Do Free Banks Overexpand in Unison?

Time Series Evidence from Hong Kong, 1954–66

By Kam Hon Chu, St. John's/Canada*

I. Introduction

Does a free banking system lead to overissue of banknotes or overexpansion? This question was under heated debate in the British monetary controversies of 1800–1845 (see, e.g., Fetter (1965), and White (1984) for details). Although a note-exchange system or clearinghouse could check overissue of banknotes by a single bank in a *laissez faire* banking system by the law of reflux or adverse clearings, opponents of free banking were concerned about slowness in clearing liabilities, banknotes in particular, among free banks as it might allow a spontaneous system-wide overexpansion to get into motion. Furthermore, they forcefully argued, with the notable numerical examples of McCulloch (1831) and Longfield (1840), that adverse clearings would fail to check overexpansion by the free banking system as a whole when all banks colluded to expand by a common factor. Even absent collusion, banks might act spontaneously under competitive pressure to overissue in order to maintain or expand their market shares (Loyd (1857)). This "in-concert" overexpansion hypothesis was regarded by Vera Smith as "the most important controversial point in the theory of free banking" (1936, pp. 74–76). This undeniably important issue has, however, remained unresolved and continued to provoke controversies in the modern free banking literature. Despite the historical evidence of free banking stability (see, e.g., White (1984), and Dowd (1992)), most economists today, e.g., Kindleberger (1978), Goodhart (1988), and Laidler (1992), among many others, still believe that a free banking system would be unanchored because of in-concert overexpansion.[1] White, a proponent of modern free banking, admits that

"no important theorist of the Free Banking School explicitly denied this as a hypothetical proposition" but "found the scenario of coordinated expansion implausible as a description of actual events" (1984, p. 98). By applying a model incorporating the quantity theory of money and precautionary demand for bank reserves, Selgin (1994, 2001) argues that free banks could not expand their balance sheets at will simply by acting in concert and overexpansion would be self-correcting given a fixed supply of reserve media. An in-concert overexpansion would increase every individual bank's precautionary demand for reserves, because the increase in clearings would lead to an increase in the risk of stochastic net reserve losses faced by an individual bank. In contrast to Selgin's transactions-based analysis, VanHoose (1997) considers interest rate effects on the LM schedule and shows that the effects of free banking on macroeconomic stability are not unambiguous, depending on the marginal return to and the marginal resource cost of holding reserves.

This in-concert overexpansion hypothesis plays a vital role in determining the viability of free banking not only in the modern free banking literature and its nineteenth century predecessor but also in another closely related strand of literature on *laissez faire* approach to money and banking commonly known as the "new monetary economics" (Cowen and Kroszner (1987)), a version of which is the BFH system expounded and advocated by Greenfield and Yeager (1983). Selgin and White (1994, pp. 1740–1) once found the BFH system puzzling in its control mechanism to constrain banks from overexpansion in unison, but they themselves later (Selgin and White (1996)) clarified how arbitrage would trigger an automatic correction to check overexpansion.

Empirical evidence is apparently needed to support White's above claim of implausibility of in-concert overexpansion by free banks in practice as well as to resolve the debate on free banking stability. Although the Scottish experience during its free banking era of 1716–1844 has been cited as an example of success of free banking in practice (White (1984)), it has nonetheless been challenged by some studies concerning how competitive, free and independent the Scottish banking system was.[2] Moreover, White and the several historical studies documented by Dowd (1992) did not directly examine the in-concert overex-

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[1] Using an overlapping generation model with information asymmetries in banking markets as the analytical framework and historical American and Canadian data for the period 1870–1913 as empirical evidence, *Williamson* (1989) concludes that free banking would reduce macroeconomic stability. However, neither country was under unrestricted banking during this period.

pansion hypothesis, probably due to lack of data. Although one could infer indirectly from episodes of free banking stability that in-concert overexpansion did not occur in practice, more direct and concrete evidence is indispensable in either supporting or rejecting the case for free banking.

The objective of this paper is to fill this gap in the literature by examining empirically whether there is in practice in-concert overexpansion of credit by banks in an unregulated banking system. The highly unregulated Hong Kong banking system during the period 1954–66 is examined as a case study. In contrast to the historical studies, this study employs time series data on aggregate bank loans and formally examines the time series properties to test the in-concert overexpansion hypothesis. The Engle-Granger (1987) method is applied, and a long-run relationship between bank loans in real terms and real GDP is found. Furthermore, the error correction model (ECM) indicates that deviations of real bank loans from the long-run equilibrium level were "self-correcting" in the sense that real loans in excess of its long-run equilibrium level in a given year were followed by a contraction in the next year, and vice versa. This empirical finding is reinforced by the results of a regression of detrended real loans on detrended real GDP: fluctuations in real loans around a linear deterministic trend are found to be highly positively correlated to fluctuations of real GDP around the trend. Both sets of empirical findings suggest that at the aggregate level free banks did not create credit at their own discretions so as to expand or to maintain their market shares. Instead, growth in bank loans was driven by the level of real aggregate economic activity.

Recognizing the limitations and potential fallacies of time series analysis based on aggregate data alone, this paper also examines the balance sheets of some individual banks for the period 1960–66. The growth rates in loans and advances suggest that the sample banks did not expand in unison. Taking the findings based on the aggregate time series data and on the individual banks' balance sheet data together, we reject the in-concert overexpansion hypothesis.

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[2] Some of the major criticisms include restricted limited-liability privileges to three particular Scottish banks, dependence of the Scottish banking system on the London financial market for liquidity need, and the role of the Bank of England as a central bank and lender of last resort (see, e. g., *Carr, Glied* and *Mathewson* (1989), *Cowen* and *Kroszner* (1989), *Goodhart* (1988), *Sechrest* (1993) for details). *White* (1991) gives a rebuttal and maintains that the traditional free banking model is still valid for understanding the Scottish banking system from 1810 to 1844.

It should be emphasized that the findings here do not provide proof of the impossibility of in-concert overexpansion due to some sort of clearinghouse constraint, as argued in Selgin (2001). This is because the original question raised by critics of free banking is whether a free banking system would behave procyclically in a closed system, or one with flexible exchange rates, with unrestricted fractional note issue, and the Hong Kong banking system (see Section II below for more details) did not perfectly match the conditions. Nevertheless, this study does address the question whether there is a tendency for a less-regulated banking system to overexpand because of "herd" behaviour among competing banks.[3]

The rest of this paper proceeds as follows. The next section provides a brief description of the historical and institutional backgrounds of the Hong Kong banking system during 1954–66. Section III gives details of the empirical procedures, the data used, and the findings in the time series study. This is followed by the empirical findings based on the balance sheet data of the individual banks in Section IV. A discussion on how our empirical results are related to the theoretical issues concerning the stability of a free banking system can be found in Section V before the paper concludes.

II. The Historical and Institutional Backgrounds

Although the Hong Kong banking system during the period under study was not an ideal, pure free banking system according to Sechrest's (1993) and Selgin's (1988) definitions, it was highly unregulated.[4] There were no central bank, deposit insurance, discount window and official lender of last resort. The right to issue banknotes was restricted to three private commercial banks and the supply of coins and small-denomination notes was monopolized by the Hong Kong Government. Under the

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[3] As *Selgin* (2001) points out, in-concert overexpansion may also take place when banks in a competitive system move together in response to a common signal.

[4] For example, according to *Sechrest* (1993, p. 3), a pure free banking system should satisfy the following criteria: (1) no government restrictions on entry or exit by banks, (2) no restrictions, other than the enforcement of contracts, on the issuing of notes and deposits, (3) no central bank that acts as an *ex ante* lender of last resort, (4) no government deposit insurance, (5) no statutory reserve requirements, (6) no minimum capital requirements, (7) no restrictions on branching, (8) no restrictions on the types of banking activities, and no interest rate control. As shall be seen, the Hong Kong banking system satisfied most of these criteria.

Sterling Area arrangement at that time, however, the note-issuing banks were subject to a 100 % marginal reserve requirement against their notes, which were wholly backed up by sterling assets. While there were restrictions on currency supply, there were no restrictions on the provision of deposits and loans. The supply of inside money (deposits) and loan creation were essentially competitive and unregulated. Except an annual licence fee of HK$ 5,000, banks were not subject to any capital or reserve requirements. Nor were there any restrictions on interest rates and loan portfolios (see Jao (1974, pp. 299–302) for more details).[5] More stringent regulations had not been introduced until amendments to the Banking Ordinance were made in 1964, as remedial measures to a short-lived run on a small bank in 1961. The major regulations included a minimum capital requirement of $ 5 million and a minimum liquidity ratio of 25 %. However, a grace period of two years was granted to banks for them to meet the capital requirement. Therefore, the Hong Kong banking system during the period under study was highly unregulated, and it serves as a laboratory for testing the in-concert overexpansion hypothesis.

III. Empirical Evidence

An empirical implication of the in-concert overexpansion hypothesis is that growth in bank loans (or banknotes) is unrestrained – the absence of any economic forces or an adjustment mechanism to check loan expansion. Therefore, the hypothesis can be rejected if we find (i) a long-run relationship between aggregate bank loans and real aggregate economic activity such as real GDP growth, and (ii) an error-correction mechanism in the short run that prevents persistent deviations from this long-run relationship. In a time series framework, both the long-run relationship and the short-run dynamics between real bank loans and real GDP can be examined by the Engle-Granger (1987) method.

The sample period for this study starts from 1954, the year for which official data on bank loans were first made available, to 1966, when the banking regulations introduced by the Banking Ordinance of 1964 became fully effective. As quarterly and monthly data are not available, annual data are used. The span of twelve years should be sufficiently long for the banking system to adjust to equilibrium and allow us to detect

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[5] An interest rate cartel on deposit rates was formed in July 1964, but it was formed by the commercial banks themselves to end an interest rate war prevailing in the previous years rather than a mandatory restriction imposed by the Hong Kong Government.

the long-run relationship, if any.[6] The data on bank loans are from *Hong Kong Statistics 1947–1967*. For GDP at current market prices, data for 1954–60 are from Szczepanik (1960) whereas those for 1961–66 are from the various issues of *Estimate of Gross Domestic Product* published by the Hong Kong Census and Statistics Department, Hong Kong Government. The Consumer Price Index (CPI), also from *Hong Kong Statistics 1947–1967* and the only official price index available for the period under study, is used as the deflator to obtain the time series on real bank loans and real GDP.

Both the augmented Dickey-Fuller (1979, 1981) and Phillips-Perron (1988) tests are applied to the two time series real loans (l_t) and real GDP (y_t), and the results are reported in Table 1. All the test statistics do not reject the hypothesis that the two time series are non-stationary, i.e., the existence of unit roots in these series. The first stage of the Engle-Granger method is then applied to test if the two series are cointegrated by running cointegration regressions.[7] In large samples, asymptotic theory indicates that the test for cointegration between two variables, say x and y, by using the residuals from the "equilibrium" regression of x on y is equivalent to using the residuals from the regression of y on x. But in small samples, such as the one in this study, the test for cointegration may not be invariant to the choice of the variable chosen for normalization. Therefore, both cointegration regressions of real loans on real GDP and of real GDP on real loans are run in order to examine if the cointegration test results are sensitive to normalization. The two sets of cointegration regression results are reported in Table 2.

For the cointegration regression of real loans on real GDP, the Dickey-Fuller statistic for the cointegration regression (CR) residuals is –3.0599,

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[6] One may criticize the number of observations for this empirical study is small. However, as *Campbell* and *Shiller* (1987) correctly point out, the time span is more important than the number of observations in capturing the long-run relationship between economic variables. For an example of applying the error correction model technique to small samples, see *Muscatelli, Srinivasan* and *Vine* (1994).

[7] According to the original procedures developed by *Engle* and *Granger* (1987), the variables entering the cointegration regression should be integrated of the same order before proceeding to run the cointegration regression. However, one may argue that in practice there are few advantages in adhering to the Engle-Granger procedures. This study follows *Dolado, Jenkinson* and *Sosvilla-Rivero* (1990), who argue that, given the problems, such as small sample bias and the low power of unit root tests, with the testing procedures for integration and cointegration, the researcher needs to worry less about the degree of integration of the individual variables as long as the regressand and the chosen set of regressors cointegrate among themselves so as to produce a stationary residual series.

Summary of Unit Root Tests

Variable	Real Loans		Real GDP	
Model	ADF Test	PP Test	ADF Test	PP Test
1. Constant, No Trend				
A(1) = 0, Z-test	–	0.7665	0.9576	0.9538
A(1) = 0, T-test	–1.8215	1.0653	1.6778	1.6475
A(0) = A(1) = 0	2.2856	9.6942***	18.513***	18.091***
2. Constant, Trend				
A(1) = 0, Z-test	–	–3.2515	–2.2670	–2.2306
A(1) = 0, T-test	–3.1532*	–1.7968	–1.2076	–1.2018
A(0) = A(1)=A(2) = 0	4.2792*	12.966***	16.193***	16.628***
A(1) = A(2) = 0	5.4300*	3.8718	3.3124	3.3740

Notes:
1. ADF and PP respectively stand for Augmented Dickey Fuller and Phillips-Perron tests.
2. ***, **, * denote respectively the one-, five- and ten-percent significance levels.
3. The number of lag terms is one in all tests except the ADF test for real GDP, for which the number of lag terms is zero.

smaller than the critical value at the one-percent significance level.[8] This together with the cointegration regression Durbin-Watson statistic (CRDW) of 1.670 suggests that the residuals are stationary white noise and that the two time series are cointegrated. As Table 2 reveals, the results for the regression of real GDP on real loans are qualitatively the same. The Dickey-Fuller test statistic for the CR residuals is –3.1310 whereas the CRDW is 1.6776. Therefore, normalization is not a problem despite the small sample size. The high values of R^2 for both cointegration regressions also suggest that the small-sample bias may in fact be small.[9] To further test the robustness of our finding of cointegration between the two variables, the Johansen (1988) cointegration test is also applied. The likelihood ratio test statistics of 24.4 and 8.06 suggest one

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[8] The critical values by *MacKinnon* (1991) are used for the unit root tests in this study.

[9] *Banerjee* et al. (1986) present some Monte Carlo evidence regarding the small-sample bias in the long-run parameter estimates for the 'first-stage' equation. They demonstrate that in bivariate models the bias is negatively correlated with the R^2 of the equation.

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Table 2

Cointegration Regressions

	Real Loans	Real GDP
Intercept	−1479.048	2275.419
	(−14.78)***	(23.67) ***
Real GDP	0.6570	
	(36.11)***	
Real Loans		1.5094
		(36.11)***
R^2	0.9916	0.9916
F-statistic	1303.64 ***	1303.64 ***
S.E.E.	130.2713	197.4629
C.R.D.W.	1.6704	1.6776
Unit Root Tests on CR residuals		
Dickey-Fuller (DF)	−3.0599***	−3.1310***
Phillips-Perron (PP)	−3.5352***	−5.0130***

Note: ***, **, * denote respectively the one-, five- and ten-percent significance levels.

cointegration vector at the five-percent significance level. The parameter estimates are statistically significant and plausible in terms of economics. Take the regression of real loans on real GDP for example. All other things equal, the slope estimate suggests a one-dollar increase in real GDP in the long run would, at the margin, induce an increase in real loans by $0.657, which is consistent with the notion of economies of scale in the demand for real loans. Therefore, it can be concluded that there existed a long-run relationship between real loans and real GDP during the period under study.

Following the Engle-Granger method, an error correction model (ECM) is estimated in the second stage. The Schwarz criterion statistic suggests a lag length of one and the regression results are reported in Table 3. The error correction mechanism is prominently reflected by the regression equations for real loans in both Models 1 and 2. Consider Model 1 as an illustration. Changes in real loans in time period t are negatively related to deviations from the long-run equilibrium in the previous period (re-

Table 3

Error Correction Models

Dependent Var.	Model 1		Model 2	
	Δl_t	Δy_t	Δl_t	Δy_t
INTERCEPT	−20.698	188.27	7.6515	182.833
	(−0.233)	(1.579)	(0.087)	(1.632)
$\hat{\epsilon}_{t-1}$	−1.4945	0.6596	0.9485	−0.4850
	(−2.764)**	(0.907)	(2.532)**	(−1.020)
Δl_{t-1}	1.7625	1.2409	1.6981	1.2081
	(4.230)***	(2.214)*	(3.971)***	(2.225)*
Δy_{t-1}	−0.4369	−0.1563	−0.4501	−0.1262
	(−2.191)*	(−0.583)	(−2.092)*	(−0.462)
R^2	0.6762	0.7538	0.6465	0.7605
F-statistic	7.9595 **	11.2080 ***	7.0956**	11.5836 ***
S.E.E.	121.2018	163.0342	126.6329	160.8186
D.W.	2.0141	1.6902	1.8867	1.6665

Notes:
1. The variable $\hat{\epsilon}_{t-1}$ in Model 1 is constructed from the residuals of the cointegration regression of real loans on real GDP; whereas in Model 2 it is constructed from the residuals of the cointegration regression of real GDP on real loans.
2. Figures in parentheses are *t*-statistics.
3. ***, **, * denote respectively the one-, five- and ten-percent significance levels.

presented by the $\hat{\epsilon}_{t-1}$ in the first CR equation). This negative relationship is statistically significant and the adjustment speed is also reasonably fast – in this case one year. In other words, real loans in excess of the long-run equilibrium level in a given year were followed by a contraction in the next year, and vice versa. The relative magnitudes (in terms of absolute value) of the coefficients of $\hat{\epsilon}_{t-1}$, in the two equations, i.e., −1.4945 and 0.6596, indicate that most of the adjustment is in real loans. The results also suggest that, if we accept a five-percent significance level, real GDP Granger-caused real loans during the period under study. Put differently, real loans were driven by real GDP and the banking system responded to correct the deviations from the long-run equilibrium. This contradicts the conjecture that a free banking system is

cycle amplifying, as described by Goodhart (1988, p. 50): "free banking tends at best to be pro-cyclical in operation and at worst may be directly responsible for severe fluctuations." This error correction mechanism thus rules out bank-created excess supply of credit (and hence bank deposits and money) in the long run. The results for the error correction model by using the residuals from the second cointegration regression are qualitatively the same. This is hardly surprising, given the highly similar cointegration regression results obtained in the first stage. Overall, no in-concert overexpansion under unregulated banking was observed during the period under study.

How robust is the above empirical finding? As it is difficult to distinguish a stochastic trend from a deterministic trend, one may question the sensitivity of the above empirical evidence to misspecification of the underlying time trend. This issue is examined here by assuming that both real loans and real GDP follow a deterministic linear trend instead of a stochastic one. The following OLS results suggest that detrended real loans (DTL_t) fluctuated with detrended real GDP ($DTGDP_t$):

$$DTL_t = 0.7125 \times 10E^{-12} + 0.6605 \, DTGDP_t$$

$$(0.1972 \times 10E^{-13}) \, (8.973)^{***}$$

$$R^2 = 0.8797, \text{ S.E.E.} = 130.26, \text{ DW} = 1.6786, \text{ Obs.} = 13.$$

where the figures in parentheses are the t-statistics. The Dickey-Fuller test statistic for the OLS residuals is –3.06. This together with the Durbin Watson (DW) statistic reported above suggests that the OLS residuals are stationary white noise. Results of heteroscedasticity tests do not reject the hypothesis that the residuals are homoscedastic, whereas the RESET tests do not detect any specification errors. This regression indicates that about 90 % of the variability in the dependent variable – real loans around its deterministic trend – can be attributed to the fluctuations in real GDP around its trend. Overall, this finding is consistent with the hypothesis that unregulated banks created credit in response to aggregate economic activity.

In brief, there is no evidence of in-concert overexpansion of the highly unregulated Hong Kong banking system during the period under study, regardless of the assumption on the underlying trend of the time series data.[10] Both sets of results suggest that the banking system created credit in response to aggregate economic activity.

IV. Some Further Evidence at the Bank Level

Testing the in-concert overexpansion hypothesis based on a panel data set containing data for all the banks for the entire "free banking" period in Hong Kong is definitely preferable to the above aggregate time series analysis. Unfortunately, a panel data set whose sample size is sufficiently large for meaningful econometric analysis is not available because banks were not legally required to publish their balance sheets and income statements until the Bank Ordinance of 1964 became effective. Nevertheless, the balance sheets of 10 banks for the period 1959–1966 were collected from various sources to further examine the in-concert overexpansion hypothesis.

A testable implication follows from the in-concert overexpansion hypothesis: all other things equal, free banks are expected to post more or less the same growth rate over a sufficiently long period of time if each individual bank aims at maintaining its market share, either by collusion or under competitive pressure. To examine whether this scenario did in fact occur, the annual growth rates in loans and advances for the sample banks are tabulated as Table 4. As can be seen, some of the banks, namely the Bank of Canton, the Bank of East Asia, the Hong Kong and Shanghai Banking Corporation, and Wing On Bank had prominently lower growth rates in their loans and advances than those of their competitors. This is the case not only in most individual years but also over the period 1960–64.[11] This finding is contradictory to overexpansion due to banks' collusion, as there is no apparent reason for these banks to agree to giving up their market shares over these years. It is also inconsistent with the notion of overexpansion due to competitive pressure, because the bank suffering a loss in its market share in one year would have learned from its own mistakes in its lending strategy as well as from observing its competitors' lending strategies and hence expanded

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[10] These findings, however, do not imply that the possibility of overexpansion in the short run can be ruled out, though the error correction mechanism indicates that overexpansion cannot be the case in the long run. By the same token, the possibility of overexpansion by any single individual bank cannot be ruled out, but there are many mechanisms, for instance, the law of reflux, to check against overissue by an individual bank.

[11] Here we focus on the years 1960–64 because overexpansion, if existed at all, would be more likely before 1965, as growth in bank loans was not restrained by the Banking Ordinance of 1964, which was not effective yet, and the economic recession in 1965 and 1966 due partly to the banking crisis of 1965. Nonetheless, the findings remain qualitatively unchanged even if the data for 1965 and 1966 are included to compute the average growth rates, as can be seen in Table 4.

its loans in subsequent years in order to restore its market share. For one reason or another that deserves future research, some of the sample banks simply did not expand their loans as aggressively as their competitors, and, as a result, the in-concert overexpansion hypothesis is again rejected.

V. Stability of the Hong Kong Banking System

What were the possible factors contributing to the absence of in-concert overexpansion by banks in Hong Kong during the period under study? There are at least three plausible explanations and they are not mutually exclusive. First, the Hongkong and Shanghai Banking Corporation was a dominant player in the banking industry. The fluctuations in the time series data on aggregate bank loans reflect to a large extent this bank's changes in loans and advances. As the bank was a reputable, well-established and highly profitable bank, it is not difficult to understand why it did not take excessive risk by overexpanding its loan portfolio to jeopardize its long-run profits. This explanation is supported by the bank's lower-than-average growth rates in loans (see Table 4). Second, Hong Kong was virtually under a currency board system from 1935–1967. Banknotes issued by the three note-issuing banks had to be fully backed up by Pound Sterling. Overexpansion by the banking system as a whole would be checked by internal drains due to rising demand for currency, as well as external drains and the Humean price-specie-flow mechanism (White (1984, p. 87)). The monetary regime imposed a constraint to prevent overissue of banknotes, which in turn set a constraint on total reserves held by commercial banks.[12] This, together with the presence of precautionary demand for reserves of each individual bank, could have prevented a bank from overextending its loans and running into a liquidity problem. As a result, there was a check against system-wide expansion (see Selgin (1992, 1994, and 2001) for details). Finally, the fact that Hong Kong is a small city, geographically speaking, might have also made it easy for depositors to check against overexpansion by individual banks, and thus system-wide expansion as well. This is similar to the geographic theory of note circulation put forward by King (1804), Gilbart (1834) and Bell (1840) (see White (1984, p. 90) for details).

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[12] There were no legal reserve requirements, and a requirement of a 25 percent liquidity ratio was introduced only after the amendments to the Banking Ordinance of 1964. Nonetheless, banks held currency (coins and banknotes, which were subject to 100% marginal reserve requirement) and inter-bank deposits for liquidity risk management.

Table 4

Growth Rates in Loans and Advances

Bank	1960	1961	1962	Year 1963	1964	1965	1966	Average 1960–64	Average 1960–66
Canton	25.2	3.8	6.1	27.0	21.3	5.1	–3.3	16.7	12.2
Chekiang	49.4	57.8	50.5	82.9	10.6	–2.4	7.0	50.3	36.6
East Asia	19.3	3.4	14.3	–20.0	52.8	21.9	7.4	14.0	14.2
Hang Seng	73.5	42.9	55.8	69.2	48.6	–10.2	1.5	58.0	40.2
HSBC	19.3	15.6	7.6	10.9	18.2	5.4	14.1	14.3	13.0
Ka Wah	n.a.	37.2	24.4	60.3	58.3	–15.9	6.7	45.0	28.5
Nanyang	n.a.	n.a.	19.8	48.9	50.9	7.5	15.5	39.9	28.5
SCB	12.9	8.9	15.0	71.3	38.7	–12.8	28.7	29.4	23.2
Wing Lung	n.a.	n.a.	n.a.	39.9	38.1	–37.6	14.4	39.0	13.7
Wing On	22.2	8.6	8.3	25.1	10.5	–5.3	–3.6	14.9	9.4

Notes:
1. All figures are percentage changes (%) on a year-to-year basis.
2. n.a. stands for not available.
3. HSBC and SCB represent the Hong Kong and Shanghai Banking Corporation and Shanghai Commercial Bank Ltd. respectively.

Data Sources: Annual reports of banks and *Bankers Almanac and Year Book*, London: T. Skinner, various issues.

Our empirical results indicate that a free banking system is not inherently unstable as far as system-wide overexpansion is concerned. Nevertheless, opponents of free banking may still cast doubt on the stability of the Hong Kong banking system during the period under study because there were bank runs in 1961 and 1965. Before we proceed with the discussion, it should be pointed out that isolated bank runs and failures are no evidence of a flawed banking system. While it is not the place here to reexamine these episodes in detail, a couple of observations deserve mentioning here so as to clarify the stability issue. First, the 1961 run on Liu Chong Hing Bank, a medium-sized bank which invested heavily in real estate loans and investment by offering high interest rates to attract small depositors, can be viewed as market discipline on an individual bank for its overexpansion. As a result of substantial deposit withdrawals, the bank had to use its real estate holdings as collateral to secure advances from the two leading note-issuing banks so as to solve its liquidity problem. The banking system as a whole did not suffer any cash drains (see Jao (1974, pp. 238–40) for more details). Second, the banking crisis in 1965, triggered by failures of two mismanaged banks and a real estate slump, saw runs on several local banks that were generally perceived as aggressive and were suspected by the public of being heavily involved in real estate loans and investment (see Jao (*ibid.*, pp. 244–50) for details). Over the year, there was a redistribution of deposits from risky banks to prudent banks rather than a deposit drain on the whole banking system (see Chu (1995, pp. 182–5)). Furthermore, empirical evidence shows that the Hong Kong banking system was relatively more stable, based on bank failure rates, when compared with its US counterpart – a highly regulated banking system with deposit insurance – during the period 1935–66 (Chu (1996)). In brief, while free banking does not prevent bank failures and runs from occurring, it is not as unstable as most economists believe.

VI. Conclusion

The empirical results of this paper indicate that the highly unregulated Hong Kong banking system during the period 1954–1966 did not overexpand as a whole, thus rejecting the in-concert overexpansion hypothesis under free banking. Several factors could have contributed to the absence of in-concert overexpansion. Further investigation, particularly empirical studies based on micro-data, is indispensable before we can determine what these relevant factors are and thus have a better under-

standing of the adjustment mechanism that prevents in-concert overexpansion. Overall, the results of this study, together with many others in the literature (see the recent survey by Selgin and White (1994) and the references therein), suggest that free banking instability is sometimes exaggerated. It should be emphasized that there is no conclusive evidence that free banking is more stable than regulated banking or vice versa. Although free banking may turn out to be not the most stable and efficient monetary arrangement after in-depth analysis by economists, its possibility as a feasible solution to monetary reform should not be entirely ignored without any further investigation just because of the empirically unfounded belief that free banks would overexpand in unison in practice.

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Summary

Do Free Banks Overexpand in Unison?
Time Series Evidence from Hong Kong, 1954–1966

This paper applies the Engle-Granger cointegration framework to test the in-concert overexpansion hypothesis under free banking. The highly unregulated Hong Kong banking system during 1954–66 is examined. The results suggest a long-run relationship between aggregate bank loans and GDP, both in real terms. Furthermore, the error correction model indicates that deviations of bank loans from the long-run relationship were "self-correcting" in the sense that real loans in excess of its long-run equilibrium level in a year were followed by a contraction in the next year and vice versa. The time-series results are reinforced by further examination of individual banks' loan growth rates. Overall, the findings reject the in-concert overexpansion hypothesis. (JEL E 32, E 42, E 51)

Zusammenfassung

Konzertierte Überexpansion in einem freien Bankensystem?
Beweis in Form von Zeitreihen für Hongkong, 1954–1966

Dieser Beitrag bedient sich der Integrationsanalyse nach Engle-Granger, um die Stichhaltigkeit der Hypothese einer konzertierten Überexpansion in einem freien Bankensystem zu testen. Es wird das im Zeitraum 1954–1966 in höchstem Maße unregulierte Bankensystem Hongkongs einer Prüfung unterzogen. Die Ergebnisse deuten auf die Existenz einer langfristigen Beziehung zwischen den aggregierten realen Bankdarlehen und dem realen Bruttoinlandsprodukt hin. Ferner zeigt das Fehlerkorrekturmodell, daß sich bei Bankdarlehen langfristige Abweichungen in dem Sinne „selber korrigiert haben", daß die in einem Jahr über das langfristige Gleichgewichtsniveau hinausgehenden realen Ausleihungen im darauffolgenden Jahr von einer Kontraktion abgelöst worden sind und umgekehrt. Die Zeitreihen-ergebnisse werden durch weitere Untersuchungen der Zuwachsraten für die Dar-lehensgewährung individueller Banken untermauert. Insgesamt weisen die Ergeb-nisse die Hypothese einer konzertierten Überexpansion als nicht haltbar zurück.

Résumé

Y a-t-il une expansion excessive concertée des banques
sous un régime non contrôlé?
Evidence de séries chronologiques temporelles de Hong Kong, 1954–1966

L'auteur applique ici le modèle de cointégration d'Engle-Granger en vue de tester l'hypothèse d'expansion excessive concertée dans le cas d'un régime sans contrôle bancaire. Il examine le système bancaire de Hong Kong fortement déré-gulé durant les années 1954 à 1966. Les résultats suggèrent une relation à long terme entre les prêts bancaires agrégés et le PNB, en termes réels. De plus, le

modèle de correction d'erreur indique que les déviations des prêts bancaires par rapport à la relation à long terme étaient «auto-corrigeantes» dans le sens où les prêts réels excédant leur niveau d'équilibre à long terme pendant une année étaient suivis d'une contraction au cours de l'année suivante et vice versa. Les résultats de séries chronologiques temporelles sont encore renforcés par l'examen des taux de croissance des prêts de banques individuelles. Partout, les résultats rejettent l'hypothèse de l'expansion excessive concertée.