Currency Crisis and International Trade: the Case of Korea

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1. Introduction

Korea experienced a sudden reversal of international capital flows during the currency crisis in 1997 and 1998. The shift from capital inflows to outflows after currency crisis had to be matched by current account balance moving from deficit to surplus. So Korea needed to run substantial current account surplus from 1998.

In this paper, we would like to investigate what are the differences between normal trade surplus and forced trade surplus achieved by Korea after the currency crisis from trade viewpoint. We are going to focus on the behavior of trade variables such as volumes of exports and imports, quantity and unit price of exports and imports.

The next section begins with a brief discussion of the currency crisis in Korea and trade viewpoint of currency crisis. Then, we move on to a brief description of past behavior of current account in Korea. We also describe a 4-year period in the 1980s when a substantial current account surplus was recorded. In section 3, we compare trade aspects of these two periods. In final section we conclude.

2. Currency Crisis and International Trade

Until 1997 Korea was the envy of the developing world. Its rapid growth rate was bringing Korea far up the development scale, putting it in striking distance of advanced-country status. Thanks to the success of export-oriented industrialization within a short period of three and a half decades, it was transformed into a modern industrialized country. Helped by the rapid growth, which averaged over 8 per cent per annum for more than thirty years, its GDP volume soared from only 2.1 billion U.S. dollars in 1961 to 520.0 billion U.S. dollars by 1996, while its per capita GNP also leapt from 82 dollars to 11,380 dollars over the same period.

However, Korean economy had several structural weaknesses such as little increase in productivity relatively to advanced-country, poor state of banking regulation, and the lack of a good legal framework for dealing with companies in trouble. These structural weaknesses became apparent over time.

In the 1990s, Korea began running large current account deficits as a share of GDP. One of the driving forces of high growth for Korea was high rate of investment. Several studies suggest that the combination of high investment rates and rapidly improving educational levels explains a large fraction of the rapid growth in East Asia including Korea. Although Korea had financed

the bulk of its high investment out of domestic savings, domestic savings were often not sufficient enough to finance domestic investment, which was reflected in the current account deficit. The current account balance, which had been briefly in surplus since the mid-eighties, slid into deficit from 1990 onward. Most markedly, in 1996 the current account deficit widened sharply to 23.0 billion U.S. dollars, which amounted to 4.4 per cent of GDP. Total foreign debt also widened sharply from 29.4 billion U.S. dollars as of the end of 1989 to 104.7 billion U.S. dollars at the end of 1996.

These current account deficits were matched by the substantial capital inflow which took place due to the growing popularity of emerging markets among lenders and investors in the advanced world in the 1990s. Korea, as a favorite of international investors, had attracted large inflows of money, allowing them to import considerably more than they exported.

In 1997, Korea experienced a sudden reversal of international capital flow. Confidence in emerging economies collapsed in 1997; foreign banks that had been lending heavily to Asian companies now demanded that the loans be repaid, stock market investors began selling off their holdings. From early 1997, foreign currency liquidity conditions continued to worsen and by November Korea was on the brink of defaulting on its debts. Consequently, the government had to turn to the IMF to request assistance and received loans in return for implementation of economic plans that were supposed to contain the damage: higher interest rates to limit the exchange rate depreciation, efforts to avoid large budget deficits, and structural reforms that were supposed to deal with the weaknesses that had brought on the crisis. Despite the IMF's aid, however, the result of the currency crises was a sharp economic downturn. GDP growth rate went from 8.9 and 6.8 percent in 1995 and 1996 to a severe contraction of -6.7 percent in 1998.

As a consequence of the collapse of confidence in Korean economy, Korea was also forced into a dramatic reversal of its current account position. The shift from capital inflows to outflows had to be matched by current account balance moving from deficit to surplus. To restore foreign confidence by accumulating its foreign exchange reserve, Korea was forced to run substantial current account surplus from 1998.

In this paper, we are going to investigate trade aspect of currency crisis. First, we are going to look at what happened in exports and imports during the period before and after the currency crisis. Currency crisis obviously involves changes in exports and imports. One of the overt problems of Korea during the currency crisis was that it accumulated a huge amount of foreign

debt during the early 1990s and it didn't have enough foreign currency reserve to restore confidence of international lenders and investors who wanted to withdraw. And much of foreign debt accumulation was due to the trade deficit over the years. To restore foreign confidence by accumulating its foreign exchange reserve, substantial current account surplus was recorded from 1998 on.

Another trade aspect of currency crisis we are going to look at is changes in the terms of trade. From trade viewpoint, trade deficit or surplus comes from changes in quantity of exports (and imports) and/or changes in price of exports (and imports). The change in the terms of trade has been one of significant causes of current account deficit during the period before currency crisis in Korea. A deterioration of terms of trade has also been one of the characteristics of the current account surplus period after currency crisis.

As a consequence of the collapse of confidence in Korean economy, Korea was also forced into a dramatic reversal of its current account position. Korea needed to run substantial current account surplus. Then what is the nature of forced trade surplus?

One way to do this would be to compare two periods of current account surplus and find what are the differences if any. Korea had shown chronic current account deficit up to the mid-1980s. High investment was the main source of both high economic growth and substantial amount of current account deficit, and financed by heavy borrowings from abroad. However, during the mid-1980s, a combination of favorable changes in external economic environment and tight monetary and fiscal policies brought about a turnaround in current account balance of payments position of Korea. From 1986 onward, GDP growth accelerated swiftly and the current account balance, chronically in deficit, moved into substantial surplus. This was owing to the so-called "three lows"; namely, low oil prices, low international interest rates and the low value of the U.S. dollar in terms of the Japanese yen, as well as the greater degree of price stability attained in the first half of the 1980s.

Then in the 1990s, Korean economy entered into a period of current account deficit again. As the Korean economy moved into the 1990s, the structural fault-lines of its "high-cost, low-efficiency" industrial structure deepened amid a sharp increase in competitive pressures. High costs had become endemic with high wages, high land prices and high interest rates, due to repeated waves of price instability and the inflexible adherence to firms' management strategies of external expansion. Moreover, Korean companies faced intense competition with foreign

companies in both domestic and international markets, owing to the rapid catch-up growth of late-starter developing countries, the launch of the WTO, and the acceleration of market opening to meet OECD entry criteria.

Coping effectively with these tough new domestic and overseas economic environments required a strong drive for economic stability and structural reform. Policies along these lines were pursued only half-heartedly, however, and the previous growth-oriented strategies tended to persist.

As a result, economic growth raced ahead, while the current account balance shifted deeply into the red and price instability continued. GDP growth topped 7.5 per cent per annum on average during the period from 1990 to 1996. The current account balance, though, which had continued in surplus since the mid eighties, slid into deficit from 1990 onward. Most markedly, in 1996 the current account deficit widened sharply to 23.0 billion U.S. dollars, which amounted to 4.4 per cent of GDP. Total foreign debt also widened sharply from 29.4 billion U.S. dollars as of the end of 1989 to 104.7 billion U.S. dollars at the end of 1996.

From early 1997, foreign currency liquidity conditions continued to worsen and by November Korea was on the brink of defaulting on its debts. Consequently, the government had to turn to the IMF to request stand-by funds. To improve its foreign exchange reserve and restore foreign confidence in Korean economy, Korea was forced to run current account surplus from 1998 on.

This paper is going to compare these two periods of current account surplus in three areas and trying to find what are the differences. First, we are going to examine the question of how the current account surplus was accomplished. Reversal in trade balance can be accomplished by more rapid increase in exports with growing trade or by reduction of imports. Then we will examine whether there is a different pattern of change in the terms of trade between these periods.

Korea experienced a sudden reversal of international capital flows during the currency crisis. Capital accounts shifted from capital inflows to outflows after currency crisis. In effect Korea went quickly from receiving large inward transfers to making large outward transfers. If Keynes's presumption about the effects of transfers were right, this reversal of fortune should have produced a noticeable deterioration of Korean terms of trade, exacerbating what was already a severe economic blow. Another question one may ask is whether there is any possible

distortion of comparative advantage position. It is obvious that transferring country would export more of goods than before. Then a natural question arises, what types of goods to export? After currency crisis, Korean investment and savings rated fell remarkably. This fall in investment would suggest that less resources available to develop capacities to produce and export more capital and technology intensive commodities. Then one might argue that Korea exported more of its traditional exports than moving up to a higher level in the comparative advantage ladder.

3 Trade Aspect of Currency Crisis in Korea

Let's first look at the size of current account surplus. Surplus during the 1980s seems as significant as that during the 1990s. During the four year period between 1986 and 1989 Korea recorded a surplus of US$ 34.7 billion. In absolute terms, this figure seems quite smaller than the surplus of US$ 85.3 billion between 1998 and 2001. However, in terms of the relative size to the economy as a whole the significance was almost the same. As a ratio of current account surplus to GDP, the surplus during the first period was almost 5.6 percent, whereas the surplus during the second period was almost 5.8 percent.

Next, let's take a look at how the improvement in the current account balance was achieved. Was it achieved when the volume of trade was increased or decreased. During the 1980s, Korea's trade volume had shown steady increase. Both exports and imports increased over time. Exports and imports increased faster than GDP and world exports and imports. Korea's share in world trade increased substantially during the 1980s. The current account surplus in the 1980s was achieved by a more rapid increase in exports than imports. On the other hand, the current account surplus after the currency crisis was brought about by a drastic reduction in imports. Korean imports fell sharply from US$145 billion in 1997 to US$93 billion in 1998 and US$120 billion in 1999.

Despite a slight decline in exports, this drastic fall in import brought about a huge current account surplus of US$40 billion, which amounted to 12.7 percent of GDP in 1998. Most of this current account surplus came not through increased exports but through a huge drop in imports, as the economies contracted. The contraction of the economy is obvious from the fact that the ratio of imports to GDP showed only a slight decline from 30.3 percent in 1997 to 29.4 percent in 1998 despite a dramatic fall in imports in 1998. Whereas the 80's BOP surplus coincided with

both the growth in trade volumes and faster growth of exports, CA surplus after currency crisis was achieved mainly through the sharp decline in imports. As income declines, expenditure on nontradables declined. Then more resources were diverted to trade sector. which was reflected in the drastic increase in the ratio of exports to GDP from 28.6 percent in 1997 to 41.6 percent in 1998.

The terms of trade in the 1st surplus period improved steadily over time. As a matter of fact, the terms of trade improved continuously since 1982 up to 1989. The improvement in the terms of trade was mainly due to the rapid rise in the unit price of exports. The unit price of Korean exports rose steadily since 1985 and peaked at 1989. Compared with the 1985, unit price of export increased by 40%. On the other hand the terms of trade in 2nd surplus period deteriorated steadily over time. It began before crisis since 1996. This deterioration of the terms of trade was one of the main reason for the current account deficit. The terms of trade continued to deteriorate During the surplus period. Main culprit was a decline in unit export price that took place for almost every year.

Trade aspect of currency crisis was that deterioration of the terms of trade has been a very important factor in worsening current account deficit. Unlike some other developing countries that export primary products, Korea had been very fortunate to have relatively stable terms of trade over the years. So it didn't have to worry about the possibility of immiserizing growth. The main reason was that although unit value of imports increased steadily over time, unit value of Korea's export also increased as a similar pace. This was made possible by Korean firms' continuing efforts to upgrade their composition of exportable goods. Korean exporters successfully upgraded their products and moved into more sophisticated and higher priced goods.

After the currency crisis Korea needed to run a substantial trade surplus over a medium-run to service foreign debt. In effect Korea went quickly from receiving large inward transfers to making large outward transfers. During this transfer period, the income of domestic country fell and the income of the rest of the world increased. The implication of this transfer on trade is that more goods are exported, and fewer types of goods imported. As domestic income declines, there is less expenditure on nontradeable. Then, more resources are transferred to export sector from the nontradeable sector. Due to lower domestic expenditure, more exportables are produced and exported. This happened in a drastic increase in the ratio of exports to GDP after

the currency crisis.

Then a natural question arises, what happened to the composition of exports? Export increase is accomplished by the increase in the volume of existing exports or by broadening its line of export goods. Over the years Korean economy has shown a high rate of savings and investment. Consequently, rapid capital deepening occurred and capital intensity of export increased over the years. Korea started as an export of highly labor-intensive products such as textile, wigs, and plywoods. As more resources are available due to the high rate of savings and investment, technological capability is acquired over the years and exports has become more capital intensive over the year. Korea broadened its exports to less capital-intensive and more capital intensive goods such as electronics, automobiles, ships, and steel products.

Then current crisis brought about two changes. One is Korea is forced to run the current account surplus due to a dramatic swing in capital inflow. They had to run the current account surplus. Korea tried to mobilize all the resources to increase export after the currency crisis.

Another is a change in the investment and savings rate. From a simple arithmetic identity, X(exports) - M(imposts) = S(savings) - I(investment). it is apparent that current account shows surplus when savings exceeds investment. Then a change in current account from deficit to surplus happens when savings increases and investment decreases

During the current account surplus period in the 1980s, there was a dramatic increase in the rate of savings. Average savings rate was about 27.5% between 1980 and 1985. This average saving rate rose sharply to about 37.9% during the surplus period in the 1980s.

On the other hand, there wasn't any increase in the rate of savings during the current surplus period after the currency crisis. Savings rather decreased after the currency crisis. Savings rate was 35.7% during the ca deficit period in the 1990s. This rate declined to 31.7% during the ca surplus period after the currency crisis. But there was a drastic decline in the rate of investment. During the ca deficit period in the 1990s, the average investment rate was about 37.1%. After the currency crisis, the average investment rate fell drastically to 25.9% for the period between 1998 and 2002. After the current crisis, both savings and investment rate declined. However, because of a steeper fall in the rate of investment than savings rate, Korea had recorded current account surplus. The current account surplus after the current crisis was brought about by a decline in investment. while current account surplus during the 1980s was mainly achieved by an increase in savings.

Less investment means less capital formation and less resources available for technological capability improvement. Therefore one may speculate that currency crisis and its adverse effect on investment and savings rate might have dragged the transformation of Korean exports into more capital- or technological-intensive products. Then Korea is exporting more of commodities they used to export, instead of moving up to the higher level in the comparative advantage ladder. If this is the case, then this is another aspect of cost that currency crisis imposed upon Korean economy.

Table 5 shows the results of a series of regression equations which has Balassa's RCA(Revealed Comparative Advantage) index as a dependent variable. Independent variables are wage rate, fixed asset per employee, and proportion of production workers. This equation tries to see what explains the comparative advantage position of Korean industries. Then regression was run for selected years to see whether there was any change in the source of comparative advantage.

The result shows that in the early years, industries that employ workers with lower than average wage tend to have comparative advantage. Also the proportion of production workers which appears to capture the role of semi- or unskilled workers was positively related to the comparative advantage position of Korean industries. However, during the current account surplus period after the currency crisis, industries which employ workers with higher than average wage tend to have comparative advantage.

This result is not consistent with the speculation that currency crisis and subsequent drop in savings and investment made Korea to export more of what it used to export. Instead, Korean comparative advantage appears to move up to those goods produced in industries which employ workers with higher than average wage despite currency crisis. Other studies on cross-country regressions also reports that there is no evidence for a direct impact of a currency crisis on long-run growth.(Yung Chul Park et. al.).
This suggests that currency crisis did not deter Korean firms from moving into more capital and technology intensive industries. It appears that Korea continued to transform itself into an economy where more capital- and technology-intensive industries tend to have comparative advantage.

4. Conclusion

This paper tried to take a look at trade aspect of currency crisis. From a trade viewpoint,

currency crisis occurred when too much foreign debt accumulated after a chronic and substantial current account deficit. The shift from capital inflows to outflows after currency crisis had to be matched by current account balance moving from deficit to surplus. So Korea needed to run substantial current account surplus from 1998.

Korea has another period during which a substantial amount of current account surplus was recorded. Comparing trade aspects of these two periods, we found the following differences. Currency crisis induced current account surplus was achieved mainly by drastic reduction in imports. Current account surplus in the 1980s was achieved by increase in exports. While both exports and imports increased, exports increased a lot faster than imports.

There was also different pattern of the terms of trade movement. During the current account surplus period in the 1980s, the terms of trade improved significantly. Current account surplus was achieved by more rapid increase in both quantity and unit price of exports relative to imports. On the other hand, current account surplus after the currency crisis, there was a continuous deterioration of terms of trade. We note the following two trends. Deterioration of the terms of trade began before the currency crisis in 1996 and continued through 2002. Deterioration of the terms of trade was the cause of a huge current account deficit in 1996 and 1997. We also not that unit price of both imports and exports started to decline since 1996. The terms of trade worsened because the decline in the unit price of exports were faster than imports.

The current account surplus after the currency crisis was achieved by a decrease in investment while the current account surplus was achieved by a more rapid increase in savings in the 1980s.

Finally, it does not appear that currency crisis affected the pattern of comparative advantage changes of Korea. It appears that Korea continued to transform itself into an economy where more capital- and technology-intensive industries tend to have comparative advantage.

Table 1 Current Account, Exports, and Imports

Year	CA	CA/GDP (%)	Exports	X/GDP (%)	X/WX (%)	Imports	M/GDP (%)	M/WM (%)
1980	-5.3	-8.5	17.5	28.1	0.9	22.3	35.8	1.1
1981	-4.6	-6.6	21.3	30.5	1.1	26.1	37.5	1.3
1982	-2.6	-3.4	21.9	29.4	1.2	24.3	32.6	1.3
1983	-1.5	-1.9	24.4	29.7	1.4	26.2	31.8	1.4
1984	-1.3	-1.4	29.2	32.3	1.6	30.6	33.8	1.6
1985	-0.8	-0.9	30.3	32.4	1.6	31.1	33.3	1.6
1986	4.7	4.4	34.7	32.3	1.7	31.6	29.4	1.5
1987	10.1	7.4	47.3	35.0	1.9	41.0	30.3	1.6
1988	14.5	8.0	60.7	33.6	2.2	51.8	28.7	1.8
1989	5.4	2.4	62.4	28.3	2.1	61.5	27.8	2.0
1990	-2.0	-0.8	65.0	25.7	1.9	69.8	27.7	2.0
1991	-8.3	-2.8	71.9	24.4	2.0	81.5	27.6	2.2
1992	-3.9	-1.3	76.6	24.4	2.0	81.8	26.0	2.1
1993	1.0	0.3	82.2	23.8	2.2	83.8	24.2	2.2
1994	-3.9	-1.0	96.0	23.9	2.2	102.3	25.4	2.4
1995	-8.5	-1.7	125.1	25.6	2.4	135.1	27.6	2.6
1996	-23.0	-4.4	129.7	24.9	2.4	150.3	28.9	2.8
1997	-8.2	-1.7	136.2	28.6	2.5	144.6	30.3	2.6
1998	40.4	12.7	132.3	41.6	2.4	93.3	29.4	1.7
1999	24.5	6.0	143.7	35.4	2.5	119.8	29.5	2.1
2000	12.2	2.7	172.3	37.3	2.7	160.5	34.8	2.4
2001	8.2	1.9	150.4	35.2	2.5	141.1	33.0	2.2
2002	6.1	1.3	162.5	34.1	2.5	152.1	31.9	2.3

Sources: Bank of Korea
Figures in US$ Billion.

Table 2 Changes in the Terms of Trade (1980s)

Year	Qx	%Δ	Qm	%Δ	Px	%Δ	Pm	%Δ	TOT	%Δ
1980	55.2	11.3	64.6	-9.1	104.7	4.4	110.9	20.4	94.4	-13.3
1981	64.9	17.6	71.9	11.3	108.1	3.2	116.9	5.4	92.5	-2.1
1982	69.2	6.6	72.0	0.1	104.4	-3.4	108.2	-7.4	96.5	4.3
1983	80.4	16.2	81.7	13.5	100.4	-3.8	103.1	-4.7	97.4	0.9
1984	93.0	15.7	94.3	15.4	103.9	3.5	104.4	1.3	99.5	2.2
1985	100.0	7.5	100.0	6.0	100.0	-3.8	100.0	-4.2	100.0	0.5
1986	112.2	12.2	108.1	8.1	102.1	2.1	93.8	-6.2	108.8	8.8
1987	138.9	23.8	130.7	20.9	112.4	10.1	100.8	7.5	111.5	2.4
1988	156.9	13.0	149.4	14.3	127.7	13.6	111.4	10.5	114.6	2.8
1989	146.9	-6.4	173.6	16.2	140.2	9.8	113.7	2.1	123.3	7.6
1990	153.3	4.4	196.6	13.2	139.8	-0.3	114.1	0.4	122.5	-0.6

Sources: Bank of Korea
Qx: Volume index of exports
Px: Unit price of exports
Qm: Volume index of imports
Pm: Unit price of imports

Table 3 Changes in the Terms of Trade (1990s)

Year	Qx	%	Qm	%	Px	%	Pm	%	TOT	%
1991	26.6	8.1	44.5	22.6	156.9	-0.9	116.8	-3.7	134.3	2.9
1992	29.0	9.0	45.7	2.7	152.6	-2.7	113.5	-2.8	134.4	0.1
1993	33.2	14.5	48.5	6.1	146.8	-3.8	111.0	-2.2	132.3	-1.6
1994	37.7	13.6	59.4	22.5	150.6	2.6	110.1	-0.8	136.8	3.4
1995	46.1	22.3	73.7	24.1	161.8	7.4	116.8	6.1	138.5	1.2
1996	54.1	17.4	85.2	15.6	140.5	-13.2	112.0	-4.1	125.4	-9.5
1997	62.1	14.8	86.9	2.0	127.9	-9.0	104.7	-6.5	122.2	-2.6

1998	74.0	19.2	65.1	-25.1	102.0	-20.3	87.4	-16.5	116.7	-4.5
1999	82.9	12.0	84.0	29.0	99.6	-2.4	87.3	-0.1	114.1	-2.2
2000	100.0	20.6	100.0	19.0	100.0	0.4	100.0	14.5	100.0	-12.4
2001	100.7	0.7	97.7	-2.3	86.9	-13.1	91.0	-9.0	95.5	-4.5
2002	114.1	13.3	109.7	12.3	83.1	-4.4	87.5	-3.8	95.0	-0.5

Sources: Bank of Korea
Qx: Volume index of exports
Px: Unit price of exports
Qm: Volume index of imports
Pm: Unit price of imports

Table 4 Trends in Investment and Savings Rate

year	investment rate	savings rate	year	investment rate	savings rate
1980	32.2	24.4	1990	37.6	37.5
1981	30.0	24.3	1991	39.8	37.3
1982	29.0	25.4	1992	37.3	36.4
1983	29.3	29.0	1993	35.4	36.2
1984	30.7	31.0	1994	36.5	35.5
1985	30.5	31.1	1995	37.3	35.5
1986	29.4	34.9	1996	38.1	33.8
1987	30.2	38.4	1997	34.4	33.4
1988	31.2	40.5	1998	21.3	33.9
1989	33.8	37.6	1999	26.9	32.9
			2000	28.3	32.4
			2001	27.0	30.2
			2002	26.1	29.2

Table 5 Changes in Comparative Advantage

	Wage	L/K	Ratio of Production Workers	R-square	F-value
1980 RCA	-1.974**	.148	.043	.047	2.350*
1984 RCA	-1.085	-.335	-.257	.017	.818
1985 RCA	.236	-.166	3.217***	.088	4.558***
1990 RCA	-.665	.394	3.177***	.085	4.406***
1991 RCA	-.465	.169	3.093***	.071	3.663**
1997 RCA	1.469	-.097	1.832*	.040	1.993
1998 RCA	2.844***	-1.154	1.767*	.073	3.771**
2001 RCA	3.110***	-1.317	3.154***	.111	5.876***

n=149

* denotes significance at 10% level
** denotes significance at 5% level
*** denotes significance at 1% level

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