

A Quantitative Comparison of Current Socio-economic Conditions in North and South Korea

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If we wish to approach our discussion of an eventual reintegration or reunification of the two Koreas in a practical fashion, it is essential for us to have a sense of the starting points for this prospective journey. That is to say, we need to know about social and economic conditions in both parts of Korea, so that we may have some presentiment of the magnitude and nature of the gaps that will have to be bridged, and the adjustments that will have to be accommodated.

Unfortunately for our exercise, it is extraordinarily difficult to present an accurate comparison of social and economic trends in divided Korea today. Two problems—one general, one quite particular—account for this difficulty.

The general problem is the dilemma of valuing output produced by a Soviet-Type Economy (STE)¹ in market terms. Although Western economists developed a variety of techniques and devices for representing the results from centrally planned economies in a market-style framework², none of these attempts could solve the conundrum of how to offer a common unit of measurement for systems with such fundamentally different approaches to pricing and resource allocation.³

¹ For useful background on the STE, see Jan Winiecki, *The Distorted World Of Soviet-Type Economies*, (Pittsburgh, PA: University Of Pittsburgh Press, 1988), and Janos Kornai, *The Socialist System: The Political Economy Of Communism*, (Princeton, NJ: Princeton University Press, 1992).

² The most important of these efforts arguably being Bergson's. See Abram Bergson, *The Real National Income Of Soviet Russia Since 1928*, (Cambridge, MA: Harvard University Press, 1961).

This basic methodological predicament has consistently hampered attempts to place the performance of Communist economies in a comparative international perspective. During the Cold War, the US government devoted enormous resources to its effort to describe and measure trends in the Soviet economy; that undertaking, in fact, may well have been the largest social science research project ever mounted.⁴ Yet despite the considerable financial and intellectual investment in that project, its findings in retrospect look in a number of respects to have been seriously off the mark: such indicators as output per capita, levels of per capita consumption, and rates of economic growth may have been consistently overestimated. An analogous overestimation of a Communist system's economic performance can be seen in the case of the German Democratic Republic, the severity of whose economic troubles only became generally apparent to Western specialists after the 1989 breach of the Berlin Wall.⁵

The second and more particular problem concerns the remarkable dearth of reliable social and economic information about North Korea today. Since the early 1960s, the government of the Democratic People's Republic of Korea (DPRK) has steadily enforced a strict "statistical blackout" on conditions within that country. The North Korean state's campaign to suppress all such information is reminiscent of earlier campaigns in Stalin's USSR and Mao's China, but Pyongyang's campaign has lasted far longer than those of any Communist precursor.

Closed as they may have been before the downfall of their Communist governments, Soviet bloc countries in the 1980s nonetheless regularly published a variety of statistical compendia

¹ For an elaboration on this argument, see Steven Rosefielde and Ralph W. Pfouts, "Neoclassical Norms And The Valuation of National Product In The Soviet Union And Its Postcommunist Successor States", *Journal Of Comparative Economics*, vol. 21, no. 3 (1995), pp. 375-89.

⁴ A point originally made in Nicholas Eberstadt, "The CIA's Assessment Of The Soviet Economy", in *idem.*, *The Tyranny Of Numbers: Mismeasurement And Misrule*, (Washington, DC: AEI Press, 1995), pp. 136-149.

⁵ There is an enormous literature bearing on the reassessment of the GDR's economy. For a sense of this literature, see Gernot Schneider, *Wirtschaftswunder DDR: Anspruch Und Realitaet*, (Cologne: Bund Verlag, 1990); Philip J. Bryson and Manfred Melzer, *The End Of The East German Economy*, (New York: St. Martin's Press, 1991); Eberhard Kuhrt, ed., *Die Wirtschaftliche Und Oekologische Situation Der DDR In Den Achtziger Jahren*, (Opladen, Germany: Leske and Budrich, 1996); and Jeffrey Kopstein, *The Politics Of Economic Decline In East Germany, 1945-1989*, (Chapel Hill, NC: University Of North Carolina Press, 1997).

(e.g., *Narodni Khoziaistvo SSSR, Statistisches Jahrbuch der DDR*). By contrast, the DPRK has *never* published an official statistical compendium of any sort on a regular basis!⁶ To make matters worse, some of the few data the DPRK has released may have been deliberately distorted or falsified⁷, and the actual capabilities of the DPRK Central Bureau of Statistics for compiling and preparing accurate data remains as yet an open question.⁸

Under such circumstances, the question of “what we know and how we know it” figures centrally in any assessment of North Korean social and economic conditions. In the case of North Korea, we can not simply take “data” as “given”. Although a number of institutions—most importantly, the Central Intelligence Agency (CIA) in the United States and the National Unification Board (NUB), the Korea Development Institute (KDI) and the Bank of Korea (BOK) in the Republic of Korea (ROK)—analyze and attempt to quantify North Korea’s economic performance, the quality and reliability of their estimates are inescapably limited by the general and particular problems to which we have already alluded.⁹

If we are to attempt a meaningful comparison of socio-economic conditions in North and South Korea, and at the same time avoid the pitfalls of false precision, we must search for indicators that are both inherently reliable and subject to a minimum of interpretive ambiguity. Two kinds of data suggest themselves for our purposes. The first are demographic data collected by the DPRK Central Bureau of Statistics¹⁰; these bear directly upon social conditions, and can cast some light upon economic conditions as well. The second are so-called “mirror statistics” on North Korea’s foreign trade, as reported by the DPRK’s trading partners: these quantify a conse-

⁶ Indeed: the only regular official statistical series of any kind bearing on the performance of North Korean economy (the annual report on state budgetary revenues and expenditures) has now been interrupted by the continuing suspension, in the wake of Kim Il Sung’s death, of the DPRK Supreme People’s Assembly (SPA)—the forum at which those figures were traditionally announced.

⁷ Figures on the government’s defense expenditures are an example that comes immediately to mind.

⁸ In a meeting with officials from the DPRK Central Bureau of Statistics in Pyongyang in May 1990, I was told by my counterparts that they sometimes referred jokingly to their own output as “rubber statistics” that could be stretched or bounced as required.

⁹ To the extent that those institutions rely upon privileged or classified information in their assessment of North Korea’s performance, outside observers are confronted with additional issues regarding the replicability of their results.

quential component of the North Korean economy (the external sector) and in addition provide an aperture on the domestic DPRK economy.¹¹ There is also an additional, intriguing, kind of data that has just recently become available. These are the statistics DPRK officials provided the International Monetary Fund (IMF) on trends in national economic output and the national budget¹². While a number of questions may be raised about those figures even upon initial inspection, they are nonetheless worth reviewing, if only because they afford a first official presentation of North Korean national accounts data in a Western-style national accounts framework.

Population

The starting point for a socio-economic comparison of divided Korea is population size and composition. Table 1 presents some basic indicators on this, drawn from North Korea's census for yearend 1993 and from South Korea's statistical system.¹³ [SEE TABLE 1]

According to official data from 1993, the DPRK's population was about 21 million; South Korea's, by contrast, was roughly 44 million. (Thus, whereas the ratio of West to East Germans at the moment of unification was about 4:1, the ratio of South to North

¹⁰ In 1989, the DPRK transmitted some demographic information the United Nations Population Fund (UNFPA) to meet conditions for possible UNFPA technical assistance with an upcoming population census. Those data are analyzed in detail in Nicholas Eberstadt and Judith Banister, *The Population Of North Korea*, (Berkeley, CA: University Of California Institute of East Asian Studies, 1992). North Korea eventually held a population census—evidently, its first-ever in the history of the regime—in early 1994, focused on the situation as of yearend 1993. For more details, see DPRK Central Bureau of Statistics, *Tabulation Of The Population Census Of The Democratic People's Republic Of Korea*, (Pyongyang: DPRK Central Bureau of Statistics, 1995). Results from this census were formally published in 1995, and became available in the West in 1997.

¹¹ "Mirror statistics" on the North Korean economy are drawn from the UN International Commodity Trade Database, and from Soviet/Russian, Chinese, and South Korean statistical compendia on their trade with the DPRK. For more details, see Nicholas Eberstadt, "The DPRK's International Trade In Capital Goods: Some Indications From 'Mirror Statistics'", *Journal of East Asian Affairs*, (forthcoming), and *idem.*, "Food, Energy And Transport Equipment In The DPRK Economy: Some Indications From 'Mirror Statistics'", *Asian Survey*, (forthcoming).

¹² International Monetary Fund, "Democratic People's Republic of Korea, Fact Finding Report" (Washington, DC: IMF Asia and Pacific Department, November 12, 1997, unpublished).

¹³ We should note that North Korea's population census has not yet been intensively analyzed—or checked for internal consistency—by outsiders.

<Table 1> Comparative Demographic Indicators from Official Data: DPRK and ROK, 1993

	DPRK	ROK
Population (millions)	21.1	44.2
Area (thousands sq. km)	122.8	99.3
Population Density (persons per sq. km)	173	445
Sex Ratio (males per 100 females)	94.9	101.3
Median Age (Years)	27	31 ¹
Population aged 0-14 (percent)	27.9	23.2 ¹
Population aged 15-64 (percent)	66.6	70.7 ¹
Population aged 65 and older (percent)	5.5	6.1 ¹
Crude birth rate (births per 1000 pop.)	19.9	16.5
Crude death rate (deaths per 1000 pop.)	4.9	5.5
Rate of natural increase (per 1000 pop.)	13.9	11.1
Average household size (persons)	4.7	3.3 ¹

Notes: DPRK census data are for year-end 1993; ¹ = 1995. ROK census data are for midyear.

Sources: Derived from DPRK Central Bureau of Statistics, *Tabulation of the Population Census of the Democratic Peoples Republic of Korea (31 December 1993)*; and ROK, National Statistics Office, *Social Indicators 1995*, and *Korea Statistical Yearbook 1996*.

Koreans is now roughly 2:1.) South Korea looks to be much more densely populated than North Korea, and also appears to have a significantly higher ratio of males to females in its population—possibly in part due to the lingering effects of the Korean War, in which the North suffered even more severely than the South.

In Germany today, the median population age is nearly 40.¹⁴ To judge by Table 1, South Korea's population is much younger—about 31—and North Korea's is younger still, at just under 27. Children under 15 years of age account for a higher share of the total population in the DPRK than the ROK; for the population 65 years of age or more, the share is slightly larger in the South than the North. People between the ages of 15 and 65—sometimes described as the “economically active cohorts”—today account for a somewhat greater share of the total population in South Korea than in North

¹⁴ The figure is for the year 1995. Derived from BRD Statistisches Bundesamt, *Statistisches Jahrbuch Fuer Die Bundesrepublik Deutschland 1997*, (Stuttgart: Metzler-Poeschel Verlag, 1997), p. 62.

Korea.

According to official data, household size averaged about 4.7 persons in the DPRK in the early 1990s. In South Korea, it averaged about 3.3. By contrast, average household size was under 2.3 in Germany in the early 1990s.¹⁵ In general, smaller household size reflects 1) lower fertility levels and 2) the increased ability or disposition of persons to live alone (in independent one-person households). Evidently, these “modern” trends have thus far affected South Korea rather more strongly than North Korea.

In both North and South Korea, population growth in the early 1990s was due overwhelmingly to “natural increase”—the excess of births over deaths. According to official data, the rate of natural increase in 1993 was slightly higher in the DPRK than in the ROK (1.4% a year vs. 1.1% a year). Between the early 1960s and the early 1990s, both Koreas had made the transition from high- to low-fertility regimens. In the early 1960s, the “total fertility rate” (births per woman per lifetime, or TFR) was about six in both North and South Korea. South Korea’s fertility level has been below replacement since the mid-1980s, and is currently about 1.7.¹⁶ As for the DPRK, by 1993, to judge by census data, North Korea’s TFR was down to about 2.2—just barely above replacement.

Roughly a year and a half after North Korea’s population census, Pyongyang announced that the DPRK was beset by serious food shortages, and launched an official appeal for emergency humanitarian food aid. That appeal continues to this writing. At this time it is impossible to provide an accurate assessment of the severity of North Korea’s nutritional problems. In other locales, however, serious food shortages have been known to depress fertility levels sharply, although temporarily: in the years immediately following the “Great Leap Forward”, for example, fertility levels

¹⁵ *Statistisches Jahrbuch fuer die Bundesrepublik Deutschland 1997*, p. 65.

¹⁶ One noteworthy feature of South Korea’s recent fertility patterns has been the coincidence of strong son preference and sub-replacement fertility. For more than a decade, South Korea’s newborns have been distinguished by unnaturally high “sex ratios”—up to 120 boys for every 100 girls. The eventual consequence of this pattern, as some researchers have noted, may be a “marriage crisis”: other things being equal, by 2015 there will be 25 percent more young South Korean men of marriageable age than young South Korean women who could marry them. See Chai Bin Park and Nam Hoon Cho, “Consequence Of Son Preference In A Low Fertility Society: Imbalance Of The Sex Ratio At Birth In Korea”, *Population And Development Review*, vol. 21, no. 1 (1995), pp. 59-84.

in China are thought to have dropped by half or more.

Health And Longevity

A population's health is intrinsically important for both personal and humanitarian reasons. Health levels also reflect upon living standards, and may also provide clues about the potential for productive economic activity.

Perhaps the single best summary measure for a population's health is its expectation of life at birth. Estimates for life expectancy for North and South Korea are presented in Table 2. [SEE TABLE 2] Note that these estimates are based upon reconstructions of population data from the respective countries, rather than simply upon the claims of their governments.

According to these estimates, both North and South Korea enjoyed rapid health progress over the decades between the end of the Korean War and the mid-1980s. Even more striking, perhaps, is

<Table 2> Estimated Life Expectancy at Birth for DPRK and ROK: 1955-85

	North Korea			South Korea		
	Both sexes	Male	Female	Both sexes	Male	Female
1955-60	NA	NA	NA	49.6	46.9	52.5
1960	49.0	46.0	52.1	NA	NA	NA
1960-65	51.9	48.9	55.0	50.7	48.1	53.5
1970-75	61.3	58.2	64.6	NA	NA	NA
1978-79	65.2	62.1	68.4	NA	62.7	69.1
1980	65.7	62.7	69.0	64.9	63.2	68.8
1985	67.2	64.1	70.4	NA	64.9	71.3

NA = Not available

Notes: For North Korea, the life expectancy estimates given for 1960-1965 are 1963 estimates; for 1970-1975, 1973 estimates, and for 1978-79, 1979 estimates.

Sources: For ROK: Kwon, *Demography of Korea: Population Change and Its Components 1925-66* Table A2; ROK *Yearbook of Health and Social Statistics 1986*, p. 7; Kong, et al. *Hanguk ui Samangnyok kwa Samang Wonin* (Korean Mortality and Causes of Death); for DPRK, see Eberstadt & Banister, *The Population of North Korea*.

the similarity of both levels and paces of increase in life expectancy in the two Koreas: over this long period, male and female life expectancy at birth in North and South Korea remained essentially indistinguishable from one another. When one considers the very different development paths embraced by the two contending regimes, and the fact that contact between the two populations was virtually nonexistent over those years, the result looks even more remarkable.

Preliminary analysis of the North Korean 1993 census suggests a life expectancy at birth for males of about 68 years, and for females of about 74 years. This would have been just below South Korea's levels, where the respective figures were estimated at 68 and 76 in the year 1991.¹⁷ (By way of contrast, as of 1992/94 united Germany's life expectancies were about 73 years for men and 79 years for women.¹⁸) If North Korea's recent food problems have resulted in excess mortality, its life expectancy could have declined since its census; at this writing, however, there are no reliable indications regarding such impacts.

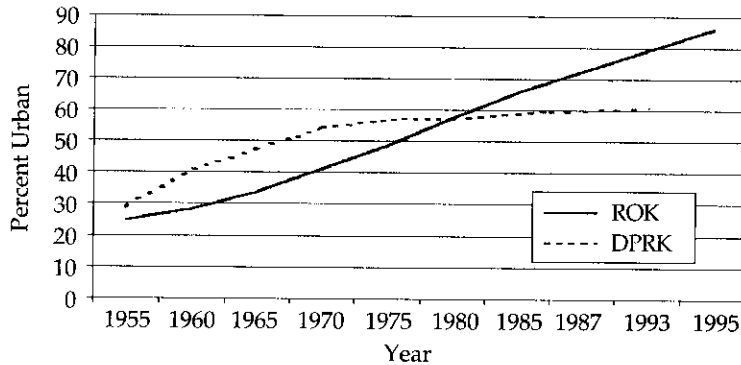
Urbanization

The level and pace of urbanization provides some indications into a country's social and economic development. Data on urbanization in North and South Korea are presented in Figure 1. [SEE FIGURE 1] According to these figures, both North and South Korea have made the transition from a predominantly rural to a predominantly urban way of life.

North Korea's level of urbanization appears to have been higher than South Korea's for some time after the Korean War, but the DPRK seems to have been surpassed by the ROK during the 1970s. Since then the pace of urbanization has continued to be brisk in South Korea, whereas it appears to have stagnated in the North. These trends may be read as a commentary on overall development patterns in the two Koreas; one must caution, though, that the slow pace of urbanization in North Korea over the past two

¹⁷ United Nations, *Demographic Yearbook 1995* (New York: UN, 1997), p. 145.

¹⁸ *Ibid.*, p. 147.

<Figure 1> Urbanization in the DPRK and ROK, 1955-1995

Notes: For South Korea, urban areas are defined as administrative cities with an urban population of 50,000 or more. The definition of the urban population in North Korea has not been published.

Sources: for ROK, see *Social Indicators in Korea*, various editions; *Korea Statistical Yearbook*, various editions. For DPRK, see Eberstadt and Banister, *The Population of North Korea*.

decades could also reflect non-economic factors (e.g., possible policies to disperse population for security or military reasons).

It is possible that Figure 1 exaggerates North Korea's level of urbanization in comparison with that of South Korea. North Korea's definition of "urban area" appears to be quite elastic¹⁹; areas that might not qualify as urban in the ROK may be counted as urban in the DPRK. One hint to this effect: whereas almost 60 percent of North Korea's population was defined as "urban" in 1987, only 37 percent of North Koreans at the time lived in cities of 100,000 or more. In South Korea, well over half of the populace lived in such cities in 1985, and nearly two-thirds did by 1995.

Militarization

The DPRK maintains an exceptionally—indeed, an extraordinarily—militarized society and economy. Indications of just how militarized North Korea has become can be had from estimates of military manpower. [SEE FIGURE 2] (The figures for North Korea

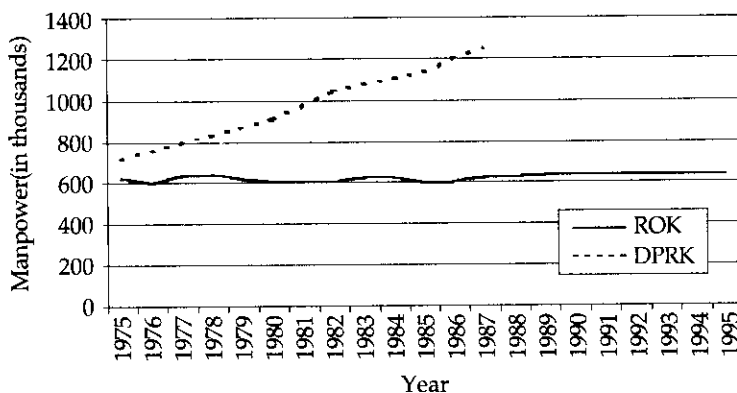
¹⁹ Based on the author's conversations with North Korean statistical officials in Pyongyang in 1990.

are reconstructions of the “non-civilian male” population, based upon official DPRK population data.)

Throughout the 1970s, 1980s, and 1990s, South Korea maintained a relatively stable number of men under arms. North Korea, by contrast, appears to have pursued a steady military buildup during the 1970s and 1980s. By the late 1980s, even though South Korea was fielding one of the world’s largest armies, North Korea—with a population only half as large—was apparently billeting twice as many soldiers. By those numbers, North Korea would look to have been the most militarized country in the world at that time, with over 6 percent of its total population in the armed forces (a fraction similar to that of the United States in 1943), and fully a fifth of the country’s men between the ages of 16 and 55 in the barracks.

Just how large the North Korean armed forces are today is not clear. Pyongyang’s 1993 census can be interpreted as indicating a military strength of just under 700,000; on the other hand, Western intelligence sources routinely describe the Korean People’s Army (KPA) as a force of well over one million. Yet whichever figure is

<Figure 2> Inferred and Reported Military Manpower in the DPRK and ROK, 1975-1995



Note: Military manpower for ROK as reported. Military manpower for DPRK inferred from estimates of noncivilian male population based on demographic reconstructions.

Source: For ROK, IISS *The Military Balance*, various editions; for DPRK, see Eberstadt and Banister, *The Population of North Korea*.

closer to the mark, North Korea today would be a country shouldering a tremendously heavy military burden.

If the two Koreas do eventually enter into a peaceful reintegration, there would be scope for a vast "build-down" of military forces on the peninsula. This would be especially true for North Korea, where a very substantial portion of the population of "economically active age" could be released to other pursuits. Correlatively, the presumably high fraction of North Korea's capital stock currently devoted to supporting the military industries would have to be converted, or simply scrapped.

Labor Force

With the release of the 1993 DPRK census, more information than ever before is available on the North Korean workforce. These data, to be sure, are not bereft of ambiguity: while one assumes the figures include workers in the country's extensive military-industrial sector, for example, the census does not spell this out. Such ambiguities notwithstanding, these numbers provide insights into both social arrangements and patterns of development, and can be contrasted with the apposite data from South Korea. [SEE TABLE 3]

According to the figures in Table 3, North Korea's overall labor force in 1993 was just over half as large as South Korea's in 1995. Both workforces had made the transition from a primarily agricultural to a primarily non-agricultural pattern of employment. That said, the distribution of labor force among economic sectors nevertheless looks strikingly different in the two Koreas.

Not surprisingly, "commerce" absorbs much less of the North Korean than the South Korean workforce (5 percent vs. 18 percent). More unexpected is the finding that North Korea devotes a rather smaller share of its manpower to construction than does South Korea (4 percent vs. 9 percent)—a reflection, perhaps, of the fact that by the early 1990s the troubled DPRK economy was simply not undertaking many new building projects.

In keeping with its traditional emphasis on development of industry (especially heavy industry), "manufacturing" absorbs more North Korean manpower than any other sector. On the other

<Table 3> Distribution of Labor Force: DPRK 1993 vs. ROK 1995

	DPRK		ROK	
	Total (1000s)	Percent	Total (1000s)	Percent
Overall Labor Force	11004	100%	20377	100%
Manufacturing	4118	37.4	4773	23.4
Farming	3381	30.7	2551	12.5
Construction	464	4.2	1896	9.3
Transport and Communication	402	3.7	1068	5.2
State farms	251	2.3	-	-
Commerce	509	4.6	3763	18.4
Education, Culture, Health	844	7.7	1312	6.4
Others	1305	9.4	5014	24.8

Sources: Derived from DPRK Central Bureau of Statistics, Tabulation of the Population Census of the Democratic Peoples Republic of Korea (31 December 1993); and ROK, National Statistics Office, *Korea Statistical Yearbook 1996*.

hand, "farming" also accounts for well over 30 percent of North Korea's employment, whereas it is under 13 percent in South Korea.

Table 4 places North and South Korean labor force participation rates in international perspective. [SEE TABLE 4] Even for a Communist society, North Korea's degree of labor force mobilization is remarkably high.²⁰ Note further that these North Korean rates ostensibly pertain to the civilian population only. If military manpower were taken into account, the rate for "mobilized adult manpower" would be still higher—and perhaps even historically unparalleled.

Clearly, a peaceful reintegration of the two Koreas would portend vast, possibly wrenching, changes for the North Korean labor market. If, as a very crude first approximation, we hypothesize that North Korean labor force participation rates were to match those currently seen in the Korean South, over two million North Korean "workers" would immediately be redundant. (Posit massive demo-

²⁰ China's and Vietnam's rates of labor force participation may look comparable to the DPRK's, but in predominantly agrarian societies active labor force participation is often overestimated.

<Table 4> Labor Force Participation Rates for North and South Korea and Selected other Countries, Recent Years (percent)

Country (year, age-group)	Total	Male	Female
North Korea, excluding army (1993, 16+)	76.0	84.6	68.9
South Korea (1995, 15+)	62.0	76.5	48.3
Communist States			
Czechoslovakia (1980, 15+)	67.8	75.5	60.8
East Germany (1981, 15+)	67.5	76.2	60.0
Hungary (1980, 15+)	60.5	71.9	50.2
Cuba (1981, 15+)	53.4	72.8	33.8
China (1982, 15+)	78.7	86.5	75.0
Vietnam (1989, 15+)	77.3	81.6	73.6
Asian NICs			
Hong Kong (1995, 15+)	62.8	77.3	48.0
Taiwan (1989, 15+)	60.4	74.8	45.4
Singapore (1995, 15+)	64.3	78.4	50.0
Developed Market Economies			
Germany (1995, 15+)	58.5	69.7	48.2
Japan (1995, 15+)	63.4	77.6	50.0
Switzerland (1995, 15+)	55	64	46.4
United States (1995, 16+)	66.6	75	58.0

Sources: Derived from DPRK Central Bureau of Statistics, *Tabulation of the Population Census of the Democratic Peoples Republic of Korea* (31 December 1993); ROK, *Social Indicators in Korea 1995 and Korea Statistical Yearbook 1996*; ROC: *Republic of China Statistical Yearbook 1990*; all others, ILO: *Yearbook of Labour Statistics*, various editions.

bilization, and that total quickly approaches three million—out of a total adult population of about 15 million, and a total economically (or militarily) active population of about 12 million.)

But even these large numbers might underestimate the scale of labor force displacement. For at South Korean participation and distributional patterns, there would be only a little over a million “farmers” in the North (as opposed to the 3.6 million registered in the 1993 census), and only a little over two million workers in the manufacturing sector (as opposed to the 4 million plus reported by

North Korea in 1993). Simply conforming to South Korea's sectoral employment patterns and labor force participation rates would imply that very nearly half of North Korea's workers would have to find new jobs or leave the workforce altogether (even more than half, if one envisions significantly military demobilization and considers soldiers as "employees").

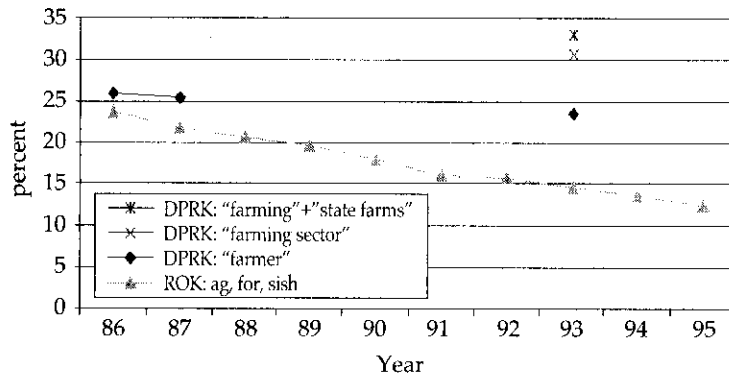
Few available data pertain to the potential productivity of today's North Korean workers. At the moment, we lack reliable current figures relating to the health of the North Korean populace. It would be helpful to know something about the educational background of the North Korean labor force. Unlike many national censuses, the DPRK's population count did not gather information on educational attainment.²¹ (The 1993 North Korean census did provide information on the distribution of so-called "technicians and specialists" within the workforce, but that certification looked to be decidedly non-educational in nature: whereas the highest incidence of post-secondary education would have been expected among persons in their late 20s, the proportion of "technicians and specialists" is by far the highest for workers over 60 years of age!)

Although information on the potential productivity of North Korea's workers is all but nonexistent, the DPRK's labor force distribution patterns provide hints about overall productivity levels, and trends, in that economy. Figure 3, for example, contrasts trends in employment in the "primary sector" (e.g., farming, forestry and fishing) in North and South Korea in the 1980s and 1990s. [SEE FIGURE 3] In 1993, "farming" occupied about a third of North Korea's workforce. Accounting for forestry and fishing (as does South Korea in its figures on "primary sector" workers) would presumably raise that fraction still further for North Korea.

Although a strict and mechanistic correspondence between sectoral employment patterns and per capita output obviously should not be expected²², it is nonetheless interesting to note that the last time "primary sector" activities occupied 35% or more of South

²¹ In an earlier study, though, Eberstadt and Banister showed that North Korea's episodically released numbers on school enrollments would have been consistent, by the 1980s, with near-universal primary school education, with relatively high rates of secondary school enrollment, and with quite a high proportion of adults with some post-secondary education. *The Population Of North Korea, op.cit.* These ratios, of course, tell us nothing about the quality or content of the education obtained.

<Figure 3> Reported Percentage of Labor Force in Primary Sector DPRK vs. ROK, ca. 1986-1995



Sources: for ROK: Bank of Korea, Economic Statistics Yearbook 1996; for DPRK: Eberstadt and Banister, *The Population of North Korea*; and DPRK Central Bureau of Statistics, *Tabulation of the Population Census (31 December 1993)*

Korea's workforce was in the late 1970s—when per capita output was roughly only a quarter as high as it is today. We may further note that the displacement of manpower out of agriculture appears to have been much more rapid in South Korea than in North Korea during the 1980s and 1990s (to judge at least by the DPRK's reported figures on the share in its workforce of "farmers"—a category typed by their class rather than their occupation). These findings are consistent with the propositions that 1) the level of material attainment is much higher today in the South than in the North; and 2) the pace of development has been markedly higher in the South than the North for most at least the past two decades.

Foreign Trade And Domestic Economic Infrastructure

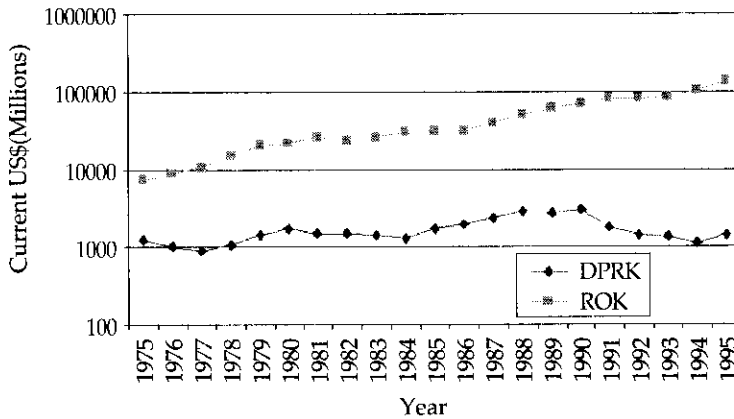
"Mirror statistics" for North Korea and reported trade data for South Korea permit comparison of the two Korean economies in a number of meaningful ways, characteristic limitations of "mirror

²² Despite the robust international patterns that have been identified here. See, for example, Moïshe Syrquin and Hollis B. Chenery, *Patterns of Development: 1950 to 1983*, (Washington, DC: World Bank, 1989).

statistics" notwithstanding²³. Estimates on trade turnover for North and South Korea are presented in current US dollars—not real, inflation-adjusted dollars—for a variety of technical reasons.²⁴

Figures 4 and 5 contrast overall trade trends in North and South Korea between 1975 and 1995. [SEE FIGURES 4 AND 5] Over those two decades, the nominal value of South Korea's trade turnover virtually exploded, jumping by a factor of over 20, reaching \$130 billion in exports and \$150 billion in imports in 1995. Even after adjusting for rises in the international price level, the real increase in trade volume over this period for the ROK over this interval was probably over 10-fold²⁵, indicating that per capita imports and exports may have risen by a factor of six or more. The

<Figure 4> Identified Imports to the DPRK and ROK, 1975-1995



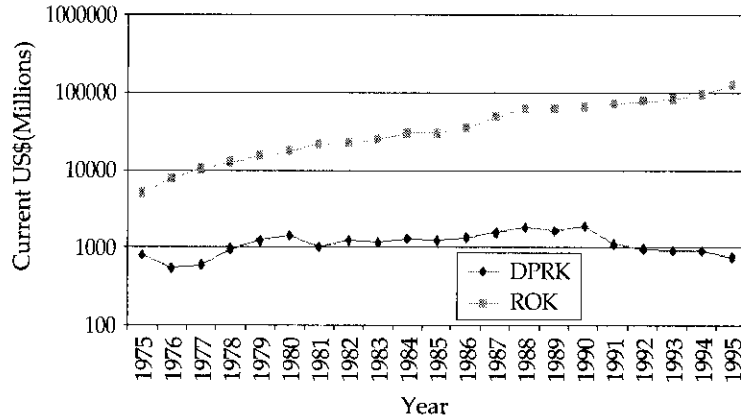
Note: Imports measured or estimated c.i.f.; method for estimating DPRK imports is explained in the source.

Source: for ROK, IMF, *International Financial Statistics Yearbook 1997*; for DPRK, see Eberstadt, Nicholas. "The DPRK's International Trade in Capital Goods, 1970-1995: Indications from 'Mirror Statistics'." *Journal of East Asian Affairs*, forthcoming.

²³ An additional complication in North Korea's case is the relatively large share of DPRK international commerce in illicit goods (weaponry, narcotics, and the like) that ordinarily do not show up in trade partners' official export or import accounts.

²⁴ Most important among these: the absence of any reliable index for converting current Soviet rubles (in which much on North Korea's trade was denominated) into constant US dollars.

²⁵ Derived against the IMF's dollar-denominated international export and import price deflator. See International Monetary Fund, *International Financial Statistics Yearbook 1997*. (Washington, DC: IMF, 1997), pp. 124-127.

<Figure 5> Identified Exports from the DPRK and ROK, 1975-1995

Note: Exports measured or estimated f.o.b; method for estimating DPRK exports explained in source.

Source: for ROK, IMF, *International Financial Statistics Yearbook 1997*; for DPRK, see Eberstadt, Nicholas. "The DPRK's International Trade in Capital Goods, 1970-1995: Indications from 'Mirror Statistics'." *Journal of East Asian Affairs*, forthcoming.

ROK's approach to trade and the international economy—a strategy described with whatever accuracy as "export orientation" by a prominent tendency of current economic thinking²⁶—figured centrally in the success of its overall approach to economic development over the past three and a half decades. In addition to dramatically expanding its aggregate trade volume, South Korea's trade composition has progressively shifted; exports, ROK exports, for example, were once predominantly agricultural and/or labor-intensive, but are now typically complex manufactured goods or technology-intensive products.

North Korea's trade patterns tell a very different tale. In 1995, the DPRK's estimated trade turnover was less than one percent of that registered by the ROK. Even in nominal US dollars, North

²⁶ For examples of this viewpoint, see Bela Balassa, "Outward Orientation", in *idem.*, ed. *Policy Choices For The 1990s*, (New York: New York University Press, 1989), pp. 3-55; Anne O. Krueger, "Asian Trade And Growth Lessons", *American Economic Review*, vo. 80, no. 2 (1990), pp. 108-112; and Deepak Lal, "Foreign Trade Regimes And Economic Growth In Developing Countries", in *idem.*, ed., *The Repressed Economy: Causes, Consequences, Reform*. (Brookfield, VT: Ashgate, 1993), pp. 169-97.

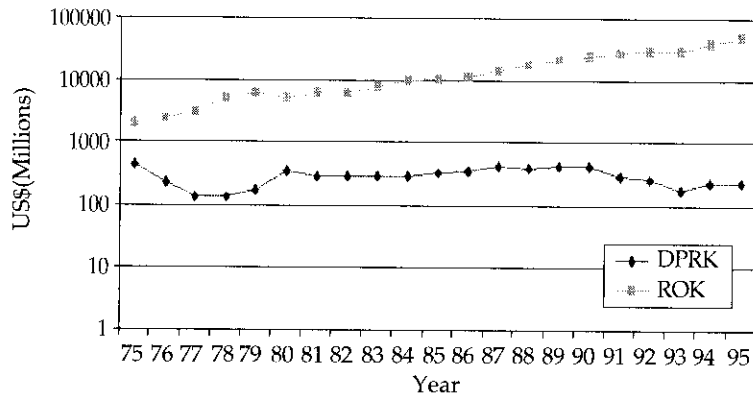
Korea's trade volume was no higher than it had been twenty years earlier; on a per capita basis, it was actually lower in 1995 than it had been in 1975, and on a real per capita basis it would probably be lower still. North Korea's approach to economic development has been very largely insensitive to the potential benefits of international trade—arguably, even hostile toward potential interaction with the international market economy.

Although the DPRK's trade turnover did increase during the 1980s, almost all of this gain can be attributed to the growth of Soviet-DPRK commerce—a commerce willed into existence by political figures in Moscow. The collapse of the Soviet Union precipitated a corresponding collapse of North Korean trade turnover; even in nominal dollars, the DPRK's import and export totals appear to have been less than half as great in 1995 as they had been in 1989. Unlike South Korea's steadily shifting export composition, North Korea's export patterns (as reflected by mirror statistics) were basically stuck in the same structure between the late 1970s and the mid-1990s, consisting largely of minerals (gold, magnesite), relatively simple manufactured goods (steel, cement), and foodstuffs (rice, marine products).²⁷ Although it would be inappropriate to draw overly specific inferences about North Korea's domestic economy from these aggregate trade estimates, the trends in Figures 4 and 5 would appear entirely consistent with the proposition that the North Korean economy has been beset by economic and technological stagnation—or worse—for the better part of a generation.

Trade data and mirror statistics can provide some insight into the state of a country's economic infrastructure. Figures 6 and 7, for example, trace trends in imports and exports of machinery and "capital goods" in the two Koreas. [SEE FIGURES 6 AND 7] These figures attest to the continuing modernization of the ROK capital stock through the import of productivity-enhancing foreign machin-

²⁷ One exception to this generalization concerns clothing and textile exports. Under the DPRK's last 5-year economic agreement with the USSR, these came to account for a substantial share of North Korea's overall exports. With the end of the USSR, however, North Korea's textile and clothing exports entered into a slump from which they have not yet recovered. For more information, see Nicholas Eberstadt, "Prospects For US-DPRK Economic Relations: Some Indications From North Korea's Past Trade Performance", *Korea And World Affairs*, vol. 22, no. 4 (1997).

<Figure 6> Identified Imports of Capital Goods and Machinery to the DPRK and ROK, 1975-1995



Note: Imports measured or estimated c.i.f.; method for estimating DPRK imports and exports is explained in source. For DPRK, "capital goods" are defined to include SITC 69, 71, 72, 86, and 89; for ROK, machinery and transport equipment covers all SITC 7. For further details on methodology, see source.

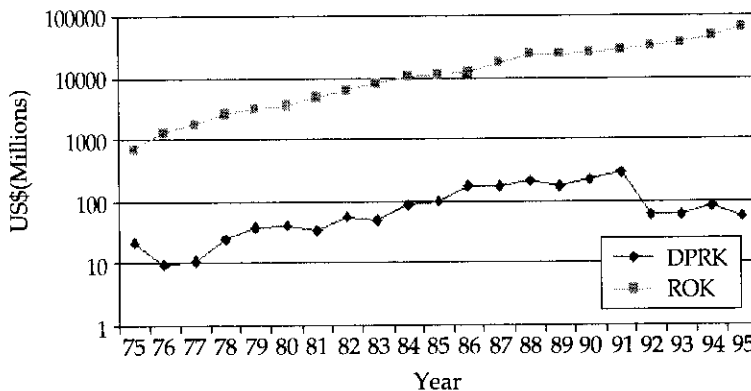
Source: for ROK, U.N. *International Trade Statistics Yearbook*, various editions; for DPRK, Eberstadt, Nicholas. "The DPRK's International Trade in Capital Goods, 1970-1995: Indications from 'Mirror Statistics'." *Journal of East Asian Affairs*, forthcoming.

ery. As it has developed, machinery imports have come to account for an ever greater fraction of overall ROK imports (roughly half the total by the mid-1990s).

In North Korea, on the other hand, 1975 looks to have been the high-water mark for capital goods imports, even in nominal terms; if in real terms, capital equipment imports have probably tended downward through the 1970s, 1980s, and 1990s. No less significant, the share of capital goods within DPRK imports appears to have declined progressively over these same decades. As a result of these longstanding patterns (and, presumably, policy directives), North Korea today has one of the lowest proportions of foreign machinery in its overall capital stock of any modern country. Thus, despite the DPRK's seeming fetish for "investment", industrial production has been severely constrained.

North Korea's allergy to capital investment on the basis of

<Figure7> Identified Exports of of Capital Goods and Machinery from the DPRK, 1975-1995



Note: Exports measured or estimated f.o.b.; method for estimating DPRK imports and exports is explained in source. For DPRK, "capital goods" are defined to include SITC 69, 71, 72, 86, and 89; for ROK, machinery and transport equipment covers all SITC 7. For further details on methodology, see source.

Source: for ROK, *U.N. International Trade Statistics Yearbook*, various editions; for DPRK, Eberstadt, Nicholas. "The DPRK's International Trade in Capital Goods, 1970-1995: Indications from 'Mirror Statistics'." *Journal of East Asian Affairs*, forthcoming.

imported foreign machinery appears to have been unique among Communist economies, much less market-oriented economies. [SEE TABLE 5] One consequences of this allergy has been an inability to generate exports of machinery or capital goods. On a per capita basis, North Korea's level of such exports is probably lower today than it had been a decade earlier—possibly even two decades earlier.

Noteworthy also is the conspicuous lack of investment in "transport equipment" revealed by DPRK mirror statistics. On those numbers, it would appear that the DPRK has been seriously underinvesting in means of transport for the better part of the past generation; the revolution in transportation that has swept up the rest of the world, to go by those figures, has swept the DPRK by.²⁸ To judge by the clues from mirror statistics, North Korea's trans-

²⁸ For more details, see "Food, Energy, and Transport Equipment in The DPRK Economy", *op. cit.*

<Table 5> DPRK and ROK Capital Goods Trade in International Perspective

Country/region	Capital Goods as a Proportion of Trade (percent)			Capital Goods Trade per person (current \$ value)		
	Imports					
	1970s	1980s	1990s	1970s	1980s	1990s
DPRK	27.7 ⁴	19.8	16.4	14 ⁴	17	9
ROK	28.8	30.2	35.1	68	238	774
USSR	35.9	37.1	-	45	18	-
CMEA Europe	35.7 ¹	31.7 ²	-	175 ¹	303 ²	-
Cuba	26.6	31.7	21.0	97	237	77
China	21.8 ³	28.6	37.8	23	10	28
Developing Economies	27.4	32.1	46.5 ⁵	27	57	114 ⁵
	Exports					
	1970s	1980s	1990s	1970s	1980s	1990s
DPRK	3.8 ⁴	6.9	10.4	1 ⁴	6	6
ROK	14.8	32.3	45.0	32	294	922
USSR	18.4	14.6	-	24	49	-
CMEA Europe	42.3 ¹	46.7 ²	-	192 ¹	455 ²	-
Cuba	negl.	negl.	negl.	negl.	negl.	negl.
China	3.7 ³	3.3	13.9	negl. ³	2	11
Developing Economies	4.8	12.8	27.4 ⁵	4	23	67 ⁵

Notes: ¹ = 1970, 73-79; ² = 1980-88; ³ = 1970,75-79; ⁴ = 1972-79; ⁵ = 1990-94.

Trade volumes estimated in current \$ at official exchange rates, imports c.i.f. (except developing economies), exports f.o.b. "Developing Economies" defined per UN taxonomy (less China); per capita trade volumes calculated according to 1975, 1985, 1990/95 pop.

Sources: for Cuba and USSR: US CIA, *Handbook*; Eastern Europe: *Handbook*; ROK: *Korea Statistical Yearbook*; developing countries: *International Trade*. Population derived from UN *World Population Prospects*

portation and communications infrastructure today is probably woefully underdeveloped.

National Output

With the recent IMF "fact finding mission" to the DPRK, figures at last have been transmitted by Pyongyang on to the outside

world concerning the country's patterns of aggregate economic output. [SEE TABLE 6] Enormous unresolved questions weigh upon these disclosures: it is not clear, for example, if these numbers are meant to include the military economy or not; no price deflators were offered here; conversion of output into US dollars is, to say the least, a highly problematic exercise; and whether the DPRK would be capable of measuring value added through its economy under the best of circumstances is hardly self-evident. For all these unresolved problems, it may nevertheless be informative to compare reported recent patterns of output in North and South Korea.

According to the numbers in Table 6, in 1993 aggregate GDP was about 16 times larger in the ROK than in the DPRK; per capita output was nearly 8 times higher in South than North. By these numbers, agricultural output in the South was "only" three times higher than in the North—a curiously low discrepancy, considering

<Table 6> Official Data on GDP and its Composition: DPRK and ROK, 1993

	DPRK	ROK	Ratio
GDP (current \$US million)	20,935	333,022	16:1
GDP per capita	990	7,600	7.7:1
Sectoral Output (current \$US million)			
Agriculture	8227	23978	2.9:1
Industry	4689	89916	19.2:1
Construction	1256	46290	36.9:1
Other	6762	173504	25.7:1
Sectoral Output (percent)			
Agriculture	39.3	7.0	0.18:1
Industry	22.4	27.0	1.2:1
Construction	6.0	13.9	2.3:1
Other	39.3	52.1	1.6:1

Note: \$US values calculated on the basis of official exchange rates.

Sources: ROK: Derived from *Korea Statistical Yearbook 1996*; DPRK: International Monetary Fund Democratic Peoples Republic of Korea, Fact Finding Report (Washington, DC: IMF Asia and Pacific Department, November 12, 1997, unpublished.); and DPRK Central Bureau of Statistics, *Tabulation of the Population Census of the Democratic Peoples Republic of Korea (31 December 1993)*.

that 1) the population of the South was twice as large as the North's; 2) farm output in the South is valued at nearly twice world (international) prices; 3) the North in 1993 was only months away from publicly declaring a severe food shortage, and seeking international emergency food aid on a humanitarian basis. In other sectors, the discrepancy is recorded as ranging from roughly 20-to-1 to nearly 40-to-1—implying differences of per capita output of roughly 10-to-1 to 20-to-1.

We have no way of testing, or replicating, these figures. Suffice it to say that the prevailing assumption, supported by a variety of data apart from the numbers in Table 6, is that per capita output has been dramatically higher in South than in North Korea for some considerable time.

Public Finance

North Korea has recently transmitted data on its public finances to the IMF [SEE TABLE 7], although these must also be viewed in light of the unanswered questions about them.

North Korea's system of public finances, and its differences from South Korea's system, have already been described in general terms elsewhere²⁹. Perhaps the most meaningful of the differences indicated here involves the share of government budget in relation to estimated national output. Whereas the ROK's ratio of government spending to GDP is roughly 22 percent, the DPRK's proportion would be fully 90 percent. This would indicate an extraordinary scope for government activity within the domestic economy, even for a Communist economy. Indeed: the ratio of government spending to national income appears to have been markedly lower (in the range of 70-75 percent) for the highly developed Socialist states of Soviet bloc Europe in the 1980s.

²⁹ For example, see Chong Kee Park, "Fiscal System", in Lee-Jay Cho and Yoon Hyung Kim, eds., *Economic Systems In North And South Korea: The Agenda For Economic Integration*. (Seoul: Korea Development Institute, 1995).

<Table 7> Official Data on Public Finance: DPRK and ROK

	DPRK	ROK
Government Budgetary Revenues, 1993 (current \$US billion)	18.9	86.0
Government Budgetary Expenditures, 1993 (current \$US billion)	18.8	86.0
Expenditures as Percentage of Official GDP	90.0	22.3
Composition of Officially Announced Government Expenditures, 1993 (percent)		
- Economic Development	68.1	27.4
- Defense	11.2	15.2
- Social and Cultural	17.2	41.0
- General Administration	0.1	10.8
- Other	0.2	5.6
Composition of Officially Announced Government Revenues, (1996 DPRK, 1993 ROK) (percent)		
- Direct Taxes	43.1	30.9
- Indirect Taxes	39.9	37.8
- Social Insurance Revenues	0.4	6.0
- Other Revenues	16.6	25.3

Notes: \$US values calculated according to official exchange rates.

ROK data pertain to general governmental revenues.

For ROK budgetary expenditures, "Economic Services" are classified under "Economic Development"; "Education", "Health", "Social Security and Welfare", and "Other Community and Social Services" under "Social and Cultural"; "Defense" and "General Administration" figures are directly translated. For ROK budgetary revenues, "Taxes on Income and Profits" and "Taxes on Property" are classified as "Direct Taxes"; "Taxes on Goods and Services" and "Customs Duties" are classified as "Indirect Taxes".

Sources: DPRK: International Monetary Fund "Democratic People's Republic of Korea, Fact Finding Report" (Washington, DC: IMF Asia and Pacific Department, November 12, 1997, unpublished.)
ROK: *Korea Statistical Yearbook 1996*.

Concluding Observations

Given the imprecisions of any statistical comparison of contemporary North and South Korea, our curiosity must be tempered by caution. False precision will not serve our purposes here.

Yet when all is said and done, our search for numbers about the North and South Korean social and economic circumstances may be said to reinforce a number of impressions about divided Korea. For one thing, North Korea seems to be one of the most distorted, and militarized, economies on the face of the earth today. For another, North Korea appears to have been stagnating, or worse, for some years—and not simply because of Pyongyang's bad luck with its erstwhile Soviet allies. Per capita output is likely far lower in North than in South Korea, although it is impossible to say just how great that differential may be. While North Korea has a highly—indeed, extraordinarily—mobilized adult workforce, the capabilities of that population have not been adequately surveyed at this time.

As a first order approximation, it may be the case that North Korea's entire capital stock would be next to worthless under open, competitive, market conditions, and that most North Korean workers would have to find new occupations if their system were exposed to systematic market forces. All of these factors could bear on the venture of Korean reintegration—depending upon how they are dealt with, either for good or for ill. ■■■