The Political Economy of Re-unification between Two Koreas

Eui-Gak Hwang

Professor emeritus of economics, Korea University and Senior Research Professor of The International Centre for the Study of East Asian Development (ICSEAD), Japan

The International Centre for the Study of East Asian Development, Kitakyushu

The Political Economy of Re-unification between Two Koreas

Eui-Gak Hwang[*]

Abstract

This paper compares both the relative economic strengths of two Koreas and the economics of guns and butter in both theoretical and actual contexts, followed by analysis of the economics of Korean reunification with references in some points with the experiences and lessons obtained from both Germany's reunification in 1990 and Vietnam's reunification in 1975. The costs and benefits of the reunification to be incurred are presented conceptually and numerically, if possible, to reach a conclusion that the sooner the reunification is made, the less the cost of the reunification would be, unless North Korea will change its political and economic landscape toward more open and free market-oriented directions.

Key words: benefit, cost, diseconomy, externality, Germanys, monetary union, PAC-2s and PAC-3s, SAM-X system, Daepodong-2, Vietnam

[*] Eui-Gak Hwang is currently s senior research professor at the International Centre for the study of East Asian Development (ICSEAD), 114-4 Otemachi, Kokurakita, Kitakyushu, 803-0814, Japan. e-mail: hwang@icsead.or.jp and eghwang40@yahoo.co.kr.

1.   Introduction

The 1948 political division of the Korean Peninsula into two rival systems- the North into Soviet-injected socialist system and the South into American-enticed capitalist system,- has for over a half century attributed to completely distant ways and levels of living conditions respectively in two Koreas. North Korea has basically adopted a communist command economy from the beginning and modified (or strengthened) it with so-called unique self-reliant (*Juche)* doctrine since 1955.[1] South Korea, in contrast, has principally followed the capitalist road of a market system, although in the early stages of its development courses (from1960s through1980s) a great deal of government indicative role and controlling practice was indiscriminately used. The fundamentals on which South Korean economy is based, however, are characterized as private ownership of means of production (capital, labor, land, and natural resources), diversified decision-making process, and the built-in stabilization mechanism working principally in accordance with market laws. Market would often face such failures as imperfect competition, natural monopoly, externality, and an insufficient supply of public goods, not to speak of economic instability arising from depression, unemployment, and also inflation which can lead to a growing inequality of income and wealth distribution. These problems inevitably necessitates public intervention into markets by means of indicative or adjustment policies, which may employ some direct purchase, taxation and welfare program aimed at mitigating gaps in both horizontal and vertical equity. From beginning of 1990s, however, the South's economy is mostly running on the basis of market functioning.

North Korea's economy, on the other hand, has been more centralized, more controlled, more ideologically monocratic, and more internationally isolated than those of any of the world's other communist states. With its autarkic command and rationing system (which stopped its proper functioning after 2002 due to short supply of food and other necessities), the North Korea has attempted to achieve its socialistic goals for social

---

[1] The *Juche idea* was initiated by Kim Il-Sung at the Workers' Party Central Committee in 1955 for the sake of various political and economic causes. The basic idea behind the *Juche (self-reliance)* was to make all North Koreans want to become 'ardent communists' independent from alien influences. For more details, see Eui-Gak Hwang, The Korean Economies: A Comparison of North and South (Clarendon Press· Oxford), 1993, pp.28-30.

equity and welfare, but only resulted in shattered failure over time. As in other command economies, the means of productions are namely in the form of 'all people ownership' and 'cooperative ownership', which in theory is geared to serve the promotion of the material well-being of the masses. With regard to what to produce, social preference ordering made by political value judgment of the leadership elites takes precedence over a majority of general consumer demand in the command economy, quite contrary to market economy. In most socialist economies, the priorities of production are ranked down from public goods (inclusive military goods), heavy industry's goods, and light and consumer goods, so that consumer needs on the micro-level are mostly neglected for the sake of the macro-level targets of the planners. The emphasis on heavy industrial and military sectors has been focal point in most socialist economies since the Stalinist period, and the North Korea's *Juche* was no exception. The heavy industrialization needed to secure a large amount of start-up capital amid of overly lower level of per-capita income (consumption) in North Korea. The *Juche* spirit is, however, not oriented in principle to mobilize capital requirements from foreign savings but rather from the so-called "its internal socialistic accumulation" in line with its self-reliant doctrine. However, in the economy where per capita income (or consumption) level was yet too low to feed well, the internal capacity for expanding social resources was severely limited. And continuing urge to make the people to tighten their belts and increase their labor productivity "for better tomorrow" began to lose legitimacy particularly with the turn of mid 1970s.

This policy of heavy industrialization including military sector build-ups in the early stage of development in the North was well compared with the South Korean policy which progressed from the development of consumer goods and light industry in the earlier stages to heavy industry in latter stages as the economy was able to accumulate capital through both enhanced economic growth and foreign savings. As to the distribution of outputs (income), the two systems differ in terms of the choice of beneficiary or demander. The capitalist system distributes its outputs through a market mechanism to those who can afford to pay the price determined by condition of supply and demand. In other words, output flows in the direction of meeting demand. Often consumers face income and wealth constraints which result from the distribution curves

of initial wealth endowments, the abilities of each individual, and other social base factors. Briefly speaking, the markets are mostly buyers markets in a capitalist system but for a number of natural monopolistic goods or exceptional other market failures. Therefore, the producers must compete to provide the prospective buyers with relatively less expensive but better-quality goods and services. Such a competition system makes it possible to improve the quality and diversity of marketable goods, thus helping it extend the markets for the goods to overseas beyond the national border. In the North's communist system, on the other hand, the supreme ruler and top decision-makers allocate resources based on their policy priorities in the order "from military build-up down to party-maintenance and household consumption." They ration consumption goods to the people in accordance with their ranked faithfulness and loyalty to the regime. Even though North Korea has developed its own material incentive systems which are coupled with basic wages, bonuses, and awards of medals as means of encouraging workers' fulfillment of obligatory plan targets, usually defined in percentage growth rates of physical quantities. But such incentive system is not assigned to each individual worker, but to team units. Just as it is possible for an agent in an imperfect monopoly market to cheat sale price in his or her favor, so can a single (wise) worker or every member worker within each team cheat his or her working capacity either independently or collaboratively in such egalitarian society. As such, merely formal incentive system began to lose their effectiveness in luring workers further for hard toils and sweats in the almost equal pay system with no due regard to individual productivity prominence among team members. Beginning from early 1970s, the North had already begun to experience the down trend of workers' productivity, which in turn attributed to lowering the economic growth rates over time. Workers became to know how to meet the annual quantity targets assigned for production in each factory units. In other words, the fulfillment could be achieved by trading off between "quality degrade" and "quantity increase" to meet obligatory plan targets. Furthermore, in North Korean controlled economy, workers have learned over time that their over-fulfillment of the assigned plan target by too large margin in this period would be the government basis for setting target for the next period.

Too much over-fulfillment this year will mean too much hard toils and sweats for workers next year. The system has thus fallen into its own dichotomy which results the North Korean system to increase neither workers' productivity growth nor export competitiveness, not to mention of ending up with overall short supply of all necessities.

Apparently, North Korea had a key turning point that it could have reformed its economic system when the so-called Great Leader Kim Il-sung passed away in July 1994, but his son-heir Kim Jong-il overlooked the good opportunity. Instead, Dear Leader Kim Jong-il has since then chosen a wrong road to turn all his resources only to develop nuke weapons and missiles.

2.   A Brief Comparison of Economic Performance Between Two Koreas

An economic performance of a nation is usually measured by an index of inflation-adjusted national income or its real growth.   In the national income accounts, gross national product (GNP in capitalistic economy) or gross (value) of social product (GSP or GVSP in socialist system) can be viewed as a flow of either product or income, although there exists fundamental difference in respective methods of measuring between values of GNP and GSP (alternatively, GVSP).   In general, the national income (or output, say, Y) can be expressed as the basic identity relationship as follows:

$C + I + G + (X-M) = Y = C + S + T + R_f$, where C is total value of consumption expenditure, I total value of investment expenditure, G government purchases of goods and services, (X-M) net exports of goods and services, S gross private saving (business saving+ personal saving+ depreciation), T net tax revenues (tax revenue minus domestic transfer payments, net interest paid, and net subsidies), and R_f is net transfer payments to foreign countries. If two countries in question use the same method in measuring their respective income (output), then there is no problem to compare their published income data between the two economies. But it is very problematic to compare between two Koreas, since actual income (output) compiling methods are too different one another to compare directly on the basis of one-to-one mapping, as will explained later.

To identify the contributions of major factors on economic growth or performance and to compare between economies, however, we need in general to employ a production

function approach of income (Y). One of widely used conventional approaches is an endogenous growth model introduced by Romer (1986, 1990) and Lucas (1988). An endogenous growth model must highlight one or several key role variables such as human capital and openness of trade and others that have significantly contributed to the contrasting economic performances between two comparing economies. For illustration, recent literatures (Jeffrey D. Sachs and A. Warner, 1995, Ann Harrison, 1995, Sebastian Edwards, 1992) tried to find that various measures of openness increase economic growth significantly through large and substantial investment in physical capital and human capital.[2] Also Robert E. Lucas (1993) found a striking empirical result by comparing South Korea and the Philippines. He showed that as far as secondary enrollment is concerned, the Philippines had 41% enrollment in 1965 and 68% enrollment in 1984, whereas South Korea recorded a remarkable increase from 35% in 1965 to 91% in 1984. The annual average growth rate from 1965 to 1985 for the Philippines is 2.3%, in contrast South Korea rate is 6.6%, almost three times higher than the former. The paper wants to demonstrate that Korea's strong outwarded trade policy during this period made it surpass the Philippines inward-oriented policy in terms of human capital accumulation and economic growth.[3]

To show the role of factors on economic growth, for purpose of theoretical illustration, a simple neo-classical production function may be employed as follows. For simplicity, we may wish to recognize four-plus factors of production along with the endogenous productivity parameter 'A'. The factors may include labor L and physical composite capital K and human capital H and other factor products vector X , which encompasses all important resource and environmental (inclusive economic system, openness of trade, degree of democracy, and a vector of government economic policy, etc.) variables (i.e, $X = \Sigma_i X_i = X_1 + X_2 + \cdot \cdot + X_n$). Then our production function looks in the simplicity form as follows:

---

[2] In particular, see Ann Harrison, *Openness and Growth: A Time-series, Cross-Country Analysis for Developing Countries ,*NBER Working Paper No. 5221, August 1995; and Sebastian Edwards, *Trade Orientation, Distortions and Growth in Developing Countries,* Journal of Development Economics, 39, July 1992, pp.31-58.
[3] See Robert E. Lucas Jr., *Making a Miracle*, Econometrica, 61, 1993, pp.251-72.

$Y = A(\cdot)\ F\ (K, L, H, X),\ \text{where } X = \Sigma_i\ X_i\ \text{and } i = 1 \cdots\ n.$ $\hspace{2cm}$ (1)

The generalization of it into the Cobb-Douglass Production function and then in labor-intensive form is,

$y = Y/L = A(\cdot)\ \{ [K^{\alpha}\ H^{\beta}\ L^{1-\alpha-\beta-\delta i}\ \prod_i X_i^{\delta i}] / (L^{\alpha}\ L^{\beta}\ L^{\delta i}\ L^{1-\alpha-\beta-\delta i}) \}$ $\hspace{1cm}$ (2)

$\hspace{1cm} = A\ (\cdot)\ k^{\alpha} h^{\beta} \prod_I x_i^{\delta i}\ \text{(where I goes from 1 to n)}$

This model (2) can be used to explain the variation in real income per capita y across the two (or more) countries. The labor-intensive form of the function depends on physical capital per capita, k, and human capital per head, h, and other factors (such as trade openness, degree of democracy, etc) represented by x_i. The population (labor force) can continue to be specified as growing exogenously. Here, we need to derive the measure of productivity variable 'A'. Usually we may think about changes in the quality of inputs such as capital and labor in production due to technical changes enhanced by new innovation, education, and R& D inputs etc. In this case, a production function shift comes from changes in technology. Solow (1957, p.316) proposed a way of deriving a measure of the level of technology by factoring out technology out of production function such that technical change is treated to be Hicks neutral. The implication of this separable form is that function shifts are pure scale changes, leaving marginal rates of substitution unchanged at given capital-labor ratios in the production described as

$Y(t) = A(t)\ f\ \{K(t), L(t), X(t)\}$. Given K/L ratio is unrelated to the rate of technical change, the so-called Solow's residuals can be measured from the aggregate growth accounting equation as follows:

$\Delta Y/Y = \Delta A/A + \epsilon\ \Delta K/K + r\ \Delta L/L + \theta\ \Delta X/X\ ,\ \text{where } \theta = \Sigma_i\ \theta_i\ \text{and } X = \Sigma_i\ X_i,\ (\ i = 1 \cdots\ n)$ $\hspace{0.3cm}$ (3)

$\hspace{1cm} \text{and}\ \ \epsilon = (\partial Y/\partial K)\ (K/Y) = A\ (\partial f/\partial K)\ (K/Y)$ $\hspace{3cm}$ (4)

$\hspace{1.5cm} r = (\partial Y/\partial L)\ (L/Y) = A\ (\partial f/\ \partial L)\ (L/Y)$ $\hspace{3.5cm}$ (5)

$\hspace{1.5cm} \theta_i = (\partial Y/\partial X_i)\ (X_i/Y) = A\ (\partial f/\partial X_i)\ (X_i/Y)$ $\hspace{3cm}$ (6)

From equation (3), a measure of technology change rate can be easily obtained if relevant values of variables are available. Once the implied rate of technical progress $\Delta A/A$ is computed by equation (3), (4), (5) and (6), an index of technology A(t) can be

deduced to use in our estimation for equation (5) which can also easily rearranged into natural log form if needed.

Estimation of economic growth in two Koreas would be very mechanical if all relevant data and policy variables are available in the form of "equivalence of their qualities and contents" for two Koreas. The un-equivalent (mutually contrasting) raw data as well as unreliability of the data in reality poses serious hindrance to make any objective and quantitative comparison of economic performance between two Koreas.

Using available South Korean macro-economic time-series data (1985-2005), a pilot estimation exercise for per-capita real income (y) growth based on equation (2) above produced the marginal contribution of each factors to growth in terms of elasticity values as given below. The raw data sources came from (South) Korea Statistical Yearbook, and Gross Regional Domestic Product and Expenditure, both compiled by Korea National Statistical Office (www.nso.go.go.kr), and National Income Statistics published by the Bank of Korea (www.bok.or.kr).

$$dlny_t = 2.811dlnA_t + 0.318dlnk_t + 0.177dlnh_t + 0.126dlnx_1 + 0.715dlnx_2 + 0.013dlnx_3$$
$$+0.042dlnx_4 + 0.239dlnx_5 - 1.449dlnx_6,$$

where $dlny_t = lny_t - lny_{t-1}$ and ln indicates natural log and y=Y/L (that is, per capita output);

   A = technological efficiency parameter (as defined in equations, 3, 4, and 5);

   h = per capita human capital (H/L), which is derived by H = {(total saving rate on education) − 0.05* aggregate monetary value of the stock of highly educated people} divided by total labor force (L). Here * indicates multiplication operator and / is division operator as usual and 0.05 is an assumed annual constant depreciation rate of human capital;

   x_1 = degree of democracy (represented by government intervention, that is derived by 1 minus the ratio of real government consumption to real gross domestic product); x_2 =trade competitiveness (proxy for openness); x_3 = technology level (represented by per capita R&D expense); x_4 = domestic private consumption rate; x_5 = special demand condition (derived as ratio of real spending on recreation, culture, religion, and education to final consumption expenditure of non-profit institutions serving to households); and x_6 = ethnic diversity derived as { $N^{(1-\gamma i)}$ - 1} where N is the number of ethnic groups and γi

is the ratio of ith ethnic group to total population. As the estimates show, the contribution of technological efficiency to economic growth is the largest (2.811), followed by trade openness x_2 (0.715), physical capital k (0.318) special demand conditions x_5 (0.239), human capital h (0.177), level of democracy x_1 (0.126) in order. The elasticity of technology level, x_3, is strangely very low perhaps due to inclusion of technology efficiency score simultaneously with the level. During the sample period, domestic private consumption was found not leading factor for economic growth. The ethnic diversity did negatively play a role, for which further investigation may need in terms of data accuracy as well as estimation methodology..

The above results based on South Korean data suggest at least some important hint for almost broken North Korean economy: if North Korea were to open its economy, to lessen its command control, and to import more foreign capital so as to improve technological efficiency, it would definitely start to catch up South Korea.

In order to apply the production function approach to find how and to what extent do the differences between some economic and policy variables (such as degree of democracy, economic openness, physical and human capitals, etc.) of the two Koreas affect their respective economic performance, all other factors such as the initial conditions and the resource endowments need to be assumed given as usual.

Although two Koreas had some identical initial conditions such as ethnicity, language, and cultural tradition for more than a millennium until the division of the Korean Peninsula in 1945, there has in fact been fundamental divergence developed respectively in both political and economic systems between the two Koreas since then. Nevertheless, any attempts to highlight some key policy variables (i.e, openness of trade and degree of freedom, government defense spending, etc.) that are regarded as significantly contributing to the contrasting economic performance of the two Koreas will be of no significant meaning because there exists yet fundamental heterogeneity in political rulings, policy targets, and other economic policy functions to take into considerations, not to mention the different nature and content of basic data compilation between the two systems as well as insufficient availability of needed data for North Korea. Nevertheless,

some efforts have been made to estimate the North's annual values of total production based on partially and officially proclaimed piece of data.[4]

Even if we set aside such differences between two Koreas as the start-up endowments of natural resources, industrial structure, the ownership of the means of production, and economic policy, there are still basic questions when attempting a comparative analysis based on respectively announced (published) statistics. North Korea uses two macroeconomic indexes: the concept of gross (value of) social product (GSP or GVSP) and national income (NI).[5] However, the concept of national income used in the communist economy differs from that of GNP or NI in the capitalist economy. National income in North Korea as in other communist countries does not include 'value added' originated in most service sectors and depreciation costs. Instead it does include the transaction revenues (profits in turnover), which are equivalent to the differences between wholesale prices and retail prices in the transaction of some consumer goods and some services.[6]

The gross value of social products (GVSP) entails some double accounting in the production process because it is estimated by adding up all output values of all separately enumerated production units. For example, suppose that a farm co-operative produces 10 units of wheat, of which 2 units are consumed by the co-operative itself. A wheat meal uses 8 units of wheat to produce 20 units of wheat flour, of which 5 units are consumed within the mill. Next, a bakery purchases 15 units of wheat flour to make 30 units of bread and it consumes 10 units out of the 30 units of bread. Then, the gross social product (GSP) earned in these productive process is 43 units, that is: (10-2)+(20-5)+(30-10) = 43.

---

[4] See Eui-Gak Hwang, *The Korean Economies: A Comparison of North and South* (Clarendon Press·Oxford, 1993), pp. 93-145, for *the Estimates of North Korea's National Income of 1946-1990*; and *Estimates of North Korea's Income,* released by the Bank of Korea since 1991. It must be noted that BOK's estimates of North Korea's income is made in terms of South Korea's monetary values.

[5] Socialistic economy's gross value of social product (GVSP) consists of three components in accordance of Marxian notation: GVSP=C+V+S, where C is constant capital which represents productive equipment (factories and machinery, etc.), raw material and power; V is variable capital which represents the wage bill; and S is the surplus value of labour which represents "net social income". GVSP is the flow of production per period of time; therefore, C is not the stock of capital, but the annual wear-and-tear and amortization of capital. In a capitalist society S constitutes the profits on capital invested and accruing to the factor income of the capitalists, but in socialist income accounting, S is 'surplus value' which is returned to society as a whole. And national income (NI) in socialist economy is defined as a gross value of social products minus capital depreciation and intermediate costs in accordance with 'the theory of labor values' in Marxian doctrine.

[6] Price concepts used exclusively before 2000 and mostly still now in North Korea refer to "accounting price", but rarely for "exchange price".

But in terms of gross national product (GNP) concept used in market-economy like South Korea, this would come to 37 units: 10+(20-8)+(30-15)=37. As noted, GNP accounts for all "value added", that is, net value after subtracting the intermediate uses, while GSP (GVSP) takes into account the net output values of all consecutive production stages. GSP includes the value of intermediate products and thus its value is counted several times.

More importantly, as explained above, these income concepts in North Korea deviate greatly from their counterparts in the South. North Korea neither explains the methods of estimation of its macro-economic statistics, nor releases any details of the database. The only piecemeal bits of information known to the world are the growth rates of national income and of some arbitrarily selected commodities, but without explanation of base-quantity data, and some occasionally released per capita income figures in terms of wage and reward (bonus) payment increases. But all these released data is often expressed in terms of the workers' over-fulfillment rate over the state plan target rate. In principle, the total value of output (GVSP or NI) achieved in excess of the state plan target rate (100%) is to be distributed to all workers in the socialist state.

The basic straight wage paid for work done within the state targeted goal (100%) changes in proportion to the accomplishment rate of the plan target. However, the reward and bonus payment is made in accordance with the rate of over-fulfillment rate. The state basic assignment rate for work fulfillment is determined on the basis of 100% of the base target, while the over-fulfillment rate is calculated on the basis of 1% unit exceeding the base target (100%)., that is every portion in excess of basic plan target (100%). For example, if the actual work fulfillment is 110% over plan target, it means 10% over-fulfillment as compared with the targeted 100% fulfillment plan. But it is equivalent to just 10 times or 1000% over-achievement if measured in unit of every 1% of over-fulfillment basis. This complicated method for computing the labor productivity growth and output rate is the source of overstating the North's income growth statistics that is irregularly released mainly for propagandizing its achievement.

In order to make economic comparison possible, therefore, overall indicators of North Korea must be somehow adjusted to conform as much as possible to those measures used in capitalist South Korea's economy, none the less important of taking account of real

(shadow) exchange rate to apply for converting the estimated incomes into one standard international money (i.e., US dollars).[7]

Without further elaboration on this issue, we show per capita incomes of two Koreas based on published and accordingly adjusted data information[8] in Table 1, which readers are cautioned to understand only with greater grain of salts, keeping in minds the inaccuracy problems inherent to the raw statistics as discussed above. North Korean economic power in terms of per capita income had outpaced that of its foe South Korea at least until 1975, although its socialistic labor mobilization and work stimulation effects began to inevitably erode in the command economy where every worker gets equal payment no matter how much he or she produces.

The law of decreasing rate of return to work (labor) in incentive-lacking system has been one of important causes of dragging down the growth of North Korea's economy over the last few decades   It is true that the command-type economic policy could be more efficient in the early stage of development as the Soviet-type command economy in North Korea did show a relatively higher growth rate until the early 1970s. But once a command economy reaches a certain threshold level of its growth, it will come to face complexity as every mobilized workers begin to awake to the reality that their toils and sweats are not properly rewarded. It will turn out to exhibit diminishing marginal rate of returns to the inputs of work-push typical in the command system.   This stage is followed by a drop of workers' moral and incentives for any further hard work, and productivity suffers. Such phenomena has been spotted in North Korea since the early 1970s, as revealed at least indirectly by both its stepped-up social indoctrination of '*Juche idea*' and other morale-boosting campaigns to intensively motivate the people.

For nearly a decade beginning from 1990, North Korean economy had been hard hit by both unfavorable external environments such as the dramatic transitions of old communist blocs and consecutively bad weather conditions, which damaged its agricultural production in particular as well as overall economic growth.   During the

---

[7] With regard to diverse methodologies, refer to Eui-Gak Hwang (1993), ibid., Chapter 3.
[8] For 1946-90, it is Eui-Gak Hwang's estimates done by using 'trade exchange rate' instead of North Korea's official exchange rate; For 1991-2008, it is from the Bank of Korea's estimates made in South Korean prices, but they are here converted into US dollar values by using the South Korean exchange rate. To save the space, we show the respective annual income in five year intervals. Those who need annual series of data, refer to the two sources above.

period of 1990-1998, North Korea's economy experienced annual average of minus 3.8% growth rate. This made its gross national income of the 1990s back-drop to the level of two-thirds of the late 1980s. North Korea's annual growth rate recorded minus 3.7% in 1990, minus 3.5% in 1991, minus 6.0% in 1992, minus 4.2% In 1993, minus 2.1% in 1994, minus 4.1% in 1995, minus 3.6% in 1966, minus 6.3% in 1977, minus 1.1% in 1998, followed by plus 6.2% in 1999, 1.3% in 2000, 3.7% in 2001, 1.2% in 2002, 1.8% in 2003, 2.2% in 2004, 3.8% in 2005, and again turned to minus 1.1% in 2006 and minus 2.8% in 2007 in row.

It may be suspected if the shift from minus growth for 1990-98 to plus growth in 1999 might be somewhat related to the pouring money into the North under the South's Kim Dae-jung regime's *sunshine policy* started in 1998, not to pointing out that the North mobilized all efforts then under its limited capacity to get out of its poverty-pit.

Table 1. Comparison of Per Capita GNP (or GNI) in Market US-dollars between Two Koreas

Year	North Korea (DPRK)		South Korea (Republic of Korea)	
	Per-capita GNP	Population	Per-capita GNP	Population
1946	25	9,257,000	-	-
1953	53	8,491,000	67	20,194,000
1956	46	9,359,000	66	21,970,000
1960	177	10,789,000	79	24,658,000
1965	248	12,100,000	105	28,628,000
1970	304	13,892,000	252	32,163,000
1975	751	15,853,000	590	35,246,000
1976	775	16,260,000	797	35,822,000
1980	1,161	18,025,000	1,589	37,965,000
1985	978	20,385,000	2,194	40,882,000
1990	1,146	23,174,000	5,569	42,719,000
1995	1,034	21,543,000	11,432	45,250,000
2000	757	22,175,000	10,841	47,209,000
2005	1,056	22,928,000	16,413	48,138,000
2006	1,108	23,079,000	18,372	48,297,000
2007	1,140	23,200,000	20,045	48,456,000
2008				

Sources: For 1946-1990, Eui-Gak Hwang, *The Korean Economies: A Comparison of North and South*, (Clarendon Press· Oxford, 1993), Chapter 3, pp. 93-145. For 1991-2008, The Bank of Korea, *North Korea's Major Economic Indicators*, *Principal Economic Indicators (monthly)*.

But only external help cannot rescue the poverty of a nation unless the nation is willing to help itself. Above all, heaven must ransom the wrongdoings of the leadership.

Despite loud paeans to self-reliance coming from the regime, a disastrous famine from 1996 to 1999 was known to kill about one million people. Starting from 2006, as already shown above, North Korea appears to confront a second wave of annual minus economic growth in row amid of its use of nuclear brinkmanship diplomacy.

In order for the North to free from wrath of starvation, it has to transform its political and economic system into free democracy and market economy as its former communist bloc countries have chosen. The North leadership needs to change its intransigent mind-sets.

Of course, per capita income level can not be a sole indicator of economic strength of any economy. Other economic indicators showing relative economic power between two Koreas may include external trade, external debts, size of national budget, production of electricity, other energy sources, food grains, industrial outputs, steal, and construction materials, as well as social overhead capitals, etc., to list a few. In most of these cognitive indicators, North Korea cannot match with South Korea but for its marginal advantage in deposits of some mineral resources (i.e., coal, steal, and non-metallic minerals). For example, as of 2008, external trade of the South outpaced that of the North by more than 200 times. More importantly, for all practical purposes, North Korea's state-run economy of steel mills and coal mines is almost dead as their operation rates are less than 20 percent of their capacity. The North's dream for socialist paradise is forsaken, and its medi-care system and Public Distribution System have all been out of order nearly for recent a decade. With the partial exception of the military industry, the only functioning parts of the North Korean economy are now 'unofficial private markets' whose illegal economic activity is the only way to survive for many people. Amid of the authorities' reiterating their old anti-market rhetoric, even ranks of bureaucrats are looking for other opportunity from the spread juxtaposition society. In fact, North Korea officially introduced its market promotion measure in March, 2003, but enlarging markets made it increasingly difficult to control the spreads of various political gossip and truth among people. So the North attempted to reinstall its Public Distribution System in October, 2005 but with no effective success; to prohibit any adult male of 17 years older from engaging in market transaction in December, 2006; to permit women of 49 years older to participate in marketing activities in October, 2007; to list items and

prices of marketable goods in November, 2007; to restrict all industrial goods to trade only at state-run markets in December, 2007; to convert daily market system to one of every ten days in November, 2008; and to convert 'all-round market' to only limited 'farm' market system in December. The leaderships perceive the markets to be the source of 'capitalistic yellow winds' (what they call subversive, anti-socialistic moves), a potential blow to the North's isolated *Juche* system. But these control efforts are now only partially successful in the North because the closing of these markets would mean people's starvation to death. Internally, the juxtaposition society produces unavoidably corruption, making possible many things that were unthinkable in the past, such as various bribing and human trafficking.

3.   The Economics of Guns and Bread

   The prospects for North Korea are increasingly not promising. Dear Leader Kim Jong-il had partially attempted to experiment the road of market reform along the lines of China in 2002, but soon began to make a policy U-turn because of fear of his eroding legitimacy for *Juche* doctrine. Market trade activities would facilitate a spread of rumors about the life in outside world including their brethren across the border. The U-turn process could not, of course, be complete as mentioned above. However, the frustration occurred from its poorly prepared road to reform as well as from its unsustainable economy appears to be driving the North's leadership further to turn to brinkmanship actions to play with its military toys. In North Korea where people are long subordinated mentally, emotionally and ideologically to the Personality Cult, the ruling class's strong power ostentation using nuclear weapon and rocket (missile) developments would still be one of the most effective options for binding people to unity. This does not, of course, imply that a majority of people will unanimously continue to support the leadership with little regard for their hungry stomach in favor of the state's assurance of victorious military strength.   For illustration, let's suppose we have two free agents: a sole government and people as an aggregate entity. The government (represented by one man leadership) is currently attempting to employ a nuclear brinkmanship policy at the cost of insufficient food supply, and we know with absolute certainty that if it is successful, it

can establish a strong state to receive sufficient foods from the scared outside world. What should the other agent called 'people' do about this matter?   This agent (people) has two alternatives: He can either join the government policy, (and he can not join the forces of opposition because this means 'exile'), or he can remain inactive.[9]   We may illustratively compute the payoff to 'people' of these two types of action. The cost (negative pay-off) to 'people' who does not support the government policy, P_i, will equal the increased food secured by successful brinkmanship, F_s, which the people would receive times the likelihood that the brinkmanship policy, L_b will be successful: $P_i = F_s \cdot L_b$., which shows the payoff to inaction (indifference). Unless P_i is less than total implicit cost of employing brinkmanship policy (that occurs if probability L_b is equal to or less than zero), people can be coerced to follow government policy whether good or bad. Of course, this payoff is theoretically a public good and private reward as well in a socialist egalitarian economy like North Korea. Rational people (agent), though destined to live in the controlled society, will always weigh both the rationality and success probability of any government policy when they make their true judgment in their inner-most calculation. The dictatorial leadership needs, therefore, to coerce its people to believe that its brinkmanship diplomacy has positive probability of success. In this case, of course, the selfish dictator needs not to be responsible and thus to consider whatever it will be after his departure from this worldly life.

Amid of the UN World Food Program (WFP) report that an estimated 8.7 million people went hungry, North Korea blasted off a long range missile (which Pyongyang claimed was a communication satellite) from the Musudan-ri launch facility at 11:30 a.m. on April 5 (Sunday), 2009. North Korea proudly announced that its three-stage rocket had successfully put its satellite into orbit, which it claims circling the Earth and transmitting revolutionary Kim Il-sung and Kim Jong-il songs. "Our scientists and engineers have succeeded in sending satellite Kwang-myong-sung-2 into orbit by way of carrier rocket Unha-2 which is also called the Dapodong-2", said North Korea's state Korean Central News Agency. Although the U.S. intelligence confirmed that the rocket (which U.S. and Japan regarded as a disguised ballistic missile test) apparently fizzled

---

[9] In reality, it may be also risky if one shows inactive or indifferent response to what the communist regime does.

into the Pacific without success to reach orbit, the North demonstrated its improvement in missile range. The rocket's second stage was traced to land in Pacific Ocean waters about 3,200 km (2,000 miles) from the launch site, showing that North Korea has succeeded in about doubling the range compared to a 1998 launch of Dapodong-1 missile with 1,640km range.

According to South Korean military intelligence authorities, this time launch of the North's rocket cost the regime about 300 million U.S. dollars, totaling North's direct cost of current nuclear projects and missile developments to an estimate of over 2.6 billion dollars. The amount of 300 million dollars could buy about one million tons of rice at the 2008 world price, which was about to meet the absolute shortage of rice in the North for a year. Assuming average rice consumption per capita will be about 500 grams per day (which is larger than a South Korean average daily rice consumption), one million tons of rice (to be procured for 300 million dollars) will feed about 5.5 million of North Koreans for a year.

With little regard for the plight of most North Korean grass-roots, the North's elite class enticed by a cult of personality on the Dear Leader giggled with delight when they heard the news of rocket launch. North Koreans living on China's side of the border and pro-North Korean residents in Japan as well as a considerable number of leftists in South Korea (i.e., members of the Pan- National Association of Fatherland's Unification in Seoul) hailed the launch openly and at least from their inner-most feelings. South Korea's Yonhop news agency reported that Mr. Shin Son-ho, North Koreas' ambassador to the U.N., told reporters in New York, "We are happy. Very, very successful. You should congratulate us".[10]

Would the launch work as a good medicine or as a bad poison for the life of North Korea? These questions must be approached in the context of the North leadership's two trump card bets: one domestic bet to enhance the "regime's military and science first policy" as well as a major psychological boost among mass, and the other for inducing U.S. President Obama to hold direct talks with the so-called "great fatherland's Dear Leader". In an apparent attempt for 'a bigger gain' by offering tensions with this ballistic missile in addition to a nuclear bomb test , North Korea even had to demonstrate its

---

[10] The Japan Times, (Tuesday, April 7, 2009), p. 1, *U.N. fails to agree on response to N. Korea rocket.*

robustness of self-reliance. In fact, North Korea refused in 2009 to accept even food aids from the United States and South Korea, its main food providers since the successive crop failures began in mid-1990s. In September, 2008, the WFP made a worldwide appeal to up to $504 million of food aid for North Korea, but as of April, 2009, only 11 percent of that has been received, enough to feed about 1.8 million people.

North Korean leadership is betting on long-range missile and nuclear bombs (*guns)* at the cost of its populace's shrinking stomach (*food*). For the North believes that betting on 'guns' can surely buy 'more food' later as the western cowards come to compromise in exchange with its provocative moves. More impotently, North Korea is betting it will not suffer serious international sanctions for the launch, since U.N. Security Council is divided on a response. If the U.N. Security Council moved against the "our-own-way" *Juche* nation, it will bolster its nuclear deterrent and continue to develop its so-called disguised space (rocket) program. Nonetheless, the reclusive communist nation will conduct more "provocative act" as its means of survival efforts.

Japanese and U.S. envoys working on the U.N. Security Council response to North Korea's rocket (disguised missile) launch appeared initially very strong confirming that the launch was a violation of Security Council Resolution 1718, adopted in October 2006 after Pyongyang carried out a nuclear test. But Japan and U.S. changed their positions back down over strict sanctions on North Korea. Because China and Russia (of five permanent Security Council members: Britain, China, France, Russia and the U.S.) took positions of very muted response to the North's rocket launch in sharp contrast to other nations. Such factors were probably figured into the North's calculations to fire the rocket, as usually were in its other previous provocative actions toward the United States and South Korea. If everything did work as the North calculated, the North's game would be a short-term success for Pyongyang regardless to the dependability and marketability of its missile technology. Because North Korea now adds some immediate leverage to bargain away its nuclear weapons and missile programs in exchange for 'more food aids' and other concessions with the United States either directly or at the six-party talks. North Korea's leadership could also continue to carry out other provocative acts, such as a second nuclear test, if its rocket launch doesn't produce what it wants such as direct talks with the U.S. This is indeed a new unpredictable game-field which U.S. President

Barack Obama has to cross the East-Asian deep waters. Unless the United States could make China engage far more to rein in North Korea,[11] North Korean game is hard for the inconsistent U.S. administration to win until the North's regime collapses itself due to its inside trap. More significantly, the defining characteristics of U.S. current policy toward North Korea does not seem to have any coherence and consistency. While President Barrack Obama sternly voiced in Prague that "rules must be binding" and "violations must be punished" when he learned about North Koreas' launch of an intercontinental missile, his special envoy for North Korea, Stephen W. Bosworth had publicly declared that "pressure is not the most productive line of approach" in dealing with the North. It is very doubtful that the U.S. will make a progress on missile and nuclear deals with the North which reads well the maps of the U.S. policy inconsistency as well as the would-be weakness of the U.S. kind of counter-foreign medicine.

As North's military experts demonstrated a greatly enhanced range of its missile, the North Korea Workers Party delicately planned the launch to unanimously back up Kim Jong-il leadership at the 12th Supreme Peoples' General Assembly (Parliament) held on April 9, 2009 . The launch presented the 67 year-old Kim to see an enormous boost in Pyongyang for the defiant act. At the Supreme People's Assembly held in just 4 days after the launch, Kim was re-elected as the Chairman of the National Defense Commission which is in charge of the entire state affairs including all economic policy as well as defense policy.[12] This is his fourth term as the head of both Korean Workers' Party and Defense Standing Committee since he took the position first in April, 1993,

---

[11] Lee Myung-bak has called on China to help deal with North Korea following its rocket launch. South Korean President Lee told a visiting senior Chinese Communist Party official that Beijing must play a large role in resolving the issue of the long-range missile launch. Mr. Li Changchun said that China will work with South Korea to resolve the issue. In a national radio address on April 6, 2009, President Lee said the launch is a threat to "regional and global security" and can not be justified. President Lee said that he is considering joining a U.S.-led initiative to halt the spread of missiles and weapons of mass destruction. On the same day, South Korean lawmakers passed a resolution condemning the launch, while some conservative demonstrators took to the streets of Seoul to protest against Pyongyang which carried out the launch. According to North Korea's central news agency (KCNA), Kim Jong-il was present during the launch and hailed its scientists for their wisdom and technology. Japan and the U.S. believe that North Korea's launch violated U.N. Security Council Resolution 1718, which was adopted following North Korea's nuclear test in October 2006 and calls on Pyongyang to abandon its missile and nuclear development program. Reports say that China, Russia, Libya, and Vietnam oppose any further U.N. actions on the North's April 5 rocket launch
[12] Kim Jong-il, having had a stroke in summer 2008, has been less influence over the military and has delegated a considerable power to his brother-in-law Chang Sung-taek in expecting to put his one of sons on the throne.

when his father Kim Il-sung remained still alive and was in power. The ever-victorious supreme ruler but now ailing Dear Leader Kim Jong-il managed to re-boost his incumbent power ground politically, thus helping to pave the way for his successor (perhaps one of his three sons yet not pronounced) to take the helm. It is apparent that North Korea will enter into its period of step-by-step power transition due to his illness and age. [13]

By passing, it may be noted that the North's missile (or rocket, whatever it was called) appears to provide Japan with new opportunity and incentive to greatly enhance its build-ups for self-defense system. Japanese annual defense expense is approximately 44 billion U.S. dollars, ranking 5th largest in the world as of 2009. Japan has already its 800 million yen (about 8 million US dollars) missile defense system including two Aegis destroyers carrying Standard Missile-3 (SM-3) interceptor missiles and several Patriot Advanced Capability-3 (PAC-3).[14] After North's April 5th missile launch, Japanese government moved immediately to set aside additional fiscal spending to help each of all municipalities (local governments) introduce a satellite-based system for warning residents of missiles and natural disasters. They intend to finance individual municipalities to introduce J-ALERT system (costing an average of 6 million Japanese yen, equivalent to about 600 thousand US dollars per unit) under a supplementary budget for fiscal 2010. Further defense inputs must be one notable and prolific political economics of military yet under waters in East-Asia, being ignited by the North's exercise of its economics of weapons (guns).

---

[13] Kim Jong-il anointed his brother-in-law Jang Song-taek (63) (who is husband of Kim's sister Kim Kyong-hui) to a powerful seat, one of newly expanded 13 standing members of the National Defense Commission at April 9th Supreme Peoples' Assembly. This is seen as the most likely choice to take over power should ailing Kim die suddenly. He could also mentor one of Kim's three known sons if he decides to groom them for succession. Jang, an economic specialist considered pragmatic, suffered career setback in 2004 as a result of a power struggle in Pyongyang, but was seen as returning to Kim's inner circle in 2006 when he attended a reception hosted by the National Defense Commission. He, the youngest member of the National Defense Commission, is likely playing a key role in preparing for the post-Kim era.
[14] SM-3s can cover most of Japan and each PAC-3 has a defense range of 20 km.

4.   The Economy of the North's Nuclear and Missile Tests

Today, the world is instantly connected like a spider web without borders. Robert P. Warren pointed that *"in that time he learned that the world is all one piece. He learned that the world is like an enormous spider web and if you touch it, however lightly, at any point, the vibration ripples to the remotest perimeter and the drowsy spider feels the tingle and is drowsy no more ⋯⋯"*.[15]   Indeed, any external shock anywhere in the globe may quickly influence everywhere in either degrees depending upon its wave of 'bang effect'.

The effects of the North's nuclear and missile tests on the world financial markets are mixed. Immediately following August 31, 1998, when North Korea launched its Daepodong 1 missile, the world's stock markets reacted surprisingly up-wards (instead of down-wards) along with dollar rate rise. On the other hand, September 11 U.S. terror in 2001 caused to drop world stock prices, dollar rate, and world interest rate instantly. The North Korean missile launch (March 10, 2003), its declaration of nuclear weapon development (February 11, 2005), and its nuclear test (October 9, 2006), and the North's rocket launch (April 5, 2009) have so far no significant influences on South Korean markets as well as world financial markets in contrast to relatively angry rhetoric in Seoul, Tokyo, and Washington while most European cities remained intact in calm and indifferent mood. This shows that the world nations do not buy North Korea's real capability to threaten the world politically and economically, if not put aside its normality. If it were not under Beijing's tutelage, the North's existence would largely be ignored whatever brinkmanship the deformed regime may employ hard. South Koreans are much more immunized to the North's scoundrel which, in fact, lacks any robustness in terms of physical strength. With no regard to the North's tests, South Korean economy continues its normal trends over time, as South Koreans doubt if the North is capable to trigger on the South. The South's short-term economy is more dependent on both domestic and world finance and market conditions rather than any policy move in the North, even

---

[15]. Quoted from Peter Murrel, *The Nature of Socialist Economics: Lessons from Eastern European Foreign Trade* (Princeton, NJ: Princeton University Press, 1990) p.44.

though there are rooms for the economy being adversely affected if odds of war broke up in the Peninsula.

If an economy were concentrated toward heavy industry at some take-off stage of growth, then investment in military technology (like rocket, satellite, warship, etc.) could accompany some accelerating 'boost effects' for the economy as a whole through its forward and backward linkages on overall sectors. There is plenty of research evidence to support the economics of military spending, not merely to pointing the 'employment effect' as well as 'skill training effect' of military cadets. There are also 'pro-and-con' arguments regarding about if military spending is merely consumptive and non-renewable when in particular the economy is yet primitive and less developing stage. It may depends, but in an impoverished and isolated economy like North Korea increased pouring in military sector would surely harm the people economically because other sectors could not afford to grow.. Channeling most resources into beefing-up military sector would make a great majority of people poorly nourished, resulting the height and weight of average people as seen in North Korea to have been 'shorter, smaller, and weaker' over several decades. There is no question that weak physical health attributes in part to average worker productivity of North Korea far less (only one-twentieth) than that of average human capital in South Korea. Inefficient use of resources for 'military-first' tenacity at the cost of daily necessities is certainly the main cause of the "dichotomy" of North Korean policy makers. The North's 'military-first policy' also makes its counter partner in the South overly divert scare resources for military defense, as is it also likely to affect Japan as cited above. Such a diversion of resource to military sector would constitute the externality of the diseconomy of the North's adherence to nuclear and missile developments, although in both South Korea and Japan (which are now at the economic stages of mass consumption and beyond) the increase in military spending would possibly accompany with some positive linkage effects to wake up their respective economies bound in global recession .

The current military capability in terms of quantity and quality between two Koreas are hard to make a clear line as regards to who is superior. North Korea has a 40-year-long history of missile development since it emulated the old Soviet Union and Chinese technologies. North Korea, now with own capability of developing middle and long-

range missile (ranging from 300 km to 2,500 km), develops formidable ballistic missile of 3,200 km range (estimated total weight of 70 ton) as launched on April 5, 2009.

To both South Korea and Japan (as well as the United States in not a distant future), the North's missile power is an integral   part of nuclear threat. While South Korea is exposed to the North's nuclear threat, its missile defense capability is severely limited, but greatly covered by U.S. force in South Korea. Currently U.S. Force in Korea deploys PAC-2s and PAC-3s in South Korea (officially, Republic of Korea) to intercept any North's missile attacks toward the southern part of the Peninsula. In case of a Korean contingency, the U.S. may dispatch Aegis ships armed with SM-3s.

South Korea's SAM-X system [16], if applied in parallel to general ROK-U.S. cooperation, may add up some defense capability. As a matter of fact, South Korea's defense depends greatly on ROK-U.S. missile defense cooperation, although the proximity to North Korea (officially, Democratic Peoples Republic of Korea) does make any missile defense system not-so-effective. North Korea's missile to be launched near the military truce line can strike Seoul in less than a minute.

It is technically not feasible for a South Korea's defense system, if any, to detect and interdict the incoming missiles like Rodongs or Scud-Cs, more than half of whose flight is exo-atmospheric, and occurs in the blink of an eye.[17]

A comparison of military powers in terms of quantity (numbers only) between two Koreas as of December 2008 is shown in Table 2.

---

[16] SAM-X is the codename for the South Korea's program in the future upgrading of a surface-to-air missile system, enveloping plans in acquiring early-warning ballistic missile systems, Aegis destroyer, and PAC-2 ATM.

[17] See Taewoo Kim, *OK Military Transformation and ROK-US Security and Maritime Cooperation: MD,PSI and Dokdo Island,* International Journal of Korean Studies, Volume XII, Number1 (Fall/Winter 2008), p.51.

Table 2.　A Comparison of Military Strengths between Two Koreas (end of 2008)

	South Korea	North Korea
Army (persons)	522,000 (- 19,000)	1,020,000 (+ 20,000)
Navy (persons)	68,000	60,000
Air Force (persons)	65,000	110,000
Sub-total	655,000 (-19,000)	1,190,000 (+20,000)
Corps (units)	10 (-2)	15 (-4)
Divisions (units)	46 (-4)	86 (+1)
Mobile Brigade (units)	15 (-4)	69
Tank (units)	2,300	3,900 (+200)
Armored Vehicle (units)	2,400 (-100)	2,100
Field Artillery (units)	5,200 (+100)	8,500
Emanate Artillery (units)	200	5,100 (+300)
Battleships (units)	120	420
Landing (Ship) Tank (units)	10	260
Submarine (units)	10	70
Air-fighter (units)	490 (-10)	840 (+20)
Helicopter (units)	680	310
Reserve Army (numbers)	3,040,000	7,700,000

Note: numbers in parenthesis is the change of numbers over 2006.

The data given in Table 2 was from the 2008 White Paper of Defense published by the Ministry of Defense of the Republic of Korea. As shown, North Korea precedes South Korea in most of comparable data when viewed from the angle of military quantities, but in terms of quality of weapons such as accuracy and sophistication South Korea coupled with the U.S. forces in Korea is known not to be less powerful than its counterpart. But it is not hard to believe that military authority always needs to show its 'relative disadvantage (inferiority)' as well as some profile of strains over the enemy in order to secure more share of annual national budget for military sector. On the other hand, South

Korea needs to reboot the ROK-U.S. alliance that has been on down-grading rout not only because of the Korean anti-American sentiments and autonomy implanted by former Kim Dae-jung and Roh Moo-hyun liberal leaders, but also due to the U.S. new strategic flexibility policy taken after 9-11 terror in 2001.

According to military experts, South Korea is now more ahead of spaceship technology but behind in rocket technology than North Korea. Table 3 compares (with no further comments) the rocket technology between two Koreas.

Table 3. A Comparison of Rocket Technology between Two Koreas

Division	South Korea	North Korea
Name	KSLV-1 (small satellite)	Eun-Ha (Daepodong-2)
Length	33m	32m (estimate)
Diameter	2.9m	2.4m (estimate)
Weight	140t	about 70t (estimate)
Propel Method	1st stage by liquid and 2nd by solid Fuel	1st and 2nd by liquid and 3rd by solid fuel
Flight-height	300km	200- 300km (estimate)
Carrier	Science Satellite-2	Kyangmyungsung-2
Carrier Weight	100kg	Maximum 1000kg (estimate)
Developer	Cooperation with Russia	North Korean Scientists
Launch Date	2009. 7 (plan)	2009. 4. 5 (actual)

Source: South Korea's Space Research Bureau (April 2009).
Refer to http://kr.news.yahoo.com/etc.text.htm/articleid=2009040602535562210 (2009-04-07)

South Korea's missile development had been so far restricted only to its capacity limits of less than 180km range and 500kg weight by ROK-U.S Agreement made in the 1970s. The agreement was revised in January 2001 so as for South Korea to expand its limit of range up to 300km in three years later after North Korea launched its Dapodong-1 of about 2,500 km range in August, 1998, following its Rodong-1 of 1,300km tested in May, 1993. In order to target all corner of North Korea, South Korea has to have at least 550km range of missile

Being awaked by the North's April 5th rocket launch, new voices are emerging in Seoul asking for the recovery of "nation's missile rights", which are yet being regulated by ROK-U.S defense alliance pact and missile non-proliferation compliance with all members of MTCR (Missile Technology Control Regime). Meanwhile, South Korea plans to develop its own early warning raider system enable to cover 1000km range by 2012 with total investment of 300 million U.S. dollars.

5.   The Political Economy of Korean Unification

The political economy of would-be Korean reunification must be balanced, as in all political affairs as well as in individual behaviors, in terms of potential benefits and costs over due time. The hope and despair would be unavoidably mixed in the course of the process regardless of whichever either implosion or explosion attributes to it and how it comes either in gradual mode or in big bang. The lighter side of the unification may include an enlarged economy in terms of expanded capacity of land, people, endowment of natural resources, and markets, not least to explain the potential saving away from conflicts of political rivalry between two Koreas.

Economic integration will contribute not only to bring forth national external competitiveness but also to enhance national guts (spirits) above all. All such direct and external benefits (and costs as well) would, of course, be neither fully realizable nor accountable, no sooner than the occurrence of physical integration.

The noticeable physical and pecuniary effects, if not emotionally, will come rather slower than expectation - over several years or decades, as learned from the economic consequences of German Unification. With the fall of the Berlin Wall in 1989 and the ensuing reunification of East Germany with West came great expectations for a renaissance that would presage an even stronger German economy. Although the cost that involved with moving an antiquated socialist economy toward its capitalist counterpart was anticipated to be significant, German industrial efficiency was expected to quickly overcome the challenges that would be encountered.

However, things turned out rather differently in reality, perhaps due to misguided macro-economic policies rather than monetary costs of unification, attributing to rather

poor economic performance and rise in public debt on unification for a decade of the 1990s. The deterioration in public finances and the country's exceptionally poor economic performance during most of the 1990s was a direct and apparently inevitable result of German unification. But the German government and its Bundesbank (Germany's central bank) put soon in place fiscal and monetary policies, i.e., higher taxes, increased social security contribution rates, and spending cuts, aimed at reducing borrowing and in turn, containing the inflationary pressure. The overall results were low inflation and sound financial and structural balances, which provided somewhat for unified Germany to travel a long way to reach to about 40,000 US dollars per-capita income until 2008. Nevertheless, the unified Germany has been swimming yet in many lingering negative results including relatively high unemployment, slow growth, and the disappointing economic developments in eastern Germany since unification.

For a few years soon after the unification, former West Germany's economy coped rather smoothly with the strains that unification put on its resources. In fact, real GDP grew at a solid rate of 5 percent in both 1990 and 1991. Investment, potential output, and labor productivity grew rapidly, with the result that supply-side growth was strong and broad-based. Employment growth was evenly distributed and included people previously classified as structurally unemployed. Moreover, the influx of labor from former East Germany provided important supply-side relief, so that general labor market pressures were abated. But soon the Germany's misguided macro-economic policy paradox (mixed with pro-cyclical fiscal policy and counter-cyclical monetary policy) began to harm the post-unification era of German economy.

If it had not been the fiscal-monetary policy paradox in that German government which embarked on fiscal consolidation in pro-cyclical and inexplicably aggressive way, while the Bundesbank, in turn, magnified the depressive effects of fiscal policy by tightening money supply, the economic performance could have been much better.[18] More cohesive policies could effectively have stabilized the economy as it absorbed the cost of unification. Jorg Bibow (2001) argued that tight, pro-cyclical fiscal and monetary policies that dampened economic activity after the rest of 1990s were major causes of

---

[18] Jorg Bibow, *The Economic Consequences of German Unification: The Impact of Misguided Macroeconomic Policies,* Public Policy Brief (No.67, 2001), The Levy Economics Institute of Bard College, p.8.

anemic growth and high unemployment for which the country's finance department and central bank were responsible rather than two-Germany's unification.[19]

Probably counterproductive results of high unemployment, slow growth, and fiscal deterioration were mostly responsible for the Bundesbank, because the German central bank was obsessed too much with controlling inflation while mistakenly underestimated the amount of spare capacity and supply-side elasticity of the economy to be owed to the unification. If it had not been a tight money, the united economy could have achieved better.

As a case in Germany, indeed, very important is the government macro-economic policy in fixing the economics of a nation. No less important is, of course, the nation's well preparation to face up real problems on hand, not to ignore the importance of the quality of people in place. We know that leading groups are so important to make a nation or world keep on right tract. In 2008, the world had witnessed the collapse of a host of big financial institutions everywhere, as a small groups of traders and business executives at once venerable institutions had brought global financial systems dysfunction with reckless risk-taking – with other people's money – for their personal gain, thus bringing the world to the worst economic calamity since the 1930s.[20]

The Germany's experience illustrates that the post-unification economic policy is one of the most important considerations for Korea to care for in order to minimize the negative externality and loss of efficiency to be accompanied by unification process

Official estimates of fiscal transfers from western to eastern Germany are about DM 180 billion per year since 1991, or roughly 6.5 percent of western Germany's GDP. This figure is the sum of all unification-related expenditures and tax relief. The portions of both this expenditure and tax relief come partially from federal revenues generated in eastern Germany which must be deduced to yield proper net transfers from western to eastern Germany. Thus, the net transfers are some DM 120-140 billion per year since 1991, or roughly 4.5 percent of western Germany's GDP. Considering such figures (4 or 5 percent of the South's GDP) applicable to Korean case, some may argue that

---

[19] Ibid, p.6.
[20] For illustration, a handful of oligarchs and elites have contributed to their countries' economy or business to ruin in the pursuit of their own selfish interests as witnessed over history in Russia, Latin America, Africa, and Asia as well as in Bear Stearns, Lehman Brothers and AIG more recently in the United States.

unification will likely bring about too heavy economic burden on the shoulders of South Koreans who are supposed to absorb the North in case. Though such a fiscal transfer from the South to North Korea may constitute big share of unification burdens, but the amount of such net transfers is not an appropriate measure of the financing requirements resulting from unification. For income and employment multipliers to be generated from gross fiscal transfers to North Korea will also benefit South Korea's public finance sooner or later by raising exports to North Korea and abroad as well. Therefore, actual financing requirements would be expected to be considerably "lower" than any total numbers suggested in terms of actual transfer money..

The unification will balance the pecuniary benefits and pecuniary costs over dynamic process and time, while it will surely make its positive externality exceed its negative externality for the nation. Although the two Koreas have followed diametrically opposite paths of development in politics and economics, they have been rooted in common culture, language and family. Once the two get united, Korea will be able to advance its economic, social, and inherent national tradition and superior cultural fronts by diverting its national energy, talents, and other resources from largely consuming for the contests of political, ideological, and security matters that two competing rival systems have played out on its soil. None the less, Koreans under one nation flag will likely recover its "high-spirited identity" and will be able to take "more responsibility as well as more assertive role" in world affairs. By no means less important are the conceivable implications of the unification of Korea for the evolution of the more cooperative multi-national economic relations both in Asia and on a global scale. One Korea re-founded on "solid neutral position" in the world political game will also contribute to the balance of power among China, Russia, Japan, and the United States.

The experience and lessons gained from the post-Vietnam reunification also suggest some inference for Korea. Vietnam today after its reunification in 1975 does present very challenging economics of hope (or no-worry) for Koreans even if the latter' path to national unification would differ from that of Vietnam. Vietnam which has 54 different ethnic groups had divided and followed opposite political and economic systems for almost two decades that followed the Geneva Accords in July 1954. North Vietnam was based on an attempt to construct socialism like North Korea, while South Vietnam was

set on the capitalist path of development like South Korea. After the collapse of the South Vietnam Government in August 1975, the communist Ho Chi Minh Government succeeded to achieve a political and socio-economic unification overcoming and solving many problems thereof, while accelerating its 'economic reform' adopting open-door policy, free pricing system, and financial market liberalization. Since then, Vietnam has entered a new stage of economic development with the average annual GDP growth rate exceeding 7.5% in row.

Currently per-capita income is yet no more than 1,200 U.S. dollar, but Vietnam with its population of more than 83.2 million (about 44 million of working age population) is now being overflowed with 'national vitality and hope' for better future with much improved individual and political freedom. Integration of two systems into one offers new motives and reasons to both leaders and people to compete accommodating more flexible and pragmatic political and economic policies than when the two divided in fighting against one another.

Likewise, the reunification of Korea will induce all Koreans to work forward together in unity with new hope and dream and the unification generation will tell their off-springs that 'oneness' is always worthier than the division, whatever the cost of unity would be.

As regards to the cost of Korean reunification (possibly due to either total collapse of a regime reminiscent of the Romania's Nicolae Ceausescu in 1989 or other unexpected causes), factors to be considered are too diverse to count. To list a few of contingency expense, pecuniary and non-pecuniary immediate costs needed to deal with wave of emigration, peoples' adaptation to new circumstances, structural unemployment, post-military role readjustment and disposal of weapons, violence and demonstrations, as well as housing problems etc., are all in important order above all. However, if the reunification were to come in such a mode (i.e., more or less peaceful and gradual process) as was in Germany after Berlin Wall fall in late 1989[21], it might be considered in terms of time-structural costs and benefits involved with the South-North monetary, economic and social integration process. As an example, East and West Germanys officially signed a state-to-state pact on monetary, economic and social union (MESU) of two Germanys on May 18, 1990, by which East German socialist economic order was

---

[21] See the appendix on chronology of German reunification process.

legally integrated into social market economic order of the West effective as of October 3,1990.[22] In order to integrate into one unified system, Germany took, first of all, the measure of monetary union between two separate currencies used theretofore respectively in two Germanys. The exchange rate between the west and the east currencies was politically set at around one to one ratio, despite the then actual shadow rate was approximately 4.4: 1 between the East Germany's Mark and West Germany's DM (Deutsche Bundesbank Mark).

The reunification cost can be thought of largely two categories: consumptive cost and recoverable cost. The benefit side is also considered in light of the aspects of not only cost-savings from two rival and thus duplicative expenses (i.e., military and security budgets, diplomacy expenses) but also economic, political and social benefits and externality (i.e., larger land, labor forces, markets, resources and to-be-enhanced human rights, democracy, reduced war risks, higher national spirits). They are all not necessary static concepts for cost and benefit but rather dynamic over time. Therefore, any attempts to estimate would-be cost-and-benefit of Korean reunification is very challenging but the results would often not likely be of any useful value in reality, as it would be nearly infeasible to take account of all relevant factors in terms of their internalized values over time, if not a mere intellectual exercise for any concerned researcher. The estimates will also depend on assumed cost and benefit catagories, needless to say. Broadly speaking, the cost must be equal to the benefit if measured at the end point of the unification process.

For illustration, we will employ somewhat simple but realistic approach to estimate a pecuniary amount of money (dollars) for national reunification. First of all, we will define the cost (or benefit) of reunification as a lump-sum investment requirements to equalize per capita income between North and South Koreas. Since it is a contrary to the

---

[22] The de Maiziere administration of East Germany and the Kohl administration of West Germany concluded the monetary, economic and social union (MESU) on May 18, 1990. As the treaty went into effect just six weeks later as of July 1, 1990, financial integration was carried out dramatically. More importantly, about seven and a half weeks later on August 23, the Peoples' Council of East Germany decided to reunite with the West on October 3, and to hold a general election on December 2. On August 31, 1990, the two Germanys concluded a reunification treaty. In Moscow on September 12, 1990, two Germanys, the U.S., the U.K., France and Russia removed the impediments to the reunification of Germany, by signing the 2+4 Treaty. The political reunification of the two Germanys was finally achieved on October 3, 1990.

economics of hope to level down the higher side of income to the poor side income, it is suggested that investment must be implemented so as to make the poor income level up to the rich. Of course, it is possible to include time dimension in terms of total number of years to take for the poor to catch up or to converge to the rich side. As it is a matter of calculation for either compounding flow of investments over continuous period or for a static (or relatively short-period) lump-sum investment, we simply choose a total lump-sum investment as if it is needed at the base year, for simplicity purpose.[23]

Now the cost of reunification (which is alternatively called as total investment required to make two sides per capita income equalize one another at a target year) can be estimated straight forward. Based on pre-fixed values of marginal capital-output ratio, actual per-capita income gap between the North and the South, and the number of total population of the short income side (that is, North Korea), we estimate the investment cost (which is conceptually equal to benefit in a national unity) in the formula as follows.

Note that $I = K_t - K_{t-1} = \Delta K = (\Delta K/\Delta Y) * \Delta Y$. If the difference of per capita income (Y) between two Koreas is assumed to be ΔY in real money terms, and assume that marginal capital–output ratio $(\Delta K/\Delta Y)$ is approximately around 3, and North Korea's total population is POP: then incremental investment needed to make per capita income equal will be I (or ΔI) $= 3 * \Delta Y * POP$.

Based on Table 1, the North-South per capita income gap in 2007 was 18,905 U.S. dollars (= \$20,045 - \$1,140), and the North's population estimate was about 23,200 thousands. Using the data, the direct cost of investment at the end of 2007 is estimated to be almost 1.32 trillion U.S. dollar, which exceeds slightly the level of South Korea's GDP of that chosen year. For the year 2000, it was about 670.84 billion U.S. dollar while it amounted to around 307.50 billion U.S dollar in 1990.[24] It shows a trend of doubling the cost every 10 years as income disparity widens.

In sum, the cost of investment depends largely upon the expected per capita income gap between the two Koreas, the total number of people of the country that has relatively

---

[23] Total sum of continuous investment cost will be estimated by the formula: $I_T = \Sigma A_i (1 + r_i)^t$, where I_T is total investment, A_i is flow of annual variable investment (where amount A is assumed to change annually as A_i indicates different amount of investment in each year i); r_i is annual variable interest rate; and t denotes the number of periods from 1 to n (end year).
[24] See also Eui-Gak Hwang, ibid., (*The Korean Economies: A Comparison of North and South,* Clarendon Press· Oxford, 1993), pp.314-317, for earlier estimates using a range of incremental capital-output ratios.

lower per capita income, and the factor of incremental capital-output ratio (which is realistically assumed to be around 3) of that country. Also the cost will be related to the timing, the extent of socio-economic friction, and the ease and the speed of integration.

Neoclassical economics teaches us that human beings are very quickly adjusting to new situations and that big bang will be basically unproblematic. The possibility of slow and costly adjustment – or high friction – while acknowledged in general by most institutionalists, is treated as rare. The neoclassicists support 'shock therapy' over 'gradual approach' to transform a command economy into a free market, because they believe that big bang will be less costly than gradual approach. In reality, however, such a transformation involves the changes of not only human nature factors, but also physical and human capital, enterprise structures, physical and social infrastructure as well as social values that would drag on for an extended period of time in the united system. It is a matter of empirical findings which will also subject to many factors such as therapy timing, circumstances, ethnic characteristics, variances of both systems and income gaps, and many others.

Additionally, it must be noted that the direct investment estimate above tends to underestimate the real aggregate cost, if any, because direct investment cost does not account of the external cost to be incurred in forms of psychological, sociological, and political factors among others. If we added any internalized externality costs to the above direct investment costs, the figure will expand to far greater figure, maybe more than the double of the direct investment cost. A quick thumb calculation amounts to about 2.64 trillion U.S. dollar based on the 2007 data. It is indeed an astronomical figure in term of lump-sum money. If anyone opposes to the reunification because of too much national burden to bear, then only comforting word to this is that investment will be distributed over years so as to reduce in light of yearly investment. Of course, however, if we want to regard the direct investment cost as benefit accrued to Korean people as a whole, then only external cost must be internalized to be considered as pure net cost after deducting internalized positive externality (external benefit of the re-unity) thereof. But as already mentioned briefly, the internalization for all externality (both positive and negative) accompanied by reunification process is literally unaccountable, if not impossible.

In concluding, the costs of transition and of reunification are going to be either much higher depending on what are included as costs or much smaller if some seemingly cost is counted as benefits in the end for all Koreans, than at first estimated. But it is evident that the larger the income gaps between the two states and the greater the friction factors, the greater the costs of reunification will be. As per capita income gaps get larger and deeper over time, the estimate for investment costs is greatly increasing as time passes by.

Unless North Korea will change its overall economic and political landscape dramatically toward more open and market-oriented directions, it is never likely for the gap to shallow down. Differently expressing, it is very unlikely that the economics of β *convergence*, (that is, in economist's jargon, that convergence applies when a poor economy tends to grow faster than a rich one) will occur on the Korean Peninsula. For the incumbent North's leadership would never likely risk its *status-quo* by loosening fist on its current political and economic system. If so, the cost of reunification will get smaller, the sooner it is achieved. Thus, the economics of attempting 'early reunification' by all means can be better and less costly for the nation unless North Korea will voluntarily anchor itself in the wide and robust stream of free market-oriented world today.

"Let us not wallow in the valley of despairs, I say to you today, my friends. And so even though we face the difficulties of today and tomorrow, I still have a dream.......I have a dream that one day this nation will rise up and live out the true meaning of its creed. ...."

Quoted in part from Martin Luther King, Jr. August 28, 1963 Speech at the

Lincoln Memorial Hall, Washington, D.C.

References:

Bibow, Jorg , *The Economic Consequence of German Unification: The Impact of Misguided Macroeconomic Policies*, Public Policy Brief (No. 67), The Levy Economic Institute of Bard College, 2001. pp.6-8.

Harrison, Ann, *Openness and growth: A Time-series, Cross-Country Analysis for Developing Countries,* NBER Working Paper No.5221, August 1995.

Hwang, Eui-Gak, *The Korean Economics: A Comparison of North and South* (London: Clarendon Press· Oxford) , 1993.

Kim, Taewoo, *OK Military Transformation and ROK-U.S. Security and Maritime Cooperation: MD, PSI and Dokdo Island,* International Journal of Korean Studies, Volume XII, Number 1 (Fall/Winter), 2008. p.51.

Lucas Jr., Robert E. , *On the Mechanics of Economic Development,* Journal of Monetary economics, 22, July, 1998. pp.3-42

Lucas Jr., Robert E., *Making a Miracle*, Econometrica, 61, 1993. pp.251-72.

Murrel, Peter, *The Nature of Socialist Economics: Lessons from Eastern European Foreign Trade* (Princeton, NJ: Princeton University Press), 1993, p.44.

Romer, Paul M., *Increasing Returns and Long-run Growth,* Journal of Political Economy, 94, October, 1986. pp.1002-1039.

Romer, Paul M., *Endogenous Technological Change,* Journal of Political Economy, vol.98, no.5, 1990. pp.S71-S102.

Sachs, Jeffrey D., and Andrew Warner, *Economic Reform and the Process of Global Integration,* Brookings Papers on Economic Activity I (The Brookings Institution), 1995. pp.1-118.

Sebastian, Edwards, *Trade Orientation, Distortions and Growth in Developing Countries,* Journal of Development Economics, 39, July 1992, pp.31-58.

Solow, Robert M., *A Contribution to Theory of Economic Growth,* Quarterly Journal of Economics, vol. 70, February, 1957. pp.65-74.

Taylor, Alan M., *Human Capital, Product Quality, and Growth,* Quarterly Journal of Economics, 106, 1995. pp.587-616.

The Bank of Korea, *The Estimates of North Korea's National Income* (in Korean), annual release.

The Japan Time, *U.N fails to agree on response to N. Korea rocket,* (Tuesday, April 7, 2009) p.1.

South Korea's Space Research Bureau, *A Comparison of Rocket Technology between Two Koreas* (in Korean), April, 2009.

http://kr.news.yahoo.com/etc.text.htm/articleid=20090406025.

Appendix:

A Short Chronology of Early Stages of German Unity (1989-1990)

October 18, 1989 : An unprecedented wave of exodus from the East and a few months of mass demonstrations force the head of state and of the Communist Party, Erich Honecker to step down in East Germany.

November 9, 1989 : East German politburo member Guenter Schabowski mentions that the borders have been opened with immediate effect. Not long afterward, thousands of East Germans flood across the borders. After 28 years, the Berlin Wall comes down.

November 13, 1989 : East Germany's communist party head Hans Modrow is tasked by the East German Parliament to form a new government. At the mass demonstrations that have been running for months there are banners reading "Germany united fatherland".

December 3, 1989 : Under pressure from the party rank and file in East Germany, the Politburo and Central Committee resign.

December 7, 1989 : A round table – a forum of representatives from old and new parties, and organizations – convenes under the auspices of church representatives to put forward proposals to resolve the national crisis.

December 19, 1990 : West German Chancellor Helmut Kohl arrives on his first official visit to East Germany. In Dresden, he is enthusiastically received with calls of 'Hermut, Hermut' and chants of "Germany united fatherland".

January 15, 1990   : Some 2,000 demonstrators storm the headquarters of the Stasi secret police in East Berlin while about 100,000 demonstrate in front of the building.

January 28, 1990 : Representatives of the political parties agree on the formation of a transitional government. Representatives of civil rights groups are part of the round-table talks.

February 1, 1990 : Modrow as East Germany's prime minister puts forward a draft for German unity to Parliament based on military neutrality and a federal structure.

February 7, 1990 : The West German government decides to offer East Germany immediate talks on a currency union.

March 18, 1990 : The first free elections take place in East Germany, with a conservative alliance headed by the Christian Democratic Union taking a clear victory.

April 12, 1990 : The first freely elected East German Parliament elects Lothar de Maiziere (CDU) as prime minister in East Germany.

April 23, 1990 : The West German government agrees on the basis of a treaty for currency union.

May 5, 1990 : First round of talks of the Two-plus-Four conferences (East and West Germanys, United Kingdom, France, Soviet Union and the United States) gets under way with the six foreign ministers in Bonn. The main point of discussion is that of allegiance.

May 18, 1990 : Signing of a treaty for economic, currency and social union begins the birth of a free and united Germany as Helmut Kohl sees.

July 1, 1990 : Currency Union is implemented, and East German mark changes to the deutsche mark. People are permitted freely to cross the inner German border.

July 2, 1990 : Discussion begins in East Berlin regarding second treaty, that is, the Unification Treaty.

July 16, 1990 : Helmut Kohl and Soviet leader Mikhail Gorbachev announce a breakthrough in the allegiance issue. Germany is to retain a member of NATO after reunification.

July 22, 1990 : The East German Parliament approves legal actions on re-establishing the state council within the country.

August 23, 1990 : The People's Council of East Germany decides to reunite with the West effective on October 3, and to hold a general election (on December 2).

August 31, 1990 : The two Germanys conclude a reunification treaty.

September 12, 1990 : West and East Germany, the U.K., France, Russia (the Soviet Union), and the U.S. remove all the impediments to the reunification of Germany by signing the 2+4 Treaty in Moscow.

October 3, 1990 : Political reunification of the two Germanys is finally achieved.