ECONOMIC IMPACT OF KOREAN REUNIFICATION

John Y. T. Kuark

ABSTRACT

The global geopolitical transformations of the past decade -- the collapse of East European communist regimes, the reunification of East and West Germany , the disintegration of the Soviet Union, the realization of the European Union, the death of Kim Il-Sung in North Korea, and the inter-Korean summit meeting of two Kims in June 2000 -- make reunification of Korea inevitable and likely to happen sooner or later. Economic impact of the Korean reunification, like the German one, will have "synergistic J-curve effects" deteriorating for several years after the economic integration, before the whole economy may get better.

I.   INTRODUCTION

When the Berlin Wall crumbled and East European communist regimes collapsed in 1989, when East and West Germany were reunited in 1990, when the Soviet Union disintegrated and emerged as the Commonwealth of Independent States in 1991, the European community (EC) became a reality in 1993 followed by European Union (EU) in 1999, the death of Kim Il-Sung in 1994, and the Pyeongyang summit meeting of two Kims in June 2000, these epochal changes in the world cast tremendous new hope to Koreans, who have longed for the reunification of their own divided country.

Despite the half century of deep-rooted mistrust between the two states under the diametrically opposed ideologies and the bloody war (1950-53), the historic geopolitical transformations of the past decade make the reunification of Korea inevitable and likely to occur sooner or later.

The crucial questions are: (1) when and how reunification will come about; (2) what can both governments do now to expedite the inevitable process; (3) what can be done to minimize any negative impact and maximize the benefits of reunification when it happens; and (4) how can the ailing command economy of the North be integrated into the prosperous market economy of the South in a Pareto-optimal way. This paper examines the differences in unification policies of North and South Korea, the economic integration problems, and the economic cost impact of reunification of the two states related to question (4) above.

II.   THE DIFFERENCES IN UNIFICATION POLICIES OF NORTH AND SOUTH KOREA

Since Kim Il-Sung announced the latest version of his "Formula for Creating the Democratic Confederal Republic of Koryo" October 10, 1980, in a speech at the Sixth National Congress of the Workers' Party, North Korea 's proposal has not changed much at all. It proposed that the reunification of Korea be achieved under the principles of "independence, peace and national unity," while the two Koreas maintain their existing political ideologies and systems. It offered that a "Supreme National Confederal Assembly" be formed with an equal number of representatives from the North and the South and an appropriate representation of overseas nationals, with a 'Confederal Standing Committee" to function as a confederal government, supervising the two autonomous regional governments in the North and the South as well as their diplomatic corps and military forces to pursue affairs related to the general national interest. With the creation of a confederation, it further proposes to implement "ten revision measures" by both sides such as increased mutual exchanges and economic cooperation.

North Korea has stipulated several preconditions to the creation of a confederation, including (1) that South Korea abolish such fascist laws as Anti-Communist and National Security Law; (2) that the present South Korean government be replaced by a democratic peoples government; (3) that the United States withdraw its armed forces from the South; and (4) that the present armistice agreement be replaced with a peace treaty, etc. Items (1) and (4) are considered as reasonable, whereas (2) and (3) are castigated as quixotic and impossible.

On the other hand, South Korea's unification formula, which is based on a clear understanding of the wide difference between the political ideologies and governing systems of the two Koreas, advocates a gradual integration approach toward unification through a "Korean Commonwealth" as a transitional system. The detailed formula proposed that the two sides increase their dialogues, mutual exchanges and economic cooperation for a peaceful coexistence on the basis of the recognition of each other's ideology and system, thereby restoring a national community and developing it further to build an eventual unified democratic nation[1] through national referendum or general election.

Some may wonder how the "confederation" proposal made by the North differs from the "commonwealth" formula advanced by the South. The unification policies of North and South Korea differ widely not only in their approach to integration but also in the eventual form of the unified state. Above all, the North's policy seeks the coexistence of two diametrically opposed systems as a confederation of states. The South is based on democracy and capitalism which respect private property and a free market economy, and the North adheres to socialism and the communist "juche" (self-reliance) thought which negate the privatization of industry and uphold the socialist command economy.

It is clear that such a state of affairs cannot be regarded as a genuine integration, nor is this acceptable to the South. Since the disintegration of the Soviet Union, the socialist command economy as an ideology has been discarded in favor of the free market economy, and the "juche" thought is inherently contradictory in an interdependent and interlinked global economy. North Korea has virtually admitted the self-contradiction and impracticability of its own unification policy by indicating that it is willing to make partial revisions.[2] Yet North Korea rejects a German-style unification formula. Furthermore, North Korea has become a "garrison state" under the rule of its National Defense Commission (NDC)[3] with Kim Jong-il as its head upon the 1998 amendment of its national constitution. Despite its serious economic hardships, North Korea is reported to have beefed up its military expenditures even after the inter-Korean summit last June.

South Korea has refused the concept of unifying the nation under a confederation system within the context of its national history spanning five millennia with a homogeneous cultural and linguistic heritage. Korea previously had a single independent government for over 13 centuries until the country was divided by the superpowers in the wake of World War II. The South fears that integration through the confederation system would perpetuate the current state of division imposed on the Korean people. Moreover, most of the "ten revision measures" and the preconditions submitted by the North have been castigated as impossible and impractical, and sabotaging the unification talks. However, no substantial change has been seen in the basic attitude of North Korea to seek a confederation of two governments running under two different systems, which is likened to having "two households under one roof" permanently. This is the political dilemma that the Korean reunification problem faces.

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[1] National Unification Board, *To Build a National Community through the Korean Commonwealth*, Seoul: Republic of Korea. November 1991, pp. 19-47.
[2] Ibid.
[3] Chung, Chong-Wook. "Has North Korea Really Changed?" *Korea Focus*, March-April 2001, pp. 53-64.

The sunshine engagement policy of Kim Dae-Jung administration has accomplished the opening of a new era of reconciliation and cooperation. Following the inter-Korean summit, a number of dramatic events have indeed occurred, including the joint march of the North and South Korean Olympic teams at the opening ceremony of the Sydney Olympiad, joint television broadcasts from Mt. Baekdu in the North and Mt. Halla in the South, tearful reunions of separated family members in the North and the South, a groundbreaking ceremony for reconnecting the Seoul-Pyeongyang railroad, and an unprecedented meeting of North and South Korean defense ministers. Another noteworthy development involved overtures of détente by North Korea to improve bilateral relations with the United States by sending Vice Marshal Jo Myong-rok (first vice chairman of powerful National Defense Commission) to Washington as a special envoy where he met with President Bill Clinton and other U.S. leaders in October 2000. This was reciprocated by Secretary of State Madeleine Albright, who flew to Pyeongyang to meet with Kim Jong-il and paved the way for President Clinton's proposed visit to the North. Although the Clinton's visit was cancelled due to the domestic political situation in December, these events underscored the fact that all sides had moved toward dismantling the Cold War regime on the Korean Peninsula.[4]

Nonetheless, many observers in South Korea and elsewhere are concerned about the extent to which these events will actually contribute toward establishing a lasting peace regime in Korea, unfolding a new age of coexistence and co-prosperity between two Koreas, and ultimately achieving national unification. Harboring such doubts is largely due to North Korea's unrelenting military buildup and misgivings about Pyeongyang's ulterior motives to gain economic aids using South Korea as a stepping-stone.

III. WHAT ECONOMIC INTEGRATION IS APPLICABLE TO KOREA?

International economic integration is a complex notion meaning different things in different countries and at different times. In advanced market economies, economic integration means a way to introduce the most profitable technologies and allocate them in the most efficient manner among such member states as the European Union (EU). In centrally planned economies it implied the planning of industrial development and certain economic activities along with the volume of international trade exchanged among members of the Council for Mutual Economic Assistance (CMEA or COMECON). In the newly developing countries, it represents a contrivance for economic development and industrialization. In the days of Viner's seminal work (1950), it meant the customs unions. Today it refers to the increase in the levels of economic welfare (Jovanovic, 1992).

Tinberben (1954) introduced the notion of "negative integration" as the removal of discriminatory and restrictive institutions such as tariffs and quotas, and of "positive integration" as the adjustment of existing institutions and the enforcement of new common economic policies. El-Agraa (1985) views economic integration as the removal of all barriers to trade in goods and services as well as freedom of movement for factors of production, and therefore it means an act of agreement between two or more nation states to pursue such common goals and policies. Marer and Montias (1988) note that it has to do with the division of labor in a geographical region advocating the internationalization of markets for capital, labor, technology and entrepreneurship in addition to markets for goods and services. It appears that the necessary and sufficient conditions for full integration are the equalization of commodity prices and the free mobility of factors of production with an increased trade and welfare level for every member state.

By and large the study of international economic integration in both theory and practice has been historically centered around the European Economic Community, or recently European Union (EU),

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[4] *Ibid.*

and has assumed few theoretical differences between what I call "*homogeneous integration*" among industrialized countries and among less developed countries of the world. The arguments in favor of integration for economic gains have been the same concerning trade creation and diversion, factor mobility, cost reduction, economies of scale, higher consumption, and an increased level of welfare for integrated states. However, few "*heterogeneous integration*" problems between EU countries and former COMECON nations have been explored, not to mention the East and West German economic integration problem. Herein lies the difficulty of delineating the heterogeneous economic integration problems between North and South Korea, which have had diametrically opposed ideologies and political systems despite the homogeneous culture, common language and close geographical proximity.

What is the essence of economic integration? And what are the criteria for the appraisal of this integration process? Machlup (1979) stated that *increased international trade was the quintessence of economic integration, and the specialization of labor its underlying principle.* Transportation costs aside, the basic principles for the appraisal of international economic integration appear to be equalization of prices for comparable goods and services and free mobility of factors of production in all integrated countries. In this sense, economic integration between North and South Korea has a long way to go, indeed, starting from a few free trade areas (like Nampo, Wansan, and the Tumen River Basin Delta area) and progressing to a full political and economic integration.

IV.   MEASUREMENT OF INTEGRATION AND SYNERGISTIC J-CURVE EFFECT

In an attempt to measure the effects of economic integration on trade flows, the so-called gravity equation has been commonly employed in two ways. The first model and its variants explored by Tinbergen (1962), Linneman (1966), Aitkin (1973), Hewett (1976), Brada and Mendez (1985) and El-Agraa (1989), is to introduce as explanatory variables income, population, distance variables and a set of dummy variables to measure the trade-augmenting effect of integration of intermember trade, namely the value of exports as a dependent variable. When two members of an integrated group in preference areas trade with each other, the dummy is set equal to 2 or greater, and when trade is with nonmembers or in nonpreference areas, the dummy is 1. The larger the coefficient value of the dummy variables, the higher the volume of intermember trade relative to nonpreferential trade, and the most effective is the economic integration. The gravity trade flow equations may be written as follows:

$$\ln X_{ij} = a_0 + a_1 \ln Y_i + a_2 \ln Y_j + a_3 \ln N_i + a4 \ln N_j + a_5 \ln D_{ij} + b_1 \ln Q_{ij} + b_2 P_{ij} \ln (Y_i/N_i)(Y_j/N_j)$$
$$+ b_3 P_{ij} \ln D_{ij} + \ln e_{ij} \tag{1}$$

$$\ln X_{ij} = a_0 + a_1 \ln Y_i + a_2 \ln Y_j + a_3 \ln N_i + a_4 \ln N_j + a_5 \ln D_{ij} + \ln e_{ij} \tag{2}$$

where X_{ij} = value of exports from country i to country j; Y_i, Y_j = income in the exporting and importing countries, assuming to determine their export and import demands;
N_i, N_j = population in the exporting and importing countries, assuming to imply their market size;
D_{ij} = distance between countries i and j as a proxy for 'natural trade resistance' as a composite of transport cost and delivery time plus 'economic horizon' (Aitkin 1973, p.882);
Q_{ij} = 2 if countries i and j belong to the same preference area; and
P_{ij} = 1, (1 or 0), respectively, if i and j belong to non-preference areas;
e_{ij} = lognormal random error term.

Another approach employed by Pelzman (1977) is that a pre-integration period is chosen on the basis of which Equation (2) is estimated. The parameter estimates are then used to extrapolate the expected

volume of trade (X_{ij}) during the post-integration period. The excess amount of actual inter-member trade is computed as attributable to the effect of integration.

Brada and Mendez (1985) showed the empirical results using the trade data of the member countries of EEC, EFTA, LAFTA and Central American Common Market (CACM), and the Andean Pact, concluding that environmental factors caused the greatest variation in trade creation with inter-member distances being the most important environmental variable. The ratio of post- to pre-integration trade is indicated by the expression, $b_1 + b_2(Y^*/N^*)_2 + b_3D^*$ where Y^* and N^* are the average income and population of the integrated countries, and D^* the average distance among them.

However, the trade flows of CMEA (or COMECON) countries were not employed in estimating the parameters of Equation (1) because the centrally planned CMEA trade was not expected to follow the regime implied by parameters estimated on the basis of the international trade of free market economies. Furthermore, the gravity equations (1) and (2) are only applicable to many integrated member states using the cross-section data due to the fixed distance and dummy variables. Statistically, they are not amenable to the use of time series data applied to economic integration between two states like East and West Germany nor North and South Korea. Therefore, the model has to be modified and estimated using the quarterly time-series data from 1991 to 1997 as follows:

$$\ln X_{ij} = b_0 + b_1 \ln Y_i + b_2 \ln X_j + b_3 \ln Y_i + b_4 \ln Y_j + b_5 \ln N_i + b_6 \ln N_j + b_7 P_{ij} \ln(Y_i/N_i)(Y_j/N_j)$$
$$+ \ln e_{ij} \tag{3}$$

where X_{ij} = trade volume (both export and import) betweemn two integrated states,
  X_i = total trade volume of ith country with all other countries,
  X_j = total trade volume of jth country with all other countries,
  Y_i, Y_j = nominal value of GNP in ith and jth countries,
  N_i, N_j = population in ith and jth countries,
  (Y_i/N_i) = per capita income of ith country,
  $Y_j/N_j)$ = per capita income of jth country,
  P_{ij} = dummy preference or integration policy effectiveness variable,

The estimated trade flow equation between North and South Korean economic integration may be shown as follows:

$$\ln X_{ij} = 1021.100 - 2.9025 \ln X_i + 0.0640 \ln X_j + 20.760 \ln Y_i + 2.588 \ln Y_j - 26.680 \ln N_i - 111.673 \ln N_j$$
$$\qquad\qquad (1.3867) \qquad (0.8360) \qquad (0.8935) \qquad (0.3513) \qquad (0.8537) \qquad (0.6182)$$

$$+ 8.7234 P_{ij} \ln(Y_i/N_i)(Y_j/N_j), \qquad \text{t -values are in parenthesis.} \qquad (3.1)$$
$$(0.9435)$$

Determination coefficient $R^2 = 0.9649$; adj.$R^2 = 0.9035$; Se = 0.2303; F-test = 15.7193 (significant).

Due to the use of limited sample unseasonalized North-South trade data and seasonalized South Korean data, the estimated coefficients errors are large, and hence the insignificant t-values, although the over-all F-test value is quite significant at 5 percent level, and the determination coefficient (R^2) at 0.9649 is indeed very meaningful, since the changes in the trade volume, X_{ij} are explained 96.46% of the time by the changes in all other explanatory variables in the trade flow equation.

Assuming effective integration policies of unified countries, following the Brada and Mendez lines of thought in estimating a result of both post-integration trade flows and average income level from the differential equation, we can examine the following growth path of per capita income level:

$$\ln g = (b_1 + b_2) \ln (X^*/N^*) + (1/2)b_7 \ln (Y^*/N^*). \qquad (4)$$

Therefore, the estimated value becomes

$$\ln g = (-2.8385) \ln (X^*/N^*) + (1/2)(8.7234) \ln (Y^*/N^*) \qquad (4.1)$$

We can see how the growth path, g of the combined level of per capita income (augmented by the increasing trade but deteriorated synergistically by the combined population factor N^*) would follow after the economic integration, where Y^* is the combined nominal value of GNP of unified countries.

Based upon the German experience (Smyser 1992, Welfens 1992), we can simulate plausible values of explanatory variables and parameters for North and South Korean economic integration. Such a simulation result using quarterly data for Korea is shown in Figure 1. The above exponential form of Equation (4.1) shows a "synergistic J-curve effect" as in the case of currency devaluation (Miles 1979, Krueger 1983, Bahmani-Oskooee 1985, 1989, and Gerlach 1989). The level of per capita income would unmistakably deteriorate immediately after the Korean reunification, and improve only as time passed, in this case, taking some 18 quarters, or 4 years and 2 months before any improvement. If the assumed effectiveness of economic integration policies were in fact mistake-prone and lethargic, it would certainly take a longer time period before it might get better.

The South Korea Ministry of Finance reported in 1993 that the total cost of reunification could reach as high as $980 billion for first ten years if South Korea were to absorb the North Korean economy by the year 2000, based on the assumptions that the failing North Korean economy would collapse by then, and the cost of the German unification would be analogous to the Korean integration.[5] Although one could certainly question the validity of these assumptions, this figure is shocking indeed, considering the 1993 South Korean GNP of approximately $280 billion (currently $420 billion in 1999). This sobering cost figure appears to be a plausible guestimate in view of the fact that, supposing the German analogy has some validity, the Kohl government public transfer payments to East Germany including ERP Special Fund and German Unity Fund (annualized) amounted to over $150 billion (or DM250 billion divided by then exchange rate of DM 1.66 to $1) on the average annually since unification, and that such transfer payments growing at 10 percent per annum compounded for five years would sum up to over $1,007 billion. If compounded for ten years it amounts to $2.6 trillion for Germany, although these figures should be weighed against the beneficial effects of economic integration including trade creation, factor mobility, cost reduction, economies of scale, higher consumption, tax revenues, and increased welfare levels. Roughly estimated, however, the economic costs of Korean unification would amount to over $100 billion a year, and such transfer payments compounded similarly at 10 percent a year come to nearly $1.75 trillion for ten year period upon unification.[6]

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[5] The South Korean Ministry of Finance released the report on the estimated cost of national unification on January 29, 1993.

[6] South Korea's GNP of $420 billion in 1999 is roughly one-quarter of West German GNP of $1,632 billion (DM3,335 billion). Deutsche Bundes Bank still keeps separate West German statistics. Likewise, their trade volume ratio is about 1:3 at $263 billion vs. $868 billion in 1999. However, South Korea cannot get by with one-third of German transfer payments to East Germany for those to North Korea upon reunification, according to the National Unification Board officials mainly due to the lack of social overhead infrastructure in the North.

Figure 1. Simulated Synergistic J-Curve Effect

V. Concluding Remarks

From the foregoing analysis, one can estimate the effect of integration in terms of levels of combined per capita income (Y*/N*) growth over time, which has shown a "synergistic J-curve effect" following the economic integration. In light of the enormous cost burden of integration, it would be a moot question whether or not North Korea's current per capita income of $1,000 could reach the South Korean figure of $12,800 (1999) level in ten year's time after integration. Under the most effective and optimal conditions, the simulation results show more than thirty quarters or seven year's time.

In order to alleviate the huge cost burden of economic integration, it would be wise for the South Korean government to direct its policy toward opening up North Korea's command economy. It can be done by encouraging more joint ventures, by stimulating more investments in the North by South Korean businesses, and more trade between the two states. In this regard, the Tumen River Basin Delta development projects enveloping Yanji, Vladivostok and Chongjin (which was originated by China, the Soviet Union, and North Korea in 1989), can be a very doable program under an international consortium joint venture scheme with South Korea, Japan, and USA joining the cause with the financing support of UNDP, UNIDO and the World Bank. Such an international consortium joint venture can most likely provide a catalyst for full cooperation of North Korea, and eventual unification of North and South Korea without overburdening the South Korean economy.

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