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LENDING SUSTAINABILITY IN ASIAN ECONOMIES

This paper studies the sustainability of lending growth in Asian countries. Using panel logit estimation, the probability of crisis is estimated for each country, given lending growth and macroeconomic development. The results show that lending growth in Asian countries is sustainable. In fact, the likelihood of banking crisis in Asian countries is more associated with macroeconomic shocks and monetary policies, rather than credit growth itself. However, Malaysia and Thailand are found to be of higher risk relative to other countries. These 2 high-risk countries are found to have lending pattern that favors households, instead of business.

Keywords: *lending, panel logit estimates, household lending, business lending.*

Роза Хазлі Закарія, Айві Оу Янг

СТІЙКІСТЬ КРЕДИТУВАННЯ В АЗІАТСЬКИХ КРАЇНАХ

У статті досліджено стійкість зростання кредитування в країнах Азії. Для аналізу використано панельну логіт-модель, імовірність кризи оцінено для кожної країни, враховуючи зростання кредитування і макроекономічний розвиток. Результати показали, що зростання кредитування в країнах Азії є стійким. Ймовірність банківської кризи в азіатських країнах більше пов'язана з макроекономічними потрясіннями і грошово-кредитною політикою, а не з самим зростанням кредитування. Малайзія і Таїланд відрізняються підвищеним ризиком у порівнянні з іншими країнами. У цих двох країнах з високим рівнем ризику модель кредитування сприяє розвитку домашніх господарств, а не бізнесу.

Ключові слова: *кредитування, панельна логіт-модель, споживче кредитування, кредитування бізнесу.*

Таб. 4. Форм. 3. Літ. 22.

Роза Хазли Закария, Айви Оу Янг

УСТОЙЧИВОСТЬ КРЕДИТОВАНИЯ В АЗИАТСКИХ СТРАНАХ

В статье исследована устойчивость роста кредитования в странах Азии. Для анализа использована панельная логит-модель, вероятность кризиса оценена для каждой страны, учитывая рост кредитования и макроэкономическое развитие. Результаты показали, что рост кредитования в странах Азии является устойчивым. Вероятность банковского кризиса в азиатских странах больше связана с макроэкономическими потрясениями и денежно-кредитной политикой, а не с самим ростом кредитования. Малайзия и Тайланд отличаются повышенным риском по сравнению с другими странами. В этих двух странах с высоким уровнем риска модель кредитования способствует развитию домашних хозяйств, а не бизнеса.

Ключевые слова: *кредитование, панельная логит-модель, потребительское кредитование, кредитование бизнеса.*

Introduction. Rapidly increasing credit growth is observed in many Asian economies. Bank credit has expanded faster than output since 2007, particularly in Hong Kong, Singapore, China and Korea (Neuman and Mukherjee, 2012). Partly it

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is a result of the progrowth policies by each individual country, in addition to the expansionary monetary policy that induced low interest rates environment. This trend has triggered a concern over the issue of lending sustainability. Credit growth that is too rapid is capable of inducing banking crisis, as experienced by the US economy during the recent financial crisis. Many literatures, for example Demirguc-Kunt & Detragiache (1998); Gourinchas et al. (2001); Terrones & Mendoza (2004) found that rapid credit growth tends to have a high association with banking crisis, up to 75%, especially in emerging economies. Duenwald et al. (2005) pointed out that rapid credit growth could trigger banking sector distress through macroeconomic imbalance and deterioration of loan quality.

In addition to that, another disturbing trend in Asian economies is the shift in bank lending preferences, away from business lending to consumption or household lending. In general, business loans are more productive in the sense that they increase capital accumulation and productivity which will help to stimulate economy. On the other hand, the effect of household lending on economic growth is uncertain. According to Keynesian's multiplier theory, when one increases consumption expenditure, business revenues rise. Then this will be followed by job generation, wealth and more spending, and so the cycle goes on. The same goes to consumption loans. Coricelli et al. (2006) provided supportive evidence that credit to household has significant effects on aggregate consumption. However, the problem with consumption loan is it does not generate future growth. For instance, when households are largely indebted, they need to devote more resources in future to service debts. Their disposable income gets smaller. In the long term, high household lending may thwart future consumption growth. In addition, as household lending increase, saving rate drops (Barba and Pivetti, 2009). This affects the amount of saving channeled into investment, subsequently lead to lagging productivity growth and slower output growth.

The possible negative consequences of lending boom and the ambiguous impact of household lending on economic growth motivate us to undertake this study. The aim of this study is to determine whether the current lending boom taking place within Asian economies are sustainable, given the macroeconomic background. The shift in bank lending preference to the household sector will also be taken into account by analyzing the sustainability of each component separately.

Literature Review. There are several studies which focus on examining the sustainability of credit growth. So far the result is mixed. Numerous studies conclude that although lending is high, it does not necessarily lead to banking crisis. For instance, using the approach of error correction model (ECM) to verify if lending growth is at its long run equilibrium level, Brzoza-Brzezina (2005) found that remarkable rise in lending in Hungary and Poland is caused by the high level of interest rate convergence between new members and already very low interest rates in the EU countries. In addition, no asset bubble is detected. In fact, loan quality is improved and banking sectors are more beneficial and stable. Coricelli et al. (2006) discussed the medium to long run sustainability of current level of household debt in 10 New Europe countries also have similar findings. Their results indicated that current trend in household credit markets is at equilibrium where household credit expands rapidly from extremely low initial levels. Kiss et al. (2006) and Egert et al. (2006) both concluded that even though credit expands quickly in Central European

Economies (CEE) countries, credit over GDP ratio in CEE are still below the level justified by macroeconomic fundamentals.

On the other hand, Kraft (2007) suggested that the lending boom in Latin America makes the economy more volatile and vulnerable to financial and balance of payment setback. Kraft (2007) suggested that if growth in banking and real sector is imbalance, it will lead to strong household lending growth and weak enterprise credit demand and creditworthiness. This will result in fast consumption growth, raising living standards of household temporarily but will lead to current account deficit that may be unsustainable in the long run. Buyukkarabacak and Valev (2010) analyze the contribution of private lending to households in financial sector in 37 countries and the effect of both types of lending on GDP per capita growth. Using logit estimation, they found that both credit components contribute to banking crisis; and household credit expansion increases the likelihood of banking crisis even more. This is also consistent with the study by Eichengreen and Arteta (2000), Hardy and Pazarbasioglu (1999) and Demirguc-Kunt and Detragiache (1998) who proved empirically that banking distress is associated with rapid credit expansion. Together with sharp fall in real GDP growth, boom-bust cycles inflation, capital inflows, rising real interest rate and a declining incremental capital output ratio; huge decline in real exchange rate and adverse trade and credit expansion could develop into banking debacle. Early warning system by Bunda and Ca'Zorzi (2010) also exhibits that huge current account shortfall, fall in price competitiveness, strong real growth and high public debt over GDP ratio, along with lending or housing boom increase the likelihood of a banking distress.

Methodology.

Modelling. In order to analyze if rapid lending growth in Asia is sustainable in the long run we first analyze the impact of overall banking credit to private sector on crisis to see if excessive credit growth has led to crisis in the past. With comparison to current ongoing rapid credit growth, we also inspect its long-run sustainability or the likelihood of subsequent crisis. Multivariate logit model is used to estimate the likelihood of a crisis, following Demirguc-Kunt and Detragiache (1998). Several macroeconomic predictors are included in the estimation to examine whether lending growth is justified given the macroeconomic fundamentals.

Among the factors included are GDP to account for real output growth in the economy. Accordingly, if rapid credit expansion is associated with an increase in GDP, particularly investment that raises productivity and stimulates increase in real GDP growth, it may be not harmful. On the other hand, poor macroeconomic environment boosts non-performing loans in the economy. Thus, a decrease in real GDP eases the likelihood of banking crisis. Interest rate is included on the basis that an increase in interest rate is associated with the increase in credit risk, in particular the floating rate loans. An increase in interest rate could adversely affect borrowers' ability to serve their debt as the amount will increase. Besides, high interest rate will also worsen the problem of adverse selection as this could encourage excessive risk-taking, thus is highly likely to boost non-performing loans. Apart from interest rate, inflation too could increase the probability of loan default. Inflation decreases the real value of money over time. Borrowers living in high inflation environment might be forced to default if cost of living or doing business gets too high. In addition, high inflation too

could dampen investment and deposit base. Meanwhile, the level of GDP per capita is introduced as a proxy of income with the hypothesis the higher per capita income, the lesser the probability of household insolvency.

Money supply is said to be one of the major cause of lending growth. As money supply increases, interest rate is lower and this encourages more lending for investment and promote consumption. Hence, greater money supply is expected to raise the likelihood of banking crisis. Lending sustainability could also be affected by terms of trade. Deterioration in terms of trade may affect the competitiveness of a country and profitability of its corporate sector. Indirectly, it will also affect the ability to repay loans by the corporate and trade sectors, thus increasing the possibility of banking crisis. The possibility of crisis, given the rapid lending expansion also depends on the banking system liquidity position. Banking system with liquidity level that is too low will be in greater probability to face the problem of systemic crisis since it might have problems to accommodate withdrawal demand in case of bank run.

Going back to model estimation, the basic logit model take the form of:

$$Logit\Pr(Y_{it}=1|X_{it})=\alpha^{*}+\beta^{*}X_{it},$$

where β* measures the change in the logit of the fraction with Y = 1 for a unit increase in X.

The dependent variable, Y, that is the crisis dummy is dichotomous. It takes the value 0 when there is no banking crisis and 1 in the event of crisis. We apply population averaged panel logic probability model for the regression.

Taking into account other crisis predictors, the logit models are as follows:

$$Crisis=\ln\left(\frac{p_i}{1-p_i}\right)=\beta_0+\beta_1 GDPG+\beta_2 GDPPC+\beta_3 RIR+\beta_4 TOT+ \\ \beta_5 M2PRESV+\beta_6 BCAPPASSET+\beta_7 LOAN, \quad (1)$$

where GDPD, GDPPC, RIR, TOT, M2PRESV, BCAPPASSET and LOAN represent real GDP growth, GDP per capita, inflation rate, real interest rate, change in terms of trade, M2 over foreign reserves ratio, bank capital over bank assets and a vector of loan growth measures.

We employ non-linear estimating procedures via the method of maximum likelihood. Normal statistics is used to calculate the statistical significance of the coefficients. In a logit model, Y is either 1 or 0. If the calculated possibility is greater than 0.5, it is taken as 1; if smaller than 0.5, it is taken as 0. In order to test if all the slope coefficients are simultaneously equal to zero, likelihood ratio (LR) statistics is calculated. The LR statistics follows the χ^2 distribution with degree of freedom equal to the number of explanatory variables. For a more precise and meaningful interpretation, the coefficients need to be antilog. For computing the actual probability of banking crisis, the odds is calculated using the exponentiated coefficient.

Data Sources and Description. We analyze the sustainability of bank lending growth in 8 Asian countries which are China, Indonesia, Japan, Korea, Malaysia, the Philippines, Singapore and Thailand. The dataset are sourced from national central banks, along with International Financial Statistics (IFS) from International Monetary Fund (IMF), World Development Indicator (WDI) from World Bank

(WB). The credit data are obtained from the respective countries' central banks. In this study, we use the country's own definition for loans by domestic banks to private sectors as overall bank lending data. For the periods unavailable, we compiled from International Financial Statistics (IFS), IMF. For business credit we use the sum of loans to agricultural, industry, constructions, services and trade; if unavailable, we also use loans to business sector/commercial/industries/non-financial corporation as substitutes. For household credit we use the sum of credit card loans, housing loans, hire purchase, personal loans; we also use the total consumption loans as substitute, where available. In case it is not available, we also compiled total outstanding claims of deposit money banks on private sector from IFS minus total outstanding claims of deposit money banks on enterprise sector as substitute. The banking crisis data from 1985 to 2009 is compiled from Caprio et al. (2005); Laeven et al. (2008); Reinhart and Rogoff (2008). They defined banking crisis as a country's corporate and financial sectors experience a large number of defaults and financial institutions and corporations face great difficulties repaying debts on time.

Results and Findings. Table 1 contains the summary of logit model empirical results including estimated parameters, standard errors and goodness of model specification. Independent variables are grouped into credit growth variables and variables for risk factors. Columns from left to right present equation 1,2,3 with its relation of total private credit, business credit and household credit respectively along with presence of risk factors while the last column shows the results of equation 4 with the decomposition of both business and household credit with risk factors.

Model Chi-square checks on joint significance of the all independent variables. It is observed that those models Chi-square are highly significant. All specifications of the hypothesis that all coefficients of the independent variables are jointly equal to zero are rejected at the 1% significant level. The AIC is calculated as minus the log-likelihood of the model plus the number of estimation parameters, hence the smaller AIC, the better models (Gujarati Damodar, 2003).

In order to interpret the results, the exponentiated coefficients are computed as follows.

Table 2. **Exponentiated coefficients value**

Credit growth variables	**1**	**2**	**3**	**4**
Private credit to GDP ratio growth	246449.3			
Business credit to GDP ratio growth		20525.56		-68.0074
Household credit to GDP ratio growth			39444.27	45579.79
Risk factors				
Bank capital to asset ratio	-52.2101	-77.999	-85.5794	-86.586
GDP growth	-24.0045	-12.8684	-38.8817	-41.3148
GDP per capita	-0.0174	-0.03819	-0.04919	-0.05069
Inflation rate	-27.7952	-23.0078	-17.2395	-15.6636
M2 to foreign reserve ratio	13.92179	32.14135	43.68396	44.95295
Real interest rate	38.45539	26.61237	28.44916	29.27077
Terms of trade	7.766536	-0.43206	-4.13795	-4.48511

In all the equations, bank capital to asset ratio and GDP per capita are statistically significant up to the 5% level with expected signs. By holding others variables as constant, 1 unit increase in bank capital to bank asset ratio reduces the odds of favoring crisis by 52.2% as shown in equation 1, 77.9% in equation 2, 85.5% and 86.6% in equations 3 and 4 respectively.

Table 1. **Logit Estimation Results**

Credit growth variables	(1)	(2)	(3)	(4)
Private credit to GDP ratio growth (lagged one)	7.810147 (4.891065)			
Business credit to GDP ratio growth (lagged one)		5.329116 (4.043833)		-1.13966 (5.75055)
Household credit to GDP ratio growth (lagged one)			5.980006 (6.252024)	6.124241 (6.373456)
Risk factors				
Bank capital to asset ratio	-0.738356** (0.344975)	-1.51408** (0.70136)	-1.93651** (0.873003)	-2.00887** (0.971351)
GDP growth	-0.274496 (0.223645)	-0.13775 (0.331137)	-0.49236 (0.40653)	-0.53298 (0.466211)
GDP per capita	-0.000174* (8.97E-05)	-0.00038** (0.000173)	-0.00049** (0.000212)	-0.00051** (0.000232)
Inflation rate	-0.325664 (0.250829)	-0.26147 (0.347698)	-0.18922 (0.341507)	-0.17036 (0.355381)
M2 to foreign reserve ratio (lagged one)	0.130342 (0.115947)	0.278702 (0.180341)	0.362446* (0.198338)	0.371239* (2.05E-01)
Real interest rate (lagged one)	0.325378** (0.165462)	0.23596 (2.18E-01)	0.250363 (2.61E-01)	0.256739 (0.268149)
Terms of trade	0.074797 (0.091282)	-0.00433 (0.103337)	-0.04226 (0.112877)	-0.04589 (0.1163)
Constant	-1.819821 (9.092624)	12.8811 (12.7727)	20.26347 (14.2915)	21.24462 (15.5181)
McFadden R-squared	0.525969	0.630504	0.697389	0.698063
AIC	0.684244	0.63577	0.573239	0.604866
Model χ^2	33.93206***	36.54699***	40.42396***	40.46304***
Total observation	71	62	62	62
Number of countries	8	7	7	7
Number of correct predictions	65	59	59	59
Prediction Accuracy	0.915492958	0.951613	0.951613	0.951613

Note: Dependent variable is banking crisis, where y = 1 if there is crisis and otherwise. Standard errors are in parentheses. * denote the significance level of 10%; ** denote the significance level of 5%. *** denote the significant level of 1%.

GDP per capita also have statistically significant negative relationship with banking crisis. By holding other variables constant, 1 unit increase in GDPPC reduces the odds of crisis by 0.05% as shown in both equations 3 and 4. Besides, M2 to reserve ratio is also significant when regressed against business credit to GDP ratio growth and household credit to GDP growth respectively. By holding other variables constant, 1 unit increase in M2 to reserve ratio increases the odds by 43.6% in equation 3 whereas 44.9% as shown in equation 4. In addition, lagged real interest rate is also statistically significant with the expected sign. Equation 1 suggests that 1 unit increase in real interest rate increases the odds of favoring crisis by 38.5%.

Interestingly, it is observed that inflation rate is insignificant in all the specifications. However, this finding is consistent with the findings of Buyukkarabacak and Valev (2010) and Demirguc-Kunt and Detragiache (1998).

Forecast of Banking Crisis. In this study, the sustainability of the recent rapid credit growth is benchmarked to the probability of banking crisis. (The estimations are used to examine whether credit growth would lead to the probability of a banking

crisis in each country). This study uses the most recent data available substituted into the logit model specification to calculate the fitted value *z*.

Then fitted value *z* is used in logistic distribution function to calculate probability of crisis as below:

$$P = \frac{1}{1+e^{-z}}$$

Table 3 presents the forecast results across for all the sample countries.

Table 3. **Forecast of banking crisis across Asian countries**

		Indonesia	Japan	Korea	Malaysia	Philippines	Singapore	Thailand
Equation 1	Fitted value(z)	-9.53	-2.23	-6.39	-1.67	-5.24	-6.22	-0.06
	Prob	0.00	**0.10**	0.00	**0.16**	0.01	0.00	**0.49**
Equation 2	Fitted value(z)	-6.16	-5.02	-8.76	-3.56	-4.64	-14.16	-1.74
	Prob	0.00	0.01	0.00	0.03	0.01	0.00	**0.15**
Equation 3	Fitted value(z)	-6.72	-4.19	-10.63	-2.26	-4.64	-18.62	-1.83
	Prob	0.00	0.01	0.00	0.09	0.01	0.00	**0.14**
Equation 4	Fitted value(z)	-6.85	-4.19	-10.99	-2.10	-4.72	-19.42	-1.97
	Prob	0.00	0.01	0.00	**0.11**	0.01	0.00	**0.12**

Note: Shaded cells denote probability of banking crisis more than 0.10.

The forecast results show no country has probability greater than 0.5, in other words, none faces the threat of banking crisis. 3 countries show zero probability in all the equations of credit growth and risk factor variables, with up to 2 decimal places which are Indonesia, Korea and Singapore. These countries are categorized as low risk country. Even though all countries display no sign of subsequent crisis, 2 countries have higher probability relative to other countries. Malaysia and Thailand consistently demonstrate probability more than 0.10 throughout all the equations. These 2 countries are categorized as high risk countries.

In order to identify the features which contribute to higher likelihood of banking crisis in high-risk countries, we make comparison against low-risk countries in the context of risk factors and credit growth.

Table 4 presents the descriptive statistics of risk factors and credit growth variables in high-risk and low-risk countries, 2005 to 2009. Since the forecast values in Table 3 are substituted by 2009 inputs, investigating the descriptive statistics and trend from 2005 to 2009 would provide more insights on each feature.

From earlier calculations, Thailand and Malaysia have relatively higher probability than Indonesia, Korea and Singapore. All the countries have enjoyed pleasant growth rate during 2005-2009. There is no sign of economic slowdown or downturn, and no significant evidence is found to associate with crisis. This is corroborating with earlier findings where GDP growth rate is not statistically significant in model specifications. Kaminsky and Reinhart (1999) find that the decline in GDP tends to head before banking crisis by about 8 months.

Table 4. **Comparison between Low Risk and High Risk Countries**

		Low Risk Country			High Risk	
Countries		**Indonesia**	**Korea**	**Singapore**	**Malaysia**	**Thailand**
Risk Factors						
GDP growth (annual %)	Average	5.6182	3.3471	6.1952	4.1311	2.9793
	Standard dev.	0.6798	2.1126	5.8597	3.3319	3.1118
Real interest rate (%)	Average	1.0853	4.3549	4.0573	2.8929	2.7134
	Standard dev.	3.4956	1.4262	3.2086	6.2233	1.0702
	Average growth	-3.1091	-0.1391	-1.5397	-1.8740	**0.3646**
Inflation, GDP deflator (annual %)	Average	13.2683	1.7732	1.3117	3.4039	3.8318
	Standard dev.	3.6629	1.4869	3.1868	6.1608	1.2073
	Average growth	-0.0340	-4.0418	-1.1809	-0.1198	-0.1363
GDP per capita (current US$)	Average	1892.9590	19030.2000	35474.0910	6729.1180	3482.9510
	Standard dev.	430.9854	1827.2060	4291.2441	1088.3370	572.8364
	Average growth	0.1611	-0.0006	0.0604	0.0779	0.1020
Net barter terms of trade index (2000 = 100)	Average	61.6020	71.1320	84.6020	101.9580	96.0300
	Standard dev.	2.6688	6.2355	1.8077	1.6688	1.0990
	Average growth	0.0213	-0.0313	-0.0121	-0.0060	0.0007
Money and quasi money M2 to total reserves ratio	Average	3.4368	2.5982	1.2544	2.6732	3.0100
	Standard dev.	0.2844	0.3201	0.0976	0.2658	0.5971
	Average growth	-0.0237	-0.0200	0.0467	0.0414	-0.1228
Bank capital to assets ratio %	Average	9.9200	9.4400	9.4400	**7.9600**	9.2600
	Standard dev.	0.4438	0.8385	0.7956	0.6348	0.3912
	Average growth	0.0154	0.0460	0.0314	0.0416	0.0253
Credit Growth Variables						
Bank credit to GDP ratio growth (%)	Average	0.0131	0.0544	0.0220	**-0.0302**	**-0.0404**
	Standard dev.	0.0206	0.0297	0.0891	0.0127	0.0260
Business credit to GDP ratio (%) growth	Average	0.0289	0.0810	0.0407	**0.0030**	**0.0002**
	Standard dev.	0.0475	0.0735	0.1133	0.4300	0.1022
Household credit to GDP ratio growth	Average	0.0358	0.0294	0.0045	**0.1967**	**0.0889**
	Standard dev.	0.0816	0.0390	0.1008	0.1618	0.0270

Average growth of real interest rate in all the countries has negative value but Thailand have positive value. Lagged real interest rate shows significant positive coefficient indicating that high real interest rate increase the probability of a banking crisis. The findings are consistent with Gourinchas et al. (2001); Hardy and Pazarbasioglu (1999), where lending boom and banking distress are mostly related to rising real interest rates. According to Galbis (1993) financial liberalization is likely to cause high real interest rates, but when financial sector is liberalized, it may increase undue risk-taking and fraud, thus making banking sector more fragile. Amongst the

5 countries, Malaysia seems to have the lowest bank capital over bank asset ratio at 7.96%. This result corroborates with earlier findings where bank capital to asset ratio significantly contributes to the increase in the likelihood of banking crisis.

Albeit credit growth variables are not significant in explaining the likelihood of crisis in Asian countries, a remarkably different trend and magnitude in high risk and low risk countries in lending is still observed. During 2005-2009, the average growth of total bank credit to private sector to GDP ratio in Malaysia and Thailand showed a declining trend, whereas all low risk countries showed positive average growth. However, the trend of credit composition also differed between low- and high-risk countries. Lending to productive sectors, measured by average business credits to GDP ratio growth in both high risk countries, are relatively lower than low-risk countries. Thailand, especially, has the lowest average business credit to GDP ratio. In contrast to business credit, Malaysia and Thailand both demonstrated higher average household credit to GDP ratio growth. This implied that household credit has grown to a larger portion of private lending.

Conclusions. Although most of the banking crises are preceded by rapid credit expansion, not all of them end in crisis. The results of the study show that rapid lending growth in Asian countries by itself is not problematic. There is no evidence that the current lending policy could lead to a banking crisis. Accordingly, banks in Asia are still robust, and prudent in control lending. The significance of risk factor variables in explaining the probability of banking crisis instead of credit growth variables suggests that banking systems in Asian countries are more exposed to macroeconomic shocks and monetary policies.

Nonetheless, on the relative basis, Malaysia and Thailand have a higher likelihood of banking crisis. Higher risk countries exhibit attributes such as positive average growth in real interest rates in the recent 5 years, low bank capital to bank asset ratio and a trend of bank credit that favors the household sector. This implies that countries with higher household credit as oppose to investment credit have relatively higher risk to banking crisis. Banks and financial institutions should be encouraged to allocate and focus more on business loans rather than household loans. Policy makers should take note on current lending practices, guidelines as well as policies to avoid excessive household credit.

References:

1. *Barba, A., & Pivetti, M.* (2009). Rising household debt: Its causes and macroeconomic implications - a long-period analysis. Cambridge Journal of Economics, 33(1), 113.

2. *Brzoza-Brzezina, M.* (2005). Lending booms in Europe's periphery: South-Western lessons for Central-Eastern members. Macroeconomics, 0502002, EconWPA.

3. *Bunda, I., & Ca'Zorzi, M.* (2010). Signals from housing and lending booms. Emerging Markets Review, 11(1), 1-20.

4. *Buyukkarabacak, B., & Valev, N. T.* (2010). The role of household and business credit in banking crises. Journal of Banking & Finance, 34(6), 1247-1256.

5. *Buyukkarabacak, B., & Krause, S.* (2005). Studying the Effects of Household and Firm Credit on the Trade Balance: The Allocation of Funds Matters. Emory Economics.

6. *Caprio, G., Klingebiel, D., Laeven, L., & Noguera, G.* (2005). Banking crisis database. Systemic Financial Crises, 341-360.

7. *Coricelli, F., Mucci, F., & Revoltella, D.* (2006). Household credit in the New Europe: Lending boom or sustainable growth? Discussion Paper Series-Centre for Economic Policy Research London, 5520.

8. *Demirguc-Kunt, A., & Detragiache, E.* (1998). The determinants of banking crises in developing and developed countries. IMF Staff Papers, 45(1), 81-109.

9. *Duenwald, C., Gueorguiev, N., & Schaechter, A.* (2005). Too much of a good thing?: credit booms in transition economies: the cases of Bulgaria, Romania, and Ukraine: International Monetary Fund.

10. *Egert, B., Backe, P., & Zumer, T.* (2007). Private-Sector Credit in Central and Eastern Europe: New (Over) Shooting Stars? 1. Comparative Economic Studies, 49(2), 201-231.

11. *Eichengreen, B., & Arteta, C.* (2000). Banking crises in emerging markets: presumptions and evidence.

12. *Galbis, V.* (1993). High real interest rates under financial liberalization: is there a problem? IMF Working Paper #93/7.

13. *Gourinchas, P. O., Valdes, R., & Landerretche, O.* (2001). Lending booms: Latin America and the world: National Bureau of Economic Research Cambridge, Mass., USA.

14. *Gujarati Damodar, N.* (2003). Basic econometrics. McGraw-Hill Book Company, New York.

15. *Hardy, D. C., & Pazarbasioglu, C.* (1999). Determinants and leading indicators of banking crises: further evidence. IMF Staff papers, 46, 247-258.

16. *Kaminsky, G. L., & Reinhart, C. M.* (1999). The twin crises: the causes of banking and balance-of-payments problems. The American Economic Review, 89(3), 473-500.

17. *Kiss, G., Nagy, M., & Vonnak, B.* (2006). Credit Growth in Central and Eastern Europe: Trend, Cycle or Boom.

18. *Kraft, E.* (2007). The boom in household lending in transition countries: a Croatian case study and a cross-country analysis of determinants. Comparative Economic Studies, 49(3), 345-366.

19. *Laeven, L., Valencia, F.* (2008). Systemic banking crises: a new database: International Monetary Fund, Research Dept.

20. *Neumann, F. & Mukherjee, S.* (2012). How Credit Intensive is Asia's Growth? Hard Numbers. HSBC Global Research.

21. *Reinhart, C. M., & Rogoff, K. S.* (2008). Banking crises: an equal opportunity menace: National Bureau of Economic Research Cambridge, Mass., USA.

22. *Terrones, M., & Mendoza, E.* (2004). Are credit booms in emerging markets a concern. World Economic Outlook, 147-166.

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