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Determinants of Economic Growth in Transition Economies: Implications for Economic Reform in North Korea

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JEONG Hyung-Gon Senior Research Fellow, Cooperation Policy Team, Department of Northeast Asian Economics, KIEP (hgjeong@kiep.go.kr)
KIM Byung-Yeon Department of Economics, Seoul National University (kimby@snu.ac.kr)
LEE Jae Wan Visiting Research Fellow, KIEP
BANG Ho Kyung Senior Researcher, Cooperation Policy Team, Department of Northeast Asian Economics, KIEP (bassgu@kiep.go.kr)
HONG Yi Kyung Researcher, Department of International Cooperation Policy, KIEP

1. Background and Purpose

Instability in the North Korean economy and regime stands out as one of the most important challenges for the South Korean economy. However, despite the significance and severity of the issue, there is presently a comparative lack of research on the potential for change in the North Korean economy, or policy preparedness in the event it occurs.

The purpose of this study is to suggest policy measures that would support the successful transition of the North Korean regime. To this end, the study estimates the determinants of economic growth of both market economies and transition countries. Furthermore, the study examines the characteristics of economic growth determinants by income level and draws implications for North Korea's transition to a market economy. Based on theoretical and empirical analysis, this study brings North Korea's transition and economic growth issues into the spotlight to elicit policy measures for the regime's economic growth, while at the same time suggesting the general direction for inter-Korean economic cooperation on the part of the South Korean government.

2. Research and Analysis

This study conducts an empirical analysis on economic growth determinants by income level, on the assumption that key determinants of economic growth differ by transition country and income level [low-income, middle-income, high-income (OECD member countries)]. We estimate the model below using both fixed effects and system GMM methods.

$$\Delta \ln g_{it} = a + \alpha \ln g_{i,t-1} + \beta' X_{it} + v_i + v_t + \varepsilon_{it}{}^{1}$$

[Table 1] summarizes our main empirical results. Given that North Korea is a transition country and an underdeveloped nation at the same time, it is necessary to focus on the economic growth determinants corresponding to each of these classifications in the context of North Korea's economic growth in the early stages of reform. Determinants by income level in North Korea should also be taken into account after the transition has occurred.

[Table 1] Summary of Analysis on Economic Growth Determinants

	All countries		Low-income countries		Transition countries	
Estimation method	Fixed effects	System GMM	Fixed effects	System GMM	Fixed effects	System GMM
Scalar variable						
Human capital	+	+			+	
Domestic investment	+	+	+	+	+	+
Export shares	+		+	+		
Infrastructure	+	+				+
Inflation rate	-				-	-
FDI				+	+	+
Institutional conditions	+	+	+			
Transition-related variables						
Large-scale privatization						
Small-scale privatization						+
Corporate restructuring						+
Price liberalization						
Trade/Foreign exchange systems					+	+
Competition policy						

Note:

*: +, - each indicates the statistically significant positive and negative impact on the dependent variable. Blank cells indicate that there was no statistical relevance.

**: While scalar variables are included in all equations, transition-related variables are only included in equations that employ transition countries as a subject. The regression analyses conducted on transition countries contain one transition-related variable each, which makes 6 regression equations in total; presented variables were relevant to at least two of the equations.

***: Per capita GDP of the preceding period was not featured, since it is not a policy variable.

Source: Jeong *et al*. 2014. Determinants of Economic Growth in Transition Economies: Their Implications for North Korea. KIEP.

[1] i: country, t: year, $\ln g$: log value of real per capita income, X: investment, human capital, openness, FDI, macroeconomic conditions, institutional conditions, etc., v_i: unobserved national attributes that do not change with time, v_t: unobserved time attributes that do not change by nation. ε_{it}: independent and identically distributed random variable $\varepsilon_{kjt} \sim i.i.d.(0, \sigma_\varepsilon^2)$

Of the scalar variables, domestic investment was relevant in all regression equations, while human capital, export shares, inflation rates, FDI, institutional conditions and infrastructure were relevant in different ways, depending on the type of nation. FDI was a determinant that had a relevant impact on economic growth in underdeveloped nations and transition countries; meanwhile, infrastructure turned out to be a variable that held no significance for underdeveloped nations. This implies that in underdeveloped nations, building large factories or investment in machinery hold more importance than infrastructure, due to the ensuing impact on economic growth. On the contrary, it was discovered that investment in infrastructure had a significant impact on economic growth in transition countries, since production power from their socialist days has been retained. In low-income countries, exports affected economic growth - implying that exports can drive the economy in such countries that tend to have weak domestic demand. Meanwhile, lower inflation rates in transition countries had a relevant impact on economic growth.

Regarding the transition-related variables, small-scale privatization, corporate restructuring, and trade/foreign exchange systems held relevance. The growth impacts from small-scale and large-scale privatization differ; as small-scale privatization production activity can be boosted within a considerably short period, while large-scale privatization in itself cannot be expected to enhance growth without improving efficiency through corporate restructuring. Meanwhile, the liberalization of trade and foreign exchange systems have proved to have a positive impact on economic growth by increasing trade, stabilizing the macroeconomy and stimulating competition.

[Table 2] and [Table 3] are calculations of the impact of economic growth determinants based on the results of the analysis in this study. The variables that had the highest impact on growth when all nations were included in the subject group were: infrastructure, institutional conditions, human capital and domestic investment, in descending order. When the subject was limited to low-income countries, the order of variables was: domestic investment, FDI and export shares; however, there was not much variation in the growth-driving effect of these determinants. As for transition countries, the outcome was in the order of infrastructure, domestic investment, small-scale privatization, FDI, corporate restructuring, inflation rates, and trade/foreign exchange systems.

[Table 2] Standardized coefficient – All countries and low-income countries

	All countries	Low-income countries
Human capital	0.9272	-
Domestic investment	0.2404	0.6650
Export shares	-	0.4350
Infrastructure	3.3424	-
Inflation rates	-	-
FDI	-	0.5571
Institutional conditions	2.2993	-

Note: The standardized coefficient was calculated as the impact on growth when each determinant improves by one standard deviation.

Source: Jeong *et al.*(2014)

[Table 3] Standardized coefficient – Transition countries

	(1)	(2)	(3)	(4)	(5)	(6)	AVG
Domestic investment	0.4696	0.6804	0.8473	0.5847	0.4923	0.3886	0.5772
Inflation rates		-0.3208	-0.3208			-0.3208	-0.3208
Infrastructure	1.1351		0.3816	0.5920	1.1092	0.5702	0.7576
FDI	0.5389					0.3756	0.4573
Small-scale privatization	-	0.5323	-	-	-	-	0.5323
Corporate restructuring	-	-	0.4481	-	-	-	0.4481
Trade/Foreign Exchange Systems	-	-	-	-	0.2946	-	0.2946

Note: The standardized coefficient was calculated as the impact on growth when each determinant improves by one standard deviation.

Source: Jeong *et al.*(2014)

3. Policy Suggestions

Based on the analysis of determinants that can advance North Korea's economic growth and sequencing of policies, this study presents economic cooperation policy measures for the South Korean government in dealing with North Korea.

(On determination of policy sequence) The sequence of policies should be decided. First, institution as a fundamental determinant of economic growth, and second, the complementarities and dynamic reinforcement between policies, as well as their political constraints.

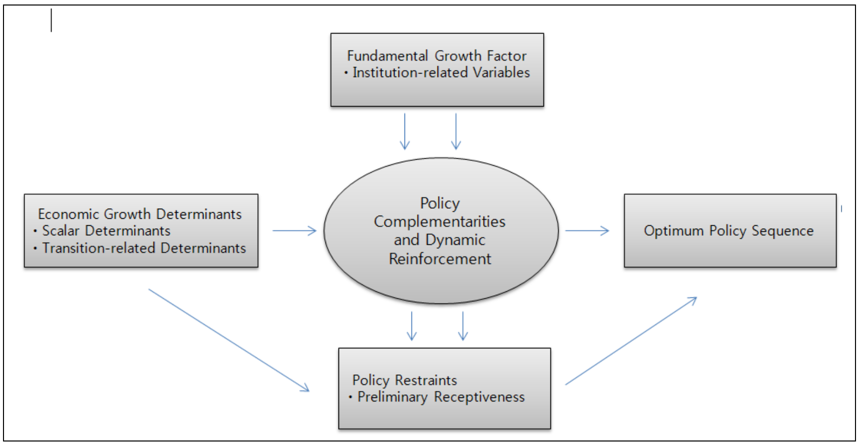
(Short-Term - Building a foundation for growth) The early stage has been set as a period for raising economic efficiency while maintaining the current economic regime in North Korea. During this phase, the North Korean regime should attempt to diversify policy directions to enhance economic efficiency. This will help lay the groundwork for the stable growth of the North Korean economy.

(Mid-Term - Opening up the economy and supporting export industries) This phase will provide support for the successful adoption of capitalist institutions so that North Korea can seek transition to a market economy. The assumption made here is that North Korea has, at the very least, initiated denuclearization and that the international community has lifted the related sanctions, enabling efforts toward opening of the economy.

(Long-Term - Advancing the industrial structure) This is when the pace of advancement of North Korea's industrial structure is expedited, which would minimize the reunification costs that will occur during the economic integration of the two Koreas. At this stage, North Korea will have mostly completed its transition to a market economy, and would be pushing ahead with large-scale privatization that had been put on hold at the mid-term stage. In this phase North and South Korea will be working in earnest to integrate the two economies, and this must be accompanied by workforce training for advanced industry and large-scale infrastructure investment, with a per capita income surpassing USD 4,000.

Proposals for cooperation measures on the part of the South Korean government have been classified into first, enactment of economic policies to support the development of the North Korean economy; second, economic cooperation assistance including humanitarian and material aid; and third, support in terms of economic diplomacy with the aim of normalizing international economic relations. These were then linked to sequential policy variables for North Korea's economic growth, to be presented in the following phases.

[Figure 1] Optimum sequence for North Korea's economic growth policies



Source: Compiled by author.

To develop a basis for growth in the early stages, the government should carry out policy consultation by forming a "North Korea Policy Consultative Group" under the initiative of a "knowledge-sharing via third countries" project. Aside from this, other tasks would include providing humanitarian aid, normalization of the Kaesong Industrial Complex, delivery of transport and logistics support to build a foundation for growth, and attracting foreign investment.

In the mid-term, the South Korean government should support policy research on regime transition as a strategy for opening the economy and fostering export industries; provide financial support for compulsory education and job training; enhance the forward and backward linkage effects of the Kaesong Industrial Complex and seek to expand investment in special economic zones aside from this region; provide infrastructure for industrial zones linking North and South Korea with other areas; and help North Korea join international financial institutions.

The later stages will be focused on a strategy for supporting the advancement of North Korea's industrial structure. To this end, it is advisable that the South Korean government support the investment for and operation of higher education; seek the transition of Kaesong Industrial Complex into a high-tech industrial structure; provide large-scale infrastructure support, i.e. railways; and seek cooperation on building large-scale funds for investment in North Korea, for instance by establishing a Northeast Asian Development Bank. KIEP