

Unveiling The North Korean Economy

Byung-Yeon Kim
(Seoul National University)

Questions this seminar addresses

- What were/are the fundamental problems in the North Korean economy?
- What are the main features of the current North Korean economy?
- How does the performance of the North Korean economy look like?
- What scenarios are possible regarding the future of the two Koreas?
 - Is unification of the Koreas feasible?
- How can we facilitate North Korea's denuclearization?

Socialist economic system

- It is estimated that the socialist economic system is inefficient by 30-40% compared with the capitalist one (Bergson, 1987; 1994).
- The main reason is the economic system.
- The economic system refers mainly to property rights and coordination mechanism.
 - Capitalism is based on private ownership and market coordination.
 - Socialism is hinged on state ownership and centrally-planned coordination.

Comparison of the socialist systems

	The USSR	Market Socialism	China (before reform)	North Korea (before the 1990s)
Property rights	State ownership	State/public ownership	State ownership	Strict state ownership
Coordination mechanism	Mainly central planning	Indicative planning/ planning mimicking a market mechanism	Inefficient planning and intensive mass mobilization	Inefficient planning, spot guidance and constant mass mobilization

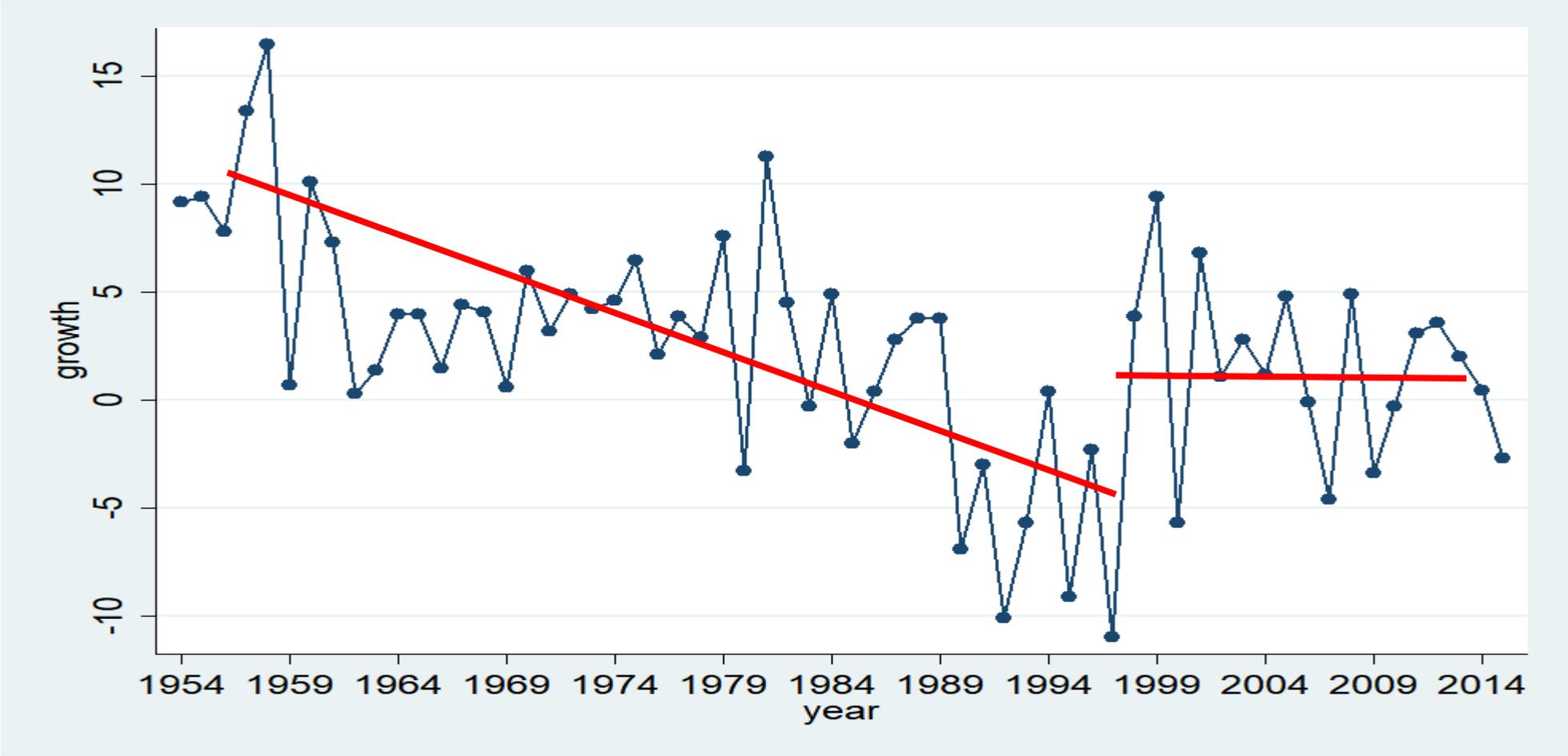
Incoherent coordination mechanism

- Central planning has been disrupted by spot guidance and mass mobilization, causing failure in coordination mechanism.
- Spot guidance of the N. Korean leaders has been used mainly for political propaganda.
 - They visited firms, farms, army organizations, etc.
 - Whenever the leader goes for spot guidance, specially designated money or inputs are spent on the spot to achieve high performance.
 - Subsequently, mass media boasts that the spot guidance made such great impact on the performance of the factory or the farm.
 - The effect of spot guidance on the economy appears at least neutral or even negative.
- N. Korean economy had been inefficient by one-third compared with the Soviet one, controlling for income per capita (Kim et al, 2007).

Kim Jong-il's spot guidance

Year	No. of Spot Guidance
1995	34
1996	53
1997	55
1998	96
1999	100
2000	87
2001	107
2002	106
2003	87
2004	86
2005	108
2006	105
2007	95
2008	120
2009	205

Long-run growth performance



Sources: updated from Kim (2017) and Kim et al (2007)

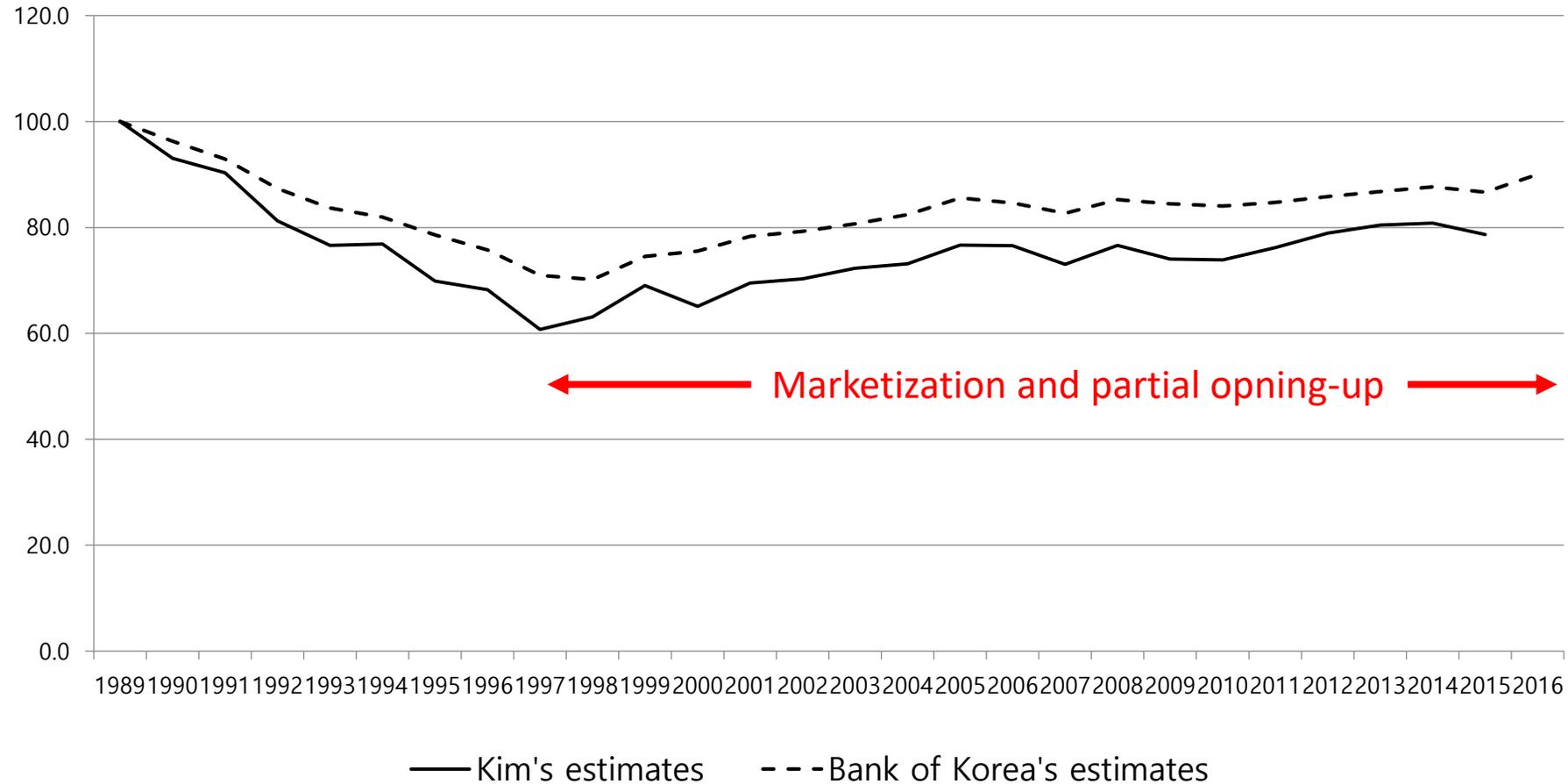
The Great Divide

GDP per capita of South and North Korea (nominal US \$)

	South Korea (1)	North Korea (2)	Ratio (1)/(2)
1963	100	-	
1973	404	-	
1983	2,113	-	
1993	8,402	568	15.1
2003	13,460	593	28.9
2014	27,971	770	36.3

Source: updated from Kim (2017)

Trend of GDP since 1990



Sources: updated from Kim (2017) and Bank of Korea (various years)

Marketization from below

- Income from the informal (market) sector accounts for more than 70% of total household income.
 - Official salary is on average less than 1 US \$ if the shadow exchange rate is applied.
- Some people accumulate a large sum of money by market activities and foreign trade.
 - Private financiers called *Donju* are reported to finance some private businesses and government project.
- Firms purchase some inputs from markets and sell them at markets.
 - Firms allow workers to participate in the informal economy on the condition that they pay to firms a specified amount of money.
- Unofficial privatization has been taking place mainly in the small service sector (restaurants, kiosks, means of transportation).
- Real estate markets (pseudo-ownership) are established without legal recognition.

Marketization compared

	The USSR (1954-1991)	North Korea (1996-2009)
The share of income from the informal sector in total household income	16%	At least 70%

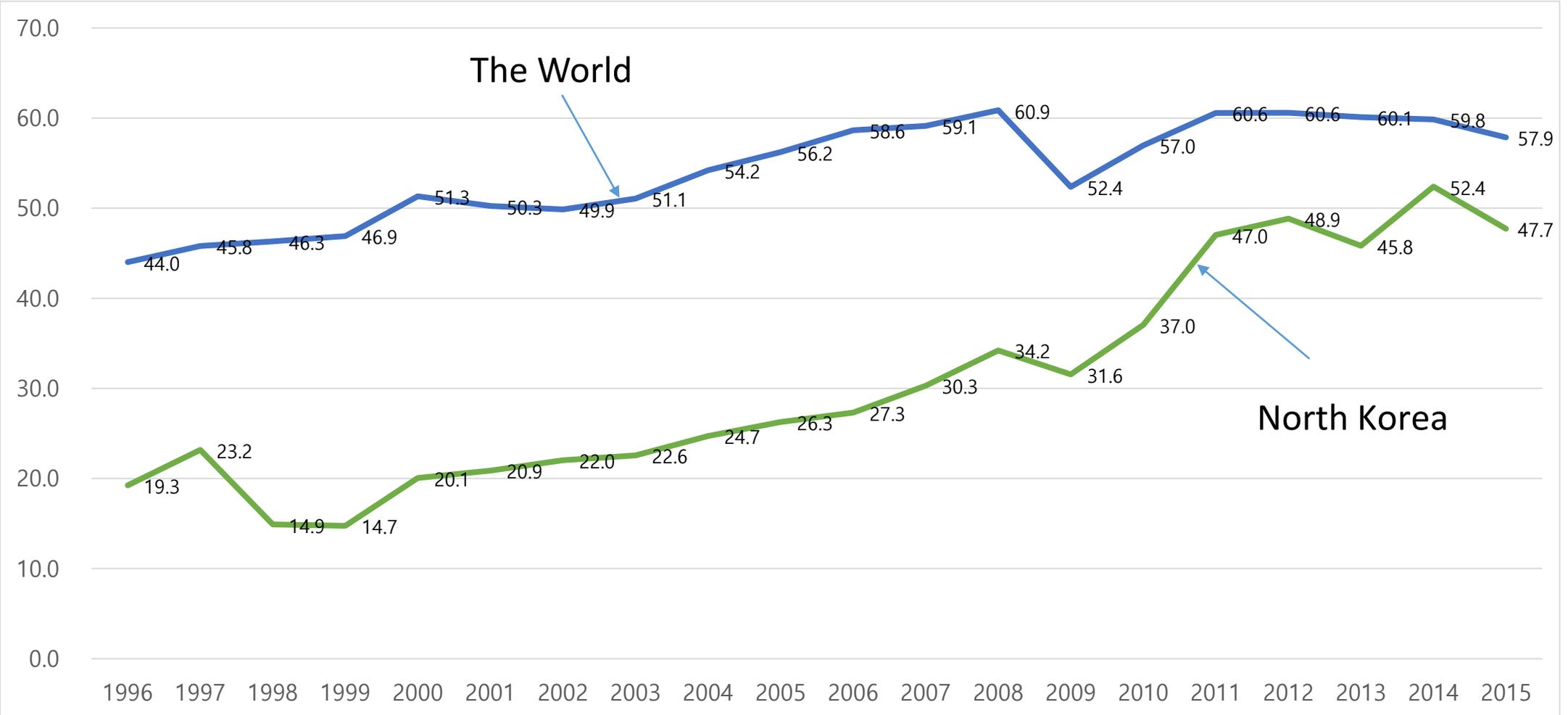
Sources: Kim (2003) and Kim (2017)

- The extent to which the North Korean socialist economy is marketized is unprecedented in the history of socialist economies.
- This extent of marketization from below may be regarded as a threat to the socialist legitimacy and thus to the regime.

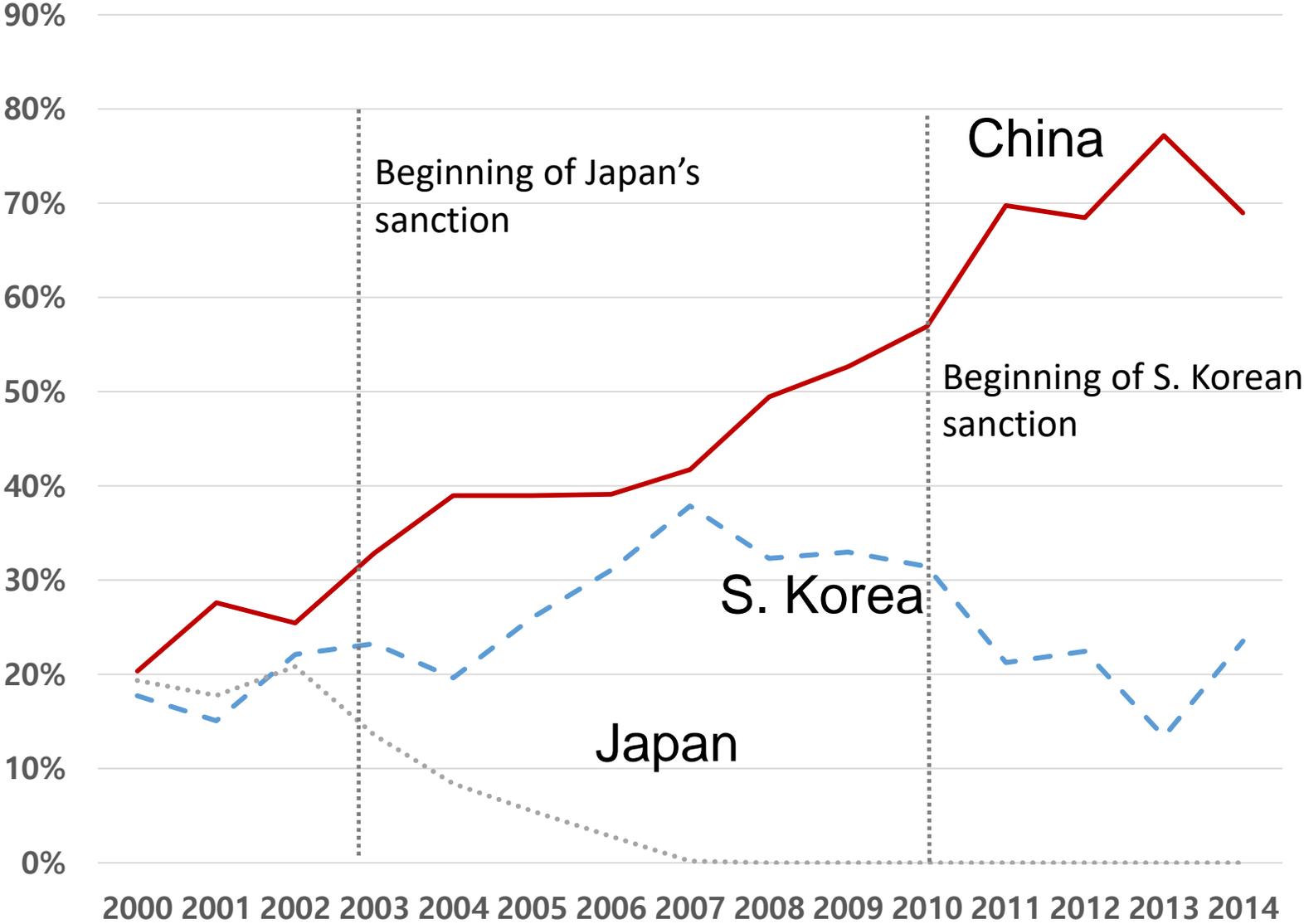
High trade dependency

- N. Korean can be regarded as an open economy in terms of the share of trade in GDP.
 - The amount of its external trade (KOTRA data) including the two Korea's trade in 2014 is 9.95 bn USD.
 - According to Kim, N Korea's GDP in 2014 is 18.9 bn USD. This yields that the share of trade in GDP is about 52%.
 - Most of trade is conducted with China.
 - Illicit trade that is not included in the official trade data is believed to be significant.

North Korea's trade dependency ratio



Trade partners of North Korea



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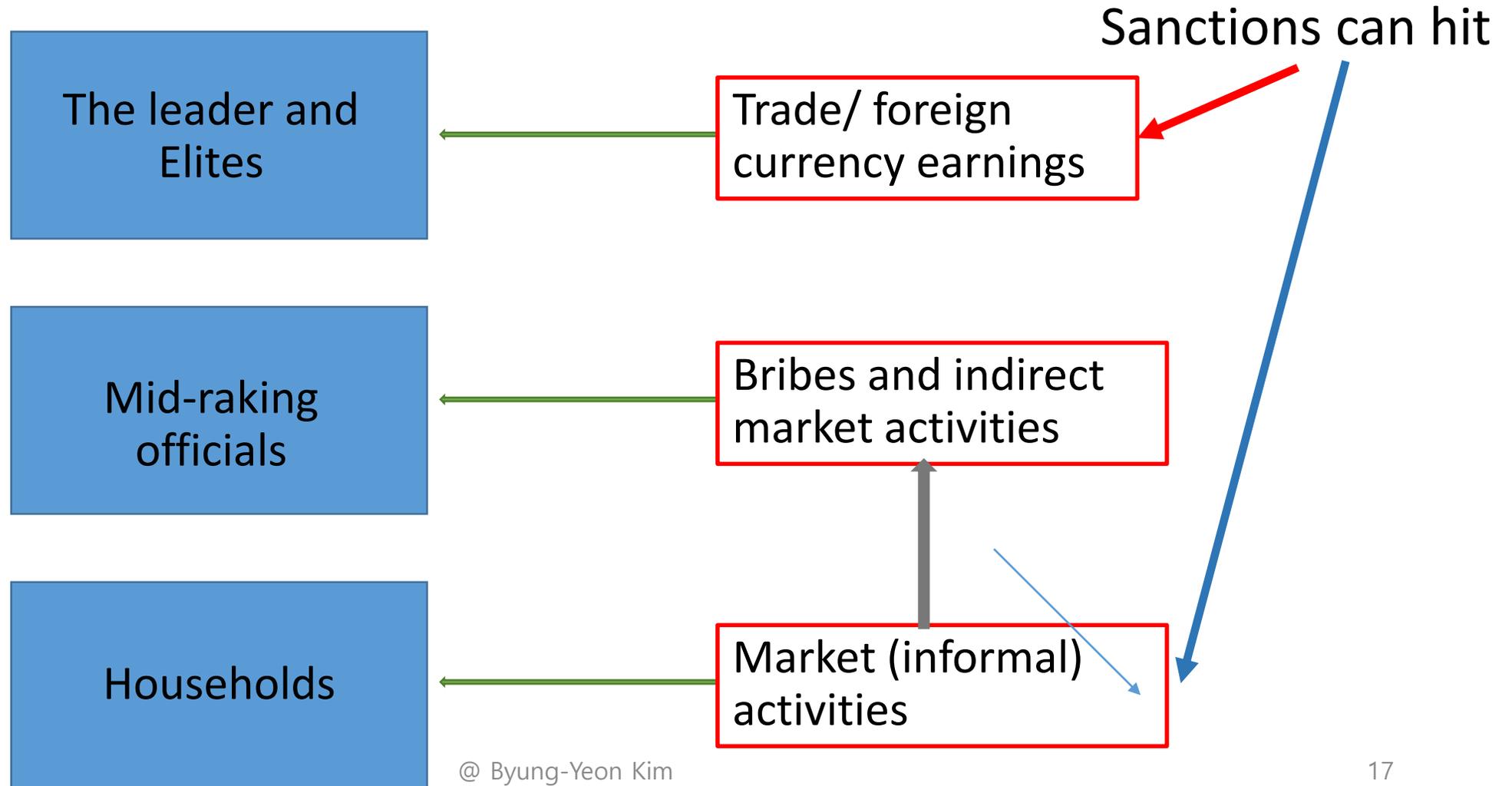
Why did Kim come to a negotiating table?

- Three hypotheses
 - Economic sanctions
 - Concern about military action of the US
 - Confidence upon completing the development of nuclear weapons and ICBMs
- Which one is the most likely?

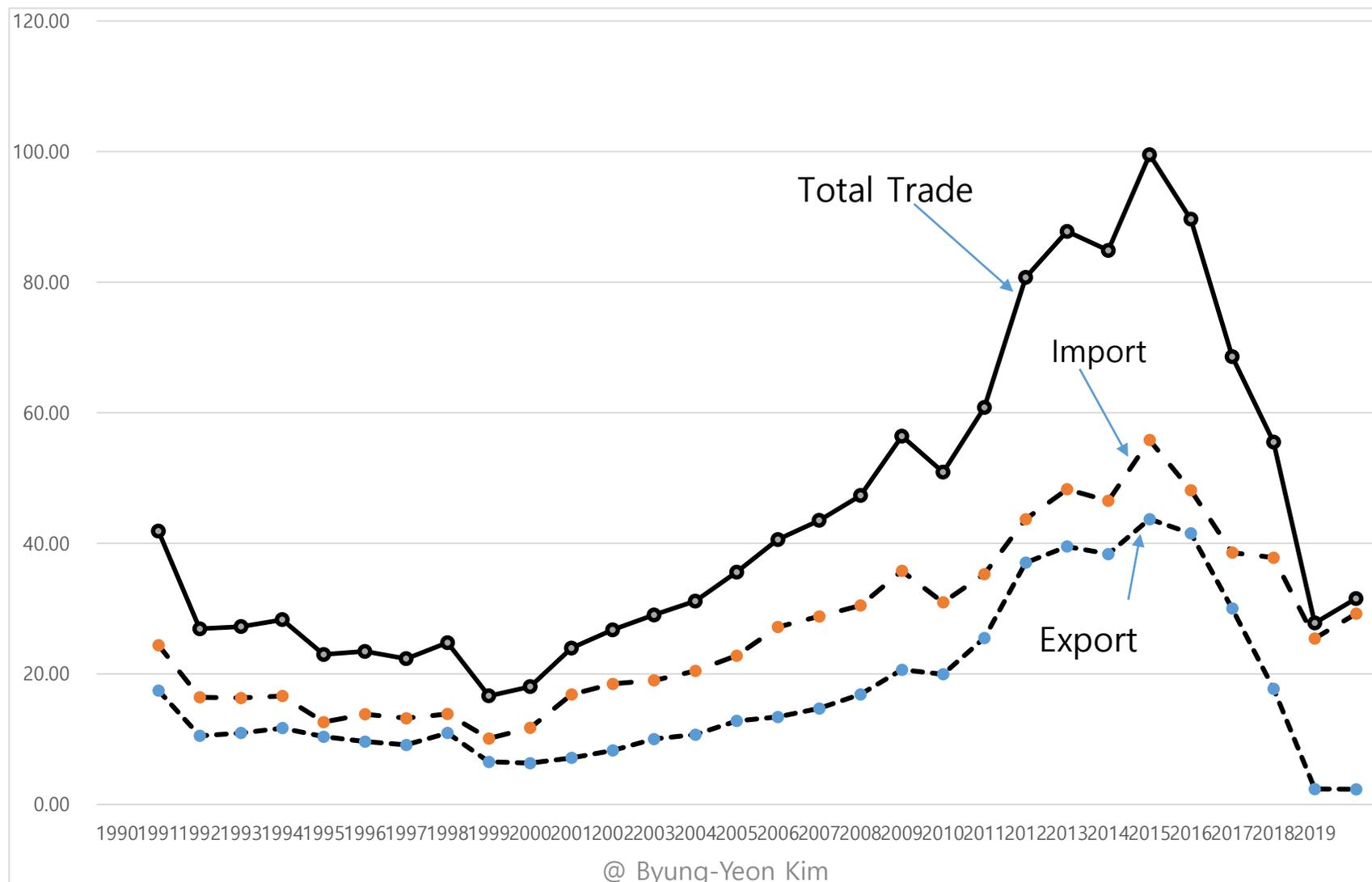
Economic sanctions

- Markets and trade are estimated to account for about two-thirds of N. Korea's growth.
- N. Korea's growth rate is expected to decline by 5% point if the UN sanctions are implemented fully and thus N. Korea's export decreases by about 90%.
 - N. Korea's export reduced by 37% in 2017, which can be translated into at least -2% growth rate.
 - Bank of Korea estimated growth rate in 2017 was -3.5%.
- Decrease in trade is likely to shrink market activities.

Income sources of North Koreans and sanctions



Trend of North Korea's Foreign Trade



Scenarios for the two Koreas

	Factors	Similar cases
Scenario I: Gradual integration followed by transition	<ul style="list-style-type: none"> • Decision by the political leader • Transition by pressure from the marketization process 	<ul style="list-style-type: none"> • Chinese transition • No case for unification
Scenario II: Status quo	<ul style="list-style-type: none"> • No intention for transition • Hostile relation between SK and NK 	Inter-Korean relations in the 2000s
Scenario III: Peaceful but radical unification by South Korea's initiative	<ul style="list-style-type: none"> • Uprising in NK • Power vacuum in NK 	German unification
Scenario IV: Radical unification after violent conflicts in North Korea	<ul style="list-style-type: none"> • Military conflicts among the elites in NK • Use of violence to repress uprising in NK 	<ul style="list-style-type: none"> • Arab's Spring • Violent transition in FSU and E. Europe

Scenario 1: Gradual unification process followed by economic integration

- Assumptions
 - Unification through gradual economic integration
 - Peaceful unification
 - North Korea's transition toward a market economy
- This suggests an interim state of “two separate regions but one market economy” before the completion of political unification.

Economic Effects on North Korea

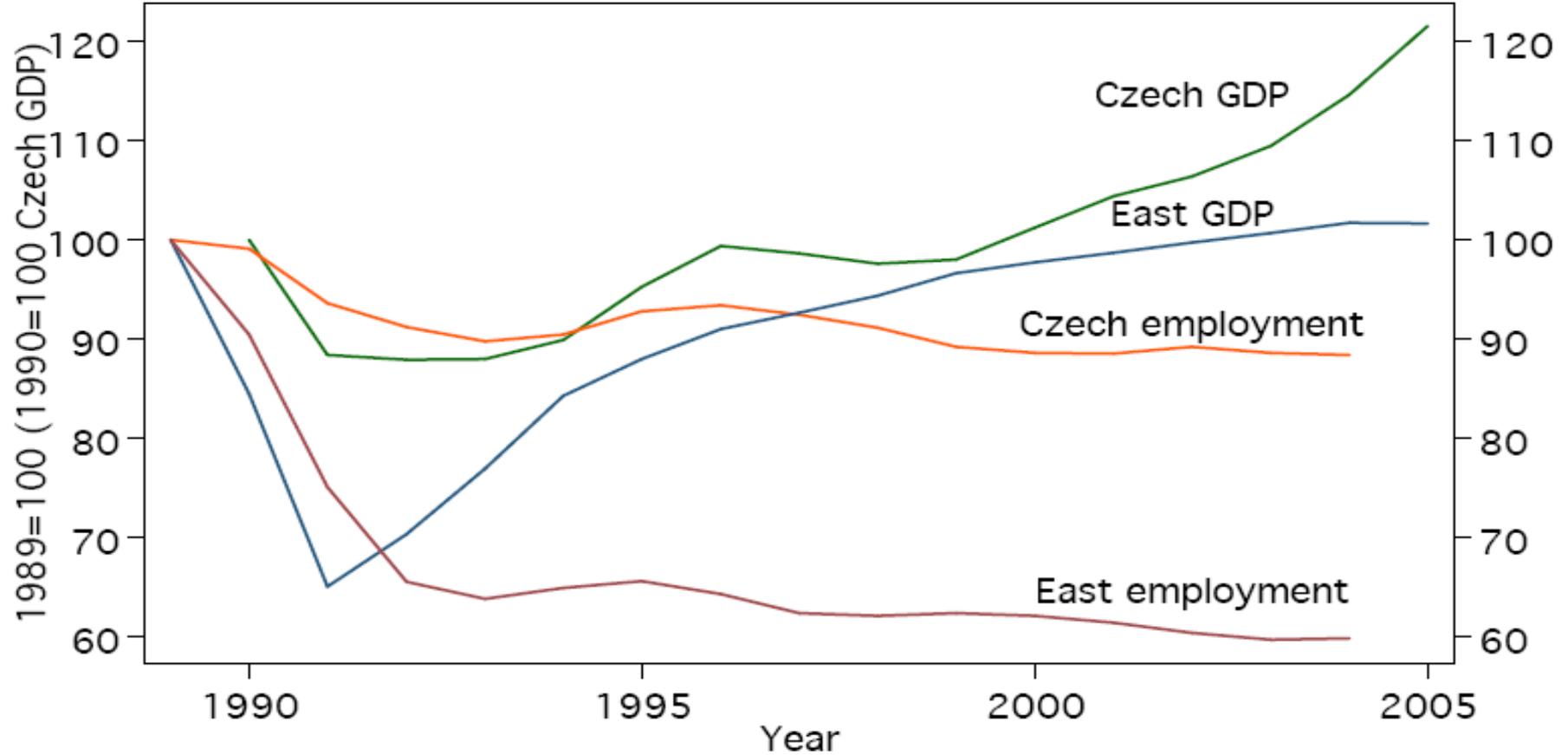
- Expected to display a very high growth in North Korea.
 - Low income per capita
 - No constraints on capital and technology
 - Transition effect
 - Integration effect
 - High investment and rapid improvement in human capital
- Estimates suggest that North Korea is able to achieve growth rates ranging from 6% to 15% per annum for a sustained period.

Scenario III: German-type unification

- This scenario will incur large short-term costs in spite of substantial long-term gains.
- Estimates of total unification costs can be up to four or five times of South Korean GDP.
- Macroeconomic stability (eg. fiscal deficit; exchange rates, interest rates) is a key concern.
- Unification cum transition is likely to be much costlier compared with transition without unification at least in the early period of unification.
 - One reason would be a mismatch in human capital.

Unification is more difficult

Figure 1: Czech and East German Comparisons



Source: Hunt, 2006

Scenario III: Risks

	Germany	Korea
Costs	3 trillion USD	
Population	4 (WG) : 1 (EG)	2 (SK) : 1 (NK)
GDP per capita	100 (WG): 30 (EG)	100 (SK) : 3 (NK)
Shocks on the macro economy		
Exchange rates	Exit of Pound and Lira from ERM	Large shock is expected
Interest rates	Increase by 2-3 times	Large shock is expected
Change in political regime	Unlikely, given proportion of population	More likely

Human Capital of North Koreans

- In 2014, we conducted Raven tests using 161 North Korean refugees and the same number of South Korea – born residents.
- In 2015, we conducted the same test using 191 North Korean refugees, 193 South Korea-born residents in Seoul, and 72 Chinese-Koreans.

Raven Progressive Matrices Test

- 24 Raven Matrices Test in paper within 10 minutes.

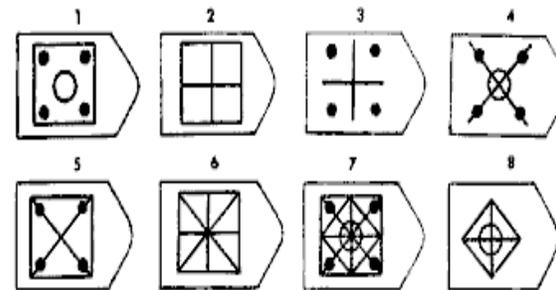
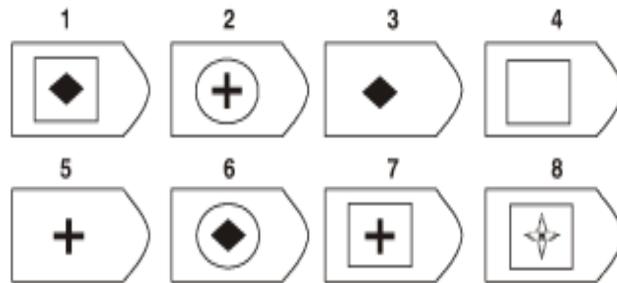
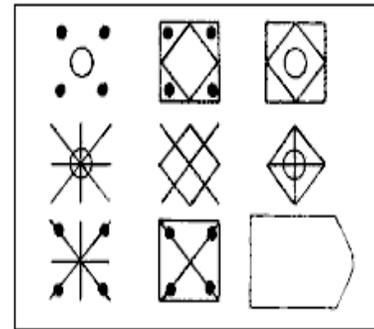
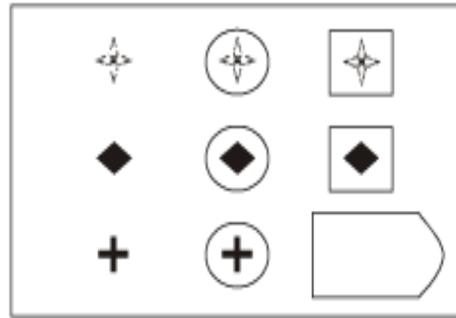


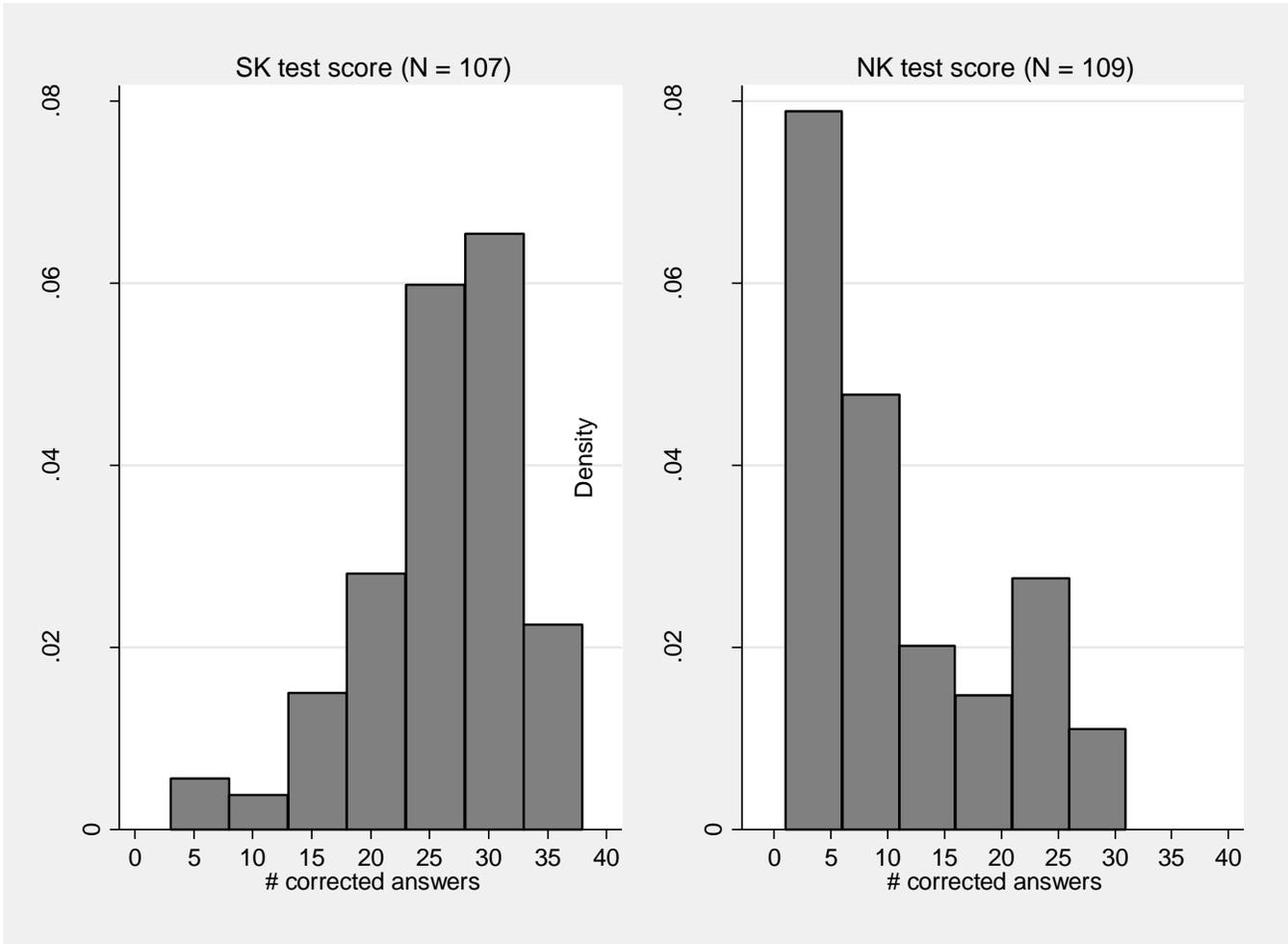
Figure 2 - Raven's progressive matrices

Raven test results: 2014 sample

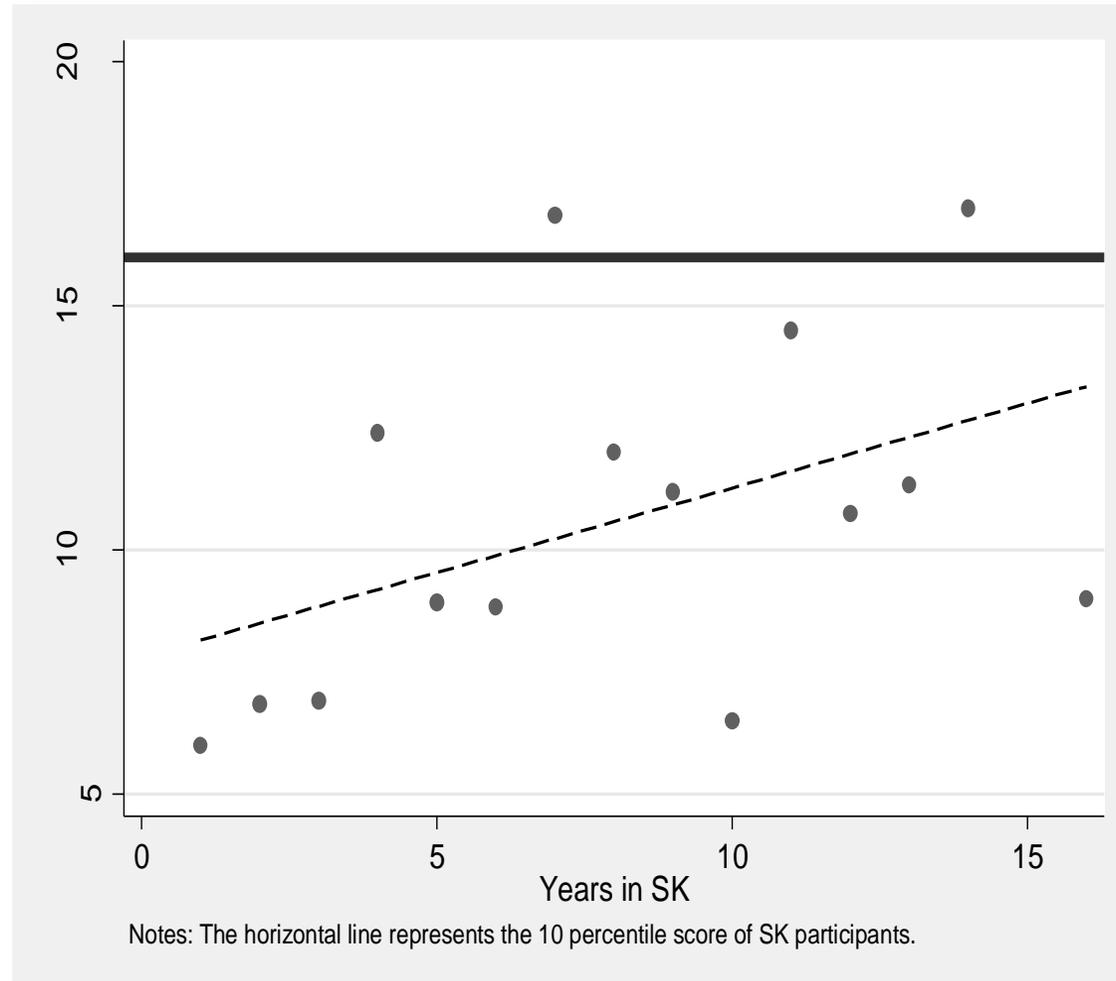
Description of Raven test results

		T1		T2	
		NK	SK	NK	SK
Mean		9.79	24.83	11.38	26.06
Std. Dev.		7.74	7.51	8.82	6.01
Obs.		57	54	52	53
Percentiles	Max	29	36	28	36
	95%	25	35	27	33
	90%	23	34	25	32
	75%	15	30	20.5	20
	50%	6	25.5	7	28
	25%	4	22	4.5	25
	10%	3	15	3	17
	5%	2	6	2	13
	Min	1	3	2	9

Distribution of Raven test results



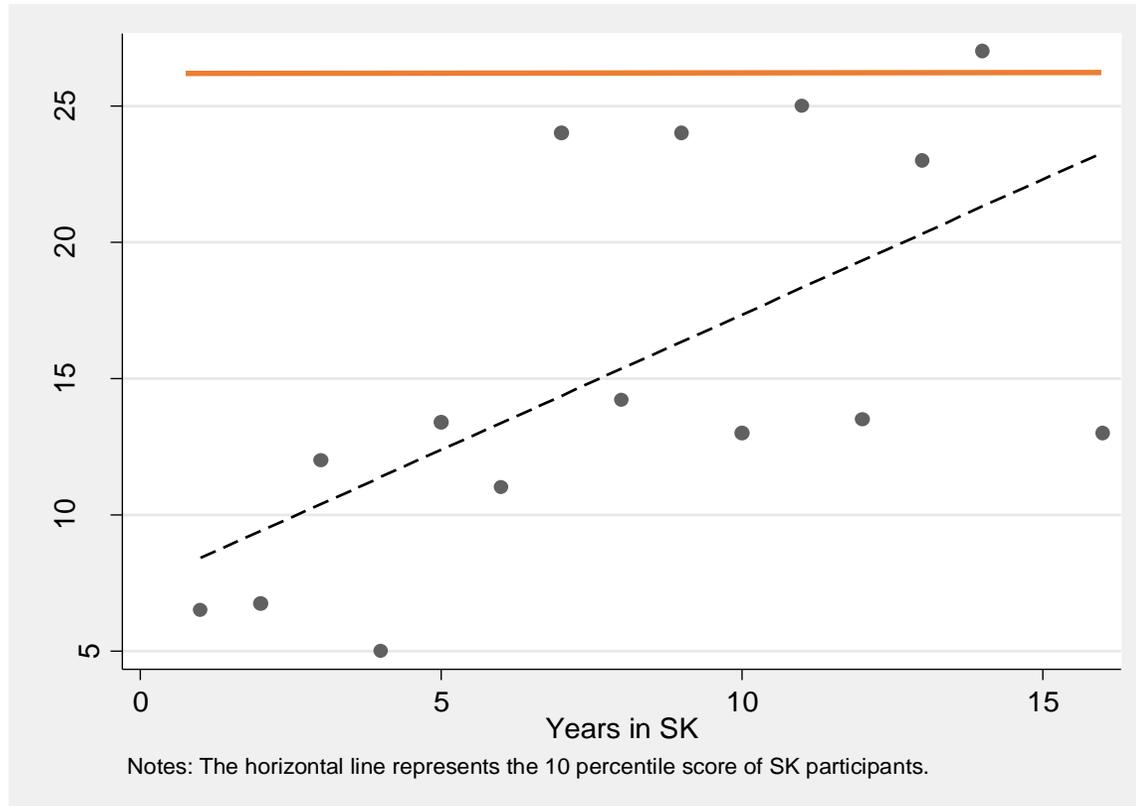
Convergence of cognitive ability



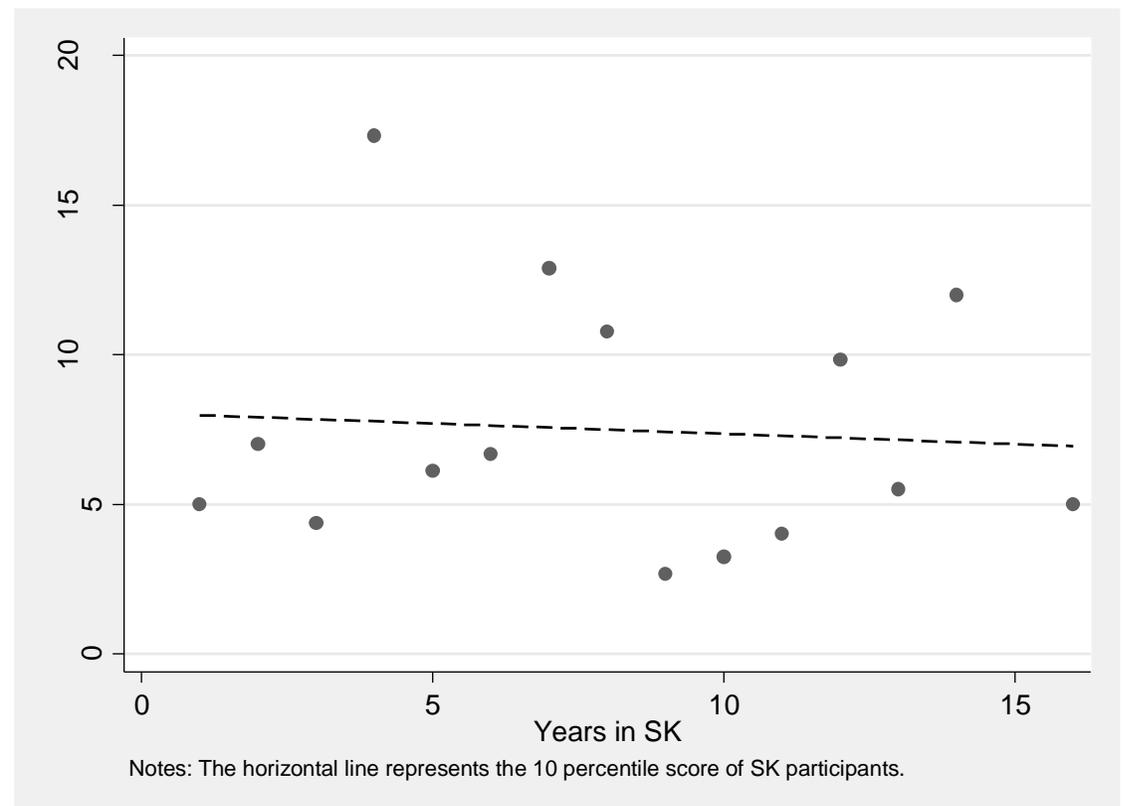
← Bottom
10% of S.
Korean
sample

Convergence of human capital according to age groups

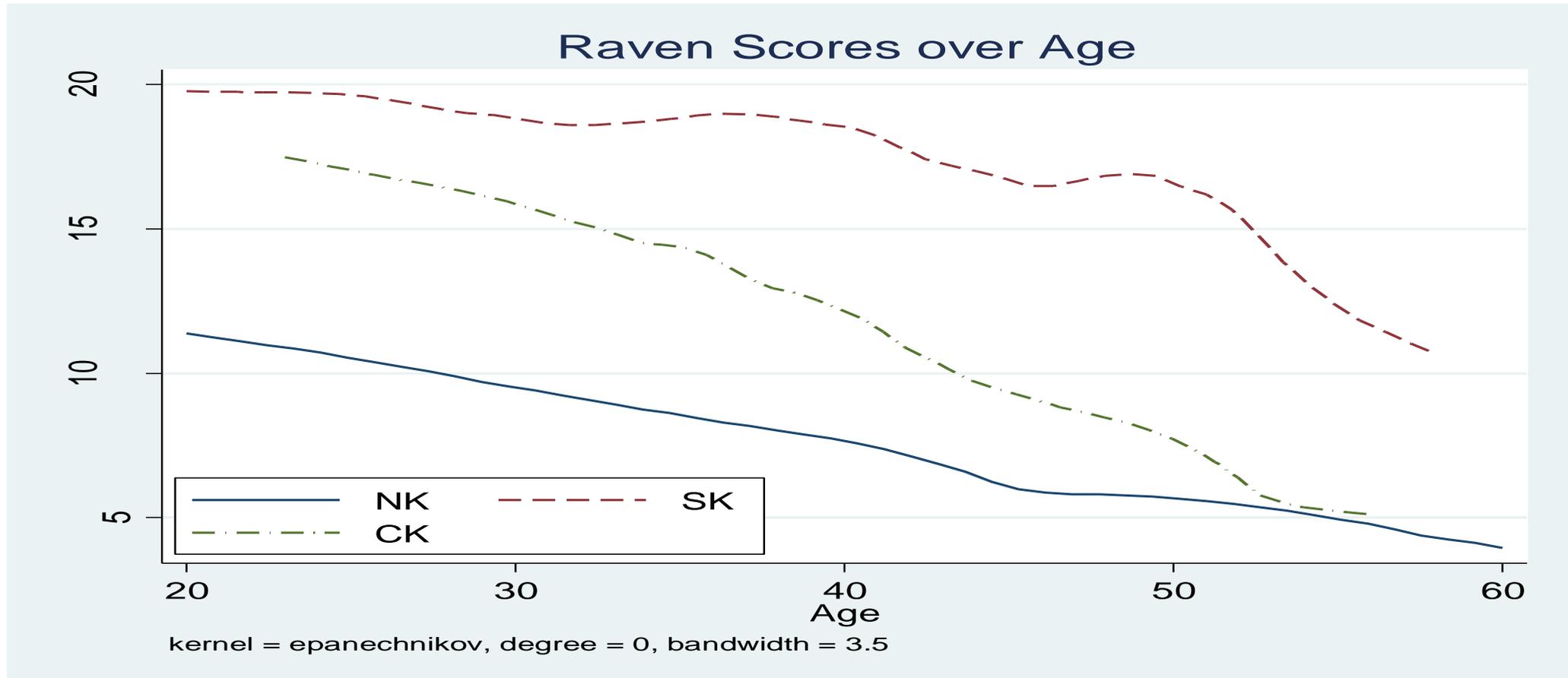
Those who aged less than or equal to 35



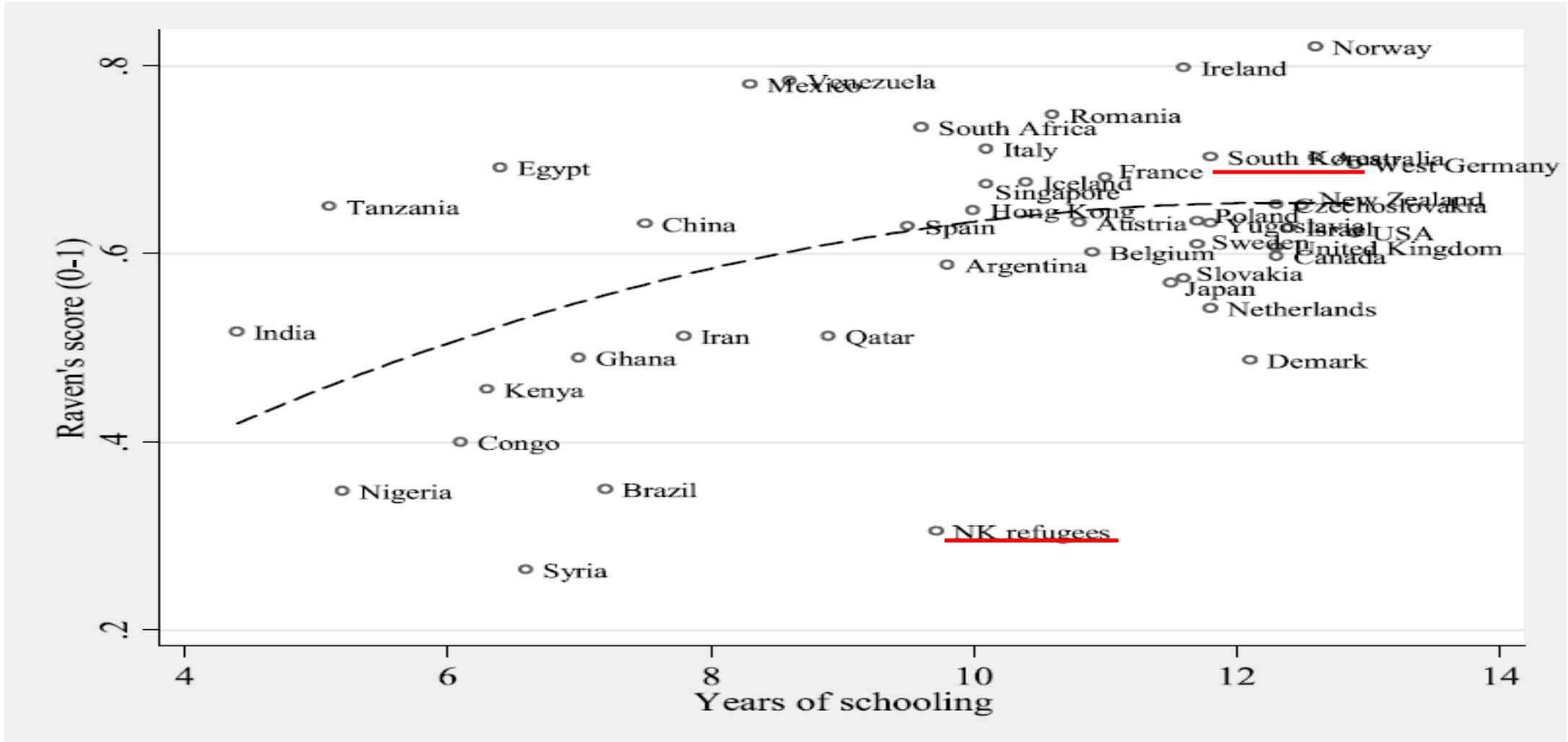
Those who aged above 35



Raven test in 2015



International comparison of Raven test scores



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Source: Kim and Lee (2018)

Test of Giving behaviour: Sampling structure

NK subjects

Newcomers

(Aug. ~ Sept. 2011)

College students

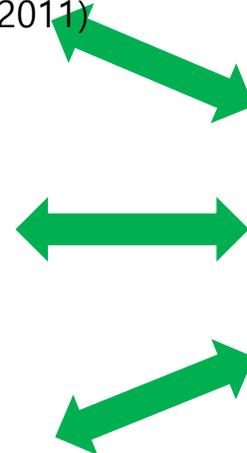
(May 2012)

Returning newcomers

(June~July 2013)

SK subjects

College students

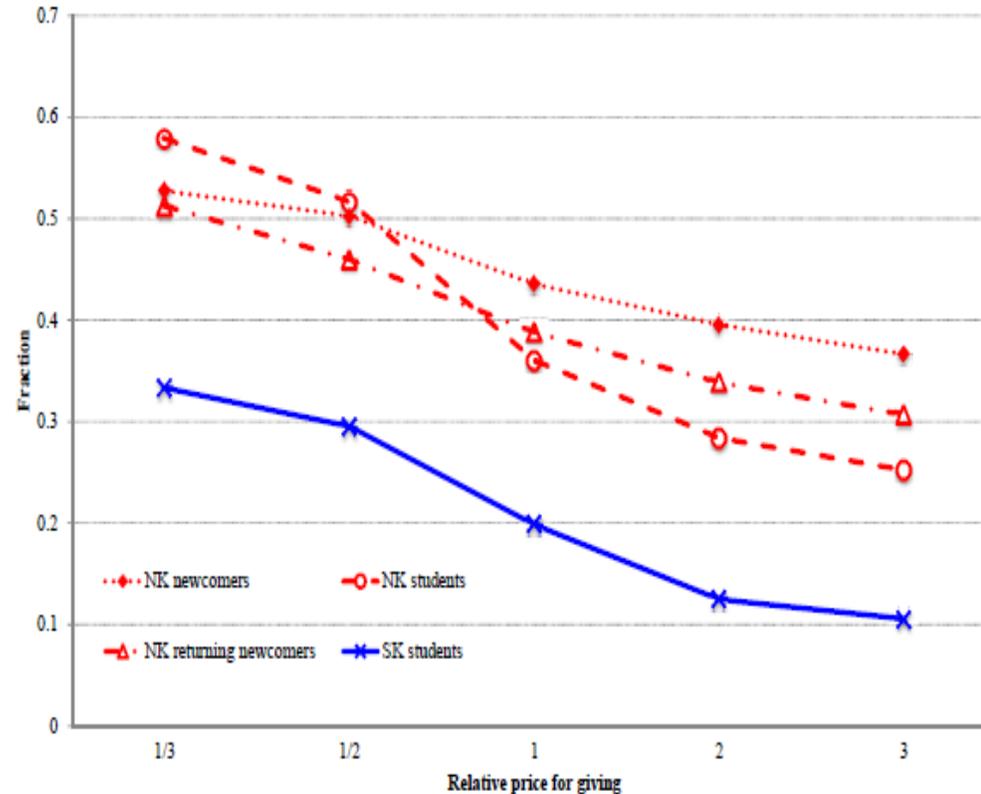


Description of Samples

	NK subjects				SK subjects			
	Newcomers (Study 1)	Students (Study 2)	Returning newcomers (Study 3)	All	Study 1	Study 2	Study 3	All
Male	0.37	0.28	0.30	0.33	0.58	0.52	0.62	0.58
Age	36.28	25.50	41.42	34.67	21.36	22.05	22.89	22.09
Years in North Korea	35.15	16.68	38.27	31.11				
Months in South Korea	10.86	62.43	34.18	29.83				
Number of subjects	133	72	66	271	166	80	157	403

- The group of NK newcomers are older than SK subjects.
- The group of NK college students are much more similar to SK subjects: of similar age and enrolled in a university in Seoul, at the time of the studies.

Average Behaviour of Giving against an SK Opponent



- Facing an SK opponent, NK subjects gave more about 20% more than SK subjects.
- The behavior of SK students is consistent with the findings with Western university students in the literature (e.g., Andreoni and Miller 2002; Fisman et al. 2005)

Possibility of economic engagement

- Kim's factor: Given his age, Kim Jong-un is likely to be a stationary bandit rather than a roving bandit.
 - The shift of his policy toward economic development and his implicit acceptance of markets also suggest this possibility.
- N. Koreans' factor: The N. Korean public expectation on better life has increased at least partially due to marketization, foreign trade, and the spread of information on outside world.
- These suggest a possibility that Kim Jong-un now realizes economic development delivers higher return for his keeping power than having nuclear weapons.
- His concern on securities can be met with economic measures (eg, intensive economic transactions and investment) as well as diplomatic ones (eg. peace treaty).

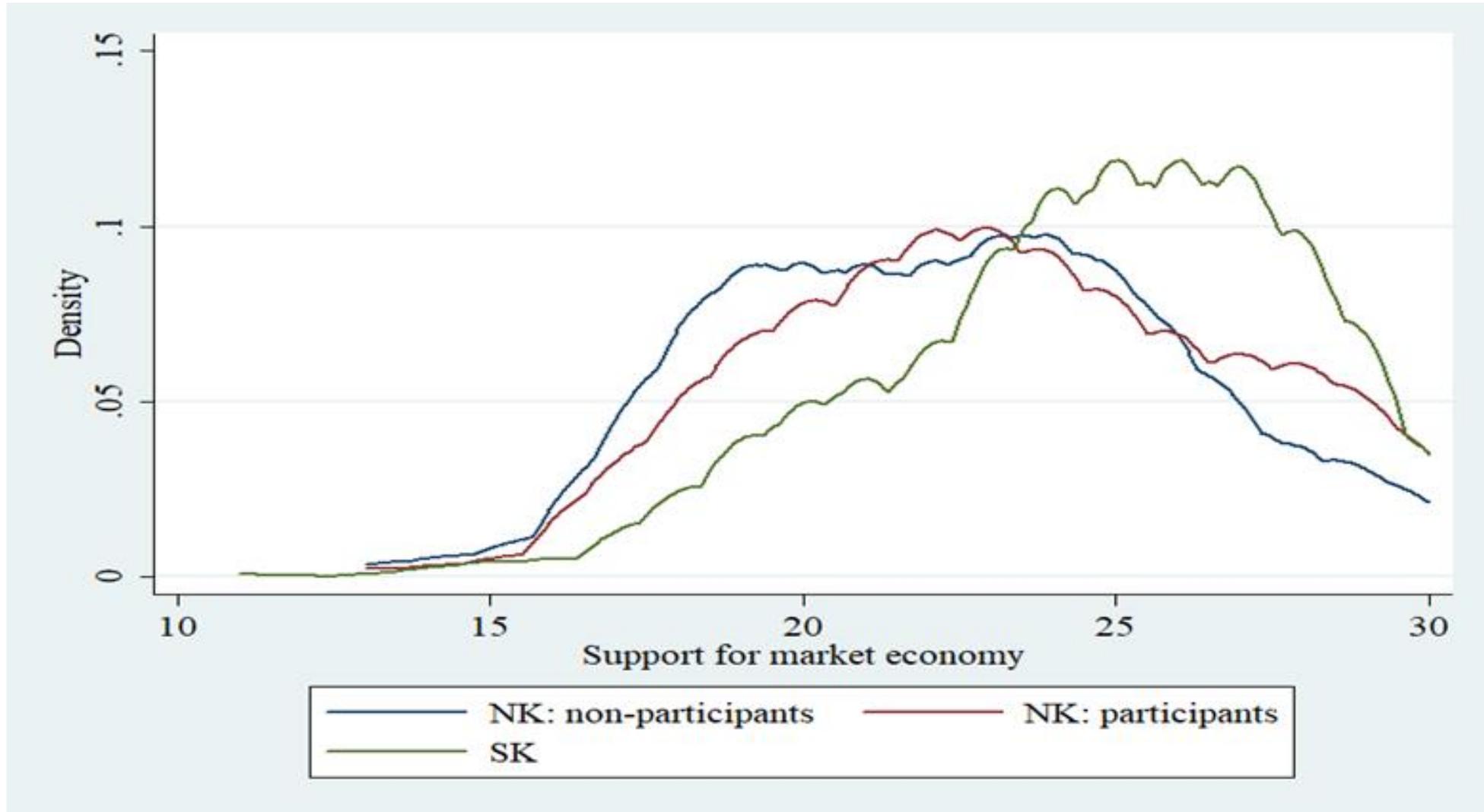
Economic engagement posterior to lifting the sanctions

- Further changes in the N. Korean society are possible due marketization of her economy.
- Markets affect the following aspects:
 - The mindsets of people
 - Incentive structure of government officials through bribery
 - Informal small-scale privatization
- The above factors will push Kim Jong-un to the road to a market economy.
 - The public mind will change in favor of a market economy.
 - Government officials are bribed to accept market activities. Kim's order to repress markets is unlikely to work. They act as protectors for market-related activities.
 - Government assets are informally sold to (a group of) individuals.

Market activities and public support for capitalism

- Support for markets are measured using support for private ownership (vs. state ownership), competition (vs no competition), and performance-based salary (vs. equal salary).
- Suppose the extent to which S. Koreans and N. Korean refugees who have not participated market activities support markets is 100 and 0, respectively. The level of support by N. Korean refugees who participated in such activities is 36 (Kim and Kim, 2018), .
- This difference is clearly pronounced as well in regressions where other factors are carefully controlled.
- This result indicates that marketization induces the public to support a market economy than socialism. This process will be intensified further when market activities become more prevalent and stronger than before.

The effects of market activities on public support



Source: Kim and Kim (2018)

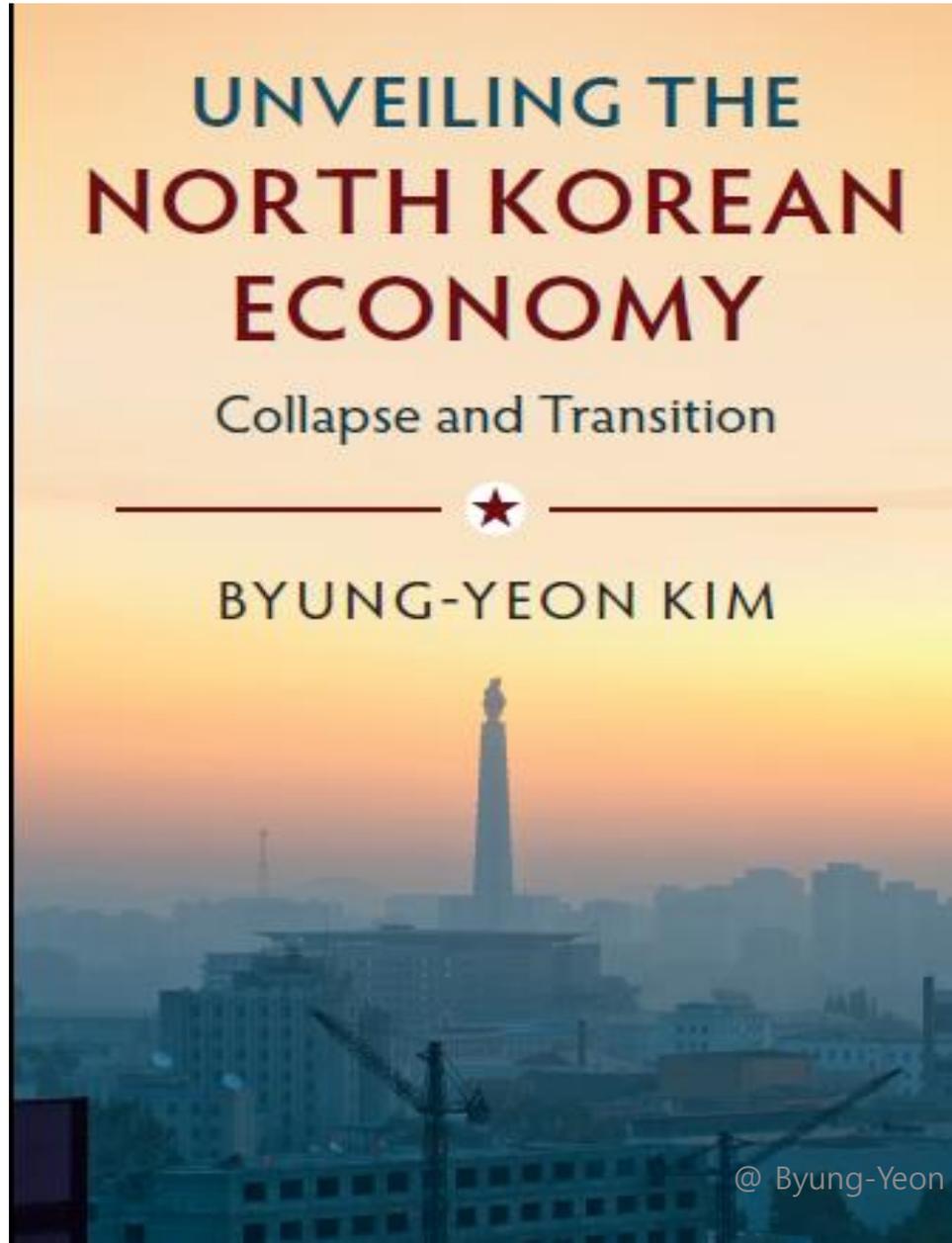
Effects of market activities on control over society

- The informal economy is closely associated with bribery. Most of bribes in N. Korea is directed to those who have power to allow, to protect, and not to penalize market activities.
 - The participation in the informal economy increases the probability of giving bribes by 60%.
 - By giving bribes, official working hours reduce from 45 hours per week to 36 hours per week.
- Working hours in official workplaces decrease by 35% because of holding informal jobs.
- Government officials have two conflicting incentives (incentive misalignments).
 - Political incentives
 - Economic incentives
- Control over the society becomes more difficult because of incentive misalignments of government officials and weakening official economy.
- This indicates possible collusion between market participants and government officials.
- Informal small-scale privatization can be interpreted as evidence of such collusion.

Long-term challenges

- Marketization will transform not only the structure of the economy but also the mindsets of the people.
- According to Kim (2017), those who involve in market activities are more likely to support the market economy than those who did not.
- Economic sanctions are likely to affect North Korea's future.
- Improving human capital of North Koreans is key to successful integration of the two Koreas.

My new book (Cambridge University Press, 2017)



Reviewed by
Financial Times (4th
September)

A scholarly and
important work
providing academic
rigour and rare data