yearly budgetary income.[4] The merchants were allowed to pay silver, copper coins, grain, and textiles to the government in exchange for the privileged rights of selling salt and tea at a specific region for a fixed term. Yet under the circumstances of the inflation caused by the military conflicts, the merchants faced high risks in transferring and selling the monopolized goods. To boost the sales of salt, the late Tang government accepted textiles as payments at overestimated values that apparently went beyond the market prices. This practice, known as official procurement rates (*xugu,* 虛估), allowed salt merchants to purchase salt at discounted rates that were substantially lower than before (Twitchett 1970, 50–58; Wu 1997, 133–138). While this approach resulted in high nominal revenue, it also produced a significant discrepancy between the official rates and the real prices of monopolized salt and tea that led to a huge loss of state revenues (Wu 1997, 145–183; Chen and Yang 1990, 155–166). In 822, Zhang Pingshu, vice-minister of the Board of Finance, proposed the government agencies to sell salt directly to ordinary consumers rather than allow salt merchants to act as wholesalers. However, his proposal was rejected by the court on the ground that direct sales by the agencies would be even less profitable than the current arrangement (Wang 1960, 5901–5902). In short, the late Tang court began to institutionally exchange monopolized goods such as salt for grain and encouraged the merchants to cooperate with the government to maintain profits. But all these changes in monopolies and public purchases had involved little innovation of credit tools.

8.3 The Establishment of the Monopoly Tax Bureau at Kaifeng

The civil war continued after the collapse of the Tang dynasty in 907 and the military conflicts among the warlords escalated to an unprecedented level in the succeeding years. The two concurring trends, the monetization of the economy and the commercialization of military mobilization, laid a foundation for an emerging military-fiscal state (Liu 2015). When it came to the reunification of China by the Song dynasty in 980, the dramatic increase in the recruited professional soldiers created a heavy burden on the court. The establishment of *Quehuowu* (榷貨務), or the Monopoly Tax Bureau (MTB), at the capital city of Kaifeng led to a credit-based provisioning policy. Initially, the MTB oversaw a monopoly scheme that relied on cooperation with the merchants in the tea trade. The merchants would prepay in gold and silk to

[4] In the mid-ninth century, the Tang government also implemented the tea monopoly as a strategy to augment its revenue. This monopoly encompassed all aspects of tea production, enabling the government to levy taxes on the sales of tea. Concurrently, it imposed a prohibition on unauthorized private trading of tea, thereby ensured its complete control over the profit of tea monopoly (Twitchett, 1970, 62–65).

the MTB for tea vouchers. In return, they were allowed to transfer tea grown in the south to the north for sale (Chen 2006, 19).

After the war with the Khitan Liao at the northern border in 986, the Song court launched a defense provisioning program, a policy known as *ruzhong* (入中)*, zhezhong* (折中), *or zhebo* (折博). As a means of procuring military supplies to the border troops, the merchants were incentivized to transfer grain to the northern border in exchange for economic benefits. The court soon felt necessary to link the tea monopoly scheme—which inevitably involved the cash prepayment by the tea merchants to either the official agencies in the south or the MTB at the capital—to the military provisioning program at the frontier. Upon the delivery of the military supplies, they would receive a state-issued voucher (*yin*) issued by the MTB at Kaifeng which allowed the merchant to obtain a fixed amount of salt or tea at the designated production centers corresponding to the value of the delivered food and fodder (Li 2004, 687).[5]

When it came to Emperor Zhenzong (997–1022), especially after the Northern Song signed the peace treaty with the Khitan in 1005, the military provision program gradually shifted its focus to the northwestern front to aid the Song court's fighting for control of the Silk Road. The official documents preserved during the Zhenzong reign have provided only sketchy information about the mechanism of the *ruzhong* system, especially how the central authority handled, reviewed, and reformed its policies to improve the efficiency of the military provision and minimize the state expenditure.

Essentially, the *ruzhong* program became a complicated and profit-driven process that required a huge sum of prepayments in exchange for privileges in long-distance tea trade earmarked by the vouchers. To put it simply, supervised by the MTB, this *ruzhong* program formally started from the military provision at the border and ended with the retail sale of tea at the designated districts in North China. It would take two to three years for a single merchant to complete the whole cycle, not to mention the difficulties and risks he would face. Therefore, the court allowed the merchants, who had delivered the supplies to the border, to sell the vouchers in state-authorized voucher shops at Kaifeng once they acquired them from the MTB.[6] As the vouchers were sold and re-sold at the voucher shops, the final buyers were mostly the tea and salt merchants who possessed not only a large amount of money but also rich knowledge and skills of shipping goods over long distances. In doing so, the merchants who bought the vouchers became creditors and the MTB in response became a debtor that had used vouchers as a form of credit instrument to purchase the military supplies.

The evolution of the military provisioning program gave rise to an emergence of the securities market at Kaifeng. The circulation of the vouchers was not confined

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[5] According to Ma Duanlin (1245–1322), the policy of *ruzhong* began in 985 (Ma 2012, 438). However, Guo's (1990b, 719–721) research indicates that the policy was actually implemented in 986 instead of 985.

[6] For the whole process of the ruzhong program related to trade of vouchers at Kaifeng, key evidence comes from *Xu zizhi tongjian changbian* (Li 2004, 855).

Table 8.3 Actual purchasing price of the Northern Song military provision, 1003–1005

I. 1003		
Location	Actual price of millet per *dou*	Procurement rate of millet per *dou*
Zhenrongjun	497	714
Weizhou	~	734
II.1005		
Lingzhou	750	1000 ~ 2000

Sources Xu 2014, 6502–6503; Li 2004, 1335–1336

to the hands of the grain-supply merchants and the tea and salt merchants. A securities market emerged when the selling and buying of vouchers at Kaifeng attracted financiers to speculate for extra profits (Liu 2015; Li 2007). In 1005, the central authority recognized that the voucher itself had become transferable among private merchants. Its value was also negotiable as the officials said that the voucher's prices fluctuated at this market.[7]

As it was a market-based public purchase program, the court faced challenges arising from both the grain and voucher markets. Even during peacetime, the deployment of many professional soldiers at the border led to a surge in demand for military provisions. To meet these needs, the MTB offered substantial concessions to incentivize merchants in the delivery of military supplies. (Song 1979, 73–76; Golas 2015, 185–198). The increasing discrepancy between the official procurement rates and market prices of provisioning materials drove up grain prices and attracted more merchants to speculate in the provision program. In 1003, for instance, a sharp increase in the official rates of the public purchases alerted the Northern Song government (Xu 2014, 6502–6503). By 1005, official procurement rates of grain had become significantly higher than market prices, which had already risen due to increased demand (see Table 8.3).

To solve these problems, the Northern Song government implemented a "Three Items Policy" that offered to the grain and fodder merchants the exchange certificates, and a combination of cash and vouchers. After a careful examination of land transportation costs and several meetings with the merchants, the State Finance Commission redefined the exchange ratios between grain and fodder on the one hand and tea on the other hand. Meanwhile, it gave equal weights to three kinds of payments—copper coins, luxury goods such as ivory and aromatic medicines, and tea vouchers (Tuo 1977, 4484–4486). As vouchers were issued in large quantities in the preceding years, the government had struggled to honor its commitments due to the limited stocks of tea. This delay had impacted the securities market in Kaifeng, leading to

[7] A long paragraph preserved in *Xu Zizhi tongjian changbian* tells a reader that at the year of 1005 AD the State Finance Commission revised and issued the guideline in 1005 AD for the procuring military supplies after consulting with big merchants. As it describes, the vouchers had already become transferrable and their value became negotiable at the market before the year of 1005 AD, though it might have existed some years earlier.

a significant decline in both the volume of transactions and the market prices of the tea vouchers (Li 2004, 1335–1336). To issue the voucher in a much smaller quantity was a primary means of stabilizing the market prices of the vouchers. This time the MTB allowed the merchants to obtain two-thirds of the payments via both cash and ivory, and a balance between the outflow and inflow of cash out of its own reserve thus became a crucial task.

After the reform of the "Three Items Policy" was conducted in 1005, the MTB successfully obtained annually from 2 to 4 million strings (a currency unit comprising 770–1,000 cash coins bound together through holes in the center) from the tea monopoly (Li 2004, 1481–1482). In 1031, the MTB reported it would secure 1.8 million strings cash yearly out of the monopolies of the salt produced in southeast China. Later this quota increased to 4 million strings (Tuo 1977, 4440). Given the steady cash inflows, the MTB even began to redeem the vouchers from the securities market when prices fell.[8]

Providing a comprehensive assessment of the overall performance of the MTB in the eleventh century is difficult based on existing sources. For the implementation of the *ruzhong* program, the state must possess a capability to bear the risk of fluctuations in both the grain and voucher markets. Thus, the sustainability of this defense procurement program largely depended on the Song government's capability to fulfill its financial obligations to the merchants. During the three decades after the "Three Items Policy" was launched, the Northern Song and Khitan Liao remained at peace. And the defense procurement program, though still expensive, could be arranged at leisure. The MTB even found its cash inflow exceeded its outflow. Nonetheless, obtaining military supplies during wartime would turn out to be a different case. As the shortage of the monopolized goods in the governmental agencies caused delays to tea and salt merchants, the market prices of the vouchers declined and the discrepancy between the face value and the market price of the vouchers increased. Speculation occurred wildly then to drag down the prices of the vouchers, even to half of their face value. While the problem of price-gouging in military provisions caused a substantial outflow of the MTB's cash reserves, the speculation on the transferrable vouchers greatly destabilized the securities market and dealt another blow to the MTB. This is exactly what happened to Song China around 1040, which suffered a deep crisis in public finances, initially caused by the border war with Tangut Xi Xia. As shown in the following section, the poor operation of the Northern Song's military procurement program and the rampant fluctuation of the voucher prices at the securities market quickly drained the wealth of the imperial treasury and caused inflation across the country.

[8] In the Zhenzong reign, the court decided to redeem the vouchers in the years of 1014,1017 and 1021 (Xu 2014, 6790–6792;Li 2004, 1481–1482).

8.4 The Performance of the Securities Market During the 1040 s Crises

The longstanding rivalry between the Northern Song and the Tanguts can be traced back to the late tenth century when Li Jiqian (963–1004), the military governor of Xiazhou, refused to acknowledge the supremacy of the Song emperor. This refusal was in response to the Song court's attempt to enforce a resettlement policy on the Tangut clan within the interior regions of China in 982. Despite the Tangut's occupation of Lingzhou, the Song state pursued an appeasement policy, opting to avoid direct conflict. In 1005, both sides signed a peace treaty that formally recognized Li Deming (981–1032) as the ruler of the Tangut people. However, the political situation deteriorated when Li Yuanhao (1003–1048), the son of Li Deming, ascended to the throne. Unlike his father, who was subservient to the Northern Song, Li Yuanhao was a Tangut ruler with high-caliber military talent who aspired to lead an independent state formally recognized by the Northern Song court. He asserted control over Gansu region, capturing major cities in the Hexi Corridor, including Guazhou, Shazhou, and Suzhou. This expansion pushed his territories further westward to the northwestern border of the Song state in 1030 s. The protracted conflict between Northern Song and Tangut Xi Xia eventually escalated into full-scale war. From late 1039 to 1042, the two states engaged in at least 13 sieges and 20 battles, three of which culminated in catastrophic defeats for the Northern Song (see Table 8.4 and 8.5). In the first month of 1040, while en route to relieve the besieged city of Yanzhou in the Yongxingjun circuit (Yanzhou-Y), Song troops suffered a devastating defeat in an ambush. This led to the capture of the Song commander Liu Ping and resulted in more than 5,000 Northern Song soldiers being killed (Li 2010, 32–35, 130–131; McGrath 2009, 305–306). In the second year, the Northern Song forces were lured into an ambush at Haoshuichuan. This defeat brought the death toll to over 10,000 soldiers. Finally, in the tenth month of 1042, the battle of Dingchuan fortress ended in a massacre of the Song forces, 13 officers and 9,400 soldiers being killed (Li 2010, 132–135; Tsang 1997, 224–228).

Alongside the military setbacks, the court also had to grapple with a financial crisis, which was a direct consequence of the war. From 1041 onwards, the Northern Song government was supporting more than 200,000 professional mercenaries on the northwestern border (see Table 8.6).

The defense of the northwestern border posed an acute problem for the military provisions. In 1043, Wang Yaochen (1003–1058), Deputy Commissioner of State Finance, highlighted the fiscal burden of the court caused by the ongoing war with the Tangut. In 1038, Shaanxi's annual budgetary incomes, mostly from local tax revenues, stood at 19.78 million strings. However, after the war broke out the budgetary incomes at the discretion of the Shaanxi administration reached 33.9 million strings, a surge of nearly 72% by 1042. This increase was met by transferring revenue from the neighboring inland areas (Wang 1995, 19). Despite this increase in allocated resources, the rise in real expenditures was even more dramatic. In 1038, Shaanxi's expenditures reached approximately 15.5 million strings, but during the

Table 8.4 Sieges between Northern Song and Xi Xia, 1040–1041

Date (M/Y)	Location	Besieger/Défense	Outcome
1/1040	Jinming Fort	Xia/Song	occupied
1/1040 (7 days)	Yanzhou-Y	Xia/Song	withdrawn
1/1040	Yongping Fort	Xia/Song	withdrawn
1/1040	Anyuan Fort	Xia/Song	withdrawn
1/1040	Saimen Fort	Xia/Song	occupied
1/1040	Zhenxibao	Xia/Song	withdrawn
9/1040	Sanchuan Fort	Xia/Song	withdrawn
9/1040	Baibaocheng	Song/Xia	occupied
2/1041	Liufanbao	Xia/Song	withdrawn
7/1041(31 days)	Linzhou	Xia/Song	withdrawn
7/1041	Ningyuan Fort	Xia/Song	occupied
7/1041	Fuzhou-H	Xia/Song	withdrawn
7/1041	Fengzhou-H	Xia/Song	occupied

Sources Li 2004, 2966–3164

Table 8.5 Battles between Northern Song and Xi Xia, 1040–1042

Date (M/Y)	Location	Winner
11/1039	Bao'anjun	Northern Song
11/1039	Chengping Fort	Northern Song
11/1039	Houqiao Fort	Northern Song
1/1040	Sanchuankou	Xi Xia
8/1040	Guobeiping	Northern Song
9/1040	Zhenrongjun	Northern Song
9/1040	Shizibao	Northern Song
9/1040	Bao'anjun	Xi Xia
9/1040	Zhao'an Fort	Northern Song
2/1041	Haoshuichuan	Xi Xia
4/1041	Hanqi, Xuema and Duwei forts	Northern Song
9/1041	Liulibao	Northern Song
9/1041	Longmenchuan	Northern Song
4/1042	Furonggu	Northern Song
4/1042	Anding	Northern Song
5/1042	Sansongling	Northern Song
5/1042	Tumaochuan	Northern Song
10/1042	Dingchuan Fort	Xi Xia
10/1042	Weizhou	Xi Xia
10/1042	Pengyang	Northern Song

Sources Li 2004, 2944–3307

Table 8.6 Number of professional troops on the northwestern front, 1041–1044

	Circuits				
Year	Fuyan	Huanqing	Jingyuan	Qinfeng	**Total**
1041	68, 000	50, 000	70, 000	27, 000	215,000
1044	~	~	~	~	300,000

Sources Li 2004,0.3140–3141, 3600; Li 2010, 106–108

war with the Tangut Xi Xia, it soared to 33.6 million strings, an increase of nearly 117% (see Table 8.7).

The intensifying military conflicts between the Northern Song and Tangut Xi Xia necessitated urgent military provisions to supply the Shaanxi border. Indeed, even during times of peace, the local economy could barely sustain the garrison stationed there. In 1034, Cheng Lin (988–1056),the Commissioner of State Finance, revealed that the Shaanxi garrison forces consumed approximately 15 million *shi* yearly, but only half of that could be satisfied by the supplies of local taxes. As a result, the Song government had to import an additional 7.5 million *shi* from Kaifeng to meet the demand (Li 2004, 2675–2676; Zhang 2000, 324–325; Huang 2009, 178–180). The Northern Song government had to deploy unusual measures to wage war on the Tangut.

In 1040, just one year after the war broke out, to address the pressing wartime demand for military provisions, the Song court expanded its *ruzhong* policy to procure the necessary military supplies. Advised by the head of State Finance Commission, the court decided to sharply raise the sea salt production quota along China's southeastern coast. The merchants who transported grain and fodder to the northwestern front would be eligible to obtain vouchers for shipping and selling salt. (Li 2004, 3072; Tuo 1977, 182; Chien 2004, 190). Two years later, this policy was further revised to procure an even greater quantity of provisions from the private sector for the garrisons in Shaanxi and Hedong. Now merchants who engaged in provisioning Shaanxi and Hedong would receive half their compensation in copper coins and half in gold and textiles at the MTB; those who preferred not to receive gold and silk were offered vouchers of tea, salt, or aromatics as alternatives (Tuo 1977, 4440; Xu 2014, 6509). Furthermore, merchants who transported other goods to the border would be

Table 8.7 Allocated resources and actual expenditures of the major circuits in Northern Song (strings of cash)

	Shaanxi		Hebei		Hedong	
Year	Budgetary incomes	Expenditure	Budgetary incomes	Expenditure	Budgetary incomes	Expenditure
1038	19,780,000	15,510,000	20,140,000	18,230,000	10,380,000	8,590,000
1042	33,900,000	33,630,000	27,450,000	25,520,000	11,760,000	13,030,000

Sources Li 2004, 3366

compensated with salt vouchers that could be redeemed by the official agency at the Xiezhou Salt Pond (Xu 2014, 6509) (Map 8.1).

Amid the ongoing war against the Tanguts, the Song state was confronted with an unparalleled fiscal crisis that was as dire as the military defeats. Zhang Fangping (1007–1091) recounted the staggering amount of expenditure incurred following the escalation of the hostilities between Northern Song and Xi Xia:

> During the Baoyuan (1038–1039) and Kangding (1040–1041) periods, the central power of Northern Song was challenged by the Tangut. The deployment of military forces along the western border resulted in the concentration of troops and horses, which further necessitated the long-distance delivery of grain and fodder. This shipment led to a significant outflow of the vouchers, silver, cash, and textiles from the MTB's reserve, amounting to more than 10 million strings of cash annually. Since this amount exceeded the resources controlled by the State Finance Commission, immediate help [was required] from the Inner Treasury (the royal reserve at the disposal of the emperor). (Zhang 2000, 353–354)

The substantial outflow of cash from the MTB can be explained by the pressing military requirements on the northwestern border in Shaanxi. The local authorities on the border elevated the purchasing prices of military provisions to attract more merchants to supply these provisions to the border. In 1049, Bao Zheng (999–1062), Deputy Commissioner of State Finance, provided a vivid account of the state's exorbitant expenditures during the military conflict with the Tanguts:

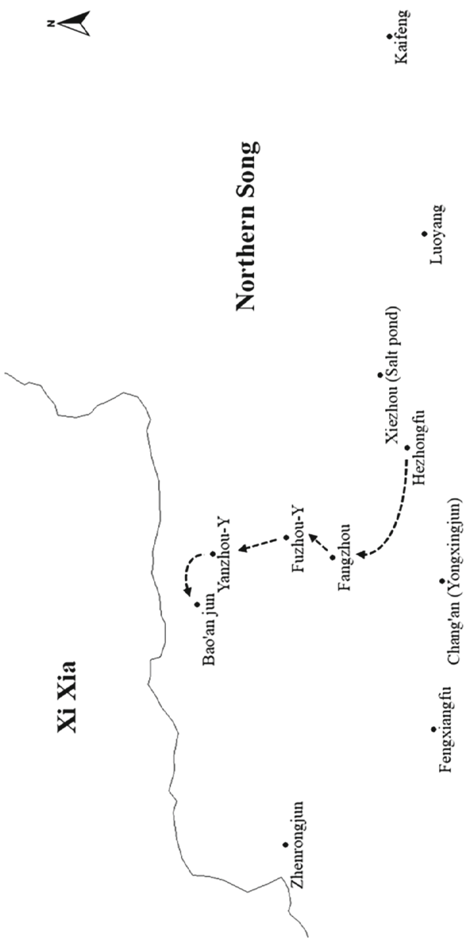
> Since the period of Kangding (1040), those who delivered grain and fodder to the western border received vouchers that could be exchanged for copper coins, silver or textiles at the MTB. Salt produced from the Xiezhou Salt Pond would be offered in exchange for the supplies to the frontier such as feathers, sinew and horn, glue and paint, iron and charcoal, tiles and lumber. Unscrupulous merchants were tempted to collude with the corrupt officials to keep prices artificially high. A merchant could, for example, sell a pair of wooden beams at the rate of 1,000 coins of cash and could be rewarded with a large salt mat as the payment, which caused incalculable losses from the state. (Xu 2014, 6509–6510; Chien 2004, 110–111)[9]

In addition to such high official rates, which indicated the over-valuation of the procurement materials at the frontier, the payment of vouchers at hugely discounted rates also caused a great loss to the MTB. Zhang Fangping, who held the position of Commissioner of State Finance after the war, described how avidly merchants had exploited the vouchers of the Xiezhou-produced salt provided by the state's *ruzhong* provision policy to reap financial gains in the market:

> Due to the insufficient fiscal resources available in the Shaanxi circuit, the state has implemented a strategy of encouraging merchants to supply the northwestern frontier with grain and fodder. The Bureau of General Accounts pays cash and silk cloth to those merchants at a rate three times higher than the conventional one. This led to the devaluation of tea, salt, and alum [a chemical salt used in textiles and medicine]. As the profits of these commodities dissipated, the central authorities were left to swallow the cost. (Li 2004, 3895)

The devaluation of the three commodities referred to the MTB selling at hugely discounted rates. To fulfill urgent military needs, as shown in Table 8.8, the prices of

[9] For the weight of salt in Song Dynasty, 1 mat (*xi* 席) was equal to 220 *jin* (Guo 1990b, 217–218).



Map 8.1 Routes of grain and fodder supplies to the northwestern frontier of Northern Song, 1040 (*Sources* Li 2004, 3613–3615; Cheng 2006,139–144)

Table 8.8 The official rates of Xiezhou-produced salt calculated from vouchers, 1004–1042 AD

Year	Location	*Wen* per *jin*
1004	**Most outer periphery**: Huanzhou, Qingzhou, Yanzhou-Y, Weizhou, Yuanzhou, Zhenrongjun, Bao'anjun	12
	Secondary outer periphery: Yizhou, Fuzhou-Y	14
	Inner peripheral region: Binzhou, Ningzhou, Jingzhou	16
	Secondary inner region: Qinzhou, Fangzhou, Danzhou, Qianzhou, Longzhou, Fengzhou-Q, Jiezhou, Chengzhou, Fengxiangfu	18
	Secondary inner region: Tongzhou, Huazhou, Yaozhou, Guozhou, Xiezhou, Hezhongfu,, Yongxingjun, Shanfu	20
1026	Huanzhou	15.2
	Zhenrongjun	15.2
	Bao'anjun	14.5
	Qingzhou, Weizhou, Yuanzhou-Y, Yanzhou-Y	15.5
1042	Yongxingjun, Tongzhou, Huazhou, Yaozhou, Hezhongfu, Shanfu, Guozhou, Xiezhou, Jinzhou, Jiangzhou-H, Qingchengjun	4.55

Sources Xu 2014, 6502–3, 6788; Dai 1981, 237–238; Li 2004, 3215, 4517–4518

the Xiezhou-produced salt available through the vouchers plummeted to an unprecedented level. In the prewar time the official rates for the military procurement ranged between 12–20 *wen* cash per *jin,* depending on the shipment distance. When it came to the war, prices fell dramatically to as little as 4.55 *wen* per *jin* of salt in 1042 and it is presumed that the MTB would have had to increase the voucher supply to make up for the fall in prices.

However, the court largely failed to do so, as both production and consumption of salt and tea remained largely the same. To stabilize the market of Xiezhou-produced salt, the Song state reintroduced in 1042 a strict policy that required merchants to withdraw from the salt monopolies implemented in the hinterland prefectures close to the Xiezhou Salt Pond. Instead, both the merchants formerly involved in military provisions and the holders of salt vouchers were asked to sell their vouchers back to the state at a recalculated value.[10]

Despite of the reintroduction of officially-controlled sales along with the redemption of vouchers related to the circulation of the Xiezhou-produced salt in the Northwest, which actually constituted only a part of the state-issued vouchers, it made little difference to the securities market that had also speculated on different vouchers related to the sea salt and other goods. Following a substantial increase in the number

[10] We are unsure of how many prefectures in the north, under this policy, were defined as the highly controlled area exclusively for the official sales. The source mentioned in particular that the merchants were prohibited from the salt monopoly in Kaifeng and the eleven hinterland prefectures with both easy access to the transportation and intense density of populations. The official agents and outlets were fully in charge of the distribution and sales of Xiezhou-produced salt (Li 2004, 3215). For further information see Tuo 1977, 4417; Chien 2004, 111; Guo 1990b, 919–920.

of salt vouchers in circulation, the over-supply caused by excessive military procurement became apparent. As the salt merchants at Kaifeng found it difficult to receive the fixed amount of salt as indicated by the voucher's face value, they became reluctant to purchase further vouchers. In 1043, Fan Zhongyan observed:

> At present the MTB has merely 100 private dealers for the voucher business. Despite the deployment of the "Three Items Policy", only a small number of merchants have participated in the *ruzhong* provisioning program, supplying a meager amount of grain and fodder for military provisioning. It remains difficult for the MTB to accumulate an adequate amount of gold, silver, coins or textiles in the current year. (Fan 2004, 544)

The sluggish sales of salt vouchers, as suggested by Guo (1990b, 921), can be attributed to the shrinking of merchant-sales regions and in consequence the decreasing numbers of the consumers that the merchants were able to target, directly resulted from the reintroduction of a stricter approach to the salt monopoly in Kaifeng and the prefectures in Shaanxi regions. Although Fan Zhongyan did not provide a complete explanation for the unattractiveness of salt vouchers to merchants, he noted that increasing the amount of sea salt offered for each voucher was a solution to this problem. Xu Yuan, who was recommended by Fan Zhongyan to head the MTB in the capital, suggested that the local authorities offer even higher official rates for grain it paid to merchants, and this extra amount could be solved by issuing the vouchers for sea salt in a much larger quantity (Ouyang 2001, 476–477).

The depletion of cash reserves forced the MTB to continue excessive sales of sea salt vouchers, creating a dilemma for the Song state. On the one hand, to curb the cash outflow out of the MTB, the Song state needed to issue fewer vouchers or even halt their issuance. On the other hand, to fulfil the urgent military needs of provisioning the frontier troops, the state had little choice but to continue selling more vouchers. After the escalation of the military conflicts between Northern Song and Tangut Xi Xia, the MTB's cash outflows ballooned. In the two years of 1039 and 1040, this figure reached 10 million strings of cash. And in 1042 it was still over 6.4 million, which far exceeded the pre-war level (see Table 8.9). Xu Yuan observed that after the state reintroduced the *ruzhong* provisioning policy, the bureau lacked sufficient cash to pay the merchants. The inability of the MTB to provide adequate cash payment to merchants led to a sharp decrease in the amount of grain delivered to the front and a corresponding increase in grain prices (Ouyang 2001, 476).

Nevertheless, as the MTB officials were pressured to meet the urgent military needs by using credit tools such the tea and salt vouchers, the over-supply of vouchers tipped the balance between the inflow and outflow of cash reserves originally designed by the MTB. By 1044, the Northern Song government, eager to achieve peace and alleviate the fiscal burden incurred by the war, concluded a peace settlement with the Tangut Xi Xia. Despite this effort, the MTB continued to experience a significant cash deficit that persisted beyond the short-lived Qingli reforms. As shown in Table 8.9, the MTB's cash outflows did not come down to prewar levels. In 1046, the bureau's cash outflows totaled 4.8 million strings of cash. It was not until the following year that a decline in the cash disbursement was observed, dropping to 2.76 million strings.

Table 8.9 Cash inflows and outflows of the MTB, 1028–1047 (000 strings)

Year	**Inflow**			**Outflow**
	Tea vouchers	Xiezhou salt vouchers	Sea salt vouchers	
1015	> 2,000			
1022	Jiangnan:570	Jingxi: 230	1,140	
1028			1,803	1,544
1038				≈10,000
1039				≈10,000
1040				≈10,000
1042				6,470
1046				4,800
1047	1,190			2,760

Sources Xu 2014, 6797–6798;Zhang 2000, 353–354; Li 2004, 4517–4518; Guo 1990a, 96–102

Since the Song state was incapable of completely addressing the excessive cash expenditure of the MTB during wartime, it resorted to increasing the money supply by minting iron and copper coins. At the suggestion of the reform officials, low-intrinsic-value "ten cash iron coin" and "ten cash copper coin" (*dangshi daqian* 當十大錢) began to be circulated in Shaanxi in substantial quantities from the early 1040 s onward. In 1040, the Song state began to mint "ten cash copper coins" and iron coins in Jiangnan and transported them to Shaanxi to meet a shortage (Xu 2014, 6214). These new coins' intrinsic value was considerably lower than their face value. A ten cash large coin, for instance, had an intrinsic value of only 30% of its nominal value, equivalent to the value of three normal copper coins (Li 2004, 3954–3955). Officials such as Ding Du (990–1053) opposed the circulation of these coins out of concern that it would not only debase the currency and encourage large-scale manufacture of counterfeit coins but also inflate the prices of grain and fodder on the border (Li 2004, 3071–3072; Wang 2003, 532–533).

Despite such concerns, the Song state continued to increase the money supply by minting coins in low intrinsic values in the 1040 s. In the autumn of 1041, the State Finance Commission ordered prefectures with iron ore mines in Hedong circuit such as Jinzhou and Zezhou to produce "large iron coins" in support of the Song state's military expenditure in Shaanxi (Li 2004, 3173; Wang 2003, 534). In the winter of the same year, a huge number of iron coins, totaling 3 million strings of cash at face value, were manufactured at the imperial mints located in Jiangzhou, Raozhou, and Chizhou prefectures of South China for "military costs on Shaanxi border" (Li 2004, 3196; Wang 2003, 535). Even after the peace treaty was signed in the autumn of 1044, the court still faced the burden of cash outflows and ordered the production of the ten cash copper coins, by the total of 110,000 and amounting to the aggregate value of 1.1 million strings of normal copper coins at the face value, were cast at the imperial mints in South China in order to stabilize the money supply (see Table 8.10).

Table 8.10 Amount of minted coins in Northern Song China, 1041–1045 (strings)

Year	Location of minting	large iron coins	Small iron coins	Large copper coins
1041	Jinzhou	288,000	114,500	~
	Zezhou	160,000	4,000	~
	Jiang-Rao-Chi	3,000,000 in total*		~
1045	Jiangnan C	~	~	110,000

Sources Hino 1983, 380–383
* The sum of the iron coins produced at the imperial mints in the Jiangzhou-J, Raozhou, and Chizhou prefectures was 3,000,000

The circulation of depreciated metal coins had significant repercussions for the Song state. In 1043, Fan Zhongyan, one of the most influential figures of the Qingli reforms, acknowledged that the casting of iron coins, which was intended to help finance the military expenditure in Shaanxi and Hedong, resulted in significant illegal casting (Li 2004, 3459–3460). Due to the persistent heavy expenditure on the border defense, the Song state continued to issue ten cash iron coins. However, the circulation of these metal coins was followed by sustained inflation in Shaanxi throughout the decade. To combat inflation, iron coins were withdrawn from circulation in Shaanxi from 1045 onwards. In 1048, to stabilize prices, the Song state devalued the large-nominal-value iron and copper coins by 70%, making them equivalent to only three normal copper coins (Li 2004, 3955; Wang 2003, 535–536).

A complete recovery of the voucher market took much longer years after the war had ended. To aid the defense procurement at the border in Hebei, the Song state implemented in 1048 the "Four Items Policy", which was intended as an improvement over the "Three Items Policy" that had been conducted preceding the war. However, inflation continued unabated, and the MTB could not maintain a reasonable ratio between the procurement rates of grain and that of the vouchers. "A hundred and eight *jin* of salt that previously sold at 100,000 cash were now rated at 60,000 cash only" (Tuo 1977, 4440; Chien 2004, 191). The persistent presence of the official rates of salt and tea vouchers at a heavily discounted level had significant impacts on the securities market. The MTB issued more vouchers at discounted rates, causing a sharp decline of the voucher values in the securities market. The financial officials noted with alarm that once the "Four Items Policy" was implemented, a supplier of provisioning goods would sell aromatic medicine at the price of 500–600 coins of cash per *jin*, merely one-seventh of the market prices previously paid, to the local administration. The vouchers paid to the supplier were already overwhelmingly discounted. When the salt and tea merchants bought these vouchers at Kaifeng from the market, they too asked for an extremely high discount rates, leading to a rampant speculation on an ever-low price of the vouchers. According to *Song Shi*, a voucher that guarantee a pack of tea originally worth about 100 strings cash was then resold at the value of 3 strings. The State Finance Commission was forced to negotiate with the financiers to solve the embarrassing problem. Anyone who held the voucher currently valued at 3 strings, once paying additional 44 strings cash, were immediately granted with tea worth 100 strings by the government. To stabilize the price of salt vouchers, the Song court, on the recommendation of Fan Xiang (Xiezhou Salt Monopoly Commissioner), decided to allow the provisioning merchants to use cash at the frontier in exchange for the vouchers of Xiezhou-produced salt. (Li 2004, 3970–3971; Guo 1990b, 921–925). Later, the court sometimes turned to purchase grain by cash to reduce its reliance of military procurement on vouchers. But this would certainly lead to a stagnation of the voucher market until the coming of the far-reaching financial, trade and legal reforms brought about by the New Policies introduced in 1069.

8.5 Conclusion

This paper aims to explore the close relationship between the market-based military mobilization and the rise of securities market at Kaifeng at the dawn of the eleventh century. It starts from a cross-dynastic comparison of public purchases between the Tang and Northern Song dynasties. As the Tang Empire expanded greatly, its territories in the seventh century, a public procurement scheme was deployed to supply the soldiers stationed along the Silk Road. After the An Lushan Rebellion, the internal fights within China Proper led to the emergence of a market-based military mobilization. Nonetheless, it was not until the reunification of the Northern Song dynasty that the central authorities in China began to systematically exploit monetized resources to sustain the large number of professional soldiers under its direct control. Around 1005 the Song court created a complicated system to supply the armies at the frontier. This system comprised three parts: a public purchase program known as *ruzhong* for providing food and fodder, a monopoly in tea and salt for receiving cash payments from the merchants in wholesale business and a special commercial administration known as the MTB for handling the receiving and paying of cash and which was responsible for issuing and supervising the vouchers as a credit tool. By paying attention to the functioning of both the *ruzhong* method and the role that the MTB played at the securities market at Kaifeng, we find the prewar financial apparatus had worked smoothly in linking the military procurement with the monopolies in salt and tea. In the three decades between 1005 and 1039 the MTB successfully maintained a subtle balance between the inflows and outflows of cash and redeemed the vouchers from the hands of private merchants to stabilize the securities market.

However, throughout the 1040 s, the Song state struggled with financial crises stemming from military defeats on the northwestern border. The official rates of the supplies purchased at the border soared to incentivize the merchants to provide what the military needed. The problem of price-gouging in transactions of military supplies caused enormous cash outflows from the MTB. While the shortage of hard currencies worsened, speculation in vouchers almost undermined the securities market. The circulation of depreciated metal coins, which were originally designed by the reformists to relieve the shortage of hard currencies as payment means, escalated into a national crisis that sparked hyperinflation. Faced with military setbacks and a financial crisis, the court decided to sign a peace treaty with the Tanguts. It would be decades before the Song authorities restored financial order and curbed inflation.

Appendix Pinyin spelling for the place names in traditional Chinese character

Anding 安定
Anyuan Fort 安遠寨
Anxi 安西
Baibaocheng 白豹城
Bao'anjun 保安軍
Beiting 北庭
Binzhou 邠州
Chengping Fort 承平寨
Chengzhou 成州
Chizhou 池州
Danzhou 丹州
Dingchuan Fort 定川寨
Duwei Fort 都嵬寨
Fanyang 范陽
Fangzhou 坊州
Fengxiangfu 鳳翔府
Fengzhou of Hedong Circuit (Fengzhou-H) 豐州
Fengzhou of Qinfeng Circuit (Fengzhou-Q) 鳳州
Furonggu 芙蓉谷
Fuyan 鄜延
Fuzhou of Hedong Circuit (Fuzhou-H) 府州
Fuzhou of Yongxingjun Circuit (Fuzhou-Y) 鄜州
Guazhou 瓜州
Guobeiping 郭北平
Guozhou 虢州
Haoshuichuan 好水川
Hanqi Fort 漢乞寨
Hedong 河東
Hedong Circuit (modern Shanxi) 河東路
Hezhongfu 河中府
Hexi 河西
Houqiao Fort 後橋寨
Huazhou 華州
Huanqing 環慶
Huanzhou 環州

Jiangzhou of Hedong Circuit (Jiangzhou-H) 絳州
Jiangzhou of Jiangnandong Circuit (Jiangzhou-J) 江州
Jiannan 劍南
Jiezhou 階州
Jingyuan 涇原
Jingzhou 涇州
Jinming Fort 金明寨
Jinzhou 晉州
Kaifeng 開封
Lingnan 嶺南
Lingzhou 靈州
Linzhou 麟州
Liufanbao 劉璠堡
Liulibao 琉璃堡
Longmenchuan 龍門川
Longyou 隴右
Longzhou 隴州
Ningyuan Fort 寧遠寨
Ningzhou 寧州
Pengyang 彭陽
Pinglu 平盧
Qianzhou 乾州
Qinfeng Circuit (modern Shaanxi) 秦鳳
Qingchengjun 慶成軍
Qingzhou 慶州
Qinzhou 秦州
Raozhou 饒州
Saimen Fort 塞門寨
Sanchuan Fort 三川寨
Sanchuankou 三川口
Sansongling 三松嶺
Shaanxi 陝西
Shanfu 陝府
Shazhou 沙州
Shizibao 師子堡
Shuofang 朔方
Suzhou 肅州
Tongzhou 同州
Tumaochuan 兔毛川
Weizhou 渭州
Wuchi 烏池
Xiazhou 夏州
Xiezhou 解州
Xuema Fort 薛馬寨

Yanzhou of Guannei Circuit during Tang Dynasty, or Yanzhou-G 鹽州. It was situated in the modern Dingbian county in northern Shaanxi.

Yanzhou of Yongxingjun Circuit (Yanzhou-Y) 延州
Yaozhou 耀州
Yizhou 儀州
Yongping Fort 永平寨
Yongxingjun 永興軍
Yuanzhou 原州
Zezhou 澤州
Zhao'an Fort 招安寨
Zhenxibao 鎮西堡
Zhenrongjun 鎮戎軍

References

Chen, Jun. 2006. *Huangchao biannian gangmu beiyao* [Chronologically Arranged Complete Essentials in Outline and Detail of the August Courts]. Beijing: Zhonghua shuju.

Chen, Yande and Yang Quan. 1990. *Tangdai yanzheng* [The Salt Administration During the Tang Dynasty]. Xi'an: Sanqin chubanshe.

Cheng, Long. 2006. *Bei Song xibei zhanqu liangshi buji dili* [Geography of the Food Supplies on the Northwestern Border in the Northern Song]. Beijing: Shehui kexue wenxian chubanshe.

Chien, Cecilia L. F. 2004. *Salt and State: An Annotated Translation of the Songshi Salt Monopoly*. Ann Arbor: Center for Chinese Studies, University of Michigan Press.

Dai, Yixuan. 1981. *Songdai yanchao zhidu yanjiu* [The System of Salt Vouchers During the Song Dynasty]. Beijing: Zhonghua shuju.

Fan, Zhongyan. 2004. *Fan Zhongyan quanji* [Collected Works of Fan Zhongyan], ed. Fan Nengjun, vol. 1. Nanjing: Fenghuang chubanshe.

Fang, Jian. 2001. *Fan Zhongyan pingzhuan* [Fan Zhongyan: A Critical Biography]. Nanjing: Nanjing daxue chubanshe.

Guo, Zhengzhong. 1990a. *Songyan guankui* [A Glimpse of the Salt During the Song Dynasty]. Taiyuan: Shanxi jingji chubanshe.

Guo, Zhengzhong. 1990b. *Songdai yanye jingjishi* [An Economic History of the Salt Industry During the Song Period]. Beijing: Renmin chubanshe.

Golas, Peter J. 2015. The Sung Fiscal Administration. In *The Cambridge History of China, vol.5, part 2: Sung China, 960–1279*, ed. John W. Chaffee, and Denis Twitchett. Cambridge: Cambridge University Press.

Hino, Kaisaburō. 1983. *Sōdai no kahei to kin'yū (jyō)* [The history of currency and finance of Song Dynasty]. In *Tōyō shigaku ronshū* [Collected works of Hino Kaisaburō on the history of East Asia], vol 7. Tokyo: Sanichi shobō.

Huang, Chunyan. 2009. *Bei Song xibei yanbian de ruzhong* [Ruzhong Provisioning Operation on the Northwestern Border of Northern Song], *Tang Song zhengzhi jingji shi lungao* [Collection of the Works on Political and Economic History of Tang and Song Dynasties], 178–189. Lanzhou: Gansu renmin chubanshe.

Li, Huarui. 2010. *Song Xia guanxi shi* [A History of Song–Tangut Relations]. Beijing: Zhongguo renmin daxue chubanshe.

Li, Jinxiu. 1995. *Tangdai caizheng shigao* [Research Manuscript of Tang Dynasty's Financial History], vol.1. Beijing: Beijing daxue chubanshe.

Li, Jinxiu. 2001. *Tangdai caizheng shigao* [Research Manuscript of Tang Dynasty's Financial History], vol.2. Beijing: Beijing daxue chubanshe.

Li, Tao. 2004. *Xu zizhitongjian changbian* [The Long Draft Continuation of the Comprehensive Mirror That Aids Administration]. Beijing: Zhonghua shuju.

Li, Xiao. 2007. *Songchao zhengfu goumai zhidu yanjiu* [Studies of the System of the Song Government Procurement]. Shanghai: Shanghai renmin chubanshe.

Liu, William G. L. 2015. The Making of a Fiscal State in Song China, 960–1279. *Economic History Review* 68 (1): 48–78.

Lu, Xiangqian. 2012. *Tangdai Zhengzhi jingjishi zonglun: Ganlu zhi bian yanjiu ji qita* [The History of Politics and Economy in Tang Dynasty: Research on Ganlu Incident and Others]. Beijing: Shangwu yinshuguan.

Ma, Duanlin. 2012. *Wenxian tongkao* [Comprehensive Studies of Historical Documents]. Beijing: Zhonghua shuju.

McGrath, Michael. 2009. *The Reigns of Jen-tsung (1022–1063) and Ying-tsung (1063–1067).* In *The Cambridge History of China, vol. 5, part 1: The Sung Dynasty and Its Precursors, 907–1279*, ed Denis Twitchett and Paul J. Smith. Cambridge: Cambridge University Press.

Maruhashi, Mitsuhiro. 2016. Tōdai Kōhan no Hokuhen Keizai saikō [Rethinking the Economy of the Northern Frontier Region During the Second Half of the Tang Dynasty]. *Ajia Shigaku Ronshū* (Studies in Asian History) 10: 43–61.

Ouyang, Xiu. 2001. *Jushi ji* [Collected Works of the Retired Scholar]. In *Ouyang Xiu quanji* [Collected Works of Ouyang Xiu], ed Li Yi'an. Beijing: Zhonghua shuju.

Qi, Xia. 2009. *Qi Xia quanji* [Complete Works of Qi Xia], vol.9. Baoding: Hebei daxue chubanshe.

Song, Xi. 1979. Bei Song shangren de ruzhong bianliang [Deliveries of grain to the borders by merchants during the Northern Song period]. In S*ongshi yanjiu luncong* [Collection of Song History Studies]. Taipei: Huagang chuban youxian gongsi.

Tsang, Shui-lung. 1997. *Violence and Strategy in Flux, 960–1104 A.D.*" PhD diss., The University of Arizona.

Twitchett, Denis. 1970. *Financial Administration under the T'ang Dynasty*. Cambridge: Cambridge University Press.

Twitchett, Denis. 1979. "Hsüan-tsung (reign 712–56)". In *The Cambridge History of China, vol.3, part 1: Sui and T'ang China, 589–906*, ed. Denis Twitchett, Cambridge: Cambridge University Press.

Tan, Qixing. 1982. *Zhongguo lishi dituji* [The Historical Atlas of China], vol. 5. Beijing: Zhongguo ditu chubanshe.

Tuo Tuo. 1977. *Song shi* [History of Song Dynasty]. Beijing: Zhonghua shuju.

Wang, Pu. 2006a. *Tang huiyao* [Institutional History of the Tang Dynasty]. Shanghai: Shanghai guiji chubanshe.

Wang, Qinruo. 1960. *Cefu yuangui* [Grand Tortoise in the Imperial Treasury of Archive]. Beijing: Zhonghua shuju.

Wang, Shengduo. 1995. *Liang Song caizheng shi* [A Fiscal History of the Song Dynasty]. Beijing: Shehui kexue chubanshe.

Wang, Shengduo. 2003. *Liang Song huobi shi* (A Monetary History of the Song Dynasty). Beijing: Shehui kexue chubanshe.

Wang, Zengyu. 2006b. Songchao de hedi liangcao [The Harmonious Purchase of Fodder and Provisions during the Song Dynasty], *Zizhu bian* [Collection of Trifle Things] Baoding: Hebei daxue chubanshe.

Wu, Liyu. 1994. *Shiyan de huobi zuoyong yu zhebozhi de fazhan——jianlun chaoyinzhi de qiyuan* [The Monetary Role of Salt and the Development of the *Zhebo* System: A Discussion on the Origin of the Voucher System]. *Zhongguo jingjishi yanjiu* [Researches In Chinese Economic History] 4: 94–102.

Wu, Liyu. 1997. *Sui-Tang Wudai de yanye* [The History of Salt Industry During the Sui-Tang and Five Dynasties period]. In *Zhongguo yanye shi: gudai bian* [History of Salt Industry in China: Ancient China], ed. Guo Zhengzhong, 79–237. Beijing: Renmin chubanshe.

Xu, Song. 2014. *Song huiyao jigao* (The Recovered Draft of the Collected Essential Documents of Song). Shanghai: Shanghai guji chubanshe.

Zhang, Fangping. 2000. *Zhang Fangping ji* (Collected Works of Zhang Fangping). Zhengzhou: Zhongzhou guji chubanshe.

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