9

Korean Unification: Lessons from Germany

HOLGER WOLF

Introduction

In the summer of 1989, pundits predicting the imminent demise of the German Democratic Republic (GDR) were scorned: the Communist Party appeared to be firmly in control, signs of protest were muted. Six months later the regime collapsed. German unification, though long expected, came as a surprise. Today, the possibility of a collapse of the North Korean government is not viewed with quite the same incredulity (Y. S. Lee 1995), yet, for many sound reasons, the survival chances of the regime are viewed as quite decent, at least for the time being. This chapter offers no particular insight in this regard, save to notice the speed of collapse of what was widely regarded as one of the most stable socialist systems in Eastern Europe, the German Democratic Republic.

The suddenness of the German collapse suggests that rapid economic and social developments forced politics into a reactive rather than proactive role. There was little time to consider, formulate, and implement a coherent transformation strategy. In the rush to produce a workable plan in the face of expected mass migration and production collapse, a number of policy and strategy mistakes significantly worsened the long-term prospects for East Germany (and the size of the unification bill for West Germany). These mistakes, and a number of other lessons from the German for the Korean unification process, are the focus of the chapter.

Holger Wolf is a professor in the Department of Economics, Stern School of Business, New York University, and a member of the National Bureau of Economic Research, Massachusetts.

Of course an indiscriminate transplantation of policy choices from the Germanys to the Koreas would invite disaster—policies operate against the background of a particular social and institutional infrastructure, and the philosophical differences between the German free market model deemphasizing and the Korean development model emphasizing the role of the state in allocation decisions are considerable. Even more important, during episodes of dramatic change cultural and historical issues tend to come to the fore; both the much longer unification experience of the Koreas and the fact that the split of Korea but not of Germany occurred in the context of an internal conflict are likely to significantly influence the course of events. To maintain the focus of the chapter on the lessons for Korea, I concentrate on the more transferable aspects of the German unification experience. I also will not touch on more general issues of transition, as these are discussed in great detail elsewhere.

Scenarios

Two unification scenarios can be envisaged, with unification coming either at the beginning or at the end of the integration process.[1] Under the first scenario, North Korea crumbles: perhaps because of popular unrest, perhaps in the wake of a coup, it is hoped not in the aftermath of a war. Faced with political instability and potential mass migration, South Korea has little choice but to agree to instant unification, in large part taking the form of absorbing North into South Korea. This instant merger would most closely resemble the German case.

The second scenario envisages that North Korea, either under its current leadership, or after a regime-maintaining coup, follows the path of Vietnam and China, adopting a gradual transition strategy.[2] The reforms are expected to unleash productivity as resource allocation improves (Noland 1996; Noland, Robinson, and Scatasta 1997), eventually culminating in political and economic unification after the economic, political, and social systems have sufficiently converged.[3]

---

1. See, inter alia, chapter 3 in this volume, Choi (1995), Chun (1993), Chung (1992, 1993), Drennan (1997), Eberstadt (1995, 1997), and Noland (1997a).

2. A number of observers argue that a sort of "gradualism from below" is taking place in North Korea, with a substantial part of the economy slipping out of the rigidly controlled framework and private initiative gaining a foothold (in an as yet very moderate way).

3. It is important to note, especially with respect to the social systems, that the experience of the typical older North Korean comprises Japanese occupation, war, and extreme socialism. After some 40 years of extreme isolation—Noland (1997a) quotes official sources to the effect that just 360 intra-Korean round trips took place in 1992, contrasted with more than 2.7 *million* intra-German trips in 1980—it stands to reason that value systems have drifted substantially apart, particularly for the younger generation.

The gradualist scenario has appeal: it will smooth many of the wrenching initial adjustments and may ease the political tensions. A number of important caveats arise, however. First, gradualism will not necessarily, or even likely, reduce the total cost of unification, as is often claimed. The cost of unification is, as will be discussed below, largely a function of the real productivity gap between the two Koreas at the time of unification. A reduction in costs thus presumes that, under the gradualist strategy, North Korea will log higher growth rates than South Korea, an expectation based on the quite high growth rates achieved by China. It must be noted, however, that China is an outlier in this respect among the transition economies and that its high growth rates have been achieved during its transition from an agricultural to an industrial economy. This, of course, is not the challenge confronting North Korea. Like the East European transition economies, North Korea is fairly industrialized and faces the problem of the transition from heavy industry to consumer goods and services. The relevant measuring rod is thus not China but the transition economies of the republics of the former Soviet Union. Among that reference group, none of the gradual reformers (notably Ukraine and Belarus) have yet attained their prereform output levels, much less achieved substantial net growth. For the initial decade, a gradual unification strategy is thus more likely to increase than to decrease the productivity gap, and hence the eventual cost of unification. The cost argument for a gradualist unification scenario is therefore unconvincing. However, a financial case for waiting can be made based not on the size of the bill but on South Korea's ability to *finance* the bill. A period of positive national savings can provide a cushion to smooth the adverse fiscal impact of eventual unification.

But the gradualist scenario also faces a second important obstacle: it is highly unlikely on political grounds (see chapter 3). The gradualist reformers in Eastern Europe could play a second trump card of nationalism to attain political legitimacy. This is not an option in North Korea. It is hard to see how North Koreans, faced with almost half a century of significant underperformance vis-à-vis the South (an underperformance that, even if at present not widely appreciated, will be hard to conceal if reforms are undertaken), will opt to trust an untested North Korean technocratic government to guide market reform in preference to the obvious alternative of demanding immediate unification. Even if they are at first willing to remain separate, the likelihood that the gap between the South and the North will initially widen substantially in the wake of gradual reform suggests that the government's legitimacy problems will grow. Once the political legitimacy of the North Korean leadership is crumbling, South Korea will be hard pressed to reject unification—to do so would entail maintaining a strict internal border to forestall mass migration.

Gradualism also encounters a much more basic obstacle: though "my

wish" remains the most popular song, it is perhaps sung a little bit less fervently in the aftermath of seeing the equivalent wish come true in Germany. The recent upheaval in South Korea, which will place great strain on the economy for some time to come, will do little to ease these concerns. While the older generation voices quite strong support for unification, the views of younger Koreans are much more ambivalent. Instant unification in the face of collapse sidesteps the crucial question of whether South Korea really desires "my wish" to become true; in a gradualist scenario, the option of permanent coexistence is much more likely to be raised.

In the end, gradualism is likely to remain a theoretically appealing but very unlikely unification scenario. This was starkly visible in Germany: initial calls for an East German "third way," with "soft" reforms and eventual unification—quite fashionable with the intellectual elite (in both West and East Germany)—were easily brushed aside by the simple attraction of joining the wealthy brother to the west. Mass demonstrations under the motto "Either the deutsche mark comes to us, or we will come to the deutsche mark" sealed the fate of the third way. It stands to reason that should North Korea acknowledge, explicitly or implicitly, defeat in the "socialism versus market economy" competition, the case for a separate North Korean state may likewise prove hard to make to North Koreans, if not to their wealthier brothers to the south. Whether South Korea is willing to accept the only remaining option—to maintain an internal border with force—remains to be seen; but it would seem quite unlikely.

The following discussion hence focuses squarely on the first scenario of a rapid unification following a North Korean collapse. This scenario is, of course, also the relevant one if lessons from the German experience are to be drawn.

The Germanys and the Koreas: Background

Both the two Koreas and the two Germanys are reflections of the postwar ideological conflict, though the Korean split, born of an internal conflict, was arguably more traumatic. Maybe not too surprisingly, the socialist halves adopted particularly strident and hard-line approaches,[4] with near complete public-sector ownership of productive resources.

In both cases, the socialist halves started from a higher development level, enabling them initially to keep abreast of the respective market economies by emphasizing extensive growth in heavy industry. After

4. Indeed, the GDR government, shortly before its fall, criticized the Soviet Union for having departed from the path of true socialism.

Table 1 The Koreas (1996) and the Germanys (1989)

	South Korea	North Korea	Ratio	West Germany	East Germany	Ratio
Population (millions)	45.5	23.6	1.9	61.7	16.4	3.8
GDP (US$ billion)	480.4	21.4	22.4	1,288	120	10.7
GNP per capita (US$)	10,548	910	11.6	20,877	7,300	2.9

Source: Young, Lee, and Zang estimates (see chapter 14).

reaching the limits of this growth strategy,[5] both socialist economies experienced declining growth rates by the 1970s and serious contraction by the late 1980s. This relative decline signified an inability to match either the gradual switch in West Germany and South Korea away from purely manufacturing-based economies or the pace of technological innovation in the remaining manufacturing sectors.[6]

The cumulative result of increasing differences in growth rates over time was large differences in per capita income. While statistics on relative growth rates in socialist economies are notoriously unreliable, when we look back with the benefit of hindsight it is clear that the socialist reality had been much grimmer than official whitewashed statistics revealed. Though initial estimates placed East German labor productivity at two-thirds the West German level, the reality and estimates proved to be quite far apart: following a closer examination after unification, estimates of relative productivity ratcheted down dramatically, stabilizing at a level of about one-third of the West German level (see table 1). The sharp reduction was caused partly by plainly false earlier statistics, partly by the inordinate resources devoted to a few showcase Kombinate, and partly by the difficulty of assessing the true market value of output "sold" within the Council for Mutual Economic Assistance (COMECON).

The North Korean data are widely regarded as particularly suspect even in the realm of socialist statistics. With that caveat, estimates place North Korean labor productivity, after the recent 30-odd percent decline in production, at a tenth to a fifth of the South Korean level (see table 2). A first suggestive lesson of the German experience (and, more generally, of most transition economies) is to take the lower end of this range.

5. East Germany, for instance, boasted an adult labor force participation ratio above 80 percent, far exceeding West Germany's.

6. There are some exceptions to this rule; for instance, until the early 1980s East Germany apparently remained fairly close to the technological frontier in optics, medical technology, and, to a lesser extent, semiconductors.

Table 2 North Korea: growth, 1992-96 (percentage)

	1992	1993	1994	1995	1996
Agriculture	–2.7	–7.6	2.7	–10.5	
Mining	–15.0	–3.2	–4.2	–2.3	
Manufacturing	–17.0	–1.9	–3.8	–5.3	
Aggregate output	–7.7	–4.2	–1.8	–4.6	–3.7

Source: Bank of Korea, Unification Board.

The famine (see chapter 5 and Smith 1997) is likely to further reduce productivity through a reduction in livestock, through malnourishment, through environmental damage, and through the diversion of resources away from (more or less) productive investment toward food purchases.

What explains the comparatively worse performance of North Korea compared to East Germany? First, East Germany grew somewhat faster: comprising the old "high-tech" heart of prewar Germany, the GDR retained a large fraction of the industrial and engineering capacity of prewar Germany and a highly skilled manufacturing workforce, enabling it to at least embark on productivity-based growth once factor mobilization had reached its limits. East Germany also remained moderately integrated with market economies on the production side (particularly after the early 1970s). Moreover, since a high fraction of East German households were able to watch West German television, the degree of isolation present in North Korea was never attained. The second reason for the comparative outperformance of East Germany lies in the denominator: over the entire postwar period, South Korea has grown substantially faster than West Germany.

German Unification: A Capsule Overview

The broad outlines of the German unification process are well known and will not be described here in any detail; the detailed descriptions are readily available in sources listed in the references (see especially Bofinger and Cernohorsky 1992 and Sinn and Sinn 1992). In essence, following the collapse of the Berlin Wall, political pressures soon tilted the debate away from "third way" scenarios to instant unification, which was accomplished in 1990 with a de facto absorption of East Germany into West Germany. This entailed, with few temporary exceptions, the immediate introduction of the West German market economy to all institutions, as well as instant internal and external convertibility and free factor mobility.

When the wall crumbled, views on the likely unification process were mixed. On one side of the spectrum, economic institutes, the Bundesbank, and most outside observers predicted that unification was likely to be a long and costly process. The conclusion was partly based on a simple but instructive computation: for East and West German living standards to converge, a reasonable convergence of per capita public and private capital must take place. Given a reasonable path of public and private investment, both costs and duration can be determined based on simple back-of-the-envelope calculations. Such calculations suggested that even if the investment share in output were to substantially increase, partial convergence was a matter of decades; furthermore, substantial fiscal outlays would be required both to finance the necessary improvements of the public-sector infrastructure and, on the transfer side, to mitigate the social costs of the adjustment process.

On the other side of the spectrum, the federal government (operating under the pressures of an upcoming election) promised "flowering landscapes" in East Germany within a few years and suggested, quite explicitly, that the unification process was a win-win situation—a stance that, as further discussed below, had first-order adverse effects on wage policy.

Mathematical laws are hard to circumvent: ex post facto, the first group proved to have been closer to the truth. Some eight years later, the success of unification is mixed at best. Far from flowering landscapes, industrial ruins dot the former GDR. Following the de facto absorption of East Germany into the Federal Republic in 1990, eastern output immediately collapsed.

The decline reflected a number of reasons, both exogenous and homemade. Exogenously, the dissolution of COMECON had negative effects on East Germany just as on the other transition economies. Furthermore, application of market cost-benefit calculus and environmental regulations implied the end for many an East German enterprise.

Arguably, however, a very significant part of the East German collapse was homemade: production in the former GDR contracted much further than production in the comparable Visigrad transition economies. The key culprit was nominal wage increases (in DM) far exceeding increases in labor productivity, boosting East Germany to the top spot in the world unit labor cost rankings, exceeding West Germany's by 50 percent. Lacking compensating advantages, East Germany found itself priced out of world markets; worse, foreign direct investment bypassed it on the way further east to the Visigrad economies, which had unit labor costs around one-tenth of the East German level. A second culprit was slow top-down privatization, caused by confusion about property rights. Third, and in sharp contrast to the Visigrad countries, bottom-up privatization in East Germany was also sluggish, reflecting—perhaps as a consequence of the "takeover" nature of unification—the unwillingness of

the government to take a more than token look at unnecessary regulations in the West German economy. We will return to these issues at length below.

The initial contraction was followed by a short period of rapid growth. The growth, alas, resulted primarily from a construction boom fueled partly by direct public-sector infrastructure investment, partly by very generous tax incentives.[7] The construction program proved successful: East Germany today has, if at high cost, one of the most modern transportation and communication infrastructure systems in Europe. The quality of housing has also increased substantially, though the number of renters with incomes sufficient to pay rents that cover renovation costs has not, causing the construction boom increasingly to stutter.

Outside of construction, the landscape remains barren. With the exception of a few booming areas—"silicon valley" in Saxony perhaps being the best known—real output has not noticeably exceeded pre-unification levels. Unemployment, measured comprehensively as employment reduction (including forced early retirement, retraining, de facto unemployment counted as "short work zero hours," etc.), reached a third of the pre-unification labor force. It shows no sign of decreasing significantly: resident employment declined from 9.8 million in 1989 to 6.2 million four years later, before stabilizing.[8] Objectively, workers above age 50 have been largely pushed out of the labor force and into early retirement, while female labor force participation rates, formerly buttressed by a very extensive system of public child care, have decreased as child care services have been reduced to West German levels.

While the production side looks quite uninspiring, relative consumption levels of most East Germans have increased substantially after unification (and far exceed the level in the Visigrad economies), propped up by large per capita transfers that enable an East German living standard and consumption level far above production per capita. Initially, total net flows from West Germany to East Germany exceeded DM10,000 per East German citizen; they have since slightly decreased.[9]

Looking forward, there is little reason to expect a second German economic miracle; rather, a Mezzogiorno scenario for East Germany seems the most likely outcome, with permanently low production and a permanent trade deficit vis-à-vis West Germany, financed by perpetual

7. The incentives, which initially applied to both new construction and renovations, have recently been restricted to renovations only.

8. Early retirement, training, public works programs, and short work time accounted for almost 2 million persons at the peak. As a certain fraction of the initial workforce was likely de facto unemployed, the decrease in employment is somewhat overstated.

9. Transfers amounted to between 4.8 (1995) and 6.1 (1991) percent of West German GDP, and between 39.4 (1995) and 59.1 (1991) percent of East German GDP (IMF).

transfers. A number of factors have united to push Germany in this direction. High relative unit labor costs combined with little flexibility on regulations in essence voided the major potential comparative advantage of East Germany. The tax breaks granted to investors to date have proven insufficient to overcome this unit labor cost differential relative to the Visigrad economies, except for a few capital-intensive sectors: overall, private investment remains small. Meanwhile, the high transfer rate—financed partly by a solidarity surcharge on high earners—coupled with the requirements of Maastricht and the generally difficult fiscal situation, limits the economic and political scope for future fiscal measures stimulating the East German economy.

South Korea has the benefit of an early warning, and hence the chance to learn from the mistakes of German unification and to formulate unification strategies before the event. Of course, the parallel between the Germanys and the Koreas can only be stretched so far. Institutional idiosyncrasies, location, history, and not least the hard-to-quantify social and political environment will cause important differences in the two unification experiences. Nevertheless, from the quite small set of countries in which a market and a socialist economy have unified—Germany, Vietnam, Yemen—the German case arguably is the best match for the scenario implicitly assumed in this chapter: a South Korea-led unification leading to the introduction of a market economy in North Korea. Vietnam's unification took the opposite route (as did, in a much-modified form, the return of Hong Kong to China); Yemen's economic (though, ex post facto, not political) unification posed fairly few problems, reflecting the dominance of the oil sector and a relative lack of the type of obsolete capital plaguing most transition economies.

The next section turns to an assessment of likely post-unification dynamics in Korea, drawing extensively on events in Germany. I then conclude, in capsule format, with the main lessons to be learned from the German experience.

Post-Unification Korea

In the immediate aftermath of the move to market prices, a substantial fraction of the North Korean capital stock will become obsolete, leading to a onetime reduction of output even at unchanged wages. The obsolescence partly reflects true value-subtracting black holes, or enterprises for which the value of inputs exceeds the world market value of output—and partly will result from a better recognition of adverse environmental externalities.

The environmental issue proved fairly decisive in East Germany, whose track record, like that of virtually all socialist economies, suggests a remarkably muted concern for environmental damages—not only hard-

to-observe climate effects but also immediately visible effects on the growth rates of children and on mortality and morbidity rates of children and adults in the vicinity of industrial plants. While environmental standards in Germany are particularly high, it stands to reason that in the Koreas, too, a onetime culling among the worst polluters will occur after unification as maintaining large differences in post-unification environmental standards will probably not be politically feasible. This effect will likely be more pronounced if the significant height differences between North and South Korean conscripts that travelers generally perceive can be traced to environmental pollution rather than to sustained famine. The alternative to closure—upgrading the North Korean plants to match South Korean pollution standards—is quite unlikely: given the low value of the existing North Korean capital stock and the high relative cost of upgrading existing facilities, building up-to-date facilities from scratch is typically more cost-effective. To the extent that existing South Korean facilities or imports cannot match the additional demand, the issue then becomes whether new facilities will be built in North or in South Korea.

Beyond the clear cases at the extremes, a range of plants will likely be in an intermediate zone, with marginal value added. The fraction of these plants surviving over the medium term depends on their ability to attract new capital and know-how, which in turn largely depends on the attractiveness of North Korea as an investment site. A number of factors will work in favor of North Korea. South Korea will extend her market-proven institutional framework to the North, including, as a key benefit not available to other transition economies, experienced administrators, judges, accountants, and so forth. The South will also, in all likelihood, substantially improve the Northern communication and transportation infrastructures, both apparently sadly in disrepair. The evidence of the German process suggests that these benefits will not be sufficient, however: what matters in the end is whether total operating costs in the North are sufficiently below operating costs in the South to justify the additional risks involved. The level and trend of North Korean unit labor costs vis-à-vis South Korea—that is, the relative evolution of wages and labor productivity—will play a pivotal role in this respect.

In the absence of effective controls on internal migration, unification creates immediate pressure toward real wage equalization, pressures that will be very hard to resist. In the German case, the monetary unification at a one-to-one ratio (for flow magnitudes) yielded initial relative wages of East to West German workers in manufacturing that matched the productivity differential one-to-three. Yet attempts to sustain this differential in real wages (and hence equality of relative unit labor costs) proved futile, on both political and economic grounds.

For one thing, the case for differential wages proved hard to make in the service sector: bus drivers in East Berlin objected, not unreasonably,

to receiving lower wages than their West Berlin counterparts for the same hours and the same work. Demands for wage equalization thus became a political flashpoint, with the political parties aiming to gain support primarily from the East German voters, who strongly advocated wage equalization. Second, internal migration—amounting cumulatively to less than 10 percent of the pre-unification labor force in East Germany, but heavily concentrated among the young and the better skilled—soon began to exert its own pressure on wages as the most skilled East German workers began first to commute and then increasingly to move to better-paying jobs in West Germany, confronting East German firms with the dilemma of either raising wages faster than productivity or losing skilled workers. The pressure could in principle have been partly relieved by capital migration from West to East Germany; however, as discussed above, slow privatization and obstacles to greenfield investments (investments based on new construction) sharply constrained private capital flows.

In a flexible labor market, this migration of labor from East to West would have—eventually—achieved wage equalization.[10] Real wages would have declined (compared to pre-unification levels) in West Germany, reflecting the increased supply of previously scarce skilled workers, but increased in East Germany, reflecting the increased outside opportunities. This reduction in the average real wage is unavoidable if full employment is to be maintained: the lower average capital stock per worker requires a reduction in the price of labor relative to capital.

Politics, the structure of the labor market, and the bargaining arrangements for East German wages did not, however, allow real wage equalization on a level consistent with full employment. On the political side, identification with the call for wage equalization proved attractive to parties trying to capture the loyalties of the new East German voters, while there were few points to be garnered by opposing wage increases. Furthermore, managers in pre-privatized East German firms had little reason to oppose wage increases right before the enterprises were to be taken over by the privatization trust fund (the Treuhand).

After the takeover, wage bargaining pitted the Treuhand (see Carlin and Meyer 1994), a public institution, against the West German unions that had, de facto, assumed representation of the East German workers (the East German unions, tainted by their close association with the

10. It should be noted, incidentally, that in principle migration in response to wage differentials in the aftermath of unification is economically desirable (see, e.g., Borjas 1994 for a general analysis). Problems arise, however, to the extent that the individual migrant does not take into account congestion externalities. This rarely emerges as a major problem in mature economies since the housing market acts as a counterbalancing force, but it may be a more serious problem in the case of pent-up migration pressures and extreme wage differentials.

Honecker regime, rapidly faded). The West German unions were unwilling to accept sizable real wage reductions (or even reductions in real wage growth) for their West German members. The reluctance can be partly rationalized in the context of the unions' partisan objectives in determining insider wages, though it also has to be recognized that unions would have had a hard time selling voluntary real wage reductions against the background of the government's confident predictions of flowering landscapes and assertions that "no one will lose." The outcome was a set of agreements to substantially close the gap between West and East German wages by raising the Eastern level to the Western standard. While equalization occurred over several years and did not apply to side benefits, thus maintaining about a 20 percent gap, the wage increase far exceeded productivity growth and led to a sharp rise in relative unit labor costs.

In hindsight (though this was also widely predicted by economic advisers at the time), the decision to opt for approximate wage equalization was and remains the single most important factor hampering East German production. The dynamics are straightforward: as argued above, the transition from socialism to markets entails an unavoidable culling of the capital stock; in addition, the unraveling of existing trade and production networks leads to a further contraction of output.[11] In the short run, labor productivity in transition economies thus falls, before (potentially) gradually rebounding as firms enter new networks and as investment in human and physical capital bears fruit. To sustain a reasonable level of employment in this process, real wages thus have to follow a J-curve to stabilize unit labor costs; indeed, it is precisely the falling (or at best stable) unit labor cost that make the second round of expansion through investment feasible. This J-curve was, in fact, observed in many of the more successful transition economies as price increases initially exceeded nominal wage increases. East Germany is a clear outlier in this respect. The decision to shield West German real wages from any impact due to the sharp rise in the labor supply meant that the adjustment had to come on the quantity side: at wages around 80 percent but productivity around 40 percent of West German levels, unit labor costs in East Germany soared to the top spot in the international ranking, causing a dramatic contraction and effectively forestalling any emergence from the trough of the J-curve.

---

11. Noland (1996) and Noland, Robinson, and Scatasta (1997) provide in-depth assessments of the likely extent of these magnitudes, as well as the investment required to achieve reasonable parity between the Koreas under alternative assumptions. For one baseline scenario, the initial loss of output amounts to 50 percent, though this is offset by productivity gains due to better factor allocation and technology. See also Akerlof et al. (1991), Sinn and Sinn (1992), Bofinger and Cernohorsky (1992), Bryson (1992), Siebert (1992), and Dornbusch and Wolf (1994) for the German case; and Noland (1997a) and Yeon (1994) for a comparison.

A real wage reduction has particular benefits for the labor-intensive sectors, allowing labor released from the contracting heavy industries to be absorbed until the slow flow of investment has rebuilt the capital stock in the more capital-intensive sectors. It is precisely these sectors—textiles, services—that have absorbed many of the workers shed by manufacturing in the Visigrad economies; it is precisely these sectors that have received a large share of the initial inward foreign direct investment (FDI) in the Visigrad countries; and it is precisely these sectors that were harmed most by the rapid wage increases in East Germany and have underperformed relative to the Visigrad economies. Effectively, choosing wage equalization on West German rather than on equilibrium levels has obviated the single most important comparative advantage of East Germany and has redirected investment flows to the Visigrad countries: the flowering landscapes have emerged east, not west, of the Oder.

A different, but no less important, cost of the wage decision was incurred on the fiscal side: the sharp rise in unemployment (and the implied collapse in production) dramatically boosted the necessary social transfers from West to East Germany while reducing tax revenues. The resulting net strain in turn curtailed the public-sector resources available for the necessary infrastructure investments. Higher fiscal transfers, partly financed through an additional "solidarity tax," also did little to calm the political scene, as West German taxpayers, having been initially assured that unification would not cost them, increasingly appreciated the actual costs and their likely duration.

These transfers have often been cited in assessments of the likely costs of Korean unification,[12] though direct extrapolation is inappropriate.[13] However, a number of qualifying points arise. First, the transfers remain quite low as a fraction of West German GDP, some 4 to 5 percent with declining tendency. Given relative population shares, the transfers would be somewhat higher in the Korean case *if* the same obligations arose. While not trivial, the increase is small both compared to the much larger general expansion of the government share over the last decade and compared to, for example, the expected fiscal cost of dealing with underfunded social security systems. It should also be borne in mind that these costs are temporary (provided the transition is well managed). It is not uncommon for countries to accumulate debt for such onetime expenditures, particularly during military conflicts.

Second, it is also of some importance to consider the composition of these "costs." What matters ultimately is the present discounted value of the entire *stream* of unification expenditures (and the associated tax

12. See Bae (1996), Charles Lee (1997), Mo (1994), Piazolo (1997), and Hoon (1992).

13. For a discussion, see Noland (1996, 1997a).

increases) rather than current expenditures. The focus on cumulative expenditures immediately points to the importance of the distinction between transfers and public investment. Transfers are a function of the difference between labor productivity and unemployment; investment reduces this differential. The higher the share of public investment spending in the total fiscal expenditure, the more rapidly will the productivity gap close and hence transfers be reduced.[14] In assessing the cost of unification, these two elements—the spending necessary to update the public capital stock and the transfers necessary to make the transition possible socially—need to be strictly separated. In the German case, the lack of a sustained East German recovery has led to an upward revision of cost estimates: as record unemployment in the East persists, so will transfer payments. Net cumulative transfers of the order of DM2 trillion appear not unrealistic. It should be noted, though, that stretched over a period of 15 to 20 years, even this at first sight quite large amount becomes manageable.

Third, the level of transfers itself is a function of the given social security system and thus cannot simply be taken from one case and applied to another. In particular, the greater historical reliance of Korea on intrafamily rather than government-financed "social security," combined with the lower legal entitlements, suggests that the high transfers for East Germany will not be matched in the Korean case. Finally, the costs must be offset by the reduction in defense expenditure, both lowering pure fiscal cost and releasing the resources, human as well as physical, now earmarked for the military to more productive usage in the private sector.

In sum, the decision to close the real wage gap between East and West German wages almost exclusively by raising East German wages—hence also increasing relative East German unit labor costs—made unemployment substantially worse. The rise in unemployment in turn required a diversion of fiscal resources from investment to social transfers. High tax burdens and high unit labor costs combined to sharply reduce the attractiveness of East Germany as an investment location and thus hindered its ability to absorb the high unemployment in the near future. As investment—and high-paying jobs—remains scarce, younger and more-skilled workers migrate to West Germany, denuding East Germany of its major remaining asset, a highly skilled labor force. These reenforcing trends threaten to turn large parts of East Germany into a northern Mezzogiorno. The German government has responded in the traditional way (Sinn 1995), offering subsidies to offset location disadvantages. Past experience with such subsidies is quite mixed—neither the Mezzogiorno nor Appalachia has experienced notable growth despite decades of fiscal

14. The share of investment in total net flows amounted to about a third in Germany in the initial post-unification years.

support. East Germany's chances are better because of its location next to the Visigrad countries,[15] yet to date incentives have not succeeded in motivating a noticeable increase in investment increase, and indeed support for the East is increasingly viewed as a potential sacrifice on the road to Maastricht.

How will these dynamics play out in Korea? Unless strict internal border controls are maintained—presumably not a politically feasible path—it stands to reason that real wage equalization will occur. Longer isolation may lengthen the process, but ultimately both capital movements to the North (the preferred means) and labor movements to the South (the realistic means) will bring about real wage adjustment. The operational problem thus becomes determining the point at which real wages become equalized—as discussed above, the feasible range stretches from a real wage reduction in the South up to the introduction of South Korean wages in the North.

What can be done to avoid an excessive increase in North Korean unit labor costs? The key lesson from Germany is that the government must take a proactive role in favor of real wage adjustments compatible with long-term recovery in North Korea. First, and trivially, being up front about the unavoidable belt-tightening associated with unification helps to prevent unrealistic expectations. The extensive discussion of the costs of unification, with ample reference to the German case, in the South Korean press has already gone a long way in this direction. What remains unknown are the expectations of North Koreans and the future role played by parties and interest groups representing North Koreans in a unified Korea. Coming out of famine rather than relative prosperity, the initial income objectives of North Koreans may be more muted than those of the East Germans.

The economist moves on thin ice in discussing psychological areas, yet again German history may provide a lesson: during the previous era of dramatic reform in Germany, in the postwar period, the still much beloved economics minister (and later chancellor) Ludwig Erhard made *Masshalten* (very imperfectly translated as "living within our means") the cornerstone of public pronouncements and policy. The subsequent German economic miracle may be due not least to wage restraint deliberately following rather than anticipating productivity growth. The contrast, in attitude as well as outcome, between the 1948 and the 1989 reforms could hardly be starker. The crucial importance of the North Korean wage level in determining the success and costs of Korean unification suggests that the government should have few qualms about moving beyond mild moral pressure. Income policies differentiated by sector are an obvious tool to set the right tone if the threat of excessive wage

15. In a similar vein, North Korea's location vis-à-vis Russia and China has the potential to play a positive role in fostering trade, particular in the golden triangle area.

increases is present. Avoiding the initial increase is key here: it has proved very hard (and taken five years) for even minimal signs of *downward* wage flexibility to become visible in some East German enterprises.

Beyond political leadership, fiscal policies can be used to drive a wedge between relative wages and relative unit labor costs. Of particular merit in this respect are reductions in employment taxes for firms located in the North; such reductions also tilt the incentive toward labor-intensive sectors, which absorb the labor released from contracting heavy industry. Wage subsidies for Northern firms can play a similar role, as can income tax credits for Northern workers, both counteracting the migration incentive. To be sure, such measures have significant fiscal costs, but these are at least partly offset by the fiscal savings (on both the revenue and the expenditure side) made possible by lower unemployment. In the end, it is more sensible to subsidize employment for a limited period—maintaining skills and reducing the migration incentive—than to finance the social transfers necessitated by long-term unemployment.[16]

While fiscal measures aimed at separating relative unit labor costs—the variable driving employment—from relative real consumption wages—the variable driving migration—can reduce the unemployment consequences of unification, temporary unemployment cannot be entirely avoided: successful transition requires growth of the service and consumer goods sectors and a contraction of heavy industry, a shift that entails a temporary unemployment increase. Beyond sensible wage policies, a number of additional steps can be taken to ease the wrenching adjustment.

The challenge is twofold: a rapid restructuring within the manufacturing sector from heavy to light industry and a shrinkage of the manufacturing sector vis-à-vis the service sector. The experience of Germany can serve as a lesson and as a warning in both respects. The initial underdevelopment of the service sector in the transition economies, coupled with its low capital requirements, renders the service sector a natural first haven to absorb labor released from manufacturing. Experience in Eastern Europe suggests that these service firms require fairly little government assistance and operate largely without formal financial-sector support. The role of the government thus lies not so much in actively promoting small-scale service enterprises but in removing obstacles.

This has not been a major issue in most transition economies, as both regulations and the capacity to enforce them were limited. But the situation is quite different in the case of transition economies that are undergoing unification with an established market economy and are thus inheriting the set of regulations—and the implementing bureaucracy—of the partner economy. In the German case, unification as takeover

16. A related possibility is transferal of ownership rights of apartment houses in North Korea to current residents, subject to a nonmigration agreement.

meant that West German regulations—tailored to the demands of a stable market economy—were transplanted lock, stock, and barrel to East Germany. While some flexibility existed, in many cases regulations appropriate for West Germany proved to be major obstacles to creating jobs in East Germany. Thus the high hurdles for entering most professions (including, for example, barbers and tailors)—typically a three-year apprenticeship to qualify for working in a profession, followed by a mandatory period of work experience and further exams prior to becoming an employer—are defensible to ensure quality in a stable economy; yet they caused unintended problems when applied in East Germany. For example, an East German becoming unemployed in 1990 would not have been able to open, say, a barber shop until 1995.

Similar examples abound; together they make the simple but, as the German experience shows, far from sufficiently appreciated point that optimal regulations are context dependent and, more specifically, that the (primary) aim of avoiding destabilizing mass unemployment may justify some temporary regress in other areas. More generally, the wrenching experience of reunification also demands (and provides a convenient justification for) attacks on structural rigidities in the market partner. In this regard, not all institutional achievements of the "losing" socialist partner should be discarded in favor of the institutions of the "victorious" market economy, a strong temptation in a forced rapid unification. Germany, alas, receives an unsatisfactory grade in this respect too, largely failing, despite exhortations from the Council of Economic Advisers, to tackle West German structural problems. At the same time, despite widespread recognition that the lack of reliable organized child care acted as a major constraint on West German labor market flexibility (in particular, reducing female labor force participation to rates below levels seen in similar economies), the much more extensive East German child care system was, through fiscal cuts, eviscerated to match lower West German standards. As South Korea itself is increasingly struggling with structural rigidities, notably in factor markets, the case for using an eventual unification as opportunity and justification for tackling some of its protracted problems is clear. Tensions will arise, of course; in particular, the necessary reliance on the *chaebol* to play a leading role in the reconstruction of North Korea may postpone the long-overdue clarification of their role in society.

This extensive discussion of labor market issues reflects their prime importance in determining the outcome of the German unification experience and, looking forward, the likely evolution of a unified Korean economy. A second crucial issue concerns the disposal of existing assets. The transfer of property from the state to the private sector is a critical component of the transition. However, a simple change of ownership does little to assist an enterprise in updating technologies and entering world markets, both crucial prerequisites for a successful transition. For

both, the financial status and the entrepreneurial vision of the new owners are key. In essence, two main options are available for privatization: sale (including by auction) and free disposal through a voucher system. East Germany was among the few transition economies to opt for selling, a decision that was largely influenced by East Germany's nature as a unification economy.

The Treuhand approach required potential buyers to submit detailed business plans, including binding agreements on future employment and investment; the success of the bidder depended on a combination of the bid and the business plan. This highly information-intensive approach could not have been replicated in other transition economies, for two reasons: a lack of bidders with sufficient resources and a lack of skilled manpower to formulate and evaluate the business plans. West Germany provided both.

Much has been written about the Treuhand. Undoubtedly, corruption and incompetence in some cases led to suboptimal outcomes. Yet, taken as a whole, the privatization strategy of selecting buyers who have the resources and business vision to transform the moribund enterprises of East Germany is clearly preferable to the alternative: transferring ownership rights via vouchers to (newly created) funds in the hope that these funds will, in turn, deal with issues of restructuring. Viewed from this perspective, the privatization process in East Germany must be judged a success: actual investment did not quite reach prior commitments but came close, though employment fell somewhat shorter of the target. Yet it must be recognized that commitments in many cases only imperfectly anticipated the subsequent real wage increases; thus again the labor market developments, rather than privatization proper, bear the brunt of responsibility.

South Korea, by virtue of being able to draw on solvent buyers, and by virtue of commanding the human capital required to evaluate the prospects of individual firms, has the ability to copy the Treuhand approach. Indeed, it fits more easily with the general Korean pattern of development, which favors an allocative role for the state, than it does with the free market strategy followed in postwar Germany. Alternative, more complicated hybrid systems with partial sales and distribution of residuals rights to North Korean citizens have been advocated, mostly on grounds of fairness. To be sure, privatization by sale implies a transfer of ownership to South Korea that might be viewed as "unfair." Apart from noting that, first, the acquired firms are with few exceptions unlikely to be of significant value without additional sizable investment and, second, that fairness on the asset side on this account has to be matched with fairness on the transfer side, the main argument against such hybrid schemes is their complexity. Two issues arise. First, private acquirers not themselves listed on the stock exchange may be deterred by schemes involving later listings of the acquired companies. Second,

and more important, the typical North Korean firm will require substantial injections of capital. As North Korean partial owners will not be able to shoulder their share of this new investment, the only two possibilities then become a dilution in their share—running counter to the initial objective—or their exemption from the capital increase, which is equivalent to a tax on the acquirer and thus will lower investment. A range of other technical objections arise in this area, but the fundamental issue is clear. The success of the transition depends on the willingness of (mainly) South Koreans to invest both financial and human capital in North Korea rather than elsewhere. The loss of ownership is the price North Koreans will have to pay (and East Germans have paid) for their rapid increase in consumption per capita.

Against this background, a number of important lessons emerge from the privatization process. First, the reintroduction of private property rights entitles prior owners of nationalized assets to seek redress. This can be achieved in two ways: by restitution of assets or by compensation for their loss. Germany opted for restitution. In practice, however, the determination of property rights turned out to be highly complicated because of repeated transfers, partial or missing documentation, and disputes over the treatment of investments made after the expropriation. In consequence, claimants took their cases to the courts: soon more than 1.2 million cases were logged, creating multiyear judicial backlogs. These delays curtailed both the ability of the Treuhand to dispose of assets and the ability, and certainly the incentive, of individuals to embark on major investments until the ownership issue was resolved. The gridlock eventually forced a shift in policy emphasis from restoration to compensation. The privatization agency, by disposing of properties without waiting for the final determination of their ownership, with compensation paid to the owners later, enabled a speedy transfer of property rights while ensuring social equity.

It is unlikely that North Korea has been more careful than East Germany in keeping precise records on prerevolutionary ownership structures, even ignoring the thorny issue of Japanese claims. Similar property disputes are thus likely to arise. The lesson is clear: while restitution has moral appeal, it is impractical given the sheer scale of the process; ownership of the North Korean assets should be centralized at a privatization agency with the right of disposal, with compensation claims resolved on a strictly separate track.

Second, expectations of windfall gains from privatization revenues are unrealistic. De facto, after years of neglecting repairs and upkeep on plants that were outmoded when built, most North Korean firms are likely to be at best marginally viable; it is more likely that they are nonviable without substantial additional investments. With the exception of a few crown jewels—in particular, companies dealing with raw materials—North Korean firms will not fetch high prices. Indeed, it must

be borne in mind that the potential buyer in many cases has the option of opening a greenfield plant nearby and hiring workers from the plant that is to be privatized. Initial rosy expectations in Germany that the net privatization revenues of the Treuhand could be distributed to East Germans soon met reality when the Treuhand was forced to, in effect, pay buyers (often by assuming financial or environmental liability) so that firms could be sold. When the Treuhand finally closed its door, its cumulative deficit reached several percent of GDP.

Unification also raises important issues on the monetary side (Kwon 1997). Essentially, two options are available: a period of dual currencies linked by floating exchange rates and immediate monetary unification. The first option is preferable on theoretical grounds, since the equilibrium real exchange rate will undergo significant changes during the transition. In the initial phase of the transitional recession, real exchange rate depreciation can sustain domestic demand; during the later upswing, gradual appreciation avoids inflation. In addition to these trends, the transition period is likely to be characterized by substantial real shocks, which again can be buffered by exchange rate adjustments. In principle, real exchange rate adjustments can of course be equivalently brought about by price changes, and shocks can be buffered in a variety of alternative ways—notably factor mobility and, again, price flexibility. However, evidence from other economies, both transition and market, suggests that these alternative adjustment mechanisms rarely suffice to speedily offset large shocks, leaving (undesirable) large fiscal transfers as the only residual compensation strategy. On a priori grounds, nominal exchange rate flexibility thus in principle provides a useful additional adjustment tool.

But in practice, political constraints are again likely to bite: political unification without economic unification creates a two-class society. In Germany, the symbolism of monetary unification can hardly be exaggerated, as mass demonstrations explicitly demanded the introduction of the deutsche mark. Instant monetary unification also carries a number of additional advantages. First, the reputation of the South Korean central bank is immediately extended to the North Korean monetary system. Second, transaction costs are substantially reduced. Third, more tentatively, possession of and remuneration in a hard currency appear to produce substantial boosts in confidence unlikely to be realized with a temporary North Korean currency. Fourth, extension of the supervisory functions of the South Korean central bank could avoid the emergence of monetary disequilibriums through inter-enterprise areas that have plagued other transition economies.

The likelihood of early monetary unification places a spotlight on flexible tax policy. Differentiated sales taxes for North and South Korean products or time-limited tariffs on South Korean exports to North Korea provide alternative means of achieving effective real exchange rate varia-

tion without surrendering the distinct benefits of operating under a single currency.

In the German case, the conversion rate used in the monetary unification has attracted a great amount of attention, and indeed it has often been blamed for the East German recession. The case against an "excessive" conversion rate is, however, quite weak. First of all, the conversion rate for flows, one to one, allowed East German wages (standing at slightly more than one-third of West German wages) to be translated into deutsche marks at a rate matching relative productivity. The increase in relative unit labor costs came only *after* monetary unification and cannot be blamed on the conversion rate: a conversion at a lower rate would simply have led to faster post-unification wage growth. The point is small, but important: what matters is relative unit labor costs in common currency. Hence, for some given relative productivity, it is the wage determination that matters. The initial conversion rate set a starting point, but it cannot be held responsible for the subsequent unwarranted wage increase.

The second monetary issue concerned the conversion rate on the stock side, the conversion of the existing East German marks into deutsche marks. The ultimate average conversion rate, 1.81 East marks per deutsche mark, has been widely interpreted as "too generous" and "inflationary." The economic meaning of the first critique is nebulous: the often-heard argument that the (much less favorable) black-market rate represented a "fair" exchange rate is incorrect, as the black-market rate did not, in any sense, present a measure of overall relative monetary conditions. The second charge has merit: calculations suggest that at the 1.81:1 rate, the post-unification money supply increased more than the money demand, creating inflationary pressures. However, there are two caveats. First, the difference between estimated money demand and supply was of second-order magnitude. Second, any "error" in a conversion rate will at best create a onetime price level blip; as a stock adjustment it will not trigger persistent inflation. For households, a too-generous conversion rate can thus be seen as little more than a onetime "welcoming gift" for North Korea; and again, the psychological benefits of North Koreans obtaining hard money with effective purchasing power should not be underestimated. If, at the time of unification, South Korea should have excess capacity, the conversion rate can even act as a demand stimulus.

A more important concern is the conversion rate for firm debt and bank assets. The (ex ante largely unknown) enterprise debts in transition economies bear little relation to market magnitudes; instead, they largely reflect the arbitrary relative pricing structure under socialism. In Germany, the Treuhand dealt with these debts on a case-by-case basis. This is unnecessarily complicated: a buyer forced to assume past debt will simply reduce the bidding price correspondingly, with zero effect on net privatization receipts. Rather than further complicating the privatization

process, the more appropriate action is a complete cancellation of old debts. Such a cut will, however, unbalance the North Korean financial institutions. To the extent that these are deemed savable, equalization claims are thus required.

In sum, the monetary side of unification, while important, is ultimately dominated by the labor market side. This being said, the choice of conversion rate is an interesting question. Operationally, it entails two steps: first, an assessment of the outstanding stock of North Korean currency likely to be presented for conversion; second, an assessment of the likely additional money demand (in South Korean currency). The ratio of the two magnitudes defines the noninflationary conversion rate. In managing the conversion a range of technical issues arise that go beyond the scope of the chapter. In essence, the determination of the conversion rate is a straightforward matter, though the actual rate will unavoidably be no more than a "guestimate."

Two lessons from historical currency reforms deserve attention. First, staggered conversion rates, with more generous rates initially on small amounts and less generous rates on larger amounts, can be used to achieve wealth distributional targets while maintaining the overall conversion rate. Second, a two-stage conversion in which part of the converted balances remains "frozen" for a period, and is later either released or canceled depending on the ex post facto evolution of money demand, can reduce the chance of excessive monetary expansion (though again this would at present not appear to be a major problem for the Koreas).

A final issue concerns external trade. By virtue of joining a market economy closely integrated into the world economy, both North Korea and East Germany receive a blessing and a curse. The blessing comes in the longer term: existing sales channels are open to firms in the transition economy. The curse comes in the short term: foreign products immediately compete with domestic products, leading to further demand contractions and thus rendering the transition more complex. There are two ways of coping with this situation. First, the presence of foreign competition can be viewed as a disciplining agent, giving firms in the transition economy the stark choice to adjust or disappear and thus eliminating muddle-through scenarios. According to the second view, adjustment takes time and the decline in demand renders adjustment more difficult; consequently, temporary protection is advocated. Germany opted for the first course, the sharp reduction in production described above. A temporary import tariff coupled with export subsidies for North Korean firms could provide the alternative, though at some efficiency cost.[17]

17. To reduce evasion, the tariff would have to extend to shipments from South to North Korea in the relevant sectors, again raising the issue of effective internal border controls.

Conclusion: Lessons

The above discussion yields a number of capsule lessons from the German unification experience that appear applicable to the Korean case. In summary, I briefly list these lessons:

- *Politics*. Political leadership is of prime importance in shaping expectations during transition. Irrational expectations about the time period required until full convergence can occur, or about the costs of unification, can, as the German case amply illustrates, lead to unrealistic private-sector wage decisions that prove hard to reverse. In Germany, the government's adoption of a "don't worry, be happy" attitude—in preference to a Churchillian "blood, sweat, and tears" approach emphasizing the historic opportunity and the sacrifices necessary to realize it—made it difficult to shore up the political support for the reunification process once its actual costs became better known.
- *Incomes policy*. While economists in general tend to take a rather skeptical view of outright incomes policies, the very high costs of excessive wage increases in the aftermath of unification suggest at minimum a very active policy of "moral pressure."
- *Fiscal flexibility*. In the most likely scenario, real wages will be equalized somewhere between the extremes of pre-unification South Korean wages and the level consistent with full employment. The implied increase in North Korean relative unit labor cost can be counteracted by a spatially differentiated tax policy, particularly in the area of nonwage labor costs. Overvaluation tendencies of North Korea vis-à-vis South Korea can likewise be counteracted by spatially differentiated sales taxes.
- *Flexible regulations*. North Korea and East Germany possess a major advantage not available to other transition economies: immediate access to an efficient, market-proven system of regulations and institutions, including (very importantly!), skilled and experienced administrators. The institutional infrastructure provides major benefits in terms of stability—in particular legal certainty, which in turn stimulates long-term decision making. However, the inherited regulations are tailored to the needs of the stable market economy, not the needs of the transition economy. In some respects, regulations that are sensible for the market economy may act as roadblocks for the transition economy; flexible application may be the appropriate solution.
- *Institutional overhaul*. While the primary focus of the unification process is on the structural adjustments of the socialist economy, substantial cost reductions might also be obtainable by rethinking institutions in the market partner; indeed, the costs of unification provide a good political justification for tackling structural rigidities, notably in

factor markets. In this regard, not all the achievements and institutions of the socialist partner should be automatically discarded.

- *Privatization.* On the privatization side, the individual sale option pursued by Germany has substantial advantages vis-à-vis the voucher privatization programs used elsewhere. South Korea, by virtue of likewise being able to draw on solvent purchasers and the depth of human capital required to evaluate the prospects of every individual firm, can replicate the Treuhand's approach.
- *Money.* Politics will in all likelihood require instant monetary unification, at the cost of a reduced ability to alter the real exchange rate in response to shocks, but with the benefit of gaining a sound money and a well-supervised financial system. Spatially differentiated tax policy can partly compensate for the costs. The mechanics of unification, including the conversion rate, while politically highly visible, are ultimately of second-order importance.

References

Akerlof, George, Andrew Rose, Janet Yellen, and Helga Hessenius. 1991. East Germany in from the Cold. *Brookings Papers* 1 (Spring): 1-105.

Bae, Jin-Young. 1996. The Fiscal Burden of Korean Unification and Its Impact on South Korea's Macroeconomic Stability. *Joint Korea-U.S. Academic Studies* 6. Washington: Korea Economic Institute of America.

Bofinger, Peter, and Ivan Cernohorsky. 1992. *Some Lessons from Economic Transformation in East Germany*. CEPR Discussion Paper 686. London: Centre for Economic Policy Research (June).

Borjas, George. 1994. *The Economic Benefits from Immigration*. NBER Working Paper 4955. Cambridge, MA: National Bureau of Economic Research.

Bryson, P. 1992. The Economics of German Unification. *Journal of Comparative Economics* 16 (March): 118-49.

Carlin, Wendy, and Colin Meyer. 1994. The Treuhandanstalt. In *The Transition in Eastern Europe,* vol. 2, ed. by Olivier Jean Blanchard, Kenneth Froot, and Jeffrey Sachs. Chicago: University of Chicago Press.

Choi, Jinwook. 1995. Inter-Korean Economic Cooperation. *Korean Journal of National Unification* 4: 133-50.

Chun, Hong-Tack. 1993. *A Gradual Approach toward North and South Korean Economic Integration*. KDI Working Paper 93/11. Seoul: Korea Development Institute.

Chung, Joseph. 1992. The Prospect for Economic Integration in Korea. In *The Reunification of Korea and World Peace.* Washington.

Chung, Joseph. 1993. An Approach to the Formation of a Korean Economic Community. *Korea Observer* 24, no. 3 (Autumn): 335-65.

Dornbusch, Rudiger, and Holger Wolf. 1994. East German Economic Reconstruction. In *The Transition in Eastern Europe*, vol. 2, ed. by Olivier Jean Blanchard, Kenneth Froot, and Jeffrey Sachs. Chicago: University of Chicago Press.

Drennan, William. 1997. Prospects and Implications of Korean Unification. Paper presented at a conference on the Economic Integration of the Korean Peninsula, sponsored by the Institute for International Economics, Washington (5-6 September).

Eberstadt, Nicholas. 1995. *Korea Approaches Unification*. Armonk, NY: M. E. Sharpe.
Eberstadt, Nicholas. 1997. Hastening Korean Unification. *Foreign Affairs* 76, no. 2 (March/April): 77-92.
Hoon, Shim Jae. 1992. The Price of Unity. *Far Eastern Economic Review* 155, no. 12 (26 March): 54-56.
Hwang, Eui-Gak. 1993. *The Korean Economies*. Oxford: Clarendon Press.
Kang, Myung-Kyu, and Keun Lee. 1992. Industrial Systems and Reform in North Korea. *World Development* 20, no. 7 (July): 947-58.
Korean Development Bank. 1994. *North Korea's Economy and Industry*. Seoul: KDB Economic and Industrial Focus.
Kwack, Sung Yeung, ed. 1994. *The Korean Economy at a Crossroad*. Westport, CT: Praeger.
Kwon, Goohoon. 1997. *Experiences with Monetary Integration and Lessons for Korean Unification*. IMF Working Paper 97/65. Washington: International Monetary Fund.
Lee, Charles. 1997. What Price Unity? *Far Eastern Economic Review* 160, no. 26 (26 June): 69.
Lee, Chung Lee. 1993. *Korean Unification*. Kiel Institute Working Paper 590. Germany: Kiel Institute (August).
Lee, Young Sun. 1994. Economic Integration of the Korean Peninsula. In *The Korean Economy at a Crossroad*, ed. by Sung Yeung Kwack. Westport, CT: Praeger.
Lee, Young Sun. 1995. Is Korean Reunification Possible? *Korea Focus* 3, no. 3 (May-June): 5-21.
Macdonald, Donald. 1988. *The Koreans*. Boulder, CO: Westview Press.
Mo, Jongryn. 1994. German Lessons for Managing the Economic Costs of Korean Unification. In *One Korea*, ed. by Thomas Hendricksen and Kyongsoo Lho. Stanford, CA: Hoover Institution Press.
Noland, Marcus. 1996. The North Korean Economy. *Joint U.S.-Korea Academic Studies* 6. Washington: Korea Economic Institute of America.
Noland, Marcus. 1997a. German Lessons for Korea. In *The Korea-United States Economic Relationship*, ed. by Fred Bergsten and Il SaKong. Washington: Institute for International Economics.
Noland, Marcus. 1997b. Why North Korea Will Muddle Through. *Foreign Affairs* 76, no. 4 (July/August): 105-18.
Noland, Marcus, Sherman Robinson, and Monica Scatasta. 1997. Modeling North Korean Economic Reform. *Journal of Asian Economics* 8, no. 1 (Spring): 15-38.
Noland, Marcus, Sherman Robinson, and Ligang Liu. 1997. *The Economics of Korean Unification*. Working Paper Series 97-5. Washington: Institute for International Economics.
Piazolo, Marc. 1997. Could South Korea Afford German-Style Unification? *Economics of Korean Reunification* 2, no. 2: 48-63.
Rhee, Kang Suk. 1993. Korea's Unification: The Applicability of the German Experience. *Asian Survey* 33, no. 4 (April): 360-75.
Rhee, Sang-Woo. 1991. North Korea in 1990. *Asian Survey* 31, no. 1 (January): 71-78.
Roy, Donald. 1990. Real Product and Income in China, Cuba, North Korea, and Vietnam. *Development Policy Review* 8 (March): 77-81.
Siebert, Horst. 1992. *Das Wagniss Der Einheit*. Stuttgart: DVA.
Sinn, Gerlinde, and Hans-Werner Sinn. 1992. *Jump Start: The Economic Unification of Germany*, trans. by Juli Irving-Lessmann. Cambridge, MA: MIT Press.
Sinn, Hans-Werner. 1995. Staggering Along: Wages Policy and Investment Support in East Germany. *Economics of Transition* 3, no. 4 (December): 403-26.
Smith, Heather. 1997. *North Korea: How Much Reform and Whose Characteristics?* Brookings Discussion Papers in International Economics 133. Washington: Brookings Institution.
Yeon, Ha-Cheong. 1994. Economic Consequences of German Unification and Its Policy Implications for Korea. In *Perspectives of Global Responsibility*. New York: Inter Action Council.