

North Korea's External Economic Relations

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Abstract

North Korea's international transactions have grown since the 1990s famine period. Illicit transactions appear to account for a declining share of trade. Direct investment is rising, but the country remains significantly dependent on aid to finance imports. Interdependence with South Korea and China is rising, but the nature of integration with these two partners is very different: China's interaction with North Korea appears to be increasingly on market-oriented terms, while South Korea's involvement has a growing noncommercial or aid component. These patterns have implications for North Korea's development, the effectiveness of UN sanctions, and its bargaining behavior in nuclear negotiations.

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During the 1972 US presidential campaign, “Deepthroat,” later revealed to be FBI Associate Director Mark Felt, counseled *Washington Post* journalists Bob Woodward and Carl Bernstein to “follow the money” to unravel the Watergate scandal. This working paper represents a similarly inspired forensic exercise. It seeks to make two contributions to our understanding of North Korea’s external economic relations by “following the money.”

First considerable uncertainty surrounds the state of the North Korean economy and the country’s external sector in particular. Analysts have remarkably little access to conventional economic data, and much of the reported trade and investment data are fragmentary, improperly conceptualized, and subject to gross measurement error (Noland 2001, Eberstadt 2007). Simply establishing a factual baseline of the country’s external sector, as well pinpointing the sources and magnitudes of uncertainty surrounding these estimates, is a sine qua non for coherent analysis.

Second we are interested in understanding North Korea’s external economic relations not simply in their own right, but for the light they shed on the country’s diplomacy. Much of the debate about how to deal with North Korea centers on the purported gains from economic “engagement.” Yet in the absence of a clear understanding of the changing nature of the country’s trade, aid, and investment, it is difficult to judge whether these ties will have salutary consequences or only prolong the country’s dependence on international largesse.

The core of this working paper is an effort to construct an internally consistent balance of payments for the country, considering licit and illicit merchandise trade, services, current transfers, and capital flows and paying careful attention to the degree of uncertainty surrounding each category of transactions. This exercise is of particular interest because of the relative magnitude that unconventional activities play in North Korea’s external relations, particularly weapons exports, drug trafficking, and counterfeiting. A variety of estimates of these activities exist, many well-informed, but these numbers are typically offered in isolation without consideration of their plausibility in light of the overall balance of payments picture. The balance of payments framework offers an approach to assess the plausibility of various public estimates of North Korea’s illicit activities; allows us to identify trends in North Korea’s external relations and its external financing needs; and provides a convenient indicator of whether the precision of our knowledge about these transactions appears to be rising or falling.

The working paper also provides information on the geographic distribution of North Korea’s trade, aid, and investment relations. These changing patterns, including most notably the rising share of China in North Korea’s trade and the substantial role played by South Korean aid, have important political implications.

CONSTRUCTING A BALANCE OF PAYMENTS

Constructing a balance of payments for North Korea is a speculative exercise. Even merchandise trade is regarded as a state secret and must be constructed on the basis of “mirror statistics” reported by partner countries (Noland 2000, chapter 3). Nonetheless, the balance of payments framework, which embodies the accounting identity that every sale is also a purchase, helps assess the likely veracity of a variety of claims about North Korea’s economic activities including particularly the magnitude of its illicit ones.

We adopt the conventions embodied in the International Monetary Fund’s (IMF) *Balance of Payments Manual* (fifth edition, 1993). Transactions are divided between those entering in the current account and the capital account. The former encompasses trade in goods and services, income flows, and current transfers (which includes aid and worker remittances). The latter consists largely of financial flows including direct and portfolio investment and changes in official reserves. According to double-entry accounting conventions, imbalances in the current and capital accounts should precisely offset; they should sum to zero. This result is generally not the case in practice, however, and a final category, the statistical discrepancy (called “errors and omissions” in some contexts) is defined as the residual.

As a roadmap to the discussion that follows, major items in the balance of payments include:

Current Account

- Goods and Services
 - Goods
 - Services (includes transportation, travel, and tourism)
- Investment income
- Current transfers (includes most aid and workers’ remittances)

Capital Account

- Capital transfers (includes migrants’ and other unrequited transfers)
- Financial account (includes direct and portfolio investment)
- Changes in official reserves (includes monetary gold)

Statistical discrepancy

We extend this format to include illicit activities such as counterfeiting which do not appear in conventional balance of payments accounting. We will also make a number of calculations which attempt to separate out transactions occurring on a commercial basis from politically determined transactions, such as aid, to gain insight into the relative magnitudes of these two modalities of exchange.

CURRENT ACCOUNT TRANSACTIONS

Observed Goods Trade

North Korean trade volumes began falling in 1991 with the dissolution of the Soviet Union and collapse of the Eastern Bloc which had been North Korea's primary trade partners (figure 1). (Sources and methods of constructing these and subsequent estimates are reported in the appendix.) But trade continued to decline thereafter, reaching a minimum at the end of the famine period 1998–99 at less than 40 percent of 1990 values.¹ From 2000, it began to revive, though as of 2005, both imports and exports remain below their 1990 values. Since the onset of the nuclear crisis in 2002 exports have continued to increase, but imports have grown even more, implying a widening merchandise trade deficit.

Weapons Trade and Illicit Activities

In addition to the trade derived from mirror statistics reported in figure 1, North Korea derives additional revenues from unobserved transactions, which include arms sales that are not technically illegal as well as clearly illicit activities such as drug trafficking and counterfeiting. It may appear obvious that arms sales and illicit activities are nonrecorded activities and should be added to the balance of payments as exports, thus reducing the financing gap. But it is also possible that illicit trade is misreported in other commodity categories and therefore does not represent a dollar-for-dollar addition to North Korea's net exports. Missiles, for example, could be misreported as fabricated metal products in the importer's statistics. Public discussion of revenues from these controversial sources has a greater tendency to overstate their contribution (by assuming that they are entirely additional) than understate it (by excessively correcting for the likelihood that they are partly captured elsewhere in the trade data). We return to the issue of "additionality" when reconstructing the overall balance of payments.

Arms

In the 1980s North Korea emerged as a significant player in the global arms market, supplying conventional arms based on Soviet designs including short-range ballistic missiles.² According to the 1997 Arms Control and Disarmament Agency report, sales in the second half of the 1980s (1986–90) averaged over \$500 million a year (in constant 1996 dollars), just less than 20 percent of total exports for that period. North Korea's customers included virtually every major oil exporter, and it sold weapons to both sides during the Iran-Iraq conflict.

1. The timing of this trough corresponds to the Asian financial crisis and a slowdown in Japan, but domestic factors were more significant.

2. In addition to weapons, the North Koreans export a variety of military-related training, consulting, and praetorian guard services (Noland 2000, chapter 3).

Arms sales fell in the first half of the 1990s, a victim of shrinking demand and increasingly competitive supply conditions.³ Nonetheless, there is ample evidence that the North Koreans sought to revive the business in the mid-1990s (for example, Grimmett 2006). The onset of the nuclear crisis in 2002 and the missile and nuclear tests of 2006 brought this trade under much closer international scrutiny, however. A number of customers, including Pakistan, Yemen, Egypt, the United Arab Emirates, and most recently Libya, subsequently discontinued purchases from North Korea. Since 2003, several high profile interdictions, the initiation of the Proliferation Security Initiative (PSI), and diplomatic efforts by the United States to restrict overflight by aircraft suspected of carrying North Korean weapons have further restricted such sales (Sanger 2005). The most likely ongoing customer of large-scale weapons systems such as missiles is Iran (which is also one of several countries in the Middle East that does not report its trade with North Korea to the UN) although Syria is also a probable customer.⁴

The two sources that venture estimates of total arms sales over time, the US State Department *World Military Expenditures and Arms Transfers* (2003) and the Stockholm International Peace Research Institute (SIPRI), show steadily declining sales over time (table A.4). The Congressional Research Service (CRS) provides an estimate of \$1 billion in total conventional arms sales for 1998–2001, or an average of \$250 million a year for that period, enough to place North Korea as the 10th largest conventional arms exporter for that period (Grimmett 2006). Although these figures are dated and vary substantially, they suggest that the upper end estimates that are sometimes reported—such as the statement by a US official that North Korea earned \$560 million from missile sales in 2001—are probably exaggerated (Ward 2002, Lintner 2005). Similarly, although the CRS does not provide an estimate for the more recent reporting period, North Korea falls off the list of top exporters. The research institutions tracking such sales in the open-source literature, such as the Center for Non-Proliferation Studies,⁵ the Wisconsin Project on Nuclear Arms Control,⁶ and the Nuclear Threat Initiative⁷ refer to only a limited number of transactions

3. In the late 1980s, North Korean models began to obsolesce as the Soviets began restricting the transfer of technology and designs. Missile exports were also probably affected by the more general shortage of inputs that followed the collapse of Soviet trade. Following the collapse of the Eastern Bloc Eastern European suppliers stepped up their export activities, generating a glut on the world market for conventional arms. A marked reduction in tensions in a number of regions also limited sales; the end of the Iran-Iraq war was almost certainly consequential in this regard.

4. Between 2000 and 2004 the United States placed sanctions on North Korea no less than five separate times for violating the Iran Nonproliferation Act (Wisconsin Arms Control Project 2005). Most recently in December 2005 a German press source, citing German intelligence, identified a purchase of 18 disassembled missiles.

5. See the various studies at the Center for Non-Proliferation Studies' website, <http://cns.miis.edu/research/korea/index.htm#msl>.

6. See the overview of the North Korean missile program at the Wisconsin Project on Nuclear Arms Control's website, <http://www.wisconsinproject.org/countries/nkorea/north-korea-miles.html>.

7. See the overview of the North Korean missile program at the Nuclear Threat Initiative's website, http://www.nti.org/e_research/profiles/NK/Missile/index.html.

in the 2000s. Central Intelligence Agency (CIA) reports to Congress suggest ongoing sales, but in pro forma language that is constant across annual reports and without substantiating detail.⁸ Except for the possibility of a resurgence of business with Iran and Syria in the early 2000s, sales of major weapons systems have almost certainly declined.

The declining sales of major weapons systems are no doubt partly offset by provisions of technical assistance packages, the follow-on sale of parts and fuel, and diversification into other military sales, such as patrol boats and ammunition.⁹ However, the decline in the sale of large-scale systems would be followed, albeit with a lag, by a decline in the value of associated sales and services as well.¹⁰ Moreover, trade in dual-use technologies that might have any connection with either weapons of mass destruction (WMD) or missile manufacture has come under much tighter scrutiny over the last decade. Such transactions are now formally subject to sanction under UN Security Council Resolutions 1695 and 1718 which followed the missile tests of July 2006 and the nuclear test of October 2006 respectively. Although significant at one point in time, it is likely that the importance of weapons sales as a source of foreign exchange has declined. The lackluster performance of these products in recent tests presumably has not helped.

Two caveats to this conclusion stem from strategic and demand side considerations. First although a number of North Korea's customers have been peeled away, the interest of a small number of states in acquiring weapons has no doubt grown; Iran and Syria head this list. Second due to the increased price of oil in recent years some of North Korea's historic customers are flush with cash; Iran, again, falls quite clearly in this category, as does Syria, and by extension, their proxy Hezbollah.¹¹ As we will see in considering the geographic distribution of North Korea's trade, economic ties with the Middle East have

8. "Throughout the second half of 2003, North Korea continued to export significant ballistic missile-related equipment, components, materials, and technical expertise to the Middle East, South Asia, and North Africa. Pyongyang attached high priority to the development and sale of ballistic missiles, equipment, and related technology. Exports of ballistic missiles and related technology were one of the North's major sources of hard currency, which supported ongoing missile development and production." Available at the Central Intelligence Agency's website, https://www.cia.gov/cia/reports/721_reports/july_dec2003.htm#14.

9. Lintner (2005, chapter 11) has detailed transactions of this sort as well as the role of North Korean companies acting as intermediaries in the purchase and sale of dual-use technologies to a number of Middle Eastern countries.

10. An example of this phenomenon was the April 2007 revelation of a January 2007 deal to resupply Ethiopia with parts for its Soviet-era equipment. The Ethiopian case suggests that despite the PSI, the United States can turn a blind eye to North Korean arms sales when it has a strategic reason to do so. But the Ethiopian case was the exception, not the rule (Gordon and Mazzetti 2007, Lee 2007).

11. The Sudan would be another potential customer combining oil revenues with a need for conventional arms. There have also been reports of arms sales to some African countries that would be plausible given North Korea's historical ties to some of these regimes, and the increasing production of oil in Africa that would provide the financial wherewithal for such purchases.

grown substantially. Nevertheless, from an overall balance of payments perspective, we suspect the role of arms sales in overall exports to have declined from their high point in the 1980s.

Drugs

North Korea has long been involved in drug trafficking, initially exporting opiates and later synthetics such as methamphetamines. These activities involved both North Korean diplomats as well as cooperation with international criminal organizations (Noland 2000; Perl 2007; Chesnut 2007).¹² Sales of drugs, which depend on complex wholesale and retail networks, are even more difficult to track than those of missiles which involve large, discrete transactions. Because these networks involve extraordinary mark-ups as one moves down the distribution chain, estimates of the drug trade are easily inflated by applying street prices to upstream transactions.¹³ The difficulty of constructing revenue estimates is further compounded by the fact that the North Koreans are not only involved in the production of drugs, but provide courier services for other producers.¹⁴

A former US government official has put annual drug revenues at \$100–200 million (Asher 2006). In successive reports for the CRS, Perl (2007) has offered a more modest estimate of \$71 million a year (broken down into \$59 million from opiates and \$12 million from amphetamines).¹⁵ Some simple calculations of estimated acreage under cultivation, likely output, and wholesale prices lead us to believe that this estimate should be treated as an upper bound.¹⁶

12. Although drugs almost certainly dominate North Korea's smuggling activity, there is evidence—in the form of diplomatic expulsions—for trade in other sanctioned items, including so-called “conflict” diamonds from civil war zones in Africa, rhino horns, and ivory (Noland 2000; Asher 2006; Prahar 2006). North Korea has also been accused of committing insurance fraud as well (Nanto and Perl 2007).

13. For example, in the same congressional testimony, a US official reported both the purchase of 60 kilos of amphetamines by Japanese crime syndicates for \$1 million (or \$17,000 a kilo) in 1998 and a Japanese seizure of 565 kilograms in 1999 with a street value of \$347 million (or \$615,000 a kilo) (Prahar 2006)! Clearly, the former rather than the latter are closer to what we would consider export prices.

14. This business was brought to light in dramatic fashion in 2003 with the seizure of a North Korean freighter, the *Pong Su*, off the Australian coast carrying 125 kilos of heroin, probably of Southeast Asian origin.

15. As with missiles estimates, the drug trade's value has sometimes veered into the fanciful, including the estimate from an American military official in 2003 that the North Koreans were earning between \$500 million and \$1 billion a year from trade in narcotics at a time when total exports for the whole country were only \$775 million (Solomon and Dean 2003).

16. According to Perl (2005, 9), the State Department's 2000 *International Narcotics Control Strategy Report* estimated the area under opium cultivation in North Korea at 4,200 to 7,000 hectares in 1998, which would yield 30 to 44 metric tons of opium, or 4.6 to 6.8 metric tons of heroin at a conversion rate of 6.5 to 1. In 2004, according to the *2005 World Drug Report* (United Nations Office on Drugs and Crime 2005, 46), the farmgate price of opium ranged from a low of \$142 a kilo (in Afghanistan) to \$234 a kilo (in Myanmar). If we take the generous estimate of \$200 a kilo, this would yield a total farmgate value for opium production of only \$6–9 million. On the other hand, the United Nations Office on Drugs and Crime (2003, 247) reports wholesale prices of heroin in China for 2001 at approximately \$20,000 a kilo, which would yield a total value of approximately \$92–135

Moreover, these numbers have probably fallen in the 2000s. The most systematic overview of public reports of drug seizures through 2006 shows a dramatic increase in seizures beginning in the mid-1990s, but a downward trend thereafter (Chesnut 2007). This source reports a few incidents in recent years, while the 2005 US State Department *International Narcotics Control Strategy Report* (INCSR) reports only two small courier incidents for 2004 and notes that no large Japanese seizures had occurred during the reporting period. Interestingly the *2005 World Drug Report* makes no mention whatsoever of North Korea in its detailed discussion of the international heroin and opium markets.

The decline in seizures could reflect adoption of alternative means for bringing drugs into major export markets including China, Japan, Russia, and South Korea. These means include small boat deliveries, the use of Chinese triads, Russian Mafia, and Korean gangs as intermediaries and the misidentification of North Korean contraband as originating in the intermediating third country (Asher 2006, Nanto and Perl 2007). However, the decline in seizures could also reflect more effective surveillance and interdiction of North Korea's activities.¹⁷ We believe the \$70 million figure offered by the CRS should be treated as an upper bound estimate, with one-quarter to half of that estimate as a more probable figure for 2005–06.¹⁸

Counterfeiting

A second major form of illicit activity is counterfeiting. US government officials had long suspected North Korea to be the origin of the so-called “supernotes,” very high-quality counterfeits of \$100 bills, which began to appear in 1989.¹⁹ However, the issue gained more attention in 2005 with a series of

million, assuming the North Koreans were able to get this wholesale price on all output. Yet prices of heroin on other markets have undergone a sharp decline—as much as 50 percent in wholesale prices—following the overthrow of the Taliban regime in Afghanistan and the resurgence of production in that country.

17. In 2006 Japanese police successfully broke up the ring that was responsible for seven, high-profile seizures in that country in the late-1990s and early 2000s. In 2004 the Chinese Ministry of Public Security publicly stated its concern with North Korean drug smuggling and has also recently prosecuted a number of North Korean traffickers, albeit small-scale ones. These drug-related actions are in addition to the more general scrutiny to which North Korean trade is now subject since the onset of the crisis, and of the missile and nuclear tests in particular. According to Raphael Perl, there was no evidence during the second half of 2006 “of any seizures of either illicit narcotics or counterfeit currency” produced or circulated by the Democratic People’s Republic of Korea, a development he ascribes to heightened international sensitivity (Yonhap. 2006. “No Trace of New N. Korean Counterfeits in Six Months: U.S. Researcher.” Available at <http://english.yna.co.kr/Engnews/20061103/91000000020061103114847E3.html> [November 3]).

18. Moreover both official and unofficial reports out of North Korea suggest that the regime itself has begun to show signs of concern over drug trafficking, either because of external pressure on the issue or more likely because of the penetration of drugs into domestic use (International Narcotics Control Board 2005, 68).

19. Due to macroeconomic instability and the declining value of the North Korean won, the North Korean government may also print counterfeits to capture seignorage internally, and some of these notes may simply leak out through North Korea’s cash-based external transactions.

criminal cases and Treasury enforcement actions against a Macau bank, Banco Delta Asia (BDA).²⁰

Concern over the laundering of counterfeit notes was also behind the Treasury Department finding that BDA was a financial institution of “primary money laundering concern,” an action that was to play a central role in the breakdown of the Six Party Talks in late 2005 and their ultimate revival in early 2007. Although the official action was a “guidance” issued by the Department of Treasury’s Financial Crimes Enforcement Network that contained no specific allegations, subsequent Treasury statements accused the bank of introducing counterfeit notes as well as large-scale money laundering and managing the financial transactions of firms engaged in WMD-related activities (Meyer and Demick 2005, Hall 2007).²¹

As with other illicit activities, estimating returns from counterfeiting is difficult. In the second half of the 1990s—before the recent emphasis placed on North Korea’s illicit activities—South Korea estimated total counterfeiting revenues at \$15 million, but US officials believed this number was too high (Noland 2000, 121). Since that time, US government officials have estimated that \$50 million of notes have been seized since 1990 and that the total amount of counterfeiting is very much larger than that, even in the hundreds of millions of dollars (Hall 2007). According to Asher (2006) North Korea may earn as much as 40 percent of the face value of all notes counterfeited. If one simply allocated the \$50 million in seizures over the 16-year period, applied the 60 percent discount, and assumed that a dollar was seized for every one successfully passed it would imply revenues of \$1.25 million per year. Seizures are only some fraction of the total stock of notes in circulation, and this estimate would constitute a lower bound for currency counterfeiting revenues.

There are reasons to believe that income from counterfeiting is in retreat, however, and indeed may have been exaggerated from the start. The Treasury Department has stuck closely to its claims about BDA, and even finalized its initial ruling against the bank in March 2007. But the underlying evidence has been held secret. Although an Ernst and Young audit conducted for the Macau monetary authorities indicates that internal controls were weak, numerous press reports claim that counterfeiting through BDA was overstated and that the motive for targeting the bank was to restrict North Korea’s gold sales or simply to generate a political bargaining chip. Fearing ensnarement in future money laundering cases, major banks have since shunned North Korea, impeding its ability to conduct even legitimate commercial

20. As with drug smuggling, the sale of supernotes involves a complex distribution chain in which notes are sold wholesale to distributors at some discount to their face value. A 2005 US indictment documented the alleged distribution of \$28 million in notes in six European countries, while two US sting operations generated indictments involving \$6 million in counterfeit currency (Meyer and Demick 2005; Perl 2006; Chesnut 2007).

21. Although it denied wrongdoing, the bank experienced a run on deposits. Under pressure not only from the United States but from correspondent banks in Japan, Korea, and Europe, it severed connections with approximately 50 North Korean individuals or businesses—many believed to be military-related or party-related—and allowed Macau authorities to administer its operations.

transactions. According to Chesnut (2007) currency counterfeiting incidents dropped to zero in 2006.²²

Counterfeiting has not been limited to currency, however; evidence also exists of North Korean involvement in counterfeiting of cigarettes and pharmaceuticals (Asher 2006, Chesnut 2007).²³ The US tobacco industry puts potential gross revenues from counterfeiting on the order of \$520–720 million annually based on the prices of counterfeit cigarettes in Asian ports (Coalition of Tobacco Companies, 2005). However, this estimate is for the value of the cigarettes once they have been sold to criminal gangs and successfully been smuggled out of North Korea through China; these prices are the equivalent of the street or retail prices for drugs and do not reflect export prices. One close observer of this trade puts the actual revenues to the North Koreans much lower: between \$80–160 million a year with a central estimate of perhaps \$100 million. Raphael Perl, who indicates that drug sales are declining, believes that cigarette counterfeiting is actually increasing.²⁴ This trend is notable because illicit activities are sometimes connected; cigarette counterfeiting helps to keep smuggling in and out of North Korea viable, and the same boats that move cigarettes allegedly have also moved supernotes and drugs.

As this review shows, there is extraordinarily high variation in the valuation of North Korea's illicit sales. In considering estimates of totals, however, it is important to be cautious. Many estimates make reference to prior periods, or peak levels of the given activity and few make any adjustments at all for whether foreign exchange earnings from the activity are truly additional to the balance of payments or hidden in other exports. Moreover, past estimates do not consider the likely effect of closer scrutiny of North Korea's economic activity that has occurred since the onset of the crisis in October 2002 and particularly since the US Treasury's actions of 2005 and the introduction of formal sanctions in the wake of the missile and nuclear tests of 2006.

Services Transactions

Little data exist on licit services transactions. For example, North Korea has earned a small amount of foreign exchange by permitting commercial airliners overflight rights to its airspace, and there have been

22. In 2006 bilateral meetings with the United States, the North Korean delegation indicated they were prepared to subscribe to international norms with respect to money laundering, proposed the establishment of a joint US–North Korean task force on counterfeiting, and even asked the United States to provide technical assistance in identifying counterfeit bills (Kwak 2006, 15). Resolution of the BDA case was a major North Korean demand in talks held in Berlin prior to the Six Party Talks in February 2007, and United States' willingness to discuss the issue through a separate channel was a key development.

23. The cigarette counterfeiting appears organized in cooperation with Chinese gangs which relocated to North Korea after their government cracked down on counterfeiting in the context of China's World Trade Organization accession and pressure from trade partners including the United States.

24. Yonhap. 2006. "No Trace of New N. Korean Counterfeits in Six Months: U.S. Researcher." Available at <http://english.yna.co.kr/Engnews/20061103/91000000020061103114847E3.html> (November 3).

discussions of North Korea generating revenue through railroad tariffs if lines connect South Korea with Russia and China in the future. North Korean construction enterprises have been increasingly active internationally in recent years. But today the bulk of services revenues are likely to be derived from the Mount Kumgang tourism project (see the appendix for further details). Apart from this channel there is little reason to believe that services transactions have a significant impact on the overall balance of payments.

Today North Korea receives \$72 million annually in rent for Kumgang, plus an additional fee per visitor that has been running between \$9 and \$14 million a year. These admissions fees have fallen recently as the destination has lost its luster; North Korean belligerency has soured potential tourists. North Korea also benefits from hotel stays and additional spending by visitors on sundry items. The South Korean government reports “noncommercial transfers” associated with the project as running in the tens of millions of dollars annually.

Current Transfers

Private Transfers: Workers’ Remittances

Workers’ remittances are transfers made by workers temporarily abroad (the equivalent transfers by permanent migrants appear in the capital account). In the case of North Korea workers’ remittances have been generated in the Soviet Union/Russia, though in recent years North Korea has been replicating the model of organizing contract workers in a much wider array of countries, including Libya, Saudi Arabia, Bulgaria, and the Czech Republic. For example, the supply of North Korean labor for work in the Middle East was a provision of Orascom Construction’s 2007 investment in a North Korean cement plant (Griggs and Fidler 2007).²⁵ A distinct form of unrequited transfer originates from the Korean community in Japan and will be discussed in the context of the capital account.

North Korea’s export of labor to Russia dates to the Soviet era, when prisoners were used in logging compounds that were run entirely by North Korean security forces. In 1995 the North Korean and Russian governments renewed the treaty that had lapsed in 1993 under which North Korea would supply 15,000–20,000 loggers to work off Soviet-era debts. A variety of other North Korean enterprises have subsequently entered the business of providing contract labor in logging and the construction sector in Vladivostok, employing an additional 10,000–15,000 North Koreans (Zabrovskaya 2006).²⁶

25. Due to human rights concerns over the treatment of North Korean contract workers, the Czech Republic stopped issuing visas for this purpose in 2007.

26. The impact of these workers on North Korea’s balance of payments is not straightforward. State-owned companies appear to select workers for three-year contracts, collect and retain all wage payments and pass on only some share—perhaps as little as 10 percent—to the workers themselves. Alternatively contracts may require

Zabrovskaya (2006) provides figures on the locational and occupational distribution of North Korean workers in Russia, estimates of their earnings, and repatriated savings. Constructing an annual estimate of these remittances is difficult because most of these jobs (for example logging, construction, and fishing) involve seasonal work. Annualizing her monthly data would yield an estimate of approximately \$10 million in remittances. Applying this figure to a roughly equal number of workers thought to be working under official contracts in Russia and elsewhere yields the high end estimate of \$20 million. Cutting the best guess estimate in half to account for the seasonal nature of most of this work, and the likelihood that these workers are not employed during the Russian winter yields the lower bound estimate of \$5 million.

There is also a community of North Korean refugees in China that has been estimated as ranging from as few as 20,000 to as many as 400,000 people (Chang, Haggard, and Noland 2006). A considerable share of these refugees reports returning to North Korea bearing food and money. However, many people in this community are not employed and those who are generally earn low wages. The amounts that they are transferring back to North Korea are small and may well be declining as increased policing has discouraged cross-border movement. However there is an ethnic Korean population on the Chinese side of the border that makes private transfers to North Korea and is a conduit for money originating in Korean communities outside China. This nonrefugee channel is almost surely more important in financial terms than funds emanating from the refugees themselves.

Official Transfers

Aid

Since the famine of the 1990s North Korea has received nearly \$2.5 billion in aid from official and private sources, the overwhelming majority of which has taken the form of in-kind transfers of food and other humanitarian items (table A.3). Despite claims that humanitarian aid should not be linked to politics, aid has become much more erratic since the onset of the nuclear crisis with bilateral assistance from China and South Korea playing a more prominent role. Assessing the magnitude of Chinese support is difficult: It does not participate in multilateral initiatives such as the World Food Program, is not a member of the Organization for Economic Cooperation and Development's (OECD) Development

the contracted worker to earn a certain amount per month, allowing them to keep the remainder; this pattern is visible in the construction sector in Vladivostok. In some cases payments to workers appear to be in-kind or in coupons rather than in cash. Other reports suggest that the contract labor is part of complex barter arrangements in which labor is used to pay for timber or oil; in this case the wage payments would constitute the counterpart of a commercial import. Yet in all of these cases, remittances constitute a potential windfall to the government because of its ability to capture the difference between what firms—effectively the government—are paid and the share of that payment actually reaching the workers.

Assistance Committee, and does not publish figures on its bilateral aid programs. Chinese customs statistics do categorize some transactions as “aid,” but these would appear to constitute a lower bound: The figures appear to exclude major transactions in food and fuel carried out at “friendship prices” which embody a grant or concessional element although of unknown magnitude.

It is sometimes argued that China simply allows North Korea to accumulate arrears on its trade account. If this is indeed the case, then Chinese support has been significant: Since the mid-1980s the cumulative trade imbalance has been roughly \$7 billion, which could be viewed as the upper bound estimate of support (Haggard and Noland 2007, chapter 6). However it is highly doubtful that the entire bilateral deficit represents aid. First there is ample anecdotal evidence that the imbalance is financed in part by other financial flows from China such as foreign direct investment (FDI) and remittances carried through the growing border trade. Second the bilateral deficit could be financed by net export earnings from trade with third countries or financial flows from those countries, including South Korea which has a deficit on its current account with North Korea. Taking these considerations into account, we take the high-end estimate of Chinese aid as the total value of its exports of food and fuel to North Korea.

Other Official Transfers

In addition to humanitarian and development assistance, North Korea has also been the recipient of various official transfers, including payments by the United States associated with efforts to recover the remains of soldiers missing in action from the Korean War, and more significantly, activities falling under the Korean Peninsula Energy Development Organization (KEDO).²⁷ KEDO’s remit was to construct two nuclear reactors to replace the nuclear facilities shut down under the 1994 Agreed Framework. KEDO also had the responsibility to supply oil to compensate for the loss of electricity generation capacity from the operating reactor closed under the agreement until the new reactors came on line. Heavy fuel oil shipments were stopped in December 2002 following the onset of the nuclear crisis. Reactor construction slowed to a halt in 2003–04, and KEDO itself was formally terminated in 2005.

According to the 2004 KEDO annual report, the organization spent nearly \$400 million on oil between 1995 and 2002 when deliveries were halted. The KEDO annual reports do not permit us to estimate a precise transfer value of local construction on the reactor project. However, the South Korean government, which had primary responsibility for overseeing construction, reports “noncommercial

27. More than \$4 billion was pledged to this effort, principally by the governments of South Korea and Japan. However, the lion’s share of KEDO funds were both raised and spent outside of North Korea, for example for the design and procurement of reactor components. From a balance of payments perspective, we are interested solely in what was actually transferred to North Korea. This would appear to consist only of the heavy fuel oil and whatever funds were used for site construction, including payment for workers and shipped construction materials such as cement.

exports” associated with the project, including construction-related materials. These exports peak at nearly \$59 million in 2002. North Korean workers reputedly received \$110 in monthly wages; \$1 million in annual wages would appear to be a generous estimate of what the North Koreans were receiving. If we add \$1 million in wages to the noncommercial exports associated with the project, it probably provides a reasonably accurate estimate of what North Korea received through this channel.

North-South “Cooperation Projects”

A final, and significant, source of current transfers to North Korea is from the South. These transactions are dominated by direct support, which has mostly taken the form of food aid and provision of fertilizer (table A.2). Although this support is officially financed by “loans,” there can be little doubt that they are in fact aid. However, the aid relationship also encompasses a number of large, highly visible and symbolically significant North-South “cooperation projects” that occupy a grey area between commercial and noncommercial transactions. These projects have been closely tied to broader foreign policy initiatives; as a result, public-private risk-sharing and outright subsidies were features of them from the beginning. In connection with agreements reached in 1998 and the North-South summit of 2000, Hyundai had promised, and probably made, payments to North Korea of approximately \$800 million through 2005; this history is briefly recounted in the appendix.²⁸ Over time, however, the public component of these projects has actually increased either because of the financial burden they imposed on the private actors (mainly Hyundai Asan) or because the political risks seemed too substantial for firms—and smaller firms in particular—to invest on their own.

In addition to these highly visible large-scale projects, a large number of South Korean nongovernmental organizations (NGOs) are involved in North Korean-related projects such as “cultural tourism” and “knowledge partnership” projects have arisen through them. Anecdotally these reconciliation projects are often alleged to have a significant transfer component. Park and Jung (2007) document 91 “knowledge partnership” projects over the period 1997–2006. The numbers spike in 2001 and 2004, but have since declined as a result of tensions over the North Korean nuclear program (Park and Jung 2007, figure 1). It is quite possible that progress toward denuclearization could result in another surge of such initiatives. It is unclear how much money flows into North Korea as a result of these endeavors, and some nominally private or NGO activity is in fact funded by the government. Nonetheless, NGO activity is not negligible.

28. These projects have their origin in largely private, commercial initiatives particularly from Hyundai. In addition to the 1998 agreement on Kumgang, Hyundai’s inside track on large-scale investment in North Korea was cemented in the immediate wake of the 2000 summit by an agreement that granted it 30-year exclusive rights to seven other major business areas: railroads; telecommunications; electric power; construction of the Tongcheon airfield; use of Mount Kumgang reservoir water; development of other tourist sites (including Mount Paekdu); and for the construction of the Imjin River Dam.

Lastly, in July 2007 the governments of North and South Korea announced an agreement under which South Korea would supply inputs such as textiles to North Korea's light industry in return for South Korean firms being granted concessions to the development North Korean mines.²⁹ Such deals resemble barter: In principle they should increase both exports and imports by an equivalent amount leaving the net balance unchanged. In reality, give the opacity of pricing and the scope for politicization, these arrangements may become another channel for implicit South Korean aid.

CAPITAL ACCOUNT TRANSACTIONS

North Korea has been effectively excluded from international capital markets since defaulting on bank loans in the late 1970s. Its ability to borrow internationally is limited to a relatively low volume of short-term trade credits that the OECD put at \$188 million in 1994. As described in the appendix, the North Korean government received a large and highly controversial one-off transfer from South Korea in connection with the summit meeting. It also receives significant, though declining, unrequited private transfers in the form of migrants' remittances, primarily from ethnic Koreans in Japan. Inflows of FDI, mostly from China but from other sources as well, have almost certainly become a more important component of the overall balance of payments picture. However, there is no consistent data on such flows and indeed the North Korean government appears intent on hiding their extent for fear that the enterprises might be targeted by sanctions.

Capital Transfers: Private Unrequited Transfers

As with other sources of financial support for the country, the magnitude of private unrequited transfers has been the subject of substantial controversy. Estimates dating from the early 1990s of remittances from Japan alone ranged from \$10 million a year to a high of \$2 billion (Eberstadt 1996; Lind 1997; Noland 2000). The most credible estimates from this period were in the range of \$16–41 million and certainly less than \$100 million a year. Since then, a string of events has combined to reduce Japanese remittances, and quite dramatically by 2004–06. As a result of failures of financial institutions associated with the Chochongryun, the organization of Pyongyang-affiliated Korean residents, and closer scrutiny of the organization's support for the North Korean regime, remittances had to be routed through third parties, such as banks that were targeted by the United States after 2005, or on cash carried by travelers that was

29. United Press International. 2007. "S. Korea to Develop Mines in North." Available at http://www.upi.com/International_Intelligence/Briefing/2007/07/27/s_korea_to_develop_mines_in_north/5096/ (July 27).

subject to a ¥1 million limit.³⁰ Under pressure from the Diet, the Ministry of Finance began to provide information based on registered remittances in the form of cash carried or transported by Japanese residents to North Korea. These reports recorded \$29.5 million for fiscal 2002 (ending in March 2002); \$22.8 million for fiscal 2003; \$23.1 million for fiscal 2004; \$24.4 million for 2005. According to other reports, these need to be supplemented by a small share of funds that are still remitted through bank transfers, which account for approximately 10 percent of the total.³¹ In addition, there is no doubt some currency smuggling. But the wherewithal for the Chochongryun to engage in large-scale transfer is much diminished by the failure of linked financial institutions and closer scrutiny of all economic exchanges with North Korea.³² Moreover, remittances from Japan have since fallen further still; for fiscal 2006, ending in March, the Ministry of Finance reported a paltry \$4 million.

Investment: FDI

We have seen no credible evidence that North Korea has been able to reestablish its ties to international financial markets. However, there is evidence that the regime has made efforts to attract FDI, and that it has had at least some success in doing so. The increase in FDI reflects in part policy changes taken in response to the growing external constraints we have highlighted in the previous sections, in part an adaptive response on the part of enterprises.

We have only one international series on FDI, provided by United Nations Conference on Trade and Development's (UNCTAD) annual *World Development Report*; those figures are reported in table A.5. Apart from a brief spike in the data associated with the push to expand the Rajin-Sonbong zone (Noland and Flake 1997), they show that investment was low or negative for much of the period, as frustrated Chochongryun and Russian investors withdrew. Investment turned up sharply in 2003, however, led by investors from South Korea and China. South Korean investment includes, but is not confined to, the Kaesong Industrial Complex. Chinese investments are more varied ranging from small-scale informal investments up to large projects in sectors such as mining that involve major state-owned

30. A number of Chochongryun-associated financial institutions were closed or consolidated following several scandals during Japan's 1998 banking crisis. The dominant financial channel for remittances, the Ashikaga Ginko, canceled its correspondent relations with the Foreign Trade Bank of North Korea in 2002 and failed in the following year.

31. The government estimated total remittances at ¥3.04 billion, or \$28 million, for the fiscal year ending March 2005 (*Nikkei Weekly*, September 25, 2006).

32. One channel for carrying cash is the Mangyongbong-92, a ferry that typically made 20–30 trips a year between Wonsan and Niigata. But in December 2004 these visits were interrupted for over five months by a new Japanese law requiring pollution insurance, and the ship made only about 14 port calls in 2005. In the first half of 2006, it docked only three times in Japan before it was banned altogether. Other shipping was also subject to much closer scrutiny as well, and trade fell to the lowest level since 1988.

enterprises. The onset of the second nuclear crisis did not deter such investment, at least through 2005; the 2002–05 period saw the most sustained inflows into the country since 1990.

THE MODALITIES OF NORTH KOREA'S EXTERNAL ECONOMIC TRANSACTIONS

North Korea's current account credits and debits are shown in figure 2. In addition to our baseline or "best guess" estimates, figure 2 also displays high and low estimates formed by applying the extreme estimates in the reviewed literature. The band defined by the extreme estimates for credits is much larger than for debits: There is considerable uncertainty about the magnitude of a number of the underlying credit components including the "additionality" of weapons sales, illicit activities, Chinese aid, and workers' remittances. Although North Korea may conceal some weapons-related imports, the scope for illicit debits appears less. The time patterns of these aggregates largely track those of the reported merchandise trade figures in figure 1: Current account credits bottom out in the mid-1990s and then begin rising first as aid begins to ramp up, and then with the growth of merchandise exports at the end of the decade. By 2005 the baseline magnitudes of both current account credits and debits exceed their values for 1990.

The balance of payments framework can be used to depict the shifting importance of differing modalities of exchange. Figure 3 displays estimated revenues derived from the export of weapons, drugs, and counterfeiting activities as a share of North Korea's licit exports of goods and services, using the baseline estimate as the denominator. Figure 3 suggests that in recent years arms and illicit exports have been a gradually declining component of North Korean export revenue, standing at roughly 14 percent in 2005, though this statement is characterized by considerable and growing uncertainty. The baseline begins to diverge more sharply from the high-end estimates in later years because of the increasing constraints on these activities. If true, however, the high-end estimates indicate that nonconventional exports are closer to 35 percent of revenues derived from licit goods and services.

Figure 4 documents the growing importance of official transfers during the famine period of the 1990s, with the baseline estimate reaching a peak value of more than half of imports, followed by decline. However, it is noteworthy that despite the nuclear crisis, official transfers have risen again, equaling more than 40 percent of the country's imports in 2005.

According to the baseline estimate, North Korea ran a current account deficit over the entire sample period (figure 5). However, the divergence of the high and low estimates is such that in only five of the 16 years of the sample is the sign of the balance unambiguous. Two of those observations were the terminal years of the sample: In both 1990 and 2005 the country ran a current account deficit, in both cases probably on the order of \$500 million. Keeping in mind that our confidence in the import data

is more substantial, the “high” estimate of the current account implies that North Korea ran a current account surplus and exported capital, possibly including reserve accumulation, during the worst of the famine and its immediate aftermath. This implausible result in fact suggests an important finding. Either the upper bound estimates of various nonconventional revenue streams are unlikely to be true, at least jointly, or there are major expenditure items that are missing.

In theory the current account and capital account should sum to zero; any imbalance in transactions in goods and services is exactly offset by a corresponding financial flow (figure 6). In the North Korean case at times this discrepancy has been large (1990 at the onset of its financial crisis and in 1997 at the peak of the famine) and has taken both positive and negative values, the former implying that the country was consuming more resources than can be accounted for by the estimated transactions, i.e., the magnitude of its current account deficit exceeds capital inflows. So for example in 1990 at the onset of its economic crisis when the baseline estimate of the statistical discrepancy reaches nearly \$400 million, it is possible that North Korea was financing its imports through a reduction in official reserves which we cannot observe and hence cannot properly record in its capital account transactions. For the period 1990–2005 the absolute value of the discrepancy over licit merchandise exports averaged 14 percent, reaching a minimum of 1.3 percent in 1993, and taking the value 2.2 percent in the terminal year of 2005. As points of comparison, the equivalent figures for South Korea, China, Japan, and the United States range from 1.0 percent (South Korea) to 2.2 percent (China).

In most years the baseline estimate of the statistical discrepancy takes a negative value, implying that North Korea has unaccounted for resources. Assuming that these estimates are correct, there are a variety of possible explanations, none mutually exclusive. The first explanation is that even our skeptical guesses about unconventional revenues may be generous, and the earnings generated by these activities are even less than our best guesses. A second explanation would be that imports are undercounted. It is possible that North Korea is importing weapons systems that go unreported, or that other items—for example luxury goods—are not accounted for in existing statistics. A third possibility is that the authorities have been accumulating official reserves. Although this is difficult to believe for the famine period, it is certainly possible that the regime saw the resumption of trade and investment in the early 2000s as an opportunity to rebuild foreign exchange holdings.

There could also be unaccounted for capital outflows. We have assumed that North Korea is not engaged in any substantial FDI of its own, but there is certainly some, such as the establishment of trading companies engaged in labor contracting or North Korean–themed restaurants. More significantly, it is possible that at least the top circles of the North Korean elite have accumulated foreign assets. Some high-ranking North Korean officials maintain residences in foreign countries and educate their children abroad. The possibility of the proverbial Swiss bank account cannot be ruled out, although the

controversy over a mere \$24 million in BDA suggests that such overseas investments are not likely to close the statistical discrepancy.

SHIFTING PATTERNS OF ENGAGEMENT

The analysis thus far has addressed aggregate trade and financial flows. A distinct issue of political as well as economic interest is the geographical distribution of these flows. Table 1 reports North Korea's partner composition of trade, excluding aid and noncommercial trade.³³ The justification for doing so has to do in part with the purported logic of engagement: Increasing commercial ties will reinforce economic reforms. Among North Korea's three main Asian trading partners, China's role has increased, South Korea's stagnated, and Japan's role has fallen.³⁴

To get a more refined sense of the shifting role that South Korea and China are playing in North Korea's external economic relations, all economic interactions with the two countries—trade, aid, and investment—are expressed as a function of licit merchandise exports in figure 7. These aggregates represent a way of characterizing the density of North Korea's interaction with its principal partners and of the possible “socializing effects” associated with engagement with the two countries, as well as their possible political influence. (The figures do not reflect net revenue flows.)

North Korea's interaction with both countries has risen considerably over the sample period. The increase in this measure is most dramatic for South Korea rising from zero in 1990 to a peak of 1.3 in 2000, driven in part by the one-off summit payment. After falling from this temporary peak, the series has converged back to its long-run upward trajectory. The indicator for China rises fairly steadily throughout the sample period, from 0.4 in 1990 to 1.3 in 2005, slightly exceeding that of South Korea in this terminal year of our sample period. This combined, gross measure of economic interaction helps

33. In the case of China, the most expansive definition of aid was used (downwardly biasing the Chinese figures). Trade with Middle Eastern countries reported in the IMF Direction of Trade Statistics and the UN COMTRADE database but not reported in the Korea Trade-Investment Promotion Agency data, are included.

34. Imports from Russia have also risen steadily over the period, although exports to Russia have not. One explanation for this trend is North Korea's clearing system or the absence of one. Given the collapse of North Korea's internal payments system in the 1990s, the increasing scrutiny of North Korea's external financial transactions, and the aftermath of the BDA case, trade that is not conducted in dollars is probably balanced bilaterally. Imports are financed either through merchandise exports to the country in question or other earnings in that currency. In the case of Russia, North Korea purchased Russian imports with ruble-denominated earnings from contract labor (Zabrovskaya 2006). Similarly North Korea may have cut imports from Japan in part because restrictions on exports and remittances have limited its access to yen. Even before the missile and nuclear tests of 2006, Japan had drifted toward a de facto sanctions policy as well and both trade and remittances had fallen sharply (Hughes 2006); these trends became even more pronounced in the second half of 2006 as Japan opted for a near complete embargo following the onset of the nuclear crisis and in response to ongoing conflicts over abductees.

explain South Korean concerns about China's "economic colonization" of the northern part of the peninsula.

The picture changes, however, if transactions on commercial terms, and those embodying a concessional or grant element are disaggregated. What is striking is the difference between the deepening integration between North and South Korea depicted in figure 7, and the relative stagnation of South Korea's role in commercial trade (table 1). This point is reinforced in figure 8: The magnitude of Chinese transfers, while uncertain, appears to be fairly constant, and since 1999 are dwarfed by South Korea's skyrocketing transfers. The ironic message is that North Korea's deepening economic integration with China is largely market-based, while exchange with South Korea has a growing official component. Whatever its perceived political utility in the short-run, this particular profile raises serious questions about the transformative effects of South Korea's engagement with the North.

CONCLUSION

Despite the onset of the nuclear crisis in 2002, North Korea's trade grew steadily in the first half of the decade. Moreover, for a combination of reasons the illicit share of that trade appears to have shrunk, possibly signaling the effectiveness of interdiction activities and sanctions. Our best guess is that North Korea has run current account deficits (inclusive of revenues from illicit sources) throughout the sample period 1990–2005, and that those deficits widened in the first half of the 2000s.

The discrepancy between the estimated current and capital account balances in most years suggests that North Korea is generating more revenues than it is spending. One possible explanation is that public estimates of earnings from illicit sources may be too large, either singularly or jointly, or these activities may have been successfully impeded in recent years.

North Korea's deficits have to be financed and observable transfers and capital inflows into North Korea are trending up at least through 2005. These transfers and capital flows come mostly from two sources, China and South Korea. Two strategic implications follow from North Korea's growing reliance on these two partners. First while sanctions have no doubt hurt North Korea, they have also resulted in a reorientation of the North Korean economy toward trading and investment partners who are more favorably disposed toward a strategy of engagement. Although evidence is preliminary, the missile and nuclear tests of 2006 appeared to have accelerated this trend. UN Security Council Resolutions 1695 and 1718 focused fairly narrowly on trade in WMD-related activities, major weapons systems, and luxury goods. But the resolutions constituted a floor rather than a ceiling on what governments could do. Those inclined towards sanctions deployed them; those inclined toward engagement did so cautiously (China) or barely at all (South Korea).

The logic of engagement has many foundations, including the use of economic ties as a short-term political inducement and purely humanitarian arguments in which there is no anticipated quid pro quo. However, our findings suggest that arguments about the transformative effects of engagement on the North Korean economy are more likely to hold with respect to Chinese trade and investment with North Korea, which appears to occur on largely market-conforming terms, than they are with South Korea's, which contains a very substantial noncommercial component. South Korea's economic ties continue to be characterized by a relatively high level of state involvement, either directly (in the relatively high share of aid and financial transfers in total bilateral transactions) or indirectly (through subsidies to or guarantees on nominally commercial transactions). The extensive involvement of the South Korean government in investment and trade relations with North Korea, and the very large role played by outright transfers in the relationship, raises serious questions about the argument that engagement will have the socializing effects that proponents of engagement suggest. Two of the most prominent examples of South Korea's engagement, the Mount Kumgang and Kaesong projects, are literally fenced off from the rest of the North Korean economy while an increasing share of the remainder of South Korea's transactions with the North take the form of aid.

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Table 1 Partner country share of North Korean commercial trade

Exports				
Partner	2001	2002	2003	2004
China	19.3	25.4	34.8	41.5
South Korea	20.1	25.3	25.5	18.3
Japan	26.1	22.0	15.3	11.6
Thailand	2.8	4.2	4.5	6.4
Russia	0.5	0.3	0.2	0.5
European Union	10.4	7.5	5.7	4.3
MENA	4.1	4.0	4.6	7.6
Other countries	16.7	11.2	9.3	9.9

Imports				
Partner	2001	2002	2003	2004
China	28.4	23.3	28.1	32.3
South Korea	3.7	4.3	6.6	4.2
Japan	14.5	7.9	5.0	4.2
Thailand	6.2	10.1	11.2	11.2
Russia	3.7	4.5	6.3	9.7
European Union	9.4	13.6	15.5	12.1
MENA	7.1	9.3	10.1	13.4
Other countries	27.0	26.9	17.2	12.9

Total trade				
Partner	2001	2002	2003	2004
China	25.4	24.1	30.7	36.0
South Korea	9.2	12.4	13.8	9.8
Japan	18.4	13.4	9.0	7.1
Thailand	5.0	7.8	8.6	9.3
Russia	2.6	2.9	4.0	6.0
European Union	9.7	11.3	11.7	9.0
MENA	6.1	7.3	8.0	11.1
Other countries	23.6	20.9	14.2	11.7

MENA = Middle East and Northern Africa

Sources: KOTRA (2001, 2002, 2003, 2004); DOTS (2007).

Figure 1 Observed commercial merchandise trade

millions of US dollars

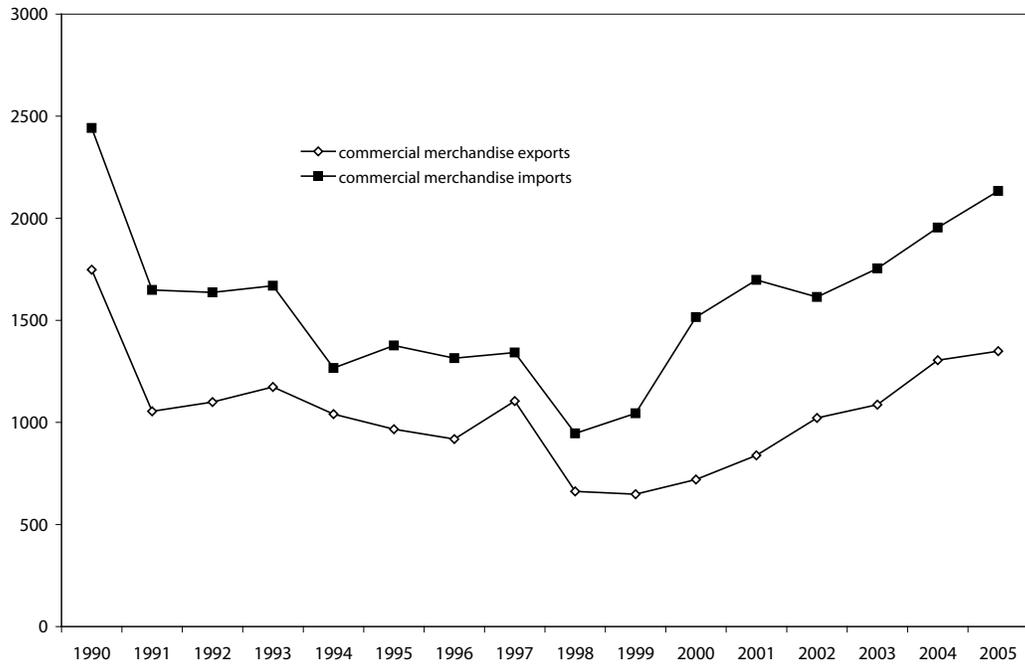


Figure 2 Total current account credits and debits

millions of US dollars

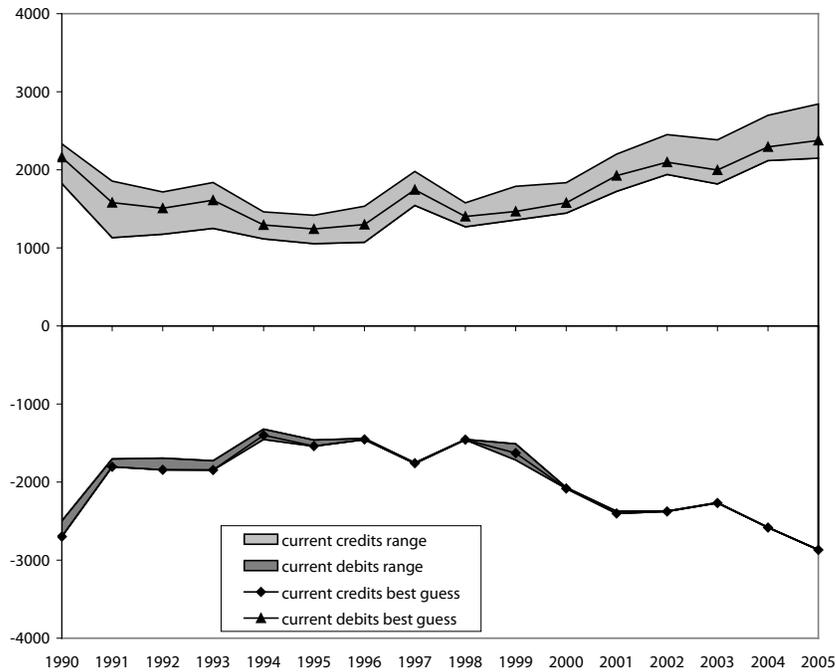


Figure 3 Arms and illicit exports as a share of commercial goods and services exports

millions of US dollars

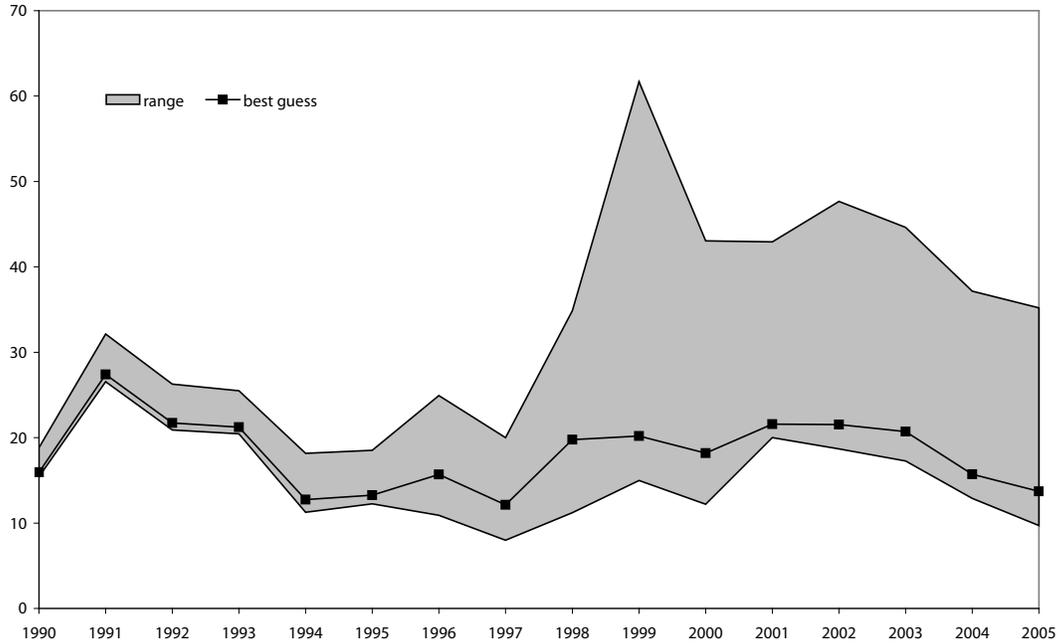
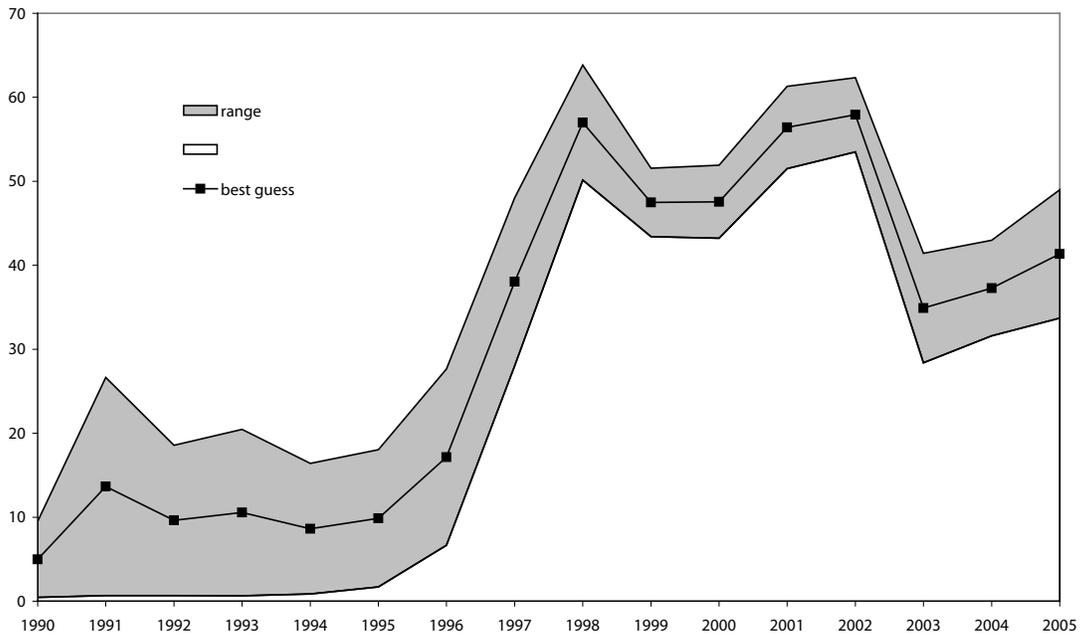


Figure 4 Official transfers (current and capital) as a share of commercial goods and services imports

percent



Note: \$350 million summit payment from 2001 is considered as three separate transfers of \$117 million over 2000–2002 in this figure.

Figure 5 North Korean current account balance

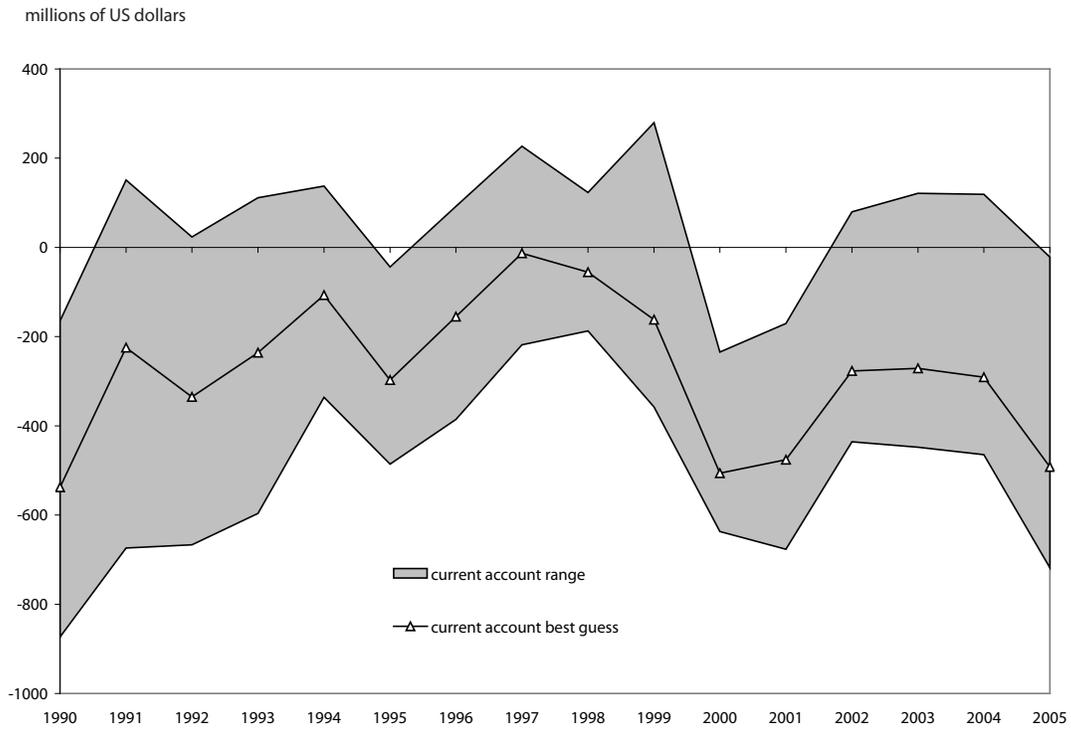


Figure 6 North Korean balance of payments statistical discrepancy

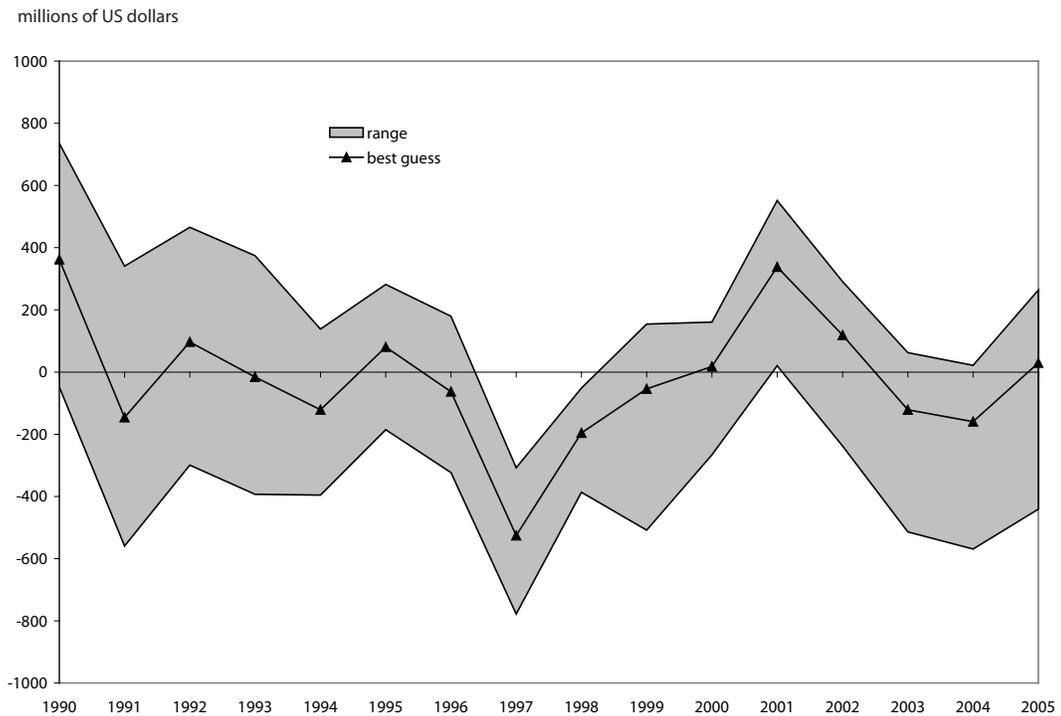


Figure 7 Ratio of balance of payments transactions to licit merchandise exports

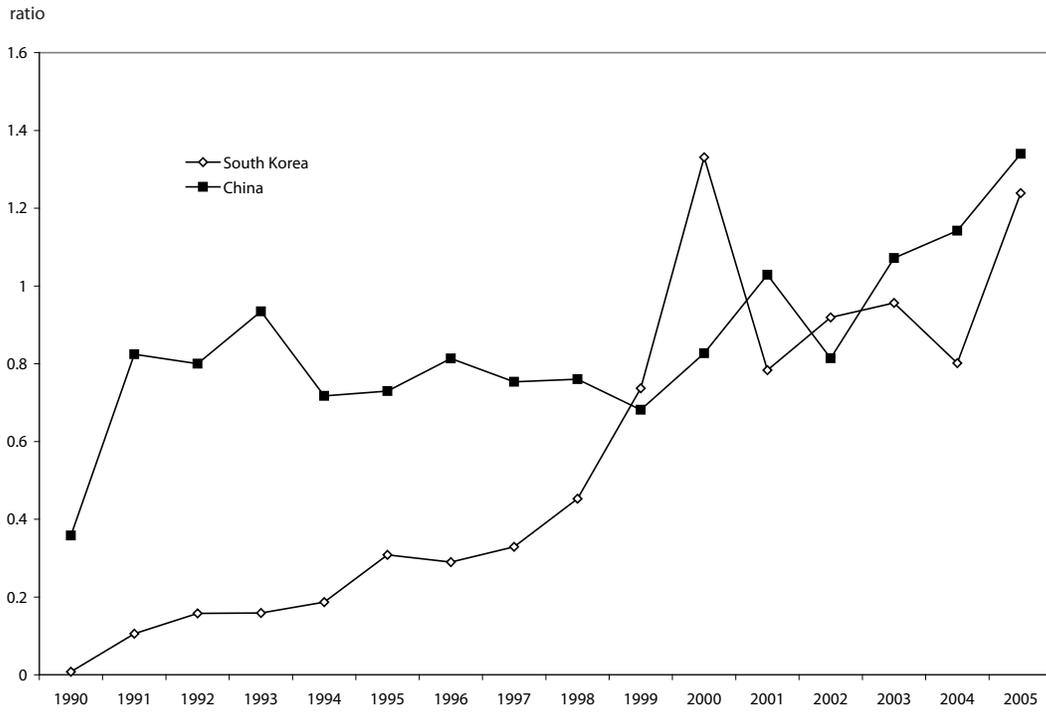
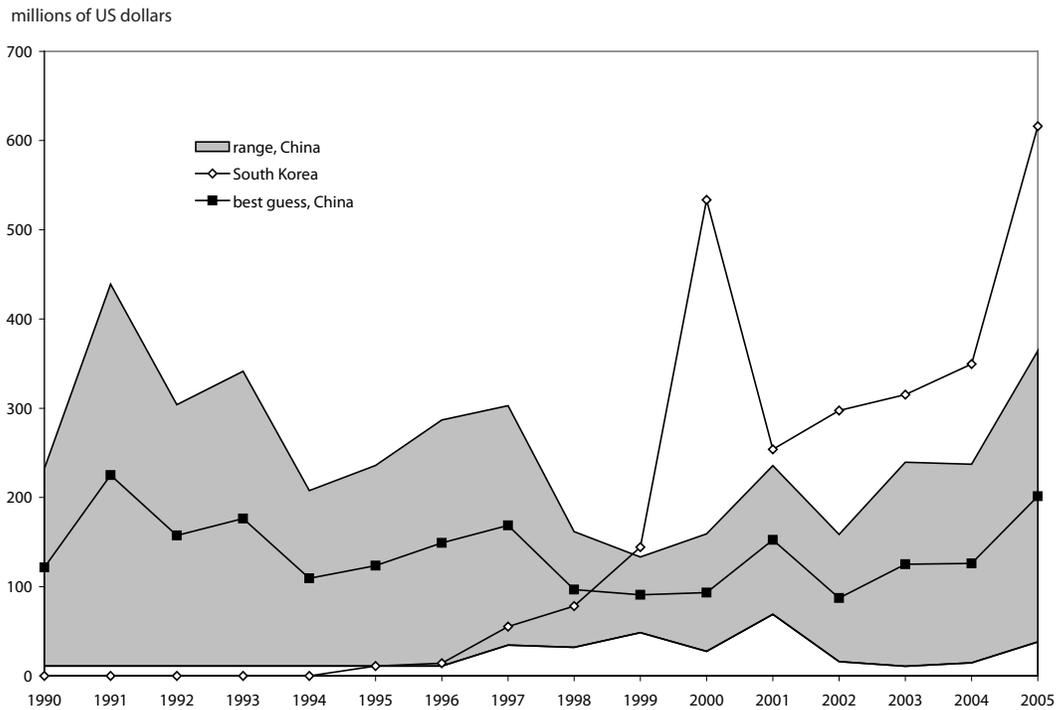


Figure 8 South Korean and Chinese official support



APPENDIX A

RECONSTRUCTING THE NORTH KOREAN BALANCE OF PAYMENTS

In order to measure the external position of North Korea, we adapted the conceptual framework for balance of payments accounting developed by the IMF and its partners and modified it to accommodate the unique nature of many of North Korea's transactions with the rest of the world.³⁵ This appendix documents the methods used in reconstructing the North Korean balance of payments, detailing the sources used and assumptions underlying the authors' calculations where uncertainties exist. An analytical presentation of the balance of payments can be viewed in table A.1.

The Current Account

Most transactions between North Korea and the rest of the world are recorded on the current account. In fact, the absolute value of transactions recorded on the current account is roughly 10 times that of those made on the capital and financial accounts, underscoring its importance in measuring North Korea's external position. The bulk of these transactions involve trade in goods, both commercial and noncommercial, licit and illicit. With greater magnitude comes greater uncertainty, however, as demonstrated by the wide range of estimates for the net current account position, and subsequently the relatively high degree of uncertainty reflected in errors and omissions. Due to the relatively large magnitude of overall transactions and higher levels of uncertainty recorded in the current account, a large share of the appendix is devoted to its explanation.

Goods

North Korea's external transactions are dominated by trade in goods, which include commercial merchandise trade, noncommercial imports of goods, and the arms trade; illicit transactions estimates are also recorded under this account. Some uncertainty is introduced to the net goods position through varying estimates in trade in arms and illicit goods, but even in scenarios that maximize goods credits and minimize goods debits, the net goods position of the country was in deficit throughout the sample period 1990–2005.

Commercial goods

Commercial goods transactions between North Korea and its trading partners consist of trade in general merchandise and goods for processing. Data on general merchandise trade is from the Korea Trade-

35. The IMF Balance of Payments Manual is available at the International Monetary Fund's website, <http://www.imf.org/external/np/sta/bop/BOPman.pdf>.

Box A.1 Discrepancies in trade data between sources and the selection of KOTRA

In this exercise we chose to use data from KOTRA as opposed to other competing sources because we believe it reports the most plausible numbers for North Korea's merchandise trade with the rest of the world. The other sources that were considered were the IMF's Direction of Trade Statistics (DOTS) and the United Nations (UN) Commodity Trade Statistics Database (COMTRADE). Even a cursory glance reveals significant differences in levels of merchandise trade reported by these sources, and closer inspection shows large discrepancies in levels of recorded bilateral trade on a country by country basis. These discrepancies appear to arise for two reasons. First KOTRA strips aid out of its merchandise trade figures. Second as has been demonstrated in the past national reporting authorities occasionally misidentify trade with South Korea as being with North Korea (Noland 2000). Furthermore, the exclusion of certain countries from KOTRA that remain in DOTS and COMTRADE account for some of the discrepancies that we observed. Where large discrepancies in recorded bilateral trade data exist between KOTRA and DOTS and COMTRADE and where countries are omitted from the KOTRA data, we tend to find (1) high levels of volatility in year-on-year trade patterns and/or (2) suspect commodity composition of bilateral trade, both of which suggest misreporting. Where high levels of volatility are observed, the median observation is typically a negligible amount of trade and highly suspect increases in trade occur over one or a small number of years, justifying omission. In many cases large jumps in exports or imports correspond to suspect commodity composition, for example when countries report importing large amounts of telecommunications equipment or motor vehicles from North Korea. In sum we believe that KOTRA, which has screened the North Korean trade data for such anomalies and stripped out aid from merchandise imports, is the most plausible source for data on North Korean trade.

Investment Promotion Agency (KOTRA) and the Korea International Trade Association (KITA). KOTRA data on merchandise trade serves as the baseline but has omitted inter-Korean trade from the dataset (see box A.1 and appendix C). Inter-Korean trade is recorded by KITA and added to goods transactions. Where appropriate, trade in goods with other omitted countries was added. Data on trade in goods for processing is from KITA and only recorded for inter-Korean trade.

Noncommercial goods

Trade in goods associated with noncommercial inter-Korean projects, humanitarian aid, and officially reported Chinese assistance corresponding to the import of goods are recorded as a subcategory of goods trade, entitled "noncommercial merchandise," which was created for illustrative purposes.³⁶ Data on inter-Korean noncommercial trade, with the exception of an in-kind transfer associated with the 2000 summit, is from the KITA (table A.1). Data on humanitarian aid comes from UN-OCHA and appears

36. This category of import includes North-South cooperation projects, social and cultural cooperation, and other inter-Korean economic cooperation, as well as goods imports from South Korea associated with Kaesong, Mount Kumgang, and the KEDO light-water reactor project. Imports associated with bilateral and multilateral aid, including humanitarian assistance and heavy fuel imports associated with KEDO, are also recorded here.

in Haggard and Noland (2007) (table A.2), the import component of which is either direct in the form of in-kind aid or assumed to finance immediately the import of goods. The South Korean share of aid recorded by the UN is stripped out to avoid double counting data that already appears in the KITA data. Data on officially reported Chinese assistance was obtained from the Korea Institute for International Economic Policy (KIEP).³⁷

Arms and Illicit Goods

The recording of illicit trade includes estimates of trade in arms, drugs, and counterfeited currency and cigarettes. We treat arms trade as possibly unreported or misreported. To compensate the lower range of credits and debits in goods omits arms estimates on the assumption that arms may already be recorded in with commercial trade in goods. Some degree of uncertainty surrounds all of these transactions, and each type of “illicit” transaction is recorded with baseline, high, and low-end estimates.

Arms data draws on data from SIPRI and the US Department of State. Ranged estimates and a best guess are created for years in which data from these two sources overlap. The sale of arms abroad makes up a substantial share of exports of illicit goods in earlier years (table A.3),³⁸ and the acquisition of arms from overseas is the only item recorded as an illicit import in our balance of payments exercise. Data taken from SIPRI is recorded in constant 1990 US dollars and was adjusted to current US dollars using World Bank data on the US GDP price deflator.³⁹

Illicit drugs trade estimates are for exports only and are largely based on extrapolation from numbers cited in a CRS report for Congress written in 2007 by Raphael Perl and a 2006 congressional testimony given by David Asher. The authors provide their own best guess estimates for the level of exports of illicit drugs for 2002–05.

The appearance of counterfeit cigarettes is a more recent phenomenon in comparison to other types of illicit exports going out of North Korea, the revenues from which are recorded only for 2002–05 in this exercise. The authors’ calculations of inflows from the export of counterfeit cigarettes are derived from estimates presented in a *Wall Street Journal* article by Gordon Fairclough⁴⁰ and additional information found in Asher’s congressional testimony mentioned above.⁴¹

37. KIEP data covers 1997–2005. We use the \$11 million KIEP figure for 1997 for 1990–96 as well.

38. Table A.3 also includes the US Department of State’s estimate of the weapons share of North Korean exports. This calculation is not based on our own export estimates.

39. A potential caveat of using the SIPRI data is that the data are “trend-indicator values,” intended for use as an indicator of the volume of arms trade. See the Stockholm International Peace Research Institute’s website, http://web.sipri.org/contents/armstrad/at_data.html, for more details on the methodology used.

40. Gordon Fairclough. “Tobacco firms trace fakes to North Korea,” *The Wall Street Journal*, January 27, 2006.

41. Annual North Korean foreign exchange earnings estimates from counterfeiting cigarettes are cited in Fairclough

Estimates of revenues from the export of counterfeit currency are derived from Asher (2006) and based on the authors' own calculations. More specifically, the authors provide both the high-end and best guess estimates, and the low estimate is derived from Asher.⁴²

The final category of illicit transaction recorded here involves unrecorded gold exports that were sold to BDA. The authors' calculations were based on underlying data found in Coleman and Lau (2006).⁴³

Services

Accounting for North Korea's services trade in the balance of payment framework involves only tourism revenues from Mount Kumgang. We do not record any services imports on debit side, although it is likely that some of the imports associated with humanitarian aid and inter-Korean cooperative projects may technically fall under services and be misclassified in with goods. In the absence of more detailed data, however, making this distinction is very difficult if not impossible, and at any rate such imports still find their way into the debit side of the overall current account balance.

Services exports are therefore constituted entirely by two types of transactions: rental payments and fees and spending associated with the Mount Kumgang project. A more detailed examination of the Mount Kumgang project is provided in appendix B.

Income

As with North Korea's external services transactions, the income account consists of very little relative to trade in goods, but unlike the services subaccount, North Korea's income account is continuously in deficit throughout the sample period. On the credit side, we include income from North Korean restaurants operating abroad based on estimates derived from Kim (2007). On the debit side we record interest paid on debt, which was reported in a National Intelligence Council (NIC) report in 2002.

as \$80 million to \$160 million per year. Asher notes that the study in which these estimates were derived was conducted over the past four years. For the purposes of the balance of payments exercise the annual estimates cited in Fairclough 2006 are applied only to years in which the investigation of North Korean cigarette counterfeiting was taking place, beginning in 2002 and extending through 2005.

42. The low estimate of \$1.25 million per year is derived from Asher (2006), citing the detection of approximately \$50 million in counterfeit US currency that was traced North Korea over a sixteen-year period. The estimated market value of this currency was 40 percent or less of its face value. Thus, the low estimate is calculated as $0.40 * \$50 \text{ million} / 16 \text{ years} = \$1.25/\text{year}$. The upper bound estimate of \$60 million in annual counterfeit currency revenues is based on a scenario in which \$150 million in counterfeit bills is printed per year and is sold at 40 percent of its face value.

43. Sales of gold to BDA raised an estimated \$120M over three years ending in September 2005. This amount was divided equally over the entire period for the purposes of the balance of payments exercise, yielding estimates of \$10M in the last quarter of 2002, \$40M in 2003 and 2004, and \$30M over the first three quarters of 2005.

Current transfers

Current transfers remain in surplus throughout the period with large credit flows arising from humanitarian and other aid inflows, noncommercial inter-Korean transactions, and workers' remittances.⁴⁴ Much of the credits recorded under current transfers, namely government transfers associated with aid and other noncommercial transactions, are offset by debits associated with the import of noncommercial goods. Debits on current transfers are essentially nonexistent. The addition of varying estimates of Chinese aid adds some uncertainty to the magnitude of current transfers. Over the period from 1990–2005, the net balance on current transfers carries a larger credit than for any other account balance shown in table A.1.

Once again, humanitarian aid data was collected from UN-OCHA, and data on noncommercial transactions was taken principally from KITA. Estimates of current transfers from China in the form of aid include both official aid as reported by KIEP and the authors' own estimates of Chinese aid provision.⁴⁵ US payments for the retrieval of the remains of soldiers missing in action during the Korean War were taken from a CRS report written by Mark Manyin.

Remittances are recorded from two different host countries: Japan and Russia. However, their nature, and therefore the way in which they are recorded on the balance of payments, differs. Due to the permanent residence and unrequited nature of remittances from Japan, these are classified as capital transfers in the capital account. Workers' remittances from Russia are treated as a current transfer in the current account and calculated by the authors using data coming from Zabrovskaya (2006).⁴⁶

44. Line by line this includes transfers associated with North-South cooperation projects, social and cultural cooperation, and other inter-Korean economic cooperation, as well as transfers from South Korea associated with Kaesong and Mount Kumgang. Transfers corresponding to bilateral and multilateral aid efforts, including humanitarian assistance, and heavy fuel oil transfers associated with KEDO are recorded in current transfers. Other current transfers include transfers from the United States to South Korea made as an effort to retrieve the remains of soldiers who were missing in action during the Korea war. Nongovernment, or "other" transfers include remittances from North Korean workers abroad.

45. Low-end estimates for 1990–1996 are the authors' own calculations, and lower bound estimates for 1997–2005 are from KIEP (2005). The KIEP data represents officially reported aid contributions from China to North Korea. Total food and fuel imports from China are used as upper bound estimates of Chinese aid from 1992–2005, and North Korea's total bilateral trade deficit with China is used as an upper bound estimate for aid from China in the years 1990 and 1991. Data on food and fuel imports from China is from COMTRADE (2006) and data on North Korea's bilateral trade balance with China is taken from IMF DOTS (2006).

46. Zabrovskaya (2006, 100–105) provides data on the locational and occupational distribution of North Korean workers. Annualizing and applying to the entire sample her estimated remittance rate for Khabarovsk Kray workers of one-third of monthly wages, yields a figure just below \$10 million. Applying this figure to a roughly equal number of workers thought to be working under official contracts in Russia and elsewhere yields the high-end estimate of \$20 million. Cutting the best guess estimate in half to account for the seasonal nature of most of this work and the likelihood that these workers are not employed during the Russian winter yields the lower bound estimate of \$5 million. In 1993 labor remittances drop to zero because of a lapse in the treaty guaranteeing the supply of laborers from North Korea to Russia.

Capital Account

The structure of North Korea's capital account is quite similar to the structure of current transfers recorded on the current account. Both consist of specific types of transfers and remittances, which are distinguished from one another by slight differences in the nature of the transactions themselves; current transfers tend to involve a large set of small, frequent—almost continuous in some cases—transfers that have an immediate effect on North Korea's consumption levels, whereas capital transfers involve the transfer of fixed assets or larger, one-off transfers.

Using the definition above to distinguish between current and capital transfers, we count the transfer of fixed assets associated with the Kaesong Industrial Complex and the KEDO light-water reactor project as capital transfers. We also classify a large portion of the 2000 summit payment made in association with the Mount Kumgang project—\$350 million to be exact—as a capital transfer. Data on capital transfers associated with Kaesong and KEDO is available online from KITA and details the summit payment associated with the Mount Kumgang project are presented in appendix B. Unrequested remittances from Japan are based on the authors' calculations with underlying data coming from Japan's Ministry of Finance.⁴⁷

Financial Account

On net North Korea's financial account maintains a credit balance from 1990–2005. The account consists of three basic elements: direct investment in North Korea (table A.5), trade credits, and changes in foreign reserves associated with the 2000 summit payment and its gradual expenditure. Trade credits remain positive throughout the time period in question, changes in reserve assets are recorded as a debit in all years for which we include data, and North Korea's net FDI position fluctuates between a credit and a debit balance, but in sum contributes a net credit to the balance of payments over the whole of the period.

Data on FDI into North Korea was obtained from the United Nations Conference on Trade and Development (UNCTAD).⁴⁸ Trade credits data was originally recorded in Noland (2000), which was found in an unpublished report by the OECD. For the purposes of this exercise, the trade credits

47. Estimates in Noland (2000) were made for 1993 and 1994. For the purposes of the balance of payments exercise, these estimates were extended back to 1990 for both low and high estimates, and forward for low- and high-end estimates through 2005 and 2001, respectively. Data on remittances from the Japanese Ministry of Finance, which is used for the best guess and high estimates from 2002–05, begins and ends in March, and therefore may not overlap perfectly with other annual estimates.

48. UNCTAD (United Nations Conference on Trade and Development). Various Issues. *World Investment Report*. Available at the United Nations' website, www.unctad.org/wir (accessed January 10, 2007).

data is assumed to remain constant at this level throughout the period. The only data on foreign reserve movements that we record in this exercise is based on the expenditure, over a three-year period, of the \$350 million hard currency transfer associated with the Mount Kumgang project. We record this transfer as a one time credit to the capital account, and debit it at a rate of \$116.67 million over a three-year period beginning in 2000 when the payment was made and assuming that it was exhausted by 2002.

Table A.1 North Korea balance of payments: analytic presentation, 1990–2005 (millions of US dollars)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
A. Current Account																
[low]	-873	-674	-667	-596	-336	-486	-386	-219	-187	-358	-637	-677	-436	-448	-465	-718
[high]	-165	151	23	111	138	-44	92	227	123	280	-235	-171	80	121	119	-22
[best guess]	-538	-225	-335	-236	-107	-297	-155	-13	-56	-162	-506	-476	-277	-271	-291	-492
Balance on goods																
Commercial	-693	-594	-537	-496	-226	-411	-396	-237	-283	-396	-796	-859	-593	-668	-649	-784
Noncommercial	-11	-11	-11	-11	-11	-23	-87	-373	-474	-452	-535	-661	-743	-496	-612	-698
Illicit																
[low]	-140	-40	-90	-60	35	-16	50	69	72	42	57	43	137	167	147	128
[high]	329	339	289	299	84	175	224	214	227	223	310	360	487	485	485	475
[best guess]	79	189	89	129	55	50	132	127	129	13	116	152	216	221	201	182
Balance on services																
[low]	0	0	0	0	0	0	0	0	61	194	144	82	82	82	82	82
[high]	0	0	0	0	0	0	0	0	61	194	144	87	87	87	87	87
[best guess]	0	0	0	0	0	0	0	0	61	194	144	85	85	85	85	85
Balance on income																
[low]	-45	-45	-45	-45	-45	-60	-40	-34	-35	-13	-16	-11	-13	-13	-13	-13
[high]	-42	-42	-42	-42	-42	-57	-37	-31	-32	-10	-13	-8	-10	-10	-10	-10
[best guess]	-44	-44	-44	-44	-44	-59	-39	-33	-34	-12	-15	-10	-12	-12	-12	-12
Balance on current transfers																
[low]	16	16	16	16	16	28	93	363	475	444	508	729	693	479	580	567
[high]	252	459	324	361	228	268	383	647	620	544	655	911	851	723	818	908
[best guess]	132	235	168	186	119	146	236	503	545	492	579	817	770	599	697	735
B. Capital Account																
[low]	11	11	11	26	11	16	16	31	20	30	400	47	73	40	58	153
[high]	86	86	86	86	71	41	41	56	45	55	425	72	87	46	65	162
[best guess]	49	49	49	56	41	29	29	44	32	43	412	60	87	46	65	162
C. Financial Account	127	322	190	196	187	188	190	495	219	173	76	78	71	346	385	301
D. Net Errors and Omissions																
[low]	735	341	466	374	138	282	180	-307	-52	155	161	551	291	62	22	264
[high]	-48	-559	-299	-393	-396	-185	-323	-778	-387	-508	-266	20	-238	-514	-569	-441
[best guess]	362	-146	97	-16	-121	81	-63	-526	-196	-54	18	338	119	-121	-159	30

Table A.2 North-South noncommercial trade (millions of US dollars, South Korean perspective)

Year	Exports to North Korea						Imports from North Korea		Total Trade
	Light-water reactor (KEDO)	Support to North Korea	Heavy oil (KEDO)	Mt. Kumgang project	Other cooperation projects	Total exports	Total imports	Imports share of total trade	
1995	—	0.2	10.8	—	—	11.0	—	—	11.0
1996	—	1.4	12.8	—	—	14.3	—	0.0	14.3
1997	17.8	8.4	29.0	—	—	55.3	2.8	4.8	58.1
1998	4.0	15.6	19.8	37.6	1.2	78.1	0.1	0.1	78.2
1999	14.4	43.4	39.5	40.6	6.3	144.3	0.1	0.1	144.4
2000	35.6	104.5	11.7	14.6	17.2	183.6	1.9	1.0	185.5
2001	33.7	110.6	3.5	5.8	10.4	164.0	2.7	1.6	166.7
2002	58.6	213.2	2.0	11.9	11.7	297.4	1.4	0.5	298.8
2003	23.7	270.7	0.0	16.1	4.8	315.5	0.2	0.1	315.7
2004	0.5	258.5	0.0	41.7	48.5	349.1	0.1	0.0	349.2
2005	0.4	365.0	0.0	87.0	163.7	616.1	20.1	3.2	636.2
2006	0.0	419.2	0.0	56.6	238.7	714.4	78.2	9.9	792.6

Source: KITA (2006).

Table A.3 Total humanitarian assistance, by donor organization
(millions of US dollars)

Year	Within appeal	Outside appeal				Total
	Multilateral (through UN)	Bilateral	UN agencies	NGOs (including Red Cross)	Other	
1996-97	34.4	11.3	0.0	4.7	0.0	50.4
1997-98	158.4	105.8	1.8	26.5	0.0	292.5
1998	215.9	92.1	0.0	27.2	0.0	335.1
1999	189.9	41.6	0.0	4.3	0.0	235.9
2000	153.1	58.6	0.1	12.5	0.0	224.2
2001	248.0	61.2	1.5	66.8	0.2	377.6
2002	220.0 ^a	79.2	3.0	58.6	0.0	360.8
2003	133.1	9.6	1.6	42.3	0.0	186.7
2004	151.5	121.4	2.2	24.8	0.6	300.5
2005 ^b	0.0	61.1	0.7	1.8	0.0	63.6
Total	1,504.2	641.9	10.9	269.4	0.8	2,427.2

a. Includes \$99.32 million carried over by the World Food Program (WFP).

b. 2005: Bilateral data includes WFP data not listed in UN-OCHA.

Notes: Does not include China. No consolidated appeal in 2005. Some bilateral assistance does go through a UN organization or an NGO.

Sources: UN-OCHA Financial Tracking Service; WFP (2006).

Table A.4 North Korean conventional weapons sales, 1990–2005

Year	WMEAT (millions of US dollars)	WMEAT (share of exports)	SIPRI (millions of US dollars)
1990	254	10.4	—
1991	257	21.5	—
1992	194	13.1	—
1993	200	14.8	—
1994	76	5.6	—
1995	64	7.5	52
1996	115	11.1	35
1997	92	10.4	14
1998	101	14.7	2
1999	140	22.0	21
2000	—	—	13
2001	—	—	77
2002	—	—	45
2003	—	—	13
2004	—	—	13
2005	—	—	0

SIPRI = Stockholm International Peace Research Institute

WMEAT = World Military and Arms Transfers

Sources: US Department of State (2002); SIPRI (2005).

**Table A.5 Foreign direct investment
in North Korea**
(million of US dollars)

Year	FDI
1990	-61
1991	134
1992	2
1993	8
1994	-1
1995	0
1996	2
1997	307
1998	31
1999	-15
2000	5
2001	7
2002	0.15
2003	158
2004	197
2005	113

Source: UNCTAD World Development Report.

APPENDIX B

THE MOUNT KUMGANG PROJECT

In the context of the North Korean balance of payments it is not possible to address the Mount Kumgang project in any one account; accounting for transactions associated with the project cut across the current, capital and financial accounts. It is therefore useful to have a separate section detailing not only the relevant transactions that took place to facilitate the Mount Kumgang project, but also how they transpired (see, in particular, Hwang 2005).

The Mount Kumgang project has its origins in two agreements—one in October 1998 and one in August 2000 immediately following the summit of that year—between the Hyundai group and the North Korean government. These agreements called for Hyundai to make \$942 million in payments to North Korea over a 75-month period with the payments strongly front-loaded for exclusive rights to develop the Mount Kumgang area, as well as seven other projects including the development of an industrial park which eventually became the Kaesong Industrial Complex. In the first nine months of the Mount Kumgang project, it netted \$183 million in revenues for North Korea. But the flow slackened in accordance with the payments schedule, and North Korean provocations led to suspensions and disruptions in the tours.

Hyundai was subsequently unable to make the payment schedule specified in the original agreement, and in 2001 the contract was renegotiated, effectively cutting Hyundai's obligation in half. The South Korean government, in the form of the Korean National Tourism Organization, assumed a greater role in the operations by effectively providing a subsidy. The original tours were conducted by boat. Investment in the form of several small hotels and other facilities has subsequently been made to accommodate overland visitors.

Much of the subsequent controversy surrounding the Mount Kumgang project centered on the revelation of a secret \$500 million remittance from Hyundai in March 2002, and the further revelations that followed a National Assembly probe: Most of the money was in cash, commingled with government money (through a Korean Development Bank loan), and it appeared to constitute a direct payment for the 2000 summit and was even remitted with the cooperation of the South Korean national security apparatus.

This transfer took the form of \$350 million in cash, \$100 million in government aid (paid by Hyundai) and \$50 million in kind. On June 9, 2000, Hyundai Merchant Marine remitted \$200 million through the Bank of China's Seoul branch to three North Korean accounts opened in the Bank of China's Macau office. Hyundai Engineering and Construction remitted \$150 million through its London office and through HSBC in Singapore into these accounts on the same date. Hyundai Electronics remitted \$100 million to Hyundai Engineering and Construction in London, which in turn remitted

these funds to North Korean accounts in Singapore and Austria. The remaining \$50 million were nominally earmarked for the Pyongyang gymnasium and other aid projects.

Hyundai claimed that these were legitimate business payments. However, the project was not viable and quickly came to involve more direct government involvement and subsidies; the indictment of Chairman Chung Mon-hun that ended in his suicide was precisely over allegations that he had embezzled corporate funds in order to bribe public officials to support Hyundai's North Korea business. In 2001 the Korea Tourism Organization borrowed 90 billion won from the North-South Cooperation Fund to invest in the project. The Roh government also provided subsidies to road building for the project in 2004, and other subsidies to the project were not finally terminated until the nuclear test of 2006.

The transactions detailed above are accounted for in full in various parts of the North Korean balance of payments. In-kind transfers find their way into the current account in the form of both merchandise imports and current transfers' credits. We elected to record the \$350 million transfer of hard currency is recorded in the capital account on the grounds of its large magnitude and because we exhaust it over a multiyear period. On-net transfers associated with Mount Kumgang involve a nontrivial amount of cash, of which only a small fraction is accounted for in official data provided by South Korea through KITA. The inclusion of these transactions is highly visible in our reconstruction of the North Korean balance of payments and critical to the measurement and analysis of North Korea's external position.

APPENDIX C TRADE DATA SELECTION

Data on North Korean trade flows is available from KOTRA, the IMF's DOTS, and COMTRADE. KOTRA and DOTS provide data on North Korea's overall merchandise trade balance and a bilateral breakdown of North Korean trade, and mirror statistics from COMTRADE make available the commodity composition of North Korean trade as reported by the country's trading partners. North Korea's trade data as reported by these three sources in many cases do not agree, with discrepancies arising from different reporting practices, country selection, and the inclusion of potentially erroneously reported data in both DOTS and COMTRADE. Ultimately KOTRA data is used in this paper for North Korea's base-case merchandise trade position, and data from DOTS is added where evidence against doing so is lacking.

Discrepancies due to differences in reporting practices and data cleaning procedures emerge in a comparison of North Korea's bilateral trade data as reported in KOTRA and DOTS, where sufficient country overlap can be found. KOTRA, for example, removes merchandise trade arising from bilateral aid transfers, while DOTS leaves bilateral aid in the merchandise trade series, as valued by the donor country. The most pronounced example of this source of discrepancy between the two datasets shows up in reported imports from Japan in 2001, where North Korean imports from Japan jump to \$1169 million in 2001, up from \$225 million in 2000. In 2002 this number drops to \$146 million and steadily declines thereafter. Alternatively, KOTRA reports that North Korean merchandise imports from Japan totaled \$249 million in 2001, \$920 million dollars less than the level of imports reported by DOTS. Looking at the commodity composition of Japanese exports to North Korea in 2001 in COMTRADE, it becomes apparent that the source of this discrepancy comes from approximately \$1 billion in rice⁴⁹ shipped from Japan—presumably in the form of food aid—that was likely either stripped from the KOTRA series or repriced by KOTRA.⁵⁰

49. Rice in the husk or not, not further prepared.

50. According to COMTRADE, Japan exported 500,000 metric tons of rice valued at \$1,017 million in 2001. This implies that the reported price of Japanese rice exports for this year was \$2034/MT, over 10 times the 12-month average price of 5 percent broken milled white rice of \$173/MT for 2001 reported in the IMF Primary Commodity Prices database. Interestingly if we subtract out the \$1,017 million of rice imports from the \$1169 million of total imports from Japan for 2001 as reported in DOTS, reprice the rice exports based on the average price of milled white rice for 2001, adjust by a factor of 1.1 for cif, and add this number to the difference between the IMF's total North Korean imports from Japan and COMTRADE's Japanese rice exports to North Korea, the value of North Korea's total imports from Japan would be approximately \$247 million for 2001, almost equal to the \$249 million reported by KOTRA. It should be noted that this exercise is merely for illustrative purposes, and that ultimately it is impossible to tell whether the source of the enormous discrepancy discussed above comes from an exercise such as this, a stripping out of "aid," or some other factor.

A second source of discrepancy between KOTRA and DOTS trade data for North Korea comes from country selection; there are many countries that are included in the DOTS trade series that have been omitted from the KOTRA series. This does not necessarily mean that North Korea's world trade totals as reported by DOTS exceed KOTRA in every year, and indeed, KOTRA reports higher levels of North Korean trade with the rest of the world through most of the early 1990s. But country selection does appear to account for a substantial share of the difference between KOTRA and DOTS trade totals for years in which bilateral trade data is available from both sources.⁵¹ Looking at trends in reported trade flows and the commodity composition of trade between North Korea and countries that appear only in DOTS reveals anomalies that in many cases can justify their removal from the trade series.

It may be the case that, for certain countries, customs officials are mixing up North and South Korea in the trade data they ultimately report to the UN. While it is difficult to prove this from the point of view of imports into North Korea, what these countries report as importing from North Korea can be more revealing. According to COMTRADE, Brazil, for example, reports a dramatic increase in imports from North Korea between the mid-1990s up through the present, the composition of which appears to be much like that of South Korea's. Forty-two percent of Brazil's reported imports from 1990–2006 are classified as machinery and transport equipment, including office machines, telecommunications equipment, and other electrical machinery. Such a dramatically “spiked” pattern of trade over time as well as the suspect commodity composition of exports may help to explain why bilateral trade data between the North and Brazil appears to have been omitted from the KOTRA series, and explains why we have chosen not to include it in this exercise. Other notable examples of questionable reporting of imports from North Korea include Ghana, Costa Rica, Guatemala, and Honduras, all of which report large “spikes” of imports of either telecommunications equipment, household appliances, automobiles, automobile parts, or other types of complex manufactures that track closely the commodity composition of South Korean exports.

Based on these and other similar observations, KOTRA's data on North Korean commercial merchandise trade seems more plausible than the alternatives. This is not to claim that the KOTRA trade data is flawless; it is likely that some countries that should have been included were omitted, and therefore KOTRA's trade data likely understates, to some small degree, North Korea's overall level of trade. It is likely, however, that the North's net trade position in goods is fairly accurate, especially when compared with other more uncertain transactions that we record in the North Korean balance of payments. In determining and analyzing North Korea's external position, KOTRA's data provides the most accurate insights into trade in goods.

51. Currently we have bilateral trade from DOTS for all years in this study (1990–2005) but only have a bilateral breakdown of trade data from KOTRA for 2001–04.

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