

# **Estimating Unofficial Economy in DPRK ;Hamkyong Province from 1996 to 2003**

by

In sook LEE

THESIS

Submitted to  
KDI school of public policy and management  
In partial fulfillment of requirements  
for the degree of

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## **Abstract**

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Around middle 1990's, 40 year-old command economy of DPRK witnessed starvation of its people, and for survival attempts of North Korean economic activity out of central government control had to emerge. This paper is motivated by the query about that economic activity which is out of government detection in North Korea; how large it is and how does it change over time? As one and only available and reliable data source for now, DPRK refugees provide the data of economic activity when they were in North Korea. Through the survey to them, information of overall household income and that from shadow economy is gathered.

Based on the components of income data from the survey, size of unofficial economy in Hamkyong province of North Korea was derived. Simple estimates from income data, share of unofficial economy in Hamkyong province is at least 54% and on average 60.5% during 1996 to 2003, which is higher than that of previous research. That is, in Hamkyong province over half of household income is not under the control of authorities. This is intriguing since at the scotoma of communist authority, the growth of market based transaction in the shadow economy can imply that economic control of command economy in DPRK is undermined from the bottom. On the other hand, about the dynamics of the portion of unofficial economy reveals another interesting or seemingly ironic aspect of unofficial economy in Hamkyong province of North Korean, since even with economic crisis of collapse of the ration system and great dearth of bare necessity the share of unofficial economy had remained around 55%, while after government showed strong will to economic reform at 2001 the share of unofficial economy abruptly increased, and it gradually dwindled since then. This sequel trend indirectly indicates that even though economic control of central government is undermined, the political control over the people plays determinant role over the latitude of unofficial economic activity.

Key words; North Korean economy, Unofficial economy, Second economy, Shadow economy,

JEL classifications; E26, O53, E01

*To My God, the Father Almighty*

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## 1. Introduction

Like a huge black box, North Korea has kept her activity under the hermetic seal while her behavior exerts troubling influence on the international and intra-national arena. Nevertheless, it is known that around mid 1990's, 40-year-old command economy of North Korea witnessed mass starvation of her people in dire state, although the exact magnitude of plight is still unknown.

Statement of North Korean refugees, however, discloses that a bunch of North Koreans sought a way of making a living with the businesses prohibited by the communist principle in order to stave themselves off the starvation. Facing unprecedentedly severe shortage as to endanger their subsistence itself, many took part in *private* production and smuggle and the like which are out of detection of central government of Democratic People's Republic of Korea (hereafter DPRK), or North Korea. This is intriguing enough since at the scotoma of communist authority, the growth of market-based transaction of the shadow economy, or unofficial economy, implies that economic control of DPRK is undermined, or that transition toward market economy from a classic Soviet-type economy is virtually going on in North Korea from the bottom. At the same time, inclusion of this part of economy can



indicate that the whole production of North Korean economy is actually higher than officially estimated.

Therefore, pressing question is about the unofficial economic activity that is out of government detection in North Korea; how large the economy beyond control of authority is and how does it change over time? What are the implications for the future of North Korea economy? A few of considerations eventually come to terms with the fact that there is no credible and available official data of North Korea economy one can utilize for the unofficial part, so this paper is to be fact finding rather than empirical, which has its own right.

As one and only reliable data source under this realistic constraint, North Korean refugees provide the data that account for the economic activities when they were in North Korea. Through the survey to them, the information of overall household income and expenditure is amassed and classified, from which income from unofficial economy is drawn out. In this paper, making simple computation with them, the estimates on the portion and size of shadow economy as well as its implications are derived for the period from 1996 to 2003.

This paper unfolds like following; in chapter 2, at first, meaning of the unofficial economy in this paper is speculated on, and traditional methodologies to usually measure it will be introduced among which the most feasible one for North Korean

economy at the moment will be selected. And after reflecting on previous researches, the features of the data set used in this paper are to be explained. In chapter 3, rough qualitative description of unofficial economy will pave the way of understanding the object, or estimate result of relative and absolute size of unofficial economy over time and its implications in the next section. Finally, in concluding chapter, this paper wrap itself up with confession of limitations of this research and suggestions for further study

## II

### **2-1. Definition of the Term ‘Unofficial Economy’**

In whatever system of economy, a realm out of government detection, which is dropped out of macroeconomic figure accounting, always has long existed all over the world. Despite of its omnipresence, full agreement on neither the definition nor the term itself<sup>1</sup> has not been achieved. Presumably, the reason why this is so is that the economic structure, from which it emerges and develops, differs case by case, so the germane scope of the definition should change.

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<sup>1</sup> Due to the lack of consensus, in the literatures, even for the same phenomenon we find various terms such as “shadow economy”, “underground economy”, “second economy”, “cash economy” “parallel economy” “unobserved economy” “black market economy” and the like, which convey different nuance in each context.

Nevertheless, evasion from official calculation of registered activity is main criteria of defining unofficial economy (Tanzi and Macafee(1980), Daniel Kaufmann and Aleksander Kaliberda(1996), Feige(1989,1994), Schneider(2003,2005), Frey and Pommerehne(1984), Smith(1994) etc) <sup>2</sup>On the one hand, circumvention of tax and legal burden is conceived as a main cause of shadow economy. (Simon Johnson et al, 1998) On the other hand, however, to the communist country where all of economy is planned and supervised by political center, compliance with law, and dominant ideology matters (Grossman (1977), Los (1990))<sup>3</sup>. Especially for the latter, it was commonly accepted that chronic deficiency problem of the society was buffered by

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<sup>2</sup> Tanzi and Macafee(1980) defines that the hidden economy is an economy that generates revenues that the official statistics do not register although they should. And all currently unregistered economic activities that contributes to the officially calculated( or observed) Gross National Product- used by Feige(1989,1994) Schneider(2003,2005) and Frey and Pommerehne(1984). For Daniel Kaufmann and Aleksander Kaliberda, it is unofficial activity as the unrecorded value added by any deliberate misreporting or evasion by a firm or individual. As such, it correlates with untaxed incomes and unrecorded capital flight. For Smith(1994 p18) it is market based production of goods and services, whether legal or illegal that escapes detection in the official estimates GDP.

<sup>3</sup>. The second economy or parallel economy is usually employed for the socialist country case and for Grossman (1977)“the second economy comprises all production and exchange activity at least one of the following test; (a)being directly for private gain, (b) being in some significant respect in knowing contravention of existing law.” And for Los(1990), the definition of second economy is “all areas of economic activity which are officially viewed as being inconsistent with the ideologically sanctioned dominant mode of economic organization. In addition to illegal economic activities, the second economy also includes those types of activity that are formally legal but ideologically suspicious and therefore officially discriminated against and assigned a clearly inferior status”

the relatively efficient production of unofficial economy, or second economy. In other words, unlike non-communist society taxing<sup>4</sup> is not the culprit, though it is obvious that the activity is also beyond official detection as in other cases.

In line with this, the definition of Grossman or Los seems appealing for DPRK situation, at a first glance, but it turned out not to be applicable for the measurement of unofficial economy. First of all, in North Korea since early 1990's, the law on the economic activities, which works main criteria of determining second economy according to Grossman's test, has revised quite often, and it follows that legality is not able to robustly work for capturing the activity of the second economy with consistency over time. Take an example, among the stuffs that are allowed to be transacted in the farmer's market<sup>5</sup>, rice was banned one time and permitted the other; essentially same activity switches its classification in terms of law, by which secularly consistent measuring fails. On the other hand, for the ideology criteria, it is obvious that the feature of its implicitness deters practical usage in estimation. Abstract words of idea of communism can be diversely interpreted, and in fact manifested ideology by leadership of North Korea has changed over time. Thus, despite of its importance

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<sup>4</sup> In fact, in communist economy where the private ownership of (mean of production) is banned and collective production is of normal form, taxation cannot explicitly affect the incentive of individual.

<sup>5</sup> The farmer's market is the place where the paltry amount of product cultivated in the yard of individual house is freely transacted. Although it has long been existed, it was regarded as 'doomed to disappear' as society develops. As shown later, it is the farmer's market that the unofficial economy started to bloom.

in North Korea, ideology cannot concretely tell us which is unofficial economy.

Rather, for estimation of North Korean unofficial economy, more appropriate definition is the economic activity out of official's account, regardless of legality, as Smith's definition. It is because whether production and transaction are registered by central government or not is explicit and does not flippantly change over time. On the top of that, in the communist economy where central authority regulates all the economy from the price to the quantity of production, the economic activity out of detection is usually against the ideology and is sometimes against law. Thus, for DPRK's case this definition serves more than that of Grossman or Los, unlike some previous researches on the second economy in USSR or in the former communist countries in East Europe. With this working definition, agricultural product from the private plot '*toigi bat*' or daily product from the private livestock that are transacted in the free market, whose price and transaction is not supervised by the central government, are representative examples of unofficial economy activity in North Korea. Though they were sometimes suppressed as against law and sometimes not, it has definitely been out of statistics of economic official of DPRK.

## **2-2. Methodologies for Estimation of Unofficial Economy**

By definition, just as we try to see the unseen, the measurement of unofficial economy is difficult, since it escapes inspection of government statistics by all means for several motives such as tax burden or legal punishment. It is natural that the agents of the unofficial economy are very reluctant to reveal their business. Thus, though methodologies<sup>6</sup> of estimating unofficial economy were earnestly developed, none of competing methods is yet universally accepted or applicable. Thus, in order to find the most appropriate way to estimate unofficial economy in North Korea, it is worth to check methodologies that were usually applied.

To begin with, for indirect approach, there are six methods;

(1) *discrepancy between national expenditure and income statistics* – the idea of this method goes that since income reporting tends to underscore the whole economic activity which includes unofficial part as well as official, subtracting national income from expenditure can capture the volume of unofficial economy. It usually holds for countries with a credible data for both sides, but it is not feasible as far as concerned with North Korea, because national income statistics of North Korea is still controversial and what is worse there is no way

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<sup>6</sup> For more detail, please refer Bruno S. Frey; Hannelore Weck 1990 and Friedrich Schneider, Dominik H. Enste 2000

to get independent estimate of the expenditure statistics of overall economy.

(2) *discrepancy between official and actual labor force* – Since the unofficial economy absorbs part of unemployment, the gap between both can capture the portion of it. Again, this approach is not the suitable to DPRK economy for now; even if North Korean authority provides official employment<sup>7</sup> blowing up may contaminate the accuracy of data, since by law of DPRK all the economically active population should have a job, and the data of the ‘actual’ labor force is far from available.

(3) *transactions approach*- this is based on the well known Fisherian quantity equation or  $MV=pT$  with assumption about the nominal GNP and V and pT. For application of this, price figures of the total volume of transaction should be available, but it is impossible to get for DPRK case at the moment. What is worse, in DPRK amongst unstable economic situation, the free market price is fluctuating even within a quarter and within a particular place.

(4) *currency demand approach*; the key assumption of this method is that hidden

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<sup>7</sup> For the first time North Korean authorities submitted economic data to UNDP to get the aid; among which the official employment at 1998 is included. And it reached as high as 98% employment rate. Source ; DPRK/UNDP. Thematic Round Table Meeting on Agricultural Recovery and Environmental Protection For the Democratic People's Republic of Korea (DPRK), Annex A-R, Geneva, 28-29 May 1998

transactions of unofficial economy are undertaken only in the form of cash payments to avoid of tax burden. Therefore, trend of currency demand really reflects the overall economy of official and unofficial area. However, DPRK has neither explicit tax system nor announcement on the current and deposit accounts. More importantly, it turns out that not all the payment in unofficial economy in North Korea is settled with cash, rather cash crop like corn is frequently used or barter often occurs.

(5) *Physical input(electricity consumption) method*<sup>8</sup>- this methods is widely used even for the communist unlike methods (1) and (2); it assumes that electricity consumption and GDP has moved in lockstep with elasticity close to one and therefore the electric power consumption is the single best indicator of overall( official + unofficial ) economy performance. Though it is preferred for transition economy, it is still not appropriate for North Korea. Above all, the precipitous decrease in energy supply from external shock<sup>9</sup> around middle 1990's disables the key assumption of electricity and overall economic performance. In addition, it turns out that the activity of unofficial economy in North Korea does not mainly rely on the electricity power for economic

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<sup>8</sup> This is also called Kaufmann-Kaliberda Method, since he artfully employed this method at his research at 1996.

<sup>9</sup> Previously the fuel was imported from USSR but as the collapse of it this support was ruined.



production. On the top of that, data on the quantity of electricity is again disagreed on between IEA and Korean Statistics department by large discrepancy.

(6) *model approach of DYMIMC*( dynamic multiple-indicators multiple causes )- this implements a factor-analysis over time, the unknown coefficients for unobserved economy are estimated in a set of structural equations, but unfortunately it requires data on the several variables in the measurement model, and consequently, for now it is far from feasible for North Korea.

None of candidates of indirect approach is not suitable method for now, then we cannot help turning to direct approach, which may free us from the need of reliable aggregate figures and enables us to reach the estimated portion of unofficial economy in DPRK even with some limitations. Direct approach is nothing but directly gather the data with survey on the economic activity in unofficial part as well as official one from voluntary respondents, and it relies on well-designed questionnaire that covers comprehensive information about economic activities. Considering all the constraints in the studies of North Korean economy, there is, in fact, no better option than data from direct survey at the moment. Just like the survey of the Berkeley –Duke research to the refugees from USSR, particularly designed interview is the second best.

Without any reliable official data of North Korean economy, refugee who has lead economic life in North Korea is one and only source of data on the unofficial economy in DPRK.

This method has strong point that detailed information about the structure of the unofficial economy. At the same time, it is necessary to note that it has disadvantages too; it is unlikely to capture all the 'shadow' or 'unofficial' activities, so they can be seen as providing lower bound estimates. In addition, the result of direct approach estimate is very sensitive to the way of questionnaire is formulated. Although, abundant literature on education, culture, law, political system that give the holistic picture of North Korean situation were considered in the design of the questionnaire in this study and several corrections with pilot interviews were followed for the sake of comprehensive and unbiased survey, it still cannot completely crowd out another way of approach in the survey design and different result from it. Lastly, another weak point of direct approach is that respondent may be reluctant to cooperate, and hesitate to confess a fraudulent behavior in the unofficial economy. Fortunately, however, this problem can be minimized or eliminated in this study, since the interviewees were paid for the earnest answering and more fundamentally once after entering into South Korea, the interviewees of North Korean refugees feel free to say what they did for their living without concerning the punishment of communist authority. Putting in

another way, the interviewees already know that profit-seeking production needs not keep under the closet with fear any more, rather it can be welcomed once they are in capitalism society, South Korea.

### **2-3. Previous Researches on the Unofficial Economy in DPRK.**

Though handful, there has been a few researches on the estimation of unofficial economy or private economy<sup>10</sup> in North Korea(Oh, 1996, Kim 1997, Dong 1997, Chun 1997, Nam & Moon 2000, Park 2002). None of them relies on the traditional indirect approach, while Kim and Park interviewed some refugees and others referred to the statement of refugees in the press or other documents. However, the estimations have limitations in providing persuasive and rigorous quantitative evidence to back up their arguments. Although it is a contribution that they introduced the previously unknown economic activity of North Korea, some of them<sup>11</sup> fail to equip quantitative

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<sup>10</sup> As mentioned above, the consensus on the term is not achieved even within Korean researchers. Some use second economy and others adapt private economy. In addition, the scope that researches used differs person to person, though all of them are beyond the authorities control. Roughly speaking, they can be classified to two, the first family is second economy or informal economy that Grossman coined; the other is private economy that the institution like World Bank or EBRD prefers. Therefore, further research implement, the discussion on the scope of concept should be preceded.

<sup>11</sup> Chun and Dong, for instance, conjectured the size of second economy based on the articles of newspapers.

approach and only refer anecdotal evidence whose credibility is sometimes still in doubt<sup>12</sup>, since they relied on the scrap of information from the public broadcasting or press on North Korea.

Nevertheless, two papers among previous researches adapt quantitative computation to estimate the size of informal economy. At first, Nam and Moon extends the statements of refugees from other article on the unofficial economy to apply Leontief table to get the size of the unofficial economy, using national account system of Bank of Korea, and they argue 27.1% of GNI as an estimate of ‘informal economy’. However, they relied on several unrealistic or untenable assumptions<sup>13</sup> for estimates by which undermined its logic. On the other hand, Kim roughly constructed his estimates of the second economy of overall North Korea, using only ten interviewee’s statement<sup>14</sup>. (Kim, 1997) Park (2002) relied on the information from the

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<sup>12</sup> For example, even when some DPRK refugee replies that roughly 40% of its economic activity is operated in the unofficial economy, it is not fully accurately driven, since unless it checked the income and expenditure flow that figure is just subjective finger counting which is not enough to argue that all of DPRK people has similar portion.

<sup>13</sup> For instance, when calculation the share of industry, they adapt that of South Korea, or they assumed that only 30% of private production is distributed in the market without any specific reason.

<sup>14</sup> That is, his study seems to rely on the answer for how large percentage of North Korea economy is second economy to the each individual, and unfortunately it is fully possible that a single individual if he or she did not work in bureaucracy of economy or statistics, cannot provide good estimate of the share of second economy and the estimate based on their statement could be misleading.

interviews with 98 North Korean refugees over seven years from various provinces, and he estimated that 'private economy' charges 3.6% of production in the whole North Korean economy based on the North Korean GNI constructed by Bank of Korea. This has weak point in that the number of samples for nationwide economic activity is as small as 14 persons a year on average, not to mention that GNI as a denominator for the relative size of unofficial economy is controversial. Therefore, though there exists gap between both estimates of Park and Nam and Moon, none of them is much more persuasive. These limitations, however, are inevitable for any research mainly because of the dearth of credible data on the North Korean economy; even for the GDP figure there is still large discrepancy between estimates of various institutes.

Thus, under the same constraint as previous research, this paper is different in that the regional coverage was narrowed down to Hamkyong Province, and in that the number of refugees is larger than ever before and the aggregate figure of DPRK economy such as GDP is not on the vital concern.

#### **2-4. Direct Survey to the North Korean Refugees**

As mentioned in 2-2, in this study survey of direct approach is implemented toward

North Korean refugees whose number skyrocketed from 2002<sup>15</sup> and its accumulated number outreached six thousand at 2004. After questionnaire was designed for several months in 2004 with pilot surveys, actual survey with the questionnaire was carried out at 2005. More than 730 respondents took part in, but sorting for the household head and earnest answering, the available data are 703<sup>16</sup>. On the top of this, the interviews for filling up the unanswered part in the questionnaire were entailed, and thanks to this painstaking process the detailed and qualitative information was added. Consisting of about 40 questions, the questionnaire covers the economic life after arriving South Koran and before leaving North Korea, and for the latter the income and expenditure in official and unofficial economic activity was asked, which will be utilized in this paper. And basis period of the economic activity at North Korea was adjusted to ‘last entire year’. For example, if an interviewee departed from North Korea on May 1997, his or her economic activity in the period from January to

<sup>15</sup> [Table 1; Trend of North Korean refugees in South Korea]

Year	Till '89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04.10	total
Number Of NK refugees	607	9	9	8	8	52	41	56	86	71	148	312	583	1,139	1,281	1,637	<b>6,047</b>

Source. Ministry of Unification, Korea

<sup>16</sup> Some of respondents were redundant and other failed to fill in most of the answers.

Because some are too young to do so, and other worked in military and therefore had no idea about the income and expenditure of household. And from time to time, they rejected to do so since reminding life in North Korea is heartrending for them.

December of 1996 was reported in the questionnaire. And it turned out that about 75.6% of the all respondents replied that they participated in the unofficial economy at DPRK, though its activeness differs.

Although the sample size is bigger than in any other researches, 700 household is still not enough, and furthermore this study is not free from the problem of deficiency in reliable economic figures on the North Korean economy, either. Coincidentally, however, about 81% of respondents were from Hamkyong Province<sup>17</sup>, which lies Northeast part of North Korea. Thus, for the sake of more rigorous estimate of unofficial economy, the scope of this research would better be narrowed down to Hamkyong Province at the cost of throwing out the information from about 140

<sup>17</sup> It is noticeable that even though Yang Gang Province and Ja Gang Province has boulder line of North Korea like Ham Kyong Province, the departure place is overwhelmingly centered on Ham Kyong. Now Ministry Unification of Korea does not provide the regional distribution of North Korean refugees home, if available, it would give another information on North Korea and the path of North Korean refugees toward South Korea.

[Table 2 ;regional distribution of respondents] [ Table3: periodical distribution of Hamkyong people among respondents ]

Regional distribution	frequency	last normal year	Respondents from Hamkyong Province
Ham Kyong Province	576	1996	93
Pyong An Province	73	1997	159
Hwang Hae Province	20	1998	60
Yang Gang Province	15	1999	36
Ja Gang Province	3	2000	48
Gang Won Province	12	2001	50
Other ( abroad or no response)	4	2002	53
		2003	61

households. Hopefully, the sample especially from around 1997, though not all the year, can work for more reliable estimate by providing data from 155 households. In consideration that the portion of population of Hamkyong province in North Korea is 22.6%.<sup>18</sup>, we can hope that the estimation result from Hamkyong province could throw some insightful light on the economy of other areas in North Korea.

### III

#### **3-1. The Qualitative Sketchy of Unofficial Economy Activity in DPRK**

Before going into the quantitative analysis of unofficial economy, accounts for it would help fathom the implications of the estimates. As mentioned before, unofficial economy is sensitive the context where it emerges and unfolds itself, so the reason why it emerges and how it develops has worthy of another research in its own right. Here, however, in this section, the brief description of unofficial economy activity is

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<sup>18</sup> [Table 4; Regional distribution of population in North Korea].

Region	Distribution ratio (%)
Ham Kyong Province	22.60
Pyong An Province	43.20
Hwang Hae Province	18.40
Yang Gang Province	3.10
Ja Gang Province	5.50
Gang Won Province	7.10

Source: KDI 1996



replaced.

*\* The reason why North Koreans took part in the unofficial economy activity is largely from survival attempts, and to some extent it is helpful for the political leadership sustenance since it eases shortage crisis. .*

To begin with, though it differs from place to place, around middle of 1990 the ration system of North Korea almost paralyzed and the salary also virtually stopped being paid. Hyper inflation in free market price from collapse of ration system made the salary obsolete, for one-month salary could cover only about 2 Kg of rice at free market. At first, they sold out the furniture or valuables to procure necessary things. Before long, people who had been accustomed to meet the bare necessity from rationing found out that they should take an action of self-help. The most common response of interviewees was that they were in so dire state, observing enormous neighbors, and even their beloved family to really starve to death in front of them everyday. Indeed, those who were bureaucrat were not in that much difficulty, but they are rare. Therefore, according to the statement of North Korean refugees, the obvious is that the participation in unofficial economy since mid 1990's, despite of prohibition of government, originated from the sharp decrease of supply of food and items which people needed for survival.

Other studies on the causes on the unofficial economy with microeconomic

approach adapts some model argues that tax system, wage rate is the culprit, relying on the neoclassical leisure-income model<sup>19</sup>. Though it is beyond the scope of this paper, the relationship between shrink of budget constraint under the subsistence level and choice of participation in unofficial economy with same model can back up the cause of unofficial economy. And for macroeconomic approach, again the tax burden, labor market restriction, the strength and efficiency of the institutions of government and the like are considered as main cause of unofficial economy, but it does not accurately hold for North Korean case. Rather, as you will see later in this paper, the conversion of government attitude affects the relative size of unofficial economy.

From the political leader's point of view, to the some extent, the free market of unofficial economy is helpful in sustaining its power, since it cushions the economic crisis threatening to its existence. According to Frank<sup>20</sup>, such a 'hybrid system' is a rational solution for the dilemma; to increase production using free market without destabilizing political system. Parallel existence of state and free market, thus, is also somehow from survival attempts for leadership, too.

*\* Items were varied, but were mainly food and apparel that were of large shortage,*

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<sup>19</sup> Neck, Reinhard, Hofreither, Markus and Friedrich Schneider, 1989

<sup>20</sup> For more detail about the political economy analysis, refer to, Economic Reforms in North Korea (1998-2004): Systemic Restrictions , Quantitative Analysis by Ruediger Frank.

*and over time the items were diversified.*

The items agents in unofficial economy handle usually are foodstuff and apparel that are of deep dearth and universal need in DPRK. The forms of business are varied widely. First of all, those who have own plot harvested corn and sell it in the market after they consume it, which was not predominant form, but limited to land owner. On the other hand, there were persons who deliver seafood from coastal area to inland for sale. Above all, the most prevalent was the selling the cooked food such as noodle and bread in portable scale, and the most primitive form was just gathering herbs for living which was conducted by usually decrepit person or children. To my guess, the reason why great deficit goods, crop, is not prevalent business lies the fact that the crop is not easy to physically carry, so it is quite vulnerable to be the target of clamp down of bureaucrats, while the vendor of foodstuff is relatively easy to escape from detection. In addition, without private land and large capital, selling foodstuff is more feasible option to ordinary person; that is the entry bar is low, comparing to other types of business. And moonshine, by the same token, is not flourished much, according to the data from survey.

Secondly, there was great paucity of shoes and clothes, and, what is worse, the quality of them was so low that the durability was quite short. For instance, the *pyeonli hwa* which is a sort of shoes that was home made and widely worn by North

Korean, can last no longer than one or two month on average. Therefore, they are popular items to consumers as well as the vendors in unofficial economy, and to meet the demand of them, shoes and used clothes were imported from China and transacted in the market with higher price.

Indeed, in North Korea there also was seeker of *shortage rent*.<sup>21</sup> For instance, electric appliance such as television sets, radio was also in the market, and the seller usually formally had or had had a related job such as repairman of TV factory, tapping the advantage of easier access to the goods. The metals and medicine whose dealing was strongly banned by law also were transacted in the realm of unofficial economy in the channel of workers who draws on their fortunate status. On the top of those, all of miscellaneous things were transacted by the vendors, they dealt with things everything within their reach, for making bread, according to the interviewee. Still, due to strict control of central government, firm level activity, like underground factory, did not emerge yet.

*\* Speculation to exploit places was prevalent form, rather than producing items itself.*

*In many cases, unofficial economy activity was related to the formal job.*

The most prevalent form of business in unofficial economy in DPRK would be

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<sup>21</sup> rent, accruing to whoever is fortunate enough to buy the deficit goods at the low official price.

‘Duigeori Jang sa’ which means retailer or vendor. In North Korea, movement from one province to other is not easy, and it requires special permission of government, and even with the permission ticket it is not as fast as you think since the transportation is retarded. Therefore, to buy abundant or available things in one place and to sell it elsewhere lack with that item is so lucrative that many DPRK people were willing to walk several days in a low with risk of shackles in order to make a fortune. Putting in another way, they exploited the margins between different places. Thus, it is natural that most of housewives who could be free from job engagement mandate took active part in the unofficial economy, since they were not bounded to seat in the workplace unlike their husbands.

Probably, on the other hand, the shortage of material input and fuel could deter the vender to set up manufacturing, thus a person whose workplace had access to materials took advantage of it, and purloined materials or products to utilize it. Thus, the more access by status of formal job a person had, the more profit he could generate in the informal economy. Along with this, if the formal job was related to specific skills, the worker utilized it to do a business outside workplace. Fitting examples would be doctor, hairdresser, and repairman etc.

### **3-2. Estimation Strategy**

With data from direct approach to DPRK refugees, the way to get the estimates is not paved with complicated equations. Based on the information on the income from various sources, the income from unofficial economy can be extracted and it can lead estimates of ratio and size of unofficial economy.

Overall income of households at last entire year<sup>22</sup> are classified into three; the first one is formal income that includes salary of formal job, whether in cash or in kind, and pension, and the second one is from unofficial economy that includes market value<sup>23</sup> of agricultural product and livestock product, net income of other informal job like vendor, smuggling, bootlegging etc, and the last one is the financial aid or loan.

Method adapted to get estimates the relative and absolute size of unofficial economy in North Korea for each year is;

Household income from unofficial economy= agricultural product(market value) + livestock product(market value)+ net income from other activity such as vendor,

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<sup>22</sup>Prototype of 'last entire year' is "last normal year" ; 'Last normal year' was designed to get distinct annual data and imported from the Berkely –Duke questionnaire. (1978) For example, if an interviewee departed from North Korea on May 1997, his or her activity in the period from January to December of 1996 was asked in the questionnaire. Consequently, last normal year was derived departure year from North Korea.

<sup>23</sup> In principle, the prices of all items are fixed by the central government, and the products from private plot or livestock were transacted not for the fixed price, but for market price. In addition, there are huge gap between them; the market price is even over ten times as much as the fixed price. And for essential necessity, like rice and corn is more than five hundred times.

smuggle and the like (1)

$$\text{Proportion of unofficial economy} = \frac{\Sigma \text{ family income from unofficial economy}}{\Sigma \text{ overall family income}^{24}} \quad (2)$$

Size of unofficial economy in Hamkyong=the number of household×the rate of participation in unofficial economy(0.756<sup>25</sup>) ×family income from unofficial economy per household. (3)

The number of the household of each year was derived like following;

The number of household in Hamkyong =Total population ×the proportion of population in Hamkyong Province(0.226)÷the average number of family member per household(3.7)<sup>26</sup> (4)

And for the currency unit, North Korean Won is used.

### 3-3. Quantitative Analysis on the Estimates

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<sup>24</sup> In the questionnaire, there are distinct question for overall household income, so it is directly employed.

<sup>25</sup> This figure also was computed from the survey.

<sup>26</sup> KDI provides the average number of family per household till 1987 and it is 4.8, while Park(2002) uses 4.3 for seven years span from 1995 to 2001 without revealing specific reason. 3.7 of this study is the average from the number of family in the respondents.

Implementing estimation strategy, with data from the survey to DPRK refugees, total family income per household, family income per household from unofficial sector and thereby portion of unofficial economy in Hamkyong Province was estimated as below.

[ Table 5; estimates of portion of unofficial economy in Hamkyong province and other estimates]

Last normal year	Number of household <sup>3)</sup>	Total family income (unit;Won) <sup>1)</sup>	Family income from unofficial economy (unit;Won)	<b>Portion of unofficial economy</b>
1996	93	59,800	33,900.	<b>0.57</b>
1997	155	23,500	13,100.	<b>0.56</b>
1998	58	43,500	23,700.	<b>0.55</b>
1999	36	41,300	22,900.	<b>0.55</b>
2000	46	41,600	25,600.	<b>0.54</b>
2001	43	63,800	49,800.	<b>0.78</b>
2002	50	247,600	168,300.	<b>0.67</b>
2003	57	232,200	144,200.	<b>0.62</b>

Note; 1)'Won' is North Korean domestic currency.

2) the figure of income is rounded off.

3) The number of respondents is less than that in Table 3, for some of them omitted the answer for total income of family or income from unofficial economy, which enables their data from utilizing in the analysis.

In looking at the last column of the result table, it is clear that the portion of unofficial economy in Hamkyong province is at least over 54% and 60.5% on average over time. Putting another way, over the half of income is produced by the unofficial economic sector that is out of government's supervising. Even though this study



covers only Hamkyong province, where one fifth of the whole population of North Korea resides, 54% is by far bigger than the estimates of Park or Nam and Moon for all over North Korea. In addition to this, considering the fact that the data of this paper only concerns household income, this could be larger. On the other hand, however, this overestimates itself in that bordering with China<sup>27</sup> and other idiosyncratic factors of Hamkyong province make unofficial economy there more proliferated than any other area in North Korea. Nevertheless since shortage problem is ubiquitous in North Korea and it promotes the activity of unofficial economy, this estimate may not be a far cry from the size of unofficial economy of overall North Korea. At least, we can argue that unofficial economic activity is not small as easily negligible.

Consequently, the result can indicate that economic activity out of government recognition and control is more than half of the overall income of household in Hamkyong Province, and, one step further, it is obvious that the official command economy has been being undermined and market-based economy is germinating there.

Then, how should we understand the magnitude of this figure? One may ask if over half of uncontrolled economic activity is panic or not. To give more sense on this figure, referring the estimate of relative size of unofficial economy in other transition

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<sup>27</sup> Large part of goods are imported from China, so close neighboring is clear advantage for the people who imported and sell the goods in the unofficial economic part.

economies would help.

[Table 6; The Portion of Unofficial Economy in Transition Economy of 25 East and Central European and Former Soviet Union Countries]

country	<b>Shadow Economy (in% off.GDP) using the DYMIMIC and Currency Demand Method</b>		
	1990/00	2001/02	2002/03
Czech Rep.	19.1	19.6	20.1
Slovak Rep.	18.9	19.3	20.2
Hungary	25.1	25.7	26.2
Poland	27.6	28.2	28.9
Slovenia	27.1	28.3	29.4
Lithuania	30.3	31.4	32.6
Albania	33.4	34.6	35.3
Croatia	33.4	34.2	35.4
Macedonia, FYR	34.1	35.1	36.3
Bosnia and Herzegovina	34.1	35.4	36.7
Uzbekistan	34.1	35.7	37.2
Romania	34.4	36.1	37.4
Bulgaria	36.9	37.1	38.3
Serbia and Montenegro	36.4	37.3	39.1
Estonia	38.4	39.2	40.1
Kyrgyz Rep	39.8	40.3	41.2
Latvia	39.9	40.7	41.3
Kazakhstan	43.2	44.1	45.2
Russian Federation	46.1	47.5	48.7
Armania	46.3	47.8	49.1
Moldova	45.1	47.3	49.4
Belarus	48.1	49.3	50.4
Ukraine	52.2	53.6	54.7
Azerbaijan	60.6	61.1	61.3
Georgia	67.3	67.6	68
unweighted average	38.1	39.1	40.1

Source; Fridrich Schneider, "The Size of the Shadow Economies of 145 Countries all over the World: First Results over the Period 1999 to 2003", *IZA Discussion Paper*, N0.1431, 2004.

Note; it is edited in increasing order of portion of unofficial economy.

The portion of unofficial economy in North Korea is slightly higher than Ukraine

before 2001, and after 2001 it is similar to Georgia and Azerbaijan. Although the share of unofficial economy is not an index of how a command economy transformed to market economy and the estimates from different method over national wide unofficial economy deters the carelessly direct comparison with the result of this paper, this table throws some light on the situation in North Korea economy on the international horizon.

For the trend of unofficial economy over time, on the other hand, from 1996 to 2000 it kept remaining around 55% despite of drastic economic fluctuation<sup>28</sup> where average family income threateningly plummeted less than half( from 59800 won to 23500 won). By contrast, it abruptly upsurged to 78% at 2001 when predicaments in the economy is rather alleviated, and it gradually decreased since then.

What accounts for this specific pattern of change? Is this trend by income change? Correlation coefficient of overall income and portion of unofficial economy turned out to be as low as 0.42. Keeping in mind that main reason why unofficial economy grows in the communist country lies shortage problem, it is definitely noticeable that the sharp decrease in income around 1997, which can be interpreted as occurrence of

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<sup>28</sup> [Table 7; Trend of North Korea Economy]

	'96	'97	'98	'99	'00	'01	'02	'03
Growth rate(%)	-3.6	-6.3	-1.1	6.2	1.3	3.7	1.2	1.8

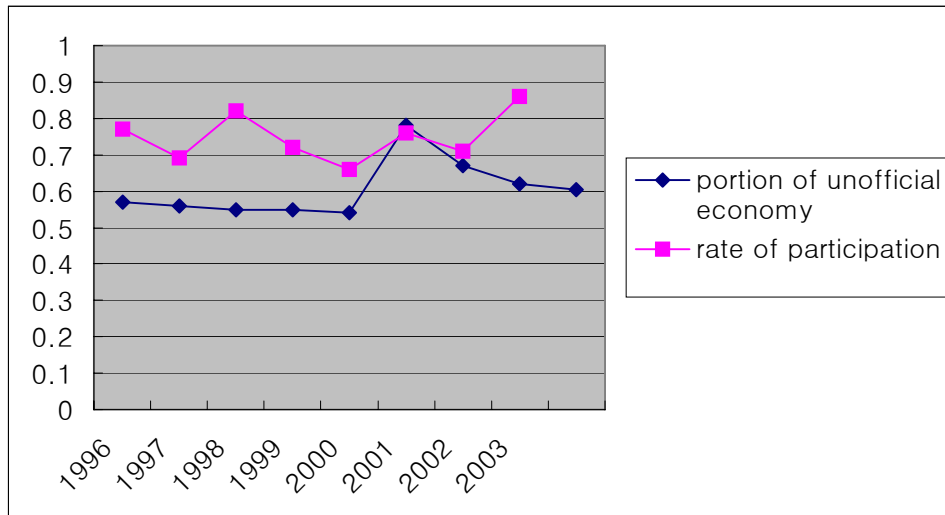
Note; 1) 'Won' in this table is South Korean domestic currency that differs from North Korean Won.  
Source: Bank Of Korea.

severe shortage, did not induce prompt increase in unofficial economic activity, while it skyrocketed when the income started to regain after the harsh period passed. Thus, it seems rather ironic, considering that the unofficial economic activity in North Korea is from survival attempts.

One candidate of explanation<sup>29</sup> would be the change in number of household who worked in unofficial sector. That is, the hypothesis is that participation rate in unofficial economy somehow sharply increased at 2001 and resulted in expansion of income from unofficial economy, while it had been unchanged before. However, participation rate of unofficial economy turns out not to be the culprit. See Figure 1 where the rate of participation does not show significant co-movement with the trend of unofficial economy. Take an example, at 1998 when the estimated portion of unofficial economy is 55%, the participation rate (82%) is even higher than that of 2001 (78%).

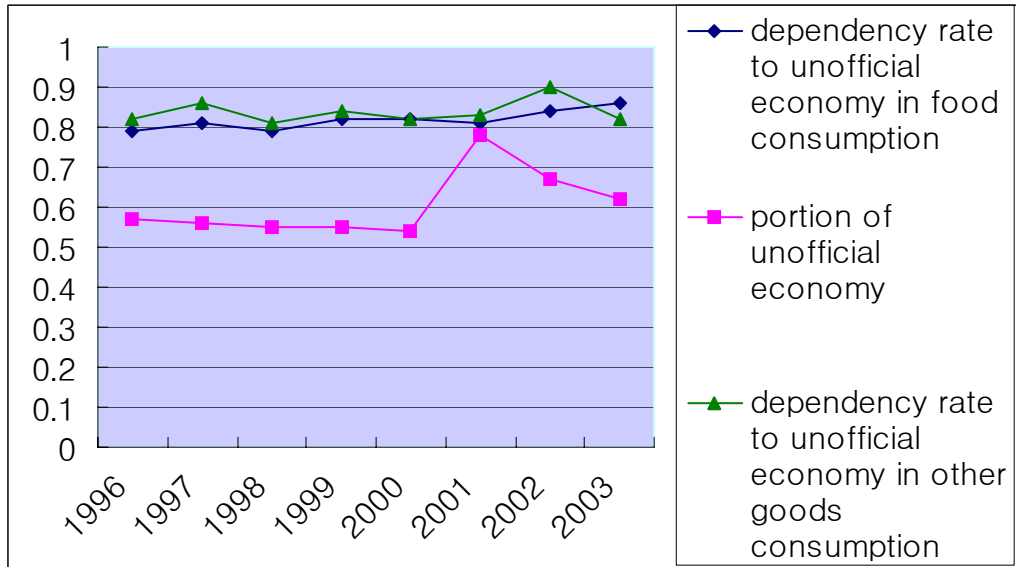
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<sup>29</sup> Indeed, one desirable way is relying on the regression to reveal the reason behind the trend, but accurate data for variables to control out is not available, and for time series regression the number of data is not enough to derive some argument.



[Figure1; trend of participation rate and portion of unofficial economy, respectively]

Then, we can suspect external factor, political control, to affect the unofficial economy; as mentioned in the 2-1, the unofficial economy is against law or communist ideology. Even with internal push to increase in unofficial economy activity, external press can suppress its growth. Although shortage problem of people to be satisfied by unofficial economy needs expanding itself, political sanction may restrain it. In fact, the answers on the question about the dependency upon unofficial economy channel when North Korean was procuring food or other goods in the questionnaire of this study reveal that the need was steadily increased, regardless of sequel change of size of unofficial economy. See Figure 2.



[Figure 2 ; trend of dependency rate to unofficial economy and of portion of unofficial economy]

With this viewpoint, the conversion of government attitude, or policy, can provide feasible reason. One explanation is that since confronting the deep and long slowdown to threat its political stability, North Korean government tried to rehabilitate its economy, and that leniency over unofficial economy would enhance unofficial economy to expand after it made up mind for market-oriented reform to regain its vitality of economy. That is, conversion of government strictness to improve efficiency could invite more freedom in the economy, and it resulted in the release of some suppresses on the unofficial economic activity and thereby enabled them to yield more profit, while returns from official economic sector did not change much. As a result, the income share from unofficial economy skyrocketed.

Unfortunately, the data<sup>30</sup> on the leniency of suppression over the unofficial

<sup>30</sup> Municipal ordinance may provide clue for this, but it is unavailable now.

economic activity is not directly available, since it is not the thing that would be publicly announced and measured even in other countries. However, the change of government attitude on the economy problem was obvious. As well known, Kim Jong-il, the leader of North Korea made a visit to China on May 2000, and especially to Shanghai on January 2001 when he showed strong will for economic reform. And 2001 New Year's Editorial of the newspapers of the Worker's Party, and the Youth League suggested '*end to old method of economic policy*'<sup>31</sup>, which can illuminate why the portion of unofficial economy sharply increased at 2001 in Hamkyong province. As a sequential move, as of 2002, 'July first economic reform'<sup>32</sup> was announced. This reform is regarded as the largest and deepest reform after socialist economy of North Korea was established and since Kim Jong-il took his power. And 2001 would be the period of the test in which the government alleviates the curb on the control over unofficial economy activity, as litmus for the reform.

About the decline of the unofficial economy after the July first economic reform 2002, however, remains unexplained yet. One possibility is that the government might

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<sup>31</sup> “ *The 2001 editorial characterizes the past, the 20<sup>th</sup> century, as ‘a century of chollima’ specifically mentioning that this campaign started in the 1950’s..... it could also mean that now is the time to bring an end to old methods of economic policy. At this point, it is worth remembering that publicizing a policy via the Rodong Sinmun is a move that usually comes at the very end of policy formulation process and marks the beginning of the implementation phase of the policy*” p. 291. Frank, 2005.

<sup>32</sup> One of the features of this reform is huge price change; as an extreme example, the price of rice skyrocketed as much as 550 times. For more information about July first economic reform, refer to KINU, 2002 and Seo, 2002

mildly restore its strictness, though not much as before, but just up to promote North Korea economy without destabilizing political system. Or gradual decrease can also be interpreted that as more North Korean entered the business of unofficial economy, the marginal gain shrunk and there by the total returns decreased. Though, as you see just in the next, the latter seems more plausible, both are possible explanation waiting more data or evidence that will referee which one is true.

The above explanation about the trend of unofficial economy implies that strict government control or regulation plays determinants over the immediate shortage problem for unofficial economic activity in Hamkyong province of DPRK. Unfortunately, direct evidence of repercussions of leniency of government or July first economic reform upon the unofficial economy sector is not available, but we can indirectly reason that less control of central government could make more room for unofficial economy to enhance its returns in the communist society and that it resulted in deteriorated income distribution. Though indirect and meager evidence, in Table 8 Gini coefficient indicates worsen distribution after 2001 when the government heralded the strong will to economic reform, and when the portion of unofficial economy upsurged. Thus, though some conjecture is inserted to explain, we can carefully argue that the government curb on the unofficial economy is a bit more influential than exploding need of unofficial economy from the bottom, at least for the



case of Hamkyong province. In other words, although some part of command economy is undermined by the unofficial economy, the political control of government over it is still sternly binding. The unofficial economy of free market mechanism still remains 'second' economy although the first economy of command economy is virtually paralyzed.

[Table 8; change in income distribution in Hamkyong province]

inequality measures of income	1996-2000	2001-2003
relative mean deviation	0.56	0.65
coefficient of variation	3.29	3.01
standard deviation of logs	1.50	2.01
Gini coefficient	<b>0.73</b>	<b>0.81</b>
Mehran measure	0.85	0.92
Piesch measure	0.67	0.76
Kakwani measure	0.42	0.53

Note; the income data used is from the survey to North Korean refugee in this study.

One caveat should be added to the results in table 5; when on the first of July economic reform 2002 the realization of price and wage lead nominal increase of income. As an extreme example, the government price of rice jumped 550 times in this reform, while the wage increased about 18.8 times. Thus, the total family income and unofficial income, which sharply increased at 2001, does not directly indicate that the real income, or purchasing power enhanced.

One more thing, one may ask how the prompt recovery around 1997 and 1998 was

possible. For this, referring the change in foreign aid to North Korean<sup>33</sup> could help, since 1997 from the international institute and South Korean government, tremendous amount of support is injected. As large as 1.7% and 2.6% of total GDP for 1997 and 1998 respectively<sup>34</sup> are donated from outside of North Korea. The controversy on the effectiveness of distribution channel aside, assuming that the aid supported the plunging economy, the regained level of family income is not impossible.

Secondly, estimates of volume of unofficial economy are listed in Table 10. Though since we already get the estimate of portion of unofficial economy, it would seem redundant to add estimated size of the unofficial economy, if we have GDP figure in hand. Nevertheless, under the situation where we have no single and reliable aggregate GDP( or GNI) of North Korea, it would be informative to grasp of North Korean economic situation, and by some multiplications with reciprocal of estimated portion of unofficial economy, participation rate and the like, it is possible to get the estimated GDP of Hamkyong province, though it does not include industrial production. From the survey data of this study, overall participation rate of unofficial

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<sup>33</sup> [Table 9 Foreign Aid to North Korea ( unit; thousand dollar)]

<b>Year</b>	<b>'95.6</b>	<b>'96</b>	<b>'97</b>	<b>'98</b>	<b>'99</b>	<b>2000</b>	<b>2001</b>
Foreign aid	287900	102250	310730	333840	406760	295530	492640

Source; Ministry of Unification.

<sup>34</sup> Here, total GDP(here GNI) used is the estimate of Bank of Korea, and they are `1770 million dollar and 1260 million dollar for 1997 and 1998, respectively.

economy is 75.6%<sup>35</sup> which is lower than the result of Park; according to his interviewee, the participation rate is 87.7%. Assuming the 75.6% of all households in Hamkyong Province are involved in unofficial economic activity, overall sizes are estimated like below.

[Table 10, Size of unofficial economy in Hamkyong province]

year	Total household income from unofficial economy in Hamkyong (unit; North Korea million Won)
1996	34,000
1997	13,200
1998	24,000
1999	23,400
2000	26,200
2001	51,200
2002	173,900
2003	149,900

Note; 1)'Won' is North Korean domestic currency.

2) the figure of income is rounded off.

It is tempting to draw out the portion of unofficial economy of North Korea from above. Unfortunately, it is untenable not only because is the regional coverage disparate, but also because the GNI or GDP estimates of North Korea are different; the announcement of North Korean government, Bank Of Korea, UNESCAP, CIA etc. are different at each year, sometimes the gap is serious. For example, for 1996 the

<sup>35</sup> Though average participation rate of unofficial economy in Hamkyong province is 74.9%, here we adapt the participation rate from overall sample.

North Korean announcement of GDP is 10.3 trillion won, while the estimate GNI by Bank of Korea is 17.3 trillion won, and 22,764 million won is from the statistics of UN database. Furthermore, in dollar currency, base the exchange rate as well as GDP(or GNI) itself is different. Thus, direct application for the overall unofficial economy in North Korea is not telling for now, and persuasive comparison of size and portion of unofficial economy of Hamkyong province with those of North Korea should wait for macroeconomic data of overall North Korean economy that are more comprehensive and reliable. Here displays just the clue of how large unofficial economy of Hamkyong province is.

## IV

### **4. Concluding Remarks**

Various methodologies were developed for estimating unregistered part of economy, but most of them were not feasible for North Korea for now. Direct approach with survey, available method at the moment, is opted under realistic constraint, and survey data of about 700 households of North Korean refugees are gathered. Though not large enough, this size of sample is larger than ever before. And among the respondents over 570 households departed from Hamkyong province, and based on

the components of income data, making simple and plain computation the proportion and size of unofficial economy in Hamkyong province was estimated.

Estimates from income data, share of unofficial economy in Hamkyong province is at least 54% and on average 60.5% during 1996 to 2003, which is higher than expected from previous researches. If we assume that unofficial economy is most proliferated in Hamkyong province or that industrial sector is not related to unofficial economic activity at all, then this figure would be larger than the overall portion of unofficial economy in North Korea. Still, the estimates indicate that the command economy of North Korea is undermined from the bottom. And it is noteworthy that in Hamkyong province over the half of household income is not from the collective production under the control of government. At least, that the unofficial economy activity produces, on average, 60% by 75.6% of household earning implies weakened economic control of government in Hamkyong province or perhaps signs for transitioning toward market economy in North Korea. From viewpoint of the policy maker in South Korea, it has another implication that the virtual volume of North Korean economy than they estimates when accounting for reunification cost.

And the trend of the portion of unofficial economy in Hamkyong province throws interesting issues over the dynamics of unofficial economy. Even with collapse of the ration system and great dearth of bare necessity, the share of unofficial economy

could not upsurge, while after government showed will to economic reform at 2001 the share is abruptly increased then gradually decreased since then. Even though economic control of central government is undermined, the political control over the people plays determinant role over the latitude of unofficial economic activity. To bail oneself out from starvation, the participation in unofficial economy is inevitable to people in North Korea, but confronting the sanctions and punishments of communist party restricts the growth of unofficial economy.

Limitation of this paper like most of previous research comes from the lack of credible and openly accessible data on North Korea economy, and even with excuse of realistic constraint, estimates from really small sample of North Korean refugee are not free from the critique of the credibility of the estimates over unofficial economy. In addition, the selection bias<sup>36</sup> caused by the point that group of participants of unofficial economy overrepresents that in the population is also a defective of this paper. If more credible information is available some day, the estimates of this study would be rejected or accepted. I wish that the result of this paper is rebuked or debated with more affluent data in the foreseeable future. There remain enormous things to improve.

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<sup>36</sup> As shown the regional distribution, the data in this paper have abnormally large number of people from Hamkyong, which may message another meaning of North Korean situation.

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### III. Internet Resources

<http://www.hri.co.kr> Hyundai Research Institute

<http://www.kdi.re.kr> Korea Development Institute

<http://www.kinu.or.kr> Korea Institute for National Unification

<http://www.lgeri.com/> LG Economy Research Institute

<http://www.seri.org> Samsung Economy Research Institute

<http://www.unikorea.go.kr> Ministry of Unification of Korea

<http://www.reliefweb.int> UNOCHA, financial tracking database