Emerging EUs and their exchange rates ex ante and ex post Sub -prime crisis

Keisuke AOKI (University of Nagasaki)

Kentaro KAWASAKI (Toyo University)

Emerging EUs and their exchange rates ex ante and ex post Sub-prime crisis

Keisuke Aoki [†]

Kentaro Kawasaki[††]

Abstract

Triggered by the failure of Lehman Brothers in fall, 2008, a global financial crisis attacked the European countries. This paper discusses about challenges of the EU financial system exposed by this financial crisis and problems of conventional growth strategy for the Central and Eastern European countries. Our empirical analysis using TAR/M-TAR unit root tests suggested that market participants' reactions to the foreign exchange market appeared to be different between appreciations and depreciations in the Hungarian forint after mid-2007, while the Czech koruna and the Polish zloty converged to the long-term mean symmetrically. This means that once the monetary authority would fail to manage the exchange rate movements and lose its reputation, an acceleration of depreciation could become a trigger of a currency crisis. Though the authorities to supervise financial institutions and to carry out a fiscal policy are entrusted to each country in the EU, a financial policy such as liquidity provision and adjusting interest rates is enforced unitarily by the ECB. Therefore, the governments practice countermeasures against the currency crisis in 'the non-euro' emerging EUs, it might cause the financial system in the EU to be destabilized because 'one-size-fit-all' monetary policies would not fit all member states. As a result, this global crisis unexpectedly has increased a unifying force for the euro adoption to non-euro countries.

[†] School of Economics, University of Nagasaki, 123 Kawashimo-cho, Sasebo-shi, Nagasaki-ken
    858-8580 Japan. Email: aoki@sun.ac.jp
[††] Faculty of Business Administration, ToyoUniversity, 5-28-20 Hakusan, Bunkyo-ku,Tokyo 112-8606
    Japan. Email: kawasaki-k@toyonet.toyo.ac.jp

1. Introduction: Background and Process of Monetary Crisis in 2008

The issue of subprime loan in U.S.A. which had come to the front in summer, 2007 caused an unprecedented monetary crisis in 2008. As for the beginning, the delay of the interest payment or the default of the home loan by the burst of the U.S. house bubble had let the value of financial instruments securitized subprime loans fall, therefore the management of financial institutions and investment firms holding them turned worse. After that, the influence produced suspicion fear in the whole monetary system and it developed into a global monetary crisis. The process which led to the global monetary crisis seems to have three main routes.

First, it is the short-term money market which financial institutions daily use to finance from each other. The short-term money market had a malfunction and became paralysis as money supplier remarkably decreased because of mutual credit uncertainty of financial institutions and investors. That caused from the aggravation of financing for financial institutions which suffered a financial loss and turned worse their management. Therefore the sound financial institutions not holding securities related to subprime loan became difficult to finance, and many of them faced to a liquidity crisis.

Secondly, the value of other securitized instruments with no related to subprime loan fell, and appraisal loss of financial institutions, investment companies and general companies holding those instruments spread and the loss in weight of their assets value caused serious management difficulty. Moreover, the risk of other loan credit covered with some financial instruments like CDS (credit defaults swap[1]) suddenly increased because of management uneasiness of insurance companies or investment banks. They sell CDS and undertake original risks. That also brought credit uncertainty of financial institutions holding such loan credit.

The final route is below. Because of such financial uncertainty, the value of derivatives and any other financial assets such as stocks, corporate bonds, investment funds fell. Besides instruments related subprime or CDS, the decreasing value of various financial instruments caused deterioration of functions of the whole capital markets. The financial panic that spread through these three routes developed into a serious global financial crisis before long.

Financial institutions and investment companies in Europe were holding big amount of

---

[1] CDS is a credit derivative contract between two counter parties. The buyer makes periodic payments (premium leg) to the seller, and in return receives a payoff (protection or default leg) if underlying financial instruments or firms default.

securitized financial instruments related subprime loans. There were some signs since before this problem came to the front greatly in summer, 2007. In February, 2007, the UBS in Switzerland closed their subsidiary hedge fund, Dillon, Read & Co. because of the loss of subprime-related instruments. In July, IKB in Germany filed for a rescue fund to KfW[2] because of the same loss.   In August, BNP Paribas in France suspended operations of three of its funds. In this phase, the European Central Bank (ECB) injected cash into the financial system. The ECB lent 95 billion euros to meet banks' needs after demand for cash in the European money markets. In September, Northern Rock Bank in U.K. faced a run on the bank.   This bank did not hold subprime related instruments much, but the home loan ratio for their business profit was high, and it was highly dependent on the short-term money market for the fund. Northern Rock Bank was eventually taken into state ownership in February, 2008. This event appeared that subprime loan issue was widely regarded as the serious problem for general people and society. However, at this point, it was still thought that every government of each country and each central bank could handle such financial problems individually.

It was September, 2008 that the situation changed completely. A start was the failure of Lehman Brothers, a U.S. major investment bank. (They filed for Chapter 11, bankruptcy protection on September 15.) That reduced the value of securitized instruments, corporate bonds, stocks and so on greatly. Their creditor and partner financial institutions which had dealt with them for derivative business like CDS suffered a big loss. On the following day, September 16, the U.S. government announced to inject a rescue fund to AIG, a U.S. major insurance company, of which the management uneasiness had been worried. In this way, the monetary crisis originated in the U.S. has become serious. The U.S. government announced Emergency Economic Stabilization Act of 2008 to purchase from financial institutions a large amount of bad loans on September 19 and appealed to other countries for the same action, but most of European countries, such as Germany and France showed negative reactions. However, at the end of September, the crisis for the failure of financial institutions began in Europe as well. The governments of Benelux announced to inject capital for Fortis, a financial service company, based in Belgium and the Netherlands.   After that, in U.K., Ireland and Germany, one after another financial institutions were nationalized or were injected public funds. (Table1.)

---

[2] Refer to http://www.kfw.de/EN_Home/index.jsp .

Table 1: Trend of Monetary Crisis since mid-September 2008

Europe		The U.S.	
		Sep.07.	・U.S. government, GSE support plan release
		Sep.15.	・Lehman Brothers failure
		Sep.16.	・FRB, bailout for AIG release
Sep.18.	・U.K. Lloyds TSB, takeover HBOS	Sep.18.	・FRB, dollar swap agreement with BOJ,ECB,BOE etc
		Sep.19.	・FRB, emergency loan for MMMF
			・U.S. government, Emergency Economic Stabilization Act of 2008 release
		Sep.21.	・Goldman Sachs, Morgan Stanley become traditional bank holding companies
		Sep.24.	・FRB, spread swap line for each central bank
		Sep.25.	・Washington Mutual forced to close by FDIC
Sep.28.	・Benelux, Total 11.2bn euros to Fortis capital injection		
Sep.29.	・U.K., Bradford & Bingley（B&B）nationalized, takeover by Spain Banco Santander	Sep.29.	・lower House, Emergency Economic Stabilization Act of 2008 reject
	・Iceland, Glitnir Banki nationalized, 75% stocks for 600 million euros		・FRB, TAF loans spread
	・Germany, Hypo Real Estate 35bn euros credit line from the government ＆ consortium of German banks.		・FRB, swap line agreement with central banks of Northern Europe and Australia
Sep.30.	・Dexia, 64bn euro as capital injection by France・Belgium・Luxembourg government & large stockholder		・CITI, takeover Wachovia release （After that, purchased by Wells Fargo）
	・Ireland, Deposit full guarantee （Domestic main 6 banks only）		
		Oct.01.	・Senate, amended Emergency Economic Stabilization Act 2008 approve
Oct.02.	・Greece, Deposit guarantee upper limit spread (for all domestic banks)		
	・ECB Executive Board, consider reduction in interest.		
Oct.03.	・U.K. FSA, Deposit guarantee upper limit spread	Oct.03.	・lower House, amended Emergency Economic Stabilization Act 2008 approve
Oct.04.	・G4（G・F・I・U.K.）emergency summit, reject rescue funds plan proposed by France		
	・Hypo Real Estate，credit line spread up to 50bn euros		
	・German, Personal deposit guarantee upper limit spread		
Oct.06.	・Sweden, Deposit guarantee upper limit spread	Oct.06.	・PWG, appeal heeds for international cooperation for the crisis
	・BNP Paribas, takeover Fortis's Belgium, Luxembourg section		
	・Iceland, Act Providing for Special Powers in Exceptional Financial Market Circumstances approve S&P, Iceland demote (A- to BBB)		
Oct.07.	・EU Finance Ministers' meeting, Deposit guarantee upper limit spread, shelve rescue funds plan ・Spain, Greece, Austria, Netherlands, Deposit guarantee upper limit spread	Oct.07.	・IMF, total loss of financial institutions estimate 1400bn dollars in Global Financial Stability Report (amount changed to 2200bn dollars in Jan. 2009.)
	・Spain, funds for purchasing assets of financial farms plan (up to 30~50bn euros)		・FRB, announce creation of Commercial Paper Funding Facility (CPFF)
	・Iceland, Landsbanki under official management		・Bernanke FRB Chairman, suggest reduction in interest rate
	・Iceland, shift to fixed exchange rate system (renounced)		
Oct.08.	・Austria, Personal deposit full guarantee	Oct.08.	・Paulson, suggest public funds to Financial institutions
	・U.K., 20bn pounds of capital injection for main banks. (max 50bn pounds)　250bn pounds of government guarantee for financial Institutions		
	・FRB・ECB・BOE・Canada・Sweden・Swiss CBs cooperation reduction in interest rate. BOJ strongly support		
	・Iceland, Kaupthing under official management		
	・Italy, rescue plan for financial institutions release		
	・ECB, spread between lending and deposit facilities reduce 50bp		
Oct.09.	・ECB, supply bid amount of money at the operations		

Oct.10.	・G7, action plan including capital injection by the governments		
Oct.12.	・Summit of the euro area countries, "concerted European action plan"		
Oct.13.	・Germany, France etc, plan for the injection of public funds and guarantee of banks debt	Oct.13.	・U.S government, preferred stock of main banks acquisition
	・ECB・EOE・Swiss bank, increase currency swap with FRB and supply necessary total amount of dollar bid		
	・U.K., injection of public funds to 3 domestic main banks		

Source : News, each government, central bank announcement.

2. Crisis spill over: Hungary, Just the First to fall?

From the U.S. to Europe, this financial crisis hit the developed countries first, and the public funds were injected to financial institutions in U.K., Germany, France, the Netherlands cf. The central banks in the developed countries, the FRB, the BOE, the ECB and others, successively carried out various measures, a concerted reduction in interest rates, purchasing assets of financial institutions, the unlimited provision of dollar liquidity and the easing the credit qualified threshold for collaterals. But the crisis extended to emerging countries. Stock prices in Central and Eastern Europe countries all declined at nearly 30% a month in October 2008. Those currency also depreciated sharply. The Hungarian forint fell 13.6%, the Polish zloty -13.6% by the fourth week of October. The large amount of money flowed from these countries. The Hungarian forint fell 30% against euro, nearly 50% against dollar from the highest in July 21 because the fundamentals of Hungary had been pointed out its weakness for some time. It might be in the situation of the currency crisis.

2.1 Empirical Analysis for Recent Exchange rate movements in Central Europe

Here, we just take a look at the recent dramatic depreciations in the Central European currencies against the Euro. To detect whether there exist the significant changes in properties of Central European exchange rates movements against the Euro, we employ a usual unit root test framework.

We suppose that the country which belongs to the ERM II framework should keep their exchange rate movements into the exchange rate band they have set, e.g. ±2.25 % or ±15%. As long as their exchange rates against their central parity would not stay out 'the snake band,' the monetary authority does not need to intervene explicitly. While these countries have allowed slight changes of their exchange rates in the band, it is quite rare for those exchange rates to deviate from the band range under the ERM II. Perhaps, most of the monetary authorities under the ERM II frameworks might often intervene in the foreign exchange market to keep their exchange rates movements stable in the band as for their daily operations. Otherwise, the nominal exchange rates may possibly be fluctuating. Therefore, only if the monetary authority is fully trusted under the ERM II framework, the exchange rates might remain in the band.

Here, we assume that each nation's monetary authority manages to eliminate deviations from their central parity and keep their exchange rate stable at least in the band. We define the logarithm of nominal exchange rate: s_t and its central parity against the EURO at the targeted exchange rate: $\bar{s}$, hence, 'ultimate' purpose of exchange rate policy for the ERM II country's monetary authority should be that the deviation from the long term mean of their exchange rates: h_t would satisfy the conditions below, then it would be the white-noise process:

$$
\begin{aligned}
E\left(s_t - \bar{s}\right) &= E\left(h_t\right) = 0 \\
\operatorname{var}\left(h_t\right) &= \operatorname{var}\left(h_{t-1}\right) = \cdots = \sigma_h^2 \\
\operatorname{cov}\left(h_t, h_{t-s}\right) &= \operatorname{cov}\left(h_{t-j}, h_{t-j-s}\right) = 0
\end{aligned}
\tag{2.1}
$$

where σ_h^2 refers to the variance of process h_t

If the monetary authority could succeed to perfectly manage their exchange rate, the deviation from the central would converge to the zero-mean in the long run, then it would be expected to be stationary process. However, even if Equation (2.1) would not be satisfied and the deviations would be non-stationary process, as long as the exchange rate fluctuations remain in the band, the targeting exchange rate policy seems to succeed at least. It is because there does not exist a factor for exchange rates to stay out the exchange rate band.

On the other hand, the country which does not belong to the ERM II framework but is expected to join the Euro in the future, may allow appreciations/depreciations to some extent in a transition for satisfying the conditions for the Euro participation. While the country allows slight appreciations/depreciations as following their economic growth, they might not have 'explicit' targeting exchange rates, namely a central parity: $\bar{s}$, then, their nominal exchange rates could be non-stationary process.

While most of the non-ERM II countries adopt the inflation targeting implicitly or explicitly, it is said that emerging economies have incentives to manage their exchange rates.[3] Hence, these countries may have an implicit target of "changes" in their nominal exchange rates against the Euro, which it may accordance with other economic policy targetings such as GDP growth rates, changes in the price, and so on. Therefore, while their exchange rate could appreciate/depreciate in a transition, the drastic changes from the implicit targeting exchange rates might be eliminated by the monetary authority as well. Here, we assume their 'implicit exchange rate policy with an implicit targeting rule for exchange rate movement: implicit exchange rate targeting. Following the nation's economic policy, the monetary

---

[3] Mishkin (2000) pointed out the problems of adopting the inflation targeting monetary policy into the emerging economies. Under those circumstances, the monetary authority in emerging economy may have incentives to adopt 'the managed float' exchange rate policy with implicit targeted rate.

authority manages to control changes in exchange rate movements around their targeting rate: $\Delta \tilde{s}$. The deviation from the targeting changes in their exchange rate as for their policy rule, might satisfy the following conditions;

$$
\begin{aligned}
E\left(\Delta s_t - \Delta \tilde{s}\right) &= E\left(g_t\right) = 0 \\
\operatorname{var}\left(g_t\right) &= \operatorname{var}\left(g_{t-1}\right) = \cdots = \sigma_g^2 \\
\operatorname{cov}\left(g_t, g_{t-s}\right) &= \operatorname{cov}\left(g_{t-j}, g_{t-j-s}\right) = 0
\end{aligned}
\tag{2.2}
$$

where σ_g^2 refers to the variance of series g_t. Since there are no exchange rate band, As binding Equation (2.2), the monetary authority would be able to succeed to constrain massive fluctuations from their targeting changes in exchange rates by their often interventions.

The well-known model to detect the process which could satisfy the conditions in Equations (2.1) or (2.2), is developed by the Dickey-Fuller (1979) test for a unit root. While detecting the stationary process, we can estimate the implicit targeted changes of exchange rates: a_0 for the non-ERM II countries by the Dickey-Fuller model below;,

$$
y_t = a_0 + a_1 y_{t-1} + \varepsilon_t,
\tag{2.3}
$$

where ε_t denotes the white-noise process. Here, Series y are expected to be followed stationary data generating process only if the null hypothesis: $a_1 = 1$ could be rejected. Adopting $y_t = g_t$, if the null is rejected, the monetary authority of non ERM II country could succeed to manage their exchange rates around at their implicit targeting policy role for exchange rate movements.

The problem here is that the Dickey-Fuller (DF) model or its augmented version (the ADF model) assumes a linear adjustment process if the process do not contain a unit root. If the monetary authority is fully trusted and its monetary policy is accordance with current economic fundamentals, slight deviations of exchange rates from their implicit targeting change, namely, rapid appreciation or depreciation, would be corrected which reverting process to the targeted value would be 'symmetric.' Hence, we might be able to employ the DF/ADF tests for detecting the symmetric reversion process. On the other hand, if those unexpected deviations come from the persistency of unreconciled monetary or economic policies or market gloom and doom, reverting process to the implicit targeting value by intervenes would become 'asymmetric' between appreciations and depreciations. The DF/ADF tests might not be useful to detect an asymmetric reversion to the equilibrium in a non-linear model.

Enormous number of literatures has shown the non-linear adjustment process model which considers the presence of an attractor. [4] Enders and Granger (1998) developed the methods of detecting the non-linearity of adjustment process considering the threshold autoregressive (TAR) model as below;

---

[4] See the details of the discussions in Pippenger and Goering (1993) and Balke and Fomby (1997)

$$\Delta y_t = I_t \rho_1 \left(y_{t-1} - \tau \right) + \left(1 - I_t \right) \rho_2 \left(y_{t-1} - \tau \right) + \sum_{i=1}^{p} \alpha_i \Delta y_{t-1} + \varepsilon_t \qquad (2.4)$$

$$I_t = \begin{cases} 1 & if & y_{t-1} \geq \tau \\ 0 & if & y_{t-1} < \tau \end{cases},$$

where τ is a threshold.

As far as we know exact value of the threshold: τ, asymmetric mean reversion process could be detected in Equation (2.4).

On the other hand, if we do not know exact thresholds as nature of non-linearity in adjustment process, Enders and Granger propose that the adjustment process depends on Δy_{t-1} instead of y_{t-1}. Hence, Equation (2.4) could be rewritten as the momentum threshold auto-regressive (M-TAR) model as follows:

$$\Delta y_t = I_t \rho_1 y_{t-1} + \left(1 - I_t \right) \rho_2 y_{t-1} + \sum_{i=1}^{p} \alpha_i \Delta y_{t-1} + \varepsilon_t \qquad (2.5)$$

$$I_t = \begin{cases} 1 & if & \Delta y_{t-1} \geq 0 \\ 0 & if & \Delta y_{t-1} < 0 \end{cases}.$$

If estimated values of ρ could not be rejected the null hypothesis of unit root: $\rho_1 = \rho_2 = 0$, the data generating process of series y_t might follow the white noise process. Next, if the null of $\rho_1 = \rho_2$ could be rejected, the adjustment process might be asymmetric.

Here, we substitute $y_t - \tau$ for the logarithm of exchange rates: h_t. Equation (2.4) would be rewritten as follows,

$$\Delta h_t = I_t \rho_1 h_{t-1} + \left(1 - I_t \right) \rho_2 h_{t-1} + \sum_{i=1}^{p} \alpha_i \Delta h_{t-1} + \varepsilon_t, \qquad (2.6)$$

$$I_t = \begin{cases} 1 & if & h_{t-1} \geq 0 \\ 0 & if & h_{t-1} < 0 \end{cases},$$

where the threshold for h_t should be zero. We use Equation (2.6) to detect stationary of exchange rates movements for the ERM country. If the series h_t in Equation (2.6) are confirmed as stationary process, there exist factors to differentiate adjustment process of depreciations from the central parity.

For the non-ERM country, their threshold is unknown. If we adopt exchange rate movements of non-ERM into the methods of detecting the non-linearity of adjustment process, we should apply Equation (2.5) as M-TAR model. We rewrite Equation (2.5) as follows;

$$\Delta g_t = I_t \rho_1 \cdot g_{t-1} + (1 - I_t) \rho_2 \cdot g_{t-1} + \sum_{i=1}^{p} \alpha_i \Delta g_{t-1} + \varepsilon_t, \tag{2.7}$$

$$I_t = \begin{cases} 1 & if \quad \Delta g_{t-1} \geq 0 \\ 0 & if \quad \Delta g_{t-1} < 0 \end{cases},$$

where a threshold for g_t still be unknown. If the series g_t in Equation (2.7) are confirmed as stationary process, there exist factors to differentiate adjustment process of 'undesirable' depreciations from that of 'acceptable' appreciations.

2.2 The data

The daily nominal exchange rates of the Danish krona and selected emerging EU currencies: the Czech koruna, the Hungarian forint, and the Polish zloty, against the Euro are obtained from *Datastream*. Our sample covers from January 1 2004 to January 12 2009. While we consider the existence of structural break related to 'the sub-prime' crisis, we set the sub samples; i) January 1 2004-July 15 2008, ii) January 1 2007 - July 15 2008, iii) January 1 2008 - July 15 2008, and iv) July 21 2008 – January 12 2009. We supposed the date of break from a kink point of emerging EUs' exchange rates movements since the exchange rates of these three currencies had started depreciating dramatically against the EURO after hitting the record high at July 21 2008.

2.3 Empirical results

Table 2s show the empirical results applying the unit root test into the three Central European countries and Denmark. While the most of coefficients in the ADF test showed insignificant, we can find the coefficients which are statistically significant from the M-TAR unit root tests. This suggests the M-TAR unit root could be able to solve the weak power in the usual unit root test as pointed in Enders and Granger (1998).

Table 2a shows results for the Czech koruna. The changes in the Czech koruna to the Euro exchange rates appeared to be stationary in the M-TAR unit root tests since the F-test statistics for the null hypothesis: $\rho_1 = \rho_2 = 0$ suggested no unit roots from the ϕ_M tables. On the other hand, we might accept the symmetric adjustment process to the mean because the null of $\rho_1 = \rho_2$ could not be rejected., Through all sub sample periods, there exist attractors to revert symmetrically, Therefore we conclude that the Czech koruna has been still under the control of the monetary authority of Czech Republic while they have experienced huge depreciations and fluctuations.

Table 2b shows the empirical results for the Hungarian forint. We could not find much differences between the case of Hungarian forint and that of the Czech koruna before July 21 2008. For the period from July 21 2008 to Jan 12 2009, the F-test statistics for the null of $\rho_1 = \rho_2$ is 5.847794 with 0.017 probabilities. It suggests asymmetric adjustment process. This means that the monetary authority might have been able to control massive fluctuations in exchange rate movements since there are no unit root, however, market participants' reactions to the foreign exchange market appeared to be different between of appreciations and depreciations in the Hungarian forint. Once the monetary authority would fail to manage the exchange rate movements and lose its reputation, an acceleration of depreciation in Hungarian forint could become a trigger of a currency crisis.

Table 2c shows results for the Polish zloty. In some cases, we could have the coefficients whose the t-test statistics for the null of unit root indicated statistically significant in the ADF tests. For all sub sample period, we could find symmetric adjustment process in the M-TAR tests. Hence, we also conclude that the Polish zloty has been still under the control of the monetary authority of Poland while they have also experienced huge depreciations and fluctuations.

Table 2d shows the case of the Danish krona as for a ERM II country. We also applied the TAR model defined in Equation (2.4). For the whole sample period and the period; May 1 2004 – Jul 15 2008, the coefficients indicated statistically significant in the TAR and the M-TAR unit root tests which suggest asymmetric adjustment process. But for the periods: Jan 1 2007 – Jul 15 2008, Jan 1 2008 – Jul 15 2008, and Jul 21 2008 - Jan 12 2009, we could not reject the null of unit root process while their level of exchange rate movements still remained inside of upper and lower band of ERM II. This suggests that there are no factors for exchange rate movements to deviate from the band. We suppose that the Danish monetary authority could manage their monetary policy very well to keep their exchange rate to the Euro stable as a result.

Table 2a: The TAR, and M-TAR unit root test for the Czech koruna

Sample Period	Model	DF	Lag(s)		Coeffcient (with S.E.)		F statisics (Probability)	
							H: Rho(+)=Rho(-)=0	H: Rho(+)=Rho(-)
May 1 2004	ADF	1223	0	a(0)	0.000000216			
-Jan 12 2009					0.000112208			
				a(1)	0.03846701			
					0.028580728			
	M-TAR	1218	0	Rho(+)	-0.949624441	****	564.4459	0.194763
					0.039743481		0	0.65906024
				Rho(-)	-0.974910661	****		
					0.041272142			
May 1 2004	ADF	1094	1	a(0)	0.000007389			
- Jul 15 2008					0.000088952			
				a(1)	-0.966880165	****		
					0.042385821			
	M-TAR	1089	0	Rho(+)	-0.966246825	****	531.2036	0.428262
					0.043550112		0	0.51298132
				Rho(-)	-1.005898827	****		
					0.042127154			
Jan 1 2007	ADF	400	0	a(0)	1.444E-07			
- Jul 15 2008					0.00016257			
				a(1)	0.061512011			
					0.049915328			
	M-TAR	400	0	Rho(+)	-0.885322885	****	177.68703	0.994678
					0.072986383		0	0.31920454
				Rho(-)	-0.984987147	****		
					0.068257561			
Jan 1 2008	ADF	139	0	a(0)	5.181E-07			
- Jul 15 2008					0.00033547			
				a(1)	0.030705088			
					0.084843454			
	M-TAR	139	0	Rho(+)	-0.890248429	****	66.17671	0.944532
					0.117324657		0	0.33280327
				Rho(-)	-1.054727087	****		
					0.121970777			
Jul 21 2008	ADF	124	0	a(0)	1.9437E-06			
-Jan 12 2009					0.000759513			
				a(1)	0.039353525			
					0.089649003			
	M-TAR	124	0	Rho(+)	-1.023754436	****	57.90275	0.506915
					0.125937234		0	0.47781469
				Rho(-)	-0.896354647	****		
					0.127115667			

Note: a(0) and a(1) denote the coefficients a_0 and a_1 in Equation (2.3), Rho(+) and Rho(-) denote r_1 and r_2 in Equations (2.4) and (2.5) respectedely.

Table 2b: The TAR, and M-TAR unit root test for the Hungarian forint

Sample Period	Model	DF	Lag(s)		Coeffcient (with S.E.)		F statisics (Probability)	
							H: Rho(+)=Rho(-)=0	H: Rho(+)=Rho(-)
May 1 2004	ADF	1223	0	a(0)	-0.000000026			
-Jan 12 2009					0.000159853			
				a(1)	0.046078952			
					0.028622311			
	M-TAR	1214	3	Rho(+)	-1.056045343	****	122.84998	9.521731
					0.067848461		0	0.00207647
				Rho(-)	-0.878115518	****		
					0.074103593			
May 1 2004	ADF	1092	1	a(0)	-0.000000943			
- Jul 15 2008					0.000132785			
				a(1)	-1.0102189	****		
					0.04145918			
	M-TAR	1088	1	Rho(+)	-1.038477389	****	300.84483	0.897807
					0.048658506		0	0.34358088
				Rho(-)	-0.980989052	****		
					0.054239948			
Jan 1 2007	ADF	400	0	a(0)	6.082E-07			
- Jul 15 2008					0.000248041			
				a(1)	0.020029003			
					0.050227537			
	M-TAR	400	0	Rho(+)	-1.026983535	****	191.3419	1.026827
					0.068327273		0	0.31151756
				Rho(-)	-0.925012023	****		
					0.073877643			
Jan 1 2008	ADF	139	0	a(0)	6.6603E-06			
- Jul 15 2008					0.000501194			
				a(1)	0.063568512			
					0.085413533			
	M-TAR	139	0	Rho(+)	-0.999814889	****	60.79286	0.720592
					0.113257184		0	0.39740927
				Rho(-)	-0.853938683	****		
					0.129243531			
Jul 21 2008	ADF	124	0	a(0)	1.2037E-06			
-Jan 12 2009					0.001032309			
				a(1)	0.009857021			
					0.090071525			
	M-TAR	124	0	Rho(+)	-1.171368246	****	66.20208	5.847794
					0.11559757		0	0.01705033
				Rho(-)	-0.740173547	****		
					0.135764146			

Note: a(0) and a(1) denote the coefficients a_0 and a_1 in Equation (2.3), Rho(+) and Rho(-) denote r_1 and r_2 in Equations (2.4) and (2.5) respectedely.

Table 2c: The TAR, and M-TAR unit root test for the Poland zloty

Sample Period	Model	DF	Lag(s)		Coeffcient (with S.E.)		F statisics (Probability)	
							H: Rho(+)=Rho(-)=0	H: Rho(+)=Rho(-)
May 1 2004 -Jan 12 2009	ADF	1223	0	a(0)	0.000008171 0.000158991			
				a(1)	0.06451117 *** 0.028585388			
	M-TAR	1218	1	Rho(+)	-0.962837079 **** 0.039481451		534.09011	0.957819 0.32793127
				Rho(-)	-0.906658357 **** 0.041668343			
May 1 2004 - Jul 15 2008	ADF	1094	0	a(0)	8.0496E-06 0.00012804			
				a(1)	0.022772092 0.030166305			
	M-TAR	1088	1	Rho(+)	-0.954141418 **** 0.051171584		240.42584 0	0.87323 0.35026992
				Rho(-)	-0.897582799 **** 0.05291851			
Jan 1 2007 - Jul 15 2008	ADF	399	1	a(0)	0.000000204 0.000158671			
				a(1)	-0.839605632 **** 0.069303195			
	M-TAR	399	1	Rho(+)	-0.847746572 **** 0.084678774		73.40534 0	0.027989 0.86722058
				Rho(-)	-0.831153887 **** 0.085760224			
Jan 1 2008 - Jul 15 2008	ADF	138	1	a(0)	0.000001029 0.000276798			
				a(1)	-0.82895173 **** 0.118711987			
	M-TAR	138	1	Rho(+)	-0.84091857 **** 0.140512226		24.39782 0	0.025322 0.8737995
				Rho(-)	-0.814129195 **** 0.150890801			
Jul 21 2008 -Jan 12 2009	ADF	124	0	a(0)	1.09102E-05 0.001060215			
				a(1)	0.084028539 0.089862417			
	M-TAR	124	0	Rho(+)	-0.997749666 **** 0.127643429		52.69937 0	0.808382 0.37034179
				Rho(-)	-0.836674037 **** 0.125708344			

Note: a(0) and a(1) denote the coeffcients a_0 and a_1 in Equation (2.3), Rho(+) and Rho(-) denote r_1 and r_2 in Equations (2.4) and (2.5) respectedely.

Table 2d: The TAR and M-TAR unit root test for the Danish krona

Sample Period	Model	DF	Lag(s)	Coeffcient (with S.E.)	F statisics (Probability) H: Rho(+)=Rho(-)=0	H: Rho(+)=Rho(-)
May 1 2004 -Jan 12 2009	ADF	1223	0	a(0) 0.000000216 0.000112208		
				a(1) 0.03846701 0.028580728		
	TAR	1223	1	Rho(+) -0.000097996 *** 0.000038222	4.40773 0.012377	8.749732 0.00315599
				Rho(-) 0.000027164 0.000018105		
	M-TAR	1224	0	Rho(+) 0.000054385 *** 0.000022448	5.30628 0.00507509	10.53742 0.0012015
				Rho(-) -0.000052023 ** 0.000023888		
May 1 2004 - Jul 15 2008	ADF	1094	1	a(0) 0.000007389 0.000088952		
				a(1) -0.966880165 **** 0.042385821		
	TAR	1094	1	Rho(+) -0.000080677 ** 0.000036417	3.69023 0.02527756	7.175953 0.00749952
				Rho(-) 0.000027697 0.000017599		
	M-TAR	1095	0	Rho(+) 0.00006072 **** 0.000021611	6.56639 0.00146291	12.874624 0.00034779
				Rho(-) -0.00005346 *** 0.000023358		
Jan 1 2007 - Jul 15 2008	ADF	400	0	a(0) 1.444E-07 0.00016257		
				a(1) 0.061512011 0.049915328		
	TAR	399	1	Rho(+) -0.000094229 0.000078346	0.92895 0.39581998	1.812549 0.17896707
				Rho(-) 0.000017391 0.000027102		
	M-TAR	400	0	Rho(+) 0.000061445 * 0.000034837	2.78084 0.06318546	5.506904 0.01942865
				Rho(-) -0.000059073 0.000037734		
Jan 1 2008 - Jul 15 2008	ADF	139	0	a(0) 5.181E-07 0.00033547		
				a(1) 0.030705088 0.084843454		
	TAR	138	1	Rho(+) -0.000113971 0.000111784	0.78208 0.45947145	1.537745 0.21705815
				Rho(-) 0.000042954 0.000059263		
	M-TAR	139	0	Rho(+) 0.000070704 0.000071029	0.82208 0.44164135	1.607618 0.20694669
				Rho(-) -0.000062983 0.000077924		
Jul 21 2008 -Jan 12 2009	ADF	124	0	a(0) 1.9437E-06 0.000759513		
				a(1) 0.039353525 0.089649003		
	TAR	123	0	Rho(+) -0.000335141 0.000213767	1.24999 0.29009259	2.3514 0.12771806
				Rho(-) 0.000017318 0.000084467		
	M-TAR	124	0	Rho(+) -0.000016989 0.000115872	0.08529 0.91829729	0.024743 0.87526406
				Rho(-) -0.000041984 0.000108734		

Note: a(0) and a(1) denote the coefficients a_0 and a_1 in Equation (2.3), Rho(+) and Rho(-) denote r_1 and r_2 in Equations (2.4) and (2.5) respectedely.

3. The Possibility of the Economic and Financial Crisis in Central and Eastern European countries.

The MNB set the credit line for 5 billion euros with the ECB (10/16), and carried out an emergency rise of 3% in interest rates leading bank rate to 11.5% (10/22) in order to avoid the possible crisis. The Hungarian government called for the support to the IMF. EU also applied the financial support system (EC 332/2002) to Hungary, then, the emergency facility up to 25.1 billion dollars was provided for Hungary.[5] Stock prices rose from the day this support plan was applied on. The exchange rate of forint also showed a sign of recovering and the exchange rate market rallied much at the end of October and has remained calm now. After that, the IMF gropes for the way to expand the short-term liquidity support plan, and EU examines the increase of the amount of supporting money upper limit, so the rescue package for remerging countries are filled up more.

However, the problems for Hungary have not settled yet. The deficit of current account, the foreign debt outstanding, the expanding of domestic credit, the government debt and the high inflation rate, those fundamentals still remain bad. Moreover, there are some other countries in Central and Eastern Europe, which have the same vulnerabilities as Hungary has. Thus it is far from the situation that we can be optimistic about. In this paragraph, we make sure the present situation of Central and Eastern Europe countries, and argue the backgrounds of economic and financial crisis in Hungary and the further possibility to occur another crisis in this area.

3.1 Vulnerabilities of fundamentals in Central and Eastern Europe countries.

In Central and Eastern Europe, other than Hungary, vulnerabilities are outstanding in three Barthes (Latvia Lithuania Estonia), Romania, Bulgaria, at the points of the current account, of the foreign debt outstanding and of the expansion of domestic credit. As for the fiscal condition, those countries, but Hungary, have generally no problem such as an annual budget deficit, a national debt. They satisfy the criteria of SGP. (The reference value is, for annual government deficit to GDP is under -3%, for gross government debt to GDP is within 60 %.) (see Table3.) The problems are about the GDP growth, inflation rates and the method of financing for the current account deficit.

---

[5] The items of the amount are following, IMF for 15.7 billion dollars,　EU for 8.1 billion dollars (650 million euros) and the World Bank for 1.3bn dollars.　Applying the regulation (EC 332/2002) last time was for Italy in 1993. 6.5 billion out of 12 billion euros in total budgets were lent to Hungary.

Table 3: Transition and Prospect of Fundamentals in Central and Eastern Europe

	Real GDP Growth (%)			Inflation Rates (CPI %)			Current Account (of GDP %)			Fiscal Balance (of GDP %)		
	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009
Hungary	1.3	1.9	2.3	7.9	6.3	4.1	-5.0	-5.5	-6.1	-5.5	-3.8	-3.3
Poland	6.6	5.2	3.8	2.5	4.0	3.3	-3.8	-4.7	-5.7	-1.5	-2.0	-2.3
Czech	6.6	4.0	3.4	2.8	6.7	3.4	-1.8	-2.2	-2.5	-1.6	-1.9	-2.1
Slovakia	10.4	7.4	5.6	1.9	3.9	3.6	-5.4	-5.1	-4.7	-2.2	-2.2	-1.7
Latvia	10.3	-0.9	-2.2	10.1	15.9	10.6	-22.9	-15.1	-8.3	0.7	-1.4	-2.0
Lithuania	8.9	3.9	0.7	5.8	11.3	6.2	-14.6	-14.9	-8.7	-1.9	-1.6	-0.7
Estonia	6.3	-1.5	0.5	6.6	10.2	5.1	-18.1	-10.8	-8.7	3.0	-1.3	-1.4
Romania	6.0	8.6	4.8	4.8	8.2	6.6	-14.0	-13.8	-13.3	-2.3	-2.3	-2.8
Bulgaria	6.2	6.3	4.2	7.6	12.2	7.0	-21.4	-24.4	-21.5	3.5	4.2	2.7

Note: real amount in 2007. The IMF prospect in 2008-2009
Source：IMF, Regional Economic Outlook (Europe) October 2008.

In recent years, the emerging countries of Central and Eastern Europe have accomplished remarkable growth as a European production foothold. They had proceeded in the typical development process of the developing countries which they accepted the direct investment from Europe and acquired the high technology, knowledge of management or know-how with the funds, moreover they imported capital goods by the funds, and they manufactured from those capital goods and exported them to Europe. These countries were relatively short of capital compared with West Europe, and they had cheap abundant labor force. Once the route accomplished to the EU participation, a lot of foreign direct investment flowed into those countries as very attractive investing countries. In this way, their economy has developed, of course with their current account in red. If the foreign direct investment finances to those deficit, there is not any problem. Such kind of money is relatively stable and not so fast to run away. Thus, it is rare that a problem occurs as long as the deficit of the current account is financed by direct investment.

But ratios of "other investment" occupying for capital inflow have begun to increase since 2005, and in 2007, as much as 106.7 billion dollars of "other investment" flowed into Central and Eastern Europe countries. It exceeded 74.8 billion dollars over "the foreign direct investment" in that year. As the deficit of the current account was 120.7 billion dollars in that year, thus most of that deficit was financed by "other investment" of that year. (see Table4.) The greater part of "other investment" is the long or short-term lending from private financial institutions in the West European countries. If the lending consists of particularly in short-term, that money has risk to be withdrew immediately when they recognize their deterioration of own balance sheet or the rising risk of their borrowers. Above all, we can see that countries shown in Table 5 have not been able to finance by the direct investment recently and that the ratio of "other investment" is growing up. Because of this financial crisis, the balance sheets of the financial institutions in the West Europe countries have turned worse. And with the global future

economic uneasiness, it has come to the situation in which a credit crunch is easy to occur by collecting short-term credit.   Recently, the Central and Eastern European counties have a big risk for financing their current account deficit and such risk is still remaining.

As for the foreign debt, the ratio of the amount of import in foreign reserves (more than 3 months) or the ratio of the foreign short-term debt in those (more than 1.0) is usually used for the aim of the short-term ability to pay. If they have enough foreign reserves to cover the sort-term debt or the amount of imports, they are considered to have the short-term ability of pay. In Central and Eastern Europe countries, all 3 Barthes do not satisfy the criteria of the short-term foreign debt, and Lithuania and Estonia as well as Hungary do not satisfy the one of the amount of imports, either. Hungary, 3 Barthes and Bulgaria also have the high ratio for the foreign debt of GDP and that item compared to last year is declined in most of the countries. We need to pay attention to the fact. (see Table6.)

Table 4: Transaction for current account deficit and its finance structures (billion dollars)

	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Current Account	-31.4	-15.5	-23.1	-36.8	-57.6	-59.4	-87.7	-120.7	-164.4	-174.2
Private capital net inflow	38.6	11.1	53.7	53.6	74.3	119.2	119.9	173.8	179.9	181.7
Direct investment	23.5	24.0	24.5	17.1	36.1	51.7	64.3	74.8	77.3	81.8
Securities investment	3.8	0.9	2.1	8.0	28.4	21.5	9.9	-7.7	10.4	15.5
Other investment	11.4	-13.8	27.2	28.5	9.8	45.9	45.6	106.7	92.2	84.5
Public capital net inflow	1.6	6.0	-7.5	-5.1	-6.0	-7.9	-4.7	-2.4	-2.4	-2.2
Foreign reserves change	-6.2	-2.7	-18.1	-12.8	-14.7	-45.9	-22.8	-41.6	-22.9	-21.3

Note: IMF prospect after 2008.Current account deficit showed minus. Capital net inflow showed plus.
Capital net outflow showed minus. Other investments include both long and short terms.   Foreign reserves change of minus means the increasing.   In definition, current account + private capital net inflow + public capital net inflow + foreign reserves change = 0, but for errors and omissions, it is not always zero.
Source: IMF[6], World Economic Outlook, October 2008.

---

[6] In the IMF definition, Central and Eastern Europe countries consist from 16 countries. Slovenia is not included. Instead, Albania, Bosnia・Herzegovina, Croatia, Macedonia, Montenegro, Serbia and Turkey are included other than EU participated countries. Their economic size is not so big except Turkey and Croatia.

Table 5: Conditions of financing for the current account deficit in each country

		Hungary	Poland	Czech	Latvia	Lithuania	Estonia	Romania	Bulgaria
06	①Current Account (of nominal GDP)	-7.6	-2.7	-2.6	-22.5	-10.6	-16.7	-10.4	-17.8
	②Foreign Direct Investment (do.)	1.1	3.2	2.8	7.5	5.1	4.2	8.9	23.3
	① ＋ ② (Pt)	-6.5	0.4	0.2	-15.0	-5.6	-12.6	-1.5	5.4
07	①Current Account (of nominal GDP)	-6.2	-4.7	-1.8	-23.8	-14.6	-18.1	-14.1	-21.8
	②Foreign Direct Investment (do.)	3.2	4.2	4.5	7.1	3.6	5.3	6.0	21.8
	① ＋ ② (Pt)	-3.0	-0.5	2.7	-16.7	-11.0	-12.8	-8.1	0.0
08 /Q2	①Current Account (of nominal GDP)	-6.1	-4.9	-2.5	-19.7	-15.5	-14.1	-13.9	-24.2
	②Foreign Direct Investment (do.)	3.0	3.3	4.7	5.2	2.8	5.4	6.7	18.5
	① ＋ ② (Pt)	-3.1	-1.6	2.2	-14.5	-12.7	-8.7	-7.1	-5.6

Note: The current account deficit of 08-Q2 is the average of last 4 terms. If ①＋② is plus, the deficit is financed by the foreign direct investment. The items in gray mean the cases not to be financed.

Source: Eurostat, each Central Banks

Table 6: The ability to pay for the foreign debt in each country.

	Hungary	Poland	Czech	Latvia	Lithuania	Estonia	Romania	Bulgaria
Foreign Reserves (U.S. billion)	27.2	79.4	37.7	6.3	7.2	4.0	39.4	19.7
The ratio of the short-term debt in foreign Reserves (times)	1.07	1.17	1.12	0.39	0.81	0.43	1.42	1.02
Changes from last year (Pt)	-0.39	-0.41	-0.63	0.03	-0.13	0.00	-0.10	-0.25
Foreign reserves／imports (months)	2.82	4.68	3.35	4.80	2.95	2.57	6.40	7.43
Changes from last year (Pt)	-0.05	0.43	-0.12	0.27	-0.68	0.18	-0.55	0.54
Foreign debt outstanding（100 million euros）	860	1443	550	183	199	147	522	220
Foreign debt (of nominal GDP)	82.7	42.3	39.1	86.0	64.3	91.9	40.9	69.9
Changes from last year (Pt)	+3.8	+3.3	+6.2	+5.9	+6.7	+6.0	+4.2	+11.8

Note: The data of the ratio of the short-term debt in foreign Reserves used 08.Q2. The data for Hungary and Estonia used 08.Q1. Foreign reserves/imports, reserves in September, 2008, imports in 08.Q2. (the average of last 4 terms) Imports stands for good, service and income payments.   Foreign debt is in 08.Q2. The items in gray are "requiring attention".

Source: Eurostat, IMF, JEDH, each Central Banks.

3.2 Borrowing dependence from the West European Banks

　　　　In Central and Eastern Europe, most of "other investment" in the private capital net inflow is dependent on borrowing from banks in West European developed countries. As the details shown in the Table7, Hungary borrows much from Germany and Austria, some from Italy, Belgium and France. Poland borrows from mainly Germany, Italy and the Netherlands. For Czech, Belgium, Austria and

France are main lending countries. These Central European countries relatively have the big economic size, and started to industrialize early. With their industrialization progressing, more companies in West Europe have advanced to those countries, and many banks have increased their lending. For 3 Barthes, Sweden is the mail lender country because of their deep connections with history. Latvia and Lithuania borrow nearly 60% of the total amount, and Estonia does more than 80%. Romania and Bulgaria in Southern Europe borrow much from Greece, Italy and Austria because of the geographical reason.

As well as in Island, in many countries of Central and Eastern Europe, foreign-currency-denominated housing loans with low interests became popular, such as in Japanese yen and Swiss franc, thus the increasing of household foreign-currency-denominated borrowing is beginning to be concerned. These countries have maintained the high economic growth rates so far, and their currencies have also been evaluated with the expectation of further growth. But the more such housing loans increase, the more vulnerabilities against the currency devaluation increase. In the countries having faced the big devaluation of their own currencies at this monetary crisis, the burden of paying interest will be up and negative influences may be brought to consumption by households. Of course the increase of the foreign debt outstanding by the currency devaluation may be going to cause the accumulated debt problem. That is the big problem for the countries which have as much as 80~90% of GDP foreign debt at present.

The following factors are thought for the reason why the financial and monetary crisis occurred in Hungary in October, 2008. In Hungary, not only vulnerabilities against fundamentals which are concerned for a long time but also the high share of borrowing from overseas banks are pointed out. The subprime loan problem which began to be concerned in 2007 caused financial institutions to change their stance for the risk. Their risk against lending has just changed to the short-term from the long-term when this global financial crisis occurred. Because of the financial crisis in their own countries, those financial institutions decreased new lending in Hungary, moreover began to make the recovery of short-term loans at the same time. That is the main reason why the depreciation of forint and the severe credit crunch occurred in Hungary.

The West European countries suffered big damage by this financial crisis could be said U.K., Germany, Belgium, the Netherlands, France and Switzerland.[7] The countries which have the high share of borrowing from above countries are Hungary, Poland and Czech. As showed in Table7, the rate of the foreign debt outstanding of nominal GDP in Poland and Czech are both low, such as 42.3% in Poland and

---

[7] They are the countries where the public funds were injected into the financial institutions. Because of that, uneasiness of the financial crisis was relatively big in those countries. And also in the research report of JETRO, the influence of individual countries by this crisis is reported. Refer to JETRO (2008).

39.1% in Czech. The ratio of the short-term debt in foreign reserves of both countries is relatively high as well. But Hungary has 82.7% for the former item and 1.07 times for the latter. The indexes of Hungary are obviously far inferior to those of Poland and Czech.

As for 3 Barthes and the South-Eastern European countries, the financial institutions of West Europe were handling their lending by themselves to both households and firms in those countries. This point differs from Hungary. However, that is one of the factors those financial institutions did not make the recovery of loans. The main reason is that 3 Barthes are borrowing mainly from Sweden and that Romania and Bulgaria are borrowing from Italy, Austria and Greece. It was fortunate that those lending countries were suffered relatively less damage than other countries such as Germany and so on.

Table 7: The amount of the foreign borrowing and the share of countries (billion dollars, %)

	Central Europe			Barthes 3			South-Eastern Europe	
	Hungary	Poland	Czech	Estonia	Latvia	Lithuania	Romania	Bulgaria
Germany	23.0	17.2	6.2	1.9	10.4	11.1	3.9	9.8
France	7.3	7.4	17.7	0.4	0.8	1.1	13.5	7.3
Italy	18.2	18.6	10.4	1.0	3.1	1.6	9.6	20.4
Netherlands	3.4	13.4	3.0	0.0	0.1	0.3	7.7	1.2
Belgium	12.5	8.6	27.1	0.3	0.1	0.4	1.0	5.2
Austria	24.7	5.3	30.2	0.7	1.8	0.8	38.6	14.5
Sweden	0.2	2.4	0.1	83.2	58.4	59.8	0.1	0.0
Greece	0.1	0.0	0.0	0.0	0.1	0.0	16.2	27.5
U.K.	1.9	1.1	1.2	0.0	0.6	0.1	0.2	0.5
Others	4.9	19.1	1.7	12.3	23.7	24.8	7.9	12.1
Total (EU)	96.3	93.2	97.6	99.8	99.1	99.9	98.7	98.7
U.S.	1.9	4.6	1.8	0.1	0.1	0.1	1.2	1.0
The amount of borrowing	153.9	295.0	209.3	39.1	42.8	40.4	124.2	39.2
of GDP (%)	111.2	70.1	120.0	183.8	156.8	105.3	74.7	99.0

Note: Countries of lending in gray are suffered big damage. Items of share in gray are over 15%.
The data of the amount of borrowing is in June, 2008. The data for GDP is 2007.
Source: BIS, Banking Statistics.

4. Conclusion: The Outlook for the Future Crisis

The EU economic downturn has become clear because of the financial crisis of 2008. The real GDP of the third quarter fell by 0.2% both in EU27 and in the euro area. Actually, in the euro area, negative economic growth showed for 2 consecutive quarters, and it is the first time for the euro area to put on record of 2 consecutive quarters since the introduction of the euro in 1999. Thus the euro area fell into a recession for the first time. In the core countries, Germany and Italy showed -0.4% (08.Q2), and -0.5% (08.Q3). Estonia and Latvia also fell into the recession. U.K., Spain, Hungary showed negative growth in 08.Q3.[8] With the further economic downturn, the unemployment rate remains high in main

---

[8] According to Eurostat. (Jan', 8, 2008.)　Estonia and Latvia showed negative growth for 3 consecutive quarters

developed countries, and even in emerging countries where the unemployment rate has been low supported by the economic growth, it has begun to rise gradually. With needs for measures to the sales slump and inventory accumulation, many companies are forced to production adjustment and it is very difficult to predict the rapid recovery of EU economy in the near future.

The Central and Eastern Europe countries have accepted the large amount of private capital from West Europe as a European production foothold since the affiliation with EU. With accumulating technology, equipment and know-how of the management, they have accomplished remarkable growth. The current deficit of those countries is mostly due to purchase of capital goods, technology and service. The economies of many develop countries in West Europe including Germany have been supported by strong external demand of the Central and Eastern European counties. In this way, the Central and Eastern European countries and the West European countries have both developed with supporting their economies each other. It is the financial crisis of this time that brought the change to this situation.

The financial crisis originated from the U.S. was contagious to Europe by instant and made the financial systems closely connected to the global economy uneasiness immediately. The influence extended to real economy and the whole EU economy is covered with a feeing of confinement now. Uneasiness of the financial system and deterioration of economy in developed countries reduce capital inflow to the Central and Eastern European countries and bring a shadow to their economy having developed by the capital. And consequently it may bring negative influence to economy in developed countries. As it was clarified in this paragraph, the key is whether financial uneasiness appears in lending countries or not. If financial uneasiness occurs again in Germany, Belgium or the Netherlands, the influence will extend to Hungary, Poland and Czech. If contagion appears among developed countries and uneasiness spreads to France, Italy and Austria, the influence will extend to Bulgaria or Romania, the South-Eastern European countries. Uneasiness in Sweden hits directly to 3 Barthes. Though the influence of crisis depends on fundamentals of those countries, they all have chronic deficit of current account and there are quite a few countries with problems of its financing. Once fell into crucial economic crisis and suffered serious damage from it, emerging countries with small economic size need quite a long time to reconstruct. And if global investment money having functioned lively before starts to avoid risk then reduces investment for other emerging countries, for example of Asia or South America, the development of those areas may be obstructed. And moreover, in the long-term view point, there is a possibility to change growth strategy of emerging or developing countries which has been dependent on foreign capital. It is same that the East Asian countries changed their growth strategy of depending on foreign capital.

since 08.Q1.

After the Asian currency crisis, they invest within domestic saving and keep the current account surplus through foreign exchange interventions in the exchange market, so that they accumulate their foreign reserves. It is unlikely that the Central and Eastern Europe countries adopt this strategy, because they are aiming to introduce euro in the future. But it is possible enough for other emerging or developing countries that the outbreak of a new financial crisis in Central and Eastern Europe promotes a change from conventional growth strategy.

This crisis let non-euro area countries currency of EU drop suddenly. One of the reasons is that investors or company managers who feared against the small size central bank touched off a capital outflow. The central banks of non-euro area opposed by raising interest rates but that might have the side effect of eroding the domestic economy. With the introduction of euro from January, 2009 near at hand, the confusion of the currency did not occur in Slovakia of which the own currency, koruna, fixed to the euro. Even if it was a small country, the stability of the money market could be secured as long as it was under affiliation of the euro. As a result, Denmark and Sweden announced their early introduction of euro, and Poland officially announced to aim the introduction of euro in 2012. Even Hungary which fell into the critical situation in this crisis is turning the stance of growth into an emergency response measure. In Czech, from the industrial world to the government, a voice in search of euro introduction rose.

This crisis unexpectedly has increased a unifying force to euro and it seems to develop the way to further deepening of EU. From now, in addition to the precaution of a new financial crisis, the argument about the expansion of the euro area will attract our attention as well.

References

Aydin, Brucu (2008), "Banking Structure and Credit Growth in Central and Eastern Europe Countries," *IMF Working Paper* WP/08/215, September.

BIS (2008), *Annual Report*.

Enders, Walter and C.W.J. Granger (1998),"Unit-Root Tests and Asymmetric Adjustment with an Example Using the Term Structure of Interest Rates." *Journal of Business and Economic Statistics* 16, July, 1998. pp. 304-11.

European Union (2008), "European Union foreign direct investment yearbook 2008".

European Union (2008), "European Economic Statistics 2008".

IMF (2008), *Global Financial Stability Report*, October.

IMF (2008), *Regional Economics Outlook (Europe*", October..

IMF (2008), *World Economic Outlook*, October.

JETRO (2008), "The influence of the financial crisis originated from the U.S. to economic and business",

Research Reports, December.

Y. Nishimura (2008), "Does the global financial crisis really extend to Central and Eastern Europe?" (in Japanese), *International Economic and Financial Review* (IIMA), November.

Mizuho Research Institute, all kinds of research papers.