

APPLYING THE REPRODUCTION METHOD TO EXAMINING EFFECTS OF THE ASIAN CURRENCY CRISIS ON VIETNAM'S ECONOMY

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Recently, the business circle, economic researchers and leadership have referred

to effects of the East Asian currency crisis on Vietnam's economy, in which the top concern is

the exchange rate between local and foreign currencies from now until 2000.



In our previous article on *Phát Triển Kinh Tế Magazine*, we forwarded the econometric model and the reproduction method to examine Vietnam's economy in some cases. This article continues the previous study. Its aims at introducing the capability of the imitation method based on models, and in the other hands, makes a suggestion for the authorities' economic solutions.

We recognize our econometric models include subjective assumptions, moreover they are much simplified against the complicated reality, especially for our country's changing economy as well as due to insufficient statistics. We would like to present our study and look forward to your comments.

I. IN CASE OF NO CRISIS

Initially, we should come back to the results of the said model. In case of no crisis, the main results (if there are necessary conditions: growth rate of Vietnam's exports, not including crude oil, is 20%, the private investment accounts for 17.5%) are as follows for the period 1998-2000:

- Annual GDP growth rate: 8.6%
- Average inflation: 6.5%
- Increasing rate of investment: 29%
- Growth rate of exports (by current prices): 23%
- Growth rate of exports (by fixed prices): 16%

II. EFFECTS OF THE CRISIS

In our model, the effects of the crisis impact will proceed via three cases:

- The value of Vietnamese currency will be increased against foreign ones, so there are direct influences on foreign trade (see the equations of the model in the said article) and prices (input prices in Vietnamese đồng

will be lower).

- The demand for Vietnamese exports except crude oil of crisis countries will decline because their economies become stagnant.

- The foreign investment in Vietnam may fall because troubled countries may reduce their investments.

How can those factors be quantified?

a. Call E_1 the total import-export value of Vietnam with Asian countries which have devaluated their currencies - Malaysia, Philippines, Thailand, Taiwan and South Korea and E_2 the total import-export value of Vietnam with other countries. Take the currency of the country having no crisis as base.

Call e_1 the exchange rate of countries devaluating money and e Vietnamese exchange rate. Define: $a = E_1 / (E_1 + E_2)$. We will have the formula: $e = e_1 \cdot a + (1-a)$.

Assume e_1 reduces by 50% during 1998-2000. Based on Vietnam's statistical yearbook 1995, we have: $a = 0.85$. Therefore, Vietnamese đồng is 15% higher than its real value.

In fact, call E the total volume of foreign trade, $E = E_1 + E_2$

E_1 : total volume of foreign trade with the troubled region 1.

E_2 : total volume of foreign trade with the untroubled region 2.

Call p^* the world price in US dollar,

p price in Vietnamese đồng

p_1 price in region 1 in its currency

p_2 price in region 2 in its currency

ϵ exchange rate of Vietnamese đồng to US dollar

ϵ_1 exchange rate of the currency of region 1 to US dollar

ϵ_2 exchange rate of the currency of region 2 to US dollar

If these regions respect the exchange rate,

we have:

$$p^* = p\epsilon = p_1 \cdot \epsilon_1 = p_2 \cdot \epsilon_2$$

More simply, we assume the currency of region 2 is US dollar ($\epsilon_2 = 1$), and $p_2 = p^*$ (region 2 fixes the world's price).

We have:

$$(1) p\epsilon E = p_1 \cdot \epsilon_1 \cdot E_1 = E_2$$

Define $u = E_1 / E$

From (1) we have:

$$(2) E \Delta(p\epsilon) = E_1$$

$$\Delta(p_1 \cdot \epsilon_1)$$

$$p^*$$

Thus, we have, if assuming p and p_1 are not changed

$$p \cdot \Delta\epsilon = \frac{p \Delta\epsilon}{p\epsilon} = \frac{E_1 p_1 \Delta\epsilon_1}{E p_1 \epsilon_1} = p_1 \cdot \Delta\left(\frac{E_1}{E}\right)$$

$$\epsilon_1 \left(\frac{E_1}{E}\right)$$

$$\Rightarrow \frac{\Delta\epsilon}{\epsilon} = \frac{\Delta\epsilon_1}{\epsilon_1} \cdot \frac{E_1}{E}$$

$$\text{In 1994, } \frac{E_1}{E} = 0.3$$

$$\text{If } \frac{\Delta\epsilon_1}{\epsilon_1} = -0.5, \text{ we have}$$

$$\frac{\Delta\epsilon}{\epsilon} = -0.15$$

That is, Vietnamese đồng is 15% higher than its real value.

To check the above result by another way, we use formula (1) and define:

$$e = p\epsilon, e_1 = p_1 \cdot \epsilon_1$$

We have:

$$(3) eE = e_1 \cdot E_1 + E_2$$

$$\text{First, } e = e_1 = 1$$

Now if ϵ_1 reduces by 50%, e_1 also reduces by 50% and

$$\Delta e = \Delta e_1 \cdot E_1 / E = 0.5 \cdot 0.3 = 0.15$$

b. But there are other Asian countries whose growth rates may go down besides those having devaluated their currencies. They are Hong Kong and Singapore. Call D_1 demand for Vietnamese goods of the currency devaluating countries, Hong Kong and Singapore. D_2 demand for Vietnamese goods of other countries. We assume the structure between D_1 and D_2 is similar to the devaluated volume of exports to these two blocks. In 1994, we had:

$$\frac{D_1}{D_1 + D_2} = 0.52.$$

Assume:

$$\frac{D_1}{D_1 + D_2} = \frac{X_1}{X_1 + X_2}$$

X_1 is the value of export to region 1, X_2 for region 2

In 1994 we had

$$\frac{X_1}{X_1 + X_2} = 0.52$$

If we assume the GDP growth rates of troubled countries reduce from 7% or 8% to 4% in the period 1998-2000 and this will lead to a decrease of 50% in their demand for Vietnamese goods, then the Vietnam's export will increase by 15% annually instead of 20%.

c. According to 1995's figures, 30% of investment capital came from Asian troubled countries. If they reduce their investment by 50% due to their decreasing GDP, the private investment in Vietnam will be 15.4% instead of 17.5%.

The results in 1998-2000 will be as follows:

- GDP growth rate: 6.1%

- Inflation: 4.1%

- Investment increasing rate: 26.5%

- Export growth rate by current prices: 23%

- Export growth rate by fixed prices: 16%

In particular the year 1998 will see a shock: GDP growth rate is 4.4% instead of 8.7%, inflation 2.2% against 6.6%, exports up by 12.3% against 23.4% by current prices.

III. CRISIS AND CURRENCY DEVALUATION

Assume in this circumstance, Vietnam devaluates its currency by 18%. As a result, our model will give the following outcomes:

- GDP growth rate: 6.4%

- Inflation: 7.3%

- Investment: 26.9%

- Exports up by 20.6% by current prices

- Exports up by 12.4% by fixed prices

In general, the devaluation by 18% will ease the crisis but boost inflation. In 1998, GDP will rise by

5.5% instead of 4.4% if no devaluation. The inflation will become 7% and exports by current prices soar by 20.3%.

If Vietnam devaluates its currency by 30%, the results will be:

- GDP growth rate: 6.7%

- Inflation: 9.3%

- Investment up by 27%

- Exports up by 23.2% by current prices

- Exports up by 12.7% by fixed prices

In 1998, the GDP will rise by 6%, inflation is 10% and exports by current prices increase by 25.6%.

IV. CONCLUSIONS

Currency devaluation will reduce the effects of the crisis for 1998. But later, this is not an all-purpose remedy. The country is required to boost foreign investment with the aim to keep immune to the currency crisis and its production must have higher competitiveness other than devaluating its đồng.

Certainly, this article should be considered carefully because its results originate from imitated situations via a model with the said assumptions.

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