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Chinese Monetary System during the Renaissance: Silver Standard and Globalization in Ming Dynasty

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Abstract: As the earliest paper money issuer in the world, the Chinese empire had a great monetary experiment lasting around 500 years which despite ended in failure. At the same time with Renaissance, The silver finally united the Chinese monetary systems and brought the final glory of the Old Time to this ancient civilization. The silver standard became the Damocles Sword of the empire and exposed one of the biggest drawbacks in the agricultural social institution. We try to tease out this silver main line and understand the Needham Puzzle by the monetary dimension.

Introduction

Joseph Needham, a famous British science historian and sinologist, posed a known question that why did modern science, the mathematization of hypotheses about nature, with all its implications for advanced technology, take its meteoric rise only in the West at the time of Galileo but had not developed in Chinese civilization or Indian civilization?¹ Therefrom a mystery was left for the subsequent researchers. Gunpowder, the magnetic compass, and paper and printing, which Francis Bacon considered as the four most important inventions facilitating the West's transformation from the Dark Ages to the modern world, were invented in China, why the industrial revolution did not originate in China?²

Since twentieth century, many scholars tried to explain it in various aspects. One of the explanations is that the Chinese inventions totally rooted in the practices and experience accumulated by the artisans and peasants in premodern time, lack of systematical research made the technology factor absent (Lin, 1995). Zhu and Wu (2007) built a growth model with increasing return to scale to prove Lin's opinion that in an industrial society, the technological development has an exponential relation with the output rather than the linear relation of the population (labor). This link seems like a lever to unclench the capacity of production resources and facilitated the productivity explosion and the industrial revolution.

If we review the history from the former perspective, the geographic discovery offered undoubtedly plenty of resources for Europe to enter this path. The age of discovery during Renaissance opened the prelude of globalization. Corresponding to the western Renaissance, China was under the reign of the Ming Empire (1368-1644), the penultimate feudal dynasty in Chinese history. During this period, China and Europe experienced the formation of the citizen class and the prosperity of commerce, which have the key conditions for the sprout of capitalism. Then the great divergence said like Kenneth Pomeranz (2001) started from here. The European commenced their preparation to the industrialization, while the Chinese continued the experiment of paper money in circulation and attempted to climb another prosperous peak of the agricultural society.

Unfortunately, the paper money test ended in failure. However, the silver standard was established after the notes issuing. China appeared to dip a toe in the water firstly at the monetary standard system than the others. This time, it was not a good new but the last straw to devastate the empire. The Ming dynasty is the epitome of Chinese feudal agricultural society lasting for two thousand years, and we reexamine it through the silver dimension to figure out the cause of failure.

¹ Joseph Needham (1969), *The Grand Titration: Science and Society in East and West*; (2004), *Science and Civilization in China*.

² Lin, Justin (January 1995). "The Needham Puzzle: Why the Industrial Revolution Did Not Originate in China". *Economic Development and Cultural Change*. 43 (2): 269–292

Appendix *PhD Project*

The Roles of the Monetary Regime for the Chinese Development

— Current Perspectives and Long Term Historical Trends

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I Motivations

Chinese currency has a long history more than 4000 years. It appeared earlier than the oldest occidental currency, the electrum coin, which was emitted by Lydian in Asia Minor before the 7th century B.C. (Peng, 1958). This independently developed monetary culture formed the most prosperous civilization in the ancient world lasting for 2000 years, and influenced many peripheral countries for a long time. Indeed, the Chinese modern monetary regime has been established similarly to others. We also analyse and adjust it parallel to the Western monetary theory. But it seems that there is a different economic output or performance vis-à-vis the occidental countries. In a nutshell, there are certain reasons providing grounds to refer to the existence of a Chinese tradition in pursuing monetary policy and to the existence of a Chinese archetype of a monetary system, of a monetary regime. That specificity has been underscored today (Zhou, 2011; Ma, 2012; Zheng, and all. 2010; Testart, and all. 2002) as well as in the past (Hu, 1998; Dai, 1993, 1994; Hozumi, 1943).

A central place within the frameworks of the Chinese tradition is held by the relation between the domestic dimension of the monetary regime (prices stability, domestic credit and interest rate policy) and the external dimension of the monetary regime (exchange rate and external demand for yuan the result of the balance of payments dynamics). The management of this relation affects directly the economic development of China, its growth and at the same time the place of China in the world economy.

As we know, China has become the 2nd largest economy in the world and as predicted it will replace the US as the largest economy before 2030s. Being the biggest exporter, China has a large positive current account balance and vast foreign reserves in its balance sheet. Therefore, China has a strong influence on the international economy. Moreover, since October 2016, the Chinese yuan has become one of the IMF basket currency and has accounted for 10.92% of SDR. Obviously, Chinese economy and the yuan have nearly integrated in the global economy and currency regime. In recent years, the Chinese yuan has encountered a strong pressure of depreciation necessitated by the international situation. By reference to the model of FED and BCE, the People's Bank of China (PBoC) today is becoming more and more independent and playing some roles in the world. It becomes increasingly important to comprehend thoroughly the Chinese monetary regime and its mechanism especially as regards the exchange rate decision, asset security, and financial stability.

Based on the 40 years reform and development, Chinese society has accumulated a big fortune and has come along with an economic qualitative change. The structural domestic contradictions should likewise be solved. As one of the most important and efficient policy instrument, monetary policy has a significant effect on the economy not only for China, but also for the other countries because of globalization and integration. The key point in the near future will be how to balance the domestic objectives and external output. The dissertation thesis is aimed at finding out the endogenic evolution path of Chinese currency from a long historical and institutional perspective based on the Chinese ancient economic and monetary thought, at analysing and evaluating its transmission mechanism, efficiency and externality to acknowledge the role of the currency regime for the Chinese development.

To this end, our PhD project is aimed at analysing the role of the monetary regime and the monetary policy in China for the country's economic development by mobilizing knowledge in the sphere of monetary theory, international political economy and the Chinese monetary history. Our research will be established on the use of modern and historical database thereby making it possible to test many of our hypotheses in quantitative and econometric terms.

II Theoretical Framework and Research Agenda

The PhD thesis shall be organized along three research lines whereby each of them will offer a specific and original approach to analysing the “external - internal money” relation and its influence on China's economic development. What we have in mind is an approach based on monetary theory (approach one), on the international political economy (approach two) and on the long-term monetary history of China (approach three).

Research Line One: Monetary Theory Approach

Much has undoubtedly been accomplished in the applied monetary sphere, serious research is carried out in this sphere in the main Chinese analytical centres included, National Bureau of Economic Research (NBER), Bank of Finland Institute of Transition (BOFIT), Bank for International Settlements (BIS) etc. Attempts are made at modelling China's monetary policy within the frameworks of the DSGE framework and other contemporary econometric techniques (e.g. Sun, 2010). Much has likewise been done as regards the theory within the

“Finance and Development” relation (e.g. PBoC and IMF joint conference, 2015, 2016, and 2017).

The originality of our approach boils down to the following: First, we aim at an accounting and analytical reconstruction of the money supply sources (for the monetary base and for the broad money), internal ones (based on the credit of the bank and non-bank system) (Yi, 2003), external ones (broad money, monetary base) and external ones (coming from the balance of payment) (Yi, 2001). These sources will be bound with the behaviour of the money multiplier that is with the behaviour of the main economic agents of the Chinese economy (the scale of social financing). A system indicator will be developed thereby making it possible to follow more closely the relation between the internal and external money sources and the base variables of the monetary policy (base interest rate, reserves requirements and exchange rate). The behaviour of these indices will be modelled for a period since 1990 to date. The indicators will be also bound with the main components of economic development thereby elucidating the main issue set forth in the PhD thesis (the relation between monetary regime and economic development). The second major issue faced by China today will be taken into account – namely the maintenance of financial stability and the sustainability of the bank and non-bank system (financing for industrial upgrading; new financing like internet finance and shadow banking; macro-supervision and systematic financial risk).

The approach aims to clarify the ways and paths of Chinese currency creation then assessing the efficiency of monetary policy transmission mechanisms in a revised DSGE model which integrates the key role of banking system in Chinese economy. With the gradual opening up of China's financial market and global integration, this helps us to identify the impact and path of China's monetary policy on global financial market volatility. Hence, we can quantify the results of the macro-prudential supervision of the PBoC and the economic role of the renminbi in the international financial market.

This first approach is economic and monetary one and it does not take into account the international political and economic relations and the geopolitical dimension of China's monetary regime. Therefore, we hereby offer a second major research approach.

Research Line Two: International Political Economy Approach

Purely theoretical and methodological research is featured here within the frameworks of the international political economy of monetary regimes and the new geography of money (Cohen, 1998, 2015; Gilpin, 1987, 2001, 2005). It provides a good basis for studying China's place within the global monetary architecture. This has partially been illustrated in an interesting book by Helleiner and Kirshner (2014). Chinese authors have also made a significant contribution to this regards (Wang, He, 2008; Liu, Yang, 2001).

Our originality will pertain first to a detailed analysis of the main actors, their interests and strategies in the sphere of the international monetary system and second to developing a system of quantitative indicators for the dynamics of the power of Chinese currency on a global scale. The main functions of global money in the case of the yuan (reserve currency, means of payment and invoicing of trade, financial assets quotation and as an anchor for other currencies) will serve for developing an empirical model. The imposition of Chinese money on a world scale and its influence on growth in China will be analysed empirically.

One big difference between the Chinese economy and the economies of other countries is that economic development is a means rather than an end. China's economic policies fully serve its political goals, which has the opposite institutional logic as electoral politics and free economy in other democracies. The practices of 40 years since the reform and open policy of Deng Xiaoping has showed the national planning and strategies of the policy. Even today, China's financial market and capital account are still opened with reservation. This approach offers us a politico-economic perspective to understand and analyse the internationalization of yuan based on the Chinese logic, and to figure out the intention and subsequent paths of reform and open.

The two models namely the monetary model and that of the political economy concern the timeliness and the modern economic history of China. In order to overcome the time restriction we turn to the third essay whereby we shall mobilize the Chinese monetary history to generalize the historical trends and convention.

Research Line Three: Chinese Monetary History Approach

In a nutshell, here our attention is focused on the issue of the extent to which “external-internal money” relation follows a similar trajectory in different periods of major importance for the Chinese history.

Unlike other regions in the world such as Europe and America for instance that the relation between “external” and “internal” money has been more complex in Chinese history, which means that it is directionally controlled by the state, i.e. there is no convertibility between “internal” and “external” money. This is to a large extent true as regards other Asian countries (Japan and Russia, e.g. Nenovsky, 2017). While “internal”, domestic money in this model is “ideal” (it does not have a valuable material substance), external money is “real” in a sense that has real material substance. The external money is state monopoly and serves as a means of payment with foreign counterparts. The stability of external money is based on the confidence of economic agents and the population in the government while external money draws its stability from the country’s capability of exporting, of trading with foreign countries.

In this third essay, our aim is to go back to the Chinese economic and monetary history, which by the way has been arousing a growing interest in recent years. (Brandt, and all. 2012; Broadberry, and all. 2017; Ma, 2012, Von Glahn, 1996, 2003, 2016). We focus our attention on two periods of major importance for China – Imperial China and Republican China.

During the imperial China, these were many scholars mentioned their monetary and economic thought. The important concepts and categories of money that emerge at this time concerning commodities, currencies, values, prices, and purchasing power. Among them, some important categories like "Zi-Mu" (son-mother) and "Qing-Zhong" (light-heavy) also developed and formed relatively systematic and naive theories such as the monetary weighing Zi-Mu theory (*Shan Qi*, the end of 6th century B.C.), monetary Qing-Zhong theory (*Guanzi*, the beginning of 7th century B.C.). Then, there were Fa-Qian (legal money, monopolistically emitted by the State) and the thought of intervening economy with currency (*Jia Yi*, *Chao Cuo*, and *Sang Hongyang*, 2nd century B.C.). Moreover, Commodity Money theory (*Gong Yu*, the beginning of 1st century B.C., *Huan Xuan*, the end of 4th century), metallism (*Kong Linzhi*, the end of 4th century; *Kong Yishang*, 482), the quantity theory of money (*Liu Yi*, 734; *Lu Zhi*, 794), the velocity and quantity of money (*Shen Kuo*, the middle of 11th century), monetary axiology

(*Zhou Xingji*, the end of 11th century), monetary Xu-Shi (virtual - real) theory (*Zhou Xingji; Zhao Mengfu*, the end of 13th century) came up one after another. Furthermore, after the appearance of paper money, there was a special and important theory, Cheng-Ti (weigh - convert) theory and credit system (*Zhou Xingji; Shen Gai*, 1155) established. Regrettably, these thoughts appeared scatteredly in their literature works or historical biographies due to the ancient social structure and institutional preference, which formed the theoretical tradition of Chinese monetary system.

In addition, the Chinese Empire was deepened by the influence of Confucianism over time. After the Han dynasty, the businessman class lost their social status progressively, and social stratum was ranked as scholars (bureaucrats), farmers, artisans, and merchants more and more strictly. This social orientation made the social structure and the self-identity of individuals, which reciprocally was shaped with the organisation of political power and the fiscal taxation system. Hence, as described above, the social tradition defined the micro-economic base of households and the macro-economic model like the economic development and output path. Thereupon, overbearing national identity was brought along as the honour and dignity of scholar class, which decided the empire policies as well as the political tradition. The institutional trap came out.

Thereinto, the main line of history evolution is taxation reform hiding behind the dynasties replacing and monetary pluralism. We realize that there is seemingly a link between the system evolutions of taxation and money. We would like to shape it as a spiral model to describe the historical evolution in China.

The Republican China period is divided into three major factions, namely, Marxist economics, neoclassical economics (Western Economics), and the people's livelihood economics. This period was the turning point and institutional evolution time for the monetary system. China's traditional economic thinking still existed, but its theories and concepts had no independent form and were attached to the three major factions as mentioned above. The international convention is integrated into the modern China, but the historical tradition still rooted deeply in the practices. The third one will compare the monetary mechanism in different period with some models and try to find the endogenic evolution path and long term historical trends.

III Methodology, Empirical Works and Academic Output (Publications)

As it has already been mentioned our PhD thesis will be based on three main pillars – monetary theory, international political economy, and monetary as well as economic history of China. Therefore our methodology is interdisciplinary in character.

Research line	Model	Methodology
Monetary theory approach	DSGE-VAR	Econometrics, international finance and macroeconomics
International political economy approach	Currency pyramid, scalene impossible triangle	Geopolitical analyse, great power game, strategy analyse
Chinese monetary history approach	Spiral (cycle-trend) model	Institutional analyse, comparative analyse

As far as the empirical part of our study is concerned hereby, we shall mobilize a database of modern historical data such as Chinese National Bureau of Statistics, Statistics and Analysis Department of PBoC, International Financial Statistics Yearbook of IMF, World Development Indicators and World Tables of World Bank, Heston-Summers Databases, Madison Databases, United Nations Conference on Trade and Development, and other macroeconomic databases about China in many famous universities and academic institutions. Of particular importance will be our cooperation with institutions such as BOFIT, BIS Asian Office research, NBER Chinese Economy working group, National School of Development (Beijing University), and other centres engaged in active empirical studies on China be it from a modern viewpoint or on the reconstruction of Chinese history.

The structure of the PhD thesis, the three essays mentioned make it possible to prepare more than three papers to be published in prestigious and internationally recognized academic journals.

IV Cooperation and Other Activities Related to the PhD

In the course of working on the dissertation thesis, we envisage cooperation with institutions, analytical centres and independent researchers related to our theme in one way or another. Preliminary contacts were established some of them thanks to my research adviser with the following institutions and researchers:

London School of Economics (Pr. Debin MA);

Ecole des Hautes Etudes en Science Sociales, Science PO (Pr. Christian LAMOUREAUX);

Central Bank of Finland (BOFIT, Chinese section);

Texas Christian University, USA (Pr. Kiril TOCHKOV);

Tokyo University (Pr. Akinobu KURODA);

Kyoto University (Pr. Dimiter IALNAZOV);

World Bank (Young Professional Program), etc.

We plan to apply for Erasmus travelling to London (LSE), to the University of Turin, Italy, to Texas CU/USA and to participate in Summer Schools (in econometrics, modelling).

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