Monetary Policy and Currency Boards

Asia Pacific Countries Examples Vol.2

Steve H. Hanke
Bilal Kargı
Editors

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Monetary Policy and Currency Boards: Asia Pacific Countries Examples, Vol.2

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Foreword

It is possible to present a brief summary of the subjects that the chapters in this book focus on.

Ch 1. We examine to what extent India's Paper Currency Department (1862-1935) operated like a currency board, using statistical tests based on its monthly balance sheet. Our paper makes the monthly balance sheet data available in machine-readable form for the first time, in a companion spreadsheet workbook, and likewise for the first time offers a through summary of legislation related to the Paper Currency Department.

Ch 2. China's economy has slowed down in the last several years, with annual GDP growth falling from 10.6 percent in 2010 to 6.7 percent in 2016. In February 2016 Zhou Xiaochuan, the governor of the People's Bank of China (PBOC), announced a new goal of having a "stabilizing yet flexible" exchange rate to replace the previous policy of de facto gradual appreciation against the U.S. dollar. Observers have since become more uncertain of the PBOC's next step. Economists have argued for years about the exchange rate system China should adopt—a currency board with a fixed exchange rate, a pegged system such as China had before 2005, or a flexible exchange rate, which could range from managed floating to free floating.

What do contemporary economists think about the issue of the exchange rate system? What do they think should be the PBOC's next move? What opinions do they voice about the new role of China's currency as a component of the International Monetary Fund's Special Drawing Right? I collect and analyze the views of several leading economists on the benefits and costs for China of various exchange rate policies.

Ch 3. Hong Kong is one of the main economies operating a currency board system today. With its currency fixed to the U.S. dollar, the system has functioned successfully since it was restarted in 1983. The last time it faced severe challenges was during the East Asian financial crisis of 1997-98. However, with the comparatively large depreciation of renminbi (RMB, and sometimes referred to as Yuan) during the past two years, a rising question is how Hong Kong might be affected by a possible future crisis originating from China. In this paper, we examine the impact of RMB depreciation on Hong Kong, with a focus on three sectors of Hong Kong's economy: foreign direct investment, external trade, and tourism.

Ch 4. In the years since the Global Financial Crisis of 2008-09, the spot rate for the Hong Kong dollar has mostly traded near the upper end of its band, the Convertibility Undertaking of 7.75 set by the HKMA. After a year and a half of gradual weakening, the HK$ finally reached the weak side level of 7.85 on April 12 2018, triggering US$ sales by the HKMA. This paper explains first why the weakening of the HK$ is perfectly normal under the currency board system, posing no threat to the currency board mechanism. It also explains why it has taken so long for the weak side convertibility undertaking to be triggered, and why HK$ interest rates have lagged behind US$ rates. The paper ends by asking whether discretionary intervention by the HKMA within the convertibility zone would be desirable to accelerate the process of interest rate normalization in Hong Kong. This is a variation on a familiar theme: rules versus discretion in monetary policy.

Ch 5. As global macroeconomic uncertainties there is notable shifts and oscillations in Chinese outbound investment and cross-border investment flows. This study shows China's key investment characteristics including geographical preferences, investment compositions, and structural changes

in industrial and foreign policies, such as Made in China 2025, financial liberalization, and OBOR. While these trends seem contradictory at time, more opportunities are available for nimble and creative players who could capitalize on China's increasing demand in the new economy ("xin jing ji"), with adequate consideration of regulatory scrutinies.

Ch 6. Since 1967, Brunei Darussalam has employed a currency board, capable of regulating inflation and government spending, as its monetary system. This paper examines the history and formation of the currency board in Brunei Darussalam and analyzes its orthodoxy throughout its existence. A workbook with balance sheets compiled from 1967-1987 and 1998-2020 accompanies this paper. An appendix of the legislative history of Brunei Darussalam's currency board can also be found at the end of this paper.

Ch 7. Sarawak, today a state in Malaysia, was once an independent state under British protection. The government began issuing its own notes in 1880, denominated in the Sarawak dollar, whose exchange rate was fixed to various other currencies. Following Japanese occupation during the Second World War, Sarawak became a British crown colony in 1946 and lost its independent monetary system in 1952, when the Sarawak dollar was fully replaced by the Malayan dollar. We discuss Sarawak's monetary system between 1880 and 1952, with a focus on the period of 1927-1941, to examine the extent to which the Sarawak system represented an orthodox currency board.

S. H. Hanke & B. Kargı
Baltimore & Istanbul
September 1, 2023

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1 India's paper currency department (1862-1935) as a Quasi currency board

Charles ***Weintraub***
Kurt ***Schuler***

Introduction

Before its current era of central banking, India had a period of monopoly note issue by the government Paper Currency Department from 1862 to 1935. Many narrative accounts of the period exist, most famously John Maynard Keynes's first book, Indian Currency and Finance (1913). In contrast, statistics of the period in the high-frequency, machine-readable form necessary for detailed quantitative analysis are not readily available. Here we start to remedy the situation with monthly statistics of the balance sheet of the Paper Currency Department. An analysis of the balance sheet shows that for part of its existence the Paper Currency Department worked like a currency board—something previous work on currency boards has not noted because data to make the diagnosis were not ready to hand.

We focus on determining the extent to which the Paper Currency Department operated like a currency board and do not address broader issues such as whether a different arrangement might have promoted economic growth better.

The statistics (in a companion spreadsheet workbook) and perhaps also the legislative history (in Appendix A) that we provide should, however, be useful to any future analysis of the Indian monetary system of the period.

Origins and workings of the paper currency department

Paper currency was a very small part of the Indian monetary system of the mid 19th century. Native credit and coins, used throughout the country, far exceeded bank deposits and paper currency, which were confined to the largest cities. India was on a silver standard, with the rupee equal to 180 troy grains of standard silver (11/12 fine) or 165 troy grains (10.6918 grams) of pure silver. The rupee and its major subdivisions were "full-bodied," containing silver equal to their face value.

Banks in India had issued notes for decades, without a government note issue. That changed under James Wilson, an accomplished Scotsman today best known as the founder of the Economist magazine. Wilson was appointed Financial Member (like minister of finance) in the Indian colonial government in 1859 to curtail the deficits arising from the Sepoy Rebellion of 1857-1858. Wilson proposed spending cuts, tax increases, reforms in budgeting procedures, and a government monopoly of note issue (Bagehot, 1860). Wilson's case for a government monopoly of note issue was that (a) notes enabled a considerable saving of cost over using coins; (b) the government would reap a large part of such savings; (c) the savings for all would be largest if the notes were legal tender; (d) it would be inappropriate for bank-issued notes to be legal tender; (e) government notes could be issued according to procedures that would make them secure, in fact more so than bank-issued notes; (f) a uniform, reliable, legal tender currency would contribute to government revenue both by promoting faster economic growth and by generating seigniorage; and (g) issuing notes was not a necessary part of the business of banks (Wilson, 1860: 4-12).

Wilson referred to the experience of the United Kingdom, which had had curtailed competitive issue of notes in 1844 and

1845. The U.K. Bank Act of 1844 established conditions that would eventually make the Bank of England the only note issuer in England. The Act divided the Bank into two parts. The Issue Department issued paper currency and, with some qualifications, had to back notes in circulation beyond £14 million 100 percent with gold. The Banking Department accepted deposits and made loans, and faced no reserve requirement. Advocates of the Bank Act had intended to make the Bank of England into something like a currency board, but had unwittingly failed by confining currency board-type restrictions to the Issue Department rather than applying them to the whole of the balance sheet.

Wilson took inspiration from but did not precisely imitate the Bank Act. Rather than a central bank that would do both a note issuing and a deposit business, he proposed only an Issue Department. Rather than a 100 percent marginal reserve requirement in gold like the Bank of England had against notes, he proposed a one-third proportional reserve (Great Britain 1919, v. 3: 154). He died before the colonial legislative council adopted his proposal, though, and his successor, Samuel Laing, changed the reserve requirement from a proportional requirement to a 100 percent marginal requirement.

By Act 19 of 1861 the colonial government made note issue in India a government monopoly effective 1 March 1862. The Department of Issue of Paper Currency (which we will generally call by its more colloquial name, the Paper Currency Department) was allowed to issue notes for 10 rupees and up. The Master of the Mint at Calcutta was initially appointed as the Head Commissioner and the Masters of the Mint at Madras and Bombay were initially the two other Commissioners, though all three positions were in principle open to other people. India was divided into three "circles of issue" based in Calcutta, Madras, and Bombay, the major cities for finance, foreign trade, and colonial administration. Notes were only redeemable in the town where issued and at the headquarters of that circle. The Department was required to issue notes on demand in exchange for Indian silver rupees, silver bullion, or foreign silver coin evaluated at its bullion value, and to redeem notes in silver. The government could also provide for the

Department to accept gold at specified rates. The Department could hold up to 40 million rupees of Indian government securities but had to back any rupees in circulation in excess of that amount 100 percent with precious metals. (This arrangement was termed "fixed fiduciary issue.") The Department had to publish a balance sheet monthly and a statement of income and expenditures annually. Notes were liabilities of the Indian government.

The Paper Currency Department was part of the Finance Department, whose head was the Finance Member of the Indian colonial administration. The three major note-issuing banks, the Bank of Calcutta, Bank of Bombay, and Bank of Madras, which were all partly government-owned at the time, were compensated for the loss of their note issues by being made the agents for the government note issue until 1866, when the Paper Currency Department had become large enough to do the work on its own.

From our perspective, the major later changes to the 1861 law, which we discuss below, were increases in the amount of Indian securities the Paper Currency Department could hold and changes to the exchange rate. Less important changes included separating its management from that of the Mint; establishing new circles of issue; reducing the minimum denomination of notes; issuing "universal" notes redeemable across all circles of issue; and allowing British government securities to count as part of reserves. Appendix A gives a history of legislation affecting the paper currency, while Appendix B summarizes changes to the ceilings on the Paper Currency Department's holdings of securities.

The Paper Currency Department issued notes until the newly formed Reserve Bank of India, the central bank today, assumed responsibility on 1 April 1935. The Reserve Bank of India was divided into an Issue Department and a Banking Department in imitation of the Bank of England, and what had been the Paper Currency Department became the Issue Department of the central bank.

To what wxtent was the paper currency department a currency board? A first cut

The key characteristics of a currency board are a fixed exchange rate with an anchor currency; 100 percent net foreign reserves, at least at the margin, against the whole monetary base; and full convertibility (no exchange controls) with the anchor currency. To what extent did the Indian monetary system actually have those characteristics during the existence of the Paper Currency Department?

India was on the silver standard from before the Paper Currency Department began until 25 June 1893. The pound sterling, in contrast, was on a gold standard, and from 1862 to 1893 the rupee depreciated from about 24 pence sterling to about 15 pence. (There were 12 pence per shilling and 20 shillings or 240 pence per pound sterling. For ease of exposition, we omit mention of shillings and reckon only in pence.) India was a borrower in the London financial markets, so the silver standard increased its debt burden. Pursuant to the recommendations of an exclusively British group of experts known as the Herschell Committee, on 26 June 1893 India abandoned the silver standard and switched to a "limping standard," which we today would call a managed float or perhaps a band. This was a transition period to allow the exchange rate to appreciate to 16 pence. After the rupee had appreciated, India would switch to sterling as its anchor and the rupee-sterling exchange rate would cease large fluctuations. No new silver rupees were coined during the transition period, but legislation provided for the use of gold, since gold coins were widely used in Britain. Because the exchange rate fluctuated, the Paper Currency Department by definition could not have operated as a currency board during the period.

In January 1898, India established a sterling/gold exchange standard pursuant to the recommendations of another exclusively British group of experts, the Fowler Committee. The experts envisioned a gold standard with extensive circulation of gold coins, but Indians preferred silver coins, so in practice the system was based on foreign exchange trading with the

pound sterling, a gold-standard currency. The Indian colonial government became the central player of the standard by offering the most convenient financial instruments for foreign exchange trading: Council Drafts (also called "Council Bills" or simply "Councils"—rupee funds in India, sold in London for sterling) and Reverse Council Drafts on Sterling Drafts ("Reverse Councils"—sterling funds in London, sold in India for rupees). The "Council" was the Council of India, a board of advisers to the top British official for India, the Secretary of State for India. Starting in 1893 the Indian government had begun offering Councils and sometimes Reverse Councils in amounts greater than its own needs alone required. In 1904 it announced that it would supply Councils to the market in unlimited amounts at a ceiling of 16-1/8 sterling pence per rupee. It did not announce a floor, but in practice did not sell Councils below 15-29/32 pence per rupee. Starting in 1908, it also sometimes offered Reverse Councils at 15-29/32 pence per rupee, but it made no promise to sell them without limit. The exchange rate system was therefore asymmetrical: both the British gold sovereign and the silver rupee were legal tender, and the government undertook to convert sovereigns into rupees in unlimited amounts but not necessarily rupees into sovereigns. As a later committee of experts, the Hilton Young Commission, observed, "The automatic working of the exchange standard is thus not adequately provided for in India, and never has been" (Royal Commission on Indian Currency and Finance 1926, v. 1: 8). Arbitrage also continued to occur through trade in precious metals. Unlike currency boards in other British colonies, the Paper Currency Department did not participate directly in the foreign exchange market, leaving it to another branch of the Finance Department.

On 5 August 1914, soon after World War I began, the Indian government ceased selling gold to the public, as the British government was also doing. The Paper Currency Department continued to pay notes in silver rupees, whose value as metal was at the time less than their face value. What had been a sterling/gold exchange standard thus became purely a sterling standard. On 20 December 1916, after record demand for Council Drafts in November and early December, the

government limited the amount it sold (Paper Currency Department annual report, 31 March 1917: 8). Because of the key role of Council Drafts in the exchange rate system of the time, we consider that limiting their sale constituted de facto exchange rate control.

The sterling standard lasted until 26 August 1917, when a rise in the price of silver forced the government to let the rupee. Silver rupees, still the bulk of the monetary base, were becoming worth more as metal than as money at 16 pence, threatening a melting down of coins and a contraction in the currency. War aggravated the situation by hindering shipments of silver to India. There are hints that even before August 1917, the market rate was diverging from the official rate (Paper Currency Department annual report, 31 March 1917: 8). After abandoning the sterling standard, the Indian government first operated a moving peg or what we might today term a managed float, varying the exchange rate with the sterling as the price of silver fluctuated. The rate appreciated to a record 28 paper pence per rupee from mid December 1919. Pursuant to the recommendations of another group of experts (this time only mainly British—there was one Indian member), the Babington Smith Committee, the government then unsuccessfully tried to establish a hard peg of 24 gold pence per rupee from 5 February 1920; the exchange rate reached 34-27/32 paper pence on 12 February 1920. As the price of silver began to fall as precipitously as it had risen, the government retreated to the more depreciated rate of 24 paper pence per rupee on 24 June, then ceased supporting the exchange rate after 28 September 1920. After another period of managed floating with limited intervention, the exchange rate hardened into a band around 18 pence per rupee in October 1924. In July 1925 the government announced that it did not wish the exchange rate to breach a ceiling of 18-3/16 paper pence and that it had adequate resources to prevent a breach. On 8 April 1926 it established a floor of 17-3/4 pence. In March 1927 the government set 17-49/64 pence per rupee as its selling rate for sterling for immediate delivery in London. Pursuant to the recommendations of a committee of experts, the Hilton Young Commission, the government officially pegged the rupee at 18

pence effective 1 April. On 27 April it initiated a system of purchase of sterling in India by public tender to help make exchange rate arbitrage work smoothly. The exchange rate of 18 pence lasted until 1966, well into India's central banking era.

Unlike the Bank of England, the Paper Currency Department had no coordinate deposit department. The requirement that it hold 100 percent foreign assets (silver, gold, and later also government British securities) beyond a certain level applied to the whole of its balance sheet. Successive laws periodically increased the maximum holding of Indian government securities as note circulation increased. During World War I the changes, formerly rare, became frequent, introducing a more discretionary element into the system. A law of 1920, allowed the Governor General of India to reduce the foreign reserve requirement from 100 percent at the margin to a 50 percent overall requirement. The reserve would have returned to something like James Wilson's original intention had the Governor General ever brought that provision of the law into effect, which apparently never happened.

The Paper Currency Department was not responsible for coins: that was the job of the Indian Mint. Coin circulation likely exceeded note circulation during the whole existence of the Paper Currency Department. In March 1900, for instance, note circulation was 287 million rupees, while estimated coin circulation exceeded 1 billion rupees (Brahmanandra 2001: 640-643). As we have mentioned, up to 1893, the metallic value of the rupee and its major subdivisions was equal to their face value. From 1893 the metallic value of silver coins became worth less than their face value. In 1900, when the government began minting silver rupees for the first time since 1893, it established a Gold Reserve Fund (later called the Gold Standard Reserve) intended to provide backing for the difference. The reserve, which consisted mainly of British securities, did not operate according to any rigid principles, and the Indian colonial administration used it as a financial buffer as circumstances seemed to require. Our companion spreadsheet workbook contains annual balance sheet figures for the reserve.

Table 1. *Key Changes Affecting the Paper Currency Department*

1862	1 March: Paper Currency Department opened; its ceiling for holdings of Indian government securities was 40 million rupees; the exchange rate was 1 rupee = 165 fine troy grains silver
1871	20 January: Raised ceiling for Indian securities to 60 million rupees
1872	January: Start of first quasi currency board period as domestic assets ceased to vary
1890	29 August: Raised ceiling for Indian securities to 80 million rupees
1893	26 June: End of first quasi currency board period as exchange rate was floated
1896	17 December: Raised ceiling for Indian securities to 100 million rupees
1898	January: Start of second quasi currency board period: government established an exchange rate of 1 rupee = 16 pence sterling (240 pence = £1), or 1 rupee = 7.53344 troy grains gold
1904	Government offered to provide unlimited exchange on India at 1 rupee = 16⅛ pence sterling
1905	22 March: Raised ceiling for securities raised to 120 million rupees, of which up to 20 million could be invested in British government securities
1907	November: Turbulence in the foreign exchange market related to the worldwide financial panic of the time; the government for a time ceased freely paying out gold in exchange for silver rupees (Kemmerer 1916: 112-113, 115)
1911	6 March: Raised ceiling for securities to 140 million rupees, of which up to 40 million could be British government securities
1914	5 August: Government ceased selling gold to public with the outbreak of World War I
1915	16 January: First of a series of temporary wartime measures raising the ceiling for securities
1916	20 December: End of second quasi currency board period as government limited its offer of exchange on India
1917	28 August: Abandoned a rigid exchange rate with sterling; established a moving peg (we might today call it a managed float) with the market rate sometimes diverging from the official rate

1920	5 February-September: Established an exchange rate of 1 rupee = 11.30016 troy grains fine gold (24 gold pence), then retreated to a more depreciated rate of 1 rupee = 24 pence sterling on 24 June, then abandoned it after 28 September as the price of silver crashed and returned to a moving peg (which we might today call a managed float)
1920	17 September: Legislation approved providing for abandoning 100 percent marginal reserves for a minimum 50 percent metallic reserve; apparently never brought into effect
1924	September: Began de facto band centered around 1 rupee = 18 pence sterling
1925	28 April: Britain in practice returned to the gold standard, so India in effect returned to a sterling/gold exchange standard similar to what had existed from 1893 to 1914
1927	1 April: Official return to a rigid exchange rate at 1 rupee = 18 pence sterling
1931	21 September: Britain abandoned gold standard; India followed, rupee remained at 18 pence
1935	1 April: Reserve Bank of India replaced Currency Department

Sources: Appendix A below; Gazette of India; Paper Currency Department annual reports.

Note: Commissions of inquiry into the Indian monetary system: Mansfield Commission (1866); Herschell Committee (1892-1893); Fowler Committee (1898-1899); Chamberlain Commission (1913-1914); Babington Smith Committee (1919-1920); Hilton Young Commission (1925-1926); Central Banking Enquiry Committee (1931). Their reports are available via Google Books or the Reserve Bank of India Digital Library, [Retrieved from].

In summary, the Paper Currency Department was definitely not a currency board from 26 June 1893 to January 1898, when the exchange rate of the rupee floated, and from 16 December 1916 through 31 March 1927, during which time there was first de facto exchange rate control with the pound sterling and then a fluctuating exchange rate. We now examine whether the Paper Currency Department operated like a currency board during the remaining periods.

The data and our tests

We (mainly Weintraub) transcribed monthly balance sheet data on the Paper Currency Department for the whole of its existence, as well as some weekly and annual data. The main source was the Gazette of India or, where it was missing, the annual Report upon the Operations of the Paper Currency Department. We also used other sources, listed in the references.

We performed tests on the balance sheet items of the Paper Currency Department as well as a test involving trade data. We followed certain conventions regarding exchange rates. During the period from 28 August 1917 to 31 March 1927 when the rupee's exchange rate with sterling fluctuated, the Paper Currency Department only changed infrequently the rate it used for converting sterling values into rupees. On 1 October 1920 it devalued sterling assets from 16 pence per rupee to 24 pence per rupee, following the market rate. It revalued them to 18 pence per rupee, the new official rate, on 1 April 1927 (Paper Currency Department annual report, 31 March 1921: 26; 31 March 1928: 14). We used the rupee equivalents that the Paper Currency Department published in its balance sheets rather than estimating different ones using market exchange rates. As for trade data, in the early years our ultimate source, the Statistical Abstract and Review of British India, only gives data in sterling. We used the rupee values in the Historical Financial Statistics data set, which converts sterling values to rupees according to official conventions of the time. Using more accurate market rates would make little difference.

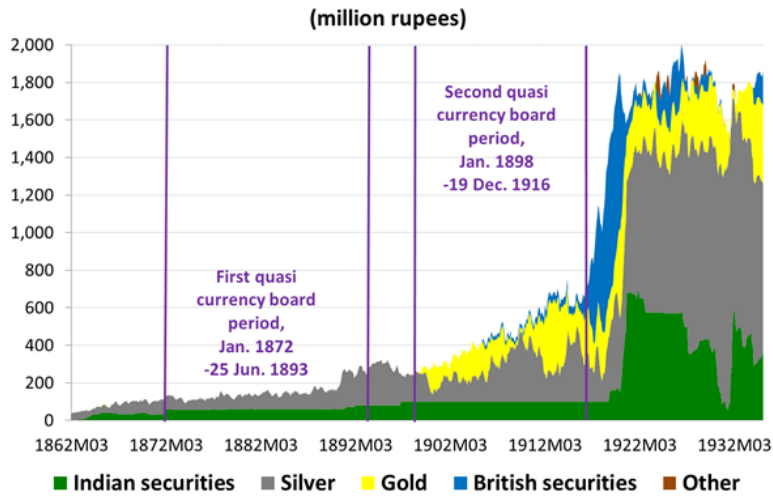
Balance sheets of the Paper Currency Department show two measures of notes in circulation. The first (gross) measure included notes taken out of circulation by foreign circles, while the second (net) measure excluded this data. (The "circles" or territories of issuance, which we mentioned earlier, were somewhat like the current division of the United States into district Federal Reserve bank regions.) The net measure is what the original balance sheets used as comprising note liabilities and was therefore used exclusively throughout this study. The mean difference between the gross and net measures was less

than 1 percent during all years for which both data series were reported.

Until 1866 the Indian financial year ended on 30 April. After that it ended, as it still does today, on 31 March, so "1872" refers to the period 1 April 1871 to 31 March 1872. Until January 1866, the note issuing circles did not necessarily report their data for the same date. In one instance, for 30 April 1922, end of month data were not readily available, so we used data from 22 April as a proxy.

Test # 1: Domestic Assets, Foreign Assets, and the Monetary Base

Unlike an orthodox currency board, the Paper Currency Department held significant portions of its assets in Indian government securities, as Figure 1 shows. From 1920 onward it was permitted to hold Indian bills of exchange, which it only ever did in small amounts.



Main sources: Gazette of India; Paper Currency Department annual reports; calculations.

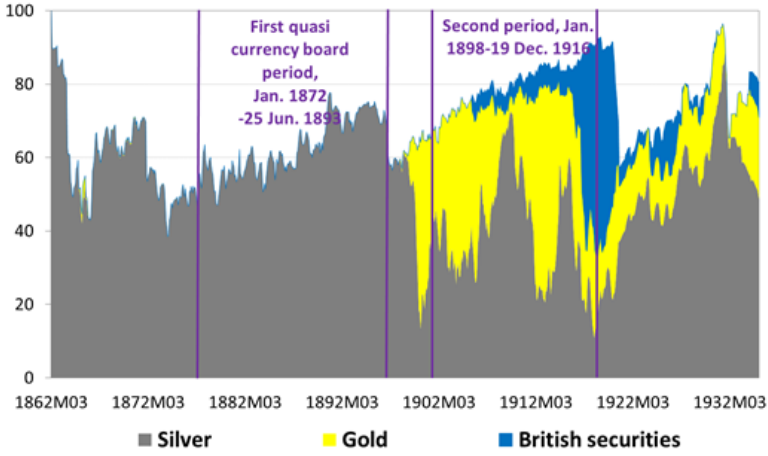
Figure 1. *Assets of paper currency department*

The inset to Figure 1, which has an enlarged vertical axis for easier viewing, makes it more apparent that until December 1871 the Paper Currency Department often varied its holdings

of Indian government securities, suggesting that monetary policy was discretionary during the period, contrary to currency board principles. From January 1872 to November 1918, government securities increased in steps when permitted by law then remained at or very near to the legal maximum, suggesting that during the period the Paper Currency Department acted in a highly rule-like manner. From December 1918 onward holdings of Indian government securities vary greatly.

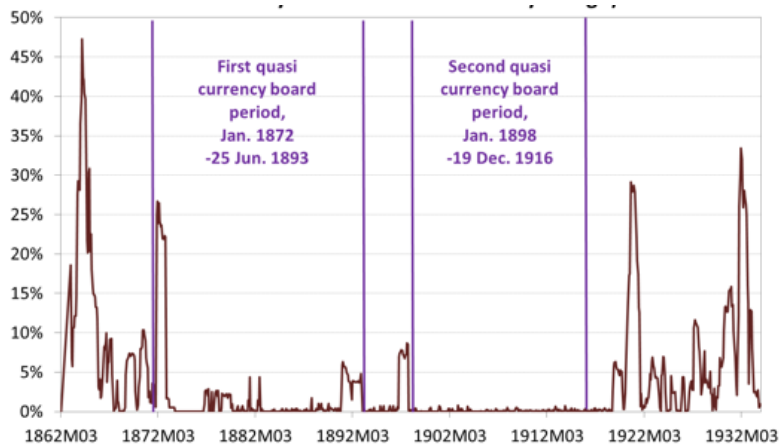
Another way of looking at the balance sheet is to measure net foreign assets as a share of the monetary base, as Figure 2, on the next page, does. (By definition, net foreign assets + net domestic assets = monetary base.) An orthodox currency board has net foreign assets equal to 100 percent of the monetary base, or under some currency boards up to 15 percent more. The Paper Currency Department's net foreign assets ranged from approximately 40 to nearly 100 percent of the monetary base. The big declines represent periods when the Paper Currency Department increased its holdings of Indian government securities after the law increased the ceiling on such holdings.

Figure 3 gives an idea of how big the absolute changes in net domestic assets were by comparing them to total liabilities (equal in this case to net note circulation) a year earlier. The graph likewise brings out the contrast between the volatility of the early and late years and the placidity of middle years of the Paper Currency Department.



Main sources: Gazette of India; Paper Currency Department annual reports; calculations.

Figure 2. *Net foreign assets (% of monetary base; currency board orthodexy = 100% or a bit more)*



Main sources: Gazette of India; Paper Currency Department annual reports; calculations.

Figure 3. *Dynamic monetary composition (Year-over-year change in absolute value of net domestic assets divided by notes in circulation one year ago)*

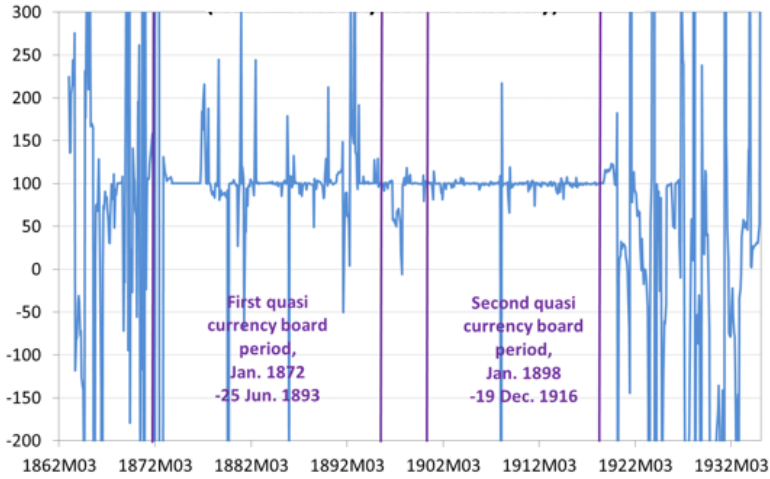
Test # 2: Reserve Pass-Through

The historical facts and the data so far suggest that the Paper Currency Department may have been a quasi currency board for the periods January 1872 to 25 June 1893 and January 1898 to

19 December 1916, but not for other periods of its existence. Now we proceed to the most important single test, "reserve pass-through," which measures year over-year change in the monetary base divided by year-over-year change in net foreign reserves. Measuring on a year-over-year basis tends to eliminate any seasonal effects and diminish the importance of one-time events such as extraordinary distributions or retentions of profit. (We also ran month-over-month calculations, which are available in the accompanying spreadsheet workbook.) For an orthodox currency board, reserve pass-through should typically be "close" to 100 percent—in practice, within the 80-100 percent range.

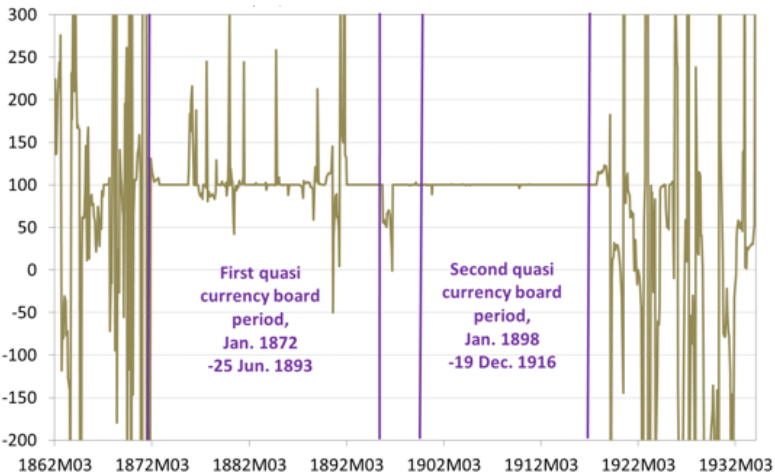
The data for reserve pass-through tell a similar story to that of the previous graphs. Reserve pass-through was highly volatile before January 1872 and again during the final 15 years of the Paper Currency Department. During those periods it fluctuated wildly, with many values far off the graph. In between, though, spikes were the result of the transitory effects of increases in the ceiling for Indian securities or temporary adjustment items in the monthly balance sheets. From the return to a fixed exchange rate in January 1898 until the Indian government introduced what we have characterized as de facto exchange control on 20 December 1916, the deviations were smaller than in the previous fixed exchange rate period. Throughout, there was a clear tendency for reserve pass-through to return to 100 percent as the homing point.

To see the effect of temporary adjustment items on reserve pass-through, Figure 4 shows calculations of reserve pass-through including the adjustment items while Figure 5 is "filtered" to exclude them. To make the balance sheet balance in Figure 5, we remove an amount equal to the adjustment items from the net note circulation on the liability side as well as from domestic assets, where we have included it on the asset side. Without the adjustment items, the contrast between the fluctuations of the early and late years of the Paper Currency Department and the much smaller fluctuations of the middle period becomes even more evident.



Main sources: Gazette of India; Paper Currency Department annual reports; calculations.

Figure 4. *Year-over-year reserve pass-throught (%) (100%=currency board orthodoxy)*



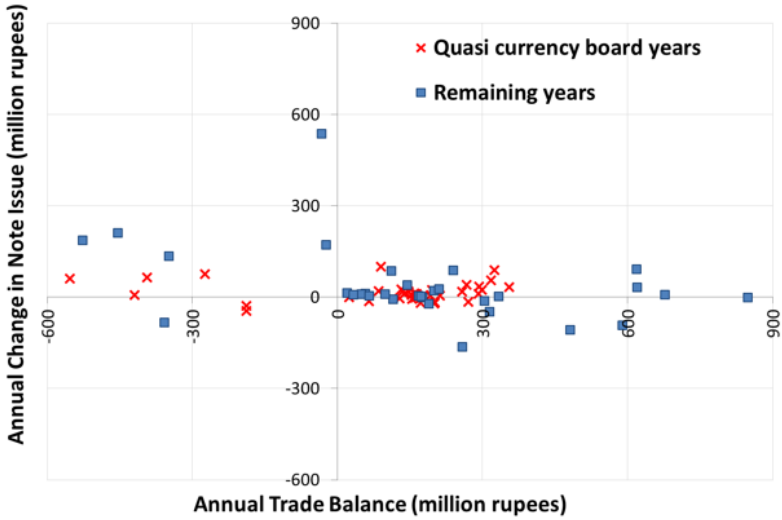
Main sources: Gazette of India; Paper Currency Department annual reports; calculations.

Figure 5. *Year-over-year reserve pass-throught, "filtered" (%; 100%=currency board orthodoxy)*

Test #3: Balance of Trade

A frequent criticism of currency boards is that they tie changes in the monetary base too closely to the balance of

payments. Although the criticism does not directly bear on whether the Paper Currency Department operated like a currency board, we examined the subject because other essays in this working paper series will cover it for some other currency board countries. Reliable data covering the whole period of the Paper Currency Department's existence are lacking for key elements of the balance of payments, and circulation of coins can only be roughly estimated because it was common to melt down silver rupees for nonmonetary use. Rather than comparing changes in the monetary base to changes in the current account balance, as we would like to be able to do, we only have continuous, reliable data to compare changes in note circulation to the trade balance. Scatter diagrams show that annual changes in the note issue have no strong relationship to India's annual trade balance, whether considering just the period when the Paper Currency Department operated like a currency board or the whole of its existence. Regression lines (not shown because they would make the graph too busy) are nearly flat, whether drawn for only the quasi currency board years, remaining years, or all years. The accompanying spreadsheet workbook also shows a similar looking graph using estimates of the current account balance up to 1898 that Banerji (1982: 168-169) made. The current account balance was negative almost every year, yet in what we have termed the first quasi currency board period, from January 1872 to 25 June 1893, the note issue doubled and the estimated supply of coins expanded by about one-third (see workbook and Brahmanandra 2001: 643).



Main sources: Gazette of India (note issue); *Statistical Abstract and Review of British India* (trade); calculations.

Figure 6. *Change is note issue vs. Trade balance*

Conclusion

The Paper Currency Department existed from 1 March 1862 to 31 March 1935. During that time it seems to have operated as a quasi currency board during two periods: from January 1872 to 25 June 1893 and from January 1898 to 19 December 1916. During its early years, March 1862 to December 1872, the Paper Currency Department did not operate as a currency board because it varied its holdings of Indian government securities in such a manner as to suggest discretionary monetary policy. Near the middle of its existence, from 26 June 1893 to early January 1898, the Paper Currency Department was not a currency board because the exchange rate floated rather than being fixed as the definition of a currency board requires. And from 20 December 1916 de facto limits on convertibility into sterling and later a fluctuating exchange rate and frequent variations in domestic assets meant that the Paper Currency Department was not a currency board because other it failed to meet elements of the definition of a currency board.

During its two currency board periods, the Paper Currency Department was a quasi currency board rather than an

orthodox board because unlike an orthodox board it held considerable domestic assets, in the form of Indian government securities. During those periods, though, the Paper Currency Department did not vary its holdings of Indian securities for monetary policy purposes, but instead passively held the maximum allowable by law and let the monetary action on the margin be determined in the foreign exchange market, as a currency board does. Paper currency was a smaller portion of the monetary base than coins, but coins in the first period were mainly "full-bodied" and supplied in a nondiscretionary manner. In the second period, silver coins became "fiduciary"—worth less as metal than their face value—but the Indian Mint supplied coins simply to meet the perceived needs of trade, and the Indian government established a fund to provide for the redemption of silver coins in gold or sterling in the event that the supply of silver coins exceeded market demand. The supply of coinage was hence sufficiently nondiscretionary that it seems accurate to describe the Indian monetary system overall, and not just the Paper Currency Department, as a quasi currency board. India thus becomes the third documented historical case of a currency board, after Mauritius (whose board began in 1849) and New Zealand (1850). As far as we know, though, cross-pollination of ideas and policies was weak between India and currency boards in other British colonies with strong trade links to India such as Ceylon (whose board began in 1885), the Straits Settlements (1899), and East Africa (1920).

We relied entirely on published writings and statistics to analyze the extent to which the Paper Currency Department operated as a quasi currency board. Archival research might reveal more about the reasons underlying its behavior during different periods. Another direction for further research would be to analyze other high-frequency statistics related to India's monetary system and economy of the period to examine how well the Paper Currency Department served the Indian economy as one component of the Indian monetary system of the time. Doing so would first require digitizing the underlying statistics. We leave those tasks to others.

As far as fulfilling its main tasks of issuing a uniform note currency and ensuring exchange rate stability first with silver and then with the pound sterling, the Paper Currency Department performed adequately. At its beginning in 1862, the exchange rate was approximately 24 pence (10 rupees per pound sterling) and the rupee was anchored to silver; at its end in 1935, the rate was 18 pence (13-1/3 rupees per pound) and the rupee was anchored to sterling. A tension did exist between silver and sterling that could not be fully resolved as long as rupee coins—which were outside the jurisdiction of the Paper Currency Department—contained so much silver that their value as metal might exceed their face value. The issue arose again during World War II, when the Indian government reduced rupees from eleven-twelfths silver to one-half silver starting in 1939.

Postscript: Companion spreadsheet workbook and source documents

The companion spreadsheet workbook to this paper contains the underlying data, calculations, and the original versions of the graphs. The workbook also contains some data not used in the paper, notably annual data of the income and expenditures of the Paper Currency Department and weekly balance sheet data for the financial year ending 31 March 1869. After that one year, the Gazette of India does not seem to have weekly (or more precisely, four times a month) balance sheets for the Paper Currency Department until October 1897, when they began to run continuously to 1935 (Paper Currency Department annual report, 31 March 1899: 9). We did not transcribe the weekly balance sheets from 1897 onward because it would have been a considerable additional labor and because there would have been many weeks where we were missing the Gazette of India. Especially during crisis periods, weekly data may offer insights additional to those of the monthly data.

The Web site of the Institute for Applied Economics, Global Health, and Study of Business Enterprise will be posting the main source documents we used: the Paper Currency Department's balance sheets printed in the Gazette of India,

Part I—including weekly balance sheets we did not transcribe—and its annual reports. Copyright on the main source documents has expired. The annual reports also contain much other information that will be useful to researchers.

Appendix

Appendix A. Summary Legislative History of Indian Currency, 1861-1935 (acts relating to the Paper Currency Department and selected other measures)

1861 An Act to Provide for a Government Paper Currency, Act 19, assented 16 July

Established a government monopoly of paper currency issue; set a ceiling of 40 million rupees on holdings of Indian government securities

1861 An Act to Enable the Banks of Bengal, Madras and Bombay to Enter into Arrangements with the Government, for Managing the Issue, Payment and Exchange of Government Currency Notes and Certain Business Hitherto Transacted by the Government Treasuries, Act 24, assented 31 August

This law was a kind of compensation to the banks involved for the loss of their note issues

1862 An Act to Provide for the Payment at the Banks of Bengal, Madras, and Bombay, Respectively, of Moneys Payable at the General Treasuries of Calcutta, Madras, and Bombay, Act 5, assented 28 February

Like Act 24 of 1861, a kind of compensation to the banks for the loss of their note issues

1862 An Act to Provide for a New Silver and a New Copper Coinage, Act 13, assented 23 April

Nothing in this act affected the silver standard or the workings of the paper currency

1864 Notification of 23 November

Provided for British gold sovereigns (£1) and half-sovereigns to be accepted at 1 sovereign = 10 rupees in payments to the government

1866 An Act to Amend Act No. 19 of 1861, Act 1, assented 5 January

Specified the interval for obtaining notes after depositing foreign silver coins or bullion

1867 An Act to Amend Act No. 19 of 1861, Act 30, assented 19 June

Allowed government to transfer towns where notes are issued to another circle of issue

1868 Notification of 28 October

Changed the rate at which the government would accept gold sovereigns to 10.25 rupees

1870 Indian Coinage Act, Act 23, assented 6 September

Consolidated legislation, dating back to the early 1800s, relating to coinage

1871 Indian Paper Currency Act, Act 3 , assented 20 January

Consolidated legislation; reduced minimum denomination of notes to 5 rupees; raised ceiling on Indian securities to 60 million rupees

1871 Commerce and Finance Department, Notification No. 3565, issued 16 September

Announced intention to raise holdings of Indian securities to 60 million rupees

1876 Native Coinage Act, Act 9

Coins issued by native states could be legal tender upon certain conditions

1882 Indian Paper Currency Act, Act 20, assented 26 October

Consolidated legislation; established a new circle of issue centered in Rangoon; reduced minimum note denomination to 5 rupees

1890 An Act to Amend the Indian Paper Currency Act, 1882, Act 15, assented 29 August

Raised ceiling on Indian securities to 80 million rupees

1890 Commerce and Finance Department, Notification No. 5900, issued 19 December

Announced intention to raise holdings of Indian securities to 70 million rupees

1891 Commerce and Finance Department, Notification No. 4861, issued 3 December

Announced intention to raise holdings of Indian securities to 80 million rupees

1893 Indian Coinage and Paper Currency Act, Act 8, assented 26 June

Closed the mints to coinage of silver on demand, thereby abandoning the silver standard

1893 Commerce and Finance Department, Notifications No. 2662-2664, 26 June

Arranged for the Mint to receive gold at 7.53344 troy grains of fine gold or 16 pence per rupee; allowed British gold sovereigns (£1 coins) and half-sovereigns to be used in payments to the government at 16 pence per rupee; and arranged for currency notes to be issued for payment of British gold sovereigns or half-sovereigns

1896 Indian Currency Act Amendment Act, Act 21, assented 17 December

Raised ceiling on Indian securities to 100 million rupees

1896 Commerce and Finance Department, Notification No. 5366, 18 December

Announced intention to raise holdings of Indian securities to 100 million rupees

1897 Commerce and Finance Department, Notification of 11 September

Announced that government would accept British gold coins at 1 sovereign (£1) = 15 rupees

1898 Indian Paper Currency Act, Act 2, assented 21 January

Allowed government to issue currency notes against gold held abroad (in practice, London) for six months at such rates as it might set; the resulting reserve was separate from other Indian Treasury accounts

1898 Commerce and Finance Department, Notification of 21 January

Announced that the government would issue notes at 1 rupee = 7.53344 troy grains fine gold and offer exchange on India in London at rates not exceeding 16-5/32 pence per rupee

1898 Indian Paper Currency Act Amendment Act, Act 8, assented 15 July

Extended the period set by Act 2 of 1898 a further two years

1899 Indian Coinage and Paper Currency Act, Act 22, assented 15 September

Made British gold coins legal tender at 1 sovereign (£1) = 15 rupees

1900 Indian Paper Currency Act, Act 8, assented 29 June

Allowed the Indian government to issue notes for gold at 1 sovereign (£1) = 15 rupees for two years, if the British government consented

1902 Indian Paper Currency Act, Act , 9, assented 27 June

Removed two-year time limit of Act 8 of 1898

1903 Indian Paper Currency (Amendment) Act, Act 6, assented 13 March

Made 5-rupee notes legal tender even outside their circles of issue except in Burma

1905 Indian Paper Currency Act, Act 3, assented 22 March

Consolidated legislation; raised ceiling for securities raised to 120 million rupees, of which up to 20 million could be British government securities; allowed gold and silver in transit to Britain to count as part of reserves; required publication of balance sheet four times a month

1906 Indian Coinage Act, Act 3, assented 2 March

Consolidated legislation, including provisions of Act 8 of 1893 and Act 22 of 1899 relating to coins

1909 Indian Paper Currency (Amendment) Act, Act 2, assented 5 February

Made all 5-rupee notes, wherever issued, legal tender throughout British India

1910 Indian Paper Currency Act, Act 2, assented 18 February

Consolidated legislation; provided for "universal currency notes" of 5-50 rupees that were legal tender throughout British India

1911 Indian Paper Currency (Amendment) Act, Act 7, assented 6 March

Raised ceiling for securities to 140 million rupees, of which up to 40 million could be British government securities

1914 Repealing and Amendment Act, Act 10, assented 17 March

Schedule 2 repealed part of a section of Act 2 of 1910; the change was minor

1914 Notification? of 5 August (Paper Currency Department annual report, 31 March 1915: 13)

Government ceased selling gold to private persons soon after World War I began

1915 Indian Paper Currency (Amendment) Ordinance, No. 1, published 16 January

Raised ceiling for securities to 200 million rupees (as before, up to 40 million could be British government securities)

1915 Indian Paper Currency (Temporary Amendment) Act, Act 5, assented 22 March

Confirmed ceiling for securities at 200 million rupees (as before, up to 40 million could be British government securities) until six months after the end of World War I; repealed Ordinance No. 1 of 1915

1916 Indian Paper Currency (Amendment) Ordinance, No. 1, published 11 January

Raised ceiling for holdings of British government securities to 100 million rupees

1916 Indian Paper Currency (Temporary Amendment) Act, Act 9, assented 21 March

Confirmed ceiling for holdings of British government securities at 100 million rupees; government could also issue up to 60 million additional rupees of notes against British Treasury bills; act to be in force until six months after the end of World War I; repealed Ordinance No. 1 of 1916

1916 Indian Paper Currency (Further Amendment) Ordinance, No. 6, published 11 November

Raised ceiling on notes issued against British Treasury bills to 180 million rupees

1916 Second Indian Paper Currency (Further Amendment) Ordinance, No. 7, published 14 December

Raised ceiling on notes issued against British Treasury bills to 300 million rupees

1917 Indian Paper Currency (Temporary Amendment) Act, Act 11, assented 21 March

Confirmed recent temporary amendments to be in force until six months after the end of World War I: a ceiling of 200 million rupees for total securities (including up to 100 million rupees of British government securities), and a separate ceiling of 300 million rupees for notes issued against British Treasury bills; repealed Act 5 of 1915, Act 9 of 1916,and Ordinance No. 7 of 1916

1917 Indian Paper Currency (Amendment) Ordinance, No. 2, published 18 April

Raised ceiling for notes issued against British Treasury bills to 420 million rupees

1917 Gold (Import) Ordinance, No. 3, published 29 June

Allowed government to take possession of all gold imported into India at 15 rupees per British gold sovereign, or 1 rupee per 7.53344 troy grains of fine gold

1917 Notification No. 1469-F, 29 June

Prohibited imports of gold except under license

1917 Silver (Import) Ordinance, No. 4, published 11 July

Allowed government to take possession of all silver imported into India at 5 percent below the London Silver Market rate for that day

1917 Notification No. 1571-F, 11 July

Prohibited imports of silver bullion and coins except under license; this or another notification of the same date prohibited using silver and gold coins for any purpose other than as currency

1917 Notification of 3 September (cited in Paper Currency Department annual report, 31 March 1918: 5)

Prohibited exportation of all silver coin and bullion; this notification or another around the same time also restricted the transport of silver by rail and boat

1917 Indian Paper Currency (Amendment) Act, Act 19, assented 19 September

Reduced minimum denomination of notes to 1 rupee; confirmed ceiling

for notes issued against British Treasury bills of 420 million rupees; allowed government to count gold and silver held in other British dominions as part of reserve until six months after the end of World War I; repealed Ordinance No. 2 of 1917

1917 Gold (Import) Act, Act 22, assented 27 September

Allowed government to take possession of all gold imported into India at such rates as it might prescribe; repealed Ordinance No. 3 of 1917

1918 Indian Coinage (Amendment) Act, Act 4, assented 6 March

Replaced silver with nickel in 2-anna (1/8 rupee) coins

1918 Indian Paper Currency (Amendment) Act, Act 6, assented 12 March

Raised ceiling for notes issued against British Treasury bills to 660 million rupees

1918 Indian Paper Currency Ordinance, No. 1, published 15 April

Allowed silver held in or in transit from the United States to count as part of the silver reserve

1918 Gold Coinage Ordinance, No. 2, published 14 June

Provided for coinage of gold mohurs (15 rupees), 123.27447 troy grains, 11/12 fine gold (equal to the British gold sovereign)

1918 Notification? of 24? August (U.S. Mint annual report, 30 June 1919: 244)

Forbade dealing in current coins at a premium to their face value

1918 Indian Paper Currency Act, Act 13, assented 12 September

Allowed silver held in or in transit from the United States to count as part of the silver reserve until six months after the end of World War I; repealed Ordinance No. 1 of 1918

1918 Gold Coinage Act, Act 14, assented 12 September

Provided for coinage of gold mohurs (15 rupees), 123.27447 troy grains, 11/12 fine gold (equal to the British gold sovereign); repealed Ordinance No. 2 of 1918

1918 Bronze Coin (Legal Tender) Act, Act 22, assented 22 September

Permitted the government to make bronze coins coined outside of India legal tender

1918 Indian Paper Currency (Amendment) Ordinance, No. 3, published 7 December

Raised ceiling for notes issued against British Treasury bills to 800 million rupees

1919 Indian Paper Currency (Amendment) Act, Act 2, assented 12 March

Confirmed ceiling for securities issued against British Treasury bills of 800 million rupees; repealed Act 6 of 1918 and Ordinance No. 3 of 1918

1919 Secretary of State for India, announcement? of 12 August 1919 (U.S. Mint annual report, 30 June 1920: 248)

Authorized the Canadian Mint in Ottawa to issue telegraphic transfers on India without limit at 1 rupee = 10.3585 fine troy grains gold

1919 Notification? of 15 September (Royal Commission on Indian Currency and Finance 1926, v. 2: 16)

Removed restrictions on the export of silver and apparently relaxed restrictions on international trade in gold

1919 Notification? Of 19 September (Paper Currency Department annual report, 31 March 1920: 9)

Removed wartime restrictions limiting who could buy Council Drafts and Reverse Councils; cancelled the rates at which banks were required to conduct foreign exchange with the public

1919 Indian Coinage (Amendment) Act, Act 21, assented 24 September

Replaced silver with nickel in 8- and 4-anna (½ rupee and ¼ rupee) coins

1919 Indian Paper Currency (Further Amendment) Act, Act 26, assented 24 September

Raised ceiling for securities issued against British Treasury bills to 1,000 million rupees; allowed gold held in or in transit from the United States to count as part of the gold reserve until six months after the end of World War I

1920 Notification(s)? of February (Paper Currency Department annual report, 31 March 1920: 8; Royal Commission on Indian Currency and Finance 1926: 16)

Removed prohibition on importing silver (exports were still prohibited); this or another notification in February also removed notifications under the Defense of India Act prohibiting the use of gold and silver coin other than as currency or dealing in them at a premium to face value; the effect of removing these restrictions and of the rate at which the government offered exchange on London was to place India on a gold standard at 11.30016 troy grains fine gold per rupee (versus 7.53344 grains in 1914)

1920 Indian Paper Currency (Temporary Amendment) Act, Act 21, assented 23 March

Consolidated recent temporary legislation; created a ceiling on total holdings of securities of 1,200 million rupees and eliminated subceilings on Indian government securities, British government securities, and

British Treasury bills, until 1 October 1920; repealed Act 11 of 1917, part of Act 19 of 1917, Act 13 of 1918, and Act 26 of 1919

1920 Notification? of 18 June (Paper Currency Department annual report, 31 March 1921: 19)

Removed restriction on the transit of silver by rail and boat in India

1920 Gold Ordinance, No. 3, published 21 June

Eliminated gold coins as legal tender; they could be exchanged for notes for 21 days at 1 British gold sovereign = 15 rupees

1920 Notification? of 25 June (Paper Currency Department annual report, 31 March 1921: 19)

Removed partial restrictions on the use of silver in payments by the government

1920 Notification? of 10 July (Paper Currency Department annual report, 31 March 1921: 16)

Removed restrictions on importing British gold coins

1920 Indian Coinage (Amendment) Act, Act 36, assented 9 September

Altered exchange rate of gold coins to 1 British sovereign = 10 rupees (versus 15 rupees previously); repealed Ordinance No. 3 of 1920

1920 Indian Paper Currency (Amendment) Act, Act 45, assented 17 September, effective 1 October

Changed name of department to Currency Department; established Paper Currency Reserve; established exchange rate of 11.30016 troy grains fine gold per rupee (versus 7.53344 grains in 1914; the new rate was equal to 10 rupees = 1 gold sovereign, but Britain was not yet back on the gold standard); government could abandon 100 percent marginal foreign reserves for a minimum 50 percent metallic reserve, and a maximum holding of 200 million rupees of Indian government securities, on a date to be set by the Governor General; but in the meantime the ceiling on securities was 850 million rupees, with no subceilings, plus a separate ceiling of up to 50 million rupees more against bills of exchange

1920 Imperial Bank of India Act, Act 47, assented 19 September 1920

Established the Imperial Bank of India

1922 Notification of 16 February (Royal Commission on Indian Currency and Finance 1926, v. 2: 19)

Detailed provisions for issuing notes against bills of exchange

1922 Indian Finance Act, Act 12, assented 27 March

Postponed date for starting to use interest received to reduce holdings of "created" Indian government securities until they did not exceed 120 million rupees (first of a series of postponements, such that the provision postponed never came into effect)

1923 Indian Paper Currency Act, Act 10, assented 5 March

Consolidated legislation; extended actual and potential issue of universal currency notes to denominations above 50 rupees; reiterated Act 45 of 1920 on reserves and ceilings

1923 Indian Finance Act, no number, made by the Governor General 29 March

Postponed date for starting to use interest received to reduce holdings of "created" Indian government securities until they did not exceed 120 million rupees

1923 Indian Paper Currency (Amendment) Act, Act 36, assented 3 August

Raised ceiling on notes against bills of exchange to 120 million rupees

1924 Indian Coinage (Amendment) Act, Act 10, assented 26 March

Allowed government to remove legal tender quality from certain coins

1924 Indian Finance Act, no number, made by Governor General 26 March

Postponed date for starting to use interest received to reduce holdings of "created" Indian government securities until they did not exceed 120 million rupees

1925 Indian Paper Currency (Amendment) Act, Act 2, assented 11 February

Raised ceiling on securities to 1,000 million rupees; established a ceiling of 500 million rupees for "created" Indian government securities

1925 Indian Finance Act, Act 13, assented 25 March

Postponed date for starting to use interest received to reduce holdings of "created" Indian government securities until they did not exceed 120 million rupees

1926 Indian Finance Act, Act 19, assented 25 March

Postponed date for starting to use interest received to reduce holdings of "created" Indian government securities until they did not exceed 120 million rupees

1927 Currency Act, Act 4, assented 26 March, effective 1 April

Provided that gold coins were not legal tender but that the government had to accept them at 8.47512 troy grains of fine gold per rupee (equivalent to 18 sterling pence per rupee); required the Indian Mint to accept gold freely for coinage, or, at the option of the top officials of the Currency Department, sterling in London at an equivalent rate in amounts of 1,065

tolas and up (1 tola = 180 troy grains) at 21 rupees, 3 annas, 10 pies (almost 21.24 rupees) per tola of fine gold

1927 Indian Finance Act, Act 5, assented 30 March

Postponed date for starting to use interest received to reduce holdings of "created" Indian government securities until they did not exceed 120 million rupees

1927 Repealing Act, Act 12, assented 8 September

Repealed Act 36 of 1920 and certain provisions of other acts

1928 Indian Finance Act, Act 5, assented 27 March

Postponed date for starting to use interest received to reduce holdings of "created" Indian government securities until they did not exceed 120 million rupees

1929 Indian Finance Act, Act 6, assented 30 March

Postponed date for starting to use interest received to reduce holdings of "created" Indian government securities until they did not exceed 120 million rupees

1930 Repealing and Amending Act, Act 8, assented 16 March

Repealed Act 5 of 1928 and sections of some previous Finance Acts

1930 Indian Finance Act, Act 15, assented 28 March

Postponed date for starting to use interest received to reduce holdings of "created" Indian government securities until they did not exceed 120 million rupees

1930 Silver (Excise Duty) Act, Act 18, assented 4 April

Imposed a duty of 4 annas (0.25 rupee) per ounce of silver produced in or imported into India.

1931 Indian Finance Act, no number, made by Governor General 30 March

Postponed date for starting to use interest received to reduce holdings of "created" Indian government securities until they did not exceed 120 million rupees; raised silver duty to 6 annas (0.375 rupee) per ounce, effective 1 March 1931

1931 Currency Ordinance, No. 6, assented and published 21 September

Relieved government of the obligation to sell gold or silver for three days; marked the abandonment of the gold standard, following Britain

1931 Gold and Sterling Sales Regulation Ordinance, No. 7, assented and published 24 September

Repealed Ordinance No. 6 of 1931; restricted sales of gold and sterling

1931	Gold and Sterling Sales Regulation Rules, Notification No. D 6604-F, issued 24 September
	Restricted sales to banks to amounts of £25,000 and up
1931	Indian Finance (Supplementary and Extending) Act, no number, made by Governor General 28 November
	Postponed date for starting to use interest received to reduce holdings of "created" Indian government securities until they did not exceed 120 million rupees; raised silver duty to 7.5 annas (0.46875 rupee) per ounce
1932	Repealing Ordinance, No. 6, assented and published 30 January
	Repealed Ordinance No. 7 of 1931
1933	Indian Finance Act, Act 7, assented 31 March
	Postponed date for starting to use interest received to reduce holdings of "created" Indian government securities until they did not exceed 120 million rupees
1934	Reserve Bank of India Act, Act 2, assented 6 March
	Established Reserve Bank of India to replace Currency Department as of 1 April 1935
1934	Imperial Bank of India (amendment) Act, Act 3, assented 6 March 1934
	Made amendments in part to coordinate with the creation of the Reserve Bank of India
1934	Indian Finance Act, Act 9, assented 29 March
	Postponed date for starting to use interest received to reduce holdings of "created" Indian government securities until they did not exceed 120 million rupees; reduced duty on silver to 5 annas (0.3125 rupee) per ounce

Notes: Acts and ordinances had Roman numerals, which we have replaced with Arabic ones for simplicity. Numbers refer to the order in which acts or ordinances were issued within a calendar year. Occasionally the Paper Currency Act was republished incorporating all revisions, which the table notes by saying that an act "consolidated legislation." Ordinances were explicitly temporary enactments by the Governor General that would lapse unless confirmed in an act by the next session of the legislature. Notifications were announcements implementing acts or ordinances.
Sources: All of the acts, most of the ordinances, and some of the notifications are available online; see References. The list of acts and ordinances is complete, or nearly so; the list of notifications is not.

Appendix B. History of the Ceilings on Securities (amounts in millions of rupees)

Act or ordinance	Overall ceiling on holdings of securities	Subceilings on holdings of:				
		Indian government securities	British government securities	British Treasury Bills*	Bills of exchange	"Created" Indian government securities
Act 3 of 1871	60	60				
Act 15 of 1890	80	80				
Act 21 of 1896	100	100				
Act 3 of 1905	120	100	20			
Act 7 of 1911	140	100	40			
Ordinance 1 of 1915	200	200	40			
Act 5 of 1915	200	200	40			
Ordinance 1 of 1916	200	200	100			
Act 9 of 1916	260	200	100	60		
Ordinance 6 of 1916	380	200	100	180		
Ordinance 7 of 1916	500	200	100	300		
Act 11 of 1917	500	200	100	300		
Ordinance 2 of 1917	620	200	100	420		
Act 19 of 1917	620	200	100	420		
Act 6 of 1918	860	200	100	660		
Ordinance 3 of 1918	1,000	200	100	800		
Act 2 of 1919	1,000	200	100	800		
Act 26 of 1919	1,200	200	100	1,000		
Act 21 of 1920	1,200	1,200	1,200	1,200		
Act 45 of 1920**	900	850	850	850	50	
Act 10 of 1923	900	850	850	850	50	
Act 36 of 1923	970	850	850	850	120	
Act 2 of 1925	1,120	1,000	1,000	1,000	120	500

* The ceiling for British Treasury bills was additional to the ceiling for British government securities, which were understood to be longer-term securities.

**Act 45 of 1920 had permanent and temporary provisions about ceilings on securities. The permanent provisions (section 12 of the act) set a ceiling for securities of 50 percent of notes in circulation, of which no more than 200 million could be Indian government securities. As long as the Paper Currency Department held more than 120 million rupees of "created" (book-entry) securities sold directly to it rather than saleable on the open market, it had to retain the interest from all its securities to reduce the "created" securities outstanding rather than paying the profits to the government. Less important limitations from the perspective of this table provided that no more than 50 million rupees of gold and gold bullion held in London could be counted as part of the Currency Department's reserves (prodding it to hold the excess in India), and that besides Indian securities, only British securities with less than a year to maturity could be counted as part of reserves. The permanent provisions did not take effect until a declaration by the Governor General.

The temporary provisions (section 13 of the act) provided that until the permanent provisions took effect, the overall ceiling and subceilings shown here would be in effect. The Governor General apparently never brought the permanent provisions into effect.

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2 Prominent economists' views: China's exchange rate—Fixed or floating?

Ginny ***Yang***

Introduction

The "impossible trinity" (or "trilemma") of exchange rate policy states that having a fixed foreign exchange rate, freedom in domestic monetary policy, and free capital movement at the same time is impossible. As it applies to China, it means that the People's Bank of China (PBOC) cannot have the power to control interest rates and the exchange rate while allowing free capital flows. Governments can choose to forgo one of the three objectives to achieve the other two. As an example, consider the formula for uncovered interest parity.

$$i_{\$} = i_{€} + \frac{E^{e}_{\$/€} - E_{\$/€}}{E_{\$/€}}$$

When the exchange rate is rigid and expected to remain so, Ee = E, then i, the interest rate, cannot be determined freely.

The PBOC can choose to peg the dollar (USD) value of the renminbi (RMB), in which case the money supply adjusts as money is created or destroyed (perhaps with long lags resulting from sterilization) to match supply and demand in the market in which the RMB and USD are exchanged. The PBOC more or less did so from 1997 to 2005, pegging the RMB at 8.27 yuan per USD. In 1997, pegging to the USD not only brought stability to RMB, but facilitated the internationalization of China's trade. In 2005, China moved away from the pegged rate, thinking that doing so would eventually help it move to further financial liberalization in the future. The PBOC adopted a managed floating exchange rate based on money supply and demand with a basket of foreign currencies. "The daily U.S. dollar-RMB trading price on the interbank spot foreign exchange market floats within a 0.5 percent range around the middle trading price for U.S. dollars." Unlike most managed floats, China's saw the currency appreciate rather than depreciate. The appreciation helped to keep domestic inflation at a reasonable level. At the same time, it did not hurt exports, because China's productivity was increasing fast. The RMB appreciated to a maximum of 6.0395 per dollar in January 2014.

China has had capital controls administered by the PBOC continuously since the 1930s. The State Administration of Foreign Exchange (SAFE) functions as a bureau under the People's Republic of China, separate from the PBOC. Some of SAFE's major functions include to study policy suggestions on the reform of the foreign exchange administration system; to study and implement policy measures for the gradual advancement of the convertibility of the RMB under the capital account and the cultivation and development of the foreign exchange market; to provide suggestions and a foundation for the People's Bank of China to formulate policy on the RMB exchange rate; drafting relevant laws, regulations, and departmental rules on foreign exchange administration; and releasing standard documents related to the carrying out of these responsibilities. Beginning on January 4, 2016, the PBOC implemented two rules to accelerate the development and boost the opening up of the foreign exchange market. First, it extended the hours during which market management systems

apply and market makers can offer quotations. Second, "qualified overseas players approved to provide RMB purchases and sales services can access the interbank foreign exchange market, and participate through the trading system of the CFETS [China Foreign Exchange Trading System] in the trading of all listed trading categories allowed in the RMB purchase and sales business. Foreign players shall participate in the trading under RMB purchase and sales in the interbank foreign exchange market, in accordance with laws and regulations."

According to recent data, China's foreign reserves consist of 65 percent USD, 26 percent euro, 5 percent sterling, 3 percent Japanese yen, and 1 percent other currencies. The structure is similar to the global structure of official foreign currency holdings according to the IMF's Composition of Foreign Exchange Reserves (COFER) data.

Chinese official reserve assets from January to May 2016 were as follows (in 100 million yuan):

官方储备资产（2016.01-2016.05）

Official reserve assets

项目 Item	2016.01		2016.02		2016.03		2016.04		2016.05	
	亿美元100 million USD	亿SDR 100million SDR	亿美元 100million USD	亿SDR 100million SDR	亿美元100 million USD	亿SDR 100million SDR	亿美元100 million USD	亿SDR 100million SDR	亿美元100 million USD	亿SDR 100million SDR
1. 外汇储备 Foreign currency reserves	32308.93	23403.85	32023.21	23181.02	32125.79	22803.34	32196.68	22716.43	31917.36	22751.33
2. 基金组织储备头寸 IMF reserve position	37.60	27.24	107.25	77.64	107.24	76.12	106.51	75.15	104.22	74.29
3. 特别提款权 SDRs	102.73	74.42	102.80	74.42	104.85	74.42	105.48	74.42	104.41	74.43
4. 黄金 Gold	635.70	460.49	710.06	514.05	714.85	507.41	747.51	527.41	704.75	502.36
5. 其他储备资产 Other reserve assets	-2.05	-1.48	-3.30	-2.39	1.72	1.22	5.16	3.64	5.71	4.07
合计 Total	33082.92	23964.52	32940.02	23844.74	33054.45	23462.51	33161.35	23397.05	32836.43	23406.48

Figure 1. *RMB to USD exchange rate, 1994-July 2016*
Source: Bank for International Settlements

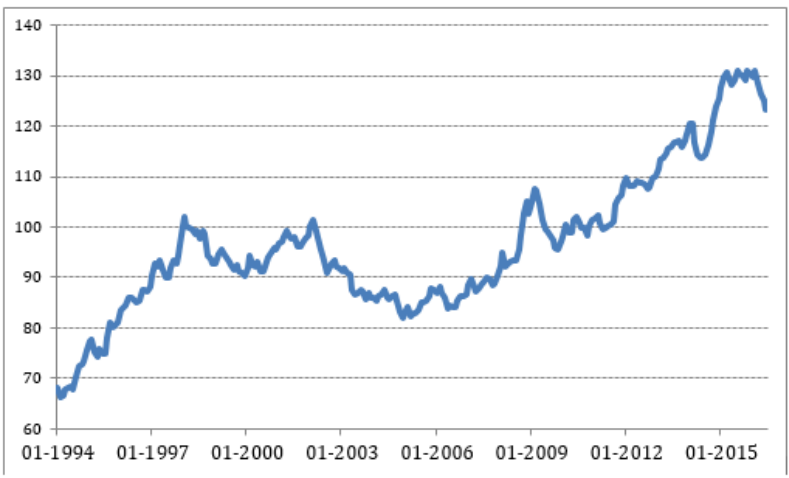

Figure 2. *Effective real exchange rate of RMB (2010 = 100)*

Fixed vs. pegged vs. floating exchange rate for China

As Professor Steve Hanke has written, the late Milton Friedman thought that there are three distinct types of exchange-rate regimes: floating, fixed, and pegged. Most economists think "fixed" and "pegged" are interchangeable terms for exchange rate. However, Friedman saw them as different concepts. Pegged rates systems occur when monetary policy aims for more than one goals at a time. Pegged rates are

disequilibrium systems, lacking an automatic response mechanism, which results in conflicts between monetary and exchange rate policies.

Type of regime	Central bank?	Exchange-rate policy?	Monetary policy?	Source of monetary base	Conflicts between exchange-rate and monetary policy?	Balance-of-payments crises?	Exchange controls?
Floating	Yes	No	Yes	Domestic	No	No	No
Fixed	No	Yes	No	Foreign	No	No	No
Pegged	Yes	Yes	Yes	Domestic and foreign	Yes	Yes	probably

Friedman advocated fixed exchange rates for many developing countries. He was skeptical about floating exchange rates for them because he thought that many developing countries' central banks lacked the ability to adopt a rule-based internal anchor.

China is the largest developing country. Since China's economy is heavily politicized, many proposals for reforming exchange rate policy are political instead of economic. Many proposals for reforming exchange rate policy are political instead of economic. Being a very large exporter, having huge foreign reserves, and having had its currency recently join the SDR basket differentiate China from other nations with pegged or fixed currency systems.

The process of selecting economists to consult about their views

In light of the considerations just mentioned, what do some leading economists who have expressed views on the subject think is an appropriate exchange rate policy for China, and why? I set out to choose a group of economists diverse both in ideas and place of residence, so as to gather varying perspectives on the subject.

Steve Hanke is at the Johns Hopkins University in Baltimore, Maryland, where I am a student. He is a professor of applied economics and co-director of the Institute for Applied Economics, Global Health, and the Study of Business

Enterprise. Professor Hanke is a well-known currency and commodity trader. He writes regularly for the Cato Institute, Forbes, ZeroHedge, and other sources. He also has a Twitter account with almost 50,000 followers that was ranked as one of the top "Twitter accounts stock-market investors need to follow in 2016." Given Professor Hanke's academic and professional background in applied economics, he is not only an expert in examining exchange rate systems and currency boards for developing countries, but also in the Asian economy.

At Professor Hanke's suggestion, I researched Hong Kong economists who have commented on the RMB. After reviewing Web sites and conferences, I found Francis Lui and Y.F. Luk. Because many mainland economists may face political consequences for talking about the PBOC and Chinese RMB policies, many of their comments are filtered and they may not speak as freely as Hong Kong economists. I chose Lui and Luk since both are principal professors of the University of Hong Kong, and have written published papers on the RMB exchange rate system.

I also searched the blog aggregator website EconAcademics.org, which is hosted by the Research Division of the Federal Reserve Bank of St. Louis. Using the search terms "RMB" or "China," I found Michael Pettis's blog, China Financial Markets. Pettis is a well-known Beijing-based economist theorist and financial strategist, whose focus area is Asian financial markets. He has worked on Wall Street, as a merchant banker, and as an equities trader. He is a professor at Peking University's Guanghua School of Management, and he is also an expert analyst, editor, and participant in the world financial system. He also has experience in U.S. universities, so his view is well-rounded, containing both global and Chinese perspective.

At EconAcademics.org, Steven Cecchetti and Kermit Schoenholtz's blog Money and Banking also triggered my interest. Cecchetti is a professor of international economics at Brandeis International Business School. He has worked as an economic advisor and as head of the Monetary and Economic Department at the Bank for International Settlements. He also served as a Director of Research at the Federal Reserve Bank of

New York. Kermit Schoenholtz is a professor of management practice in the department of economics at New York University's Stern School of Business. He has served on the Financial Research Advisory Committee of the U.S. Treasury's Office of Financial Research and was Citigroup's global chief economist from 1997 to 2005. Both Cecchetti and Schoenholtz have experience not only in academia and the U.S. government, but also in banking.

Searching through National Bureau of Economic Research (NBER) working papers, the leading working paper series in economics, I discovered Jeffrey Frankel's papers on the RMB. Frankel is a James W. Harpel Professor of Capital Formation and Growth at Harvard Kennedy School, and he also directs the Program in International Finance and Macroeconomics at the NBER. He is an expert in American and international economic policy, and has conducted research in the fields of international finance, currencies, monetary and fiscal policy, commodities, regional blocs, and global environmental issues. He has also served on the Council of Economic Advisers.

Through the NBER working papers, I also found Menzie Chinn, a professor of economics at the University of Wisconsin-Madison. He has been a visiting scholar at the International Monetary Fund, the Federal Reserve Board, and the European Central Bank. He is also an editor of the Journal of International Money and Finance and an associate editor of the Journal of Money, Credit and Banking, two of the leading specialist journals in monetary economics.

Through the NBER website I also found Brad Setser, until recently the deputy secretary for international economic analysis in the U.S. Treasury in between stints as a senior fellow at the Council of Foreign Relations. Setser also had an earlier period of working in the Treasury during the Clinton Administration. His blog Follow the Money is known for its attention to Chinese economic data, including foreign reserves, and to financial markets.

These economists seemed to be a sufficiently prominent and diverse group to study in the limited time I had for this paper. I consulted them and some others not listed here in mid 2016, and I thank every economist who responded to my questions

in the form of e-mails or verbal comments. All of your help and guidance is appreciated.

Examination of Each Economist's Opinion

For the economists listed above, I will examine their views on the following matters:

1. What are the next steps the PBOC will and should take, including about capital controls?
2. Will the PBOC depreciate the RMB, and if so, to what level?
3. What do you think the most appropriate exchange rate regime is for China in the short term? In the long term? How will the RMB's exchange rate affect the Chinese U.S. economies?
4. What is the impact of the growing internationalization of the RMB? (Many economists mentioned the effect of joining the SDR basket.)

Jeffrey Frankel (Harvard University, ex Council of Economic Advisers)

Frankel has written several working papers on the RMB exchange rate, including "On the Renminbi: The Choice between Adjustment under a Fixed Exchange Rate and Adjustment under a Flexible Rate" and "New Estimation of China's Exchange Rate Regime." In "On the Renminbi," he argued that China, unlike other countries, might not enjoy the freedom to choose the exchange rate regime that suits its circumstances. "Nevertheless, several arguments support the view that the de facto dollar peg may now have outlived its usefulness for China." One of the seven reasons Frankel listed was that "A large economy like China can achieve adjustment in the real exchange rate via flexibility in the nominal exchange rate more easily than via price flexibility." Considering China's size and its internal balance, there are pros and cons in choosing either a fixed (pegged) or a floating exchange rate system. Frankel thinks that the two advantages for a fixed system in China are: (1) A fixed exchange rate acts as the nominal anchor to prevent inflationary monetary policies and expectation thereof. (2) Fixing the exchanges rate with the U.S.

dollar can facilitate trade with other countries that use the dollar.

Frankel has also claimed that the first advantage can be substituted by other candidates for a nominal anchor such as "nominal GDP, the CPI, and an export price index."

Frankel thinks that especially a country as large as China, it is very important for the nominal exchange rate to play a role in external adjustment. The advantage of a flexible exchange rate include "the freedom to depreciate when the balance of payments is in deficit" and price level in the short run adjust partially to changes in the exchange rate.

To clarify Frankel's opinion on the advantages of a floating system, and his overall suggestion for China, I e-mailed him this question:

> In your 2005 paper, you analyzed the advantages of fixed and floating systems for China. More than ten years have passed, and the RMB has gained some strength and can stand on its own with the control of the PBOC; however, the real value of RMB is very complicated and not yet determined. Facing this unknown value of RMB and potential monetary instability, what do you think about substituting PBOC with a pegged system or fixed system to the USD? In other words, would a currency board work better for China than the current central bank system? What is your opinion?

He replied,

> My own view is no, not for China. In fact I think everyone would be better off if they had moved to a float five years ago (at a time when the balance of payments was strong).

He also recommended reading some of his recent writings on the RMB. In his 2015 article "Misinterpreting Chinese Intervention in Financial Markets," Frankel argued that Chinese authorities often intervene strongly in the financial market. "In the foreign exchange market, the People's Bank of China intervened heavily during the decade 2004-13, buying trillions of dollars in foreign exchange reserves and thus

preventing the yuan from appreciating as much as it would have if it had floated freely." The PBOC has allowed the RMB to fluctuate each day within a 2 percent band, but not to fluctuate much from one day to the next. Frankel points out that both Chinese political leaders and the PBOC are pushing the RMB toward depreciation. Frankel wrote, "peering within the country's decision-making process, it is likely that China's political leaders were primarily motivated by the desire to support the weakening economy while the People's Bank of China was primarily motivated by its longer-term reform objectives."

Frankel makes the point that "China is far from a free-floating currency, let alone from full convertibility of the yuan. Convertibility would require further liberalization of controls on financial inflows and outflows." Indeed, the Chinese government's intervention regarding the RMB exchange rate prevents the RMB from being a "freely floating" currency, and limits the ability of market forces to determine the exchange rate.

In another 2015 article, "Chinese Currency Manipulation Not a Problem," Frankel claims that the usual situation wherein China was trying to keep the foreign-exchange value lower by selling domestic currency and buying foreign currencies changed in 2014. "The overall balance of payments turned negative in the second half of the year, and the PBOC actually intervened to dampen the renminbi's depreciation."

Frankel's recommendation for the PBOC is to "start a new period of monetary stimulus." His reasoning is that "The upward pressure on the dollar relative to the RMB reflects the U.S. economy's relatively strong recovery, which has prompted the Federal Reserve to end a long period of monetary easing, and China's economic slowdown, which has prompted the PBOC to start a new period of monetary stimulus."

Steven Cecchetti (Brandeis University, ex BIS) and Kim Schoenholtz (New York University)

Cecchetti and Schoenholtz's blog Money and Banking covers a wide range of topics, from capital controls to bank runs.

It includes a recent post about the RMB, "China's Awkward Exchange Rate Regime," written in February 2016. Cecchetti and Schoenholtz argue that considering China's leading economic role in Asia, the RMB has become one of world's three largest currency blocs. They then describe three options for the RMB, not necessarily mutually exclusive.

1. Free floating: "Over the long run, China would almost certainly be better off with a floating currency that can help absorb the kinds of shocks that are driving its reserve levels sharply up or down." Cecchetti and Schoenholtz also argue "the most important reason to doubt an RMB float is the evident discomfort of China's policymakers with market volatility."
2. Role in a recapitalization: "if China does have to re-capitalize its banks, as many suspect, the most likely response is a government bailout that need not trigger monetary easing."
3. The internationalization of the RMB through joining the SDR basket added additional pressure from abroad to open China's capital account. "The third option is that policymakers could further tighten capital controls"

In conclusion, they predict, "China's current exchange rate regime is too awkward to operate for much longer without some modification. If foreign exchange reserves continue to plunge, the most likely path is a further tightening of controls, well before any large-scale devaluation or a currency float…Ultimately, China will have to choose between a truly rigid fixed exchange rate and a floating one in which the authorities lose control." They recommend that the PBOC further tighten controls before any large-scale devaluation or currency float.

I e-mailed Professor Cecchetti and Professor Schoenholtz the following question:

> In your blog, you discussed the difference between Singapore adopting the currency board and China adopting one. Why cannot China, as one of the world largest economies, adopt a currency board? What would be the cost and influence on China and US, and the rest of the world?

Cecchetti replied:

> In the post to which you refer, Kim Schoenholtz and I are not discussing the option of a currency board for either Singapore or China. We mention the fact that, because of its small size, Singapore has an option of choosing a managed exchange regime–which is not a currency board. In the long run, we believe that China is unlikely to have this option.

Following up, I asked:

> Would you mind expanding on why you think, "in the long run, China is unlikely to have this option"? Is it because of its large size or political reasons? What do you think the PBOC should do this year and in the future to boost growth?

Cecchetti responded:

> Yes, experience suggests that the size of an economy matters for the choice of exchange rate regime. As for Chinese monetary policy, we are not in a position to make provide advice beyond the well-known principles that guide our textbook on Money, Banking, and Financial Markets and our blog (www.moneyandbanking.com).

Cecchetti's blog post says that the two options in principle for China are to either truly fix the nominal exchange rate or lose control and let the market determine it. However, in his e-mail replies, he said because China is the world's second-largest economy, in practice the option of having a currency board, which would fix RMB to the dollar, is unlikely. The size of Singapore's economy suggests that it has an option to maintain its current exchange rate targeting monetary policy or to adopt a currency board, which it had for much of the 20th century. China does not have the currency board option, and perhaps in practice not even the exchange rate targeting option any more either. In his view, despite of the benefits of stabilizing the RMB-USD rate, the size of the Chinese economy suggests a free-floating exchange rate regime.

Brad Setser (Council on Foreign Relations, formerly U.S. Treasury Department)

Setser's blog Follow the Money focuses on the global economy, the U.S. current account deficit, China, central bank reserves, and the global flow of funds. In a 2009 article called "China's Difficult Choices," Setser says Beijing is caught between "two very different imperatives." He says one imperative is to maintain a stable exchange rate relative to the dollar, which has meant that China has followed the dollar both up and down over the past few years. At the same time, he notes China is concerned about the risk associated with holding so many dollars. "China has been buying dollars because it didn't want an undervalued exchange rate to support its exporters and that has a price," he says. "And I think the difficulty for China is...that China never really explained to its own population that buying dollars to keep your exchange rate down meant that you were going to lose money."

More than a decade ago, Setser wrote a "China Trip Report" with Nouriel Roubini of the Stern School of Business of New York University, a former colleague of Setser at the U.S. Treasury Department during the Clinton Administration. They spent two weeks in China, interviewing people and giving speeches. Near the end of the report, they claimed that many decisions were still controlled by Chinese government, not the market. "In many ways, China is still not a modern market economy: its current boom reflect the power of the markets, but it also stems, in part, from the power of distorted markets. China is no longer 'really' Communist. But it is not 'really' capitalist either -- lots of key prices remain out of line as a result of government action."

I e-mailed Setser the following questions:

> In your 2005 paper, "China Trip Report," you analyzed China's pegged system. More than ten years have passed. The RMB has gained some strength and can stand on its own with the control of PBOC; however, the real value of RMB is very complicated and not yet [market] determined. Facing this unknown value of RMB and potential

> monetary instability. What do you think about replacing the PBOC [in its current form] with a pegged system or fixed system to the USD?

He replied:

> You might want to look at my various papers on Argentina's crisis. I am not a fan of currency boards (I know Dr. Hanke thinks Argentina cheated and did not have a true currency board, but my view is a pure board would have been no better).
>
> Full convertibility for China via a currency board would not work. Would need to have a plan on how to cover all of M2 (and deposits are convertible to cash) without a domestic lender of last resort. Basically banks are way too big for China not to have a domestic lender of last resort. So not a fan of hardening up China's linkage to the dollar. Would prefer relying on controls during a transitional period while China does a recap, clears up bad loans.

In Setser's writings on Argentina, he argues that distortions to Argentina's political system and economy in the early 2000s arose as a result of the currency board:

> Argentine banks got rid of precisely those assets that would (potentially) have performed in the event of a devaluation and government debt restructuring. They ran down their best assets -- their liquid offshore reserves -- to pay off depositors (and to pay off maturing cross border credits). They also reduced their peso lending to Argentine firms dramatically. Peso deposits fell more rapidly than dollar deposits (that, incidentally, does not mean dollar depositors did not run: some peso depositors shifted into dollars, and some dollar depositors ran). To stay matched, currency wise, the banks had to reduce their peso lending commensurately.

Neither Argentina's political system nor its economy could adjust the situation. Sester argues that the top reasons for Argentina's economic and political constraints included the

currency board, strong dollar, dollarized banking system and dollarized domestic debt.

In conclusion, Setser is not a supporter of adopting a currency board, nor does he suggest linking the Chinese RMB with the USD for China.

Steve H. Hanke (Johns Hopkins University, ex currency adviser to many governments)

Hanke's qualifications specifically relevant to China include his extensive experience as an adviser on currency reform to many governments that have implemented or considered currency boards or dollarization and his positions as senior advisor at the Renmin University of China's International Monetary Research Institute in Beijing and contributing editor at Globe Asia Magazine.

Hanke disagrees with criticisms by Setser and others that the Argentine monetary system of the 1990s demonstrates the weaknesses of a currency board system (see the next section). He contends that what stops countries from adopting a currency board system is political reasons rather than economic ones. Since countries need to give up their monetary policy sovereignty under a currency board or dollarization, they are reluctant to do so. This is the case for China.

Hanke agrees with the view of the late Ronald McKinnon that China would be better off with a currency board, fixing its exchange rate with the U.S. dollar. McKinnon was an applied economist whose primary interest were international economics and economic development with an expertise in East Asia and Chinese economy, and he was considered an "Intellectual giant" at Stanford University, where he had taught since 1969. McKinnon had long argued the advantages of dollar links for Asian countries in his published books. In his Unloved Dollar Standard, McKinnon explained a paradox that "although no one likes the dollar standard, government and private market participants still consider it the best option." McKinnon saw three stages for China in using the dollar peg as a stabilizer. In stage one, the dollar peg acted as the nominal anchor for Chinese economy to dampen inflation. One example

he used was that by 1997, inflation in China was close to the American level at 2 per cent per year.

In stage two, ever since China replaced Japan as the Asian giant in both volume of international trade and overall economic size, China's own monetary and financial stability became an anchor for the greater East Asian economy. "Thus China is not only the engine of high economic growth for its smaller Asian suppliers and customers, but is also a better anchor for reducing cyclical instability in East Asia." Therefore, having a stable relationship with the dollar helped reduce the fluctuations from the "political pressure from the United States for gradual RMB appreciation."

Stage three is a global extension of stage two: "a stabilizing Chinese anchor for the East Asian economies prevails in response to 'worldwide' macro shocks, that is, those originating in the center country of the world dollar standard—the United States."

Figure 3. *China's Inflation Rate, measured by CPI year-over-year (1986-2016)*

Even though there has been monetary turmoil, including in the dollar, many emerging countries are still mainly relying on dollar standards. One of the most important roles that the USD plays in the Chinese RMB/USD relationship is that in East Asia, imports and exports are often denominated in USD. The USD is frequently exchanged in international payments among international banks, and the Chinese government uses the USD

as the intervention currency for smoothing fluctuations. So, according to McKinnon, "when China stabilizes the yuan/dollar rate, it is really stabilizing the rate against a much broader basket of currencies underlying interregional trade in Asia—and against dollar-based financial markets beyond Asia."

In a 2016 article, "China Has Chosen Instability," Hanke argues that the Chinese government "have forgotten [this] golden rule: stability might not be everything, but everything is nothing without stability." Hanke emphasizes the importance of the stability of a currency. Hanke thinks that at this point, the RMB is full of high uncertainty and potential economic instability, and this uncertainty and instability is detrimental to a country's economy. He writes, "In terms of volatility, economic growth and inflation rates, China's performance has deteriorated ever since it dropped exchange-rate fixity." In addition, China's volatility in GDP and inflation rates will began to shadow those in America. As a result, linking the RMB with the USD will not only bring stability to China's currency, but also to the global economy.

In an economynext article, "China Yuan moves show futility of US Mercantilism: Steve Hanke," Hanke was being interviewed to discuss the volatility in China and Yuan's appreciation in failed to bid a lower trade deficit. Hanke said, "pressure from the U.S. and many nonsensical mercantilists' arguments caused China to abandon fixity in 2005...the wrong-headed thinking in Washington is that exchange-rate flexibility in China would result in an ever-appreciating yuan against the greenback."

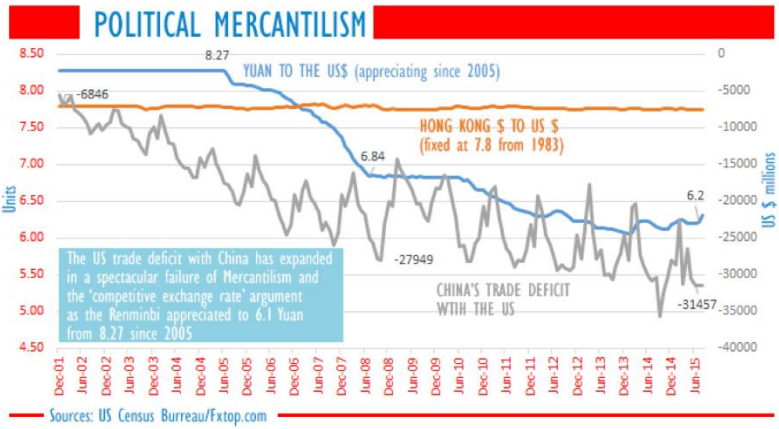

Figure 4. *Graph from FXtop.com*

Hanke disagrees with IMF and Washington's idea about a market-determined, flexible exchange rate: "That rhetoric is just a cover for Washington's real agenda: an ever-appreciating yuan."

> "Indeed, the Chinese yuan has appreciated in nominal terms relative to the greenback over the past twenty years, and so has the Chinese contribution to the U.S. trade deficit," said Hanke. The U.S. has also been in a trade deficit every year since 1975. "This is unfortunate. A reduction of the trade deficit should not even be a primary objective of federal policy. Never mind. Washington seems to thrive on counter-productive trade and currency wars that damage both the U.S. and its trading partners... In short, the U.S. trade deficit is the result of a U.S. savings deficiency, not exchange rates."

An ever-appreciating currency can also harm the country concerned. Hanke says that volatility in economic growth and inflation have risen in China since it abandoned the peg. "What should China do? First, Beijing should stop listening to Washington. Second, it should adopt a free-market, exchange-rate regime – like the currency board system in Hong Kong," Hanke says.

Hanke argues the Hong Kong currency board provides stability to the currency and Beijing should do the same. "Since 1983, the HKD/USD exchange rate has been fixed at 7.8, and the Hong Kong dollar has been fully convertible and fully backed by U.S. dollar reserves. By adopting such a fixed-rate regime, Beijing would dump instability and embrace stability." In addition, a currency board would also make difficult for mercantilists to make false claims that the Yuan is "manipulated" or "undervalued."

However, despite the potential economic benefits of a currency board in China, the decision to adopt such a policy would also be heavily political. Hence, I asked Hanke the following question:

> Since in China, the RMB policy decision is more of a political choice than an economic one, what are the political implications for mainland to adopt a fixed system? Would China agree to have a fixed system because it will stabilize the currency or would China want more control over monetary policies?

He answered as follows and suggested further reading in his own and McKinnon's works for supporting arguments:

> China has, under international pressure and also without an understanding of what they are doing, been forced down the path of a more flexible exchange rate system. China has been told and it believes that the flexible system is the only one that is free market and will result in convertibility. This is not true. I have written many articles on this.
>
> The U.S. wants China to have a flexible exchange rate and an ever-appreciating yuan. That's just what the U.S. did with Japan and it was a disaster.

Chapter 13 of McKinnon's Unloved Dollar Standard offered some details. McKinnon first reiterates his one of his arguments of the book: "because nations have been unable to agree on an alternative international money, I claim that the only feasible international monetary reform is one of rehabilitating the dollar standard." Then he specifically pointed

out the role of China in the dollar standard system. Since China has emerged as the world's largest trading nation and the biggest creditor of the United States, it is important to spell the relationship between the United States and China to operate and rehabilitate the dollar standard. "Despite some political and economic frictions with the United States, China has—more or less inadvertently—become a pillar of the dollar standard. Consider three aspects of this supporting role :

1. The "snowball" effect: The great expansion of Chinese trade with other emerging markets and countries producing primary products throughout the world, where the dollar is both the invoice currency for goods and the clearing currency for making international payments.

2. The macro stabilization effect: Since 1994, China has succeeded in following a countercyclical fiscal (credit) policy so as to stabilize its own GDP growth at a high.

3. The finance effect: China provides finance for large American fiscal deficits.

By adopting the dollar standard, not only will China have a more stable and better monetary system, but also, East Asia and the rest of the world will be more stable on a macro level. Thus, Hanke is and McKinnon was a supporter of a dollar standard in China because they argue that it will benefit China and the world economy more broadly.

A Sidebar on Argentina's Convertibility System

Many economists have pointed to the troubles of Argentina's monetary system of 1991-2001, known to Argentines as the "convertibility system," as evidence that larger economies, at least, should avoid currency boards. However, economists who have studied the system intensively contend that the convertibility system was not a currency board. Kurt Schuler of the Treasury Department (writing in an unofficial capacity), remarked that "Argentina's convertibility system never established a separate body to act as a currency board, nor did it establish a separate division within its central bank or even a separate balance sheet." The central bank

retained its own structure system and added a few new rules. The Convertibility Law of 1991 allowed the central bank to count Argentina's government bonds payable in foreign currency as reserves. There was no tendency for the system to become like a currency board. For example, the central bank's claims on the government (a type of domestic asset), increased from around 20 percent of total assets at the end of 2000 to 50 percent at the end of 2001. An orthodox currency board does not hold domestic assets. Many economists were unaware of the differences between a currency board and the convertibility system. As a result, they wrongly applied criticisms of currency boards to Argentina.

Hanke, with whom Schuler worked closely on currency boards in the 1990s, warned from an early date of the flaws in the convertibility system. Some months after the convertibility system began on April 1, 1991, he wrote a Wall Street Journal article titled "Argentina Should Abolish Its Central Bank." Hanke commented that "although monetary and currency reforms have been common, Argentina have had about as much confidence in these reforms as unreformed alcoholics have in their ability to kick the habit. The Central Bank, therefore, has little credibility, and to protect themselves from inflationary expropriation Argentines substitutes dollars for austral with a vengeance." Hanke suggested the currency reform designed by Economics Minister Domingo Cavallo needed to be amended. Hanke only saw one working solution: a solution that would solve Argentina's monetary problems permanently—a currency board. With a currency board, the credibility problems would disappear and Argentina could establish a stable and strong foreign exchange rate with the US dollar, which would soothe Argentina's interest and inflation rates.

In 1999, after Argentina's economy had experienced some fallout from Brazil's currency crisis of that period but before its own problems became severe, Hanke and Schuler wrote a paper proposing that Argentina officially dollarized. They pointed out the Argentine system was not an orthodox currency system. Rather, it had a number of deviations from an

orthodox currency board, which "result in less than a perfect unification of the peso and the U.S. dollar."

They argued further that "Argentina have shown the characteristics they want in a currency are those that the dollar has: low inflation, full convertibility, the prospect of continued good performance in the future, and international acceptability." They contended that the public did not have a full understanding about dollarization or the workings of a currency board system. One common misunderstanding about dollarization is that "it would deprive Argentina of flexibility in monetary policy." They claimed that this objection was only a theory, contradicted by the empirical evidence. They cited evidence that "Annual growth rates in developing countries without monetary flexibility—those with currency boards or dollarized systems—were over 50 percent greater than in those with central banks and monetary flexibility during the 1950–93 period." In addition, the objection that dollarization would take away the Argentine central bank's ability to act as a lender of last resort was not accurate. He supports it by "the facility [that] can provide emergency liquidity....is something called the Contingent Repurchase Facility." They criticize the objection that Argentina would be hurt if dollar became unstable by saying Argentines would be free to use other currency if they wished, although the dollar would at least initially be the most widely used currency. They conclude their argument for dollarization by saying "Dollarization is not 'too simple' for Argentina. On the contrary, the more financially sophisticated Argentina becomes, the greater the value of a simple and transparent monetary system."

They added, "The important thing is that dollarization would improve the odds that Argentina would continue to follow sound policies, much as the Convertibility Law greatly improved the odds that Argentina would implement sound policies in the first place." They also wrote a detailed specific proposal of suggested steps for Argentina's central bank to undertake. As Hanke sees it, the criticisms he made of the majority view of the convertibility system have largely been ignored, and not refuted.

Michael Pettis (Peking University, Guanghua School of Management)

Pettis' work and research mainly focuses on "monetary policy, trade policy, and the development of the banking and financial markets in China." Pettis has analyzed the level of the RMB and what would need to change for China to be better off in a blog article, "Do Markets Determine the Value of the RMB?" In his opinion, "The RMB almost certainly would decline in value today without PBOC intervention, but this does not indicate at all that the RMB is overvalued.... The RMB, it turns out, remains undervalued, although I suspect not by very much." Pettis supports a market-based economy, in which he thinks the most effective and efficient way to determine the exchange rates is to let the market decide. However, his post claims that legal and regulatory arrangements within the financial system usually prevent automatic adjustments from occurring immediately. In China's case, with current arrangements, the exchange rate could not be freely determined by the market. "An important characteristic of a market is its systemic ability to adjust, whether quickly or not. If there is a distortion in the price of any good or service, the price of other goods and services automatically adjust to return the market to what is assumed to be an optimal stage." This assumption is valid under a market-based economy without excessive government intervention.

This leads to the following argument:

> Why economists who argue that the value of currencies like the RMB should be fixed – usually in terms of other major currencies, such as the dollar, or in exchange for commodities, the longest serving of which has been cowries, followed by gold – can also argue that markets should determine all prices without being inconsistent. If the central bank pegs the value of its currency to another currency, as the PBOC pegs the value of the RMB to the USD, all other relevant variables, most importantly the interest rate, will automatically adjust so that the economy will presumably get the

> full benefit of the market's superior ability to process information.

The argument holds true under the impossible trinity, which states that it is impossible to have a fixed foreign exchange rate, freedom in domestic monetary policy, and free capital movement at the same time. Pegging the exchange rate allows the interest rate to adjust according to the market, establishing a market-driven economy, and the prices of goods and services automatically adjust. In other words, Pettis states the pros for pegging the yuan to a strong and stable currency such as the dollar is that it allows the economy to have a free interest rate.

Pettis also points out the two cons of pegged exchange rate system:

> Volatility is transformed, not eliminated. Pegging the RMB to the USD, for example, does not eliminate the volatility associated with expected changes in the USD value of the RMB. Instead the volatility shows up as higher volatility in China's money supply, higher volatility between USD and non-USD currencies, greater trade imbalances...
>
> Interventions are effectively forms of wealth transfer. Pegging the RMB to the dollar at a low rate, transfers wealth from importers to manufacturers in the tradable goods sector. But while it reduces currency volatility, it increases volatility in the money supply.

Pettis claims that fluctuations can be transformed into other sectors, but cannot be fully eliminated:

> What is more, as the PBOC attempts to control the interest-rate component of this volatility by fixing interest rates, there is even more volatility in China's money supply, both in the present, in the form of inflows and outflows, and in the future, as it is "stored" in the form of rising bad debt... Because regulators can never choose how much volatility they will permit, at best they can choose the form of volatility they least prefer and try to control it by transferring it elsewhere.

It is not a decision between whether to eliminate volatility by adopting pegged exchange rate regime, but to choose between to have volatility in which sector when adopting a pegged exchange rate regime. Hence, as the decision-maker selects which group to bear the cost of volatility, it "is usually a political choice and not an economic one... Government interventions in the currency usually aim at creating wealth transfers to subsidize favored sectors or at suppressing volatility that penalizes favored sectors, or both. The analysis of their impacts is never complete until we have also worked out the impact on those sectors from whom wealth has been transferred or to whom volatility has been transferred.

At this point, the issue of having a pegged system is more than just an economic matter—it is also deeply political. In China's case, the PBOC and SAFE are both organs of the Chinese government. Ultimately, the Chinese government makes the decision.

Later in his article, Pettis proposes two hypothetical goals for PBOC, the political one and economical one.

Pettis writes, "If we have political goals, for example wealth redistribution, or the protection of certain types of industries until they are sufficiently competitive, we would probably want to start with an idea of the economically optimal exchange rate on a fundamental basis and then move it in one direction or the other." Then he argues that the political goal in China specifically is to "eliminate some of the distortions in the Chinese economy that weaken domestic demand and systematically misprice economic inputs, most notoriously capital." However, this is dangerous since it leaves China with a dependence on debt, excess capacity and inventory, and a state sector in which incentives to innovate and create value are overwhelmed by political incentives.

> If eliminating these distortions is indeed the goal, I would argue that the correct exchange rate would probably be one that is determined by the country's economic fundamentals, i.e. one that matches supply and demand for dollars in the real economy – or perhaps a little stronger than that in order to help the rebalancing process.

> If on the other hand the goal is to ensure that China has sufficient reserves, I would argue that the correct exchange rate would probably be one that is determined by the country's overall balance of payments. In the past a country's money supply was often a function of its gold or silver reserves, and economic performance could be severely impaired by a shortfall of specie reserves.

Menize Chinn (University of Wisconsin-Madison, visiting scholar at IMF)

Menzie Chinn's writings on China's exchange rate system include "The Overvaluation of RMB Undervaluation" and "China's Current Account and Exchange Rate," as well as a number of posts on his blog Econbrowser. In the latter paper he reached these conclusions:

> We find, first, that the Chinese currency, the renminbi (RMB), is substantially below the value predicted by estimates based upon a cross-country sample, when using the 2006 vintage of the World Development Indicators.
>
> Second, we find that Chinese multilateral trade flows respond to relative prices -- as represented by a trade weighted exchange rate -- but the relationship is not always precisely estimated. In addition, the direction of the effects is sometimes different from what is expected a priori.
>
> Finally, we stress the fact that considerable uncertainty surrounds both our estimates of RMB misalignment and the responsiveness of trade flows to movements in exchange rates and output levels. In particular, the results for trade elasticities are sensitive to econometric specification, accounting for supply effects, and for the inclusion of time trends.

In an interview with Allison Nathan in Goldman Sachs Global Macro Research, Nathan asked, "what lessons can we draw from past currency attacks and defenses—successful or

not—in other countries when thinking about the PBOC's policy choices?"

Chinn answered,

> It is unfortunately difficult to draw lessons from other countries that have experienced attacks on their currencies because China's circumstances differ in many respects from these historical precedents. First, China has a current account surplus, which is not typical for a country facing a run on its currency. This means that even if China has capital outflows, there will still be some offsetting inflow of foreign currency just by virtue of the fact that they export more than they import. This is a critical difference from countries that rely on capital inflows to offset the deficit in their current account balance. For these countries, if capital inflows cease or reverse and access to borrowing disappears, policymakers end up in a bind—they have no choice but to curtail imports until they match exports.
>
> Second, China has an incredibly large stockpile of foreign exchange reserves, which means that even if the current account-related foreign currency inflows are not sufficient to offset outflows, they can use their reserves to offset depreciation pressures.
>
> Third, they have a vast arsenal of capital controls that they could quickly tighten if need be. These three factors suggest that the market should not be particularly anxious about the potential for a sudden devaluation.

Wondering whether Chinn would think fixing RMB would further internationalize the RMB and improve Chinese currency stability, I e-mailed him the following question:

> According to your interview, you compared China and Japan as exporter countries. What are the strengths that the RMB has yet the yen lacks, in terms of future economic and currency power? In your paper, you also analyzed why RMB is not

undervalued. If you were to fix RMB with USD, at what rate do you think is the most optimal for China and US?

His reply was as follows:

> The RMB lacks a sophisticated, market-oriented, and open financial system. As long as the financial system is largely government owned, subject to rules of uncertain enforcement, then it is unlikely that assets denominated in RMB will be widely demanded, aside from facilitating trade.
>
> I would *not* fix the RMB. If the desire is to further internationalize the RMB, the capital/financial account will have to be further opened. A fixed exchange rate, autonomous monetary policy, and an open capital/financial account are not consistent (i.e., the Trilemma holds).
>
> For details on these views, see my posts on the Trilemma on Econbrowser, and on RMB internationalization, also on Econbrowser.

Chinn has wrote in his blog, "The Next Global Recession: Made in China?" the following caution and forecast for China:

> If one views the government as committed to keeping growth above a certain threshold, then one is willing to countenance the possibility that authorities will sacrifice reform for continued stimulus, and short term growth will not collapse, even if longer term prospects might suffer. If one believes the government will hold true to a program of financial liberalization and rebalancing toward domestic sources of growth, then growth could very well fall far below the 6% in the short term. Count me skeptical of the latter outcome.

In the case of China, one's view of whether the government will control or liberate the growth rate influences the short term and long term growth rate.

Francis Lui (University of Hong Kong)

Francis Lui is a Hong Kong based economist and has been interview about the economic relationship between Mainland China and Hong Kong, including rethinking about the pegged monetary system. In an interview with the Hong Kong Trade Development Council, Lui was asked whether re-pegging the Hong Kong exchange rate is an alternative solution to improving the Hong Kong economy.

Since Hong Kong has adopted a currency board – which Liu does not consider to be an eternal institution- I wanted to clarify his opinion on pegging the RMB with USD, which would result in one advantage for Hong Kong: fostering economic transactions between Hong Kong and Mainland China by reducing currency risk. Thus, I asked him the following question:

> Many economists have argued and analyzed the advantages for fixed and floating system for China. More than ten years have passed since China pegged to the USD, and the RMB has gained some strength and can stand on its own with the control of PBOC since then. However, the real value of the RMB is very complicated and not yet determined. Facing this unknown value of the RMB and potential monetary instability. What do you think about substituting PBOC with a pegged system or fixed system to the USD? In other words, would a currency board work better for China than the current central bank system? What is your opinion?

His reply was:

> For a small economy, sometimes a currency board would work very well. An important condition for this to happen is that the business cycles of the small economy and the anchor economy are roughly synchronous with each other. In the case of China, it is a huge economy. Its business cycles are also quite different from those of the US. Politically, it does not want its economy to be too much affected by US monetary policies.

> So I don't think that pegging the RMB to the USD would work in the long run.

Lui's opinion is similar to Cecchetti's: the size of Chinese economy is unlikely to allow a currency board to occur. In addition, because the Chinese economy has different economic cycles from the United States, it might not be beneficial for either the United States or China to fix their exchange rate relations. Furthermore, pegging or fixing the exchange rate will not benefit the Chinese government politically. Even if following the United States' monetary policy would have a positive result, the Chinese government will not do so because of the political frictions between China and the United States. Chinese government policy-makers aim to be politically and monetarily independent from the United States.

Figure 5. *CNY/HKD Exchange Rate (2007-2016)*
Source: XE currency charts

Conclusion

After examining the opinions of seven prominent economists (Frankel, Cecchetti, Sester, Hanke, Pettis, Chinn, and Lui) on the Chinese exchange rate regime, I have summarized their views in a table below.

Both Lui and Cecchetti reject the idea of adopting a currency board in Beijing because of the size of Chinese economy. Unlike Singapore and Hong Kong, Mainland China has a very large

economy and so it is able to have an independent monetary policy. Lui points out that the business structure of China differs from that of the U.S., which also hinders China from having the dollar standard. China is also more likely than Singapore to have political differences with the United States that will make it wish to have an independent monetary policy.

Frankel and Pettis analyze China's situation from perspectives of both a floating exchange rate system and a fixed exchange rate regime. Frankel claims it is better to not fix the relationship between USD and RMB. Pettis thinks the Chinese government is the decision maker eventually, despite of the volatility and instability in each sector.

Sester is not a supporter of currency boards, citing the failure of the Argentine monetary system in 2001-02. Even though he agrees the Argentine currency board was not orthodox, he claims an orthodox one would have been no better. By extension, Sester thinks that full convertibility for China via a currency board would not work; China's financial system needs recapitalization and fixing the RMB to the USD will not reach the goal. Chinn likewise does not support the idea of a fixed exchange rate system in China in the recent years. He thinks the financial system is underdeveloped and not market-oriented—it is largely owned by the Chinese government, and it is uncertain and unclear of their movement and decisions.

Hanke disagrees with the idea that the flexible system is the only one that is free market and will result in convertibility. A currency board in China would not only provide stability within Chinese economy, but also East Asia's and worldwide. In addition, a currency board will make difficult for mercantilists to make false claims that the RMB is "manipulated" or "undervalued." Thus, Hanke suggests a currency board for China.

Economist	Preferred Exchange Rate Regime	Reasoning	Recommendation
Jeffrey Frankel	Not fixed.	Although RMB is not free-floating, a fixed exchange rate will not be more beneficial. The cost and benefit for China to adopt a pegged or fixed system under current economic situation.	The Chinese authorities do often intervene strongly in the financial market. Start a new period of monetary stimulus.
Steven Cecchetti	China would almost certainly be better off with a floating currency that can help absorb the kinds of shocks that are driving its reserve levels sharply up or down.	China's policymakers are uncomfortable with market volatility. Because of its small size, Singapore has an option of choosing a managed exchange regime – which is not a currency board. In the long run, China is unlikely to have this option.	Chinese policymakers could further tighten capital controls.
Brad Setser	Not a fan if currency boards. Full convertibility for China via a currency board would not work. Chinese economic decisions are heavily influenced by political consequences.	Argentina's crisis resulted from having a currency board and illustrates the weaknesses of currency boards. Having a more orthodox currency board would not have improved anything. Because China's financial system needs recapitalization, in a currency board system foreign reserves would have to cover M2 without a domestic lender of last resort. Hardening China's link to the dollar is a not good idea.	China will likely rely on financial controls during a transitional period while it cleans up its financial system.
Steve Hanke	China has been forced down the path of a more flexible exchange rate system by the IMF; it is not true that the flexible system is the only one that is free market and will result in convertibility. He favors McKinnon's	Stability is the key. Fixing to the dollar would have these benefits: 1. Stabilize China's economy. 2. China's monetary and financial stability would anchor the greater East Asian Economy. 3. A stable Chinese anchor for the East Asian economies	The public needs a better understanding of currency board system's functionalities before making serious conclusions. Beijing would be better served by adopting a currency board, like Hong Kong's. Hanke offers two

	opinion. China and the United States could become partners to improve financial stability if China fixes the exchange rate with the dollar.	prevails in response to "worldwide" macro shocks.	recommendations for China. First, Beijing should stop listening to Washington. Second, it should adopt a free-market, exchange-rate regime – like the currency board system in Hong Kong.
Michael Pettis	Chinese government decides. PBOC and SAFE both perform under the control of the Chinese government. Ultimately, the government makes the decision of which sector will bear the volatility.	Pros of pegging to USD: All other relevant variables, most importantly the interest rate, would automatically adjust so that the economy would presumably get the full benefit of the market's superior ability to process information. Cons for pegging: Volatility would be transformed, not eliminated. Pegging would reduce volatility of the exchange rate but increase volatility in the money supply.	If the goal is political, eliminate some of the distortions in the Chinese economy that weaken domestic demand and systematically misprice economic inputs, most notoriously capital. If the goal is to ensure that China has sufficient reserves, the correct exchange rates should be one determined by the country's overall balance of payments.
Menzie Chinn	Does not suggest fixing the RMB to the dollar.	China lacks a sophisticated, market-oriented, open financial system. As long as the financial system is largely government owned, subject to rules of uncertain enforcement, it is unlikely that assets denominated in RMB will be widely demanded, aside from facilitating trade.	To further internationalize the RMB, the capital/financial account will have to be further opened.
Francis Lui	Pegging the RMB to the USD is unlikely to work in the long run. Even if following U.S. monetary policy would have positive results, China will not do so because of the political frictions	For a small economy, sometimes a currency board can work well. An important condition for this to happen is that the business cycles of the small economy and the anchor economy are roughly synchronous. China is a huge economy. Its business cycles are also quite different from	Does not specify recommendations for Chinese policymakers; however, he thinks the Chinese are trying to implement policies that are independent from the United States.

between China and the United States.	those of the US. Politically, it does not want its economy to be too much affected by U.S. monetary policy.

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3 An analysis of the impact of RMB depreciation on Hong Kong

Richard *(Ziyuan) Li*

Introduction

Under Under the currency board system, the Hong Kong dollar has never been devalued against its anchor currency—first the pound sterling, later the U.S. dollar. The Hong Kong dollar did depreciate in the early 1980s, but it was during a period of a floating exchange rate, when the Hong Kong dollar was off the currency board system for about a decade. During the East Asian financial crisis of 1997-98, Hong Kong experienced strong pressures in financial markets and suffered a recession, but the exchange rate of HK$7.80 per U.S. dollar held firm.

A circumstance that contributed to Hong Kong being able to avoid devaluation during the Asian crisis, unlike many countries in the region, was that China did not devalue. The Hong Kong dollar appreciated against many other currencies, but not against the renminbi (RMB), the currency of its most important trading partner and already by that time a financial partner of growing importance.

Today, 20 years later, there is concern that pressures in the foreign exchange market might force China to depreciate the RMB. Currently, substantial depreciation appears to be a low probability event, at least for the next couple of years. But, it is worth thinking about the effects that a depreciation of the RMB might have on Hong Kong. Since the East Asian financial crisis, British rule has ended and Hong Kong has reverted to China. Hong Kong's trade, finance, politics, and almost any other aspect one might consider are more closely tied to China than they have been at least since the 1940s, and possibly ever. Circumstances have changed since the 1990s. Would the effects of a substantial depreciation by China be so strong that Hong Kong would have to follow, or else endure a markedly more severe recession than it did during the Asian crisis?

This paper investigates the effects of a hypothetical sudden RMB depreciation of 10-30 percent on three aspects of Hong Kong's economy that would be most strongly affected: investment, trade, and tourism. As defined by Hong Kong Census and Statistics Department, there are four traditional key industries in Hong Kong: financial services, tourism, trading and logistics, and professional and producer services. All these sectors are closely connected with China, and thus would be first and most impacted by sudden situations in its giant neighbor. There is plenty of literature and data for tourism and trade. Meanwhile it is hard to perform aggregate analysis on the financial services sector and the professional and producer services sector. This paper examines foreign direct investment by business, which is one of the factors making Hong Kong an important international financial center.

The remainder of the paper is structured as follows. Section 2 reviews Hong Kong's situation during the 1997-98 East Asian financial crisis. Section 3, 4 and 5 investigate the foreign direct investment, external trade and tourism, respectively. Section 6 offers concluding remarks. Sections 3-5 are developed independently.

Colonial Burma

The 1997-98 East Asian financial crisis originated in Thailand, and then rapidly spread through other East and South Asian economies. Directly influenced economies included Thailand, the Philippines, Indonesia, Malaysia, Vietnam, Singapore, Taiwan, Hong Kong, South Korea, and Japan. The crisis was a mixture of crises in currency, banking, and debt, resulting in disastrous turbulence in financial markets and a sharp slowdown of the real economy.

The crisis "officially" started on July 2, 1997, when Thailand announced the floating of the baht, which depreciated by 19.5 percent immediately. It was only one day after the sovereign transfer of Hong Kong back to China. After that, Hong Kong experienced a two-year recession and had a hard time recovering. There is an extensive body of literature on the East Asian financial crisis, including works focused on Hong Kong. Y. C. Jao's The Asian Financial Crisis and the Ordeal of Hong Kong (2001) provides a comprehensive introduction and analysis to the crisis and its impact on Hong Kong, and underlies the account here. What Hong Kong suffered during the East Asian financial crisis serves as a benchmark and comparison for our discussion of the possible effects of a Chinese devaluation today.

Currency

As is shown in Appendix 1, all important economies in East Asia except China and Hong Kong chose to allow their currencies float during the crisis. All of them depreciated by more than 10 percent versus the U.S. dollar by the end of 1997, and the worst performing, the Indonesian rupiah, depreciated by more than 80 percent at its low point in 1997.

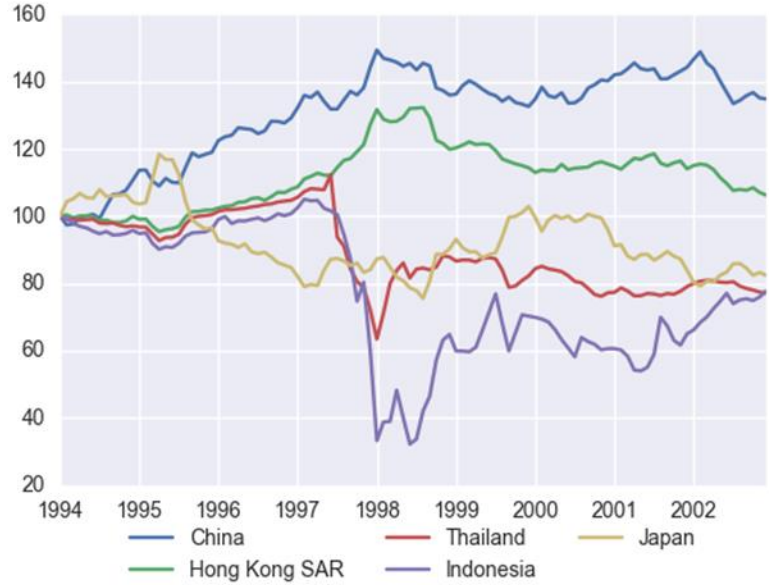


Figure 1. *Effective Exchange Rate (1994=100)*
Source: Bank for International Settlements, calculations by Richard Li

From time to time during 1997-98, international speculators accumulated massive short positions in Hong Kong dollars. To counter the speculative selling, the Hong Kong Monetary Authority (HKMA) sold huge amounts of U.S. dollars to preserve the fixed rate of the Hong Kong dollar with the U.S. dollar. The Hong Kong dollar was successfully defended, and the currency board system survived. However, as a result of depreciation of other currencies in the region, the effective exchange rate of the Hong Kong dollar appreciated substantially.

Financial Markets

In the first few months of the crisis, Hong Kong's financial markets seemed immune to the external chaos, because of the optimism over the smooth transition and the inflow of Chinese capital prior to the transfer. The Hang Seng Index (HSI, the major equity index in Hong Kong) even reached a historic peak on August 7, 1997. Starting in October, however, securities markets experienced a rapid downturn. Extremely high

volatility, including days during which the index moved more than 10 percent up or down, occurred during the period. The turmoil lasted a long time, and by mid-August 1998, the HSI was down by 60 percent from its high a year earlier.

As speculators accumulated larger and larger short positions, finally on August 14, 1998 Hong Kong authorities decided to directly enter securities markets by purchasing shares to push up the prices. The Hong Kong government also announced tighter regulatory rules afterwards. The government's unprecedented intervention was strongly criticized by many politicians and economists at home and abroad as a violation of Hong Kong's longstanding free market principles. Whether due to those measures or not, Hong Kong's financial markets did start to stabilize. By the end of August, the HSI rebounded by 9 percent, and continued to recover, surpassing its former peak in the first quarter of 2000. The government's "intervention portfolio" generated a return of more than 100 percent.

Foreign Direct Investment (FDI)

Due to unavailability of data and changes of statistical methods, we are not able to comprehensively review the performance of foreign direct investment during the East Asian financial crisis. Still, for inward FDI stocks, published statistics during 1996-1999 shows a slight increase in 1997 and a sharp decrease in 1998. However, inward and outward FDI, in terms of both stocks and yearly flows, resumed large positive growth in 1999. A main reason for these fluctuations was large ups and downs in asset market prices.

External Trade

Hong Kong has always been an open and trade-dependent economy. By the time of the East Asian financial crisis, the ratio of total external trade to GDP had been consistently larger than 200 percent. The trade sector consequently deteriorated severely during the crisis. As Appendix 2 shows, the hardest time for the trade sector was the fourth quarter of 1998, a year after the crisis started affecting Hong Kong. Total exports fell

10 percent year over year. Domestic exports dropped much more than re-exports, partly due to the appreciation of the effective exchange rate of the Hong Kong dollar. Total imports decreased by 13 percent year over year, while retained imports decreased 24 percent, reflecting weak domestic consumption during the crisis.

Tourism

The tourism industry was hard hit during the crisis. Tourist numbers from Japan, a major tourist source at the time, began to drop as early as the second quarter of 1997, before the crisis broke out. Tourist spending also decreased sharply in tandem with tourist numbers. However, numbers swiftly resumed growth after the crisis, making the tourism industry one of the most sensitive sectors to macroeconomic performance.

Table 1. *Tourist Numbers and Spending (year-on-year rate of change, %)*

1997	Number	Spending	1998	Number	Spending	1999	Number	Spending
Annual	- 11%	- 14.7%	Annual	- 8%	-26.3%	Annual	12%	-4%
Q1	9%		Q1	- 25%		Q1	13%	
Q2	2%		Q2	- 16%		Q2	10%	
Q3	- 27%		Q3	10%		Q3	11%	
Q4	- 23%		Q4	5%		Q4	12%	

Source: Calculations by Jao (2001)

Foreign Direct Investment (FDI) and Outward Foreign Direct Investment (OFDI)

FDI of China and Hong Kong

Both China and Hong Kong are important international FDI participants. According to World Investment Report 2016 published by United Nations Conference on Trade and Development (UNCTAD), in 2015 Hong Kong was the world's second-largest recipient of FDI inflows, after only the United States, and the ninth-largest source of FDI outflows. China was the world's third-largest recipient of FDI inflows, and the third-largest source of FDI outflows after the United States and Japan.

Table 2. *Hong Kong & China FDI Flows (bn US$)*

	2013	2014	2015	% of GDP (2015)
Hong Kong FDI Inflow	74.5	114.1	174.9	56.6%
Hong Kong FDI Outflow	81.0	125.1	55.1	17.8%
China FDI Inflow	123.9	128.5	135.6	1.2%
China FDI Outflow	107.8	123.1	127.6	1.2%

Source: Word Bank, UNCTAD, *World Investment Report 2016*

Table 3. *Hong Kong and China FDI Stocks*

	2000		2010		2015	
	Bn US$	% of GDP	Bn US$	% of GDP	Bn US$	% of GDP
HK Inward FDI Stock	435.4	253.6%	1067.2	466.8%	1572.6	508.5%
HK Outward FDI Stock	379.3	220.9%	943.6	412.7%	1485.7	480.4%
China Inward FDI Stock	193.3	16.0%	587.8	9.6%	1220.9	11.0%
China Outward FDI Stock	27.8	2.3%	317.2	5.2%	1010.2	9.1%

Source: Word Bank, UNCTAD, *World Investment Report 2016*

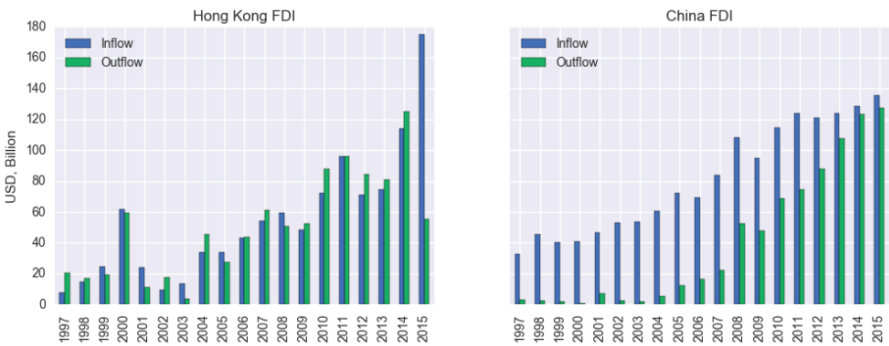


Figure 2. *Hong Kong and China's FDI*
Remark: 1997 is actually the average of 1993 – 1997
Source: UNCTAD, World Investment Report

China sees large amounts of inward FDI and fast-expanding outward FDI, while Hong Kong is a balanced FDI receiver and generator. Since 1978, when it began to introduce elements of a market economy and opened itself to the rest of the world, China has been attracting large amounts of FDI from all over the world, which is one of the main drivers of its very fast growth. China's outward FDI remained small until 2001, when China was accepted into the World Trade Organization. After that, Chinese enterprises began expanding their business overseas. From 2002 to 2015, China's outward FDI grew at an average annual rate of about 35 percent, and exceeded its inward FDI in 2014, making China a net capital exporter. On the other hand, Hong Kong has long been an important financial center in Asia, originating large amounts of outward FDI and receiving a lot of inward FDI. Its FDI inflows and outflows have been more or less balanced over last two decades, with the notable exception of 2015.

The FDI Connection between China and Hong Kong

There is close connection between China and Hong Kong in terms of FDI flows, as Hong Kong has long been the preferred gateway and service platform for Chinese enterprises looking to invest overseas, as well as for foreign capital looking to invest in China. Around 60 percent of China's outward FDI goes to Hong Kong, of which a large proportion then goes farther afield to invest abroad. For China's inward FDI, according to China's Ministry of Commerce (2016), in 2015, Hong Kong accounted for 73.4 percent. As is shown in Appendix 3, China is the largest source and recipient of Hong Kong's FDI, aside from offshore financial centers like the British Virgin Islands and the Cayman Islands (which themselves may in part be disguised Chinese FDI). Until 2015, China represented 26.5 percent of Hong Kong's inward FDI stock, and 39.6 percent of outward FDI stock.

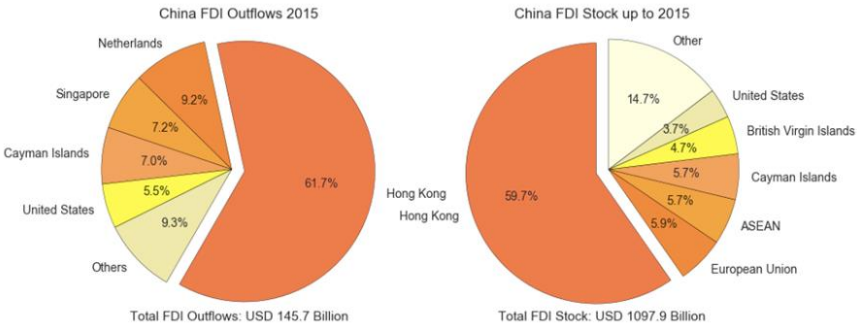


Figure 3. *China Outward FDI by Destinations*
Source: 2015 Statistical Bulletin of China's Outward Foreign Direct Investment

With China's great efforts in advancing its Belt and Road Initiative, it is believed that China will be involved in even more FDI activities in the coming years. However, despite state-level policies and strategic plans, there are many factors influencing FDI, among which the exchange rate is a very important one. Below we review some academic literature on this subject, and offer our judgment.

Literature on the Exchange Rate and FDI

Considerable research has been done on the relationship between the exchange rate and FDI. Though various methodologies and models have been deployed, there is still no consensus either in theory or empirical studies. Some argue that domestic currency depreciation stimulates inward FDI. For instance, Froot and Stein (1991) develop an imperfect capital market model and concluded that depreciation of domestic currency, by lowering the relative wealth of domestic agents, can lead to foreign investment. However, other research shows the opposite result. For example, Campa (1993) explains that if a firm produces products domestically, and sets up a foreign subsidiary to sell the goods, the appreciation of the host country's currency could generate higher revenue, thus stimulating FDI.

Carruth, Dickerson, and Henley (2000) point out that one possible reason for the mixed results is that the impacts of exchange rate changes on FDI differ across industries and FDI

types. That is, analysis based on aggregate data might lead to ambiguous conclusions. Some later research was based on categorization of industries or FDI types, to partly disaggregate the analysis. For instance, Chen, Rau, and Lin (2006) use data of Taiwan's FDI into China to investigate the impacts of exchange rate on cost-oriented FDI and market-oriented FDI separately, and conclude that while the depreciation of a host country's currency tends to stimulate inward FDI activity of cost-oriented firms, the depreciation tends to deter inward FDI activity for market-oriented firms.

In addition, studies have been carried out specifically on China. Their results are also mixed. In terms of inward FDI, Yu and Cheng (2010) show that expected appreciation of RMB could stimulate FDI inflow in a short run, but the long-term effect is ambiguous; they also pointed out that appreciation of RMB would reduce the inflow of resource-seeking FDI, while increasing that of market-seeking FDI, which was consistent with research by Chen, Rau and Lin (2006) mentioned above. For outward FDI, Liu and Deseatnicov (2016) find that RMB appreciation has a negative effect on China's outward FDI. Chao's research (2015), however, shows a significant positive correlation between the RMB's exchange rate level and China's outward FDI.

Due to Hong Kong's role as a gateway for capital in and out of China, one should first analyze the impact of RMB depreciation on China's FDI, and then extend the analysis to Hong Kong through the channel of direct investment between the two.

The Exchange Rate and China's Inward FDI

Depreciation in the RMB may deter market-oriented FDI, but stimulates export-oriented FDI. As China is a resource consumer itself, there is little resource-seeking FDI into China. It is appropriate to distinguish whether FDI is market-oriented or export-oriented. In the first case, foreign firms set up affiliates to sell goods in China. Given fixed sale prices in terms of RMB, depreciation of the RMB leads to exchange losses when profits are repatriated back to the home countries, and thus

deters market-seeking inward FDI. In the second case, foreign firms set up manufacturing facilities in China to produce products for exporting to their home countries or third countries. RMB depreciation results in lower production costs, including wages, rent, facility investment, etc. This comparative advantage would benefit exporting, therefore foreign firms are more likely to make export-oriented FDI in China.

With the gradual shift from export-oriented to market-oriented FDI, the overall effect of RMB depreciation should be negative. As there are no published statistics of FDI by sectors from Chinese authorities, we are not able to analyze its components directly. But according to UNTCAD's World Investment Report 2016, while FDI inflows into the manufacturing sector stagnated, inflows to the service sector expanded by 17 percent, rising to a record 61 percent of total FDI inflows. The share of the manufacturing sector fell to 31 percent. The report claims that rising wages and production costs have put an end to the significant edge that China once held in manufacturing. On the other hand, with three decades of wealth accumulation and residents' expectations for higher living quality, Chinese consumption has grown rapidly and still has great potential for further growth, which implies opportunities for foreign companies. A good example would be the automotive industry, in which foreign automotive companies build manufacturing facilities in China and sell products to local consumers. Based on this judgment, it is appropriate to assume the main component of inward FDI to China will gradually shift from export-oriented to market-oriented. And from the analysis above, depreciation of the RMB might deter this process.

To sum up, with inward FDI shifting from export-oriented to market-oriented, RMB depreciation is likely to deter FDI. But taking into account other factors, such as the huge potential of the Chinese market, it is hard to predict to what extent the effect of depreciation will be negative.

The Exchange Rate and China's Outward FDI

It is more complicated to analyze China's outward FDI, as outward FDI is still at a fast-expanding stage, while inward FDI has entered a more mature and stable period.

Unlike the analysis of inward FDI, for China's outward FDI, it is more appropriate to decompose its origins by ownership types, namely, state-owned enterprise or not. When making FDI decisions, enterprises owned and backed by the Chinese government aim not only at profit maximization, but also political objectives, because their foreign investments usually follow the government's national strategies and foreign policies. This type accounted for 50.4 percent of total outward FDI in 2015. In recent years, private Chinese enterprises have played a more and more active role in purchasing foreign assets. Currently, though, private enterprises generate only 2.1 percent of total FDI outflows. Mixed-ownership enterprises account for the remaining 47.5 percent. We assume that they act more like private companies, as they are not directly owned and controlled by the government.

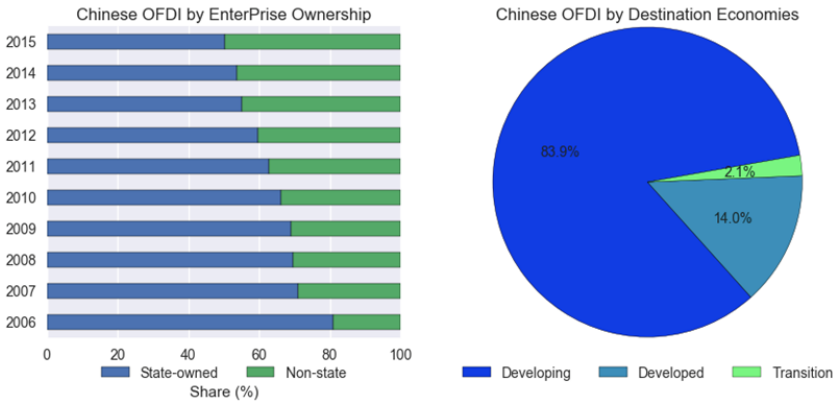


Figure 4. *Decomposition of China's Outward FDI*
Source: 2015 Statistical Bulletin of China's Outward Foreign Direct Investment

As the private sector plays a more and more important role, RMB depreciation has a negative impact on China's outward FDI. State-owned enterprises used to be the main source of China's outward FDI, naturally leading to a larger proportion

of FDI to less developed economies, because of the political peculiarity mentioned above. In this regard, as long as government planning is still the core driver, the exchange rate level plays only a minor role in influencing state-owned enterprises' FDI activities. However, as can be seen from the graph above, the share of non-state-owned enterprises has been steadily expanding in recent years, and we have every reason to assume this trend will continue in the coming years. Thus, China's future outward FDI will be more constrained by standard economic principles. Furthermore, at least in the near future, Chinese enterprises' outward FDI is by no means efficiency-seeking (export-oriented), so it is reasonable to assume that their FDI decisions would be negatively influenced by the depreciation of RMB, which is consistent with the most findings of the literature.

However, China's outward FDI is still expected to grow in the long term. Under its latest national strategy, the Belt and Road Initiative, China will continue to expand its business overseas. Furthermore, at present China accounts for only 4.4 percent of global FDI—small compared with its roughly 15 percent share in global GDP (evaluated in purchasing power parity terms). In the long run, China's outward FDI can be expected to expand further, regardless of temporary exchange rate fluctuations.

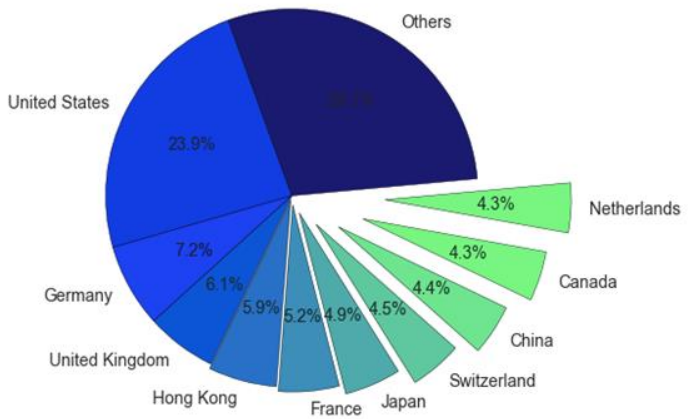


Figure 5. *Global Outward FDI Stock by Economies*
Source: 2015 Statistical Bulletin of China's Outward Foreign Direct Investment

Impact on Hong Kong

So far, we have investigated inward FDI based on categorizing it as market (cost)-oriented or export-oriented, and we have examined outward FDI by decomposing the sources into state-owned and non-state-owned enterprises. The qualitative result is that the depreciation of RMB has a negative impact on both inward and outward FDI.

Hong Kong's FDI, as well as related business sectors, would suffer from a depreciation of the RMB. As we already mentioned, it is no secret that many Chinese enterprises use Hong Kong as a channel to invest overseas, and much foreign capital enters China through the same gateway. These money flows, though not directly invested in Hong Kong, are counted as inward or outward FDI. In this regard, if our analysis that RMB depreciation would deter both inward and outward FDI for China is correct, it would also cut Hong Kong's FDI. In fact, Hong Kong benefits substantially from its role as a financial platform for China, which is also a reason for its status as an international financial center. Thus, a deterioration of China's FDI caused by RMB depreciation would lead to loss in related sectors in Hong Kong, including banking, financial service, business consulting and etc.

Summary

The impact of RMB depreciation may be negative for FDI, but the big picture suggests that the effect would be temporary. According to logical analysis based on pervious literature and the latest statistics, RMB depreciation alone is likely to deter both China's inward and outward FDI, and thus also reduce Hong Kong's FDI as well as hurt related business sectors. However, we have argued that one should not analyze FDI based on only one factor. In fact, as Athukorala (2003) has pointed out, FDI was much more stable than other forms of foreign capital inflows (portfolio investment, bank credit and etc.) during the East Asian financial crisis and the subsequent depression. Hill and Jongwanich (2009) reached a similar conclusion for outward FDI during the crisis and afterwards.

Looking at an overall picture, then, fluctuations in the RMB are not likely to have long-lasting negative effects on FDI.

External Merchandise Trade

Hong Kong's External Trade Industry

Hong Kong is the eighth-largest trading economy and the largest re-export economy in the world. In 2016, Hong Kong's total external merchandise trade was US$973.9 billion. In 2015, only 25.7 percent of its total imports were retained for use in Hong Kong; the rest was re-exported to other markets. The retained imports ratio has stayed at around 25 percent over the last decade. In 2016, domestic exports (goods produced in Hong Kong) accounted for only 1.2 percent of total exports, the rest being produced in other economies and re-exported to other markets. The domestic export ratio was around 6 percent in 2005, and has been declining steadily over the last decade. After the transfer of sovereignty to China in 1997, Hong Kong's economy structure experienced great changes. With most of its manufacturing industry having moved to China, Hong Kong's present economy is largely services-based. This is also reflected in the trading sector.

Hong Kong's external trade sector relies heavily on re-exportation, which represents over 98 percent of total exports. Re-exports consist of foreign goods exported in the same state as previously imported. Profit in the re-export business comes from the difference between the import value of goods and the re-export value of goods—the re-export margin. As a percentage of the import value, the re-export margin ranged from 18 percent to 21 percent over the decade from 2005 to 2015.

China is the largest trade partner for Hong Kong. It accounted for 50.8 percent of total trade value of Hong Kong in 2016. It is also the largest re-export partner of Hong Kong, in terms of both origins and markets. In 2016, 58.8 percent of Hong Kong's re-exports originated from China, while 54.3 percent of re-exported goods were sold to China.

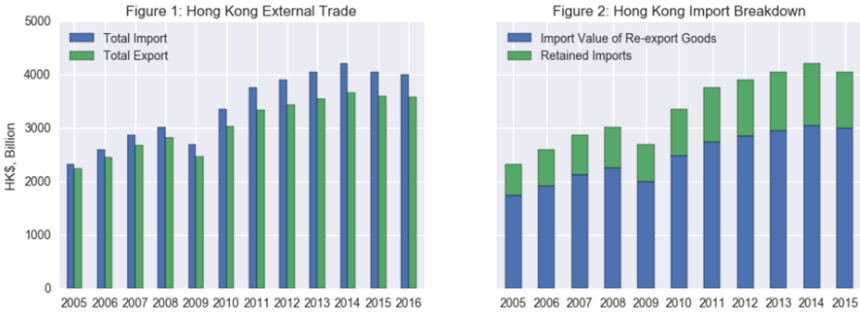


Figure 6. *Hong Kong's Overall External Trade*
Source: Hong Kong Trade and Developemnt Council (HKTDC)

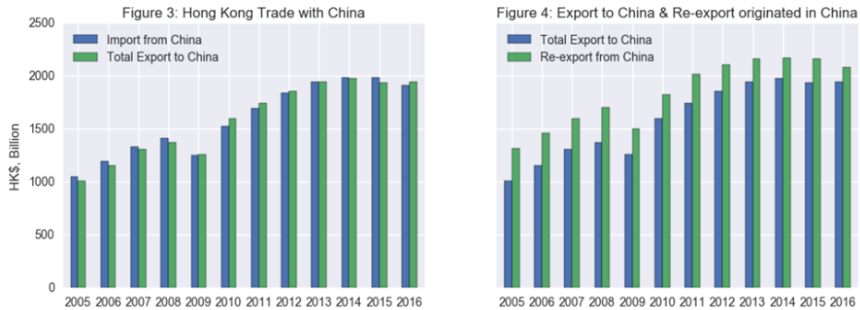


Figure 7. *Hong Kong's Trade with China*
Source: Hong Kong Trade and Developemnt Council (HKTDC)

RMB Depreciation and Hong Kong's External Trade

A depreciation of the RMB would influence Hong Kong's trade industry in two opposite directions through the re-export channel, and the overall effect is likely to be positive. Devaluation would stimulate China's exports, and thus increase Hong Kong's re-exports originating in China. On the other hand, devaluation would also reduce Hong Kong's exports to China (both domestic exports and re-exports originating in third countries). The net effect of these changes is likely to be positive, because as shown in Figure 4 above, the value of re-export originating in China is larger than Hong Kong's total exports to China.

The higher re-export margin rate from China strengthens this effect. Re-export margins of goods from different origins vary considerably. Available data are somewhat old, but

historically, according to calculations by Hang Seng Bank (2015), re-exports originating in China are much more profitable than re-exports from other regions. In this regard also, then, the influence of a depreciation in the RMB on Hong Kong's trade industry would likely be positive.

Quantitative estimates for this effect could be obtained by calculations based on certain assumptions of the connection between currency depreciation and net exports. According to IMF research (2015), "a 10 percent real effective depreciation in an economy's currency is associated with a rise in real net exports of, on average, 1.5 percent of GDP, with substantial cross-country variation around this average." Let us assume the estimated mean is approximately true with China for the following analysis.

A 10 percent depreciation in RMB would lead to a 27.5 percent rise in Hong Kong's net re-exports from China, and thus generate more profits for the trade sector. If we assume that the effective exchange rate of the RMB depreciates 10 percent, then according to IMF research, China's net exports would increase by 1.5 percent of GDP. That is, based on data in 2015, China's net exports would increase by 27.5 percent. This would influence Hong Kong through the re-export channel: re-exports originating in China would rise, while re-exports to China would likely decline. The total effect should be an increase in net re-exports from China. We assume it would be of the same percentage as the change in China's net exports, 27.5 percent. Taking the re-export margin premium from China into account, it would result in a considerable profit surge for Hong Kong's trade sector.

Table 4. *Estimated Effect of 10% Depreciation in RMB on Hong Kong's Net Exports**

	Billion US$	Billion HK$	%
Estimated Rise in China's Net Exports (1)	165.1	= 1282.9	1.5%
- China's Nominal GDP	11007.7		
- Assumed RMB Depreciation			10%
China's Net Export (2)	600.2	= 4663.4	
- China's Import Value	1681.7	= 13066.6	
- China's Export Value	2281.9	= 17730.0	

Estimated Rise in China's Net Export (%): (1) / (2)		27.5%
HK's Net Re-exports Originating in China (5): (3) – (4)	226.5	
- Re-export Originating in China (3)	2163.0	
- Re-exports to China (4)	1936.5	
HK's Share (Re-exports) of China's Net Exports: (5) / (1)		4.9%
Estimated Rise in HK's Net Re-exports Originating in China	62.3	27.5%

Source: World Bank, HK Census and Statistics Department, calculations by Richard Li.
*Due to data availability, all values above are 2015 based.

However, the accuracy of the estimate is uncertain due to the complicated components and trends of re-exports. First, a large portion of re-exports originating in China are re-exported to China. That means Hong Kong's trading companies resell products to China after purchasing and processing (in some cases) goods originally produced in China. In this case, changes in the RMB would influence both directions in trade, which makes it hard to estimate the overall effect. In 2016, this type of trade represented 40.8 percent of Hong Kong's total re-exports. Second, the surplus between re-exports originating in China and Hong Kong's total exports to China has actually been declining over last decade, as China's trade surplus has been shrinking. Third, as is shown in Appendix 4, the gap between re-export margins from China and from other economies has been narrowing over time.

Table 5. Re-exports Originating in China by Destinations in 2016

Destination	**Value (million HK$)**	**Share (%)**
China	851,427	40.8
United States	276,730	13.3
Japan	95,483	4.6
India	65,521	3.1
Germany	60,053	2.9

Source: Hong Kong Trade and Development Council (HKTDC)

Finally, in the current situation, referring only to the RMB-U.S. dollar rate exaggerates the effect of the depreciation of the RMB, and results in misleading conclusions about its impact on net exports. Typically, when people talk about the RMB's depreciation, they are referring to the bilateral exchange rate with the US dollar. However, what really matters to the overall performance of China's exports is the effective exchange rate, which is calculated based on weights of trading partners and changes in their currencies versus the RMB. The figure below shows historical data on the RMB-U.S. dollar rate and the RMB effective exchange rate. Relative to the dollar, the RMB started depreciating at the beginning of 2014. However, the effective exchange rate continued to rise until the end of 2015, which means the RMB was still appreciating relative to currencies of other trading partners during the period. The RMB has depreciated by 11.8 percent relative to the U.S. dollar since its peak in 2014, while its effective exchange rate has only depreciated by 6.8 percent. But the two rates have declined at roughly the same pace since 2016. In this regard, depreciating only relative to the U.S. dollar may not boost China's exports much, hence it may require a larger devaluation to benefit Hong Kong's trade industry substantially through the channels just discussed.

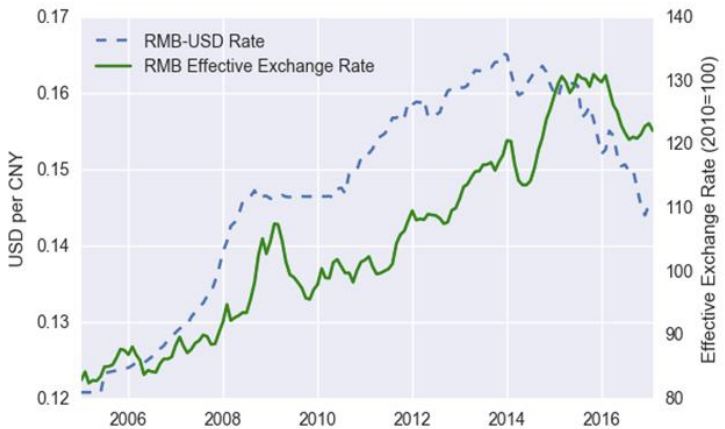


Figure 8. *RMB-U.S. Dollar Rate and RMB Effective Exchange Rate*
Source: Bank for International Settlements; Federal Reserve Bank of St. Louis FRED database

Summary

RMB depreciation is likely to have a positive impact on Hong Kong's trade industry through the re-export channel. According to our estimate based on IMF research, a 10 percent depreciation would result in a 27.5 percent increase in Hong Kong's net re-exports from China.

Tourism & Retail Sales

Tourist Numbers

Tourist arrivals to Hong Kong boomed between 2003 and 2014, because of positive changes in China. Hong Kong has long been a popular travel destination in Asia, and tourism is one of the four pillar industries for Hong Kong's economy (along with financial services, trading and logistics, and professional and producer services). It developed faster than ever from 2005 to 2014, when the total number of tourists to Hong Kong increased from 23 million to 61 million. China contributed over 90 percent of the increase over the period, and accounted for 77.7 percent of visiting tourists in 2014. Many factors caused the sharp increase of Chinese tourists, among which the Chinese government's relaxation of restrictions on tourism was the most significant one, as pointed out by Cheng (2011). In July 2003, the Chinese government announced an Individual Visit Scheme (IVS) for Hong Kong travel, allowing Chinese residents to visit Hong Kong at their own expense. It was the first time in more than 100 years that Chinese citizens were able to visit Hong Kong freely. Chinese tourists flooded into Hong Kong over the decade afterwards. Also, the political atmosphere was still mild following the smooth transfer in 1997; tension between Hong Kong democracy activists and the Chinese government, currently high, was then low. In addition, rising income and the appreciation of the RMB against the U.S. and Hong Kong dollars increased the consumption power of Chinese tourists.

However, falling tourism demand from China caused tourist numbers to fall from their peak of 2014. Annual tourist numbers dropped by around 7 percent from 2014 to 2016. China accounted for all the decrease, since tourist arrivals from other

places were still increasing. Several factors combined to cause the sudden drop from China. First, China's economic growth slowed in the 2010s, casting a shadow on Chinese households' expectations for income growth. Second, political tensions with the Chinese government arose in Hong Kong, deterring Chinese tourists. In the meantime, Chinese travel preferences began to change rapidly as a result of competition from other destinations, including southeast Asia, Japan, South Korea, and Europe. And finally, the RMB depreciated against the Hong Kong dollar, which can be viewed as the most important reason.

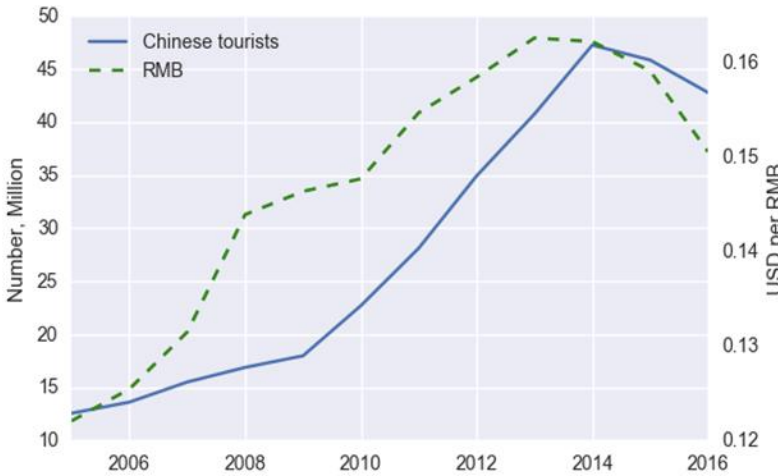


Figure 9. *RMB-U.S. Dollar Exchange Rate and Chinese Tourist Numbers*
Source: Federal Reserve Bank of St. Louis FRED database; Hong Kong Tourism Board

Currently, the exchange rate plays a more important role in Hong Kong's tourism industry than it did a few years ago, because shopping is now the main purpose of Chinese tourists. Over the booming decade from 2005 to 2014, Chinese tourists visited Hong Kong for various reasons: sightseeing, entertainment, good food, shopping, etc. Nowadays, most visit Hong Kong mainly for shopping. Furthermore, Chinese tourists used to shop mainly for luxury goods, but in recent years, Chinese visitors have been using Hong Kong as a kind of

supermarket, as they are buying daily essentials. This change makes such shopping trips more sensitive to exchange rate changes. Stephen (2014) points out that it results from the cheap prices of such goods resulted from Hong Kong's separate currency and tax regime from China. When the RMB was appreciating, shopping trips boomed, and when the RMB depreciated unexpectedly, they slowed down sharply. This is exactly the case since 2014.

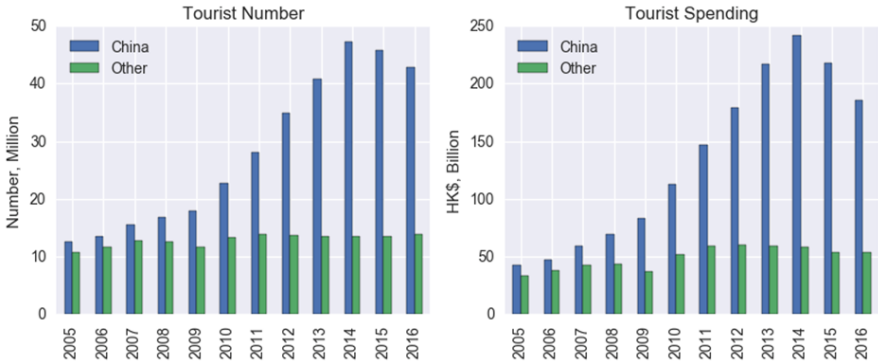


Figure 10. *Tourist Numbers and Spending*
Source: Hong Kong Tourism Board

Tourist Spending

Tourist spending experienced the same up and down trends as tourist numbers. From 2005 to 2014, total tourist spending in Hong Kong increased by four times, while Chinese tourist spending expanded by six times. Total tourist spending in 2014 was HK$300 billion (13.3 percent of GDP), and Chinese tourists represented 80 percent of that amount. However, after peaking in 2014, total tourist spending dropped 21 percent between 2014 and 2016. Spending by Chinese tourists dropped by 23.5 percent over the period, while spending by other tourists dropped 9.2 percent. The decrease in spending was larger than the decrease in tourist numbers because per capita spending also declined, as is shown in the table below.

There are two different types of tourists in Hong Kong. The first is typical overnight tourists, who stay in Hong Kong for

several days. The other is day-trippers. Day-tripping is big in Hong Kong, because of the shopping considerations mentioned above. Hong Kong is only two hours by train from the Guangzhou-Shenzhen metropolitan area, which has more than 50 million people. Many visitors from that area visit and return the same day. Currently, day-trippers represent about 60 percent of total tourists, while overnight tourists represent about 40 percent.

The two types of Chinese tourists behave differently. As Table 7 shows, for day-trippers the main purpose is shopping. For them, if the RMB depreciated, Hong Kong products would become more expensive, demand for Hong Kong goods would be lower, and thus there would be fewer day-trippers. If they continued to shop in Hong Kong, though, it probably would mean that they really want to buy certain goods, so the per capita spending would not be much lower. Another important point regarding day-trippers is that compared to other shopping destinations, like South Korea, Japan and Europe, Hong Kong has a great locational advantage. In contrast, most overnight tourists are from regions comparatively far from Hong Kong. Typically, shopping is not their only purpose; they also want to go sightseeing, eat good food, etc. Such tourist numbers would not decline as much as those of the day-trippers. However, they tend to save money by spending less on shopping, and changing their shopping destinations to other regions in the world, when prices in Hong Kong become unattractive. Thus they are likely to have lower per capita spending.

Table 6. *Tourist numbers and per capita spending, changes*

Year	Change in RMB	Change in tourist numbers		Change in per capita spending	
		Sameday	Overnight	Sameday	Overnight
2014	-2.43%	19.09%	11.63%	-0.74%	-2.62%
2015	-4.22%	-1.15%	-5.66%	-0.19%	-8.95%
2016*[1]	-6.7%	-8.74%	-3.51%	-6.27%	-10.40%

Source: Hong Kong Tourism Board

[1] The latest data for tourist spending is Jan-Jun 2016, we generated spending data for the second half of the year based on the tourist number.

Table 7. *Tourist spending based by category in 2016 (January-June)*

Category	Same-day tourists		Overnight tourists	
	Value (mn HK$)	%	Value (mn HK$)	%
Shopping	27,996.53	85.1	37,433.15	65.9
Hotel	244.57	0.7	7,373.46	13.0
Meals outside hotels	1,374.55	4.2	6,865.90	12.1
Entertainment			1,566.90	2.8
Tours			79.56	0.1
Others	1,684.13	5.1	3,517.09	6.2

Source: Hong Kong Tourism Board

Literature on Exchange Rates and Tourism

Numerous studies on international tourism demand have been carried out since the late 1970s. They find that the exchange rate elasticity of tourist spending is significantly negative, but varies by tourist origins and destinations. Crouch (1993) summarizes over 300 studies prior to 1993 and finds that most use regression analysis to derive tourism demand elasticities. GDP growth and exchange rates, as proxies for income levels and tourism prices, respectively, are the typical explanatory variables; tourist numbers, tourist spending, and hotel rates are the typical response variables. Some studies build empirical models for a pair of origin and destination over a time span, while others research on various destinations at the same time point. According to Crouch, the exchange rate elasticity of tourism demand varies a lot across studies, with a mean of around -1, which implies that a 10 percent appreciation in prices at the destination would lead to a 10 percent decrease in tourism demand, and vice versa.

Recent literature employs more advanced econometric techniques and investigates more explanatory variables. Vogt (2008) and Cheng, Ming, Kim, Thompson (2013) stress the importance of real exchange rate and income for both U.S. inbound and outbound tourism. Yap (2011) finds that international tourists are sensitive to appreciation of the Australian dollar in the short run, but not in the long term. Wang, Chen, Lu and Hwang (2008) use a copula approach to

examine the negative relationship between international tourist arrivals to Asia and exchange rate.

Some literature is particularly instructive for our study. Ruane (2014) investigates the relationship between Japan's exchange rate and tourism in Guam. When the study was carried out, Japan accounted for about 70 percent of tourist arrivals to Guam, and the yen was depreciating sharply against the U.S. dollar, which is very similar to our hypothesized China and Hong Kong situation, except that Hong Kong is not a completely tourism-dependent economy. Analyzing Scotland's tourism, Greenwood (2007) finds that the exchange rate has a much greater impact on short-haul visitors than long-haul visitors. As we have seen, day-trippers from areas adjacent to Hong Kong represent a large share of its tourist arrivals. Cheng (2012) adds dummy variables to regression models and concludes that the relaxation of visa requirement and the launch of the Individual Visit Scheme play a more important role than exchange rate for Chinese tourists to Hong Kong. Finally, instead of focusing on realized changes, some literature stresses the importance of expectations. For instance, Tse (2001) studies the impact of economic factors on tourism in Hong Kong and points out that "real tourist expenditure depends on expected income, expected exchange rate and price level."

Empirical Model

We will use a regression model to investigate Chinese tourism demand elasticities with respect to the exchange rate and income. Recent literature has been using increasingly sophisticated econometric models and has included variables in addition to the exchange rate and income; for example, relative inflation, tax and even events like relaxation of visa requirements. An entire paper would be required to build such models for Hong Kong's tourism. Instead, we will take a glimpse at the statistical relationships by using the old method and the most typical explanatory variables – the exchange rate and income. Our model can be expressed as follows.

$$Vt = \beta o + \beta 1 ERt + \beta 2 Incomet + \varepsilon t$$

where for each time t:
Vt: tourist number or tourist spending
ERt: exchange rate
Incomet: Chinese GDP
εt: error term
β1, 2: elasticities to be estimated

All variables are yearly data transformed into year-on-year percentage changes. We not only investigate the impact on total Chinese tourist numbers, but also examine the two types of tourists we have described as well as the effect on the per capita spending of each type. For exchange rate, we will examine the bilateral exchange rate between the RMB and U.S. dollar (since the Hong Kong dollar is fixed to the U.S. dollar), the effective exchange rate of the Hong Kong dollar, and the effective exchange rate of RMB. We will also test the performance of the quadratic form of the exchange rate. For Chinese GDP growth, we use annual GDP growth data published by the World Bank.

The data can be found in an accompanying file, issued with this paper. The Python notebook (code) of the regression model is available from the author upon request.

Interpretation of Empirical Results

Regression models show a positive relationship between the RMB-U.S. dollar rate and Chinese tourism demand to Hong Kong, while the impact of income level is not significant in most specifications. We have examined the RMB-U.S. dollar rate, the Hong Kong dollar effective rate, and the RMB effective rate, but only report results for the RMB-U.S. dollar rate due to its better regression performance. We decided to include the quadratic form of the RMB-U.S. dollar rate based on the improvement in adjusted R-squared. We ran the regression model for both no lags and a lag of 1 (for a given year, the explanatory variables are growth rate of the year before). For most model specifications, the exchange rate, represented by

the RMB-U.S. dollar rate, has a statistically significant impact on tourist numbers and spending. However, in contrast to previous literature, the Chinese income level is not significant in most of our models. The reason may be that correlation between the annual growth rates of the RMB-U.S. dollar rate and China's GDP is over 0.7, which may lead to multicollinearity in the linear regression. It also may be that since over our sample period (2005-2016), China's GDP growth was always positive, it failed to explain the fall in tourism since 2014 ("growth of GDP growth" may solve the problem). Finally, due to the quadratic form of the exchange rate term, the relationship between the exchange rate and tourism demand is not linear. However, as the squared power of a 10-30 percentage change is comparatively small and thus can be omitted in rough estimation, we can take the coefficient of exchange rate in the regression model as the exchange rate elasticity of tourism demand in Hong Kong. Our empirical results are summarized in Appendix 6.

RMB depreciation would deter Chinese tourism demand in Hong Kong, and day-trippers are more sensitive than overnight tourists. This is shown in three aspects of the model. First, with no lag in variables, the exchange rate is only significant for total Chinese tourists and day-trippers, though it is also significant for overnight tourists when there is a one-year lag. Second, the exchange rate can explain about 65 percent of variations in day-tripper numbers (as measured by adjusted R-squared), while it accounts for about 50 percent of changes in overnight tourist numbers. Third, the coefficient of the RMB-U.S. dollar rate in the specification for day-trippers is twice as large as that for overnight tourists. This is consistent with the abovementioned fact that the major purpose of day-trippers visiting Hong Kong is shopping. If changes in exchange rate make goods in Hong Kong more expensive, day-trippers' demand for such shopping trips would decrease sharply. Another explanation can be derived from Greenwood's (2007) finding that the exchange rate has a greater impact on long-haul tourists (overnight tourists, in this case) than short-haul tourists (day-trippers to Hong Kong, mainly Chinese). Beside, in all specifications, the coefficients of exchange rate are larger when there is a one-year

lag. This is intuitively reasonable, as normal people tend to plan their travel based on known information – realized exchange rate changes, instead of the ongoing fluctuations. To summarize, the exchange rate elasticity of Chinese tourism demand to Hong Kong is around -2 to -3, meaning that a 10 percent depreciation in RMB would lead to a 20-30 percent drop in Chinese tourist arrivals.

Aggregate Chinese tourist spending would be negatively impacted by RMB depreciation. However, the exchange rate effect is only significant for overnight per capita spending, not for day-tripper per capita spending. Generally speaking, regression models fit better for tourist spending than for tourist numbers, accounting for over 70 percent of variations in total Chinese tourist spending (with no lag). As Tables C and D in Appendix 6 show, the RMB-U.S. dollar rate is significant for total Chinese tourist spending, as well as for spending from Chinese day-trippers and overnight tourists separately. This is a natural result of the decrease in tourist numbers. However, the exchange rate is not significant for per capita spending, except in the specification for overnight tourists with a one-year lag. This implies that day-trippers would not cut their spending much as long as they do visit Hong Kong, while overnight tourists may reduce their spending with an exchange rate elasticity of -3, which means that a 10 percent RMB depreciation against the U.S. dollar would lead to about 30 percent decrease in per capita spending. As a result, though day-tripper numbers would drop more than overnight tourists, their aggregate spending would decrease by approximately the same percentage. To sum up, the exchange rate elasticity of aggregate Chinese tourist spending is around -3 to -4, meaning that a 10 percent depreciation in RMB would lead to a 30-40 percent drop in Chinese tourist spending.

However, the exchange rate elasticity of tourism demand may not be as large as implied by the empirical results above. One reason may be that over the booming decade, the annual growth rate of tourism demand from China was much larger than the annual changes in exchange rate. As a result, the coefficients in the regression model will be large, thus leading to a large exchange rate elasticity of tourism demand. In fact,

as pointed out by Cheng (2012), the main reason of the tourism boom was the launch of the Individual Visit Scheme, which had nothing to do with exchange rates. In this context, the effect of exchange rate implied by the empirical models is exaggerated. However, with the maturing of Chinese tourism market, the exchange rate should in the future have the normal impact identified in the economic literature on tourism.

Retail Sales

The retail sales sector benefits the most from growth in tourism, as it attracts the largest share of tourist spending. Tourist spending runs through many channels, including retail sales, hotels, entertainment, catering etc., but for Hong Kong, retail sales is the most important one. Shopping typically accounts for 70 to 80 percent of Chinese tourist spending. Retail sales only covers consumer spending on goods and does not include spending on services such as entertainment and transport. In this regard, tourist spending on shopping is included in retail sales, but tourist spending on entertainment, tours and similar items is not. The share of Chinese tourist spending in Hong Kong's retail sales expanded over the boom period of 2005-2014, peaking at about 38 percent in 2014. After that, with the drop in both tourist numbers and per capita spending, tourists' expenditure on shopping declined along with their overall spending. Retail spending from local consumers did not change much, so the share also dropped.

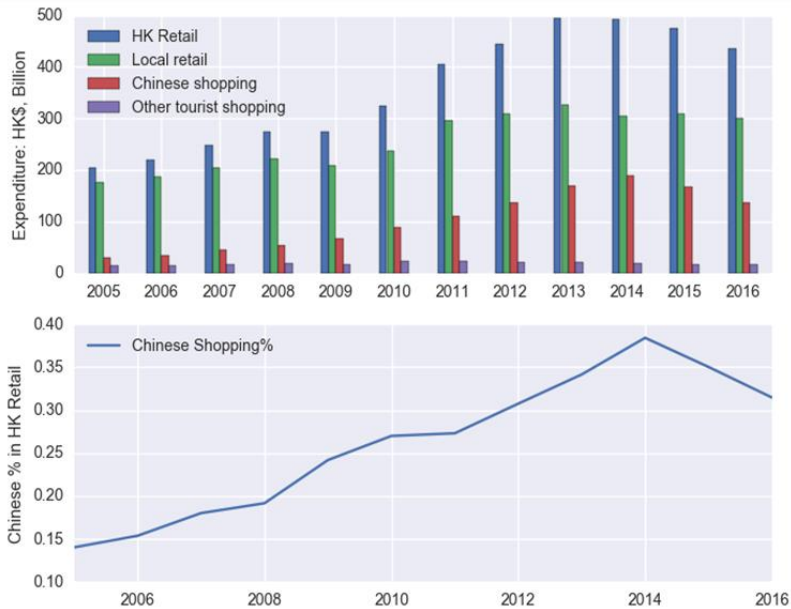


Figure 11. *Hong Kong Retail Sales and Chinese Tourists' Shopping Expenditure*
Source: Hong Kong Tourism Board

According to our calculations below, falling Chinese tourist expenditure on shopping would definitely hurt retail sales in Hong Kong. If the RMB further depreciated by 10 percent, spending on shopping from Chinese tourists would shrink by 20-30 percent. If we assume that local retail consumption and shopping expenditure from other tourists do not change much, as shopping spending from Chinese tourists represents around 30 percent of the total Hong Kong retail sales, retail sales would drop by 6-10 percent.

Table 8. *Tourist Spending*

	2014	2015	2016*[2]
Retail Sales Value (1)	493.3	475.2	436.6
Overall Visitor Spending	300.8	271.5	238.3
- Same-Day Visitor Spending	79.7	78.5	69.1

[2] The latest data for tourist spending are for January-June 2016, so we generated projected spending data for the second half of the year based on the tourist numbers.

- By Chinese Tourists	76.1	75.1	65.7
- On Shopping (2)	70.3	68.3	58.8
- Overnight Visitor Spending	221.0	193.0	169.3
- By Chinese Tourists	166.0	142.6	119.4
- On Shopping (3)	119.3	98.1	78.6
Chinese Tourists' Spending as Part of Retail Sales: (1)+(2)	189.6	166.4	137.4
- Share of (1)	38.4%	35.0%	31.5%

Source: Hong Kong Tourism Board

Summary

Hong Kong's tourism and retail sales industry would be negatively impacted by China's devaluation. RMB depreciation would deter tourism demand from China, but its impact is greater on day-trippers than overnight tourists, in terms of tourist numbers. On the other hand, however, per capita spending by overnight tourists is more sensitive to exchange rates than is spending by day-trippers. The overall effect would be a large decrease in aggregate tourist spending. Given that spending from Chinese tourists represents over 30 percent of Hong Kong's retail sales, devaluation of the RMB would lead to a contraction of Hong Kong's retail sector.

Conclusions

In this paper, we first reviewed Hong Kong's situation during the 1997-98 East Asian financial crisis, then investigated the impact of a hypothetical sudden RMB depreciation on Hong Kong by analyzing three key sectors: foreign direct investment, eternal trade and tourism.

RMB depreciation is likely to deter both China's inward and outward FDI, and thus also to reduce Hong Kong's FDI as well as hurt related business sectors. Our analysis shows that China's inward FDI is gradually shifting from export-oriented to market-oriented, and the latter will be deterred by depreciation in RMB. On the other hand, as non-state-owned enterprises make up a larger share of China's outward FDI, China's FDI activities should become more sensitive to exchange rate changes. However, we also find that FDI is much

more stable than other forms of foreign capital inflows during economic fluctuations. In addition, taking China's huge economic size into account, China's FDI is still expected to expand in the long run. As a service platform, Hong Kong may suffer from short-term stress, but is likely to participate in the long-run growth in China's FDI.

Hong Kong's trade sector is likely to benefit from RMB depreciation through its re-export channel for China. After breaking down Hong Kong's external trade statistics, we find that re-exports account for most exports and a large share of imports. To some extent, re-exports serve as a channel for China's external trade, and Hong Kong profits from re-export margins. A depreciation of the RMB would stimulate China's net exports, and therefore increase net re-exports generated from China. Since re-export business from China yields higher margins than re-exports from elsewhere, this would lead to more profits for Hong Kong's trade industry.

Tourism and retail sales will suffer greatly from depreciation in RMB. Our detailed analysis on tourist composition shows that tourists from China play a dominant role in Hong Hong's tourism sector. RMB depreciation will deter tourism demand from China, but its impact is greater on day-trippers than overnight tourists, in terms of tourist numbers. On the other hand, however, per capita spending by overnight tourists is more sensitive to exchange rates than is spending by day-trippers. The overall effect is a large decrease in aggregate tourist spending. Given that spending from Chinese tourists represents over 30 percent of Hong Kong's retail sales, devaluation of the RMB would lead to a contraction of Hong Kong's retail sector.

Looking beyond this paper, the next step would be to investigate more industries and find the most appropriate theories and models for Hong Kong. Aside from FDI, trade and tourism, the property market, securities market, and entertainment industry are very important to Hong Kong's economy as well. They deserve further and deeper analysis.

Hong Kong has been highly integrated with China economically and financially since 1997. However, it retains its special political system, currency and tax regime, etc. It is much

more than a simple free port and international financial center. During our research, we found that little literature has been developed specifically about Hong Kong, or that it is too old to accommodate recent developments. Therefore, more efforts are required for updating economic theories and models for Hong Kong.

Appendix

Appendix 1. *Major Asian Currencies versus the US Dollar (July 1 to December 31, 1997)*

Currencies	Depreciation
Chinese RMB	< 0.5%
Hong Kong dollar	< 0.5%
Indonesian rupiah	- 47.6%
Japanese yen	- 11.5%
Korean won	- 47.6%
Malaysian ringgit	- 35.2%
Philippine peso	- 34.1%
Singapore dollar	- 14.6%
New Taiwan dollar	- 14.8%
Thai baht	- 41.2%

Source: Calculations by Jao (2001); some currencies depreciated further in 1998

Appendix 2. *Exports and Imports of Hong Kong, Year-on-Year Growth Rate (%)*[3]

	Exports			Imports	
	Total Exports	Re-exports	Domestic Exports	Total Imports	Retained Imports
1997 Annual	6	7	2	7	8
Q1	4	5	- 4	6	8
Q2	6	7	*	7	6
Q3	4	4	6	7	14
Q4	10	10	5	8	3
1998 Annual	- 4	- 4	- 8	- 7	- 14
Q1	1	2	- 5	- 2	- 9
Q2	- 1	- 1	- 1	- 2	- 4
Q3	- 7	- 7	- 9	- 10	- 19
Q4	- 10	-9	- 15	- 13	- 24
1999 Annual	4	5	- 7	*	- 12
Q1	- 5	- 4	- 9	- 10	- 23
Q2	- 2	*	- 13	- 8	- 23
Q3	8	11	- 8	7	- 2
Q4	12	14	1	12	6

Notes: * means change of less than 0.5%
Source: Calculations by Jao (2001)

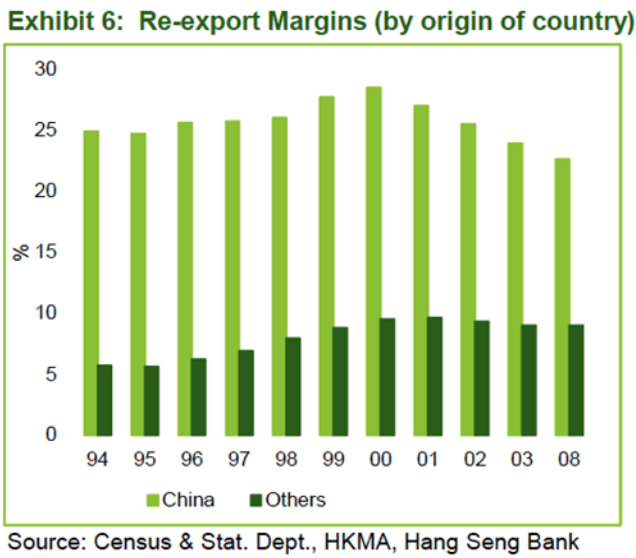
[3] The growth rates are in real terms, that is, the change in prices has been subtracted from the nominal values. According to Jao (2001), prices declined by 2-6% during the East Asian financial crisis.

Appendix 3. *2015 Hong Kong FDI by Home/Destination Economies (Billion Hong Kong Dollars)*

	Inward				Outward			
Economy	Inflows		Stock		Outflows		Stock	
BVI	437.5	32.4%	4,325.5	35.1%	-16.4	-2.9%	4,840.5	40.8%
China	200.8	14.9%	3,270.3	26.5%	306.6	55.1%	4,701.8	39.6%
CI	404.3	29.9%	861.7	7.0%	224.5	40.3%	455.2	3.8%
Netherlands	34.4	2.5%	778.7	6.3%				
Bermuda	59.4	4.4%	569.7	4.6%	24.0	4.3%	227.0	1.9%
Singapore	23.3	1.7%	343.1	2.8%	-8.2	-1.5%	71.4	0.6%
USA	3.0	0.2%	314.6	2.6%	-17.0	-3.1%	85.7	0.7%
Other	188.8	14.0%	1,872.3	15.2%	43.2	7.8%	1,487.8	12.5%
Total	1,351.5	100.0%	12,335.9	100.0%	556.7	100.0%	11,869.4	100.0%

Source: Hong Kong, Census and Statistics Department, External Direct Investment Statistics of Hong Kong 2015
Notes: BVI = British Virgin Islands; CI = Cayman Islands

Appendix 4. *Re-export Margins by Origins*

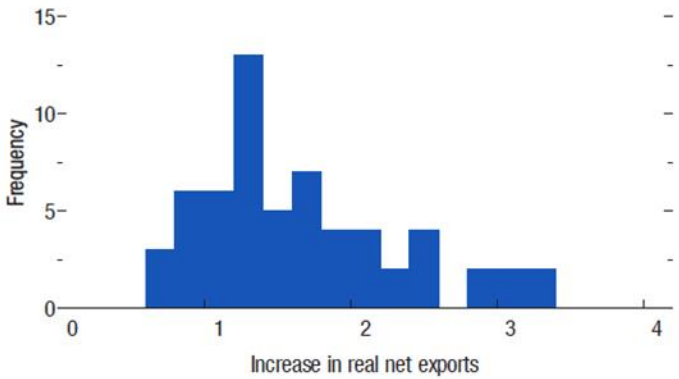


Appendix 5. *Effect of a 10% Real Effective Depreciation on Real Net Exports*

Figure 3.3. Effect of a 10 Percent Real Effective Depreciation on Real Net Exports

(Percent of GDP)

A 10 percent real effective depreciation in an economy's currency is associated with a rise in real net exports of, on average, 1.5 percent of GDP, with substantial cross-country variation around this average.



Source: IMF staff calculations.
Note: Figure shows long-term effect on level of real net exports in percent of GDP based on country-specific import- and export-to-GDP ratios and the average producer price index–based trade elasticities reported in Table 3.1 for the 60 economies in the sample.

Appendix 6. *Empirical Results*

Table A. Results for Chinese Tourist Numbers

Response Variable	Coefficients for Variables				Adjusted r-squared
	Constant	Chinese GDP	RMB-US$	RMB-US^{2}	
All Tourists	25.7249	-1.7800	2.1680		0.287
All Tourists	26.0926 *	-1.2158	2.1914 **	-0.2812 *	0.497
Day-Trippers	20.1648	0.3411	2.4903 *	-0.3926 *	0.617
Overnight Tourists	9.3923	0.2083	1.1756	-0.2364	0.354

Notes: ** means significance (p value < 0.05); * means (p value < 0.1)

Table B. *Results for Chinese Tourist Numbers (with one-year lag)*

Response Variable	Coefficients for Variables (with lag 1)				Adjusted r-squared
	Constant	Chinese GDP	RMB-US$	RMB-US$²	
All Tourists	12.7928	-0.4005	1.4742		-0.021
All Tourists	18.4448	-0.4421	3.2916 **	-0.5662 **	0.484
Day-Trippers	11.5427	1.1527	4.0543 **	-0.7754 **	0.645
Overnight Tourists	10.6412	0.1127	2.1727 *	-0.5025 **	0.489

Notes: ** means 5% significance level (p value < 0.05); * means 10% significance level (p value < 0.1)

Table C. *Results for Chinese Tourist Spending*

Response Variable	Coefficients for Variables				Adjusted r-squared
	Constant	Chinese GDP	RMB-US$	RMB-US$²	
All Tourists	20.6920	-1.0672	3.1995 **		0.561
All Tourists	21.1631	-0.3443	3.2294 **	-0.3603 **	0.748
Day-Trippers	14.7568	1.3334	3.5730 **	-0.2979 **	0.904
Overnight Tourists	17.4091	-0.1978	3.0721 **	-0.3777*	0.637
Same-Day per Capita	-13.7492	2.1511	0.6960	-0.0175	0.525
Overnight per Capita	0.8441	0.4869	1.4487 **	-0.1515	0.562

Notes: ** means 5% significance level (p value < 0.05); * means 10% significance level (p value < 0.1)

Table D. *Results for Chinese Tourist Spending*

Response Variable	Coefficients for Variables (with lag 1)				Adjusted r-squared
	Constant	Chinese GDP	RMB-US$	RMB-US$²	
All Tourists	1.1319	0.9266	2.2709		0.237
All Tourists	7.4123	0.8803	4.2903 **	-0.6291 **	0.519
Day-Trippers	-9.4751	4.0093 **	4.3830 **	-0.8004 **	0.894
Overnight Tourists	7.2177	0.5769	4.2135 *	-0.6071 *	0.383
Same-day per Capita	-21.7607 *	3.0482 **	0.5708	-0.1389	0.506
Overnight per Capita	-6.0592	0.8427	1.7980	-0.1115	0.433

Notes: ** means 5% significance level (p value < 0.05); * means 10% significance level (p value < 0.1)

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4 Hong Kong: The currency board's autopilot kicks in at 7.85

John ***Greenwood***

Introduction

Over the past nine years since the Global Financial Crisis (GFC) of 2008-09, Hong Kong's exchange rate has persistently remained on the strong side of the Hong Kong Monetary Authority's convertibility band, often close to the strong side Convertibility Undertaking at HK$ 7.75 per US$ 1.00. However, starting in early 2017 the market rate for the HK$ started to weaken, moving away from the 7.75 level, and on 12 April 2018 the rate finally reached the weak side Convertibility Undertaking at HK$ 7.85, triggering US$ sales by the HKMA.

Why did the HK$ remain so firmly on the strong side of the 7.80 rate for currency note issuance for so long? Does the recent weakening of the exchange rate represent a crisis for the currency, or is it a normal part of the working of the Currency Board system? Given that the rise in interest rates in Hong Kong (represented by HIBOR) has lagged behind the increase in US rates (like US$ LIBOR) for the past two years, is there a case for the HKMA stepping in and accelerating the process of interest rate normalization?

This brief paper explores some of the background to these events, and how the HKMA should operate in the future.

Recent developments

The Hong Kong currency system is often referred to as a Linked Exchange Rate System (LERS) centered on HK$7.80 per US$1.00. However, in reality the HKMA is better described as operating an exchange rate band with the exchange rate varying between 7.75 and 7.85 per US$ 1.00 (see Figures 1 & 2).

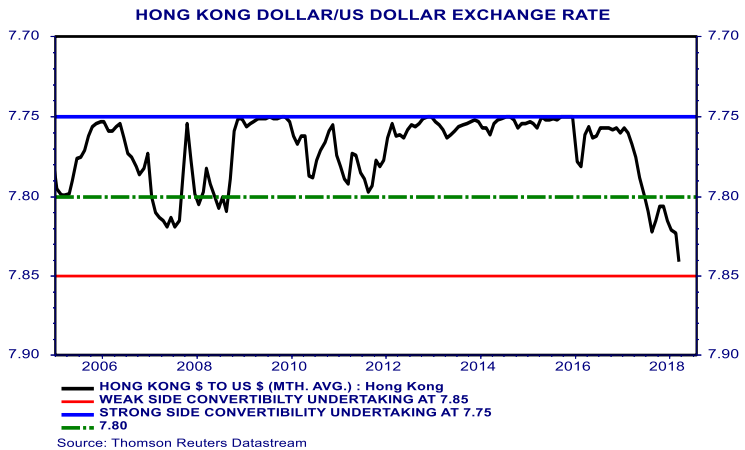


Figure 1. *Spot Rate for HK Dollars per US Dollar, 2005-18*

It is true that in order to issue banknotes the three note-issuing banks – the Hong Kong & Shanghai Bank, Bank of China, and Standard Chartered Bank - must pay US$ at the central 7.80 rate to the HKMA in order to obtain Certificates of Indebtedness (CIs) which in turn authorize the banks to issue HK$ banknotes. However, banknotes today only comprise about 6% of total HK$M3 (the broad money supply held by households and companies in Hong Kong). By contrast, the vast majority of foreign exchange transactions occur in the open market at exchange rates somewhere between the two limits of 7.75 and 7.85 – i.e. within the convertibility band.

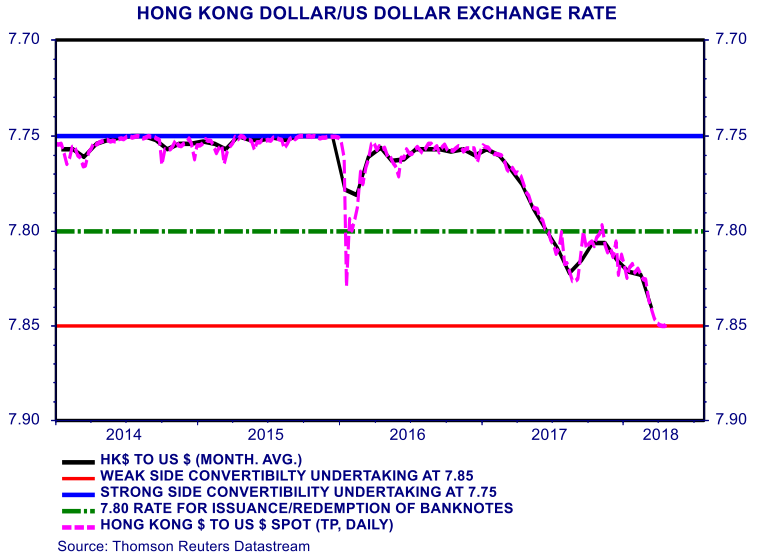


Figure 2. *Daily Spot Rate for HK Dollars per US Dollar, 2014-18*

A key point to note about the system is that so-called interventions by the HKMA are in fact not initiated by the HKMA at all, but rather by the commercial banks. The reason is that the HKMA has issued "Convertibility Undertakings" (CU) or promises to sell Hong Kong dollars at 7.75, and US dollars at 7.85 in whatever amounts the market requires.

So whenever the HKD/USD exchange rate reached or exceeded the strong side CU – say, 7.74 – it became cheaper for banks to buy HK dollars from the HKMA, obtaining HK$7.75 for every US$ 1.00, than to buy in the market where they would obtain only HK$7.74 for every US$ 1.00.

Conversely, when the exchange rate reaches the weak side CU -- say, 7.86 – it becomes cheaper for the banks to buy US dollars from the HKMA at 7.85 than to buy from the market at 7.86. In other words, the banks typically approach the HKMA to do the transactions. It is not the HKMA stepping into the market to "prop up" the currency or defend it. Since April 12, 2018 in response to demand from the banks, the HKMA has been simply fulfilling its obligation under the CU to supply US$ at 7.85.

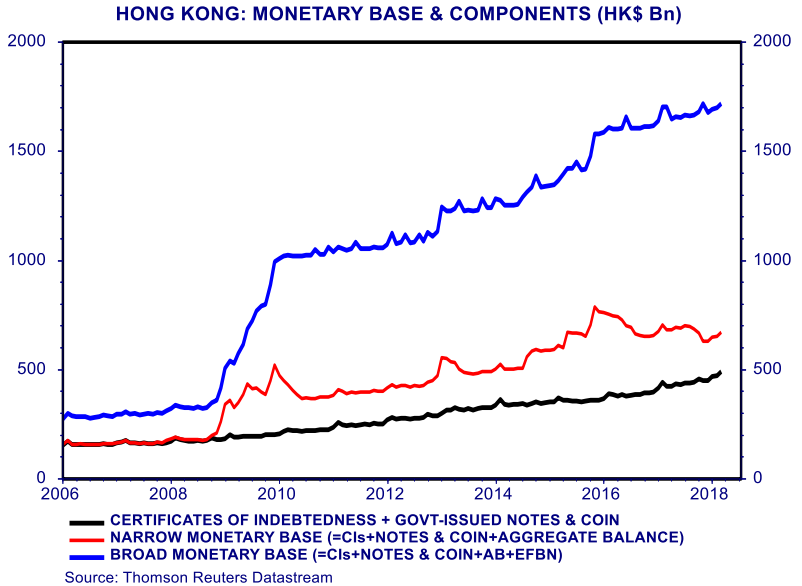


Figure 3. *Components of Hong Kong's Monetary Base, 2006-18*

Another key point to be aware of is that since the GFC in 2008, inflows into Hong Kong have been enormous, pushing the exchange rate to the 7.75 strong side CU for much of the time. This resulted in sales of US$ by the banks to the HKMA in exchange for HK$ requested by their customers. In fact the monetary base, or the key part of the HKMA's balance sheet (comprising banknotes and coin plus banks' settlement accounts plus Exchange Fund Bills & Notes) that includes these transactions, increased from HK$ 348 billion on 30 September 2008 to HK$ 1,663 billion on 26 April 2018, an increase of over HK$1.3 trillion (Figure 3).

The overall HKMA balance sheet (which includes on the asset side additional fiscal reserves from past government surpluses and accumulated earnings on foreign exchange reserves) reached HK$ 4,193 billion (or US$ 537 billion when converted at 7.80) in January, more than twice the size of the monetary base. With official foreign exchange reserves of US$ 442 billion in January 2018 and HK$M3 at HK$ 7,266 billion (or US$ 931.5 billion), the foreign assets of the HKMA were equal to 47% of HK$M3. As all of the foreign currency reserves are

available to support the HK$ and persistent outflows of HK$ would reduce the available stock of liquidity, driving up interest rates, outflows would soon be deterred by rising rates and funds would flow back into Hong Kong. The currency board, in short, is in no danger.

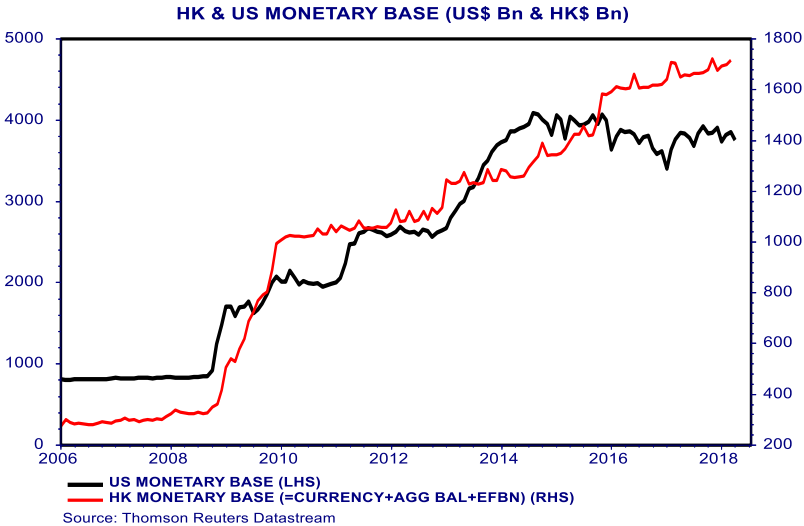


Figure 4. *Comparison of Hong Kong's Monetary Base with the US Monetary Base, 2006-18*

Just as the US Federal Reserve is currently reducing the size of its balance sheet – a process that started in October 2017 – the HKMA will also want its balance sheet to diminish in size (Figure 4). But in Hong Kong the only way this can happen naturally through market forces is if the exchange rate falls to the weak side CU level of 7.85, resulting in "outflows" of HK$ (i.e. sales of HK$ by the banks to the HKMA at 7.85 and the debiting of banks' settlement accounts at the HKMA). This process also tightens up the Hong Kong money market, pushing HK$ interest rates upwards.

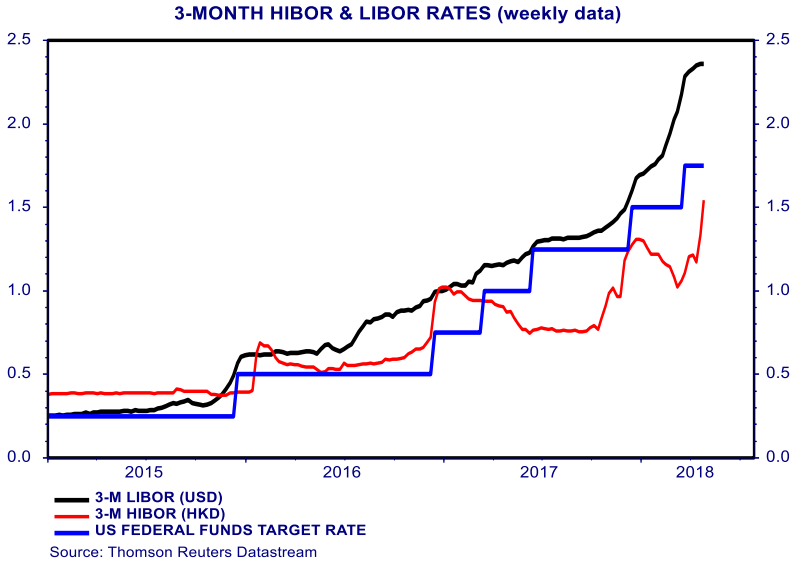


Figure 5. *Increases in HK$ HIBOR interest rates have Lagged behind US$ LIBOR rates*

However, as shown in Figure 5, since December 2015 when the Fed started raising interest rates, Hong Kong Interbank Offered Rates (HIBOR) have generally lagged behind London Interbank Offered Rates (LIBOR) in US$, partly because the exchange rate remained well above the weak side CU, and there was no draining of funds out of the HK$ money markets. One long-standing reason for the divergence is that since the CU points are set at 7.85 and 7.75, or 1.3% apart, it would require at least a difference of at least 1.3% in interest rates before profits from arbitrage under interest rate parity theory can be guaranteed.

Analysis of the background

This raises two questions. First, why did the HK$ remain so much stronger than 7.85 for so long? And second, why did the HKMA not push the process forward and close the HIBOR-LIBOR gap by stepping into the market to sell US$ (or buy HK$) before the exchange rate reached 7.85?

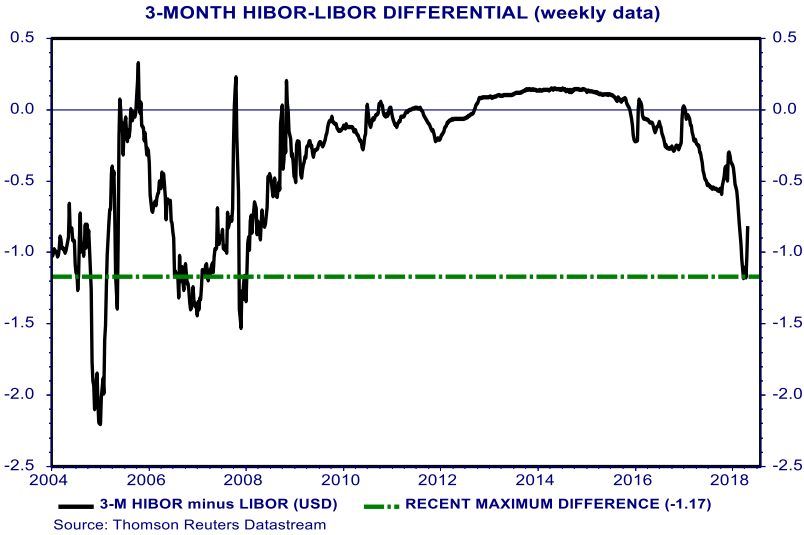


Figure 6. *Despite special factors in the LIBOR market, recent HIBOR-LIBOR spreads have not been unusual*

The answer to the first question is that inflows from the Mainland have created more liquidity in Hong Kong than in the past. The Hong Kong-Shanghai Connect and the Hong Kong-Shenzhen Connect schemes have seen a predominance of southbound flows. In addition, strong buying interest in the Hong Kong property market by Mainland investors has also been an additional source of HK$ liquidity.

Because these Mainland investors are possibly not so concerned with the interest rates or short term returns they receive in Hong Kong, but are more concerned about keeping assets in Hong Kong as a kind of long term, safe haven investment, they are perhaps less sensitive to the interest rate differentials between the HK$ and US$ money markets.

The result is that it has taken time for the HIBOR rates to follow LIBOR. An additional factor to mention is that since the end of 2017 and the enactment of President Trump's corporate tax cut with its cash repatriation incentives US$ LIBOR has increased relative to either EURIBOR or the Sterling LIBOR, exacerbating the apparent difference between HIBOR and LIBOR (see Figure 6).

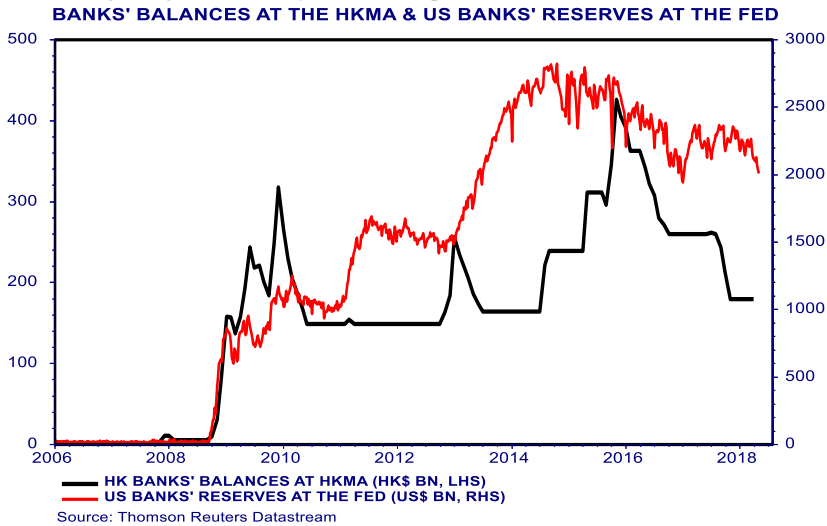


Figure 7. *Hong Kong's Aggregate Balance has moved broadly in parallel with US bank balances at the Fed*

Nevertheless, for the first time since the 7.85 CU level was set up in 2005, the weak side CU was at last triggered by sales of HK$ by the banks to the HKMA for US$ on April 12, 2018. Since then there have been numerous such episodes, resulting in cumulative sales of US$ 6.5 billion by the HKMA against purchases of HK$ 51.3 billion by the banks (up to April 18). This reduction in the amount of HK$ in the banks' settlement accounts is now gradually raising HK$ interest rates (including HIBOR, see Figure 5) in exactly the way intended.

Clearly there is still a long way to go in terms of reducing the HK$ 1.3 trillion expansion of Hong Kong's monetary base since 2008. This brings us to the second question: why doesn't the HKMA accelerate the process by intervening within the convertibility band to sell US$ or buy HK$?

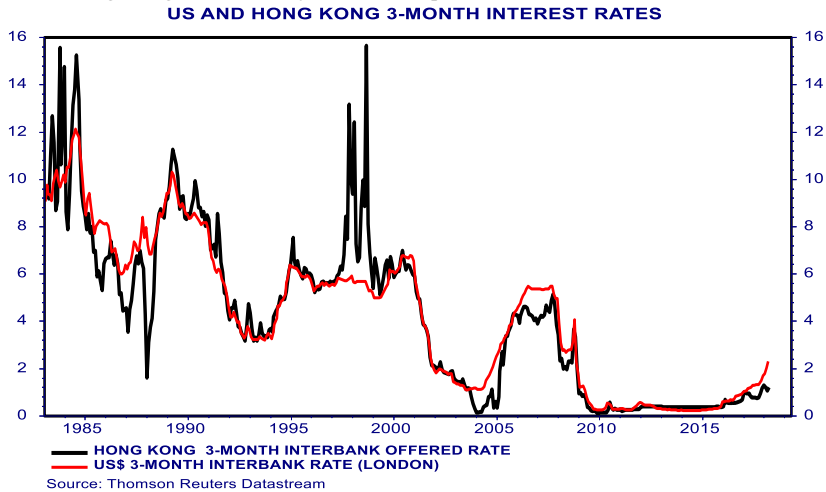


Figure 8. *Past episodes of interest rate deviation with US rates have prompted HKMA intervention*

The HKMA unquestionably has the powers to intervene within the convertibility bands. After all, from time to time it provides liquidity and then withdraws it – for example in the case of IPOs. This is done on the basis that the drain on the money market on each occasion is a known quantity of HK$ that can be supplied and then withdrawn after payments for the new shares have been settled.

However, intervention in indeterminate amounts to adjust interest rates would definitely be a discretionary action that is not in accordance with the "rules" of the post-1998 currency board mechanism. Market participants will soon start to think that the HKMA is targeting interest rates rather than the exchange rate band. Even worse, given the motivation of the Mainland investors in Hong Kong (i.e. not based on short term interest rate differentials), such intervention might not succeed in any case. The HKMA could then be buying HKD but inflows could continue, keeping rates low and the property market strong.

Moreover, in the past (2006-08), the HIBOR-LIBOR gap at times exceeded 150 basis points (1.5%), so the current gap of less than 100 basis points (1%) is not unusually large by historical standards (see also Figure 6).

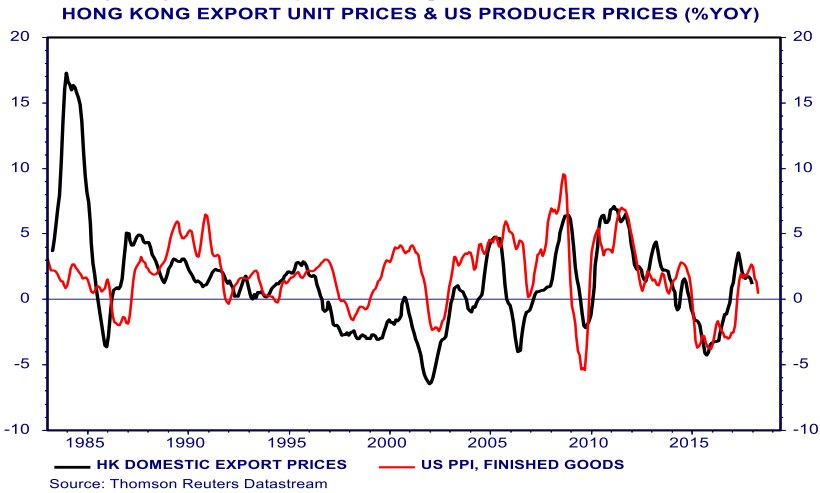


Figure 9. *In the long run, a fixed exchange rate implies broadly similar inflation in economies with pegged rates*

Discretionary intervention implies that the HKMA engages in a never-ending game of trying to outguess the market. This could easily result in a loss of long term credibility. In my view it is better for the HKMA to preserve and enhance the HKMA's credibility by observing the "rules" of the currency board system. The best way to do that is to operate the 7.75-7.85 band mechanism based on transparent rules that everyone can understand, responding only at the 7.75 and 7.85 Convertibility Undertaking points, and not intervening on the basis of its own discretion between those points.

Summary & Conclusions

The triggering of the weak side CU for the HK$ is a sign of normality returning to the operation of the Hong Kong Currency Board, not a sign of weakness or a threat to its integrity. Like the US Fed, the HKMA has experienced a massive increase in the size of its balance sheet since 2008, and the balance sheets of both should be expected to decline in size during 2018-19.

For various idiosyncratic reasons, HIBOR rates have recently lagged behind US$ LIBOR rates.

However, the move in the HK$ rate to 7.85 is now enabling a reduction of the HKMA's balance sheet and a normalization of interest rates in Hong Kong.

Given the Convertibility Undertakings at HK$7.75 and 7.85 it is best for the HKMA not to intervene within the CU zone to accelerate interest rate normalization, but to allow market forces to operate unimpeded.

5 New underlying trends in China cross-border investments

David *Yu*

Introduction

The global investment atmosphere has changed substantially over the past five years. While China cross-border investments have moved with similar movements along with the broader trade trends, it has also exhibited characteristics all of its own in response to various stimuli including numerous domestic policy changes, the evolving relationship between China and other major economic entities, among others.

A discussion of Chinese cross-border trends in the past few years without an examination of the ever-changing global economic landscape would be out of context. Before diving into the main drivers of cross-border investments in China and its impact on investments under policy changes, it is worth first having a look at the larger picture. According to IMF's World Economic Outlook Reports published in October 2018, there is a steady but less balanced expansion of economic growth that increases downside risks to global growth, with receding potentiality for upside surprises. Meanwhile, the Economic

Policy Uncertainty Index has also increased to 907.45 in December 2019 compared with the February 2014 low of 66.53.

Over the last five years, we've witnessed significant geopolitical changes and economic upheavals. The historical significance of Brexit and its influence over not only the European Union but the world economy is still an unresolved question mark. Tensions from the US-China trade disputes add even more risks to the global market, exhibiting ever-increasing characteristics of protectionism that can threaten the stability of world trade and GDP growth. The volatility and expansion of oil prices is a major concern as it's an important input for economies especially after a prolonged period of general downward trending pricing in the last five years after reaching and sustaining highs. A current pullback after recent localized highs is a positive sign for economies especially after the price drop after December 2018. These are other risks that remain for the M&A market. According to UNCTAD's World Investment Report 2019, global foreign direct investment (FDI) flows slid by 13% in 2018, which was the third consecutive annual decline. The slowdown of global capital flow is shown to be in tandem with the poorer performance of the Chinese market representing one of the major contributors. PwC estimates that ever since the 2016 "mega-year", China outbound has fallen for three straight years, partly due to the "greater scrutiny of larger cross-border M&A in many jurisdictions and a generally uncertain environment for the overseas deal-making."

One of the major themes of the Chinese cross-border trade in the last five years has been the explosive growth of Chinese outbound deals over the past decade which saw outbound M&A volume rise from $68.8bn in 2010 to $196.2bn in 2016 and at the same rise from fifth globally to second by country rank. Since the record 2016 highs, China's outbound M&A has plummeted to a 10-year low on trade tension and economic slowdown, standing at $41 billion, less than a fifth of the 2016 peak. While this growth has been more publicized, some other important details have not been as emphasized. While Chinese companies were involved in ten of the largest deals worldwide in 2016, most deals were in the middle market with the median

~$30m deal size and the top mega deals (> US$ 1 bn). While the absolute dollar values have increased, there is arguably further room for growth as this volume as a percent of GDP is smaller for Chinese companies (0.9%) than its counterparts in Europe (>2.0%) and US (1.3%) in 2015.

With increasing global economic uncertainties, the total number of mega-deals has remained flat in recent years, with significantly fewer larger outbound transactions offset by a surge in the number of domestic mega-deals. The latest figures suggest that the value of China's overall M&A fell by 18% in the first half of 2019, the largest single-period decline over the last decade. Although PE deals fell sharply by 46%, volumes of both inbound and outbound transactions in most sectors have increased, indicating an opportunity for smaller cross-border transactions. As investors will deploy more cash to the PE investment as valuations recede and this should be a temporary trend. Meanwhile, businesses renewed their focus in the domestic market, as global economic uncertainties limited outbound opportunities China's domestic strategic M&A has picked up by 8% in value and 12% in deal volume, while foreign inbound investments rose by 64% in volume but declined by 29% in value.

North America and Europe see further declines in Chinese FDI in the first half of 2019 as trade tension and Brexit uncertainty bite in, with just US$12.3 billion, down 18% on the same period last year and the lowest activity since 2014, estimated by Rhodium Group. Asia and Oceania emerged as the most popular outbound M&A destinations for Chinese enterprises, with nearly 60% of the total, according to a report by EY. In H1 2019, both continents record double-digital growth, despite the overall contracting M&A trend –

Asia (US$7.9 billion, up 21.9% YOY) and Oceania (US$4.2 billion, up 38.3% YOY).

Furthermore, it is also noted that Chinese acquisitions overseas worth $100 million or less have fallen in 2019. Fewer smaller and mid-sized deals are being announced, while the overall value is boosted by a few large transactions. It may be disappointing to see the number of China outbound mega-deals is significantly lower in 2019. Offsetting some of this is the

rising number of mega-deals from private equity and domestic strategic players. It is estimated that China outbound transactions alone have dropped 60% from 48 to 20 compared to 2016, 29% compared to the prior year of 24 deals.

Positive signs and structural optimization in Chinese M&A market

All these ominous signs don't completely dampen the potential for the Chinese M&A market to thrive. Regional GDP in Europe, North America and especially the Asia Pacific (including China) are constantly growing. At the same time comparing with pre-2008 financial crisis figures, there is significant liquidity and cost of funding and interest rates are still near its historical lows, though we have observed an increasing 3-month LIBOR rate which will increase the hurdle rates needed to do deals with all else being equal. This period of low US dollar interest rates has encouraged the development of the global M&A market and brings Chinese business enthusiasm towards new cross-border investment and strategic opportunities. Although PwC data showed that Chinese outbound M&A fell in the first half of 2019, the announced total deal volumes actually increased in most sectors, including outbound, with the exception for PE transactions, which fell by 46%. To simply look at the dropping number of deal volume and deal value would be misleading if one overlooks the trend of a steadier and high-quality development behind China overseas investment.

EY's China Overseas Investment Report H1 2019 points out that the structure of cross-border deals is gradually being optimized and diversified with a focus on new economy (*"xin jing ji"*), such as manufacturing, information transmission/software, and IT services, with 7.3% and 31.7& YOY growth, respectively, against the backdrop of overall M&A investment. The high-end value chain continued to dominate China's overseas M&As. By deal value, TMT (US$5.1 billion), consumer products (US$3.2 billion) and health & life science (US$2.1 billion) sectors accounted for more than 50% of the total. By deal volume, TMT (67), consumer products (40) and

advanced manufacturing & mobility (33) claimed over half of the deal flows.

There are many broad and sub-themes behinds these intuitively contrary figures. One of the major Chinese policy drivers is President XI Jinping's One Belt One Road (OBOR) initiative which aims to link up the countries through land and sea along the old silk road through investment in infrastructure and increased trade. While this concept was first announced in 2013, the real traction kicked off in earnest in 2015 and was developed alongside the founding and backing of the Asian Infrastructure Investment Bank in 2013 and the Silk Road Fund in 2014. This focus on trade has driven a lot of cross-border and outbound investment to countries along the routes. From 2014 to 2018, China committed to invest over US$1 trillion in about 1,700 projects across 130 nations around the world, according to the data released by the American Enterprise Institute. This has amounted to $14 billion in 66 countries in 2018 compared with $1.9 billion in 2016 according to Thomson Reuters with an increase in M&A volume of over 627% from 22 to 160. In the aviation space, for example, this has seen a surge of investment in airports, airlines, tourism activities and in aircraft leasing. While not necessarily required by China as it's open to any country, Italy became the first member of the EU to sign on to OBOR with big expectations of usage in infrastructure.

Another major theme and driver is the series of supply-side reforms that China has been implementing since 2015. All of these different components are the overarching policy directions that have large effects on cross-border investments through changes in the operating environment for potential outbound companies. The main sub-category initiatives include cutting excess industrial capacity, deflating the real estate inventory and bubble, corporate deleveraging, lowering corporate costs (taxes, fees, etc.) and Made in China 2025.

Some of these sub-themes are aimed at realigning the domestic economy and transforming it from the old to the new while making the sources of growth more sustainable. This would include cutting excess older industrial capacity and encouraging more clean energy projects. This goes hand in hand with overall deleveraging and control of the growth of the

credit exposure in China as well as deflating the real estate bubble and excess inventory especially outside of top tier cities. This desire includes slowing down credit growth due to normal and shadow banking activities.

There are two main ownership types in China: State-owned Enterprises (SOEs) and Private-owned Enterprises (POEs). SOEs refer to enterprises funded by the State and state-owned holding companies that belong to the State Council and the local people's government on behalf of the State's performance of investors' duties, and in China SOEs control pillar industries like oil, electronics, automobiles, etc. Previously the overall deleveraging measure focused on larger private companies and smaller banks, but now it has moved on to local municipal and provincial SOEs. Credit growth has intensified since 2008-2009 global financial crisis and infrastructure spending and borrowing has been a key method to drive economic growth by local governments, but lately, such initiatives have shut down projects such as new subways in farther out regions, etc. due to the concern for the amount of additional debt burden. These policies, however, do not dampen the growth of airports and related aviation infrastructure especially in more western and more underdeveloped regions in China which have continued to see steady growth. As China is going to replace the US as the world's largest aviation market in the next five years, the government plans to build 74 new airports by 2020 and 136 by 2025. In 2019, Beijing unveiled the Daxing International Airport, with an initial capacity of 45 million passengers, but there are plans to expand airport's capacity to 72 million by 2025, and ultimately 100 million, according to the Centre for Aviation. There is additional large capacity airport currently under construction in Chengdu with capacity for over 90 million passengers. The plan also doesn't include the general aviation airports which currently stand at 310 with the goal of reaching 500 by 2020.

The lowering of corporate costs has not been an as big point of emphasis until recently. It has so far focused on reducing fees and bureaucracy rather than major tax cuts while trying to stimulate the economy through encouragement of "mass entrepreneurship" by Premier Li Keqiang. This has especially

been true of the test regions of policies such as the free trade zones such as the Tianjin Dongjiang Free Trade Port zone ("DFTP") and Shanghai FTZ which are the homes of the most active jurisdictions for aircraft leasing in China. These include the newly announced $300bn of tax and fee cuts made at the beginning of 2019 with the recent additional $50bn of cuts in government and operating service fees. This is additional direct stimuli to spur businesses and individuals include cutting electricity, internet, portfolios, airport and railroad charges are examples of levers that are unavailable for other countries to induce more growth. The reduction in airport development fund contributions is a huge gift for airlines amid other industry wide cost pressures.

The Made in China 2025 (MIC 2025) industrial plan is also part of the overall supply-side reforms that have its roots in 2013 which focuses on the upgrade of the Chinese industry similar to the "Industry 4.0" initiative by Germany. The plan is the final installment of a series on China's plan to move its industries up the value chain to reduce reliance on foreign technology. In the aviation world, this would be focused on new bio-fuels, clean technologies implemented for airlines, aircraft and airports. This theme is sometimes combined with the OBOR initiative. As China's aviation market is expected to overtake the US as the world's largest in the next five years, the country needs more than 7,000 planes in the next 20 years. Under MIC 2025, China expects home-made commercial aircraft, like COMAC C919 and ARJ21, to supply more than 10% of the domestic market and its jetliners to account for nearly 20% of the global market by 2025. This will give the aviation industry and its supply chain a renewed push in the structural optimization of the M&A market.

Along with the supply-side reforms is the Chinese government's resolution in cutting frivolous overseas investment. The appreciation of USD and the corresponding depreciation of the Renminbi in recent years have led to the boom of capital outflows in China due to the increased desire for offshore assets as well as perceived higher regional investment growth and returns. The number of high profile cross-border investments carried out by Anbang and HNA

Group has alerted the CBRC and caused a review of the credit exposures for "systematic risk" to these four outbound groups. In addition, the government has stepped up scrutiny of both the convertibility of RMB to other liquid currencies and the transfer of funds to offshore locations.

In 2017, the Chinese State-Owned Assets Supervision and Administration Commission issued several documents to regulate the investment of SOEs. It is required that outbound investments should be within the competencies of the business and core policy of the government to be supported. The aim has been to slow down and dampen the more frivolous offshore investments that are outside the scope of the main business competencies and refocus on more core policy has driven investments who still have government backing. The corresponding response in the market is the witness of a significant drop in overseas deal volume and value from the SOEs.

The hurdle for overseas M&A has increased for Chinese enterprises. China has become much more selective about M&A deals struck by state-owned enterprises, driven by the caution in drawing down foreign exchange reserves as well as the effort of curtailing domestic debts. In 2018, SOEs only conducted 64 outbound deals—a 37% decrease compared with the number in 2017 and a 50% decreased compared with the number in 2016, with PwC commenting that SOEs have spent less money doing outbound deals than at any time since 2014. SOEs are more focused on the internal restructuring under the supply-side reforms and have slowed down in their overseas acquisitions. At the same time, a large number of private enterprises take up the lead and consist of nearly 50% of the total deal volume and value. Although private enterprises' outbound investment has also dropped almost half compared to its peak in 2016, in the most recent year the group has announced 310 deals (5 times more than its state-owned counterparts). Financial buyers are more capable of providing capital for overseas deals as well. They have hit a new high of a deal volume of 253 deals in 2018, a 6% increase from 2017 and a 30% increase from 2016. The 2018 break down from SOEs to

POEs is higher compared with 2017 based on the announced deals.

The reforms of SOEs and industry structures in China not only help support the RMB exchange rate, but also total foreign reserves which have steadily grown from the 1980s to its all-time high of $4.0 trillion reached in June 2014, though it has since receded to its recent low of $3.0 trillion in January 2017. Despite a slowing economy and an escalating trade war, China's foreign exchange reserves have been gradually rising since late last year, standing at $3.1 trillion in December 2019, helped by tight capital control and rising inflow from foreign investors with the renewed optimism towards the US-China negotiations, especially after the Phase 1 trade deal.

The Chinese foreign exchange reserves have hit a low in October 2018 after the announcement of a 10% tariff on $200 billion worth of Chinese goods by the US, but are gradually recovering for the last four months with a growing optimism towards the US-China negotiations.

China outbound M&A sestination shift amid US-China trade tensions

Intensifying trade tensions and tightened regulatory scrutiny have been critical factors affecting the Chinese cross-border trend. In 2018, the total value of Chinese M&A deals in the US has dropped 38% to $13.2 billion. The drop accelerated in the first six months of 2019, as China's M&A fell by 18%, marked the largest single-period decline over the last decade, as estimated by PwC. Closer scrutiny illuminates a more sullen outlook. Chinese spending on acquiring US companies fell from its peak of US$55.3bn in 2016 to just US$3bn last year, a 95% drop, with American authorities rejecting several high-profile deals. Notably, China's investment in the US technology sector plunged 79% to its lowest level in seven years.

As a part of trade tension, US Committee on Foreign Investment (CFIUS) tightened the review of these announced deals after the US Congress finalized the Foreign Investment Risk Review Modernization Act of 2018 (FIRRMA) in August

2018, the first reform of national security review in the last decade. The law expands the array of deals CIFUS can review by including non-controlling foreign investments in the technology industry, and it prolongs the timing of the review, incurring a higher cost for firms while waiting for the review results. Though the provision may not fully take effect for about another 18 months due to the reallocation of necessary resources CIFUS for more intensified future reviews, its effects are already starting to show in the market, and even those deals that are already completed are facing new threats.

In the attempt to axe the largest transaction, CFIUS blocked the proposed US$1.2 bn merger between MoneyGram, a US money transfer business, and the Ant Financial, a Chinese online payment company owned by Alibaba, citing national security concerns over data aggregation. In late March 2019, the US also required the Chinese owners of a gay dating APP Grindr to give up their 60% share of the company. Beijing Kunlun Tech, who completed the buyout of Grindr early last year, is now under the charge of possible threats to the US national security under the CFIUS decision due to data privacy issues. The announced deals of Chinese M&A are expected to continue decreasing if the hostility of the US-China trade is not eased as Chinese companies are cautious with future M&A deals in the US considering the rising costs and difficulties of such investments. Moreover, in recent years, Chinese companies have been pursuing smaller M&A deals to avoid the CFIUS scrutiny. The CFIUS demand on Grindr after its transaction, which is a relatively small sum of $245 million, signals the future threats on small value Chinese tech acquisition and the already completed suspicious deals.

EU was once the alternative destination of Chinese outbound investment, as it has contributed to 34% of the total China M&A announced deal value in 2017, and in 2018 this number jumped to 59% as the deal value in the US has further decreased. The “Big Three” economies (UK, Germany, France) still attract the most capital, but northern Europe and the Benelux (Belgium, Netherlands, and Luxembourg) also caught up in 2018. The most preferred destination in northern Europe is Sweden, who has received in 2018 with EUR3.4bn of total

investment driven by Zhejiang Geely's EUR3bn investment in Volvo AB. EU is and is likely to continue to be the most favorable foreign investment destinations for Chinese businesses in a foreseeable future due to the deteriorating US-China relation.

With Boris Johnson's emphatic election victory accelerating the Brexit process as well as the European Union framework for the screening FDIs, the announced value of China's overseas M&As in Europe was US$3.6 billion in H1 2019, down 86.6% YOY, representing the largest decline in years. Similar to CFIUS, the EU framework reinforced the screening mechanism by asking members states to review investments not only directly from non-EU countries, but also intra-EU investments involving non-EU ultimate owners, the proposal has been adopted and related legislation is approved by the European Parliament on February 14, 2019, which is to come into effect in 18 months. Although this new EU investment screening framework is not as aggressive as many OECD screening frameworks, it's a significant landmark that will influence future Chinese investors' decisions.

The Rhodium Group 2019 report especially points out some of its provisions "overlap with core characteristics of Chinese investment in Europe to date." While most of the Chinese investments in the EU are targeted at European technology and innovation assets, many of these preferred sectors are demanded by the new screening rules to undergo special scrutiny. Also, since 60% of Chinese FDI in the EU is directed by state-owned or sovereign entities in China, the new rules' requirement to review deals with funding backed by the state, not simply deals owned by state-control entities, will further create troubles for Chinese outbound investment in EU. The new rules are built on a friendly "coordination and cooperation" framework with a generally friendly gesture, but Chinese firms may no longer enjoy the same level of convenience as before in the coming years.

As scrutiny intensified in Europe and the US, emerging economies in Asia and Oceania have become the most popular overseas M&A destinations for Chinese enterprises. Driven by the improved Sino-Australia relations and the BRI, the

announced M&A value by Chinese enterprises increased significantly in Oceania (US$4.2 billion, up 38.3% YOY), and Asia (US$7.9 billion, up 21.9% YOY), accounting for nearly 60% of the total. The main sectors of China's M&As in Asia are TMT, consumer products and financial services, while in Oceania, key sectors are health & life science, real estate, and hospitality & construction. According to the Ministry of Commerce, China's non-financial outbound direct investment (ODI) was US$53.8 billion in H1 2019, dropped by 5.9% YOY. Despite overall downward trend, the main investment sectors were leasing and commercial services. The data indicate that the structure of China's ODI remained healthy and optimized in 2019.

New trends in domestic economy opening up

Moving forward, China's internal policy reforms and external pressures from the trade negotiation will dictate the country's economic liberalization. With the size of the financial sector at US$44 tn, China has 1.1 bn potential retail banking customers, who have a US$14 tn asset pool under management by 2022. However, options to participate in China's financial markets have been limited due to the regulatory barriers since its accession to WTO in 2001.

Recently, there have been more policies relating to the opening up of the domestic economy by foreign capital including publications of a national unified negative list of industries for inbound investments which was previously more locally administered policies as well as a pledge for the opening up of investments in the financial institution space along with asset management companies. The strongest indication of China's willingness to change is President Xi's commitment to implement the country's "Opening-up Initiatives," marked by the unification of its banking and insurance regulators to form the China Banking and Insurance Regulatory Commission (CBIRC) in 2018. Against such background, China's Financial Stability and Development Committee under the State Council announced a further 11 measures to ease foreign ownership limits on financial services firms in July 2019. They encouraged

global asset managers to accelerate the entry of foreign capitals into China's securities industry.

The Phase 1 Trade Deal with the United States also ensured the removal of barriers to help US banking, insurance, and other financial services companies expand in China. Under the agreement, China has agreed to set up a clear deadline for removing foreign ownership caps on securities firms, including investment banking, underwriting, and brokerage operations, by nine months to April, 2020. China's commitment provides more stability for foreign investors especially in aircraft leasing and airlines and also prevents retroactive unraveling of deals due to unanticipated policies. This has seen more foreign lessors establish local on-shore subsidiaries in China to attract more local customers.

China's retrenchment from outbound investment echoes its renewed focus on financial liberalization catalyzed by the domestic economic reforms and trade deal with the US. The new measures, characterized by "faster rather than slower, sooner rather than later", which is in response to encouraging market feedback on China's commitment towards deeper institutional reforms and economic openness.

While some of these macroeconomic drivers and domestic policies can seem a bit contradictory at time, what is certain is the encouragement of technologies and growth platforms that enhance the sources of GDP growth and composition, especially as China continues to liberalize its economy as a driving force in technological innovation. There will be continued challenges as these policies and drivers evolve to changing the global economy and industry which bodes well for more opportunities for nimble and creative players who could capitalize on China's increasing demand in the new economy (*"xin jing ji"*), with adequate consideration of regulatory scrutinies.

7 The currency board of Brunei Darussalam

Jonah ***Bennett***

Introduction

Brunei first came into contact with Europeans in the early 1500s, when the Portuguese colonized Malacca, now a southern Malaysian state. Because many Muslims feared Portuguese Catholicism and forced conversion to it, large numbers of former Malaccan residents migrated to Johor, a port city adjacent to Brunei. This exodus encouraged greater interaction between former Muslim residents of Malacca and Bruneian residents, eventually inspiring mass conversion in Brunei to Islam. Previously, Brunei had been predominantly animist. This Islamic foundation persists to this day in what is now known as the state of Brunei Darussalam.

The Portuguese, having colonized Malacca, were committed to establishing a trading empire, and quickly engaged the residents of Brunei in barter. By the end of the 16th century, trade with the Portuguese thrived. Chinese traders, sent by the Ming Dynasty, also bartered extensively with Brunei, particularly during the height of the Chinese empire in the early 16th century. The addition of Spanish merchants in the

1530s added a layer of complexity to Bruneian trading practices, as both Spanish and Portuguese ships jockeyed for control of the Bruneian import and export market. The end of the 16th century saw this intra-European competition mellow, as both Spain and Portugal proved to be valuable trading partners, primarily through barter, for the newly Islamic nation of Brunei.

With the rise of the British Empire in the 18th and 19th centuries, Brunei's traditional trading partners began struggling to obtain entry to the Southeast Asian nation's market. By the early 1800s, maritime trade with the Chinese faded, as Chinese junk ship traders were largely recalled by a protectionist and declining Qing dynasty. Brunei also struggled internally with dynastic contests between two families vying for control of the tiny nation. This instability plagued Bruneian traders, and barter declined rapidly. By 1800, the Bruneian state had expanded past its current borders, annexing the now-Malaysian state of Sarawak. It was in Sarawak that the majority of rebellion against Bruneian authorities occurred. Rebellion plagued the region throughout the 1830s, and the weakened regime in Brunei failed to maintain order.

In 1839, English "adventurer" James Brooke arrived in Sarawak. Noticing his formidable forces, the Penigran (governor) of Sarawak, Pengiran Muda Hassim (appointed by the Sultan of Brunei), requested his assistance in quelling the ongoing rebellion. In return for his support, Brooke demanded governorship of Sarawak. Upon successful repression of the rebels, Brooke was ratified as governor of Sarawak in 1842 by then-Sultan of Brunei, Omar. This marked the first annexation of Bruneian territory by British entities.

Pengiran Muda Hassim and Sultan Omar, however, then became engaged in a dynastic rivalry over the throne of Brunei. The rivalry came to a head in late 1845 when the Sultan ordered the assassination of the Pengiran. Brooke, who had backed the late Penigran in the royal struggle, retaliated with a show of military force, forcefully deposing Sultan Omar in July of 1846. The Sultan was later reinstated that year under the following terms: that he swear loyalty to Queen Victoria of Britain, grant

Britain the right to suppress piracy off Brunei's coasts, and allow Britain to annex another Bruneian province in nearby Labuan, which then had vast coal reserves.

British influence continued to advance in the region, and in 1847, the Sultan was pressured into ceding all control of Brunei's trade to Britain. Later, in 1888, Sultan Hassim (the son of the aforementioned Pengiran Hassim) signed a protectorate agreement with Britain, which ceded litigation rights to Britain while maintaining internal autonomy and independence. As British encroachment continued into the region, however, trade with other nations stopped, and the Sultanate ran dry financially. In 1906, Sultan Hassim agreed to a treaty with Britain that would, at his death, send a resident adviser from Britain to assist in administration of the nation and offer protection in exchange for a steady salary for the Sultan. In short, Brunei was to formally become a British colony.

Under British rule, Brunei's large deposits of coal and oil began to be exploited. By 1935, Brunei became the third largest oil producer in the British Empire. To this day, the Bruneian economy is highly dependent on the export of natural resources despite attempts to diversify. The resources of Brunei ceased to fuel Britain on December 16th, 1941, as Japan invaded and captured Brunei. Japanese rule lasted for nearly four years; on June 10th, 1945, Allied forces recaptured Brunei and established British military administration of the nation. The British resident was reinstated and continued to dictate affairs in the nation until 1959, when, under intense international pressure, Britain granted Brunei the ability to establish its own constitution, which outlined the transition from a British colony to an independent constitutional monarchy. Despite the withdrawal of the resident, Britain still persisted as the administrative authority in Brunei.

Throughout the 1960s, as both Malaysia and Singapore gained independence, Bruneian citizens began to organize and demand liberation. In the 1970s, this process was largely realized, as Brunei regained "full internal autonomy" in 1971, and Britain began to withdraw a large portion of its military presence. In 1977, the United Nations called for free elections in Brunei, as the constitution drafted in 1959 had yet to be fully

realized (the Sultan, under dictation by the British, was ruling as both monarch and prime minister). On January 1, 1984, Brunei gained full independence, as Britain fully withdrew and the Sultan stepped down as prime minister. The nation of Brunei Darussalam was established.

Background of Brunei's Currency

Prior to European arrival in the 16th century, Brunei's economy operated primarily through barter, with the vast majority of citizens owning little to no currency. Some Chinese coins circulated, but they functioned as both legal tender and antiques during this period. Following the inception of trade with both Portugal and Spain, European coins started to circulate within Brunei. Spanish coins were used so widely that, in fact, they became standard coinage in Brunei. Circulating alongside Spanish currency was indigenous coinage in Brunei, which circulated from the mid 17th century to the end of the 19th century. These coins had Arabic inscriptions along with either native animals from Brunei or past Sultans. This trio of Spanish, Chinese, and indigenous currency operated as legal tender until 1888, when Brunei came under British protectorate rule.

In 1888, Brunei adopted the currency of the British Straits Settlements colony, which had been circulating in Penang, Singapore, Malacca, and Dinding since 1871. The Straits dollar was similar to the silver dollar (peso) issued in Spain and its colonies in various forms since 1497, which, in effect, became the first international currency. Even several banks in Singapore issued notes denominated in silver dollars. In 1897, the Board of Commissioners of Currency for the Straits Settlements was established with the sole right to issue currency notes. The board originally had a fixed rate of exchange with silver, and from 1903-1906 the board briefly debated adopting a gold standard. In 1906, the Board of Commissioners of Currency for the Straits Settlements voted for a return back to the silver standard, which would last up until the beginning of World War One. This was due to the fact that the economic growth of the Straits Settlements,

particularly from 1897-1903, was, "commensurate with that of silver standard countries."

From 1906-1938, the Malay states used Straits Settlements currency but "shared none of the profit from its issuance." This was maintained as the Board of Commissioners of Currency for the Straits Settlements abandoned the silver standard in 1914 and established a sterling exchange standard of 2 shillings and 4 pence per one Straits Settlement dollar. The sterling exchange standard also led to the exchange of reserves for the currency board, which were originally dominated by gold and silver, to reserves held "primarily in sterling."

Shang-Yi Lee, the author of an authoritative history of money in Singapore remarks, "After 1926, the Malay states began to take a renewed interest in currency issue, as evidently there had been good currency profit." The Board of Commissioners of Currency for the Straits Settlements appointed Sir Basil Blackett, a British financial expert, to devise a plan to distribute profits equitably among the states of the region. Blackett's plan, published in 1934, outlined a strategy to divide currency liabilities and profit by currency circulation, with Brunei receiving 0.75% of all profits from issuance. The Currency Ordinance of 1938 adopted Blackett's proposal and renamed the Board of Commissioners of Currency of the Straits Settlements as the Board of Commissioners of Currency of Malaya to reflect its expanded membership.

During World War II, Southeast Asia was occupied by Japanese forces. The currency board ceased local operations, even though its assets were safe in London. The Japanese occupation forces issued their own currency, which depreciated greatly during the war. People held onto currency board notes in the expectation that they would become convertible into sterling again after an Allied victory, which was indeed what happened. After the war, the Board welcomed the territories of Sarawak and New Borneo into the All Malaya Currency Board. This geopolitical shift, coupled with wartime inflation, caused the board to enter into a new agreement in 1950. After a redemption period, notes and coins issued prior to 1950 ceased to be legal tender in the Straits Settlements. The Straits Settlements continued to operate under a currency

board and the aforementioned system of profit distribution based on consumption; this meant that Brunei continued to receive 0.75% of the profits of currency issuance. A new dollar, the Malaya and British Borneo dollar, was then issued by the Board of Commissioners of Currency, Malaya and British Borneo (formerly the Board of Commissioners of Currency of Malaya). From 1953-1967, the Malaya and British Borneo dollar operated as sole legal tender in Brunei (as well as in the other Straits Settlements).

The independence of Malaysia in 1957 and Singapore in 1959, along with Malaysia's establishment of Bank Negara Malaysia as an embryonic central bank, required revision of the currency agreement between the Straits Settlements. In 1960, the Board of Commissioners of Currency, Malaya and British Borneo allowed increased fiduciary issue (although it apparently never took advantage of the provision) and lessened restrictions on the allowance of non-sterling foreign reserves. The Board also established provisions for withdrawal from both the All Malaya Currency Board and from the authority of the Board of Commissioners of Currency, Malaya and British Borneo. To do so, the new currency authorities would recall the Board's old currency and redeem it for sterling securities at market prices from the board.

On December 12, 1964, Malaysia decided to issue its own currency through Bank Negara Malaysia from December 12, 1966 onwards. This meant that Malaysia would formally withdraw from the All Malaya Currency Board. The economic historian Catherine Schenk wrote, "Malaysia's impetus for quickly winding up the currency board was believed in London to come mainly from political forces" regarding the inflexibility on note issue powers as a member of the All Malaya Currency Board. Brunei received an offer to join Malaysia's new arrangements, and a round of negotiations between Bruneian and Malaysian authorities began. Brunei had two major provisions: that they have a place on the policy making body of the Bank Negara Malaysia, and that the portrait of the Yang di-Pertuan Agong (constitutional monarch) of Malaysia not appear on the new currency notes. Bruneian authorities also favored the continuation of a currency board rather than the

operation of a central bank. Upon rejection of these proposals by Malaysian authorities, Brunei moved to establish its own currency board. Singapore likewise established its own currency board when the Malayan currency union dissolved, although later it replaced its currency board with a central bank.

History of Brunei's Currency Board

Bruneian politics in the early 1960s revolved around the prospect of unification with Malaysia. The citizens of Brunei strongly opposed unification in favor of full ratification of the Bruneian constitution, which had been ratified in 1959 but never formally implemented. The Sultan echoed the sentiments of his people but felt that British authorities would compel Brunei to unify with a neighboring nation. Abhorring unification with Sarawak or North Borneo, which had traditionally lagged behind Brunei in terms of GDP per capita, the Sultan advocated for Malaysian unification as a compromise. In 1962, under intense pressure from the Bruneian populace, the Sultan held the first elections for the Bruneian parliament. The PRB (Brunei People's Party), which opposed unification with Malaysia, won by a landslide. Fearing a deterioration of relations with Malaysia, the Sultan denied the PRB the ability to both consult with the Sultan about Malaysian unification and to be a part of the Bruneian parliament, usurping the position of Prime Minister for himself. Outcry occurred throughout Brunei, spearheaded by a rebellion repressed by the Sultan (with the aid of British forces). While the rebellion failed to depose the Sultan, it did illuminate that union with Malaysia would have produced continued pressure for a constitutional monarchy (which would limit the powers of the sultanate), an arrangement that the Sultan feared.

Despite the public outcry against formal Malaysian unification in Brunei, Malaysia invited Brunei to join Bank Negara Malaysia and accept its currency, largely due to potential revenue streams that would have flowed from Brunei to the Bank Negara Malaysia. Of course, due to the previous

rejection of Brunei's unification proposals, the unification of the monetary systems of Brunei and Malaysia failed to materialize. In August of 1966, once both parties failed to reach an agreement, Brunei decided to establish its own independent monetary authority.

The Currency Act of 1967

After Britain withdrew its resident adviser in 1959, it granted Brunei greater autonomy of internal affairs. This meant that Brunei's monetary authority, which was formally established in 1967, would be under the direction and administration of Bruneian authorities. The Currency Act of 1967 formally established the Brunei Darussalam Currency Board. Per the Currency Act, "the principal objects of the Board…[are]…to issue currency…to maintain external reserves in order to safeguard the international value of that currency, and to promote monetary stability in Brunei Darussalam." The Board was also the "principal licensing and monitoring body for the country's banks and finance companies."

From an administrative standpoint, the Board was to have an undesignated number of members, chaired by either the Minister of Finance or an appointee by the Sultan of Brunei. Furthermore, the board was mandated to meet twice a year, with the quorum being 2 members (one of which was the chairman). The Board also was granted internal autonomy, with the authority to self-regulate and create subcommittees with representatives of its own choosing. While the board operated under the wing of the Ministry of Finance, it was also a separate branch within the Ministry, permitting the board free reign to establish offices and appoint administrative officials at its discretion.

With the breakup of the All Malaya Currency Board, the members of the Brunei Darussalam Currency Board obtained the right to issue individual national currencies. The 1967 Currency Act created a new Bruneian currency, the Brunei dollar, with a parity of 0.290299 grams of gold to 1 Brunei dollar. This rate was equivalent to the cross-rate that had

existed between the Malayan dollar and the U.S. dollar. The exchange rate of the Brunei dollar could fluctuate depending on the recommendation of the Board to the Sultan. The original exchange rate was 8.5714 Brunei dollars (B$) per pound sterling. However, after the devaluation of sterling on 18 November 1967, the rate changed to B$7.3469 per pound sterling. The gold parity remained unchanged.

Currency commissions were originally set at no more than ⅔% of each dollar of issuance (or 3/32 of 1 penny sterling per Brunei $1). On December 7, 1967, the commission changed to 0.1094 penny sterling per Brunei $1. Then, the commission became B$0.0246 per £1 sterling on October 1, 1968. The Brunei Darussalam Currency Board apparently ceased charging a commission shortly after, but we were unable to find an exact date when it happened.

The Board was also granted the sole authority (with the consent of the Sultan) to design and issue denominations and forms of the Brunei dollar. The original choice by the Board was to revive the designs originally used by monetary authorities from the 17th through 19th centuries (albeit with updated portraits and designs). The Brunei dollar was divided into 100 cents, like its predecessors: the Straits dollar and the Malayan dollar. It was decided that the Board would begin issuing currency notes on August 22, 1967.

The Currency Act required the Board's external assets to consist of "gold, sterling or currencies other than the Brunei Darussalam currency." These assets could be securities (maturing within five years), currencies, or liquid capital. The liquid assets had to amount to no less than 30% of the Board's total demand liabilities and had to mature within five years. In total, the net external assets were mandated to amount to no less than 70% of the Board's demand liabilities. Finally, total assets (including foreign and domestic assets) had to be maintained at a ratio of 1:1 with the aggregate amount of the Board's currency notes and coins in circulation. This original ratio of 70% external reserves to the monetary base was reduced in 1977 under Amendment 5 of the 1967 Currency Act. We were not able to locate this Amendment in full.

The Board was vested with the power to open accounts and accept deposits abroad and in Brunei, purchase, sell, and discount treasury bills of Brunei, purchase public securities, acquire property to establish offices, and act as an agent for monetary institutions (among others). The final power became particularly relevant during the 1990s, when Brunei Darussalam contemplated joining the International Monetary Fund (IMF). On October 10, 1995 the decision was made to join the Fund, and as a result, gold was eliminated as a de jure denominator for exchange rates in Brunei. De facto, gold had ceased to play a role in the monetary system since the collapse of the Bretton Woods international monetary system beginning in August 1971.

Originally, the minimum amount accepted for issuing Brunei dollars was 10,000 pounds sterling, and the minimum the board accepted for redeeming Brunei dollars was $100,000 Brunei dollars. Redemption initially occurred only on Tuesdays and Thursdays from 9-10:30 AM in the capital city of Bandar Seri Bagawan.

The Currency Interchangeability Agreement of 1967

Since the 19th century, Singapore has been an important financial channel for Brunei, particularly as a trading center capable of providing a valuable hub for the acquisition of external assets. Furthermore, Brunei's plethora of natural resources allowed and continually allows for large revenue to funnel into the tiny nation. Brunei needed and continues to need a financial center capable of managing these exchanges. Singapore's financial channels proved to be sufficient in the eyes of the founders of the Brunei Currency Board to serve this purpose. Thus, an agreement was established between Brunei and Singapore to maintain steady exchange rates between the Singapore dollar and the Brunei dollar. This agreement, titled the Currency Interchangeability Agreement of 1967, "allows banks in Brunei to shift funds into Singapore without running the risks of currency fluctuations." Due to the stability of this currency peg, this agreement allows for easy acquisition of external assets by Brunei Darussalam.

Under the Currency Interchangeability Agreement of 1967, "the Brunei Currency Board will accept from banks in Brunei, notes and coins issued by the Board of Commissioners of Currency, Singapore, and will exchange such notes and coins at par and without charge into notes and coins issued by the Brunei currency board." This stable exchange continues to this day, and was commemorated in 2017 with the issue of limited edition $50 polymer notes with the theme "Flourishing Growth" in both Brunei Darussalam and Singapore.

After 1967, the Currency Board of Brunei Darussalam functioned as outlined in the 1967 Currency Act. As the Australian economist Peter Drake has noted, "in any tiny, open economy [like that of Brunei Darussalam], the scope for stimulating private investment and output through domestic monetary expansion by way of bank lending will be severely limited, at least initially". Hence, the establishment of a currency board in Brunei reassured domestic money holders and foreign traders that monetary inflation and exchange rate fluctuations would not occur, since the Brunei dollar was fixed to a fairly reliable foreign currency. As mentioned previously, Brunei's economy has been dominated by the export of natural resources, and thus has been closely dependent on foreign trader confidence. The stability of the Brunei dollar allowed for sustained export of Bruneian oil and gas; in 1979, at the end of a decade of sustained economic growth in Brunei, oil and gas made up 88% of Brunei's GNP. This monetary stability also promoted sustained foreign trade past the 1970s. For example, in 1973, the Mitsubishi Corporation signed a contract with authorities in Brunei where gas was supplied to three Japanese utility plants for 20 years. This enabled consistent revenue streams for Brunei.

The establishment of Brunei as a "sovereign, democratic, and independent Malay Muslim monarchy in 1984" did not affect the administration of Brunei's currency board. Joining the Association of Southeastern Asian Nations (ASEAN) "a week after the declaration of full independence," further strengthened ties with Singapore diplomatically and cemented the neighboring nation as a valuable economic ally. This alliance continues to this day.

It is unclear when Brunei stopped using the pound sterling as an anchor currency for the Brunei dollar. The Currency Interchangeability Agreement in practice means that the Singapore dollar has been the anchor currency for the Brunei dollar since the Singapore dollar began to float on June 21, 1973. Before that, the Singapore dollar used the pound sterling as its own anchor until switching to the U.S. dollar on June 25, 1972.

The Currency and Monetary Order of 2004

In 2004, the Brunei Currency Board was renamed the "Brunei Currency and Monetary Board" under the Currency and Monetary Order of 2004. This Order made a number of changes to the Monetary Authority of Brunei Darussalam (under the Currency Act of 1967), which we have broken down into three categories: organizational, currency, and asset alterations.

Organizationally, instead of an undefined number of board members, the order specified that there would be an appointed position of Minister of the Board (who would be the chairman) and five other members. These included the Minister of Finance of Brunei Darussalam and four other persons named by the Sultan, two of which were experienced in banking and finance. Instead of meeting twice a year, the board was now required to meet on a quarterly basis. Meetings could also be held without the chairman (if the deputy chairman, the minister of finance, was present). A section of the order also added "disqualification of members," specifying bankruptcy, incapability of performance, dishonesty convictions, or missing three consecutive meetings as sufficient for expulsion from membership to the Board.

The Currency and Monetary Order of 2004 also installed great changes to the currency of Brunei. The minting facility of Brunei, stationed in Bandar Seri Begawan, was originally registered as an entity under the administration of the Brunei Darussalam Currency Board. Under the new Order, it was registered as a separate, independent entity, capable of autonomous internal affairs. The Board was also endowed with the ability to conduct demonetization, the withdrawal of

money from circulation in Brunei. Finally, the Order modernized the aforementioned Currency Act of 1967, prohibiting digital photography of any notes and coins in circulation.

As mentioned previously, we believe there was an Amendment (Amendment 5 of 1977) that allowed the board to deviate from its original 7:10 minimum ratio of foreign assets to the monetary base. However, the Currency and Monetary Order of 2004 officially cemented this ruling. This deviation could only be instituted upon unanimous concurrence between all members of the Board.

Autoriti Monetari Brunei Darussalam Order of 2010

In 2010, four units that had previously been under the Ministry of Finance merged to form the Autoriti Monetari Brunei Darussalam. These included the Financial Institutions Division, the Brunei Currency and Monetary Board, the Brunei International Financial Center, and parts of the Research and International Division of the Ministry of Finance. The Autoriti Monetari Brunei Darussalam was established as "the central bank of Brunei Darussalam." The goals of this established central bank were to limit inflation, continually stabilize the financial system, establish a financial services sector, and assist in establishing efficient payment systems.

The current administration of the central bank is quite similar to the earlier administration of the Brunei Currency and Monetary Board: a board of directors headed by a chairman, with a deputy chairman, and four to seven directors appointed by the Sultan. The directors are mandated to meet once every two months in Bandar Seri Begawan and self-regulate their proceedings. The Autoriti Monetari Brunei Darussalam can conduct credit operations with banks in Brunei and can lend to the government. This deviates from traditional monetary policy under an orthodox currency board, which does not lend to the government. This order also established the right of the bank to establish reserve requirements for banks, influenced by bank runs during the financial crisis of 2008. Furthermore, the Order permits the central bank to be a lender of last resort for

a bank or financial institution, another deviation from traditional currency board orthodoxy. However, while the central bank's establishment may have threatened the existing Currency Board's order, subsection 78 specified that "nothing in this order shall affect the operation of the Currency Order, 2004."

Currency and Monetary Amendment Order, 2010

Another enactment adopted with the above order was the Currency and Monetary Amendment Order of 2010, which altered the Currency and Monetary Order of 2004. The Autoriti Monetari Brunei Darussalam, the newly founded central bank of Brunei, was charged with the general administration of Brunei's Currency Board. All persons employed by the board were immediately transferred into service of the central bank, and all existing arrangements (such as outstanding purchases of external assets) were also transferred to the bank.

Furthermore, the Currency and Monetary Order of 2010 specified the "ability of the central bank to buy and sell domestic currency notes and coins against gold, silver or foreign currencies eligible for inclusion in the reserve of external assets." Perhaps most pertinently, this order mandated that a currency fund, holding foreign currencies, gold, and silver (in short, all external assets), be formed. These external assets are currently mandated to be at least 100% of the monetary base in Brunei Darussalam.

As a result of the formation of the Autoriti Monetari Brunei Darussalam, the Brunei Currency and Monetary Board was officially dissolved. All references made to the Brunei Currency and Monetary Board since 2010 refer to the Autoriti Monetari Brunei Darussalam.

The Brunei Currency Board (and the Brunei Currency and Monetary Board) published periodic financial statements in the Brunei government gazette but produced no stand-alone annual reports. However, the Autoriti Monetari Brunei Darussalam has published annual reports since its establishment in 2010.

Definition of an Orthodox Currency Board

An orthodox currency board is defined as a monetary authority that issues notes and coins fully backed by foreign reserves. Often, net foreign assets may modestly exceed 100% of the monetary base; the Malayan Currency Board had a ceiling of 115%. The rationale of the extra reserves is to provide a buffer against the depreciation of the securities the board holds. When a currency board exceeds its ceiling on reserves, it pays out the excess as profits, or seigniorage. Another characteristic of an orthodox currency board is that its currency should be fully convertible into the foreign (anchor) currency at a fixed exchange rate. An orthodox currency board does not hold significant domestic assets, because it does not lend to the government or to domestic corporations. A corollary is that an orthodox currency board cannot act as a lender of last resort to banks.

The question we consider here is whether Brunei Darussalam's currency board has been orthodox since its inception in 1967. We have noted that by law, Brunei Darussalam's foreign assets up until 2010 only had to be 70% of the monetary base, which does not satisfy the 100-115% level explained above. Full convertibility between Brunei's anchor currencies, which had previously been the pound sterling and now is the Singapore dollar, has existed throughout the existence of the Board. Recently, we have seen fluctuations in domestic assets held by the Brunei Currency Board, which had been steadily held in significant amounts prior to the implementation the 2010 reforms. This also suggests unorthodoxy. Finally, the establishment of the Autoriti Monetari Brunei Darussalam has created the ability for Brunei Darussalam's monetary authority to supply capital to the government and act as a lender of last resort for financial centers in Brunei. Thisfurther suggests unorthodoxy.

In short, while Brunei Darussalam's Currency Board has exhibited some traits of orthodoxy, its legal framework indicates that it need not operate as an orthodox currency board. But, how has it operated in practice?

Calculations and Tests

Annual and monthly or quarterly balance sheet data on the Currency Board of Brunei from its beginning in 1967 through early 2020 has been digitized, benefitting from previous work by Nicholas Krus. The sources of the data are as follows:

- From the board's inception in 1967 to September 1989, quarterly data from the Brunei Gazette (scattered quarters missing).
- Data could not be found from December 1987 to December 1998.
- From March 1999 to September 2001, monthly data from the International Monetary Fund's International Financial Statistics database was used due to a lack of data from Brunei Darussalam authorities.
- Since December 2001, monthly balance sheets are available from the Autoriti Monetari Brunei Darussalam, which we have included in our accompanying spreadsheet entitled "Combined Data."

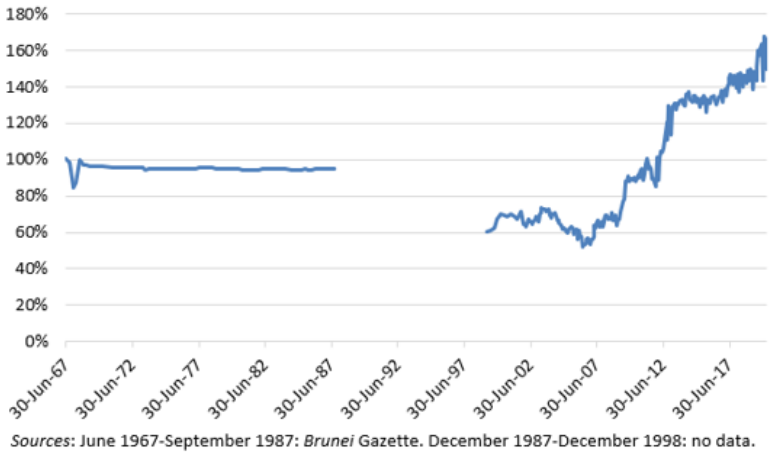
We performed various tests on the items in the balance sheets to help determine how close Brunei's monetary authority has been to currency board orthodoxy.

Test 1: Foreign Assets, Domestic Assets, and Monetary Base

First, we examined net foreign assets as a percentage of the monetary base of Brunei Darussalam (including notes and coins in circulation). Foreign assets comprise gold, silver, and foreign currencies.

As mentioned previously, an orthodox currency board holds net foreign reserves equal to 100% or somewhat more of the monetary base. In Brunei Darussalam, from 1967-1987, the Currency Board only met this requirement twice, on 30 June 1967 and 30 June 1968 (a mere 2.8% of the period). Of course, the mandate by the Currency Act of 1967 only required a proportion of 70% of external assets to the monetary base. However, foreign reserves were almost always above 90% and even 95% of the monetary base.

Unorthodoxy persisted in our measurements from 1999-2010, with foreign assets to monetary base percentages consistently dropping below the 70% threshold (the lowest being 52% on May 31st, 2006). This is likely due to the passage of the Currency and Monetary Order of 2004, which allowed the Board to lower external assets to below 70% of the monetary base upon unanimous agreement by the members of the board.



Sources: June 1967-September 1987: *Brunei* Gazette. December 1987-December 1998: no data.

Figure 1. *Net Foreign Reserves (% of Money base)*

The passage of the Currency and Monetary (Amendment) Order in 2010 mandated external assets to be at least 100% of the monetary base in Brunei Darussalam. As a result, net foreign reserves increased rapidly following the implementation of this Order. However, from 2010 to the latest data, in March 2020, we only measured a brief period of currency board orthodoxy, from March to October 2012. In November 2012, external assets rose above 110% of the monetary base. As of March 2020, the ratio was 150%.

In summary, the monetary authority was fairly orthodox from 1967 until 1989, when data is nowhere to be found. The authority was then orthodox from March to October 2012.

Test 2: Domestic Assets as a Percentage of Total Assets

For Test 2, domestic assets as a percentage of the total assets of the monetary authority was measured. Data on domestic assets could not be found until March 1999. So, the analysis begins there.

Sources: March 1999-September 2001: International Monetary Fund. December 1999-latest:

Figure 2. *Domestic Assets as a % of Total Assets*

Orthodox currency boards should have a negligible amount of domestic assets as a percentage of total assets. Some Boards hold small amounts of domestic assets on hand to pay salaries and expenses; as a result, we will classify 0-5% of domestic assets as a percentage of total assets as an orthodox measure.

From March 1999 to March 2007, around half of the monetary authority's total assets were domestic. This percentage is too high to be considered orthodox. Starting in 2012, domestic assets plummeted, and since October 2013, they have consistently fallen into the range of orthodoxy, measuring just 0.8% of total assets in March 2020. This is due to the dissolution of the 1967 Currency Act under the Currency and Monetary (Amendment) Order of 2010. Under this order, the Currency Board of Brunei Darussalam (managed by the Autoriti Monetari Brunei Darussalam) was not mandated to hold any significant percentage of domestic assets. The

implementation of this order allowed for the Board to liquidate domestic asset holdings.

As a result of our findings, we can conclude that test one's brief demonstrated period of orthodoxy in mid-2012 is undermined by Test 2, which finds significant percentages of domestic assets as a percentage of Brunei Darussalam's total assets during this period. Furthermore, the orthodoxy demonstrated in Test 2 from October 2013 to March 2020 (with domestic assets being below 5% of Brunei Darussalam's total assets) is undermined by test one, which suggested an unorthodox amount of foreign assets as a percentage of the total monetary base of Brunei Darussalam during this period.

Test 3: Reserve Pass-Through

Test 3 measured the percentage of the change in the monetary base divided by the change in foreign assets, on a year-over-year basis. Data is missing from December 1987 to December 1998.

Sources: June 1967-September 1987: *Brunei* Gazette. December 1987-December 1998: no data. March 1999-September 2001: International Monetary Fund. December 1999-latest: AMDB.

Figure 3. *Reserve Pass-Through as a % of Money Base*

A range of 80-120% of reserve pass-through as a percentage of the monetary base is considered orthodox. A reserve pass-through rate of 100% means that if the monetary base rises or falls by a certain amount, then the foreign reserves change by the exact same amount. Note that we began analysis 1968, as this test involves a rate of change. From June 1968 until data

end in June 1987, the reserve pass-through ratio fell within the range 80-120%, suggesting that the currency board was, in fact, orthodox.

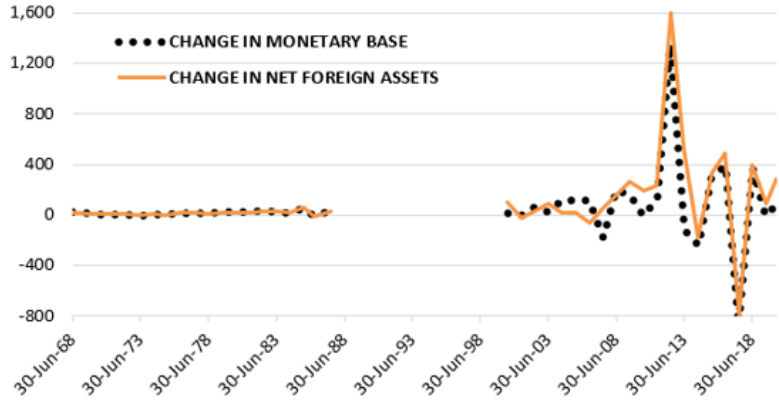
Between June 2000 and June 2014, the reserve pass-through ratio fluctuates substantially. Only one month, June 2012, had an orthodox reserve pass-through rate. This (in conjunction with Test 2) further undermines the apparent period of orthodoxy in 2012 that we measured in Test 1.

From June 2015 to June 2018 the reserve pass-through ratio remained between 80% and 120%, suggesting orthodoxy. Recall that Test 2 measured domestic assets as below 5% during this period. However, Test 1 demonstrated that foreign assets as a percentage of the monetary base were above 120% suggesting unorthodoxy.

Finally, 2019 and 2020 have seen a reversion in Brunei Darussalam back to unorthodox reserve pass-through practices, with percentages falling far below the 80% threshold.

Further Tests

Test 4 measures the annual changes in the monetary base and net foreign assets, as depicted in Figure 4. If the changes in the monetary base and the changes in net foreign assets correlate with one another, we can call the board orthodox. We see in Figure 4 that the changes in Brunei Darussalam's monetary base and net foreign assets roughly correlate with one another. Note again that data is unavailable from December 1987 to December 1998 here and in subsequent tests.

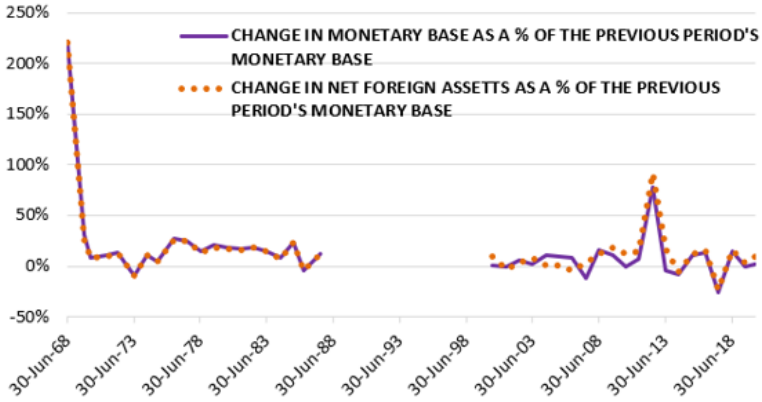


Sources: June 1967-September 1987: *Brunei* Gazette. December 1987-December 1998: no data. March 1999-September 2001: International Monetary Fund. December 1999-latest: AMDB.

Figure 4. *Changes in Monetary Base and Net Foreign Assets (Million Brunei Dollars)*

Test 5, depicted in Figure 5, calculates the change in net foreign assets and the monetary base as a percentage of the previous period's monetary base. From 1967 through 1987, the discrepancies between the changes are relatively small. The largest discrepancy was in 1969, 4.91 percentage points. Because this was both the largest difference and was relatively small, we can conclude that the annual changes in net foreign assets and monetary base in Brunei Darussalam from 1967 to 1987 suggest orthodoxy.

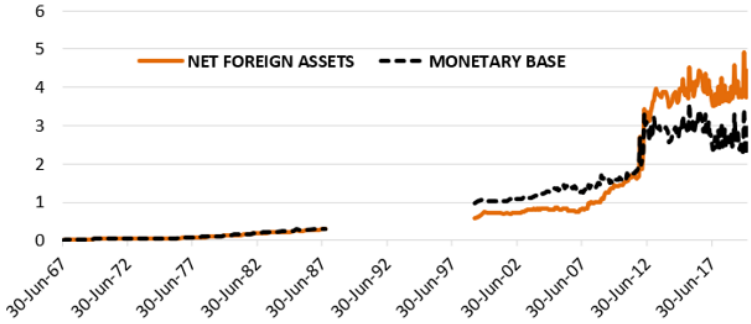
From June 2000 to March 2020, however, the change in net foreign assets and the monetary base as a percentage of the previous period's monetary base are steadily above 5%, which we mark as the threshold of significance. Large discrepancies include 20.82 percentage points in June 2013, 15.81 percentage points in June 2007, 14.41 percentage points in June 2012, and 9.26 percentage points in June 2004. These discrepancies suggest unorthodoxy.



Sources: June 1967-September 1987: *Brunei* Gazette. December 1987-December 1998: no data. March 1999-September 2001: International Monetary Fund. December 1999-latest: AMDB.

Figure 5. *Change in Net Foreign Assets and Monetary Base as a % of the Previous Period's Monetary Base*

Test 6 examines if the changes in the monetary base and net foreign assets are insignificant compared to the size of the monetary base. If so, then a large reserve pass-through as a percentage of the monetary base (analyzed in Test 3) can be ignored. For our analysis, we call any change between 0% and 5% insignificant. We can conclude that, for both periods of our analysis, from June 1968 to June 1987 and June 2000 to March 2020, the changes in the monetary base and net foreign assets were significant. Only 4 of the 41 time periods that we analyzed had changes in the monetary base and net foreign assets below the 5% threshold of insignificancy, a mere 10% of the data. As a result, we conclude that we should not dismiss the results of the previous ratio tests on the grounds that the numbers involved were too small.



Sources: June 1967-September 1987: *Brunei* Gazette. December 1987-December 1998: no data. March 1999-September 2001: International Monetary Fund. December 1999-latest: AMDB.

Figure 6. *Net Foreign Assets and Monatary Base (Billion Brunei Dollars)*

Also included is a simple comparison of the levels of the monetary base and net foreign assets in Brunei Darussalam, as depicted in Figure 6. The levels of both the monetary base and net foreign assets do appear to mirror each other, suggesting orthodoxy.

Conclusion

Brunei Darussalam's Currency Board has exhibited traits of orthodoxy throughout its existence, such as a fixed exchange rate with anchor currencies (the pound sterling and the Singapore dollar). Despite legal provisions allowing unorthodoxy, our tests demonstrate operation close to an orthodox currency board from 1967 until data stop in 1987 (as demonstrated by Tests 1, 3, 4, 5, and 6). However, since the resumption of data, the board has been unorthodox. This has come as a result of the lack of restrictions on domestic assets throughout most of the years of the operation of the Board, little to no parallels in changes of net foreign assets and the monetary base, and fluctuating reserve pass through ratios. We were not able to identify any periods of orthodoxy during this period, as each of our tests seemed to contradict the findings of the others. Test 1 suggested orthodoxy from March to October of 2012, but this is quickly undermined by tests 2, 3, 4, and 5. Test 2 suggests orthodoxy from 31 October 2013 to 31

March 2020, but this is undermined by tests 1, 3, 4, and 5. Test 3 suggests orthodoxy from 2015-2018, contradicted by tests 1, 4, and 5. Overall, while Brunei Darussalam's Currency Board has not exhibited traits of orthodoxy in recent years, but it has fostered monetary stability, helping the nation remain one of the wealthiest in Southeast Asia.

Appendix

Legislative History of Brunei's Currency Board

Date of Enactment	Law	Outcome
28 January 1967	Currency Act Parts I, II, V	The Brunei Currency Board is established, and the first Minister is appointed.
12 June 1967	Currency Act Parts III (except Section 17 (1) (b)), IV	The Brunei Currency Board becomes the sole issuer of currency in Brunei and the recall of other currencies begins.
5 July 1967	Currency Interchangeability Agreement	The Brunei Currency Board and Singapore's monetary authority would accept each other's currency at 1:1.
1 September 1967	Currency Act Part III, Section 17 (1)(b)	The external asset ratio of 70% of demand liabilities is instituted.
16 January 1969	Currency Enactment Act (under the Currency Act of 1967), Section 247	Cessation of currency notes and coins of the Board of Commissioners of Currency, Malaya and British Borneo to be Legal Tender in Brunei Darussalam.
1977	Amendment 5 of the Currency Act of 1967	The Board's orthodoxy is diminished.
1 January 1984	Currency Enactment Act (under the Currency Act of 1967), Section 12	The Brunei Currency Board issues new coins in celebration of independence.
8 January 1984	Decision to join ASEAN	The Brunei Currency Board votes to join the Association of Southeast Asian Nations (ASEAN).
10 October 1995	Decision to join IMF	The Brunei Currency Board votes to join the International Monetary Fund (IMF), and as a result, gold is abolished as a denominator for Brunei's exchange rate.
12 February 2004	Currency and Monetary Order, Part II	The Brunei Currency Board is renamed. It is now known as the Brunei Currency and Monetary Board.
12 February 2004	Currency and Monetary Order,	The Brunei Currency and Monetary Board is allowed the power to lower the

	Part IV	ratio of net foreign assets to below 70% after a vote.
7 September 2005	Currency and Monetary (Amendment) Order, 2005	All assets and liabilities originally belonging to the Brunei Currency Board are now transferred to the Brunei Currency and Monetary Board.
18 August 2007	Currency and Monetary (Amendment) Order, 2007	The accounts of the Brunei Currency and Monetary Board are now audited annually.
16 December 2010	Currency and Monetary (Amendment) Order, 2010	The Autoriti Monetari Brunei Darussalam (which formally begins on 1 January 2011) is charged with administration of Brunei's currency board. Foreign assets are now mandated to be no less than 100% of the monetary base.
1 January 2011	Autoriti Monetari Brunei Darussalam Order, 2010	The Autoriti Monetari Brunei Darussalam is established as Brunei's central bank.

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7 Analyzing the monetary system of Sarawak, 1927-1941

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Garvin ***Kim***

Introduction

Like many British colonies in the early 20th century, Sarawak, a British protectorate, had a currency board monetary system. However, perhaps because Sarawak is no longer an independent country today, Sarawak's monetary history and currency board have been rarely discussed. This paper aims to fill that gap by examining Sarawak's monetary history since its inception as an independent state under the Brooke family's rule, to its demise following the Japanese occupation in 1941. It focuses on the extent to which Sarawak's currency board system - the Sarawak Currency Fund - operated as an orthodox currency board. This paper is accompanied by an Excel workbook that gathers all key data from Sarawak's balance sheet, which will be of use to future researchers on this topic.

Brief History of Sarawak

As Sarawak is a relatively unknown region for many readers, and its currency board is still more obscure, we have included

a brief overview of Sarawak's modern history, to help readers better conceptualize the situation. We also included a brief characterization of a currency board prior to our tests of the Sarawak Currency Fund.

Today, Sarawak is one of 13 states in Malaysia. Malaysia is geographically divided into two parts: Peninsular Malaysia on the Malay Peninsula and East Malaysia on the island of Borneo. Throughout history, the two parts have developed separately. Sarawak, in East Malaysia, was originally part of the Sultanate of Brunei. The British first became interested in Sarawak for its strategic location along the China trade routes, and for its status as outside the Dutch sphere of influence (Kaur 1998: 3).

Map. Malaysia and nearby countries. **Source:** WorldAtlas

In the 1830s, Brunei was in a state of civil unrest. Brunei's ruler, the Sultan Omar Ali Saifuddin II (reign 1827–1852) tasked his uncle, Pangeran Muda Hashim, to quell the revolt. Unable to do so, Hashim was forced to request help from a British sailor named James Brooke, who helped Hashim crush the revolt. Brooke was awarded by Hashim the governorship of Sarawak on 24 September 1841, an offer that was officially confirmed by the Sultan in July 1842.

With British support, the Brooke family immediately set about expanding Sarawak at Brunei's expense (Kaur 1998: 4). By 1905, Sarawak had evolved from the small area around the capital, Kuching, to the territory within today's borders under Malaysia. Sarawak was recognized as an independent state by

the United States in 1850 and by the United Kingdom in 1864. It officially became a protectorate of the United Kingdom in 1881; this means that Britain offered Sarawak military protection and maintained control over Sarawak's foreign policy, but the White Rajahs (ruler; the Brooke family) retained full control over domestic affairs (Royal Institute of International Affairs 1957: 3).

Though Sarawak was rich in coal deposits and minerals, it was economically backward. To facilitate trade, the Brookes encouraged exports of Sarawak's resources, such as timber and crops, and closely linked the Sarawak dollar to the Strait Settlements currency, which was used in Singapore, Sarawak's closest major trading and finance hub. The Brookes exerted an absolute rule over their subjects; in Amarjit Kaur's words, "there was no legal distinction between Rajah's personal purse and the Sarawak Treasury. Everything belonged to the Rajah, and he had full control over the territory's resources and wealth" (Kaur 1998: 113). This would last until 1941, when the last White Rajah, Charles Vyner Brooke, introduced a new constitution that sought to transition Sarawak into a constitutional rule to commemorate the Brookes' centenary of rule. However, it never took effect because in December 1941, with other British colonies or protectorates in East Asia, Sarawak was invaded by Japan. Charles Vyner Brooke fled to Australia, and Sarawak remained under Japanese occupation until Japan's surrender in 1945. Though Brooke returned to Sarawak after the war, the damage that had been done during the war convinced him that Sarawak lacked the necessary resources to reconstruct by itself, and Brooke decided to cede Sarawak to Britain as a crown colony in 1946. Here, it is important to mention that the Brookes, who adopted a "more personal approach" in dealing with the local population (Kaur 1998: 12), were very popular in Sarawak. Consequently, Sarawak's cession to Britain sparked an anti-cession movement, which in 1949 culminated to the assassination of Sarawak's second colonial governor, Sir Duncan Stewart.

In 1957, the neighboring Federation of Malaya (located on the Malay Peninsula) gained independence from the United Kingdom, and in 1961, its prime minister, Tunku Abdul

Rahman, invited other British colonies in the region - Sarawak, Singapore (which has been under self-rule since 1958), Brunei and North Borneo - to form a new state called Malaysia (Kaur 1998: 3). With overwhelming popular support, Sarawak officially joined Malaysia as an autonomous state in 1963, ending more than a century of rule under the British. Today, Sarawak is the largest state in Malaysia by area.

Table 1. *Sarawak's Monetary History*

Date	Exchange Rate
Before 1880	To the extent the Sarawak dollar was used, Mexican silver pesos (Mexican dollars) and other silver dollar, widely used throughout East Asia, predominated in Sarawak.
September 1880	Sarawak $1 = 1 Mexican dollar; Sarawak government begins issuing Sarawak dollar notes.
30 November 1904	Sarawak $1 = Straits Settlements $1.
29 January 1906	Sarawak $8.57 = £1 sterling (implying Sarawak $1 = Straits Settlements $1); this rate was generally maintained until the Japanese invasion of Sarawak in December 1941.
1927	Sarawak government note issue became a currency board.
1 July 1930	A proclamation of 1 April 1930 making Sarawak notes and Straits Settlements dollar coins sole unlimited legal tender effective 1 July 1930 resulted in a large replacement of Straits Settlements currency by Sarawak currency.
21 October 1938	Sarawak $1 = Malayan $1; currency union between the Straits Settlements and Malaya caused the Malayan dollar to replace the Straits dollar.
22 February 1942	The Japanese invasion of Sarawak during World War II began in December 1941 and ended on 22 February 1942; Japanese occupation forces began issuing their own currency, nominally equal to the Sarawak dollar but was in practice depreciating against the Sarawak dollar, which was hoarded as a store of value.
September 1945	After the Japanese surrender ending World War II, Sarawak currency resumed circulation, but most of

	the increase in demand for currency was filled by Malayan currency.
1 January 1952	Sarawak (with Brunei and North Borneo) joined the Board of Commissioners of Currency, Malaya and British Borneo, which issued the Malayan dollar jointly for all its members.

Sarawak's monetary history may be divided into three periods. The first, from 1880 to 1930, encompasses the period during which there was a local currency issue, but the predominant currency in circulation was likely that of the Straits Settlements (present-day Singapore, Malacca, Penang, and Dinding). The second ranges from 1930 to the Japanese invasion in 1941, during which Sarawak's own currency became dominant, on a sterling-exchange standard at the rate of Sarawak $8.57 to £1 sterling. The third period was the afterlife of the Sarawak dollar. The public hoarded pre-war currency as a store of value during the Japanese World War II occupation of December 1941 to September 1945. Following the Japanese surrender in 1945, the British Military Authority declared legal tender for both the Sarawak notes and the coin of British North Borneo and the notes and coin of the Straits Settlements and Malaya. However, Malayan currency predominated until Sarawak currency ceased circulating.

According to government account books, the first government currency notes in Sarawak were 600 five-dollar notes were issued to the public in September 1880. They were convertible into Mexican dollars, which were recognized as the standard coin in Sarawak; the exchange rate was defined as Sarawak $1 to 1 Mexican silver peso (King 1956: 31). However, in 1903, the government of the Straits Settlements banned the importation of Mexican and British currencies and the export of Straits dollars, and in September 1904, the Rajah (ruler) warned that, while the Mexican and British currencies remained legal tender for the time being, they would soon be demonetized. On November 30, 1904, to maintain close ties and facilitate trade with Singapore, Sarawak's closest large financial hub, the Rajah proclaimed that no dollar except the Straits dollar would be accepted by the Treasury (King 1956:

32). This way, the Straits dollar became the standard coin. This was delineated on 1 January 1906, when he issued Order No. 1, stating only Straits dollars would be accepted at government treasuries henceforth (King 1957: 32). Furthermore, although legally Sarawak currency was only redeemable in Sarawak, in practice the government redeemed it in London in pounds sterling at Sarawak $1 = 2 shillings 4 pence sterling (Sarawak $8.57 to £ 1 sterling). This conversion rate lasted until the outbreak of the Pacific War in December 1941. Sarawak also closely followed Singapore's currency regulations, to increase trade with Singapore.

In 1927, the Sarawak government set up the Sarawak Currency Fund. There seems to have been no law establishing the fund; apparently it was purely a matter of administrative decision. Unlike the Straits Settlements currency board, the Sarawak Currency Fund did not do business with the public, but only with the Sarawak Treasury; the Kuching branch of the London-based Chartered Bank of India, Australia and China; and the Kuching branch of the Singapore-based Oversea-Chinese Bank. The operation of the Sarawak Currency Fund can be understood through an example. Assume that a London importer instructs the Chartered Bank to remit funds to his credit in Kuching. The London headquarters of the Chartered Bank credits the importer's account in Kuching, crediting the London amount of the Kuching branch by the same amount. The transaction would be carried out with the conversion rate of one Sarawak dollar to 2 shillings 4 pence sterling, minus any commission fees. Now, the Kuching agent of the importer wishes to draw this sum out in cash. The Chartered Bank issues the cash, debiting the importer's account and crediting the account of the Currency Fund. If the Fund wishes to transfer the current account assets from Kuching to London in order, for example, to invest in marketable securities, it would transfer the given sum to the Sarawak Government Treasury account in Kuching and receive sterling from London at the rate of one Sarawak dollar to 2 shillings 4 pence sterling. In summary, the net result of this transaction was to increase Sarawak's money supply. In 1927, the income amount of the Currency Fund showed interest payments arising from

accounts held within banks, and by 1930 the Fund had gained over $32,417.42 from interest payments (King 1956: 34).

The primary reason for the increase in interest income was the Sarawak government's decision to make both Sarawak government notes and Straits Settlements dollar coins the sole unlimited legal tender. (Sarawak coins for less than $1 were limited legal tender.) The decision was officially introduced by Notice No. 237 in the Sarawak Government Gazette of April 1, 1930, which stated that the importation of foreign currency notes was forbidden, and that Straits Settlements currency notes could be exchanged for Sarawak notes until July 1 1930 (King 1957: 34).

In 1939, the government prohibited the importation of Straits Settlements dollar coins and declared them to be no longer legal tender (King 1957: 34). This order was the final change in pre-invasion Sarawak currency. Most likely, this order was a result of the 1938 Malayan currency agreement, under which the dollar coin ceased to be unlimited legal tender in the Straits Settlements and the Malay states. This currency union between the Straits Settlements and Malaya eventually (after World War II) caused the Malayan dollar to replace the Straits dollar in Sarawak.

The Japanese invasion of Sarawak during World War II began in December 1941 and ended on 22 February 1942. During the occupation, the Japanese introduced their own currency denominated in dollars and bearing the inscription: "The Japanese Government promises to pay the Bearer on Demand xxx dollars."; the notes were dubbed "banana money" for the pictures printed on some of them. Some of the notes had serial numbers, and the Japanese hinted that the British would redeem such notes, thereby making them pass, temporarily, at a premium. However, after the Japanese surrender in 1945, the British Military Authority treated these notes as worthless. By a 1945 proclamation from the British government, British North Borneo coins, Sarawak notes and coins, and Malayan and Straits Settlements notes and coins were all declared legal tender in Sarawak (King 1956: 35). The Rajah resumed the administration of Sarawak on April 15, 1946, and kept in effect the regulations of the British Military Authority. However, as

mentioned, the Rajah (Charles Vyner Brooke) determined that Sarawak lacked the resources on its own for postwar reconstruction and ceded Sarawak to Britain as a Crown Colony on July 1, 1946.

By 1947, negotiations were under way among the governors of British territories in Southeast Asia for the extension of the Malayan currency area. After the Japanese surrender ending World War II, Sarawak currency resumed circulation, but most of the increase in demand for currency was filled by Malayan currency. No Sarawak currency notes had been put into circulation since the war, and the number of Sarawak notes in circulation had fallen significantly from $8,198,382.40 at the end of 1946 to only $961,444.60 at the end of 1951 (King 1956: 36). On January 1, 1952, Sarawak (with Brunei and North Borneo) joined the Board of Commissioners of Currency, Malaya and British Borneo, and the Malayan dollar became the sole legal tender.

Currency Board Tests

Before we can analyse the extent to which the Sarawak Currency Fund operated as an orthodox currency board, it is important to describe the key characteristics that define a currency board.

In general, a currency board has no discretionary monetary policies. It issues notes and coins that are convertible on demand into a foreign anchor currency (typically the United States dollar or British pound sterling) at a fixed exchange rate (Hanke 2002: 88). This implies that the amount of money that the board supplies is limited by its reserves of the anchor currency, which is in turn influenced by the demand for the domestic currency. Three characteristics define a currency board: a fixed exchange rate, no exchange controls with the anchor currency, and 100% foreign reserves against the monetary base.

Sarawak's currency board is of interest because of Sarawak's special status as a British protectorate ruled by a British family. Geographically, it was close to other crown colonies, such as the Strait Settlements, and to Malaya, whose currency board

orthodoxy was discussed in another working paper in this series (George 2016). For this paper, we will carry out four tests on the orthodoxy of Sarawak's currency board: (1) foreign assets to total assets (monthly basis), (2) net foreign reserves to the monetary base (monthly), and (3) reserve pass-through (annual), (4) changes in monetary base and in net foreign assets scaled to the monetary base (annual). The tests chosen here are similar to those applied by previous working papers in this series.

Methodology

To carry out these tests, we retrieved Sarawak's monetary data from the monthly-published Sarawak Gazette (1900-1928) and the Sarawak Government Gazette (since 1928, still published today for the Malayan state of Sarawak). We collected portions of these documents through various archival websites and gathered a complete set for the currency board period after visiting the Library of Congress in Washington, D.C. and the New York Public Library in New York City. An accompanying Excel workbook contains all the key data we used to graph and analyze the currency board. To ensure accurate entries of data, we performed a series of accounting checks, and made minor corrections to data that appeared erroneous due to possible printing errors in the gazettes. These corrections (and the accounting checks) are noted in the Excel workbook. We hope that they may be of use to future researchers interested in investigating Sarawak's monetary history.

Prior to 1928, balance sheets were only published annually in the Sarawak Gazette. The annual balance sheets before the currency board period were for the government as a whole; the currency was not backed by assets segregated from other government assets except for a redemption account of $50,000 at a bank. The balance sheets during the currency board period can be found in the Sarawak Government Gazette and were published monthly, though the Sarawak Government Gazette did not start publishing them until May 1931. Because of the Japanese invasion in December 1941, the Sarawak Government

Gazette ceased publication that month and hence no data are available from November 1941 onwards (the monthly Sarawak Government Gazettes always published the data for the previous month). This period also marked the demise of the Sarawak Currency Fund and Sarawak's self-rule. We also found some annual data from the post-war years, until Sarawak joined the expanded Malayan currency board.

In line with previous papers, we believe it is important and relevant to define the items constituting foreign assets, a key component of the currency board tests. In general, foreign assets are those issued by entities residing outside the area the currency board serves, in this case Sarawak; all assets that lie outside of this definition are domestic assets (Krus and Schuler: 2014). Here, it is important to note that even if a security is denominated in foreign currency or payable abroad, as long as it is issued by a domestic issuer it will not be a part of foreign assets. In Sarawak's case, we characterized all of Sarawak's investments, cash balances abroad (mainly in Singapore and London), and any foreign currency that the board may hold (Strait dollars and cash in transit to London) as foreign assets. We also differentiated between "narrow" and "broad" definitions of foreign assets, where the broad definition includes all the assets in the narrow definition plus cash balances on deposit in banks in Kuching (Sarawak's capital), but denominated in Strait dollars. As we shall see, using the broad definition makes minimal difference in our currency board analysis. We included "coins in vault at cost of minting" as foreign assets because silver coins during that period were assessed at their value as metal, not their face value, but their placement as a foreign asset rather than a domestic asset is not as clear-cut as it is for securities.

Analysis

First, we believe it is of interest to analyze how Sarawak's financial system changed from 1928-1941. One key aspect is the dominance of Sarawak's notes in circulation from late 1929. As of May 1928, coins in circulation made up approximately 60% of the value of the currency in circulation; by December 1929,

Sarawak's notes in circulation made up approximately 90% of the currency in circulation. The three graphs below (Figures 1, 2, and 3) show the relationship between notes and coins in circulation in Sarawak by percentage and by value.

The surge in Sarawak's notes in circulation was largely sparked by the Sarawak government's decision to make Sarawak government notes and Strait dollar coins sole legal tender. This policy was officially introduced by Notice No. 237 in the Sarawak Government Gazette on April 1, 1930, which stated that the importation of foreign currency notes was forbidden, and that Straits Settlements currency notes could be exchanged for Sarawak notes until June 30, 1930. The effect of these measures can be seen from the accounts of the Currency Fund. In 1927, total Sarawak government notes in circulation were approximately $155,860. By May 31, 1931, the first of the monthly currency returns, which, under the new orders had to be published in the Gazette, Sarawak government notes in circulation surged to $1,820,306. This change was affected by the exchange of Sarawak notes for surrendered Straits Settlements notes. These latter were shipped to Singapore and presented for sterling at the conversion rate of one Sarawak dollar to 2 shillings 4 pence sterling.

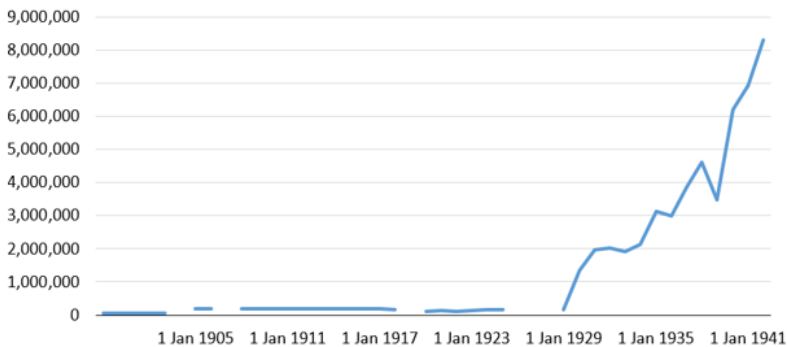

Figure 1. *Notes in Circulation (Sawarak dollars), 1900-1942*

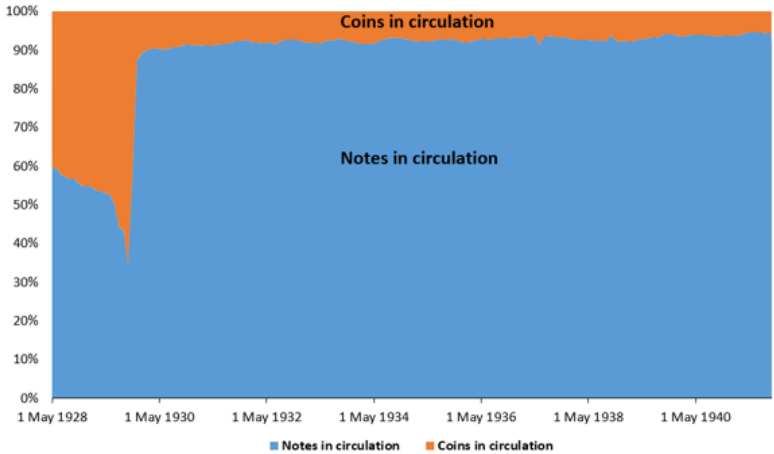

Figure 2. *Notes vs. Coins in Circulation in Sawarak 1928-1941 (%), 1928-1941*

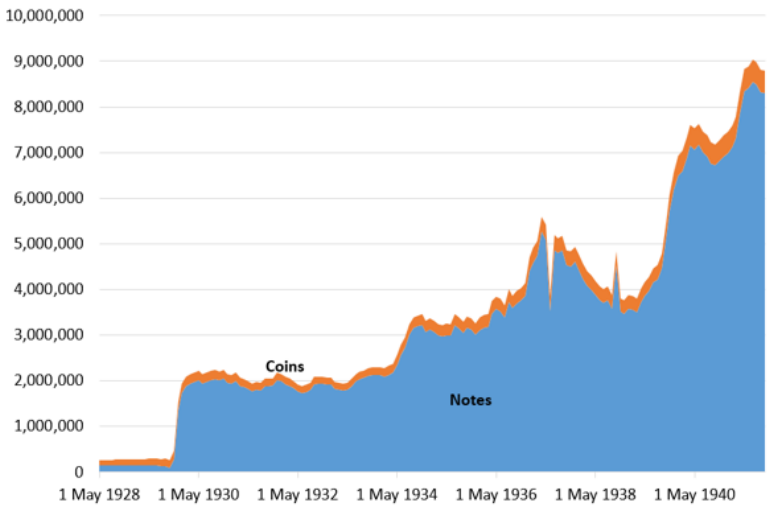

Figure 3. *Notes and Coins in Circulation (Sawarak dollars, 1928-941*

We can better understand Sarawak's Currency Fund by analyzing the percentage of foreign assets as a share of total assets. An orthodox currency board holds few or no domestic assets: approximately 100% of the assets are foreign. The graph below (Figure 4) plots the percentage of foreign to total assets in Sarawak on an annual basis. The blue line represents the narrow share of foreign assets, while the red line represents the

broad share of foreign assets. We also included a dotted line to represent the benchmark percentage of foreign assets. Since data only became available from May 1931, with the publication of monthly balance sheets in the Sarawak Government Gazette, the monthly and annual graphs both encompass the period from May 1931 to October 1941. As seen in the charts on the next page, for most years between 1935 and 1941, the percentage of foreign assets as a share of total assets stuck relatively close to 100%, at around 80-90%. Sarawak's monetary system conformed to an orthodox currency board, then, during this period, if analyzed from the point of view of Sarawak having all, or almost all of its assets held abroad.

We have performed a second test of currency board orthodoxy based on the net foreign reserves to monetary base ratio. In an orthodox currency board, the percentage should be very close to 100%, accepting 20% as a margin of error due to changes in market valuation of assets or other factors. As shown on the graph below (Figure 5), in all months between 1935 and 1941, Sarawak's monetary system conformed to an orthodox currency board, as the net foreign assets to monetary base percentage was close to 100% within the aforementioned margin of error, with a slight exception in the month of April 1938, when the broad money percentage was 129.15%.

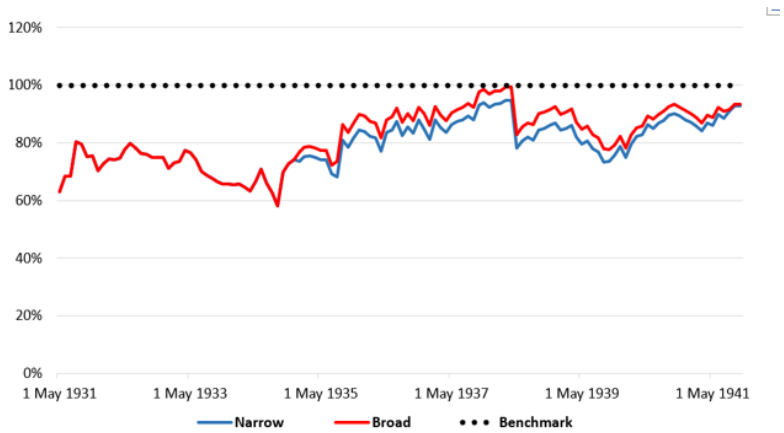

Figure 4. *Foreign Assets as a Share of Total Assets, 1931-1941*

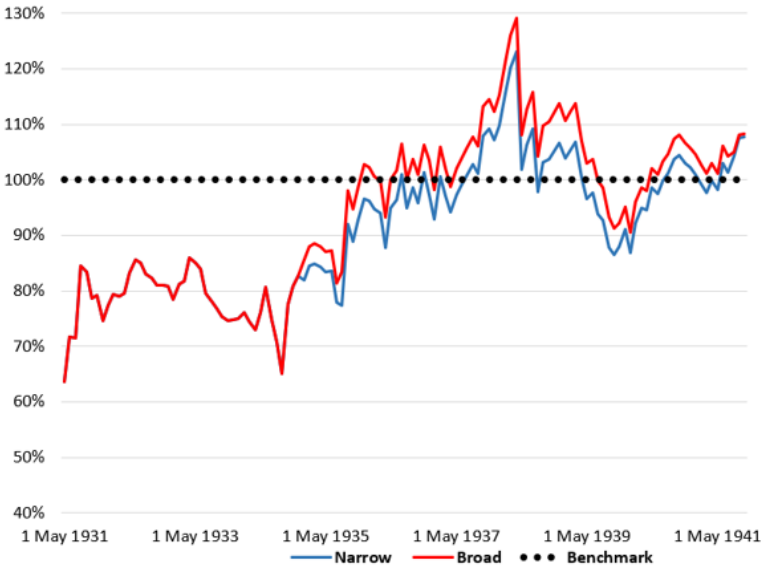

Figure 5. *Net Foreign Assets to Monetary Base (montly), 1931-1941*

This conclusion is further supported through our Reserve Pass-Through Test (Figure 6). This test represents the percentage of the total change in net foreign reserves to the total change in the monetary base. This test has been conducted on an annual basis to reduce the effects of seasonal factors. The blue line and red line represent the narrow share and broad share, respectively, of net foreign assets to the monetary base. We also included a dotted line to represent the benchmark percentage of foreign assets. Despite several fluctuations delineated in the graph above, after a significant deviation from orthodoxy in April 1938, the percentage obtained between 1935-1941 remained stable at approximately 100%, with smaller fluctuations. Sarawak's financial system conformed the most to an orthodox currency board, according to the Foreign-Total Asset Test and Reserve Pass-Through Test, during that period.

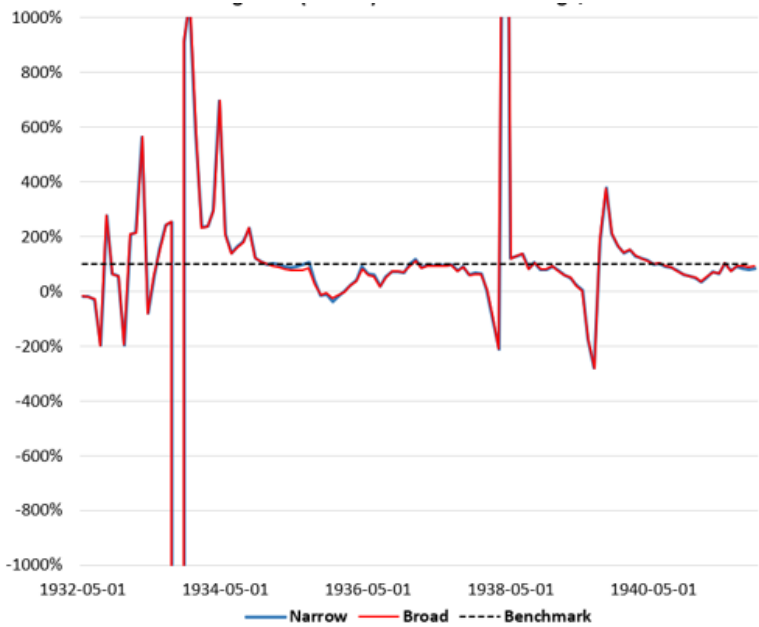

Figure 6. *(Annual) Reserve Pass-Through, 1932-1941*

Conclusion

The Sarawak Currency Fund functioned as a currency board system from 1927 to 1942. From 1935 to 1941, Sarawak's monetary system operated in a way highly similar to an orthodox currency board. We reached this conclusion by analyzing data collected from government statistical yearbooks and the results from the tests performed in this paper.

Overall, Sarawak's monetary system showed important stability during the period examined. This stable monetary system worked satisfactorily until the Japanese conquest of Sarawak in December 1941, and Japanese occupation forces began issuing currency in February 1942, marking the end of Sarawak's currency board system.

Appendix

Sarawak, 1880, (cited in King 1956: 31): Established the note issue.

Sarawak, proclamation of the Rajah Muda (ruler), 30 November 1904 (cited in King 1956: 32): In effect made the Straits dollar the unit of account and made Straits dollar coins the standard of value.

Sarawak, Order No. 1, 1 January 1906 (reprinted in King 1957: 32): Stated that only Straits dollars would be accepted at government treasuries henceforth.

We found no law or notice establishing the Currency Fund in 1927; it seems to have been a purely administrative decision.

Sarawak, Notice No. 237, 1 April 1930 (cited in King 1957: 34): Made Sarawak notes and Straits settlement silver dollars sole unlimited legal tender, effective 1 July 1930.

Sarawak, notification of 1939 (cited in King 1957: 34): Stripped Straits dollars (coins) of their legal tender quality and prohibited their importation.

British Military Administration, British Borneo, Notification No. 149, 1 June 1946 (in British Borneo Military Administration Gazette, v. 2, no. 8): Made Malayan currency notes and coins legal tender.

After the end of World War II and the resumption of civilian rule in 1946, local (Sarawak) notes were briefly issued again. Then, in view of the prospect of Sarawak joining the Malayan Currency Board, which the acting governor favored, local note issue ceased and the Malayan Currency Board supplied currency (telegram from Governor-General of Malaya to Secretary of State for the Colonies, 17 October 1946, Bank of England Archive, Series OV 65, File 25, Borneo Dependencies, filmed by Australian Joint Copying Project, in National Library of Australia Trove online collection).

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