

Powerful informal institutional arrangements in a weak legal environment: A study of the governance structure in the Chinese Shanxi piaohao

Abstract¹

Shanxi piaohao, arguably are the most important Chinese indigenous financial institutions in Chinese economic history, emerged in one particular province. In a weak legal environment to protect shareholders' capital, these Shanxi piaohao developed a unique governance structure to discipline and incentivise far flung employees. During their existence, the piaohao dominated the Chinese domestic remittance market for decades and made a great contribution to the economy. However, as with their expansion and together with the external business environment became more unpredictable, the piaohao's governance structure began malfunctioning. Concentrating on their management and incentive mechanism, this paper explores how the piaohao successfully governed their distant employees at first but failed to manage their employees and innovate their governance structure as they developed.

In 1823, in a small town in Shanxi, there emerged a firm named Rishengchang. For the first time we see a firm naming itself a piaohao [票号], which means a business enterprise [hao 号] that specialises in transmitting drafts [piao 票]. Following this, a group of piaohao sprang up in three towns in the same province, Pingyao, Qixian and Taigu, which quickly opened branches all over China. As China's first financial intermediaries specialising in remittances, these Shanxi piaohao for decades played an important role in the Chinese financial market. However, almost a hundred years after they set up, their whole system collapsed and the piaohao disappeared from history.

During their existence, the Shanxi piaohao made a great contribution to the Chinese economy. By setting a widespread branch network, the piaohao remitted and advanced hundreds of millions of government, commercial and private funds. They not only supplied the need for a remittance market but also accelerated the flow of

¹ This paper is planned for a journal publication. Please do not quote without permission. Please contact the author Dr Meng Wu for comments and discussions (daisywu625@gmail.com).

commodities, alleviated government financial constraints, and enabled ordinary people to transfer money.

Besides their contribution to the economy, the piaohao also formed a unique development trajectory. As native-born financial institutions, the piaohao formed with their own business strategies and wisdom, inherited from a century of business experience. They over-depend on neither the government nor foreign banks, and therefore their history to some degree reflects the achievements and destinies of typical Chinese merchants at the time.

Moreover, these piaohao are also important for us to understand how a traditional Chinese merchant group solved the agent problem in their long distance business, avoiding expensive court fees and the weak enforcement of judicial decisions. By investigating the employees' family background and promoting employees within the firm, the piaohao merchants ensured themselves had sufficient time to observe each one's morality and ability. A centralized management structure and comprehensive rules allowed their networks to expand to appropriate scale but prevented the head offices from losing control of the firm. Moreover, by sharing employees' behaviour through guilds and imposing collective punishments on cheaters, the piaohao further encouraged employees to be loyal for the benefits of their future career opportunities.

Besides a rigorous management structure, the piaohao also designed a competitive incentive structure to encourage employees to be honest and diligent. The piaohao merchants invented expertise share, which paid the same dividends per share as the shareholders' capital share and granted them to the employees with long tenure and outstanding performance. This structure worked well until when the piaohao suffered great loss during the 1911 Revolution and faced competitions from newly established modern banks. Compounded with external threats, head managers' refusal to give up their unlimited power deprived piaohao from renovating their governance structure, and a decayed management structure made the piaohao's governance structure dysfunctional.

Although the Shanxi piaohao is important in China's economic history, no systematic and instructive has so far been written. Previous studies on the piaohao are hobbled by primary sources. Piaohao are often juxtaposed with its contemporary financial

institutions as an illustration of Chinese financial history at the time. Neither their governance structures nor development trajectory has been comprehensively studied. By drawing on a wealth of contracts and payroll lists, this paper explores the piaohao's governance structure under the framework of the theory of the firm and aims to examining the underlying functions of the Shanxi piaohao's governance structure.

I divided this paper into eight sections followed by a conclusion. The first section explains why the Shanxi piaohao emerged in the nineteenth century. The second section narrates the legal environment under which the piaohao operating. Section three, four and five examine the piaohao's management structure and section six and seven study piaohao's incentive structure. The final section explores reasons that caused piaohao's governance structure malfunction.

1. Emergence: why did the Shanxi piaohao emerge in the nineteenth century?

The Shanxi piaohao were established to meet domestic remittance needs. Before they set up, there was no financial intermediary in China which specialised in remittances.² Networks of trade and markets drew support from various financial institutions which all provided different functions. At the national level, there were native banks and credit-bureaux carrying out deposit and loan and issuing silver notes for local circulation. In rural areas, pawnshops issues small loans against a variety of collateral, with about 10 establishments in each county (Ma, 2011 p.17.). Merchants would ship silver in convoy to cover large interregional transactions and would use silver notes to clear intra-city transactions. After the 1760s, China's commercial and trade activities boomed. A thriving international and domestic trade increased the demand for

² “As early as the Tang dynasty (618-907AD), merchants could travel around the country without carrying metal cash but with a paper proof of ownership called flying money [feiqian 飞钱]. Unlike the later drafts, which were issued by merchants, flying money was issued by the government to solve the problem of carrying copper coinage rather than of settling payment. Moreover, the policy of flying money lasted only for the short period of ten years”, in 山西票号史 (A history of the Shanxi Piaohao), Jianhui Huang, (修订本, 山西经济出版社 (Revised Edition, Shanxi Economic Press)), 2002b, p.12.

inter-provincial silver shipping.³ However, at the same time the spread of bandits and refugees from famine often stole silver en route, and it was in this situation that the Shanxi piaohao was established to meet ever increasing demand for remittances.⁴

For centuries Shanxi served as the centre of trade, with the term Shanxi merchant once synonymous with wealth. Shanxi merchants constituted a historical phenomenon that last for centuries. Given the closeness of the border with Mongolia, Shanxi locals traded with Mongols across the Great Wall for commodities of all kinds. By the Qing dynasty (1644-1912AD) the Shanxi merchants had established their retail shop networks all over China, they also operated most of the pawnshops and credit-debt bureaux in northern China (Huang, 2002b p.28.).

Shanxi piaohao merchants used armed escorts for transporting sums of silver to settle their balances for a long time. However, from the 1800s, with more frequent social riots, traditional methods of shipping silver became increasingly dangerous. In this situation, a chain of dyeing shops ran by Shanxi merchants, the Xiyucheng began to accept requests from their acquaintances to remit silver to their branch locations. At first, the Xiyucheng only did this as a favour, but the convenience and safety of the procedure attracted a growing number of people to ask for this business. Inspired by this success, Xiyucheng shareholder invested Tls.300,000 and established the Rishengchang piaohao. It is for the first time that an enterprise naming itself a piaohao and specialising in remittances (Huang, 2002a p.11.)..

The unique service provided by the Rishengchang won them quick success. At almost at the same time, a nationwide postal service developed by the Ningbo merchants

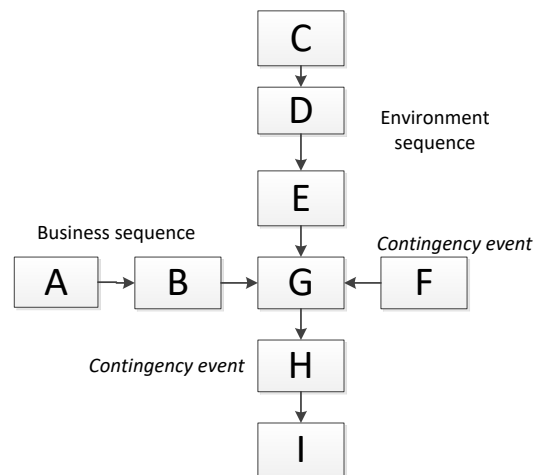
³ “China’s international trade can be divided into seaborne and land trade. It has been estimated that in the sixty years between 1760-4 and 1820-4 the seaborne export trade increased from Tls. 4 million to Tls. 15 million per annum. In the same period, the total import and export trade on land rose from Tls. 713,000 to Tls. 10 million ,” in 中国近代经济史统计资料选辑 (Selections of Modern Chinese Economic History Statistics), Zhongping Yan, (科学出版社 (Science Press)), p.45. Although there are no reliable statistics for domestic trade in the period, an increase in export/import trade would have driven an increase in the domestic trade.

⁴ Under the peaceful Qing, China’s population doubled from 150 million in 1650 to 300 million in 1800. A greatly increased population and fragmented landholding resulted in massive numbers of famine refugees (Ebrey 1981). At the turn of the nineteenth century, the White Lotus Rebellion [白莲教起义] (1794-1804) occurred in northern China, and the Tenrikyo Religion Rebellion [天理教起义] (1812/3) disrupted the Zhili, Shandong and Henan provinces.

facilitated the Rishengchang’s business.⁵ While the firm enjoyed a great triumph, its vice-head manager left the firm due to conflict with the head manager. As soon as grasping this information, a Shanxi silk merchant hired the job-hopping manager who then helped him to transform a chain of silk shop into four Shanxi piaohao: Weishengchang, Xintaihou, Weifenghou and Weitaihou. From then on, the Shanxi piaohao spread in great numbers.

From the above historical narratives, it can be seen that the emergence of the Shanxi piaohao followed the pattern of reactive sequence of path dependence.⁶

Figure 1 Reactive sequence explanation of the emergence of the Shanxi piaohao



Note:

- A. Trade and retail business
- B. Credit and debt business
- C. Trade volume increased
- D. Silver shipping increased
- E. Silver being looted or robbed
- F. A postal system set up
- G. First Shanxi piaohao was set up
- H. The conflict between the Rishengchang head and vice head manager.
- I. More Shanxi piaohao set up

⁵ “China’s postal system was established around 1800. Before Civil Postal Bureaux [minxinju 民信局] were established, mainly by Zhejiang merchants, there was no civil postal service in China and commoners could rely only on acquaintances to bring letters. So the Shanxi piaohao’ emergence was inseparable from a new postal system”, in Huang, A history of the Shanxi Piaohao, p.40.

⁶ According to Mahoney (2000), path dependence can be classified into self-reinforcing sequences and reactive sequences. Reactive sequences are chains of temporally ordered and causally connected events. In a reactive sequence, each event in the sequence is both a reaction to antecedent events and a cause of subsequent events.

As Figure 1 suggests, the origins of the Shanxi piaohao can be broken down into three main consequences: a business sequence, an environment sequence, and an economic sequence. A business sequence is triggered by certain features unique to the Shanxi piaohao. Shanxi merchants built up their long distance trade business [A]. To solve the financing problems in the trade, they established financial institutions such as pawnshops [B] to provide credit. Undertaking trade business enabled them to develop business rules and customs for long distance trading and operating pawnshops also provided the piaohao with ample experience of operating financial institutions. All these are essential for the piaohao business.

In terms of the environmental sequence of changes, the boom in China's trade volume [C] increased the frequency of silver shipping [D]. A growing number of famine refugees and rioters [E] endangered conventional forms of silver shipping. At this time, a contingency event, China's postal system, was set up [F]. Pegged to this event, the first Shanxi piaohao Rishengchang was established [G]. Although the Rishengchang intended to monopolise the remittance business by protecting its business secrets, another contingent event, the conflict between the Rishengchang head and vice head managers [H] resulted in the departure of the latter from the Rishengchang and the establishment of four more Shanxi piaohao. This set off the boom of the Shanxi piaohao [I].

The intersection of the two sequences (i.e. B and E) is necessary for the emergence of the piaohao. However, without the contingency event F, it is possible that the first Shanxi piaohao might not have been set up. Another contingency event, H, further led to more Shanxi piaohao being established.

As a group, these Shanxi piaohao enjoyed rapid development between the 1820s and the 1850s by transferring domestic mercantile funds. However, with the spread of the Taiping Rebellion (1852-64)⁷, they experienced their first business retreat from southern China. Although the piaohao suffered in this uprising, it also provided another business opportunity for them. As the rebellious troops cut off the official silver shipment routes from south to north, the Qing authorities began to allow the

⁷ The Taiping Rebellion (1850-64) was an anti-Qing rebellion in southern China. During more or less the same period, the Nian Rebellion (1851-68) in central China broke out; it was later joined by the Taiping armies.

piaohao to remit governmental funds until the Great Qing Bank was established in 1907. Moreover, as the number of treaty ports grew, the Shanxi piaohao obtained a relatively peaceful business environment for further development between the 1870s and the 1890s.

At the turn of the century, the Shanxi piaohao encountered another business withdrawal due to the Boxer Rebellion (1900/1)⁸ and the ensuing eight-county relief expedition.⁹ Since this turmoil was limited mainly to Beijing and Tianjin, they were able to recover as soon as it ended. The peaceful situation lasted for another ten years until the 1911 Revolution broke out. Unlike the previous uprisings, the 1911 Revolution occurred overnight and overthrew the Qing court. Moreover, it cast China into endless civil wars and social chaos before the Nationalist government was established in 1927. It was in these circumstances that the Shanxi piaohao dissolved one after another, and finally disappeared from history in the 1930s.

2. Scant laws to protect shareholders' capital

During the Qing era, a lawsuit could be classified either as a criminal or civil case. Criminal cases normally involved robbery or murder, and were based on the Qing Law [daqinglüli 大清律例]. On the basis of penalty, they would be judged by a county magistrate, a provincial governor and the Ministry of Justice in sequence. During this process if any official disagreed with the previous judgement or if the plaintiff or the defendant was dissatisfied with the judgement, the case would be re-examined until both parties satisfied with the result (Shiga, 1998 p.12.).

Unlike criminal cases, civil cases concerned with marriage, land and property disputes and were usually adjudicated only by a county magistrate. Moreover, unlike felonies, which were judged strictly on the basis of the Qing Law, county magistrates preferred to seek a middle ground by consulting local rules, social norms and common sense to solve civil disputes, as long as the Qing Law was not flouted (Shiga, 1998 p.13.).

⁸ The Boxer Rebellion (1900/1) was an anti-imperialist uprising which took place in Shandong and Zhili provinces.

⁹ In response to the Boxer Rebellion which was at first supported by the Qing, an international coalition set up by Japan, Russia, the British Empire, France, the United States, Germany, Italy and Austria-Hungary declared war on the Qing court and occupied Beijing and Tianjin in 1900. The war ceased with the signing of Treaty of 1901.

From the Qing Law, this paper has found that out of more than 2,000 articles, only 3-4 related to commercial disputes, while the rest concerned marriages, household registration and rites. Of the articles on commercial disputes, two articles related to the rules for protecting an entity firm. They were:

1. Regulation of servants who steal their master's property (Article 272.04): a servant who steals his master's property will be convicted on an indictment of robbery.
2. Regulation of indictments of robbery (Article 266.17-19): a person who robs other people of their assets, depending on circumstances, will receive 80 or 100 strokes with a rod and be imprisoned for three years, or be beaten with a rod and imprisoned for three years and then exiled, or sentenced to death. If the robber's family knows what he has done and has shielded him, they will all be punished. The robber's property will be sold to pay the victim.

Besides scant commercial laws, expensive court fees and weak enforcement of judicial decisions also discouraged merchants to seek law for help (Fuma, 1993 p.393.). For a plaintiff, the first obstacle is to write a proper letter of complaint in a reasonable and acceptable way. If the compliant letter was rejected by a county magistrate, the case would not be processed. Therefore, in order to prepare suitable litigation letters, which judicial decisions were made on, both plaintiffs and defendants spent much money on having them written by famous legal instructors (Fuma, 1993 p.398.). After writing litigation letters, all plaintiffs were required to submit them to the magistrate's court in person at their own travel costs. To learn how their case was progressing, both plaintiffs and defendants had to bribe the county magistrate's personal advisors [muliao 幕僚], which was also costly (Fuma, 1993 p.398.).

Sometimes, due to the government's weak enforcement, plaintiffs who won their cases still could not solve their problems. This was due to the lack of power to enforce these decisions on the part of the country magistrate (Terada 1997 p.233.).

As it can be observed, the main function of the Qing Law was to empower bureaucrats to mete out to the punishments to the extent of criminal violations (Ma,

2006 p.6.). To solve their disputes, people in the Qing dynasty preferred to employ various private orders and contracts. Although these orders did not form part of the formal law, they were more generally employed in regulating behaviour within villages, clans, guilds and families. In the case of a lawsuit, they could be invoked as grounds in judging the case (Terada, 1994, p.142., Ma, 2006).

As with other social groups in China, the Shanxi piaohao is a type of geographically based merchant group. In an environment devoid of laws to protect shareholders' capital, the piaohao merchants formulated a series of rules with the aim of solving the commitment relationship in their long distance business.

3. Personnel arrangements: Strict background investigation and promotion process

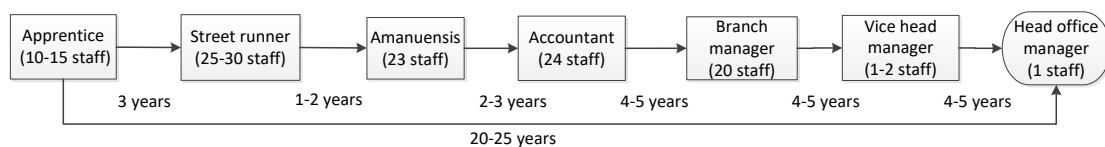
Shanxi people used to regard working in a piaohao as the only way to become well-off, so entry was fiercely competitive (Li, 1937, cited in Huang 2002a, p.613). Not only did a candidate need to find two well-known and wealthy guarantors to recommend him but his family background would also be checked to ensure that his family had no record of bad behaviour. If any employee causes huge loss to a piaohao through his misbehaviour, his two guarantors are required to repay the loss (Jie, 1936, cited in Huang 2002a, pp. 611-614.).

According to its needs, each piaohao would recruit 10-15 apprentices, aged between 15 and 17, to be trained for three years (Li, 1937, cited in Huang, 2002a, pp.612-3.). In the first year of their apprenticeship the young men had to clean the floors, fetch water and serve the head office manager all day. At night, they had to practice calligraphy and abacus calculation. During the year, the head office manager could observe whether the apprentices were loyal to him and were smart and diligent. For those disqualified apprentices, the piaohao would dismiss them. During the second year's apprenticeship, apprentices would learn accounting, study the weight and purity disparity between different types of silver and transcribe business correspondence. As the third year drew nearer, apprentices would begin to take part in the piaohao's daily operation. The head office manager would select the smartest apprentices and teach them ways of doing business and then send them to work in the branch offices (Qiao, 1961, cited in Huang, 2002a, pp.612-3.). Here it is worth

mentioning that, to avoid favouritism, piaohao managers were forbidden to employ their own relatives, but they could act as guarantors of family members who worked in other piaohao (Li, 2012 p. 92.).

Figure 2 depicts the promotion process of the Shanxi piaohao. It shows that, at the end of their three years' training, apprentices would be set to work as street runners whose job was to collect marketing information and deal with clients' queries. Those with outstanding performance could become amanuenses [wendu 文牒] and be put in charge of writing business correspondence. After some years' work experience, amanuenses were sometimes promoted to the post of accountant, with a status equal to that of a branch vice-manager. If these accountants were recommended by their branch office managers or were commended by the head office manager, they could be promoted as branch office managers and would be rotated to various locations (Jie 1936, cited in Huang 2002a, p.611.). It was during this long tenure process that the head office manager would select the most excellent candidates as vice-head office managers, who could eventually become the manager of a head office.

Figure 2 Promotion process from a piaohao apprentice to a head office manager



Source: Compiled on the basis of Li (1937, cited in Huang, 2002a, pp.591-2) and Jie (1936, cited in Huang, 2002a, p.591.).

Note: the number of employees in the bracket is for a piaohao with about twenty branches.

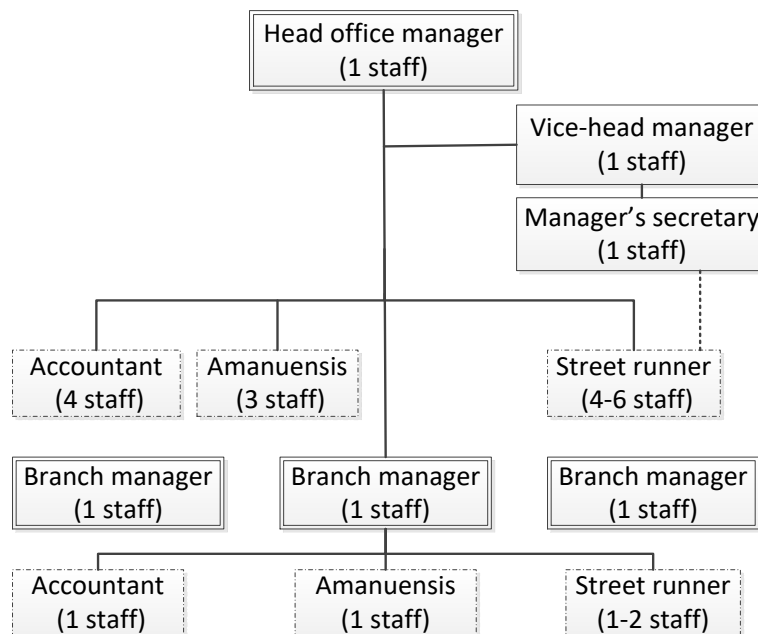
The Shanxi piaohao put the employee's honesty as the highest prior first in hiring and promoting employees. An investigation on employees' family background endogenously incentivised these employees' forebear to be honest out of a desire to preserve their descendants' future job prospects, and a guarantor system enabled the piaohao to use the employees' family and their guarantors' assets as a mortgage for any cheating behaviour. Besides a strict background investigation, piaohao also normally promoted employees within the firm with long tenure promotion. This process not only gave head office managers enough time to evaluate employees' intelligence and loyalty, but also incentivised employees to be honest and work hard if they wanted promotion. Besides these personnel arrangements, the piaohao also

imposed what this paper terms ‘a centralized vertical management structure’ and ‘a collective punished horizontal structure’ to control distant employees.

4. A centralized vertical management structure

In the Shanxi piaohao all branches were administered under the supervision of the head office manager [dazhangui 大掌柜], who had the right to take absolute decisions and control operation over the whole piaohao. The head office manager was assisted by the vice-head manager [erzhanggui 二掌柜], who would carry out and supervise his decisions and the manager’s secretary [sanzhanggui 三掌柜] who functioned as the support of the vice-head manager(Li, 1937, cited in Huang 2002a, p.612).

Figure 3 Vertical management structure of the Shanxi piaohao



Source: Compiled on the basis of Li (1937, cited in Huang, 2002a, pp.591-2.) and Jie (1936, cited in Huang, 2002a, p.591.).

As Figure 3 illustrates both the Shanxi piaohao head office and branches were self-contained units and had their own functional departments. Branches were independent of each other and the branch managers had some autonomy to exercise daily operation and decision rights such as monitoring the accounts, accepting deposits, issuing loans and taking remittances under certain limited amounts. But

when the branch managers met large business transactions, they were required to report to the head office for permission. Besides this, the branch managers had to send business correspondences every 7-10 days to the head office and other branches to report their business conditions. Based on the information from branch offices, the head office manager made operative decisions and allocated funds according to the operative conditions of each branch.¹⁰ Using the above procedure, the Shanxi piaohao held the policy of ‘Dispatching silver from those with an abundance to those with a shortage [zhuoyingjixu, 酌盈济虚] and from places where the interest is low to those where it is high [choupizhuankuai 抽疲转快]’to balance silver reserves and earn profits(Chen 1937 pp.89-90.).

Under a centralized management structure, the head office manager punished branch managers who disobeyed orders. From the Rishengchang business letters, this paper found that in 1861 the head office send a punishment notification to the Suzhou branch manager, who ignored the head office order to close his branch during the Taiping Rebellion and incurred a loss. As the letter states:

“Among all the branches managers, only Rong did not listen to the order to close Suzhou branch and delayed my command as he wanted. His behaviour resulted in one customer Xue did not pay back his loan. Once before, when Rong worked as a branch manager in Chengdu, he also did not obey the order from the head office, which left the Chengdu branch over Tls. 2,000 in arrears to the head office. Since Rong is not in good health at present, consider his past performance. The head office has decided to dismiss Rong and his two employees (Huang 2002a, p.608).”

In addition to this letter, on 24th, 28th April and 13th May 1862, the Rishengchang head office sent three letters to the Guangzhou branches, to warn the branch manager who had contravened the policy from the head office and continued to sending remittance drafts to the Kaifeng branch where there was a severe shortage of silver. The head office manager insisted if the Guangzhou manager continues to flouting the orders from head office, he will be punished for violating the regulations of the firm (Huang 2002a, pp.853-4).

¹⁰ This can be evidenced by business letters from the Rishengchang and Weitaihou.

The above letters together clearly show that it was the head office manager that has the absolute power in the piaohao and it was him who can make final decisions on business and personnel arrangement. Since the transmission of information was costly during the Qing dynasty, given the state of communication technology in the late Qing period, it was cheaper and more efficient to transmit all the information at once to a central point than to disseminate it item by item to everyone.¹¹ For the same reason, it was cheaper for a central individual to make collective decisions and transmit them than to retransmit all the information on which the decision was based. After grasping the information of operations and employees behaviours of all the branches, head office managers could make decisions which he deserved right.

By imposing a centralized management structure, the head manager overcame the weakness of giving too much power to the branch office and lost his control over the piaohao. Branch managers were given certain degree's operational rights based on the local market information, at the same time, the head office manager was informed promptly of branch operating conditions and made decisions for the benefit of the whole piaohao. This structure also enabled the piaohao head office gather limited capital to meet different silver needs of different branches, at the same time, it also ensured objective consistency for the whole firm. To carry out head office manager orders, the piaohao also designed comprehensive and strict rules and regulations. For example, the piaohao required all its branch members to dine and live in the piaohao every day, they are forbidden to marry non-Shanxi women or take family members to another city while on duty. The employees' salaries are paid directly to their family members in Shanxi and they are not allowed to send any goods home privately.

These stringent rules were more than empty phases, from the Rishengchang business letters, I have found they frequent mention, along with the business correspondence,

¹¹ “In the late Qing dynasty, the postal service was varied and intensive. There were the national post offices run by the Qing government, foreign post offices run by the foreign merchants and civil postal office run by the Zhejiang merchants”, in 晚清邮政近代化与中央机关的调适——从总理衙门到邮传部 (The modernization of the postal service in the Late Qing dynasty—from the Ministry of Foreign Affairs to the Post Office Department), Ming Liu, 前沿 (Frontier), 2013, pp. 149-50. From their business letters, I have found that before telegrams were introduced to China in the 1880s, it normally took 7-15 days to deliver a letter; after telegrams became common, one could reach a piaohao within a day.

of family letters or goods sent on behalf of individual employees, or employees who had resigned but not returned to the family, or who wanted to get married.¹²

By requiring members of staff to marry in their hometown and forbidding them to take their family to the town where they worked, the piaohao were virtually treating these families as hostages. If any employee cheated, his family or guarantors in his hometown had to pay for his misdeeds (Peng, 2007, p.661.). Requesting employees to live and dine in the piaohao was another way to monitor their daily behaviour. These regulations reinforced one another and almost cut off any possibility of cheating.

The above analyses suggest that the piaohao's vertical management was centralized and strict. To complete this vertical structure, they also designed what this paper terms a 'horizontal management structure' to prevent employees from cheating. This mechanism is illustrated in the next section.

5. Horizontal management structure—a guild system to collectively punish misbehaved employees

Chinese merchant guilds were normally formed spontaneously by merchants who undertook the same business in the same city. Merchants who belonged to the guild would enjoy the protection from the guild but also have responsibilities. The functions of the merchant guilds included negotiating with the government, accepting business on behalf merchants, as well as drafting and enforcing the guild regulations (Quan, 2007, pp.1-3). As most Chinese guilds had strong power so that they could control the whole industry and could unite other guild merchants to crowd out the merchant who did not join in the guild, in order to undertake their business safely and efficiently, merchants would join in as soon as they started their business (Peng, 1995, Liu, 1988). Moreover, in an environment which absence of commercial legislation, merchant guilds played roles in protecting and regulating commercial activities. Merchants would like to donate the fund regularly to the guild and obey the

¹² Among much evidence the following may be listed here: Pingyao to Guangzhou branch letter on 23rd January 1862 (Huang, 2002a p.850), Pingyao to Zhoujiakou branch letter on 4th July 1892 (Huang, 2002a p.894-5.), and Pingyao to Xian branch letter on 26th May 1892 (Huang, 2002a p.889.).

regulations in order to maintain its operation and seek the protection (Peng, 1995, Liu, 1988).

Similar with the other Chinese industries, the Shanxi piaohao established piaohao guilds in business centres. In each guild, piaohao branch managers were members and they would elect two to three members as directors to charge the operations of the guild. To acquire the permission and support from the government, they also invited government officers as their honour directors. Since the Shanxi merchants worshipped the memory of Guangong [关公], a Chinese historical warrior famous for his righteousness and loyalty to his brotherhood, these Shanxi merchants called their guild hall as Guangong temple (Huang 2002a, p.671.).

In piaohao guilds, members held meetings on the first and fifteenth of every month; branch managers from different piaohao should attend and discuss issues in which they are concerned. Issues discussed in the meetings include the remittance commission rate, interest rate and local market conditions. If quarrels arise between piaohao, guild members should elect two or three chairmen to mediate (Dagong Newspaper, 1904, cited in Huang, 2002a, p.674.).

Besides discussing business, referring to the piaohao correspondence, I found they also shared employees' cheating behaviour with others. In 1895, Rishengchang Tianjin branch employee Wang Yurui absconded with Tls. 1,870. He was arrested by other employees when he tried to run off and was detained in the branch. Tianjin branch manager suggested the head office send Wang to the local court for conviction, but in the head office manager reply letter it wrote:

“During these days custody, Wang has paid back the silver he steal, although the Tianjin office suggests me to send him to the court, *after discussing with other piaohao managers*, we think this suggestion is inconvenient and may cause other trouble. Therefore, we decide to punish him based on our own regulation disciplines (Rishengchang business letter from Pingyao to Tianjin, 1895, cited in Huang, 2002a, pp.914-915.)”

Since the business correspondence frequently sent by the piaohao branch managers to the head office managers, they could report everything discussed in the guild meetings. Whether an employee performed well or was guilty of cheating,

information about him would travel quickly around a piaohao guild. On obtaining such information, other Shanxi piaohao could either collectively punish cheaters and never employ them again or poach excellent employees who were not being treated well in other firms. With a guild and a correspondence reporting system, the piaohao transcended the limits of the single piaohao to monitor employees' behaviour and encouraged employees to work hard and with probity for the sake of themselves and their future career opportunities.¹³

The above analysis has shown how the piaohao protected shareholders' capital by disciplining their distant employees. Besides this, they also designed a compelling incentive structure to attract and keep excellent employees who would stay and work hard for them. This incentive structure is critically studied as follows.

6. Understanding the piaohao's income and pay structure

In the Shanxi piaohao an employee's total income normally consisted of a basic allowance [yiziyin 衣资银], salary [xinjin 薪金] and expertise dividends [hongli 红利]. The basic allowance was the money given to employees to cover their daily expenses. The salary ranged from Tls. 30 to Tls. 100 per annum, and was paid normally every six months to the employee's family in his hometown. For employees with excellent performance, the piaohao shareholders would grant an expertise share [shengou], which paid the same dividends per share as the shareholders' capital share [yingou]. The expertise share can be further divided into a *normal expertise share*, which was paid to employees according to their performance; and a *bygone share* [gugou], which was given for past good performance for 3-4 years to retired employees or the families of deceased ones. Expertise share dividends were paid at the end of each fiscal year; the piaohao valued one share as 1 fen, and divided 1 fen into ten or twelve grades, each grade being called 1 li (Chen 1937, pp.87-8.).

The decision to distribute expertise shares was made by shareholders who based employees' performance on the report of the head office manager (Wei 1944). Although there is no clear evidence described how the head office manager judged

¹³ In traditional Chinese society, merchants preferred to hire local people, which made it costly for anyone who had cheated to enter a bank in another region (Landa, 1988).

employees' performance, it is highly likely, going by the piaohao's account books and business correspondence that the head office managers evaluated branch managers' performance on the basis on their branch's profits, and the branch managers' letters to the head office managers reflected branch employees' performance.

Table 1 Descriptive results of Xiechengqian annual payroll lists in 1906 (Tls)

	Obs	Max	Min	Mean	S.d.
Staff with basic allowance ^a	16	6	6	6	0
Staff with basic allowance and salary	56	108	8	40	26
Staff with basic allowance, salary and expertise dividends ^b	32	2,100	278	866	569

Sources: Based on Huang (2002a, p.605, pp.1222-4.)

^aThe Xiechengqian payroll list does not provide basic allowance information on staff who were paid this alone, without any salary or dividend. Therefore, this paper assumes that these members of staff earned the minimum basic allowance, Tls. 0.5 per month.

^bIn 1906 Xiechengqian distributed Tls. 2,000 per fen as dividends.

Table 1 is descriptive results for the Xiechengqian¹⁴ piaohao payroll lists in the year 1906. It shows that of its 104 employees, 16 received only the basic allowance, 56 employees had a salary in addition but no dividends; and 32 employees had expertise shares, salary and the basic allowance. In the Xiechengqian, as soon as employees moved from basic allowance to the regular payroll, their salary increased many times over, ranging from Tls. 8 to Tls. 100. But the most striking increase in their income follows their being awarded expertise shares, when their total income could range from Tls. 278 to Tls. 2,100. The average annual income for those who were paid only the basic allowance was Tls. 6 per annum, while for staff with the basic allowance and salary it was Tls. 40 and for staff who had all three types of income it was Tls. 866. In the Xiechengqian, the pay gap ratio between those who had the highest income and those with the lowest was 1: 525.¹⁵ As the Shanxi piaohao distributed its

¹⁴ “The Xiechengqian (1860-1913) was set up by seven Shanxi merchants in Pingyao town. Its paid up capital was 60,000 tls, which increased to Tls. 240,000. In its most prosperous period, it paid Tls. 11,000 per fen to shareholders. This piaohao closed in the wave of piaohao bankruptcies in 1913”, in *山西票号史 (A history of the Shanxi piaohao)*, Jvxian Wei, (中央银行经济研究处 (Economic Research Department of the Central Bank)), 1944, p.16.

¹⁵ Besides Xiechengqian, I also collect the Baofenglong piaohao payroll list in 1910 and Dadetong piaohao dividends distribution list in 1889, 1908 and 1925. I discover that over time the salary difference between piaohao was small. However, unlike the salary, the difference made by dividends was great. (Wu, 2016 p.72.).

dividends according to profitability, with increases of dividend distribution per share and as employees acquired more share, their total incomes increased exponentially.

After examining the piaohao's income structure, the paper further examines the number of employees in each salary grade and shows the results in Table 2.

Table 2 Payment structure of the Xiechengqian, Baofenglong and Dadetong piaohao

	Basic allowance	Salary and basic allowance					Normal expertise share					Bygone share		
	Tls.6	Tls. 80-100	Tls. 50-70	Tls. 30-40	Tls. 10-20	Tls. 0-9	1 fen	7-9 li	5-6 li	3-4 li	1-2 li	7li-1 fen	3-4 li	1-2 li
Xiechengqian 1903-6	16	2	14	20	26	13	1	3	3	12	8	1	1	2
Baofenglong 1906-10	36	2	22	23	21	0	3	2	2	10	9	0	0	0
Dadetong 1884-9	n/a	n/a	n/a	n/a	n/a	n/a	2	1	3	7	6	1	1	1
Dadetong 1905-8	n/a	n/a	n/a	n/a	n/a	n/a	2	6	15	14	6	2	3	1
Dadetong 1921-5	n/a	n/a	n/a	n/a	n/a	n/a	3	3	2	14	15	2	1	1

Source: On the basis of Huang (2002a, p.605, pp.631-5, pp.1222-4.)

Notes: Unlike the Xiechengqian and Baofenglong which have complete payroll lists for all members of staff, Dadetong left payroll lists of its expertise shareholders only. Therefore, the payment structure of the Dadetong applies to expertise shareholders alone.

As Table 2 suggests, the payment structure in the above three piaohao followed the normal distribution: the numbers of employees who earned the highest and lowest incomes were relatively small, and the number of employees who earned an income at the middle level was large. Most of employees in these piaohao earned salaries but no expertise share dividends. As regards with expertise shareholders, their shares usually amounted to 3-4 li, and bygone shareholders occupied about 10% of the total expertise shareholders.¹⁶

Due to the limited sources, I am able to trace only that the employees who earned the highest expertise share were head office managers of these piaohao; no further information is available on the position of other employees. However, combined the piaohao's vertical management structure (Figure 3) with the Xiechengqian payroll list, it can be inferred that for the Xiechengqian which had about 20 branches, could have one head office manager, two vice-head managers, and 20 branch managers. Since there were 27 normal expertise shareholders in the piaohao at this time, it means that four employees who had no managerial position earned dividends as well as the

¹⁶ By examining the Baofenglong piaohao payroll list, I found it has a similar payment structure with the Xiechengqian.

managers. The Baofenglong piaohao was on a similar business scale to the Xiechangqian. In 1910 it distributed normal expertise shares to 26 members of staff, which implies that, besides the 23 employees with managerial positions, three employees were entitled to dividends.

The number of branches of the Dadetong piaohao was similar to those of the Xiechangqian and Xiechangqian. However, except for 1889, its first fiscal year, in which 22 employees had expertise shares, in 1908 and 1924 more than 40 members of staff in the Dadetong were entitled to dividends. These numbers indicate in addition to the head office and branch managers, at least ten other employees received dividends. Here it is worth mentioning that, unlike the other Shanxi piaohao which went bankrupt in the 1910s, the Dadetong, survived the 1911 Revolution and continued to operate until the 1930s. Having a different payment structure, not to mention its shareholders' strong capital, may account for its longer survival.¹⁷

Using the Dadetong dividend distribution lists in 1888, 1908 and 1925, Table 3 lists the employees who held expertise shares continuously from 1889 to 1925.

¹⁷ For more discussion, see Wu (2016, p.157.)

Table 3 Dadetong expertise shareholders' earnings profile from 1889 to 1925

	Dividends (Tls.)	Expertise share		Dividends (Tls.)	Expertise share
Xu Tingzhu			He Xianxi		
1884-9	224	2 li	1889	0	None
1905-8	15,514	9 li (bygone)	1908	5,204	3 li
1921-5	0	None	1925	5,764	7 li
Lv Yonghe			Gao Yunhan		
1884-9	224	2 li	1889	0	None
1905-8	17,224	1 fen	1908	8,624	5 li
1921-5	0	None	1925	8,224	1 fen
Hao Quan			Liang Hao		
1884-9	339	3 li	1889	0	None
1905-8	177,224	1 fen	1908	5,204	3 li
1921-5	8,224	1 fen	1925	6,764	7.5 li
Gao Yu			Wang Zongyu		
1884-9	339	3 li	1889	0	None
1905-8	177,224	1 fen	1908	14,634	8.5 li
1921-5	8,224	1 fen (bygone)	1925	8,224	1 fen
Zhao Yuandiao			Zong Qihan		
1889	244	2 li	1889	0	None
1908	7,774	4.5 li	1908	2,634	1.5 li
1925	6,764	7.5 li (bygone)	1925	4,944	6 li (bygone)
Gao Yunzhao			Wang Zhenduo		
1889	0	None	1889	514	5 li
1908	5,204	3 li	1908	12,064	7 li
1925	5,764	7 li	1925	0	None

Source: On the basis of Huang (2002a, pp.631-5).

From Table 3 it can be found that from 1889 to 1925, six employees were entitled to expertise shares between 1889 and 1908 and three of them still held expertise shares until 1925. In addition, there are six employees who had no share in 1889 had become entitled to it in 1908 and 1925. From the current available evidence, it can be traced that employees who had expertise shares continuously for 36 years are Gao Yu, Hao Quan and Zhao Yuandiao. Gao Yu was the head manager of the Dadetong and Hao Quan was his successor (Huang, 2002a p.573). For the rest employees, it seems that the longer they worked for the Dadetong, the more likely their expertise shares would increase.

Here it should be noted that as these piaohao developed they distributed an increasing share of their profits as dividends and the dividends disbursed to the employees caught up to that of distributed to capital shareholders. Distributing substantial sums

out of their profits to some degree deprived piaohao of other business investment opportunities.¹⁸

7. Functioning of the piaohao's incentive structure

The above analyses suggest that the expertise share played an important role in incentivising employees. In this section, by comparing the lifetime incomes of the employees with different career choices, I explore the functioning of the piaohao's incentive structure. The data this section employs is from the Dadetong piaohao. On the basis of its dividend distribution in each fiscal year from set-up (1884) to the edge of liquidation (1933), this section deduces six types of employee in the Dadetong which are:

Type 1: An employee who received an average annual salary of Tls. 100 in the Dadetong and had no expertise share and remained in the piaohao until 1933.

Type 2: An employee who received an average annual salary of Tls.100 and had no share and left for a modern Chinese bank in 1926 when the Dadetong dividend payment slumped. The annual income that this employee would have earned in a modern bank was Tls.70.¹⁹

Type 3: An employee who received an average annual salary of Tls. 100 and had no share and left for a modern bank in 1913 during the Shanxi piaohao bankruptcies wave. The annual income that this employee would have earned in a modern bank was Tls.70.

Type 4: An employee who received an annual salary of Tls. 100 and his share increased over time. He stayed at the Dadetong until 1933 when it no longer distributed dividends.

¹⁸ According to Wu (2016, p.81.), from 1889 to 1925 the proportion of distributed dividends in the total profits in the Dadetong piaohao increased steadily from 0.33 to 0.55 and then peak at 0.96. The capital share to expertise share ratio grew from 2:1 to 1:1.

¹⁹ According to “上海银行行员服务待遇规则 [Regulations of the Shanghai Bank's staff members' salary and bonus]” that a normal member of staff was paid Tls.40-90 per annum, see *Banking in modern China: entrepreneurs, professional managers, and the development of Chinese banks, 1897-1937*, Linsun Cheng, (Cambridge University Press), 2003, p.178.

Type 5: An employee who received an annual salary of Tls. 100 and his share increased over time. He left for a modern Chinese bank in 1926 when the piaohao dividend distribution slumped. The annual income that this employee earned in a modern bank would have been Tls. 200 per year.²⁰

Type 6: An employee who received an annual salary of Tls. 100 and his share increased over time. He left for a modern bank in 1913 during the piaohao's bankruptcy wave. The annual income that this employee would have earned in a modern bank was Tls. 200 per year.

Type 1, type 2 and type 3 are the employees who only have salaries, while type 4, type 5 and type 6 are the employees who have salaries and increasing expertise shares.

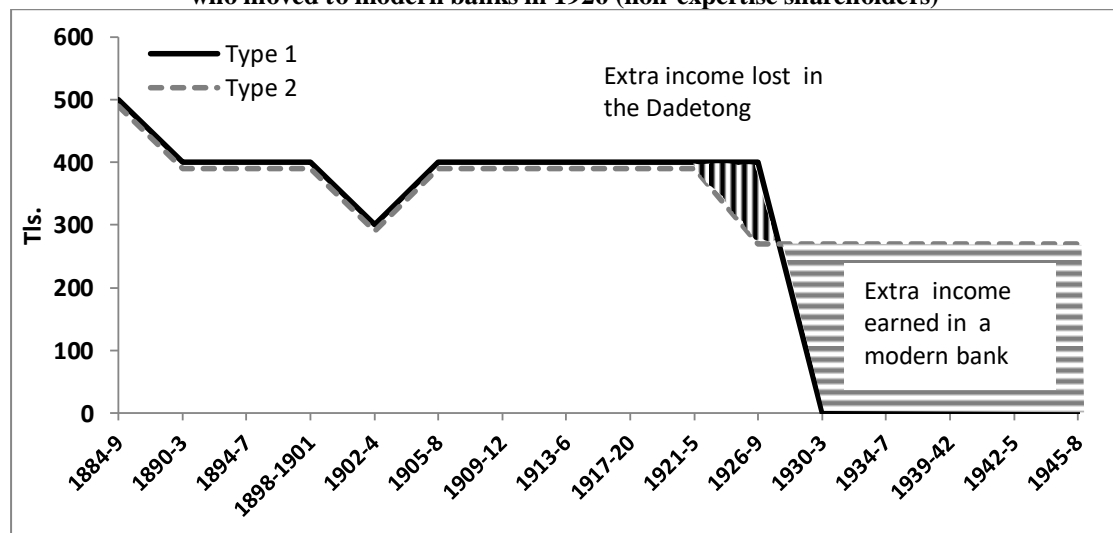
On the basis of this assumption, Figure 4, Figure 5, Figure 6 and Figure 7 plot and compare the total income of these six types of employees.

Table 4 Dadetong dividend payments in each fiscal year (Tls)

	1884-9	1890-3	1894-7	1908-1	1902-4	1905-8	1909-12	1913-6	1917-20	1921-5	1926-9	1930-3
Dividends per fen	850	3,040	7,321	11,900	15,130	17,000	17,190	15,070	11,590	8,000	1,407	0

Source: Huang (2002a, pp. 631-633).

Figure 4 Total income difference for employees who stayed at the Dadetong until 1933 and those who moved to modern banks in 1926 (non-expertise shareholders)



²⁰ Cheng (2003, p.178.) described a normal member of staff was paid Tls.40-90 per annum, as many piaohao managers joined modern banks at the rank of middle level managers who had expertise shares, this thesis assumes that these modern banks would have paid the former piaohao expertise shareholders Tls. 200 per year.

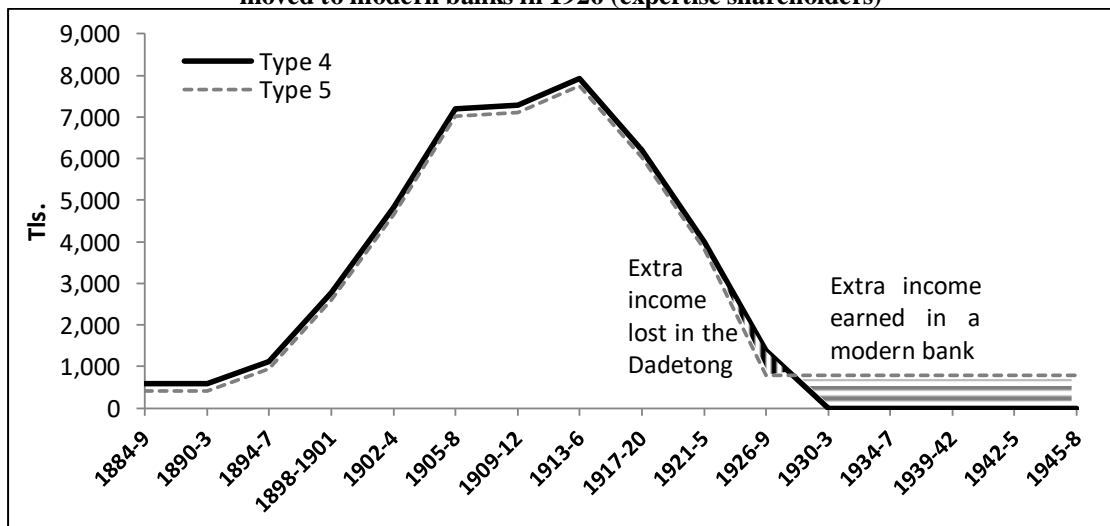
Note: Type 1 is an employee who received an average annual salary of Tls. 100 in the Dadetong and had no expertise share and remained in the piaohao until 1933. Type 2 is an employee who received an average annual salary of Tls.100 and had no share and left for a modern Chinese bank in 1926 when the Dadetong dividend payment slumped. The annual income that this employee earned in a modern bank was Tls.70.

Figure 5 Total income difference for employees who stayed at the Dadetong until it closed and those who moved to modern banks in 1913 (non-expertise shareholders)



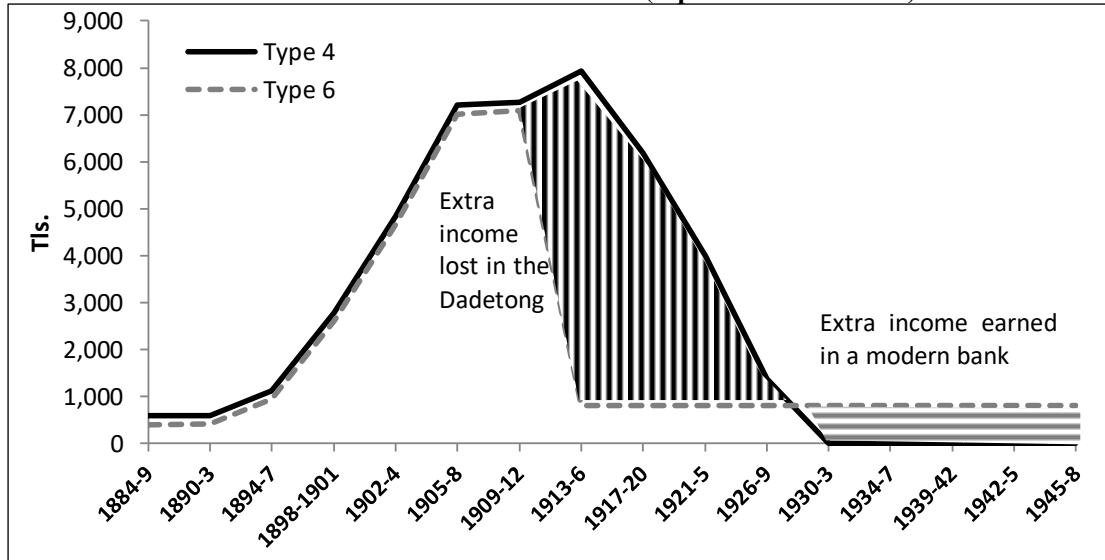
Note: Type 1 is an employee who received an average annual salary of Tls. 100 in the Dadetong and had no expertise share and remained in the piaohao until 1933. Type 3 is an employee who received an average annual salary of Tls. 100 and had no share and left for a modern bank in 1913 during the Shanxi piaohao bankruptcies wave. The annual income that this employee earned in a modern bank was Tls.70.

Figure 6 Total income difference for employees who stayed at the Dadetong and those who moved to modern banks in 1926 (expertise shareholders)



Note: Type 4 is an employee who received an annual salary of Tls. 100 and his share increased over time. He stayed at the Dadetong until 1933 when it no longer distributed dividends. Type 5 is an employee who received an annual salary of Tls. 100 and his share increased over time. He left for a modern Chinese bank in 1926 when the piaohao dividend distribution slumped. This employee earned Tls. 200 per year in a modern bank until the bank was nationalised in 1949.

Figure 7 Total income difference for employees who stayed at the Dadetong until it closed and those moved to modern banks in 1913 (expertise shareholders)



Note: Type 4 is an employee who received an annual salary of Tls. 100 and his share increased over time. He stayed at the Dadetong until 1933 when it no longer distributed dividends. Type 6: An employee who received an annual salary of Tls. 100 and his share increased over time. He left for a modern bank in 1913 during the piaohao's bankruptcy wave. He earned Tls. 200 per year in a modern bank until the bank was nationalised in 1949.

As the Figure 4 and Figure 5 suggest for those non-expertise shareholders, it would have been optimal for them to hop to modern banks when the Dadetong dividend payment slumped in 1926 or during the Shanxi piaohao bankruptcies wave in 1913. This is because the total incomes that they earned after going to modern banks were larger than the incomes they would have earned if they had stayed in the piaohao. Regarding the expertise shareholders, Figure 6 indicates that when the dividends distributions slumped in 1926, it is optimal for employees left for modern banks as the total income he earned in a modern bank is larger than if he stayed in the Dadetong. However, if the expertise shareholders left the piaohao in 1913, the total income they would lost from the Dadetong is larger than the extra income they would earn in foreign banks (Figure 7).

The above studies indicate, for a piaohao employee whether hopping to a modern bank or not depended on the prospect of the piaohao and the salary paid in modern banks. If the piaohao is prospect and can afford higher salaries and dividends in the long run, it would have been better to stay in the piaohao; otherwise it would have been better to leave for modern banks.

8. Exploring reasons that caused the piaohao's governance structure to malfunction

8.1 Unfettered power for the head managers

In the Shanxi piaohao, shareholders had no rights over the piaohao operation; instead it was the head managers who had supreme power over it. In this scenario the success of a piaohao lay precisely in the morality and ability of the head managers, except in special circumstances shareholders would not dismiss head managers whenever they chose. It was only at the end of the fiscal year, normally 3-4 years that shareholders would decide whether head managers could leave or stay.

Most Shanxi piaohao were established during the period of the 1820s and the 1880s, when there was no modern Chinese bank and the scale of foreign banks was small. At this time, the Shanxi piaohao also operated on a medium scale, each piaohao having 15-20 branches nationwide. Besides, unlike the later period when many shareholders began to enjoy extravagant living and completely left the piaohao in the hands of the head office managers, these shareholders were still able to oversee the head managers before the 1880s. In these circumstances, the agency relationship between the shareholders and head manager was relatively stable, and the head manager could manage the operation of the piaohao.

From the 1890s the Shanxi piaohao's business increased dramatically and their branch networks also expanded with each piaohao had 22-26 divisions. During the same period Chinese modern banks were set up and foreign banks augmented their business from international remittance to China's domestic remittance business.²¹ In this drastically changed environment, piaohao head managers gradually reached limits of their professional competency and a centralized management structure began to show diminishing returns.

In the face of fierce competition, initiated by the Beijing piaohao guild, the piaohao guilds in Beijing, Hankou, Chongqing, Guangzhou and many other cities wrote to head offices to persuade the Shanxi piaohao to form a joint-stock bank (Li, 1917,

²¹ For more discussion on piaohao and modern banks competition, see Wu (2016, pp.142-176).

cited in Huang, 2002a, pp.401-9.). Besides the piaohao branch managers, reformists Liang Qichao, Shanxi Jining Intendant Ding Baoquan also encouraged the Shanxi piaohao to reform (Beijing Daily Newspaper, 1906, cited in Huang, 2002a, p.397.).

However, because of the opposition of Mao Honghan, the Weitaihou piaohao head manager, who was regarded as the leader of all Shanxi piaohao, none of the other piaohao head managers revealed their attitude to this proposal, and they decided not to report it to the shareholders (Li, 1917, cited in Huang, 2002a, p.409.). As Mao said “Forming a bank is Li Hongling’s own plan to get rich. If other branches send similar suggestions in the future, just shelve them (Li, 1917, cited in Huang, 2002a, p.409).”

Although there is no clear evidence to show why Mao refused to reform, this study would conjecture that the main blame lies with his refusal to give up his own unlimited power. If Mao had agreed with the Shanxi piaohao to form a bank, he and the other piaohao head managers would have risked not being appointed as its chief manager. Therefore, instead of accepting this proposal, they decided to reject it. On top of this, their long stay in three Shanxi towns also limited their vision and power to innovate in a fast-changing environment.²²

If we define the total organizational cost as equal to the cost incurred by the inconsistent objectives plus the cost of depending on poor information (Jensen 1998, p.116.), then in the Shanxi piaohao, which had a highly centralized management structure, the cost of having inconsistent objectives was low but the cost due to poor information increased as the reliance on it increased.

From the Weifenghou business letters in the 1900s, I found that out of 88 business letters, about 20 mention employees’ poor performance, which are rare in their business letters before the 1900s. These letters also mentioned the head office managers also began to shield employees’ misbehaviour. Besides the Weifenghou, the Rishengchang piaohao head managers Guo Dounan ran away when the piaohao faced squeeze in 1911 and accelerated the piaohao’s bankruptcy (Dagong Newspaper cited in Huang, 2002a p.519.).

²² In his letter to the head office, Li tried to persuade the head office managers and shareholders to go beyond Shanxi and take a tour of the country or even overseas. However, there is no evidence that they did this (Li, 1917 p.74.).

8.2 Gloomy future for employees

Besides a decayed top management structure, piaohao's junior staff also began slacking when the piaohao confronted competitions from other banks in the late 1900s. In order to explore the fundamental reason for this change, this paper modifies the efficient wage model designed by Greif (2006), who studied the collective punishment mechanism of the Maghribi traders and proposes the following hypotheses to explain the functioning of the piaohao's governance structure in managing distant employees.

Model: Consider a closed career environment with P shareholders and A employees, where $P < A$, shareholders can hire more than one employees but each employee can work in only one firm. The reservation utility for an unemployed employee is I_u , I_c is a once-off lump sum payoff for cheating. Assume that I_h is the income which an employee i receives to keep him honest in each period, in this condition, his lifetime income is S_i . As the paper illustrated above, a piaohao normally has ten grades (li) in one share (fen), and an employee can earn a maximum of one share. Therefore, I_h denotes the income in line with the share that an employee has, where h is the grade of the share. $H_h \in [0,1]$ is the probability that an honest employee will be rehired, $H_c \in [0,1]$ is the probability that a cheater will be rehired, then S_i is monotonically increasing in H_c, I_u, I_c and monotonically decreasing in H_h .²³

Hypothesis 1: A collective punishment mechanism is self-enforcing and effective in preventing cheating.²⁴

The Shanxi piaohao shareholders wanted to hire honest employees because they required a lower S_i . Since each Shanxi piaohao shareholder would find it optimal to employ honest employees, he would like to form a collective punishment mechanism and this mechanism would be self-enforcing.

²³ This model is largely inspired by the efficient wage model designed by Greif (2006, p.37, pp.88-9.). By modifying Greif's model, I can propose Hypotheses 2, 3 and 4 and validate them with historical evidence.

²⁴ This hypothesis is validated by Greif (2006 p.37.), who shows that the Maghribi merchants wanted to hire honest employees because they required a lower lifetime income. This argument can also be applied to the Shanxi piaohao.

Hypothesis 2: An employee will be honest unless he identifies a decline of his piaohao.

Assume that an employee i starts his first job as an apprentice in a piaohao, during his whole career he has two options: to be honest or cheat. If he is honest and works hard, he will be promoted, earn expertise share dividends or switch to another piaohao to earn a higher income. In this condition, his lifetime earnings will be S_i . However, if he cheats, he will receive a lump sum I_c . Since the Shanxi piaohao imposed a collective punishment and the cost of entry to another ethnic trading community was high (Landa 1981, p.356), I_c would be this cheater's lifetime income.

A rational employee will thus be honest if $S_i \geq I_c$, otherwise he will cheat. As we illustrate in the piaohao's incentive structure, S_i depends on the performance of the employee and the profitability of a piaohao. Therefore, if the employee was honest and his piaohao was profitable, he could expect his annual income to increase steadily.

For a cheater, the maximum amount of the lump that sum he can obtain by malpractice is the shareholders' total branch deposit. As each piaohao branch avoided depositing too much silver and relied on various types of draft to balance its reserves, the silver reserve in each branch would have been Tls. 20,000-30,000. Consider the weight and size of silver ingots, we assume that the maximum amount of silver that a cheater could embezzle would have been Tls. 20,000 and an employee's annual income varied from Tls. 40 to Tls. 4,000.

Under these assumptions, it can be found that when the employee i perceives that the piaohao's future is prosperous, he will assume that if he is honest and works hard, his income will increase steadily and his lump sum he gains from cheating will be smaller than his lifetime income. However, when he anticipates that the future of the piaohao is doomed; his lump sum from cheating is greater than his future income for working honestly, he will have much more incentive to cheat.

Hypothesis 3: When the piaohao guilds prevailed, a collective punishment mechanism was effective in preventing cheating behaviours. When the guild system decayed, however, the collective punishment mechanism evaporated.

Adequate information is necessary to ensure that a collective punishment mechanism is effectively imposed. By establishing guild and holding monthly meetings, the piaohao merchants could share this information. However, when the piaohao merchant faced threats after 1911, many of them went bankrupt and the piaohao guilds declined. When there was no way to share the information about employees, this multilateral punishment mechanism was no longer valid.

Hypothesis 4: When career prospects close and no external career opportunities are offered, piaohao employees will remain honest. However, when employees have more job opportunities, they have more incentive to cheat.

When there are no other career opportunities, I_u (reservation utility for an unemployed employee) is low, holding other variables constant, shareholders need only provide a low S_i to keep employees honest. When there are other work opportunities with better treatment, e.g. working for modern banks, S_i increases, due to a higher I_u . The cost of keeping an employee honest increases. Therefore, if the piaohao cannot provide higher income, employees will cheat.

By modifying efficient wage model, the above analyses show that when the piaohao were profitable and no other career opportunities presented themselves, their governance structure is effective. However, when these preconditions changed, this governance structure became weak.

Conclusion

This paper examines the Shanxi piaohao's governance structure. To achieve this, it examines the piaohao's management structure and incentive structure. The paper finds that when the formal rules and legislations could not protect shareholders' capital, the Shanxi piaohao designed a nexus of rules and regulations to fill up the loophole. By investigating the employees' background and promoting employees within the firm, the piaohao merchants had sufficient time to observe each one's morality and ability. A centralized management structure allowed their networks to expand but prevented the head offices from losing control of the firm. Moreover, by sharing employees' behaviour through guilds and imposing collective punishments on

cheaters, the piaohao further encouraged employees to be loyal for the sake of their future career opportunities.

Besides a rigorous management structure, the piaohao also designed a compelling incentive structure to attract and keep excellent employees. To do this, they invented expertise share, which is similar to modern companies' stock incentive compensations to incentivise employees. Expertise share is important in lifting piaohao employees' total income and about 20% of the employees were entitled to this share for their long tenure and good performance. When comparing the piaohao's incentive scheme with that of the modern banks, this paper finds that for non-expertise shareholders it is optimal for them to hop to modern banks when the piaohao dividends began to slump. For expertise shareholders, it is better for them to stay unless the piaohao is on the brink of insolvency.

Shanxi piaohao's governance structure was effective when they operated on a medium scale without competitors. However, as their business network expanded together with a more unpredictable business environment, a centralized management structure began to show diminishing returns. Similar with its management structure, piaohao's incentive structure malfunctioned when they suffered loss and faced competitions from modern banks. Although the Shanxi piaohao declined at last, their unique governance structure offer us a glimpse of how did Chinese merchants supervise and incentivise distant employees by informal institutional arrangements without seeking protection of the formal laws and regulations.

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