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Predicting Banking Crisis in Six Asian Countries

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Abstract

This study aims to create predictive models of banking crises in six Asian countries, India and Japan for developed countries and 4 developing countries Indonesia, Malaysia, Thailand and Philippines. Predictive models developed using 4 groups of variables, macroeconomic, internal bank, institutional and global factors, as a whole consists of 15 explanatory variables. This research observation period beginning in 1999-2012 and analyzed using logit analysis. The results showed that there are nine variables that can be used as a predictor of banking crises in six Asian countries that is the real GDP growth, inflation, bank asset quality, liquidity, financial liberalization, central bank independence, world oil prices, U.S. economic growth, and the rate of inflation U.S.

Keywords: Banking Crisis, Macroeconomic, Internal banking, Institutional, Global Factor, Asia

4 1. Introduction

The banking industry is considered by some economists as the industry that required special attention because they are easily influenced by external factors banking and is an integral part of the payment system (Kaufman, 1997). Properties which are part of the banking payment system that gives rise to the view that the problems in the banking industry can cause negative effects on the economy that the impact is much greater than the negative effect due to the fall of an ordinary company. In this case the concern is the snowball effect of the fall of the banks that caused the collapse of banks and other companies that have a business relationship with the bank. At the time of the banking sector is experiencing financial difficulties (distress) as indicated by the tightening of credit, this will lead to delays in funding for other sectors and when the banking system ceases to function, then the banking crisis will be linked to the slowdown in economic activity, higher inflation and fiscal burden, and the exchange rate crisis that led to the economic crisis (Chan-Lau, 2004).

East Asian crisis of 1997-1998, showed a surprising phenomenon in a few months, the countries that have high economic growth and sound public finances as a result of the financial crisis many banks collapse, depositors lose faith in banks, the collapse of asset prices and flight of capital outflows. Banking crisis of the 1990s prompted many studies to generalize the crisis events. In 1996, the IMF and the World Bank published a study of bank difficulties in many IMF member countries and the World Bank. Results of this study showed that three-fourths of the members of the IMF and the World Bank have experienced significant banking problems during 1980-1996. Studies show that the level and nature of the problem varied substantially, including the case of bankruptcy of one or two major banks and government-owned institutions were also lost and in need of substantial recapitalization (Demirguc-Kunt, 2005).

Furthermore, Laeven and Valencia (2008) shows that all countries are not only developing countries, developed countries also can not be separated from the crisis and will bear the cost of handling a crisis is not small. In its findings, Laeven and Valencia (2008) reveals that developing countries often experience a crisis than developed countries, such as the fiscal costs and output costs are higher than developed countries. It can be interpreted that the banking crisis is not a simple matter and should be wary because of the costs incurred not a little, especially for developing countries. In this study, researchers tried to develop banking crisis research that has been done by previous researchers. Researchers tried to combine several previous studies by adding explanatory variables in the hope of getting a banking crisis prediction models more accurate. First, researchers study adopts Demirguc-Kunt and Detragiache (1998, 2000, 2005) that in their research using macroeconomic variables of economic growth, inflation and real interest rates as well as internal variables include the bank as one of the predictors of crises.

Poghosyan and Cihak (2008) and Wong et al. (2010) in their studies showed that the internal conditions are proxied by bank CAMELS ratio can be used as crisis predictor. Based on some of the results of previous studies suggest that banking crises can be triggered from the internal condition of the banks, this can be explained as intermediary, the bank currently experiencing financial difficulties will affect the real sector development and could impact to another bank, so could lead to a crisis in the banking sector. Secondly, this study adopts

8 researchers Demirguc-Kunt and Detragiache (2005) and Wong *et al.* (2010) that uses variables as predictors of institutional banking crisis, but the proxies used in this study differ. Demirguc-Kunt and Detragiache (2005) and Wong *et al.* (2010) with a proxy measure of institutional financial liberalization, institutional quality and deposit insurance, the researchers added a measure of central bank independence used by Klomp (2010) as the independent central bank that is considered the better institutional quality, the banking supervision function is 8 getting better so that the possibility of crisis is getting smaller. Third, this study adds global factors. Demirguc-Kunt and Detragiache (2005) and Wong *et al.* (2010) did not include one of the global factors as predictors of crises, according to research by Caprio and Klingebiel (1996), Eichengreen and Arteta (2000), Zhuang and Dowling (2002), Lestano (2003) and Hong *et al.* (2010) that global factors have an influence on the crisis in a country. Lestano (2003) describes the use of global factors as predictors of crisis indicated a shift in economic conditions in industrial countries that had an impact on other economies. Similarly, the movement of world oil prices could also trigger a crisis in the world. In this study, global factors measured by U.S. economic growth, U.S. inflation and oil prices.

9 The focus of this study was to analyze the predictive power of macroeconomic variables (which consists of real GDP growth, inflation rate, money supply, and real interest rates); banking performance (which consists of the ratio of CAMEL {Capital adequacy, Asset quality, Management, Earnings, liquidity}); institutional (consisting of financial liberalization, institutional quality and central bank independence), and global factors (which is proxied by GDP growth in the U.S., the U.S. inflation, and oil prices) as predictors of banking crises in six countries Asia. Using logit analysis, this study find that variables economic growth, inflation, bank asset quality, liquidity, financial liberalization, central bank independence, world oil prices, U.S. economic growth, and U.S. inflation rate can be used as a predictor of banking crises in six Asian countries. This paper organizes into four sections: introduction, literature review, discussion, and conclusion.

2. Literature Review

2.1. Financial Crisis Theory

The financial crisis is theoretically divided into three generations. The first generation (1970) refers to the phenomenon of macro economic mismanagement by the government. The second generation (1980) refers to the crisis as part of liquidity holder panic. The third generation (1999) shows the relationship between the corporate sector, the banking sector and the government's macro-economic dynamics. This phenomenon is often referred to as balance sheet effect in which a crisis could occur due to the poor condition of the balance sheet effects of the economic sectors that spread influence each other (Prasentyantoko, 2008).

2.2. Indicators Of Banking Crisis

37 Many factors influence the occurrence of banking crises, such as the macroeconomic environment (Demirguc-Kunt and Detragiache, 1998; Hardy and Pazarbasioglu, 1999; Poghosyan and Cihak, 2008; Wong *et al.*, 2010), banking fundamentals (Gonzalez-Hermosillo *et al.*, 1997; De Young *et al.*, 1999; Tung *et al.*, 2004; Arena, 2008), institutional (Klomp, 2010; Wong *et al.*, 2010), and global factors (Lestano, 2003; Zhuang and Dowling 2002). The explanation of each variable is as follows:

A. Macroeconomic indicators

15 Systemic banking stress associated with the macroeconomic environment such as low economic growth, high inflation, and high real interest rates. In addition, the balance of payments crisis that is also found to be associated with systemic banking problems as the studies Demirguc-Kunt and Detragiache (1998, 2000, 2002, 2005). Inflation can be used as an explanatory variable because it is likely to be associated with high nominal interest rates and therefore may be indicative of the proxy macroeconomic mismanagement, which adverse affects the economy and the banking system through various channels. In addition, the rate of depreciation is used to test the hypothesis that the banking crisis may be due to the risk of excessive foreign currency either in the banking system itself or in the borrower's bank (Demirguc-Kunt and Detragiache, 2005). According to Calvo (1996; 2012), the ratio of M2 to foreign exchange reserves is a good predictor of a country's vulnerability to balance of payments crises. Government surplus as a percentage of GDP presented the financing needs of the central government. This variable is used for two reasons: first, the government underfunded and in delay action to strengthen bank balance sheets, resulting in a systemic crisis appear early. Even as government officials prepared to intervene despite budget difficulties, people can not believe, and bank runs may add to the problem early, turning it into a full crisis. The second reason is that the failure to control the budget deficit can

be a serious obstacle for successful financial liberalization. Wong *et al.* (2010) revealed that an economy with weak economic fundamentals such as economic growth slows, inflation and high real interest rates, or international trade competitiveness deteriorated reinforce the emergence of initial shock that triggers a systemic banking crisis. So it is with high foreign reserves (money supply to foreign reserves) suggests that the economy will be more vulnerable to currency speculation (especially for those countries that peg the exchange rate). The threat of a currency crisis that led to the devaluation of the currency would stimulate investors to allocate the asset portfolio of local assets (eg, local currency deposits) into foreign assets, which can cause systemic bank runs.

B. Internal Banking indicators

Hardy and Pazarbaşıoğlu (1999) revealed that the variables associated with the banking sector can be used as indicators of the banking crisis. Some of the indicators used are the changes in bank deposit liabilities as a percentage of GDP, which indicates the existence of deposit runs (large-scale withdrawal of deposits) and a loss of confidence in the banking system, or shrinkage of bank balance sheets for other reasons. Furthermore, the ratio of bank credit with to the private sector to GDP reflects the massive expansion of the banking sector. Other indicator is the changes in ratio of gross foreign debt to GDP that the proxy of the system dependence on foreign capital to fund its operations. These measurements can be used to see the vulnerability to sudden withdrawal of capital inflows. Furthermore, Hardy and Pazarbaşıoğlu (1999) in his study found that the variable bank deposits are likely to start to decline in real terms before the banking crisis was announced. This is because declining confidence in the domestic banking system and the real amount of deposits continued to decline during the crisis. This decline contributed to the liquidity problems in the banking sector.

Uchenna and Okelue (2012) describe the components of CAMEL (Capital, Asset Quality, Management, Earnings, and Liquidity) as an aspect of health bank assessment. Capital adequacy is a key element in assessing the health of banks. The main strength lies in the bank's capital. Capital adequacy index shows the ability of the bank to meet its obligations which is a form of confidence for banks to continue to run its business. The smaller the bank's capital adequacy ratio shows increasingly unable to meet its obligations so that the greater the risk of failure. Asset mix largely determines the amount of bank profits. The increasing risky bank assets lead greater the risk of failure. In addition, the composition of assets, debt composition also plays an important role in bank soundness, usually measured by the ratio of short-term deposits to total deposits. The higher the ratio means that the risk of experiencing withdrawal the bank in the short term. Further feasibility and profitability ratios measure overall bank performance. This aspect shows the ability of banks to manage funds at risk and generate profits from its investment activities.

Poghosyan and Čihák (2008) argues that the early detection of the symptoms of banking distress (financial distress) will reduce the cost for recovery. The research of Poghosyan and Čihák (2008) using the CAMELS variables as indicators to predict banking distress and the results showed that the CAMELS can be used as predictors of distress condition of a bank, while on Altman z-score, but the result is not as good using the CAMELS. The finding of Hardy and Pazarbaşıoğlu (1999) study related variables showed that the banking sector deposits in banks tend to start falling in real terms before the banking crisis is fully recognized. This is because due to the decline of confidence in the domestic banking system, and continued to fall during the crisis. Wong *et al.* (2010) adopt research Hardy and Pazarbaşıoğlu (1998, 1999), which found that the banking financial pressures are leading indicators of the Asian financial crisis. It is also driven by the empirical results of Rojas-Suarez (2001), who found that the micro-level data is useful for predicting the banking crisis. Furthermore, Diamond and Dybvig (1983), Allen and Gale (2000) Giesecke and Weber (2006) showed that a bank failure could pose a threat of suffering a systemic banking through a contagion effect in the banking sector. Other arguments about the importance of the bank's internal indicators proposed by Wong *et al.* (2010), most studies have tried to explore the determinants of banking crisis from a macroeconomic perspective, which emphasizes the use of macro data. Based on this perspective, banking distress is assumed to come from macroeconomic problems, such as low output growth or excessive money supply. This is contrary to empirical evidence by Rojas-Suarez (2001) show that bank-level data is also useful for predicting empirically banking difficulties. Similarly, argument was also put forward by Demirgüç-Kunt and Detragiache (2005), with further explained that the use of bank-level information to predict banking distress as well as new developments in research.

C. Institutional indicators

Demirgüç-Kunt and Detragiache (1998) explains that institutional factors are important in explaining the indicators of banking distress. There are three indicators to describe the institutional factors that financial liberalization, institutional quality, and deposit insurance. The higher level of financial liberalization, would

increase the opportunities for banks because it can increase the risk of fragility of the banking sector. On the other hand, with good institutional quality, the system of banking regulation and supervision will be more effective so that the possibility of a banking crisis becomes lower. The Independence of central bank indicating bank regulatory and supervisory functions of an independent and effective because there is no interference from other parties. So, with a good institutional quality, the system of banking regulation and supervision will be more effective and the possibility of a banking crisis is lower (Demirgüç-Kunt and Detragiache, 1998). Cukierman (2011) explained that the position of the central bank as a monetary policymaker has important role when an economy is in crisis. With independent central bank will allows the recovery of the crisis more quickly, because without government intervention the central bank's easier to control inflation surged due to the crisis. Central bank independence can be attributed to the ability of bank supervision regulation more effectively and efficiently. Theoretically, Barth *et al.* (2002) revealed that the presence of regulatory and supervisory practices that force banks conduct independent accurate information disclosure, empower private sector monitoring of banks, and incentives to encourage the private sector in order to take control of the best companies to boost the performance and stability of the banking system.

D. Global Factor

31 cited research global factors as predictors of crisis shown by Eichengreen and Arteta (2000) by utilizing the growth of world oil prices, U.S. interest rate, and OECD GDP growth. The results showed that all three variables are not significant global factors as explanatory banking crisis. Global factors would indicate statistically significant value when used as explanatory variables of the currency crisis, as shown by Kamin, Schindler and Samuel (2001), in particular the U.S. interest rate, and OECD GDP growth variables. Nevertheless, the results are not significant of the three explanatory variables on the currency crisis remains were found, as indicated by studies Edison (2003). Lestano (2003) utilize the U.S. inflation rate, output growth in the OECD, and the terms of trade as a global indicator to explain the banking crisis. Research results showed that all three explanatory variables has no impact on the banking crisis. Zhuang and Dowling (2002) using 4 variable factors, that are global oil prices, the exchange rate of Japanese yen/U.S. dollar, the real U.S. interest rates, U.S. economic growth as explanatory variables in the Asian financial crisis. Zhuang and Dowling (2002) explains that the recession abroad can be transmitted to the domestic economic and causing a recession in the country. The increase in oil prices could threaten the domestic trade balance position. The increasing real world interest rate will cause capital outflow, thus threatening the open position in the country. For many East Asian countries, the depreciation of Japanese yen/U.S. dollar could cause another country's currency under pressure. Their results show that the exchange rate of Japanese yen/U.S. dollar can be used as a predictor of financial crisis, where the depreciation of the yen/U.S. dollar increases the likelihood of distress in Asian economies, while the other global variables are not significant.

3. Discussion

This study analyzes the banking crisis in 6 Asian countries consisting of two developed countries such as Japan and India, and four developing countries such as Indonesia, Malaysia, Philippines, and Thailand during the period 1999-2012. Banking crisis variable as the dependent variable was measured by following binary measurements made by Demirguc-Kunt (1998), while the explanatory variables consist of the real GDP growth, inflation, money supply, real interest rates, Capital Adequacy Ratio (CAR)1 equity shareholders/total assets, CAR2 shareholders' equity/total loans, asset quality, liquidity1, liquidity2, financial liberalization, central bank independence, institutional quality, world oil prices, U.S. economic growth, and U.S. inflation. Above explanatory variables representing the macroeconomic variables for real GDP growth, inflation, money supply, and real interest rates; internal bank variables with CAR1, CAR2, asset quality, and liquidity1, liquidity2; institutional variables by financial liberalization, central bank independence, and institutional quality; finally, global factors indicated by the world oil prices, U.S. economic growth, and U.S. inflation. Data were obtained from data published by the IMF in the form of IFS (IMF Financial Statistics), World Bank, Asian Development Bank (ADB), and each website of the central bank states the object of research. Furthermore, the data were processed using logit analysis.

The results as showed in tables 1. indicate that there are nine variables that can be used as predictors of banking crises in Asia, and those variables is the real GDP growth (X1), inflation rate (X2), asset quality (X7), liquidity2 (X9), financial liberalization (X10), central bank independence (X11), world oil prices (X13), the U.S. economic growth (X14), and the U.S. inflation rate (X15).

Table 1. Banking crisis prediction variables

Variables	Koef.	Sign.
X1	-0,398	0,054
X2	0,402	0,029
X7	-30,313	0,018
X9	23,081	0,010
X10	-2,741	0,029
X11	-5,343	0,001
X13	-0,067	0,081
X14	2,056	0,013
X15	-1,315	0,078

Sources: Data are processed by author

3.1. The Effect of Macroeconomic Variables

Macroeconomic conditions represented variable economic growth and the inflation rate based on the results of this study can be used as predictors of banking crises. The real GDP growth has negatively affect the banking crisis. This may imply that the current economic growth is represented by the real GDP growth has decreased the likelihood of a banking crisis increases. Low economic growth indicates a slowdown in economic activity both real sector and the financial sector, of course this will impact on the banking sector. When the real sector growth slowdown, the production will be hampered and will affect the banking sector as a financial institution is serving of the financing. The impact of banking sector is likely breakdown of the credit facilities granted by the bank to the real sector actors. The results are consistent with the findings Demirgüç-Kunt and Detragiache (1998, 2000), Hardy and Pazarbasioglu (1998, 1999), Beck *et al.* (2006), and Wong *et al.* (2010) which showed that banking distress is usually preceded by a slowdown in economic growth.

The variable inflation rate has a positive effect on the banking crisis. It has meaning that higher inflation rate, the greater the probability of a banking crisis. The high inflation rate shows a high economic cost. High inflation can be attributed to the high nominal interest rates. These conditions can be detrimental to the economy and the banking system through various channels. These findings are consistent with research Demirgüç-Kunt and Detragiache (1998, 2000), Hardy and Pazarbasioglu (1998, 1999), and Wong *et al.* (2010) which revealed that banking crisis preceded by deteriorating economic conditions indicated by the high rate of inflation.

This economic growth and the inflation rate variables is a representation group of macroeconomic variables and the findings of this study reinforce the first generation crisis theory (first generation model) which explains that the crisis caused by the deteriorating economic fundamentals.

3.2. Internal Banking

Internal Banking variable is represented by the variable banking asset quality and liquidity as the predictor variables significant banking crisis. The asset quality variable has negative effect to the banking sector crisis prediction. It means that the worse the quality of the asset, the higher the probability of a banking crisis. Poghosyan and Čihák (2008) suggests that asset quality indicators play an important role in early warning models of banking crisis, especially the model that focuses on medium and long-term periods. The higher proportion of loans to assets indicates the higher risk of loan portfolio. Gonzalez-Hermosillo *et al.* (1999) argued that a sound banking could turn into a failed banking (distress). The condition can occur when banks have non-performing loans which is quite large. NPLs is likely caused by previous banking investment decisions and may also be affected by changes in economic conditions, so the high level of non-performing loans. Results of this study support the findings of Gonzalez-Hermosillo *et al.* (1997), De Young *et al.* (1999), and Arena (2008).

Liquidity variable has positive influence on the probability of banking crisis. It is clear that the higher liquidity of banks is shown by the amount of loans to deposits ratio indicates the higher possibility of a bank in crisis. Gonzalez-Hermosillo *et al.* (1999) revealed that when the banks get high return loans, may indicate that the bank's revenue comes from high-risk loans. Spread (the difference between lending and deposit rates) indicates that high-risk banks take loans. Banks with high risk should provide more types of deposits are stable and

provide ample liquidity to face withdrawals massively.

3.3. Institutional indicators

Institutional indicators represented by of institutional quality, financial liberalization and central bank independence. The results of this study showed that the variables of financial liberalization and central bank independence can be used as predictors of banking crisis. Financial liberalization variables negatively affect the likelihood of a banking crisis. This may imply that the higher the level of financial liberalization as measured by domestic credit to the private sector to GDP, the less probability of a banking crisis. Demirgüç-Kunt and Detragiache (1998) revealed a positive relationship between financial liberalization with the possibility of a banking crisis. The higher the level of financial liberalization, it will increase the opportunities for banks because it can increase the risk of fragility of the banking sector. However, this effect being opposite if a strong institutional environment and the level of corruption is low. Angkinand *et al.* (2010) strengthens the argument above with their finding on a U-shaped relationship between liberalization and the probability of a crisis. Research results show that the power of regulation and supervision to determine the relationship between liberalization and banking crisis. Therefore, when regulation and supervision are very weak, it is likely to increase with the liberalization of the banking crisis. In other words, the better quality of regulation and supervision, the possibility of a crisis likely will decline with liberalization. The results also confirm the findings Komulainen and Lukkarila (2003), Jedidi and dimension (2011) which showed no negative effect of institutional quality on the likelihood of a crisis.

The results of this study revealed that central bank independence variable negatively affects the likelihood of a banking crisis. The more independent the central bank of a country, the less likely the occurrence of banking crises. Independence of the central bank indicating bank regulatory and supervisory functions of an independent and effective because there is no interference from other parties. So, with good institutional quality, then the system of banking regulation and supervision to be more effective and the possibility of a banking crisis become lower (Demirgüç-Kunt and Detragiache, 1998). Cukierman (2011) explained that the position of the central bank as a monetary policymaker has a big role when an economy is in crisis. The independent of central bank allows the recovery of the crisis more quickly, because without Government intervention the central bank get easier to control inflation surged due to the crisis. Research Barth *et al.* (2002) found no empirical evidence about the relationship between the power of supervision and regulation (supervisory power) with the ability to withstand the crisis. But in a recent study of Barth *et al.* (2013) argue that previous findings, and reveal that there is a strong relationship between the ability of the central bank supervision by the financial crisis. The more rigorous supervision of the possibility of a financial crisis is getting smaller (Barth *et al.*, 2013). The Study of Klomp (2007) distinguished the sample between developed and developing countries. The results show a negative relationship between central bank independence with financial instability. Furthermore, if the sample differentiated between developed countries and developing countries, the relationship between central bank independence with financial instability in developed countries is much more powerful. Research Klomp (2007) is not only a measure of the banking system, but also other financial systems.

The arguments over the independence of the central bank's have negative relationship with financial stability is also corroborated by research of Čihák *et al.* (2012) which describes the results of previous research (Dan, 2010; Lau, 2010; Levine, 2010; Merrouche and Neir, 2010; and Barth *et al.*, 2012) which showed that the weak factor in the regulation and supervision as a cause of the global crisis lately. Another interesting finding of the study Čihák *et al.* (2012) is the differences between the countries in crisis and no crisis, in terms of regulation and supervision. The countries that do not crisis have a strict supervision of central bank in the banking sector, while countries in crisis have a weak regulatory functions and supervision of central bank.

3.4. Global Factor

The use of global factors as predictors of banking crises is one form of renewal in this study. In previous studies, global factors used to predict the financial crisis such as Eichengreen and Arteta (2000) as well as Zhuang and Dowling (2002) or for the exchange rate crises as in Kamin *et al.* (2001) and Edison (2003). Lestano *et al.* (2003) in his research that predicts the exchange rate crisis, banking and debt using the same variables found that global factors do not provide an important role in the prediction of banking crises, but only affect the prediction of the exchange rate crisis. The study results refute the findings of Edison (2003) showed no effect of oil prices on the exchange rate crisis prediction.

Eichengreen and Rose (1998) emphasizes the external factors that world economic growth and the real interest rate is linked to the crisis in developing countries. Their findings suggest that while growth in the world

economy (represented by the OECD economic growth) going down, the crisis is taking place in developing countries. Tightening of credit in industrialized countries also play an important role in financial difficulty experienced by developing countries. As evidence, tightening monetary policy by the United States government, be the causes of the crisis in Mexico in 1994. However, many researchers ignore global factors as one of the causes of the crisis, a few literatures that can be studied to explain the impact of global factors on the occurrence of banking crisis.

Research of Eichengreen and Rose (1998) suggests that, there is a strong influence on the economic growth rate in OECD and the possibility of a banking crisis, but in a subsequent study Eichengreen and Arteta (2000) showed slightly different results which found weak influence of global factors the Asian crisis in 1997. This suggests that credit tightening in the U.S. and some European countries are less influential on the turmoil going on in Asia. These findings refute earlier findings. Furthermore, Mendis (1998) in Eichengreen and Arteta (2000) noted that the influence of global factors to the banking crisis was depend on exchange rate system adopted which allows for action or no protection to domestic banks over crisis shocks.

Research Eichengreen *et al.* (2003) provide further evidence on the role of global factors as predictors of bank risk. Research results explained that the possibility of a banking crisis can be explained by global factors if the period of observation in a state of calm (tranquil period). The Implications of these findings, that there is significant difference between the period of observation in a quiet period with an unstable period (unsettled period). These results indicate that the global factor group represented by the variable oil prices, the U.S. economy growth, and the U.S. inflation rate could significantly be used as a predictor of the banking crisis.

World oil price variable is measured by the the change of world oil prices. It has a negative effect on the likelihood of banking crisis. This means that the higher the oil price, the lower probability of a banking crisis. Reasoning of this study, that the countries in the region to benefit dominant over the rising oil prices so that the possibility of a crisis has weakened due to rising oil prices. Trade data (exports-imports) states that serve as the object of this study indicate that all countries (except Japan and India) to record transactions on commodity exports of oil (ADB, 2013). In fact, Indonesia and Malaysia are always trade balance recorded a surplus value on this commodity.

U.S. economic growth in the current study had a positive influence on the likelihood of banking crisis. These results provide evidence that the unsettled period of observation as suggested by Eichengreen *et al.* (2012) where the influence of global factors could indicate the opposite result tranquil period that tends to affect negatively. If related to trading, increased U.S. economic growth can actually encourage the likelihood of banking crisis in this region. The improvement in the U.S. economy indicates that the products produced by the U.S. will be moved out of the U.S. One of the main goals of U.S. exports is Asia market. Meanwhile, U.S. consumption will be dominated by the products of higher quality due to the improvement in U.S. economic conditions. Goods with better quality usually result from better technology. So far, more European manufacturers produce a product better than the manufacturers in Asia. Then, it affect the consumption of Asian products smaller (decreases) from those of European products. Finally, it will influence the banking sector of the Asian countries.

U.S. inflation has a negative effect on the likelihood of banking crisis. These results also provide evidence that the unsettled period of observation as suggested by Eichengreen *et al.* (2012) where the influence of the U.S. inflation variable that represents the global factors would indicate the opposite result tranquil period that tends to influence positively. Arguments over the study's findings, that the increase in U.S. inflation reflects declining economic conditions of the country as indicated by the decline in the real value of income earned. The fall in the level of the U.S. economy pushed the U.S. to change the consumption patterns of consumers for quality products (European products) to lower quality products (products Asia). In effect, an increase in U.S. demand for the products of Asia and the Asian economic growth while reducing the likelihood of banking crises in Asia. U.S. inflation is related, has been a lot of research that shows a positive relationship between interest rates and inflation. Eichengreen and Rose (1998) has actually been documented literature of Calvo *et al.* (1993) which describes the sensitivity of capital flows (capital flow) to changes in world interest rates and the impact on the possibility of bank risk. The results could be explained by using a positive relationship between interest rates and inflation. If the rise in the U.S. inflation then followed by the rising of interest rates. An increase in U.S. interest rates could reduce the influx of foreign funds (capital inflow) to the domestic as well as encourage capital outflow to the U.S., and its became a problem for banks in Asia.

4. Conclusion

The banking crisis in Asia can be predicted through the first, the economic fundamentals that the real GDP growth has declined, the higher the rate of inflation. Secondly, through the internal banking condition, those are bank's asset quality conditions and liquidity. Third, through the institutional indicator, they are the level of financial liberalization and the independence of the central bank. Finally, influenced by global factors that is world oil prices, economic growth in the U.S., and the U.S. inflation rate.

References

- Allen, F., Gale, D., (2000), "Financial contagion". *Journal of Political Economy*, Vol.108 issue 1, 1–33
- Angkinand, A. P., W. Sawangngoenyuan, C. Wihlborg. (2010), "Financial Liberalization and Banking Crises: A Cross-Country Analysis", *International Review of Finance* vol. 10(Financial): 263-292.
- Arena, M., (2008), "Bank failures and bank fundamentals: A comparative analysis of Latin America and East Asia during the nineties using bank-level data", *Journal of Banking & Finance* No. 32
- Asian Development Bank (ADB), (2013), "Key Indicators for Asia and the Pacific 2013". www.adb.org/statistics
- Barth, J. R., Jr. G. Caprio, R. Levine, (2002), "Bank Regulation And Supervision: What Works Best?" NBER Working Paper Series 9323.
- Barth, J. R., Jr. G. Caprio, R. Levine, (2013), "Bank Regulation and Supervision in 180 Countries from 1999 to 2011", *Working Paper in Haas School of Business*, University of California
- Beck, T., A. Demirgüç-Kunt, R. Levine. (2006), "Bank concentration, competition, and crises: First results", *Journal of Banking & Finance* 30 :1581–1603.
- Calvo, G., L. Leiderman, C. Reinhart, (1993), "Capital Inflows and Real Exchange Rate Appreciation in Latin America: The Role of External Factors", *IMF Staff Papers* Vol.40 No.1: 108:151.
- Calvo, G.A., (1996), "Capital Flows and Macroeconomic Management: Tequila Lesson", *International Journal of Finance and Economics*. Vol. 1. July
- Calvo, G.A., (2012), "Financial crises and liquidity shocks a bank-run perspective", *European Economic Review* No.56
- Caprio, G. J., D. Klingebiel, (1996), "Bank Insolvency: Bad Luck, Bad Policy, or Bad Banking?", *Annual World Bank Conference on Development Economics*
- Chan-Lau, J. A., A. Jobert, et al., (2004), "An Option-Based Approach to Bank Vulnerabilities in Emerging Markets", *IMF Working Paper* No.33.
- Čihák, M., A. Demirgüç-Kunt, M. S. Martínez Pería, A. Mohseni-Cheraghloo, (2012), "Bank Regulation and Supervision around the World: A Crisis Update", *Policy Research Working Paper* 6286: 1-52.
- Cukierman, A., (2011), "Reflections on the crisis and on its lessons for regulatory reform and for central bank policies", *Journal of Financial Stability* 7 : 26–37.
- De Young, R., L. G. Goldberg, L. J. White. (1999), "Youth, Adolescence, and Maturity of Banks. Credit Availability to Small Business in an Era of Banking Consolidation", *Journal of Banking and Finance* 23: 463-492.
- Demirgüç-Kunt, A., E. Detragiache, (1998), "The Determinants of Banking Crises in Developing and Developed Countries", *IMF Staff Papers* Vol. 45, No. 1
- Demirgüç-Kunt, A., E. Detragiache, (2000), "Monitoring Banking Sector Fragility: A Multivariate Logit Approach", *The World Bank Economic Review* Vol. 14, No. 2.
- Demirgüç-Kunt, A., E. Detragiache, (2002). "Does deposit insurance increase banking system stability? An empirical investigation", *Journal of Monetary Economics* No. 4: 1373–1406
- Demirgüç-Kunt, A., E. Detragiache, (2005), "Cross-Country Empirical Studies of Systemic Bank Distress: A Survey", *IMF Working Paper* No.96.
- Diamond, D., Dybvig, P., (1983), "Bank runs, deposit insurance and liquidity", *Journal of Political Economy* 91(3), 401–419.
- Edison, H. J., (2000), "Do Indicators Of Financial Crises Work? An Evaluation Of An Early Warning System",

International Finance Discussion Papers No. 675

- Eichengreen, B., A. K. Rose, (1998), "Staying Afloat When the Wind Shifts: External Factors and Emerging-Market Banking Crises", *NBER Working Series* 6370
- Eichengreen, B., C. Arteta, (2000), "Banking Crises in Emerging Markets: Presumptions and Evidence", *Center for International and Development Research*, UC Berkeley
- Eichengreen, B., A. Mody, M. Nedeljkovic, L. Sarno, (2012), "How the Subprime Crisis Went Global: Evidence from Bank Credit Default Swap Spreads", *Journal of International Money and Finance*.
- Giesecke, K., Weber, S., (2006), "Credit contagion and aggregate losses". *Journal of Economic Dynamics and Control* 30 (5), 741–767.
- Gonzalez-Hermosillo B., Pazarbasioglu, C., Billings R., (1997), "Banking System Fragility: Likelihood Versus Timing of Failure – An Application to the Mexican Financial Crisis", *IMF Staff Papers*.
- Hardy, D., Pazarbasioglu C., (1998), "Leading Indicators of Banking Crises: Was Asia Different?," IMF working paper 98/91
- Hardy, D., Pazarbasioglu C., (1999), "Determinants and Leading Indicators of Banking Crises: Further Evidence". *IMF Working Paper* 46 no.3.
- Hong, K., J.-W. Lee, H.C. Tang. (2010), "Crises in Asia: Historical perspectives and implications". *Journal of Asian Economics* 21: 265–279
- Jedidi, F. K., S. Mensi, (2011). "The Trade-off between Liberalization Policy and Financial Crises Dynamics". *Asian Social Science* Vol. 7, No. 3; March: 71-87.
- Kamin S. B., J. W. Schindler, S. L. Samuel, (2001). "The Contribution Of Domestic And External Factors To Emerging Market Devaluation Crises: An Early Warning Systems Approach". *International Finance Discussion Papers* Number 711. Board of Governors of the Federal Reserve System.
- Kaufman, George F., (1997). "Preventing Banking Crises in the Future: Lessons from past mistakes". *The Independent Review*, VII, n.1., p.55.
- Klomp, J., (2007), "Central Bank Independence and Financial Instability". *Working Paper* on University Groningen, Netherlands.
- Klomp, J., (2010), "Causes of banking crises revisited". *North American Journal of Economics and Finance* 21
- Komulainen, T., J. Lukkarila, (2003), "What Drives Financial Crises In Emerging Markets?", *BOFIT Discussion Papers* No.5.
- Laeven, L., F. Valencia, (2008), "Systemic Banking Crises: A New Database". *IMF Working Paper* No. 08/224.
- Lestano, J. J., G. H. Kuper, (2003), "Indicators of financial crises do work! An early-Warning System For Six Asian countries". *Working Paper* of University of Groningen
- Prasetyantoko, (2008), "*Bencana Finansial: Stabilitas Sebagai Barang Publik*", Penerbit Buku Kompas, Jakarta
- Poghosyan, T., M. Čihák, (2008), "Distress in European Banks: An Analysis Based on a New Dataset". *IMF Working Paper*.
- Rojas-Suarez, Liliana, (2001). "Rating Banks in Emerging Markets: What Credit Rating Agencies Should Learn from Financial Indicators", *Institute for International Economics*, No. WP01-6, May
- Tung, W. L., C. Quek, P. Cheng, (2004), "GenSo-EWS: a novel neural-fuzzy based early warning system for predicting bank failures". *Neural Networks* 17.
- Uchenna, A.W., U. D. Okelue, (2012), "Detecting Early Warning Bank Distress Signals in Nigeria: A Multi Discriminant Analysis Approach". *Research Journal of Finance and Accounting*, Vol 3, No 6, 2012
- Wong, J., T.-C. Wong, P. Leung, (2010), "Predicting banking distress in the EMEAP economies". *Journal of Financial Stability* No.6.
- Zhuang, J., J. M. Dowling, (2002). "Causes Of The 1997 Asian Financial Crisis: What Can An Early Warning System Model Tell Us?", *ERD Working Paper* No. 26.

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