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CAPITAL REQUIREMENT AND FINANCIAL CRISIS:

THE CASE OF JAPAN AND THE 1997 THAÏ CRISIS

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Abstract

This study investigates the direct link between the implementation of the 1988 Basel capital requirement in Japan and the shrinkage of banks' foreign assets, particularly in Thailand in the 90's. The empirical analysis proceeds in two stages. The first stage investigates the hypothesis that the capital crunch in Japan induced Japanese banks to alter their portfolios and reduce their foreign assets. The second step tests the hypothesis that the change in behaviour of the Japanese banks induced the increase of the probability of financial crisis in Asia. Our results support the responsibility of the Japanese capital requirement, among other factors, in triggering the 1997 Asian financial crisis as an external common shock and give a new angle on the financial crisis literature.

Keywords: Asian financial crisis; Japan; regulation; capital crunch;banks

JEL classification: G21 ; G28 ; E51 ; F34 ; C22

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Capital requirement and financial crisis: the case of Japan and the 1997 Asian crisis

1. Introduction

The implementation of the 2006 new Basel accord is a major reform in the banking area but it has already given rise to occasionally harsh criticism, notably on the new measures of banking risks (Altman and *al.* (2001, 2002); Kirstein (2002) for example). Among other potential pitfalls, the new Basel accord might decrease lending to emerging countries and cause procyclicity of credit. Criticism of the 1988 Basel accord has already been severe. The 1988 implementation of the capital requirement ratio has not only failed to reduce the frequency of banking crises[1], but several studies have highlighted its impact in terms of domestic credit crunch and economic slowdown[2].

This ratio aims at holding banks to higher standards of capital adequacy, concerning the risk level of the assets. The capital is classified into two categories. The Tier 1 capital is equity capital while Tier 2 capital includes other assets close to capital like subordinated debts and convertible bonds. Usually, the implementation of the capital accord at the end of the 80's or at the beginning of the 90's obliged a lot of banks to raise their capital ratio to meet the 8% minimum required. Poorly capitalized banks have two options. The first is to boost the capital, the numerator, with the issue of new equities, subordinated debt, and preferred stock and/or by the growth of loan loss reserves. The second concerns the denominator: banks can alternatively or simultaneously reduce the risky assets by shrinking loans or by substituting them with risk-free assets like government bonds. Peek

[1] For a survey of bank failures in the 90's in mature economies, see for example BIS Paper (2004).
[2] A survey of the macroeconomic impact of bank capital requirements can be found in Basel Committee on Banking Supervision (1999) for G-10 countries, and in Chiuri, Ferri and Majnoni (2002) for emerging countries.

and Rosengren (1995) and Hall (1993) confirm empirically the domestic credit crunch hypothesis for the United States. Formal actions to meet the ratio caused poorly capitalized US banks to reduce bank-dependent loan supply, particularly to businesses, during the 1988/1992 period. In Japan, Honda (2002), for the 1986/1995 period, documents the empirical evidence that Japanese banks with lower capital ratios reduced domestic lending. Ito and Sasaki (1998) confirm this result particularly for the Japanese City Banks, between 1990 and 1993.

While the credit crunch hypothesis is well documented, few studies have analysed to what extent the bank portfolio shifts affect other assets in the balance sheets. To meet the risk-based capital ratio, banks can reduce domestic lending but also their risky overseas lending operations. Montgomery (2005) finds evidence (for fiscal years 1982-1999) that Japanese international banks reduced heavily risk-weighted assets from 1988, such as domestic loans to all industries and international loans. However, nothing is said about the international borrowers. Peek and Rosengren (1997) confirm empirically the hypothesis that the Japanese capital crunch caused a dramatic decline in total assets and particularly in the Japanese international claims to the US from September 1988 until September 1995. The binding risk-based capital requirement resulted in a decrease in foreign lending in the United States, via U.S. branches of Japanese parent banks.

Another important issue, not yet empirically analysed, is to what extent the international credit crunch of Japanese banks affected emerging debtors. Did the Japanese capital crunch affect the foreign assets of the Japanese banks during the early 90's? Can this Japanese capital crunch partially explain the international credit crunch in Thailand and other Asian countries in 1997? King (2001) argues that the Japanese banks were the critical actors who triggered the Asian crisis when they reduced their credit, first to Thailand in early 1997 in order to meet the capital requirement. However, this hypothesis

has not been empirically tested. The domestic Japanese banking and economic problems at the beginning of the 90's became international when Japanese banks restructured their balance sheets by withdrawing funds in Asia in 1997. This overseas credit crunch reflects an international channel of crisis transmission. As the largest lender in Asia (particularly in Thailand), and as a "common banking creditor" (Kaminsky, Reinhart, 2000)[3], Japanese banks signalled a change in sentiments to other foreign banks which also reduced their international claims to the Asia markets and banks.

No empirical tests have yet been concluded on this theoretical link. By focusing on the capital ratio and on the international claims, we present a new view on a major subject in the financial crisis literature (Kaminsky and Reinhart, 1999; Corsetti, Pesenti and Roubini, 1998; Radelet and Sachs, 1998): the triggering factors of crises in emerging markets. Our empirical results (based on a time series-cross section sample) support the responsibility of the Japanese capital requirement in the triggering of the Asian crisis, as an external common shock.

2. Data and Methodology

The empirical analysis proceeds in two stages using time series data. The first stage investigates the hypothesis that tighter capital adequacy requirements introduced under the 1988 Basel Accord induced Japanese banks to modify their asset portfolios by reducing their foreign assets. The second step studies the implications for some Asian emerging markets. The withdrawal of Japanese foreign assets may create a liquidity crisis in Asia and help to explain the 1997 Asian crisis.

[3] Japanese bank loans reached in December 1996 US$22 billion in Indonesia, 8.2 in Malaysia, 24.3 in Korea, 1.5 in Philippines and 37.5 in Thailand. These amounts represented respectively 39.6% of the total claims received by Indonesia, 37% for Malaysia, 24.3% for Korea, 12% for Philippines and 53.4% for Thailand (BIS consolidated banking statistics).

Undercapitalized Japanese banks, when they are unable to raise additional capital, may choose to satisfy their capital ratio by shrinking their risky assets, including foreign ones. The first working hypothesis is that undercapitalized banks in Japan became reluctant in the 90's to extend loans abroad in order to reach the risk-based capital ratio (RBC_j).

In Japan, the first set of Basel capital standards became effective in 1989 with some transitional standards. The final set of standards was implemented by the end of March 1993, the end of Japanese fiscal year (see Ito, Sasaki, 1998). The risk-based capital ratio is calculated by the following equation:

$$\text{RBC} = \frac{[\text{Tier 1} + \text{Tier 2} - \text{deduction}]}{\sum_{i=1}^{n} W_i A_i} \qquad (1)$$

where $W_i A_i$ is the total assets of the Japanese banking system.

As the RBC ratio becomes more restrictive, the level of the banks' foreign assets BFA is expected to decline. The estimated equation for Japanese banks is in the following form:

$$\Delta(BFA_j) = \alpha + \beta_1\Delta(RBC_j) + \beta_2\Delta(BFL_j) + \beta_3\Delta(iL_j) + \beta_4\Delta(failures_j) + \beta_5\Delta(Topix_j) + \beta_6\Delta(\text{Asian.Export}) \qquad (2)$$

where j is for Japan.

The growth rate of the Japanese banking foreign assets (BFA_j) is regressed upon RBC_j, the Japanese risk-based ratio, and upon the growth rate of bank foreign liabilities (BFL_j), the average contracted loan rates for all Japanese banks (iL_j), the Japanese Stock index (The Topix), the number of monthly firms' failures ($failures_j$), and the Asian Export growth (Asian.Export, the amount of exports of the Asian area).

ΔBFA, the dependent variable, is the change in foreign assets of banks. This aggregate variable includes bank foreign exchange purchases, foreign securities, deposits with foreign banks and dues from foreign banks. All licensed banks are covered.

RBC represents the actual regulatory capital ratio as the measure of bank capitalization. We would expect to find $\beta_1 < 0$ and significantly different from zero: the level of foreign assets is expected to decline as the RBC ratio becomes more restrictive.

β_2 is expected to be positive: the foreign assets position of Japanese banks is likely to be positively linked to their foreign liabilities, which are financial resources for banks.

We approximate the profitability of the banking system with the domestic lending interest rate and the number of Japanese firms' failures. An increasing domestic lending interest rate (iL) increases domestic banking profits. Consequently, banks are less willing to lend abroad, β_3 is expected to be negative. In the same way, the sharp growth in the Japanese firms' failures means the accumulation of non-performing loans and poorer banking profitability. This should negatively affect the overseas lending behaviour of the Japanese banks. But, if 'failures' represents the economic perspectives, banks may lend abroad when growth expectations abroad are better than in the country. Indeed, β_4 may be positive or negative.

The expected sign of the coefficient β_5 of the Japanese stock price index (Topix) is also ambiguous. An increase in the Japanese stock price index actually improves the RBC ratio (Tier 2)[4] and may make banks inclined to expand their foreign assets. But, at the same time, an increasing stock price index is an incitement to invest at home. Finally, the expected effect of the Topix variable on the bank's foreign position is not clearly determined. Moreover, the aggregate stock value is already included in the Japanese RBC numerator, which can cause endogeneity problems.

β_6 is expected to be positive: Japanese foreign lending may be correlated with the volume of trade of the Asian countries. Exports are linked with international financing and

[4] Japanese banks are allowed to include up 45% of their unrealized capital gains on equity markets or "hidden reserves" into the Tier 2 bank capital, as long as they have enough Tier 1 capital.

they also approximate the country's competitiveness and its growth path. In fact, banks (in Japan) are more willing to increase their foreign assets when the volume of trade and the foreign economic perspectives are increasing.

In the second stage, we attempt to measure the impact of the changing behaviour of the Japanese banks on the Asian emerging markets. More precisely, it was interesting to test the impact of the Japanese capital requirement in the triggering of the Asian crisis. In order to test this hypothesis, we use a time series-cross section panel data set with three major Asian countries affected by the 1997 crisis (Thailand, Korea and Philippines)[5]. An index of crisis (IND) as a dependent variable is constructed for three Asian countries. This index is a weighted average of the monthly percentage change in exchange rate (EX) and the negative of the monthly percentage change in international reserves (R). The higher the value of the index, the more severe is the crisis.

Following Ahluwalia (2000) and Corsetti, Pesenti and Roubini (1998), we get:

$$IND = \left(\frac{\frac{1}{\text{var}(EX)}}{\left(\frac{1}{\text{var}(EX)} + \frac{1}{\text{var}(R)} \right)} \right) * \Delta EX + \left(\frac{\frac{1}{\text{var}(R)}}{\left(\frac{1}{\text{var}(EX)} + \frac{1}{\text{var}(R)} \right)} \right) * (-1) * \Delta R \qquad (4)$$

The weight of each component is the inverse of its variance (var) divided by the sum of the inverses of the variances of the two components. The aim is to deal with the bias due to the difference in the component volatilities.

IND corresponds to the basic definition of an exchange rate crisis: a speculative attack on the international reserves (a depletion of R) and a depreciation of the domestic money

[5] Reliable bank capital variables are not available for many other Asian countries, notably Indonesia. We exclude also Malaysia from the panel data because this country adopted capital controls very early, weakening the empirical analysis. Among other measures, the authorities introduced, in January-February 1994, a ceiling on the bank's net liability position and reserve requirement based on foreign liabilities (see Tamirisa 2004 for details).

(a huge increase of EX). As Kaminsky and Reinhart (1999) concluded, the occurrence of such a crisis depends on national fundamentals, market conditions, the health of the banking sector and external vulnerabilities of the country.

So, the estimated equation is as follows:

$$IND_{it} = d + \eta_1\Delta(BFLi_t) + \eta_2\Delta(Crediti_t) + \eta_3\Delta(Stocki_t) + \eta_4\Delta(RBCi_t) + \eta_5\Delta(RBC_{jt}) + dummy_t \quad (5)$$

The subscript i represents Asian countries (with i = 1 to 3) and j Japan. As suggested by the relevant literature[6], the financial crisis is more likely to arise when the national indebtedness ratio is growing (Credit, with η_2 expected to be >0), when the national banks are more indebted overseas, which means a stronger external vulnerability (BFL, with η_1>0), and when the stock indexes are decreasing (Stock, with η_3<0). A low effective bank capital ratio may be another factor of crisis (RBC_t, $\eta_4 < 0$),

The equation includes, in addition, the Japanese capital ratio RBC_j. η_6 is expected to be positive: an increasing RBC_j negatively affects international banking credit flows and increases the probability of crisis. Stock represents the national stock exchange price index. Credit, the debt ratio, is calculated with the domestic credit divided by total production. Finally, the equation includes a dummy variable for the 1997 July financial crisis in Thailand, with the value of one for this month, and zero otherwise.

3. Empirical results

This section provides some empirical pieces of evidence on the role of the Japanese banks as an actor of the declining cross-border lending, and in triggering the Asian crisis.

[6] Radelet and Sachs (1998) ; Corsetti and *alii* (1998) ; Kaminsky and Reinhart 1999 ; Alhuwalia (2000)...

We first estimate the Japanese banking behaviour. All the variables (in log) being I(1) (integrated of order one), they are differentiated, except the (log) number of failures, which is I(0). We calculate the Japanese banking variables aggregating activity of different categories of banks[7]. Time series are issued from the Bank of Japan and Datastream. They are monthly and cover a large period before and after the Basel Accord of 1988. Equation (2) is estimated using ordinary least squares. Table 1 reports the estimated sensitivity of foreign banking assets in Japan to regulatory capital ratios.

Table 1

The effects of the capital requirement on bank foreign assets in Japan

	Sample: 1983:04 2004:10		Included observations: 259	
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.155774	0.060782	2.562839	0.0110
$\Delta(RBC_j)$	-0.237159	0.072355	-3.277696	0.0012
$\Delta(BFL_j)$	0.856196	0.063718	13.43726	0.0000
$\Delta(iL_j)$	-0.111168	0.041694	-2.666311	0.0082
$Failures_j(-1)$	-0.021819	0.008601	-2.536893	0.0118
$\Delta(Topix_j)$	-0.089906	0.043242	-2.079104	0.0386
Δ(Asian.Export)	0.104332	0.029163	3.577542	0.0004
R-squared	0.539268	Mean dependent var		0.006165
Adjusted R-squared	0.528298	S.D. dependent var		0.057433
S.E. of regression	0.039445	Akaike info criterion		-3.601147
Sum squared resid	0.392095	Schwarz criterion		-3.505017
Log likelihood	473.3485	F-statistic		49.15919
Durbin-Watson stat	1.967210	Prob(F-statistic)		0.000000

The endogenous variable is the level of all licensed banks foreign assets in Japan. *RBC* represents the Japanese banks' effective risk-based capital ratio, BFL the Japanese foreign liabilities, *iL* the average contracted loan rate of the Japanese banking sector, *failures* the monthly number of business failure, *Topix* the Japan stock index, and *Asian.Export* the amount of exports of Asian area. All variables, except *Failures*, are (log) differentiated.

[7] regional banks, regional banks II, Trust banks, City Banks and Long term credit banks.

The results show that RBC ratio in Japan does have a significant impact on the shrinkage of banks' foreign loans[8]. The estimated coefficient has the expected (negative) sign and is significantly different from zero at the 1 percent confidence level. The enhanced enforcement of capital requirements in the late 1980's in Japan clearly had a significant impact on international bank behaviour. The other explanatory variables exhibit the expected signs and are also significant. Banking foreign assets in Japan are increasing with foreign liabilities and when the profitability of domestic alternative investment decreases (fall of the stock index or domestic interest rate, rise of firm failures). Conversely, the volume of Asian export is a push factor for foreign lending.

We worried about the potential endogeneity of the explanatory variables. We tested VAR pairwise granger causality. In our sample, the variable of "failures" is the only one which may explain the ratio of capital (Chi-2= 7.682954 with prob = 0.0215), and cause also the Topix variable (Chi-2= 5.370158 with prob = 0.0682). On the other hand, the Topix variable doesn't "Granger cause" the amount of banking capital. In order to avoid the problem of endogeneity, we introduced the failures lagged value in the above estimation.

Next, we attempt to measure more precisely the impact of the changing behaviour of the Japanese banks – linked to the variation of the capital requirement – on the Asian 1997 crisis. We try to explain the index of crisis (equation 4) using a three countries panel database (Thailand, Korea and Philippines) and the set of explanatory variables of equation 5: foreign claims, indebtedness ratio, stock exchange price index, banks risk-based capital

[8] Results of the Breusch-Pagan test show no heteroskedasticity (Chi2(1)=2.38 with a prob. of 0.1228). We use the Breusch-Godfrey test for autocorrelation and we cannot reject the null hypothesis of no autocorrelation (test statistic = 0.0516). Finally, we don't find any multicolinearity. The variance inflation factors for the independent variables is of 1.15.

ratio in domestic countries and in Japan[9] . We take into account the non-stationnarity of many time series. The dependent variable IND being I(0), we cannot use co-integration or a single equation error correction model.

We carry out the empirical analysis via different econometric approaches. Results are reported in Table 2. We first implement and report results from the simple OLS estimators, with and without fixed effects (model 1 and model 2 in Table 2). As residuals violate standard OLS assumptions, we follow afterwards the Beck and Katz (1995) method for TSCS (time-series, cross-section) data, with continuous dependent variables (model 3). They urge the use of panel-corrected standard errors with OLS estimation for the special case when T is large and N is small[10]. They prescribe retaining OLS parameter estimators but replace OLS standard errors with panel-corrected standard errors (PCSEs). It allows taking into account the contemporaneous correlation of the errors and, by necessity, heteroskedasticity, and explicitly modelling dynamics. Finally, we enforce our results with FGLS estimators (model 4).

Model (1), the cross-sectional regression, which is estimated with White heteroskedasticity robust standard errors, takes the following form:

$$Y_i = \alpha + \beta X_i + \varepsilon_i$$

Where Y_i, the dependent variable, is the crisis indicator, X_i is a vector of explanatory variables and ε_I represents an i.i.d. stochastic term. The subscript i indicates the countries. The monthly data used for the empirical work are issued from Datastream. The data set covers a panel of three Asian countries (Thailand, Philippines and Korea) in the period 1993-2005 (t=324). We do a Breusch-Pagan/ Cook-Weisberg test for heteroskedasticity. We hence find strong evidence of heteroskedasticity. Errors of a TSCS

[9] The economic growth rate is not significant.
[10] The generalised method of moments (GMM) is inappropriate when the time dimension dominates the cross-sectional dimension.

model may show heteroschedasticity because the scale of the independent variable differs between countries (Beck and Katz 1995).

Second, we estimated the model with fixed effects. As Butler and Wilson (2007) have shown, one of the fundamental problems in TSCS analysis is the omitted variable bias, in other words, the failure to account for unit heterogeneity (via unobserved local factors). In model 2, every country is assumed to have a different intercept to reflect country-specific characteristics:

$$Y_i = \alpha + \beta X_{it} + \varepsilon_i + u_{it}$$

The intercept ε_i is assumed to vary between countries but be constant within a country. However Green, Kim and Yoon's F-test does indicate that we cannot reject the null hypothesis of no fixed effects[11]. The fixed effects are not jointly significant at the 5% level. Moreover, we note that fixed effects explain very little additional variance. Time invariant country-level variables don't explain the occurrence of crisis. This result is not surprising: the three countries belong to the same geographic area and the contagion channel of the crisis dominated the time-invariant, individual-specific fundamentals channel.

The Breusch-Pagan statistic for cross-sectional independence in the residuals is chi2(3) = 32.693 and reveals contemporaneous correlation of the errors' terms. Instead we expected disturbances for such neighbour nations to be cross-sectionally correlated: shocks that affect one nation are also expected to affect its trading partners (either as a common shock or through the impact of financial or trading links). Finally, a Wald test for autocorrelation in panel data indicates that we cannot reject the null hypothesis of no first-order correlation (F(1,2)=3.70 prob=0.1943). We don't find any serial correlation of the residuals.

[11] Random effects don't perform better. Moreover, the random variable assumption is difficult to rationalize when the units of analyse are countries (Butler, Wilson 2007).

The “Panel corrected standard errors” (PCSEs) allow to correct the OLS standard errors for two problems: groupwise heteroscedaskicity and contemporaneous correlation of the errors (Beck et Katz, 1995). We first apply OLS, adjust for autocorrelation by adding a lagged dependent variable to the model, and calculate PCSEs.

Model 3: Lagged dependent variable

$Y_i = \alpha + \beta_0 Xi_t + \beta_1 Y_{it-1} + \varepsilon_t$

We ensure (using a Lagrange multiplier test) that the errors show no temporal correlation with the lagged dependent variable. The speed of adjustment is rapid (the coefficient on the LDV is 0.16 indicating a very short process of memory): the differences between various time specifications will be minimal.

We test finally if a more general dynamic model is appropriate (with lagged independent variables). Results are not conclusive (and are not presented here). The explanatory lagged variables are not significant. The lagged dependent variable model with PCSEs already accounts for dynamics.

Another way to deal with heteroskedasticity and contemporaneous correlation is to use feasible generalized least squares estimation (Parks-Kmenta method) (model 4). Results (column 4) are very similar.

Table 2. Alternative regression analyses of crisis indicator (1993-2005)

Variable	Pooled (model 1)	Fixed effects (model 2)	Pooled with dynamics- PCSE (model 3)	Pooled with GLS (model 4)
(RBC_{jt})	**0.081 (3.60)*** **	**0.052 (1.75)***	**0.077 (2.56)** **	**0.071 (2.29)** **
(RBC_{it})	-0.035 (-2.22)**	-0.033 (-2.04)**	-0.031 (-2.01)**	-0.026 (-1.70)*
$\Delta(Credit_{it})$	0.029 (2.07)**	0.071 (2.83)***	0.026 (1.94)*	0.0215 (1.63)
$\Delta(BFL_{it})$	0.70 (3.81)***	0.717 (11.49)***	0.684 (11.55)***	0.515 (9.45)***
$\Delta(Stock_{it})$	-0.152 (-3.55)***	-0.149 (-4.87)***	-0.159 (-5.43)***	-0.126 (-4.57)***
Dummy	0.082 (1.93)*	0.079 (3.96)***	0.084 (3.60)***	0.103 (4.21)***
IND_{t-1}			0.164 (3.62)**	
C	-0.354 (-3.51)***	-0.305 (-2.51)***	-0.342 (-2.45)**	-0.315 (-2.19)**
# of obs.	410	410	410	408
R2 (adj.)	0.32	0.33	0.35	
F-test		F(2,401)=2.30 Prob>F=0.1014		

Note: OLS with heteroskedasticity robust standard errors; t-values in brackets; * denotes statistical significance at the 10%, ** at the 5% and *** at the 1%-level.
The endogenous variable is an index of crisis. It is calculated as the weighted average of the monthly percentage change in domestic currency to US dollar exchange rate and the negative of the monthly percentage change in international reserves of domestic country (see equation 4). *RBC* represents the domestic effective risk-based capital ratio, and *RBC* the Japanese one. *Credit* is the domestic indebtedness ratio approximated by the ratio of domestic credit on domestic production; *BFL* represents the banking foreign liabilities and *Stock* the stock exchange price index. Dummy takes the value 1 for July 1997.

Whatever the estimators, the estimated coefficient on the Japanese risk-based capital ratio is positive, as predicted, and significant: to meet the higher capital requirement, Japanese banks reduce international credit flows. The liquidity crunch increases the Asian probability of crisis. The signs of the other variables are the same as in the relevant literature. The probability of crisis (speculative attack) rises with the level of the banks' foreign liabilities and the level of domestic indebtedness. In the same way, the decline on

domestic stock prices anticipates the exchange rate crisis. The decline of the domestic bank capital ratio means that banks are undercapitalised and the banking system is weak, so the probability of crisis goes up.

5. Conclusion

Evidence contained in this paper suggests that the implementation of the 1988 Basel risk-based capital ratio had a significant impact on Japanese banking behaviour and is one of the triggering factors of the 1997 Asian crisis. As the capital requirement improved, Japanese banks started to issue new equities and subordinated debts. But faced, since 1990, with a long-lasting stock price fall and growing troubles in the banking system, banks curtailed their risky assets, especially their foreign assets. Given the international penetration of Japanese banks, this changing behaviour was transmitted to other countries, particularly emerging markets. Notably, because Japanese banks accounted for about 30% of the Asian countries' international claims, the transmission of Japanese banking problems can appear as an exogenous shock. This external shock had potentially large effects on bank behaviour in Asian countries and may have increased the probability of crisis. This paper empirically highlights the hypothesis of an international transmission of capital requirement shocks and gives a new view on the literature concerning the triggering factors of crises and financial contagion. The Japanese capital crunch may be identified as one of the adverse exogenous shocks, in the way of the articles of Masson (1998) concerning "common shocks" that affect several countries at the same time.

Capital requirements and Prompt Corrective Action[12] have had the unfortunate consequence of aggravating the effects of a lot of troubles in Emerging Asia and Japan. A

[12] In June 1996, the Law required banks to strengthen their risk management, classifying their loan portfolio rigorously, and allowed the regulators to force banks to take corrective measures, or ultimately to close. The PCA also demanded that Japanese banks published their capital ratios.

lesson from this experience may be not to get rid of capital requirements but to highlight the difficulty of designing appropriate regulation measures and introducing them at the right time. BIS regulation in Japan is not the unique cause of the Asian crisis. The macroeconomic background changed during the 1988/97 period and other factors have admittedly played a role in Japan (bubble bursting, yen rising) and in Asian countries (growing risky investment, decreasing capital market). Nevertheless, as capital adequacy norms have a long-run effect on bank behaviour and as those in Japan are quite specific, these economic factors have been exacerbated by capital norms, throughout the 90's. Japanese banks have been a supporting actor of the crisis. Their adjusting behaviour may be seen as a signal to the other market operators about the increasing concern surrounding the Asian area.

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