Monetary and exchange rate policy in North Korea – a tentative appraisal

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Abstract

The role of stable money is central for a market economy. It is markedly different from the role of money in the centrally planned economy. While no centrally planned economy could do completely without money, its role was minimized. Especially, administered prices made the adjustment function of prices, which is central to the market economy, obsolete. Therefore, any change to a more market based economic system brings challenges for monetary policy. This has been a difficult lesson for the former centrally planned economies all around the world. Repressed inflation led in the transition process to hyperinflation and sometimes demonetization. Banking crises and exchange rate crises were a common experience during the first stages of transition. The Democratic People's Republic of Korea (henceforth North Korea) is no exception to this rule. The breakdown of the centrally planned economy led first to a non-monetary barter economy, and later to a (re-)monetized private sector alongside the moribund official economy. This creates inevitably contradictions between the official and the second, private economy, most notably in the field of exchange rates, which in the public sector often are hold artificially high, while the private sector shows no trust in the domestic currency. This again creates incentives for a drain of resources towards the private economy. North Korea can either tacitly accommodate this policy, with the consequence of possible hyperinflation, or can openly challenge it by police state methods. Currently, a mixture of both is tried, and in both ways the state runs into problems. The freeze of financial relations with North Korea of most international financial actors adds to the problems of North Korea. Disinflation policies require a new cooperation of the government and the central bank, which has to be empowered to effectively fight inflation. Transparency about macroeconomic data is as well a prerequisite for disinflation policies as for the much sought-after international aid by international financial institutions like the IMF, World Bank or ADB. This paper discusses these challenges of North Korean monetary policies behind the background of the Central and Eastern European experiences.

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1. Introduction

While the political aspects of North Korea's ongoing crisis have been broadly discussed in the last decade, there are relatively few papers on the economic aspects of its decline since 1989. Surely, the famine of the late 1990s, the decline of central planning, the reform measures of July 1st, 2002, and the inroads made into North Korea by Chinese and South Korean trade and investment have been reported.[2] But a thorough debate on the economic policy of the country is still lacking. The simple reason for this is the lack of available macro- and microeconomic data, even of the most basic data. However, the experience of other transition countries plus the (albeit slowly) growing amount of information available from North Korea today allow us to understand better the economic problems of the formerly hermetically closed state. This paper attempts to discuss monetary and exchange rate policy of North Korea. Both are crucial for the success of the market-oriented approaches, which have been among the various, often contradicting policy measures of the last one-and-a-half decades of struggling in the crisis.

The role of stable money is central for a market economy. It is markedly different from the role of money in the centrally planned economy. While no centrally planned economy could do completely without money, its role was minimized. Especially, administered prices made the adjustment function of prices, which is central to the market economy, obsolete. Therefore, any change to a more market based economic system brings challenges for monetary policy. This has been a difficult lesson for the former centrally planned economies all around the world. Repressed inflation led in the transition process to hyperinflation and sometimes de-monetization. Banking crises and exchange rate crises were a common experience during the first stages of transition. The Democratic People's Republic of Korea (henceforth North Korea) is no exception to this rule. The breakdown of the centrally planned economy led first to a non-monetary barter economy, and later to a (re-)monetized private sector alongside the moribund official economy.

This creates inevitably contradictions between the official and the second, private economy, most notably in the field of exchange rates, which in the public sector often are hold artificially high, while the private sector shows no trust in the domestic currency. This again creates incentives for a drain of resources towards the private economy. The North Korean state can either tacitly accommodate this policy, with the consequence of possible

[2] See, for example, Eberstadt (1999), Noland et al. (2000), Natsios (2002), Seliger (2005), Lankov (2006).

hyperinflation, or can openly challenge it by police state methods. Currently, a mixture of both is tried, and in both ways the state runs into problems. The freeze of financial relations with North Korea of most international financial actors adds to the problems of North Korea.

Given the distributional consequences of inflation, especially hyperinflation, the discussion of monetary policy in North Korea is not an obscure side-line of research, but rather of high importance for the assessment of the regime stability in North Korea. Disgruntled citizens due to price rises and related declining living standards were often igniting uprisings, like in Poland in the early 1980s. And the fact that the urban population with less access to the subsistence economy and a less de-monetized economy are suffering most from inflation has interesting implications for regime loyalty. Therefore, the problem of stable money can be of utmost importance for the survival or change of the current North Korean political regime.

The remainder of this paper is organized as follows. In the second section, the monetary policy of centrally-planned economies is reviewed, followed by a discussion of the North Korean financial and monetary system (3.). The fourth section deals with the reform measures of July, 2002, and their effects on inflation and exchange rates. Section five is discussing the lessons of other transition states for disinflation policy of North Korea, in particular the possible role of international financial institutions, followed by a short conclusion (6.).

2. Prices, money and banking in centrally planned economies and in transition

In the market economy, the functioning of the price mechanism as the core of the economic system requires the precondition of more or less stable money. The role of the price system as a “discovery procedure” (Hayek) requires that no unanticipated and unbalanced rises in the price level distort the signalling function of price changes. Only if prices fluctuate according to demand and supply conditions, can the economy be expected to work. This is why Walter Eucken, founder of the ordo-liberal school of economics, named a functioning price mechanism as the basic principle in his constituting principles of the market economy and spoke of the “primacy of monetary policy”, i.e. stable money, as the first and imperative condition for the operation of the price mechanism (Eucken 1952). In terms of the functions

of money, the market economy requires that money as well works as a unit of account, a medium of exchange, a reserve of purchasing power and a measure of value.

In the centrally planned economy, the role of prices is completely different: Here, prices are largely administered and do not necessarily bear a relation to the supply and demand conditions. In the original design of the Soviet economy, in the war communism after the revolution of 1917, even the complete abandonment of money was foreseen. While a unit of account was necessary to carry out the plan, money could be substituted, since goods were allocated by command. However, soon it was discovered that it was impossible to run an economy entirely on requisitions and rationing coupons. Nevertheless, the role of money remained limited and prices were politically determined.[3] In terms of the functions of money, money was "full money" only for inter-household relations, but not for the relations of households and the socialist sector (i.e. state and cooperative companies), the intra-socialist sector relations and for foreign trade, where money had merely the function of being a unit of account, as table 1 shows.

	capitalist economy	**Household - household**	**household - socialist sector**	**soc. Sector - soc. Sector**	**foreign trade**
unit of account	x	X	x	x	x
medium of exchange	x	X	x	x (beside inofficial economy)	-
reserve of PP	x	X	x	-	-
Measure of Value	x	X	-	-	-

Table 1: Functions of money in the market economy and the centrally-planned economy

Source: own illustration

[3] This was especially clear in the case of the „price scissors" of industrial and agricultural goods, which led to an administered re-valuation of the former as a precondition for forced and rapid industrialization in the Soviet Union in the late 1920s and early 1930s, which again was seen as a precondition was achieving a communist society.

Differences in the role of money also meant differences in the design of monetary policy. Though every socialist economy had a slightly different system, as a basis the monetary system was a mono-bank system, with one state bank fulfilling the functions of a central bank as well as that of a commercial bank, with a single branch in every major city. Every company had only one account at one subsidiary of the state bank and all transactions beside those involving direct wage payments were done from deposit to deposit, thereby guaranteeing the oversight of transactions by the state bank, the so-called "control by the rouble (won)". The control by the state bank was an important precondition for the carrying out of the plan and the bank had practically a veto on monetary transactions not consistent with the central plan. The allocation of credit was not the task of a competitive bank system, but rather politically decided. Differently from central banks in market economies, the central bank in socialist economies also settles the revenues and expenditures of the national budget. The mono-bank system additionally in all socialist economies knew specialized banks, especially for the purposes of sectoral investment and foreign trade, sometimes also savings banks.

Administered prices meant that the prices could not fluctuate according to supply and demand and also that the price level, as measured by consumer prices, did not rise, i.e. inflation was not open, but repressed (Nuti 1986). However, the amount of money in circulation in socialist economies grew mostly faster than the amount of available consumer goods. The main reason for this was the relative neglect of the consumer goods and services sector vis-à-vis the investment sector. At the same time, nominal wages were rising, thereby conveying the illusion of rising incomes.[4] This led to the phenomenon of a monetary overhang, i.e. money was not able to buy goods and was put in savings accounts. These forced savings financed the early rapid expansion of many socialist states. Other rationing mechanisms than inflation, namely queuing and rationing by coupon took place in the markets for consumer goods and services. Also, in second hand markets for long living consumer goods (and, in the case of North Korea under famine, even for daily supplies) the price structure was perverted, with used, but available goods being sometimes much more expensive than new, but rationed goods.

[4] Rising nominal incomes were the inevitable consequence of systemic conflict. Where systemic conflict was most visible and measurable, in divided Germany, also the necessity for comparing favourably with the competitor was highest, which explains the relatively higher importance of consumer goods availability in East Germany. North Korea, in a similar situation, chose another way, namely that of ending all publications of statistical data and hermetic closure, once South Korea overtook North Korea in terms of growth rates.

The lack of market solutions in the official economy led to a growing second economy, which itself was divided into legal, semi-legal and illegal (black) markets (Katsenelinboigen 1977). Especially, farmers' markets were important for raising the insufficient supply by rationing systems. Though only covering a minuscule percentage of the arable land, they often produced a considerable percentage of the available food.[5] Here, prices fluctuated often until an upper limit set by state controls or even freely. While working as a "social mollifier" (Sampson 1987), by allowing some form of alleviation of bottle-necks and shortages, the second economy nevertheless came at a price, namely the gradual erosion of socialist morale, and also the gradual loss of control by the centre.

The nature of the central planning process led to a gradual loss of control of the central level and created new, market-based opportunities outside the central plan. One major reason was the inability of central planners to centralize sufficient information about the situation on the firm level, thereby giving firms the possibility to get "soft plans" accepted, i.e. plans which are easily to fulfill. Central planners reacted with "markup" plans, where plans of year (x) including an automatic markup to plans of the year (x-1), but this was a crude instrument not able to cope with the differing situation on the sectoral and firm level. The hoarding of resources, necessary to overcome the ubiquitous bottle-necks in productions, added to weak plans and finally, a growing amount of resources was used outside of the plan. This took two forms: First, resources were used to fulfill the plan, without being included in the plan. Since planners knew that there would be bottle-necks (e.g. missing intermediate products, lack of energy) in the production process, they hoarded resources, either to catch up with production after the bottle-neck was overcome, or for direct exchanges outside the plan. *Tolkatchiki* ("string pullers"), organizing direct exchanges of raw materials and intermediate goods, became a cornerstone of real world centrally planned economies.

Second, resources were used for purposes clearly outside the plan, mostly in the form of an enrichment of managers, which ran firms like fiefdoms. By and by, this created a huge market, and in this market prices fluctuated according to supply and demand conditions. One effect of the increased demand outside the plan was the so-called siphoning effect, namely the demand for consumer goods by companies (partly semi-legal, the so-called small wholesale, partly illegal).[6] Illegality and intransparency meant that this market was not integrated and led

[5] According to Gey (2004), p. 128, in the Soviet Union private plots with less than two percent of the arable land produced around one quarter of the total agricultural production.
[6] For an analysis of the siphoning effect see Kim (2000).

to highly volatile prices in these markets. As a medium of exchange, foreign currencies (mostly US-$ or, to a lesser extent, Deutschmark) were preferred and thereby also the black market for foreign currency became larger and better organized. The dollarization of the centrally planned economies began already in the late 1970s and reached their peak only after transition.

The exchange rate in centrally planned economies played insofar a minor role, as according to the political goal of autarky foreign trade operations were residual. So, the official exchange rate was only important for the negligible quantity of tourism. Trade was carried out in foreign currencies and the official exchange rate played only a role for the accounting in terms of the national budget (unit of account). Multiple exchange rates were applied in many cases to distinguish different forms of foreign currency operations. As a general rule, the national currency was highly overvalued, as measured by the prices in black markets for currency.

The transition process saw a number of challenges for monetary and exchange rate policy. To (re-)enact the price mechanism as the core principle of the market economy, prices had to be freed. In most transition economies this led to an overnight jump of prices erasing the monetary overhang. Especially for receivers of fixed incomes, like retirees, the distributional consequences were dramatic, with their savings erased literally overnight. Hyperinflation of up to 1000 percent or more was a common feature in many transition countries. Additionally, the shifting power relations in early transition often led to a wage-price spiral and the gradual lifting of price controls in areas deemed of social interest (e.g. daily supplies) meant that inflation remained galloping even after the first peaks of hyperinflation. Disinflation policy in transition countries often needed more than a decade to finally succeed.

While during the time of central planning money was not supposed to be full money (with the exception of inter-household relations), money during transition could not fulfill the functions of full money, though it was supposed to be full money. The function of a measure of value and storage of value was lost with hyperinflation, and gradually this also led to a shift to others means of exchange (dollarization and barter trade). Finally, in many cases also the function of a unit of account was largely lost due to the menu costs related to high inflation. Only as a legal tender money retained this latter function, but not in everyday dealings of

households and companies. To re-establish national currencies as full money has been an important goal of monetary policy in transition countries.

The change from a mono-bank system to a two-tier bank system created additional challenges (Bonin/ Wachtel 2002). First, the new commercial banks often lacked a sound capital basis and were in many cases merely financing institutions for large companies, collecting savings and handing them out as soft loans to their parent companies. Even, where banks were not involved in these often fraudulent operations, the allocation of credit by banks posed a huge challenge for them. For this challenge, banks were ill-equipped and massive bad loans were the consequence. Second, the central bank lacked experienced personal to properly supervise commercial banks, prevent the aforementioned practice and set up early warning systems for banking crises. Bank runs were a common feature of early transition, until the banking sector was either largely in the hand of foreign banks or, at least, sufficiently consolidated. Third, the central bank itself often lacked the independence from the state necessary to maintain price stability, even in those cases, where such independence was formally granted by law. The degree of central bank independence had a considerable influence on the success of disinflation processes (Dvorsky 2000).

Last, also the exchange rate management had completely to be re-organized (Dean 2003). The unification of exchange rates from former dual or multiple rates was a necessary precondition. Due to the overvaluation of official exchange rates and due to inflation differentials, the freed and unified exchange rates steeply depreciated and continued to do so for some time. The meagre amount of official reserves often ran out, when fixed exchange rates were applied. Fixed exchange rates had the advantage of giving the economy a macroeconomic anchor which was easy to monitor. However, the condition to subject all other macroeconomic policies to this stability anchor was often politically not attainable. Pressure for expansionary monetary policy and banking crises led in many cases to exchange rate crises. New arrangements like currency boards, or, less successfully, crawling pegs or currency bands, were introduced to overcome these problems. Only the last years saw successful exchange rate based stabilization for most transition countries and the gradual shifting to other forms of macro-economic stabilization in the most advanced countries, mainly through inflation targeting (Wachtel/ Korhonen 2004).

The open crises of the monetary and financial system in the transition process were not only adjustment costs of transition itself, but mostly the result of long-lasting misalignments under central planning. North Korea did not yet embark on full-scale economic liberalization, but already now the catastrophic results of central planning and its decline in the areas of monetary and exchange rate policies can be observed. The next section gives an overview over the North Korean monetary and financial system and its decline.

3. The North Korean monetary and financial system – an overview

The former section described the features of money, prices and exchange rates for centrally planned economies in general. But can it also be applied to the case of North Korea? After all, the unique *juche* ideology, the degree of closure higher than in all other socialist states, the features of Asian despotism in the political regime might lead to the conclusion that North Korea is different from the rest of socialist countries. In fact, while the ideological superstructure seems to be different, in terms of the economy North Korea has been quite close to its Soviet archetype, though today this model has long been in decline.[7] North Korea throughout its phase of central planning, which gradually ended in the 1990s, had the typical features of all centrally-planned economies in terms of monetary policy – a mono-tier banking system with specialized sectoral bank, a residual exchange-rate management by the Foreign Trade Bank, and a control of the plan by the central bank (control by the won).[8] Also, the problems of centrally planned economies were the same for North Korea, namely repressed instead of open inflation, forced savings, the gradual loss of control of the plan, the flourishing of uncontrolled foreign currency holdings and the gradual rise of black or semi-legal markets outside the planning system. Only the degree of enforcement of the centrally planned economy has been different, with a highly oppressive political system making enforcement easier, but a country just transforming from a feudal society to an industrial one, the lack of experienced planning personnel and the low initial levels of education making it more difficult than, for example, in Central and Eastern Europe.[9]

[7] The specific and distinctive features of the political and economic system of various socialist regimes has often been claimed by area studies specialists, pointing out the uniqueness of Albanian socialism under Hoxha, Yugoslavian workers' self-management, Hungarian 'goulash communism' or, North Korean *juche* respectively *songun* ideology. However, these features melted soon away in the transition process and remained rather folkloristic elements in an otherwise very similar set of problems.

[8] The following description is largely based on Park (2003).

[9] Anecdotal evidence for the role of the oppressive regime can be found for example in the fact that forced savings extended to the so-called „voluntary", but in reality state-enforced campaigns to donate gold and other precious metals to the state.

The core position in the financial system of North Korea was that of the central bank, as an institution under the orders of the cabinet. The Cooperative Farm Trust, responsible for rural finance, and the Foreign Trade Bank, for foreign financial affairs, was directly subordinated to the central bank. Savings were under the responsibility of the Ministry of Post and Comunication, including the Koryo Commercial Bank for foreign settlements, a joint venture bank, the savings network of post offices, the Golden Triangle Bank for the Rajin-Sonbong Free Trade Area since the early 1990s and the Korea International Insurance Company. Other financial institutions seem to be under the control of the Korean Workers Party (KWP) or the People's Army.[10] The Daesung Bank, Geumbul Bank, Kumkang Bank, Changwang Trust Bank, Tongil Palchon (Unification and Development) Bank, Koryo Bank and Daedong Trust (Credit) Bank belong to the former, the Ilshin International Bank and the First Trust Finance Company to the latter group. Few things are known about the transactions of these banks.

The break-down of the centrally-planned economy also brought first attempts for investment into the financial sector. In 2000, a group of individual British Investors, or, according to another source, Hong Kong fund managers, took over a majority shareholding in the Daedong Credit Bank and a foreign general manager has been appointed. This bank holds accounts solely in foreign currency and catered to the aid community and the few foreign firms engaged in trade and investment in North Korea and an unknown quantity of North Korean business in foreign currency (European Business Association 2005). In 2006 in London the so-called Chosun Development and Investment Fund was set up with the aim to raise 50 million US-$ to invest in North Korea, announcing that it would apply professional standards for investment (Korea Herald 2006a).

The amount of transactions the banks and financial institutions handled and handle is difficult to determine. Park (2003, p. 369) reports, that the Foreign Trade Bank has financial transactions with about 1,000 banks and financial institutions around the world. After the imposing of financial sanctions these ties have been mostly severed, as the general manager of Daedong Credit Bank asserts (Gelken 2006).

[10] The amount of control is not always clear, though. The Daesung (Daesong) Bank, for example, is apparently controlled by the Daesong General Trading Company, which itself is controlled by the KWP. Other sources list the Daesung Bank, however, according to its statutes as controlled by the central bank. See Korean Web Weekly (without year).

The central bank has the tasks of issuing and controlling money, settle accounts, supplying capital (i.e. allocating credit, according to the central plan) and is responsible for the national budget (revenues and expenditures). It has 11 general branches in major cities and provinces and 210 posts in cities and counties. Its main task in monetary policy is the equilibration of the amount of cash in circulation with the necessary amount of cash through the so-called cash plan. At a first glance, these tasks are not so different from that of a central bank in a market economy, if the functions of central bank and commercial banks are seen together. Among the major differences is, however, not only the function of the central bank as the treasurer of the government, but also its rather limited role due to the large non-monetary distribution system. North Korea was the socialist country which used most extensively a system of rationing through a Public Distribution System instead of markets. According to Lankov (2006) in the mid-1970s even the state shops had become nothing more than outlets of the PDS and money played practically no role in obtaining goods. While the PDS to a large extent substituted the monetary economy, nevertheless the problems of a monetary overhang also existed in North Korea. Park (2003, p. 384) estimates that from 1990 to 2001, i.e. before the reforms of 2002, the cash holdings of North Korean citizens rose 7,5 times – without any additional goods to buy. This was a major factor for the measures of 2002, when this overhang was erased overnight by drastic price increases.

Like other socialist states, North Korea desperately looked for sources for foreign currency, since despite the pledges for self-sufficiency, in reality imports were bitterly needed, not the least to pay for luxury items for the entourage of the leadership and for the import of high technology for military purposes. Nevertheless, the exchange rate played a minor role in the centrally planned economy of North Korea. The Foreign Trade Bank was in charge of foreign settlements, foreign currency management and the control of inflows and outflows of foreign currency. The currency peg maintained to the US-$, and later to the Euro, has no relation to the respective purchasing power of currency, to the amount of reserves held or to the demand and supply of foreign currency, it is merely an accounting rate, used only in the transactions for purposes like tourism, but not for foreign trade. Foreign currency played an increasing role in transactions among citizens and also companies during the 1990s.

This overview of the North Korean financial and monetary system is brief by necessity, since there is still no data available regarding the structure of the financial system, inflation, the monetary base etc. However, it shows that up until the end of the Soviet bloc North Korea

fitted well into the socialist system also in terms of monetary policy. With the end of cheap energy supply by the Soviet Union, the dismantlement of the socialist economic integration system, the recall of North Koreans from abroad and the reduction of aid by the SU (later Russia) and China the rapid decline of the centrally-planned economy in North Korea began. The Public Distribution System, which always had been unreliable, in many places completely ceased to exist, in the rest of the country only was able to hand out rations much lower than the subsistence minimum. Deforestation in the mountains for the purpose of gaining fire wood and new arable land destroyed the soil, with devastating floods, once the summer (monsoon) rain came, ensuing. Factories were running at very low levels of capacity utilization and often completely shut down due to the lack of raw materials, energy and intermediate products.[11] As long as the PDS worked reasonably well, workers had an incentive to stay in their factory, since it entitled them to provisions. However, when the PDS broke down, people roaming the country and travelling to Manchuria defied the originally strict rules on domestic travelling and the control system of movements practically broke down. People resorted to all sorts of trade to overcome their hardship, selling their personal belongings, diverting from goods from their public use and stripping their companies of their assets.[12]

In this time, the economy became largely demonetized. There were simply no goods to be sold in the state shops, and barter trade became the most important way of selling and buying. Additionally, the aid from the international community, and later China and South Korea, brought an inflow of foreign currency (for example, through the aid community established in Pyongyang). In the newly opened markets since the late 1990s for the first time repressed inflation could transform into open inflation. By the year 2002, the situation became more and more difficult: By now, price differences between markets and the official state prices were hundredfold, draining more and more goods from the state system. North Korea resorted to a price and wage reform on July 1st, 2002. The effects of this reforms and the situation in the last years will be discussed in the next section.

[11] Accounts of the extent of the shutdown of companies vary, but estimates are as low as 10 to 20 percent for the whole economy.

[12] Since equipment was old and outworn, it could often only be sold as scrap metal to China, where it, however, especially in the last year brought high prices due to the raw material hunger of China.

4. The 7.1 measures and open hyperinflation in the market (*jangmadang*)

In July 2002 important changes were enacted, especially a thorough price and wage reform.[13] These reforms were described officially as an "economic adjustment policy for a strong and prosperous state". The unbalanced rise of prices and wages was the cornerstone of the new economic policy, essentially resembling a one-time, unilateral rise of the price level. With the reforms of July 2002, the prices were not only changed, but also the price-fixing mechanism was newly arranged: the state still sets a standard price for goods, but local factories since July 2002 can set specific prices differing from this standard price, when they win approval for that of a supervisory organization. This is part of a reform envisaging more autonomy in central planning, which was more clearly outlaid by Kim Jong-il in October 2002: planning on the national level will only concern the most important economic variables, while concrete production plans are made on the lower levels of planning, thereby moving the North Korean economic system in the direction of indicative planning. Factories under the new planning system are at least partly in charge of as well procurement as selling their output, which is a major change from orthodox central planning and also needs an autonomous accounting, leading to overall more autonomy and responsibility of the factories (Hong 2002, p. 97).

It was the aim of the rise in prices and wages, being 550-fold for rice (from 0.08 to 44 won[14]), but only 20-fold (from 110 to 2200 won) for the basic wage, to narrow the gap between official prices in state shops and market prices. This has been temporarily achieved, however over the last years this gap opened further than ever before. The one-time-effect has not been accompanied by the necessary incentives and possibilities for increased production, thereby making the reform ultimately aimless. Certainly trade offers now incentives in terms of living possibilities and even high profits in North Korea, due to arbitrage and risk premiums (in the case of semi-legal or illegal trade). In the long run, the knowledge of this new class of petit-entrepreneurs might help the transformation of North Korea to a full-fledged market economy. After all, the scarcity of entrepreneurial spirit is one of the great obstacles to economic transformation, and the new markets allow for the development of such a class. However, it looks not so good in the production sector, where the incentives on the company level are still weak, and at the same time the leeway for individual profit-making of companies in legality is still nonexistent. In terms of the political costs of raising wages far less than prices, they were negligible, since anyway rationing by quantity prevented in most

[13] For an overview see Hong (2002); see also Gey (2003) and Seliger (2004).
[14] If not otherwise stated, won denotes the North Korean Won (KPW).

cases people from buying in the state system, and the prices in the markets did not change. The development of major prices can be seen from table 2 below and, more detailed, from Annex 2. Again, due to the lack of officially available data there are limitations to the collection below, but the undeniable conclusion from this data is that North Korea entered a stage of hyperinflation.

	Official prices before July 1st, 2002	**Official prices after July 1st, 2002**	**Prices 1992-1993**	**Prices 1994-1995**	**Prices 1996**	**Tongil Market (Feb. 2004)**	**Hamheung (Aug. 2005)**	**2006**	**Hamheung (March 2006)**	**Onsung (June 2006)**	**Onsung (Sept. 2006)**
Rice (kg.)	0.08 Won	44	17-25	20-35	85-100		850		950	1.200	1.300
Corn (kg.)	0.07	33	10	20-40	50-60					250	300
Beans (kg.)	0.08	40				1.600-1.900					
Pork (kg.)	17	170				900				1.600-1.800	3.300
Basic wage for labourer	110	2.000						5000-20.000			

Table 2: Price and wage developments 1992-2006

Source: Gey (2004), North Korean Economic Forum (2005), p. 425, own observations, interviews with aid workers and at European Embassies in Pyongyang (June 2005, March and July 2006), Han (2006), Kim (2006)

Some qualifications and observations have to be made to this conclusion: First, still for most people in North Korea money plays a minor role in daily survival (contrary to the reports of the new, capitalist spirit experienced by some observers in Pyongyang). The Public Distribution System (PDS) even strengthened its role in the last two years, largely due to the channelling of food aid from South Korea and China through the PDS (Lankov 2006b). This means that even hyperinflation – though being cumbersome and maybe for many people even being life-threatening – does not necessarily lead to the chaotic economic situation known from hyperinflations in other countries, like Germany in 1923 or in various Latin American countries in the recent decade. After sixteen years of famine or near-famine conditions people are as much as possible equipped for the subsistence economy, with kitchen gardens, gathering of wild foods etc. Those, who were not prepared, are, as aid workers bitterly mention, already long dead.

The second observation is that markets are by no means a unified system of supply and demand, but barriers to entry are high, markets are local, or best, regional, and the law of one price clearly does not apply. In other words, the relevant markets are extremely compartimentalized, not only regionally, but often – due to police action like crack-downs during the rice-planting or harvesting season – also seasonally. This allows for large arbitrage profits, which seem to be exploited for example by those which have the necessary transport means like a truck. Prices are highly volatile according to the local conditions and the disciplining effects of competition do not apply, as a general rule.

Third, wages, which had been before 2002 relatively uniform (though, also then a service worker lived on wages as low as 20 won/ month, while a company director could make around 300), are far more spread today. The average wage for workers (see table 2) is estimated at 110 won/ month before the July 1st, 2002, reforms and at 2000 won/ month afterwards. However, since then a large spread set in, according to the workplace (e.g. companies producing for export or with foreign investment pay much higher wages), qualifications, and connections. An aid worker reported for early 2006 wages of as low as 1.200 won/ month for a nurse and 2.500 won/ month for a medical doctor for an Eastern province. At the same time, wages for Embassy personnel were already estimated at higher than 10.000 won/ month, including that of manual labourers, and it was reported that farm workers at Chongsan Cooperative Farm, a kind of model farm, received additionally to food rations a monthly incentive of 40.000 won each (Ser 2006). Incomparably much higher are the profits possible for those with special skills needed for trade, e.g. those speaking Chinese near the Chinese border. Private Chinese language lessons became a highly profitable business in the border city of Shinuiju, for example, as defectors reported. They earn in one hour of teaching more than the average worker in a month. Overall, the wage spread is an important incentive for a better allocation of skills and mobilization of effort – however, only as long, as higher wages really can buy more goods. [15]

Hyperinflation can also been observed through the development of the exchange rate in the semi-legal or illegal market. The new exchange rate of the US-$ to the North Korean Won after July 1st, 2002, was also an attempt to narrow (but not close) the gap to the free

[15] The comparison of various wages also sheds some new light on the somewhat bizarre discussion of possible human rights violations because of workers' exploitation in the Gaesong Industrial Complex. While surely the state pockets most of the wages of the workers in this area, still they can be called the lucky few, given their much higher wages *cum* excellent facilities and services (like free transportation and lunch, medical services etc.) compared to their compatriots.

market rate, i.e. the black market rate. The former distinction between various (foreigners' and domestic) won was given up, i.e. the exchange rate was unified.[16] The move in 2003 to introduce the euro as official foreign currency also aimed to control the holdings of foreign currency, which grew through increased exchanges with foreigners and currency holdings of traders, for example those, who crossed legally or illegally the border to China. However, the black market exchange rate in 2002 was still around five times the new official rate. After that the speed of depreciation of the won vis-à-vis foreign currencies even increased, as table 3 clearly shows.

	Before July 1st, 2002	**After July 1st, 2002**	**2003**	**2004**	**2005**	**2006**
Official Value of North Korean Won/ Euro	2.16	155.7	172.45	181.625	n.a.	n.a.
Exchange rate on *jangmadang*	Ca. 200-400[17]	500-700	1500	2500	3200	3600

Table 3: Official and unofficial exchange rate in North Korea 2002-2006

Sources: Korea Herald (2005) with data from the Bank of Korea for the official exchange rate 2002-2004, own observations

Table 3 above only gives the official exchange rate and the rate on the market, which is used there among North Koreans. However, additionally there are reports on a real black market (street) rate in the range of one US-$ to 5000-6000 North Korean won. This rate, which seems to be incompatible with the former rate reported for the *jangmadang*, becomes more understandable in the light of the fact that also the *jangmadang* is – despite all the hectic, market-like activity – not a free market, but closely controlled by the state. These controls extent to the kind of goods sold there – for example, in 2005 it was outlawed to sell cereals in the market, though this regulation seems to be widely ignored, the amount of goods sold and

[16] Originally, there had been „red won" for visitors from socialist countries and „green won" for visitors from capitalist countries.
[17] This rate applies to the time just before the changes.

the prices, where some form of price caps seem to apply. Given that there is a new class of entrepreneurs with large amounts of unreported cash and with large needs of foreign currency, US-$ and euro and in the border regions to China more and more exclusively Yüan (RMB), these widely differing exchange rates make sense.

Though no data is available from the North Korean central bank, monetary policy seems to accommodate hyperinflation. No shortage of won has been reported so far. The accommodation of hyperinflation also makes political sense, given the possible distributional consequences of hyperinflation.[18] Given that the access to arable land is highest in the rural areas (though, also a considerable percentage of the urban population depends on kitchen gardens) and that the dependence on public distribution or markets accordingly is highest in urban areas, the urban population is mostly affected by inflationary processes. This, however, is dangerous for regime stability. The urban elites had formerly been relatively privileged by the centrally planned economy. This is especially true for inhabitants of the capital city Pyongyang. After the July 1st, 2002, reforms a new class of urban poor emerged and also the urban dwellers with relatively higher incomes suffered most from inflation. As said before, this effects are somewhat diluted by the re-enforcement of public distribution since 2005, when it was outlawed to sell grains at the market and when the PDS was comparatively well-filled with supplies from South Korea. To date, the PDS seems to suffer from yet another decline and the situation after the missile tests of July 2006 did not improve North Korea's standing with the donor community. Therefore, the possible destabilizing effects of inflation should not be underestimated.

The North Korean authorities are in this respect in a dilemma situation: If they accommodate inflation by printing more money, as they do today, they help fuelling a process which impoverishes its population, and especially the population in cities, which is all in all better educated and has better means of communication among each other, thereby making it potentially more dangerous. If the authorities do not accommodate inflation, a shortage of money in circulation will mean that wages cannot be paid anymore – opposition becomes even more likely. The way out of this dilemma, the reinforcement of the PDS and the crackdown on market activities, is also highly unpopular. This does not only refer to traders, which loose their living, when markets are closed, but also to the whole population, which can not depend on the PDS. Therefore, a long-run solution to the inflation problem has to

[18] For a more extensive analysis of the distributional consequences of reforms see Seliger (2006forthcoming).

acknowledge its origins, namely the insufficient marketization of North Korea. Market reforms in the production sector and above all, the introduction of a profit-based, family-based agricultural system, are the only way out of the dilemma of hyperinflation in North Korea.

Sometimes the analysis of hyperinflation above is questioned on the ground that already for some years there are signs of hyperinflation, however, the stability of the overall economic system seems not to deteriorate, differently from other countries experiencing hyperinflation (Germany in 1923, Argentine and Brazil in the 1990s). However, two points are very important to judge the impact of hyperinflation on overall economic stability. First, economic stability of North Korea was greatly enhanced by economic cooperation with China, but mainly with South Korea. The unconditional aid channelled to North Korea in various forms, e.g. through direct monetary transfers before the North-South summit meeting of June 2000, through monetary flows related to the Gaesong- und Gumgangsang projects as well as through massive food and fertilizer aid (and the provision of other materials, like construction materials) all helped North Korea to stabilize its economy.[19] Second, while inflation on markets is clearly visible and can be judged to be galloping or hyperinflation, the role of markets is still largely suppressed in North Korea. The markets are only allowed to let of a tiny amount of the pressure built up in the North Korean economic system. But this also means that to some extent North Korea can insulate itself from the impact of hyperinflation. Therefore, the term repressed hyperinflation might be the best to describe the current situation in North Korea.

But how can North Korea ever expect to return to moderation inflation? The next section looks into the experience of disinflation policies in other former socialist countries to draw lessons for North Korea.

5. Disinflation policies in transition countries – some lessons for North Korea

The reasons for inflationary processes in the case of centrally planned economies, including North Korea, have already been mentioned above. It is important to see that ultimately inflation has monetary reasons and that the accommodation of inflation is necessary for persistent inflation. Reversely, this also means that monetary authorities have the possibility

[19] It should not be forgotten that additionally, until the end of 2005, up to one third of the population was fed by international food aid provided mainly through the World Food Programme.

to control inflation, if they know the reasons and stop accommodating inflation. In Central and Eastern Europe, though this was generally known, nevertheless important obstacles to successful disinflation existed. Monetary expansion was insofar a necessity, as fiscal policy was out of control of monetary authorities and often, monetary authorities lacked initially the independence to withstand pressure from the government. The government had the huge burden of funding a state budget without sufficient revenues, after the breakdown of the old, planned economy, where the control by the central bank (control by the rouble) made automatic deductions of taxes possible. New tax authorities had to be founded. Moreover, subsidies for daily necessities were maintained long into the transition process. The social safety net, formerly partly unnecessary (no unemployment), partly organized by companies, but by now dysfunctional had to be newly created. The government resorted to seigniorage financing of the budget, i.e. the monetization of deficits. When the markets of the former Soviet bloc broke down, credit expansion to support enterprises and prevent them from bankruptcy became even more prevailing. Imported inflation added to domestic inflation, once trade was liberalized.

Slowly, however, disinflation policies were successful in Central and Eastern Europe. In a first step, institutional preconditions for inflation fighting were created, especially a certain degree of independence of the central bank from the government and the Parliament was necessary. In the second step, government finance was put on a new, sounder basis: Tax authorities were created and new tax laws not only introduced, but also enforced. Treasury bills and government bonds with longer maturities (where accepted by the markets) substituted the monetization of deficits. Additional sources of revenue for the government were created, in particular by privatization. Subsidies did not completely end at once, but declined. Bankrupt companies were closed or sold off in pieces, other enterprises turned around.

In terms of macro-economic stabilization, the transition economies had the difficult task to find an anchor which was as well acceptable politically as practical. Monetary targets in the early phase of high inflation rates and monetary growth rates were impossible to predict in many cases, due to the monetary overhang, money creation by the government and also increased intermediary activity by banks and financial institutions, which were in early transition insufficiently supervised. The exchange rate, however, was a target easy to monitor and exchange rate – based stabilization was chosen as the most practical way for stabilization.

The introduction of a hard peg in form of a currency board happened first in Estonia, later in Lithuania, Bulgaria and Bosnia and Herzegovina.[20] It meant, however, the complete loss of monetary autonomy and therefore was seen in many countries as politically too costly. Also, the initial level of the exchange rate was crucial, giving the persisting inflation differential and, accordingly the real appreciation of the currencies with a hard peg.[21] Countries choosing a hard peg not supported by a sufficient coverage of foreign reserves or a crawling peg or band, like Poland and Russia, had to maintain the credibility of their peg, a task in which Russia spectacularly failed in 1998. When initial high levels of inflation slowly decreased and institutional preconditions were improved, many countries began to shift from exchange rate-based stabilization to inflation targeting, e.g. the Czech Republic after 1998.

Overall, after 15 years of transition the results in the monetary field are quite rosy: initial hyperinflation and also persistent galloping inflation have been contained and around 1999-2000 single digit inflation was reached. Today inflation rates in many Central European countries are comparable or even lower than those in Western Europe. To explain this success, not only domestic factors as mentioned above (institutional improvements, change of government finance, decreasing subsidies) can be credited, but external factors play an important role for success. Macro-economically, the declining import prices, especially energy prices, after the Russian crisis were an important factor to slow down inflation, though this trend has recently been clearly reversed.[22] More important are the institutional constraints imposed on transition countries by their integration into international financial institutions and, in the case of Central and Eastern Europe, the European Union (Seliger 2002). These constraints had not only the direct effect of curbing excessive government spending on subsidies, improved institutional quality (like provisions for central bank independence) and an improved fiscal system, but were particularly important in shaping inflation expectations. The accession to the European Union cannot be underestimated in its dampening effects, as can also be observed in the sharp reduction of the spread on interest rates with EU accession.

These experiences of former centrally-planned economies also give a fairly accurate blueprint of what should happen in North Korea. Certainly, first of all a basic decision for introducing market mechanisms has to be made and this decision, contrary to the more

[20] For a discussion see Korhonen (1999).
[21] However, this last problem has been less of a problem than originally thought, since it has been more than offset by productivity gains due to the transition process on the company level in many countries choosing a hard peg.
[22] Tradable goods explained up to two thirds of changes of the Consumer Price Index in transition economies.

optimistic view of some observers, has not yet been made. It might be argued that the coming into existence of a new, private sector in North Korea (additionally to the special economic zones of Gaesong, Gumgangsan, and maybe Rajin-Sonbong and Shinuiju) heralds the adoption of a Chinese-style transition process. This, however, is not likely, in particular in the field of monetary developments. First, the strong industrialization of North Korea does not allow North Korea to rally its support for transition, and thereby guarantee the stability of political leadership, by sharp increases in agricultural productivity, as was the case in China in the early transition stage. Second, the large inflows of foreign currency as a side effect of heavy foreign investment, which upheld exchange rate stability, allowed for a growing degree (though not full) of convertibility of the Chinese Yüan and even now puts heavy pressure towards revaluation cannot be expected in North Korea.[23]

Assuming a general decision for a market economy, the first task in North Korea would be the introduction of a sufficient degree of transparency, in particular the publication of statistics on monetary growth, inflation, the government budget, subsidies etc. This is the precondition for the assessment of the degree of the monetization of deficits of the state and the degree of subsidization of state firms (and the decision, which firms are bankrupt and which are, eventually, viable). To make such a publication possible, not only have the relevant laws to be revised – today, all these figures are state secrets, but also economists and accountants with modern training are needed. This is the only point, where already some movement can be seen: beginning with visits to the Chinese Central Bank in 2001, there have been various training measures for accounting, central banking and commercial banking for North Korean officials. For example, Hanns Seidel Foundation of Germany in 2004 and 2005 carried out training measures for medium-level officials from the Central Bank, the Ministry of Finance, specialized banks, other authorities like the Price Committee, and academics in Pyongyang.[24] Also, an increasing number of students of management and economics have been sent abroad, especially to China and European countries, which gives some hope for future change in economic policy. However, to make this come true, a much bolder approach is necessary.

[23] This does not mean that North Korea cannot learn from China. Indeed, its most valuable lessons may come from China, since they are the most politically accepted lessons. Lee (2006) sketches a possible North Korean monetary and financial reform based on Chinese experience. The argument above just refers to the possibility to expect similar results than in the Chinese transition process. Also, the existence of the successful other, namely South Korea, gives North Korea far less leeway in economic reform without the danger of regime destabilization.
[24] A description of the training can be found in the annex to this paper.

Once the relevant experts are educated, it is necessary to strengthen the institutional framework, by giving the Central Bank a sufficient degree of independence and establishing clear norms for central banking as well as government finance and separating both functions. The introduction of a two-tier banking system would be the last step towards the introduction of a market-based monetary and financial framework. A two-tier banking system also would require the establishment of a supervisory authority, either inside the central bank or in form of a Financial Supervisory Commission. The introduction of this framework does not mean that the task of transition is successfully concluded. Gaining experience with a market-based system, and gaining reputation for defending it, for example in inflation fighting and against political meddling, are tasks which will require not only experts, but also time. Nevertheless, as the old Korean saying goes, a long way cannot be gone until one begins with the first step.

6. Conclusion

The reform of monetary policy in North Korea is of the utmost importance for stability of the country, regardless under which political leadership. The current state of monetary policy, which can be characterized as repressed hyperinflation, is highly destabilizing for the current regime, so reforms are in its own interest. However, any serious reform is posing a different dilemma to North Korea: opening up, transparency and freer information flows, which are necessary preconditions for market reforms, have themselves a potentially destabilizing effect on the current political regime. They allow the direct comparison of North and South Korea, with a clearly predictable result, namely the request for reforms and opening, in the form of mass migration or political protest. So, while hyperinflation is regime destabilizing, inflation fighting might have the same effect. The pessimistic conclusion is that only half-hearted measures of inflation fighting will possibly take place for the time being. For the international community, it is only possible to support the process of policy discussion inside North Korea indirectly, namely through bringing North Korean students out of the country and bringing foreign experts inside.

Once a serious decision for economic reform has been made, large-scale aid is thinkable, not the least from the international financial institutions (Korea Herald 2006b). Surely, also South Korea can be expected to play a major role in the reform of monetary and financial policy in North Korea. However, South Korea is also a curse for reform of the North, since any opening of the North will ultimately give the North Koreans a choice of regime, a

fact that cannot be tolerated by its current leadership. Needless to say, the nuclear crisis is one of the major stumbling blocks for reform, which has to be removed prior to any large-scale aid from outsiders. Being caught in the dilemma of hyperinflation and seemingly impossible reform alternatives, North Korea will continue its crisis of monetary policy. For observers, foreign as well as domestic, this development should more than before be in the centre of their attention.

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Annex 1: Training Courses in Pyongyang 2004-2005
The International Monetary and Financial System - an Introduction

Lecture plan for a lecture series organized by Korean European Technology and Economic Services (KETES), Pyongyang, in cooperation with Europe Korea Foundation and Hanns Seidel Stiftung Korea (June 2004)

Lecturer: Dr. Bernhard Seliger, Representative, Hanns Seidel Stiftung Korea

Aims of the course:

Since the end of the Bretton Woods system in the early 1970s, the international monetary and financial system is characterized by a multiplicity of monetary regimes coexisting, but at the same time the ordering through international and regional institutions. The understanding of the international monetary and financial system is important as a precondition for international trade and investment decisions. This course shall enable participants to get a basic understanding of the international monetary and financial system and to understand recent developments in international monetary and financial policies.

Lecture 1: The international monetary and financial system - an overview

- discussing basic concepts of monetary policy: Exchange rate, internal/ external value of money, PPP, concepts of interest rates, balance of payments, world monetary systems, esp. fixed versus flexible exchange rate policies, spot and forward currency markets, market instruments on currency markets (swaps etc)
- introducing international financial institutions and their role (IMF, World Bank, regional development banks like ADB, EBRD
- giving a short overview over the evolution of the international monetary system from the gold standard through the Bretton Woods time to today

Lecture 2: Monetary transformation, monetary integration and monetary cooperation

- Understanding the change of monetary systems, especially the introduction of a market based monetary system
- case study: experiences of monetary transformation in Eastern Europe
- Understanding the role of national moneys and the advantages and problems of monetary integration
- case study: European monetary integration 1970-2004 (reasons for monetary cooperation in Europe, from the Werner plan to EMU, challenges of monetary cooperation)
- discussing monetary cooperation between large monetary areas (Euro zone, dollar zone, Yen zone)

Lecture 3: Understanding monetary and banking crises

- understanding the reasons for monetary crisis
- case study: the East Asian currency crisis of 1997/ 1998
- case study: The Russian currency crisis
- understanding the reasons for banking crises
- case study: Banking crises in the Baltic states, 1994-1998
- discussing the role of the IMF in the international financial system and a possible reform

Lecture 4: Financing development - the role of capital flows for economic growth

- discussing basic concepts of international capital flows (capital, capital flows and the balance of payment, FDI versus portfolio investment)
- giving an overview over global FDI flows
- understanding the impact of FDI on growth and the economy
- discussing FDI attraction policies and Special Economic Zones
- case study: the special economic zones in China

The International Monetary and Financial System II – Exchange Rates, Exchange Rate Regimes and Inflation

Lecture plan for a lecture series organized by Pyongyang International Institute of Technological and Economic Cooperation (PIINTEC), Pyongyang, in cooperation with Europe Korea Foundation and Hanns Seidel Stiftung Korea (June 2005)

Lecturer: Dr. Bernhard Seliger, Representative, Hanns Seidel Stiftung Korea

Aims of the course:

The stability of the national and international financial and monetary system is crucially dependent on stable exchange rates and a low-inflation environment. Nationally, growth and development need monetary and exchange rate stability. Internationally, economic exchanges are only possible with the certainty resulting from low or zero inflation and low exchange rate volatility. Nevertheless, fixing exchange rates and prices led many countries to serious difficulties. This lecture series explores case studies of the management of exchange rates and of inflation fighting as basis of sustainable growth and development.

Lecture 1: Exchange Rates, Exchange Rate determinants and Exchange Rate Regimes

- discussing basic concepts: Exchange rate, internal/ external value, exchange rate regimes
- overview over exchange rate regimes worldwide, history of exchange rate regimes
- exchange rate regimes and other macroeconomic variables (especially focusing on the role of monetary policy)

Lecture 2: Case Studies of Exchange Rate Regimes and Problem Solving under different Exchange Rate Regimes

- Case studies for exchange rate regimes: exchange rate regimes and economic shocks, exchange rate regimes in transition countries, exchange rate unification

Lecture 3: Inflation and Disinflation

- understanding the concepts of inflation, deflation, disinflation
- reasons for inflation
- costs of inflation
- inflation and unemployment in market economies (Philips curve debate)
- disinflation policies

Lecture 4: Case studies of inflation under different monetary regimes

- case studies: inflation and exchange rate, hyperinflations and inflation fighting, monetary policy and inflation targeting

Annex 2		Rice (kg)											
		Hamheung	Sinuiju	Pyungsung	Onsung	Haeju	Chungjin	Hyeryung	Pyongyang	Wonsan	Sariwon	Rajin	General
1998													77
1999													64
2001													50
2002							60						55
2004.8							900						
2004.9							900		900				1,000
2005.3							1,050	1,050					
2005.5													1,050
2005.10													750
2006.6	NK	900	900	930		800	900	900	950	870	900	880	
	SK	900	900	930		800	900	880	950	850	900	880	
	Ch	950	950	1,100		850	950	900	1,000	950	950	900	
2006.7 beginning	NK	770							700	700	650		
	Sk	750							750	670	650		
2006.7 Mid	NK	750~770	650~720	700~750		550)			700	680~700	600~650		
	Sk	750	670	750		550			750	670	650		
2006.7 End	NK	980					1,000	1,010	960	980	950	950)	
	SK	960					1,000	1,000	950	950	940	950	
2006.8. beginning	NK	980					1,000	1,010	960	980	950	950	
	SK	960					1,000	1,000	950	950	940	950	
2006.8 End		950					1,300		900	800			
2006.9		1,000					1,400	1,200	950	900	800		
2006.10													1,400

Source: Ministry of Unification, Good friends Newsletter, ICNK NK Brief, Sisa News, Daily NK

Corn (kg)												
	Hamheung	**Sinuiju**	**Pyungsung**	**Onsung**	**Haeju**	**Chungjin**	**Hyeryung**	**Pyongyang**	**Wonsan**	**Sariwon**	**Rajin**	**General**
1998												40
1999												33
2004.8						450~480						
2004.9						450~480			250			
2005.3						500	500					
2005.6												450
2006.1												380
2006.3												450~500
2006.6	300	270			250	310	270	290	280	280	280	
2006.7 beginning	350			250				300	300	240		
2006.7.Mid	330~350	280	300		250	300		300	300	240		
2006.8 beginning	500					400	250	300	320	300	300	
2006.9				450		450	380~400					

Source: Ministry of Unification, Good friends Newsletter, ICNK NK Brief, Sisa News, Daily NK