Institutional Spill-Over Effects in Infrastructure Projects funded by Foreign Aid: Case Studies in the Philippines

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1. Introduction

This paper analyzes empirically the indirect effects of infrastructure projects, focusing on institutional spill-over effect. The institutional spill-over effect is defined as the changes and/or innovations that are made inside the actors, transitions in actor's attitude, and/or changes in the rules and law system through projects. It may also include the lessons learned from the projects by the actors. This research observes the institutional spill-over effects and their process during the implementation of infrastructure projects funded by foreign aid. We use the following two case projects in the Philippines: the Circumferential Road No.3 Construction Project (C-3 Project) and the Batangas Port Development Project (BPDP), which were both financed by Japan Bank for International Cooperation (JBIC). We review the process of these projects by the literature survey and interviews with local actors. Then, we analyze the institutional spill-over effects with the simple game models.

2. Case Study 1: C-3 Project

C-3 project was designed not only to rehabilitate the existing parts but also to construct new parts in the northern segment of C-3 located in Caloocan City and Quezon City. Moreover, the C-3 Project was also intended to improve and construct the Makati-Mandaluyong Road as a substitute road for the southern segment of C-3. The project aimed to mitigate the urban transport problems especially the heavy congestion in Metro Manila. The construction was completed and the road was opened to the traffic in February, 1993.

There are the three institutional spill-over effects found in the project. First, the Philippine Government made the amendment of PD 1594. PD 1594 includes the implementation rules and regulations for government infrastructure contracts. The Government made the amendment because the execution agency (Department of Public Works and Highways: DPWH) violated the donor (JBIC)'s guideline. The consultant, Japan Overseas Consultants (JOC) pointed out the violation. Second, DPWH made an exception of escalation clause in PD 1594. This was originally proposed by the constructors who suffered from the spiraling market price of construction materials and a shortage of supply. Third, the local officials learned the technical skill through the on-the-job training. This was realized because the 4-year construction of the

main portion of the project was implemented under the pair-working system in which the Urban Road Project Office of DPWH worked together with the Japanese experts.

3. Case Study 2: BPDP

BPDP was aimed first at improving the freight transportation between the Luzon Island and the Mindoro Island. Second, BPDP aimed to develop the regional economy in the hinterland, and third, to complement the Manila Port as one of the major international ports serving Luzon island in the Philippines. The Batangas Port is located at 110 km south of the Metro Manila, on the northeast coast of the Batangas bay, which is at the southwestern part of the Luzon Island. The construction of Phase 1 in the BPDP was completed in March, 1999.

There are the three institutional spill-over effects found in the project. First, JBIC halted the loan because the Philippine Port Authority (PPA) implemented the demolition. Although PPA negotiated with the affected local squatters to make the consensus on the compensations while PPA requested them to relocate voluntarily, PPA could not reach the consensus successfully. PPA finally made the decision of implementing the demolition by following the necessary procedures stated in the law. Second, PPA set up the Inter-Agency Committee during the project to communicate with the stakeholders during the project. This enabled PPA to realize the good coordination among related departments. Third, PPA realized the importance of making the final list of affected residents at the early stage of the discussions on the relocation. PPA experienced the difficulties in negotiation with local squatters without the final list because a number of professional squatters came into the project sites. This lesson was reflected in the Phase Ⅱ of BPDP.

4. Mechanism Analysis of Institutional Spill-Over Effects

We analyze the mechanism of institutional spill-over effects by using the non-cooperative game theory. First, we identify the main players in the effect with their options based on the interview surveys. Next, the payoffs which are recognized by the players and options of involved players were hypothetically specified. We assume that the payoff matrix may be revised at the different steps in the project due to the

change of player's payoff perception.

Table 1 shows the payoff matrix at the beginning stage of institutional spill-over effect regarding the amendment of PD 1594 in C-3 project. We assume that the JBIC's payoffs include i) transaction cost in bidding process, ii) interaction cost, iii) reputation cost in the future, and iv) transaction cost in the future while the DPWH's payoffs include i) transaction cost in bidding process, ii) additional bidding price, iii) cost for changing the rule, iv) expected cost regarding the additional change of the rule, v) reputation cost in the future, and vi) additional bidding price in the future. We also assume that $a>b>c$, $A>B>C$, $a'>b'>c'$, $A'>B'>C'$, $a''>b''>c''$, $A''>B''>C''$ in the payoff matrix. This is based on our interview results.

At the beginning stage, to stay at status quo is the dominant strategy for JBIC. This means that JBIC always chooses the status quo option even when DPWH takes any option. DPWH may choose the various options by the options chosen by JBIC. Table 1 shows that the Nash equilibrium can be found at when JBIC and DPWH both stay at status quo as shown in the box.

At the implementation stage, the consultant (JOC) joined the process to support the JBIC and DPWH. On the one hand, JBIC came to realize with the help of JOC that the reputation cost in the future would increase due to the violation of guideline. On the other hand, DPWH gradually realized that the transaction cost in bidding process would be critical, if they stay at the status quo. DPWH also found the importance of the future reputation. Then, the perceived payoff matrix was revised into Table 2. The players changed their actions due to the change in payoff matrix. We again assume that $x>y>z$, $X>Y>Z$, $x'>y'>z'$, $X'>Y'>Z'$, $x''>y''>z''$, $X''>Y''>Z''$ in the payoff matrix. For JBIC, to choose the interaction option is the dominant strategy. Since DPWH chooses the amendment option if JBIC chooses the interaction option, the new Nash equilibrium is the "interaction-amendment".

The above analysis with the non-cooperative game indicates the three lessons. First, we found that the following three factors may cause the institutional spill-over: i) the change in donor's recognition about the reputation cost in the future; ii) the change in executing agency's recognition about the transaction cost in the bidding process; and iii) the change in executing agency's recognition about the reputation cost in the future. All these factors are related to the cost in the future. In general, the stakeholders tend to consider the cost and/or benefit in the current project only. This is mainly because they believe that the current institutions are given and fixed in the future. However, if they change their time frame from the short-term viewpoint to the longer-time viewpoint, the payoffs perceived by the players may be also changed.

This may break the rocked-in system by shifting the equilibrium and result in the win-win solution. Second, the consultant took an important role in the change in player's recognition. In addition to serving as an adviser to the executing agency, the consultant worked as an informal liaison between the donor and the executing agency. The consultant discussed the problem with the donor while they recommended that the executing agency amend the rule. Third, the executing agency was not formally required to change their system. The system change was recommended by the consultant. Thus, the implementing agency could keep the ownership of the project even if they change the system

Table1: Payoff matrix at the beginning stage

JBIC	DPWH		
	Status Quo	Have Exception	Change Rule (Amendment)
Status Quo	a, A	a', B	a'', C
Interaction	b, A'	b', C'	b'', B'
Halt the Loan	c, C''	c', B''	c'', A''

Table2: Payoff matrix after JOC joined

JBIC	DPWH		
	Status Quo	Have Exception	Change Rule (Amendment)
Status Quo	y, X	y', Y	y'', Z
Interaction	x, Z'	x', Y'	x'', X'
Halt the Loan	z, Z''	z', Y''	z'', X''

5. Conclusions

This paper reports the institutional spill-over effects in the two case studies. Then it analyzes their mechanism and shows the lessons learned from the analysis. We found that the consultant can play an important role as the third player to shift the situation, while keeping the good relationship both with donor and recipient. The analysis results show that the long-term viewpoint contributes to breaking the locked-in system. They also indicate that the appropriate interaction between donor and recipient may let the recipient improve their own institutional system without losing their ownership feeling.

References
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