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APPENDIX A: MEXICAN CRISIS1

Background of Mexico

Mexico, the country located between the United State of America and South America continental, is one of three important countries in the North America Free Trade Area. Mexico is a large market in this region since Mexico total population is 92.21 million (in late 1994), high purchasing power and is counted as an important major source of income and trade partner of the United State of America.

Mexico imports agriculture products, plastic, electronic instruments and chemical products from US. whereas she exports tea, coffee and spices. In 1994, export and import value between both countries are very high and almost equal value. In the first quarter of 1994, Mexico exported 11,324 million US\$ product value to US. and imported 11,860 million US\$. Furthermore, the huge amount of US\$. capital flew in Mexico to invest.

So the fluctuation in Mexican economy simultaneously influences to US. The decision to solve continuous current account deficit by using Peso devaluation policy directly affected US. export

The idea in this appendix is collected from the following references:

^{1.&}quot;เงินบาทกับการลดค่าเงินเปโช", SCCF research.

^{2. &}quot;จากวิกฤตการณ์ค่าเงินเปโข.......ถึงข่าวล้อลคค่าเงินบาทยลพ่วงจาก Globalization", เศรษฐกิจลนเทศ, ปีที่ 4 .1 มกราคม 2538, หน้า 1.26.

^{3. &}quot;ไทย VS เม็กซิโก จิม วอล์กเภอร์ นักวิเคราะห์บ้องตื้นหรือผู้บอกเหตุ?", อีคอนนิวส์, 23-29 มกราคม 2538, หน้า 15-20.

^{4. &}quot;บทเรียนวิกฤตการณ์ เม็กซิโก ธนาคารกลางหละหลวมทางการคลัง", ประชาชาติธุรกิจ, 5 กุมภาพันธ์ 2538.

^{5. &}quot;บาท - เปโซ ลถานภาพที่แตกต่าง", เศรษฐกิจปริทัศน์ 1, 2 กุมภาพันธ์ 2538. หน้า 1-14.

^{6.&}quot;เม็กซิโกลดค่าเงินเปโซ ส่งผลกระทบต่อการส่งออกไทย", ผู้ส่งออก 8, ปักษ์หลัง มิถูนายน 2538 : หน้า 54-57.

^{7. &}quot;วิกฤติการณ์ลดค่าเงินเบ้เร บาพีสูจน์โลกให้พรมแคน", การเงินการธนาคาร 14, 154 (กุมภาพันธ์ 38) : 126-128.

^{8. &}quot;เศรษฐกิจเม็กซิโก ได่อยู่บนหน้าผาหรือว่าพลัคคกเหว", การเงินการธนาคาร 14, 154 (กุมภาพันธ์ 38) : 200-203.

^{9. &}quot;จัด" แบงก์ชาติจึดอาคราคระบบรับมือวิกฤค ยกบทเรียนเม็กซิโกคอกย้ำ", ไทยธุรกิจ ไฟแนนซ์, 8 กุมภาพันธ์ 2538 : หน้า 1-6.

^{10. &}quot;Asian currency scare exposes serious weaknesses in the domestic monetary system." The Nation, February 14, 1995.

^{11. &}quot;Meltdown in Mexico", Business Week, Danuary 9, 1995), 14.15.

^{12. &}quot;Mexico can it cope?". Business Week. (January 16, 1995), 14-18.

because it will increase price of US. export goods in term of Peso. As results, the president Bill Clinton commanded the Minister of Finance to assist Mexico, including an increase in credit.

Before going further about what happended in Mexico, it should be better to recognise that the reasons behind this crisis is kind of problems accumulative.

During 1957 to 1972 of conservative monetary poicy, Mexico successfully sustained a stable exchange rate but after the Bank of Mexico has become a major source, financing public sector in 1973, the economic problems began arise since Mexican fiscal policy and its deficit has dramatically increased and become the first goal whereas monetary policy will be considered as the second.

In the situation of some limitation of the central bank's resources, the requirements, both to finance the fiscal budget and to stabilize fixed exchange rate, of course, are impossible to be afforted forever long. The current fixed exchange rate will be forced to depreciate. Such an instability of exchange rate, also happened in Mexico which induced many problems such as the Peso currency speculative, trade deficit, current account deficit and BoP crisis, etc.

By the exchange rate policy to increase trading competitiveness by Peso depreciation 3.7 percent annually, speculators attacked the fixed exchange rate regime. Peso tended to depreciate because of lossing confidence in Peso. People changed Peso to US dollar. In order to maintain the fixed exchange rate, the central bank of Mexico had to supply US dollar to the market until the international reserve reached some lower bound, which triggered the fixed regime collapse.

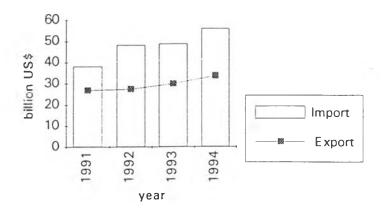
Speculators also converted Peso to US\$. and waited for devaluation time. Their behavior led more decreasing in Peso value. Once Peso was devalued, they would change US dollar to Peso and received benefit from the margin between the past exchange rate and the new fixed exchange rate. By the fixed exchange rate policy, the

central bank would collect the US dollar without any Peso appreciation occuring. This process will go on and leads Peso depreciation again.

Mexican government underwent the application of devaluation policy in August 1976, February and August 1982 also minidevalued during 1981 and imposed exchange rate control in August 1982. Nevertheless, those measures could not improve the situation. On August 13, 1982, the government of Mexico announced that Mexico could not continue to pay interest and principal on its 80 billion US dollar external debt, at the same time, she requested 3 billion US dollar loans that would enable hers to continue her debt payments. This event sparked the beginning of the deep debt crisis that spreaded like a forest fire across a large number of Latin American countries, most African countries, various East European and Asian economics.

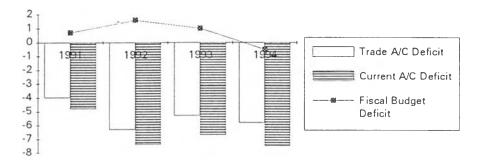
During 1988-1992, the government attempted to use the economic revolution policy and open economic policy, aiming to expand investments, after all, they recognized that the imposed policies double problems, instead of enchancement. The misapplicable policies led to import value, covering raw material and capital good, exceeded export value which was still agriculture products. Furthermore, investment exceeded saving and total expenditure growth rate was high. Mexico suffered with these collective problems for long time but they still continued.

Figure 1: Mexican Export & Import Values



After imposing of the policy, import value jumped up from 38.2 billion US\$ in 1991 to 56.1 billion US\$ in 1994. During the first half of 1990's, trade account deficit, current account deficit were double from the previous decade. The government expenditure exceeded the government income, led to fiscal budget deficit in 1994. The government financed the deficit by issuing US dollar bonds, named Tesobonos, which has commitment to pay back in term of US dollar.

Figure 2: Trade Account, Current Account and Fiscal Budget (% GDP)



After the government applied the restricted monetary policy by using interest rate control in order to fix single digit inflation rate and to motivate capital inflow, in 1993, during the policy period, the domestic investment increased by only 1 percent but it used to be 16 percent in 1992. This policy could not help to create the economic expansion since high interest rate stagnated investment around 20 billion US\$ over the first four years of decade, however, the policy succeeded in controlling inflation rate by 7 percent in 1994 and sharply increasing in capital inflow. But the capital inflows was mainly for speculative purpose.

Moreover, the interest rate controlling policy, which fixed the interest rate at the high level, distorted the real Peso value. The appreciation decreased exports, and increased imports. So this policy had risen more current account deficit as well as increased more total external debts. The government had to use up more reserves to pay debt, then, the international reserves ran out. Pressure from political

instability and reduce in reserves caused main Peso devaluation announced by the new cabinet, as showing on the chart 1.

Under the leading by President Ernesto Zedillo, the new cabinet had to face with political and economic crisis. The guerrilla band "Patista" sent congratulatory with the words "Welcome to the nightmare".

Table 1: Economic Indicators of Mexico

(unit: billion US\$.)

Title	Year				
	1991	1992	1993	1994	
Export Value	26.9	27.5	30.0	33.8	
Import Value	38.2	48.2	48.9	56.1	
Trade Deficit (percent per GDP)	11.3	20.7	18.9 5.3	22.3 5.8	
Current Account Deficit (percent per GDP)	14.9 4.8	24.7 7.4	23.3 6.7	28.0 7.5	
Government Budget (percent per GDP)	0.7	1.6	1.0	(0.5)	

Source: Economic Information, January 1995

In economic aspect, international reserves ran out rapidly, instantly affected Peso value. So the government announced Peso recurrent devaluation in December 19, 1994, by about 13.25 percent from 3.4712 to 4.0016 Peso:US\$. which shocked the world. A day after that, Mexican Peso Crisis began by dramatically rose in sale

volume of Peso and other securities in term of Peso. On that day, 1 billion US\$ flew out from Mexico and continuous through December 21, 1995, then, the Mexican government intended to stop sale force by letting the Peso float for a few days in order to find the real value but it was worse as the Peso depreciated by totally 39 percent to 5.65

Peso value moved up a little bit, anyway, it still moved at the level of 5.3-5.4. The severe depreciation of Peso led large capital loss

Table 2: Economic Indicators of Mexico

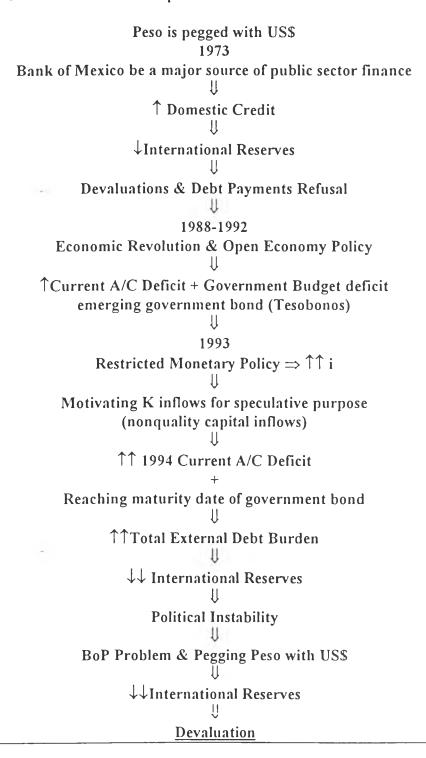
(unit : billion US\$)

	Year					
	1991	1992	1993	1994		
Inflation (percent)	22.7	15.4	9.8	7.0		
Portfolio Investment	12.1	19.2	27.9	N.A.		
External Debt	101.7	113.4	130.2	N.A.		
External Debt per income (DSR)	30.2	44.4	44.6	40.8		
International Reserve	17.7	18.9	26.1	7.0		

for the investors who invested in fixed-income assets because of Peso devaluation as well as the depression of Mexican stock exchange market.

The accumulative problems for this crisis can be demonstated in chart 1.

Chart1: Mexican Devaluations Experience:



The Reasons of Mexican Crisis

The principle reasons of this January Currency Crisis can be distinguished into three, apart from political reasons;

Table 3: Mexican Current Account Deficit and International Reserves

(unit: billion US\$)

Title	Year				
	1991	1992	1993	1994	
Current Account	-14.9	-24.7	-23.3	-28.0	
International Reserves	17.7	18.9	26.1	6.0	
Relative to Import Value (months)	3.5	3.1	3.2	<1 month	

Source: Salomon Brothers Hong Kong Jan. 17, 1995

Firstly due to rapidly increase in current account deficit in 1994, Mexican economy had to depend on short term capital inflow to compensate their debts which would caused risky for exchange rate. Since it reduces confidence in domestic currency.

Secondly, althoughthe international reserves increased from 26 billion US\$ in 1993 up to 29 billion US\$ in 1994 which is about 3.2-4.0 months of import value, in the late of 1994 international reserves went down to 7 billion US\$ or equal to less than 1 month and during the crisis it went down more to less than 4 billion US\$.

Thirdly, it was because of the external debts which had to be paid back very soon since the Mexican government issued financial security, called "Tesobonus" in term of US\$. and pay back in Peso by forward exchange rate to solve Mexican current account deficit. These securities had to be paid back by 3 billion US\$ in January and 13 billion US\$ in February - June 1995. Within this amount 80 percent are held by foreign investors.

The Peso tending to depreciated led the foreign investors to sell stock and brought money back. As Mexico had to pay back the debt very soon, the flow-out of capital caused the creditor to worry that the government could not pay back the debt as happenned in 1982 which lead the most severe crisis that have never happened in Mexico.

Mexican Crisis

Once Mexico was one of the most attractive places for investment in Latin America. Eventhough in 1982, this country confronted with the serious debt crisis, the restricted economic policy was applied, the wealth of natural resources could clear up problems in the next 7-8 years. In 1993, Mexico became popular among the foreign investors since Mexican government decided to join NAFTA which she will benefit from this economic integration. The most of investors transfered ports of investment from East Asia countries to Latin countries particulary to Mexico.

The cautious economic policy operation led to low growth rate, average by 3-4 percent per year. During 1990-1994, the inflation was about 16 percent, living standard did not improve even in the period of foreign investment booming. Only the upper class gained the benefit whereas the farmer and other lower class still had low living standard.

In addition, the rebel by guerrilla band "Patista" in January 1994 and the assasination of the post president's son abate foreign investors' assurement and also the death of the secretary of IPR party discouraged investors. However the shinning of Mexican economy could not stop investors' motivation.

Regarding to Mexican economy, after 8 years of depression, 1990. Mexican economy tended to extend and inflation lessened but 130 billion US\$., large debt burden, was required Mexico to pay back by income from abroad. There was an estimate that the government has to spend 40-44 precent of exports and services income to pay back external debts.

While huge investment created change in current account deficit from 14.9 billion US\$ in 1991 to almost double, 28 billion US\$ in 1993. The government treasury bill, in term of US\$ but pay back in Peso, were issued to support the deficit. President Salinas imposed exchange rate control to depreciate gradually by 3.7 percent annually in order to increase trading potential, competed with Asian countries and to control inflation rate at the same time.

Since Mr. Ernesto Zedillo became president in December 1, 1994. He was challenged by critical problems in both politics and economy. The accumulated economic problems, political instability and exchange rate speculative led to quick reduction of international reserves and lossing confidence in Peso, respectively. Unexpected, he announced Peso devaluation in December 19, 1994, from 3.4712 to 4.0016 peso per US\$, calculated by 13.25 percent. The Mexican devaluation shocked the world after the announcement about Peso devaluation following the occurrence of Mexican Peso Crisis in the late of 1994, it had been causing worldwide impacts.

The Mexican Peso Crisis began in December 20, 1994, a day after the devaluation policy announcement. As results of almost 40 percent devaluation and the pressure of political instability, the investors were discouraged, they, then, moved money out from Mexico. Peso value dramatically declined. The policy, aiming to solve external debt problem and to increase international reserves, seemed to rise more problems for this new government.

Besides, there also have been widespread impacts throughout the world, particulary in South East Asia region due to the publishment of foreign researcher analysis which states that the countries in these region especially the Phillipines and Thailand had financial market structure, as emerging market which are similar to of Mexican market. This analyse also points out that the investment in this region, the investors can not avoid to face with high risk because in such these countries, the economic fundamental problems are alike Mexico including short-term capital dependence, trade account deficit and current account deficit.

This paper worsened confidence in Thai Baht. The rumor about Thai baht devaluation, spreading in the mid of January, 1995, brought about the severe crisis in Thai financial market. The most of alien investors got panic and withdrew money back. Some changed port of investment to riskless port while some tried to convert Thai Baht to strong currency such as US\$. JPY. and DM. The capital outflows and the transformation of Thai currency immediately led to the deflation in economy. Interbank rate went up from 7 percent in January 11, to 9-15 percent in January 12 and then to 20-50 percent in the next day. Set index dropped by 41.35 points between 12-13 of January and Baht depreciated to 26.20 Baht per US\$.

Obviously, after the distribution of the paper, the foreign investors sold Thai securities and converted into US\$, leads to the depression of Thai securities market continuously, eventhough, Bank of Thailand tried to handle the problem by to reject the rumor and the impose some short-term measures.

Impacts of Mexican Crisis

After the crisis, many industrial sectors expected that the Mexican Peso devaluation will enhance the exports and middle class in Mexico. Since the devaluation caused Mexican products be able to compete in world market and import goods from U.S. will be effected. For example, Chrystler company; joint venture company, did not change their long term target to continue export Mexican products. This company foresees that the Peso Crisis and low labour cost will benefit their business. As well as R.R. Donnelley & Sons; the largest

publishing company, found that it is the best chance to expand their production in Mexico.

On the other hand the growth rate in Mexico were around 0 percent in 1995 different from 4 percent as predict before. Interest rate on treasury bills also increased from 13 percent to 31 percent affected the businessmen, residents as well as Mexican banks to confront the highest interest rate.

The alien companies in Mexico such as Northern Telecom de Mexico, Wall-Mart department store and other American Auto-Import company face with temporary stop pay back the debt. As a results, Wall-Mart stagnate their 25 branches expansion plan in Mexico. Hence, if this problem has not been solving, there will be large amount of Mexican capital flow in U.S.

Furthermore, Mexican Crisis also affects worldwide particulary on emerging markets. In early 1995, financial and stock exchange markets were in a turmoil. There were rapidly capital outflow, currency depreciation as investors lost confidence in the weak currencies and transfer to US\$, Deutsche Mark and Japanese Yen. The impact does not only affect Asian countries but also Latin America such as Argentina, Brazil and Chile as well as European countries particulary for members of European union.

In Europe, many weak currencies; Italian Lire, Spanish Peseta, Portugal Escudo even in French Franc were sold in the large volume while Deutsche Mark appreciated. The sensitivity of financial European markets reflects the barrier to be the European monetary and economic union; convergence in economic structure whether budget deficit, interest rate or inflation rate, single currency and control bank which due in 1999.

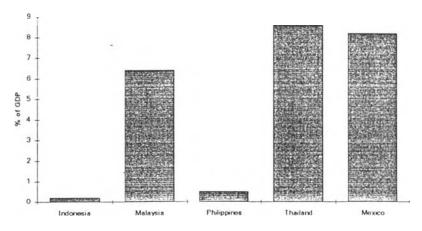
In East Asia, the security markets index dropped down sharply and also the currency depreciated. That is, there were rapidly increase in sale volume caused security markets index dropped down for 138.5 points in Nikei, 43.3 points in Hang Seng, 167.7 points in Taipai, 41.35

points in Thailand and also 8.7, 10.26 and 25.5 points in Jakarta, Kuala Lumper and Manila respectively. The depreciation of national currencies were 0.2 percent in Malasian Ringgit, 0.5 percent in Indonesian Rupiah, 0.6 percent in Singapore dollar and dramatically declined in Thai baht by 4 percent, during the second half of January, 1995. It is noted that the most depreciation was in Thailand.

As there was criticism by Dr. Jim Walker from Credit Lyonnais Securities, Hong Kong, "Could a Mexico happen in Asia", published on January 9, 1995 and January 11, 1995 in Asia Morning line, to compare market structures between Mexico and Asia countries; Indonesia, Malaysia, the Phillipines and Thailand.

This criticism states that "Emerging markets generally are likely to come under closer scruting following the Mexican Peso debacle at the end of 1994. Overvalued currencies, high inflation, trade deficits, political instability, over-reliance on short-term foreign capital flows and high external debt levels are not confined to Latin America. They occur in Asia too".

Figure 3: Net Short-term Capital Flows (% of GDP) in Asian and Mexico, 1993



Source: Asia Morning Line, January, 1995

In this region, he emphasized on Thailand that run a trade deficit over the last 10 years and the corporate and banking sectors are heavily depended on short-term (i.e., less than one year) foreign capital flows.

Eventhough, there as appreciation in its real exchange rate that seems Thai economy stand on good situation.

Moreover, he mentioned that there may be the capital outflow along with an increase in inflation rate. However, this criticism did not point out that there will be the same problem in Thailand, he suggested foreign investors to keep watching Thai inflation movement, trade deficit and commercial bank short-term loan adjustment. Because Thai Baht value may be pressured by the riskness to devalue if there was huge capital outflow.

Therefore, the January currency crisis made investors paniced and caused the damage to Thai financial market and economy as follow;

Financial Market

The development of financial system in Thailand relates Thai financial market in the same direction with internation financial market. Moreover, economic growth, political stability and the financial market improvement rapidly motivate growth of financial market which led the market to be interested by foreign investors obviously. This motivation increased the portion of investment in financial market rapidly.

However, the increased portion from foreign investment makes fluctuation in domestic financial market increase in the same order because foreign investment is hard to control so the more foreign investment increases, the more fluctuation will be suffered. To visualize clearly the situation that the rumor about devaluation of Thai Baht spreaded it and caused large impact as follow:

Jan. 11, 1995 - Criticism by Dr. Jim Walker in Asia Morning line
Jan. 12, 1995 - Set index sharply dropped by foreign investors

- High demand for US\$.

(Baht 1: US\$. 25.08 - 26.00)

Jan. 13, 1995 - Loss confidence in Thai currency still exist

Table 4: The Exchange Rate on Friday 13 January, 1995

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Time	9.00	10.00	11.00	12.00	1.00	2.00	3.00	4.00
B/US\$	25.50	25.40	25.50	25.40	25.30	26.20	25.15	25.10

Source: Money & Banking 14, 154 (February, 1995), page 128.

The impacts of financial market are devided into 2 parts;

- money market
- stock exchange market

Money Market

The rumor of Thai Baht devaluation led foreign investors to sell their assets in term of Baht and changed to US\$. Buy volume of US dollar had pressured on exchange rate to increase to 26.2 in the afternoon of January 12, 1995. Even it was 25.13 in the morning of the same day while the rate set by the central bank was 25.08. At the same time, Baht volume in money system decreased rapidly and short-term interested rate rose dramatically, stated that interbank rate increased from 7 percent per year in Wednesday, January 11, 1995 to 8-9 percent annually in Thursday morning, January 12, 1995 and increase to 15 percent per year in the afternoon of the same day until it reached 20 percent per year and some bank asked for loan by 50 percent interest rate.

However, this situation changed to better way after the executive financialist confirmed that the monetary economy had strong stability and Thai Baht was also strong stability, too. Moreover, the central bank operated monetary measures in order to rise liquidity in money market but amount of money that disappeared including deflation in the world economy affected on Thai financial market, short-term interest

rate such as interbank rate and discount rate which were 6 percent and 7 percent before the rumor on January 11, 1995 respectively.

Stock Exchange Market

Discouragement from this rumor, combine with the large earthquake in Japan caused stock market index dropped down shaply for 65.9 points from 1,314.5 points on January 11, to 1,248.6 point on January 13. Foreign investors continuously sold the stock within January. At the end of January, the security markets closed at 1,217.7 points declined from 1,360.1 points at the end of 1994. Since the foreign investment was the important factor influenced the SET growth for 2-3 years ago. The trade volume continuously depressed because foreigners lost their capital during the crisis. Besides high interest rate which caused high cost for investment in SET, the higher interest rate also caused, by loss of confidence, less capital inflow for direct and indirect investment which impacted the slow down of the economy. However, high interest rate stimulated domestic saving substitute the foreign capital scarcity.

Besides of those physical impacts during January 12-13, there also are more attention, regarding to the fear of Thai Baht devaluation.

APPENDIX B: CHANGES IN EXCHANGE RATE REGIME AND FINANCIAL LIBERALIZATION

The data, applied in this model, ranges from the first quarter of 1978 to the fourth quarter of 1995. During this period, there are two major changes. Firstly, there was a change from fixed exchange rate regime to quasi-fixed exchange rate regime, or called managed floating exchange rate regime. Secondly, there have been many policies towards financial liberalization since 1990. To monitor effects of the changes on the model's results, t-test was applied. Then, the analysis would be devided into two cases. The former case is to assess the effects of the change in the exchange rate regime while the latter case examines the effect of policy changes.

The hypothesis was set as if these events do not distort the accuracy of model estimation, in the same time interval, the probabilities in the original result, Pr_{o} , should approximately equal to the probabilities, Pr_{l} , concerned only selected period of time when the change occurred.

Given that

$$d_{t} = Pr_{o,t} - Pr_{l,t}$$

$$\overline{d} = \underbrace{\sum d_{t}}_{n}$$

$$\sigma_{d} = \underbrace{\sum (d_{t} - \overline{d})^{2}}_{n-1}$$

When d_t is the difference between the probability in the original result and the probability, computed by cutting time interval, at each period of time, t. \bar{d} is the estimation of mean of the differences while d is the parameter of mean, assumed to be zero. n is the number of observations.

Then change would not affect the model' s result, if the null hypothesis is accepted.

 $H_0: d = 0$ $H_1: d \neq 0$ $t-test = \overline{d}-d$

Casel: Exchange Rate Regime

 $\sigma_{\rm d}$

Baht has been pegged with basket of currencies since 1985, therefore, the selected time interval was 1985.1-1995.5.

CaseI: 1985.1-1995.4 $\overline{d} = 0.07015$ $\sigma_d^2 = 0.03146$ t-stat = 0.396
t-critical value of t distribution = 2.021
This means that d=0 at 5 percent level of signification.

Then it can be concluded that a change in exchange rate regime does not affect result estimation.

CaseII: Financial Liberalization

In order to be a financial centre in this region, many monetary policies have been applied since 1990. To see effects of those policies on the estimation, the considerable time interval is 1990.1-1995.4

CaseII: 1990.1-1995.4 $\overline{d} = 0.12994$ $\sigma_d^2 = 0.06912$ t-stat = 0.494
t-critical value of t distribution = 2.000
This means that d=0 at 5 percent level of signification.

In conclusion, by examining the d, the results are that both changes do not impact the results of model estimation.

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