The Distribution of Functions between Local and Central Government in River and Road Administration and Finance: With Regard to Spillover Measures*

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Abstract

Economists have proposed several methods for providing local public goods such as rivers and roads whose benefits spill over to neighboring regions: (1) direct central government provision; (2) local government provision, with fixed-rate central government subsidies as incentives; and (3) provision in accordance with negotiations between local governments. This article takes up rivers and roads as examples of local public goods that have spillover benefits, and examines how the river and road administration and finance systems in Japan are positioned in terms of spillover measures.

Three characteristics of the river and road administration and finance systems can be identified: (1) when national and local governments divide roles between them, the conditions under which central government directly provides local public goods include those related to spillover benefits, and it can be said that while a certain degree of consideration is given to spillover benefits, central government often directly manages local public goods irrespective of spillover benefits; (2) when national and local governments share the costs for provision of local public goods, the former covers a certain percentage of costs irrespective of the degree of spillover benefits, but there is a system that local governments share the costs according to the benefit principle, and in fact, such a system is being used effectively for rivers; and (3) negotiations are held between local governments about the management of and the sharing of

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costs for class B rivers, national expressways that managed by local governments, and local roads. Therefore, the point can be made that spillover measures through negotiations between local governments, though limited, are functioning properly.

I. Introduction

The Decentralization Promotion Committee formed in April 2007 prepared and submitted four recommendations to the Prime Minister up to November 2009. The first recommendation was submitted in May 2008; the fourth, in November 2009. In addition to these recommendations, the committee also submitted two statements of opinions. The first recommendation urged the central government to fundamentally review the allocation of functions between the central government and local governments. Focusing closely on river and road administration, the committee recommended that the central government should delegate authorities of class A rivers and national roads directly administered by the central government to the local governments.

How should we assess this recommendation? In economic terms, the traditional function allocation theory holds that national public goods should be managed by a central government. The theory provides no clear notion, however on local public goods whose benefits spill over to various local regions, such as rivers and roads. The choice of various alternatives leaves this an open question. One alternative, for example, is to have the central government (or the government higher up in the hierarchy) directly manage the local public goods. Another is to have the central government grant subsidies to induce local governments to manage the local public goods in the manner desired by the central government. A third is to have local governments negotiate the management scheme.

This article primarily spotlights river and road administration and discusses how the functions are distributed between the central government and local governments in Japan from a spillover measure perspective. The article proceeds as follows. Section II discusses the sharing of functions and expenses between the central government and local governments in terms of river and road administration from an economic perspective. Section III discusses the status of river and road administration and finance in Japan. Section IV assesses whether river and road administration and finance have been designed systematically in consideration of the spillover issue. Lastly, Section V offers concluding remarks.
II Economics of River and Road Administration

II-1 Economic functions of rivers and roads and the roles of the central government

First, rivers serve as both an economic resource by bringing about various benefits for users and as a source of damage by flooding or other means.

As for the economic aspect of rivers, people can use rivers as an economic resource in various ways: swimming, drinking, fishing, Hydropower, irrigating, drain-off, and so on. All of these usages have characteristics of rivalry. No matter how ample the river water appears to be, the use of vast volumes for irrigation or Hydropower will reduce the amount available for drinking. If sewerage in excess of the purification capacity of the river flows into the river, the pollution will render the water unfit for drinking or swimming, or may even kill fish. If rivers are left uncontrolled as common resources without excludability, excessive water intake or drainage can be expected. To address this, it will require that the government appropriately allocate water rights and water drainage rights.

With regard to rivers as disaster source, the government will take various measures, such as zoning against habitation of areas highly exposed to floods, the establishment of evacuation areas in case of floods, or flood prevention by the construction of bankers. The construction of bankers and establishment of evacuation places have both non-rivalry and non-excludability. If these measures are implemented by voluntary supply by the people potentially exposed to the damages, a less-than-sufficient supply is expected. Appropriate supply by the government is therefore essential.

Next, roads have two economic aspects: traffic and public space.

It is difficult to charge walkers and drivers for using roads, except for expressways or toll roads. In this sense, roads have a non-excludability. If pedestrians or drivers who intend to use roads are expected to provide roads voluntarily, sufficient roads are less likely to be provided. Again, appropriate supply by the central government is essential.

Economic and social activities depend on roads heavily for the transport of people and goods. Hence, businesses focused on public interests such as electric, water, and railways rely heavily on roads, as do for-profit businesses. Roads provide space not only for transporting people and goods, but also for accommodating electric lines or gas conduits, as well as for economic activities on or under the roads. If disorderly road use is permitted, other businesses may be prevented from using the roads and the intrinsic function of transportation may be impeded. In other words, multiple agents compete to use roads and efficient resource allocation cannot be achieved unless excludability such as water rights and drainage rights are provided.

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1 Rivalry represents the nature by which the consumption opportunities of others decrease when one consumes.
2 Excludability feature refers to the exclusion from consumption of those who pay no consideration
Hence, the government is required to intervene and appropriately allocate resources.

II-2 Externality and functional allocation between the central governments and local governments

What role should government ideally play, and to what extent? Traditional functional allocation theory holds as follows with regard to the three government functions classified by Richard Musgrave: the central government owns the income redistribution function and economic stabilization function, while the other resource allocation functions should be selected according to the extent of the benefits provided. In this context, the central government should provide the national public goods whose benefits spread nationwide, while local governments should provide local public goods whose benefits are limited to the regions under their control. This begs a question, however, how do we have to define the roles of resource allocation policies where benefits flow beyond regional boundaries but do not necessarily flow to nationwide.

It sometimes happens that short rivers run within a municipal government’s boundary, such as cities, towns, or villages. But in the case of longer rivers with tributaries, independent management may be difficult even for prefectural governments with jurisdiction over vast areas. For long and large rivers, policies on water rights distribution or flood prevention measures in upstream local governments may affect downstream governments. Even if a short river runs within a local government, the benefit of river improvement spreads beyond its jurisdiction in case of arterial roads across or along the river. Thus, river management policy is likely to generate an inter-region externality, that is, a spillover effect, to some extent. On the other hand, there are cases where a local government may independently manage a river with complete success, just as it might manage a small isolated island. But in most cases, connecting roads cross the boundaries of local governments. Roads generate spillover effects of different magnitudes.

There are three main alternatives for the role-sharing of policies with inter-regional externalities. Each has advantages and disadvantages. In the first alternative, a central government directly implements the policy. The advantage here is the internalization of inter-regional externalities. Yet when there is asymmetric information between the central government and local governments, it becomes difficult to address differences in policy demand from one region to another. Further, with asymmetric information, the internalization

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3 Under circumstances where inhabitants may move between regions freely and incur no movement costs, it has been theoretically pointed out that when a local government provides local public goods that engender a spillover effect, the external effect will be internalized. For details, see Sato (2009, Ch 3) or Wellisch (2000, Ch.6) Here we deploy the discussion with the focus on the situation when there is no movement of population.
of inter-regional externalities will probably be insufficient.

In the second alternative, local governments implement the policy and the central government intervenes in the implementation by providing matching grants or other regulatory measures. This has the advantage of giving local governments a clear picture of the areas where policies are implemented, which enables them to address differences in policy demand among regions. Yet disadvantageously, the externalities are mitigated by the setting of subsidy rates or regulatory thresholds, and efficiency will probably be lacking unless the central government has sufficient information.

The third alternative is similar to the second. While a local government implements the policy, the internalization of externalities is implemented by negotiations among local governments. Advantageously, related parties that fully understand the condition of the local regions, including the externality, can jointly solve the issue. And as the transactions costs for the negotiations decline, the resource allocation is expected to become more efficient, as shown by the Coase theorem. But if the transaction costs are large, the negotiations among the local governments will fail and the externality will not be internalized.

II-3 Cost-sharing

Finally, we discuss the cost-sharing for the expenses incurred during the course of policy implementation. The cost-sharing should be considered from the perspective of efficiency and fairness. Efficiency is especially important, and approaches to the cost-sharing may influence the distribution of functions between the central government and local governments. For the river administration policy, expenses incurred for the construction of facilities for river improvement and maintenance and repairs are especially significant. Hence, they are discussed in consideration of the expense of providing local public goods.

Suppose that the central government supplies local public goods that have no spillover effect nationwide. In this case, some bear expenses without gaining benefits, while others do not pay expenses commensurate with the benefits they receive. This generates regional differences in net fiscal benefits and impedes horizontal equity. It may have impact on policy decisions. Suppose, for example, that the central government wants to know the magnitude of the expected benefits when considering whether it should supply the local public goods. In this case, those who are likely to bear smaller expenses may be induced to assert excessive benefits. Or suppose that some group of people seeks to influence the decision of the central government by lobbying. In this case, those who incur lower expenses may call for the central government to provide the goods.

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4 On the other hand, a stricter principle of burden in proportion to benefits would give rise to an inducement for the declaration of smaller benefits.
government to supply excessive supply of local public goods. If the benefits of public goods are assessed excessively, another demerit results from the central government having responsibility for river administration and finance policy.

Next, suppose the case where a local government implements such policies and the central government attempts to internalize the externality through matching grants. If the sources of the matching grants are financed by regions that benefit from the policies, it is arguably desirable both from an efficiency perspective and equity perspective. But if the subsidies are financed by the general fiscal resources of the central government, this policy will encounter similar problems mentioned above. When the subsidy rate is constant, on the other hand, it becomes impossible to conduct surveys on benefits to determine the subsidy rate or activities to affect the subsidy rate determination.

Finally, consider the case where the internalization of inter-region externality is implemented by negotiations among local governments. In this case, the negotiations are expected to reach an agreement, since the regions receiving external benefits contribute funding to the regions undertaking the projects in accordance with the magnitude of the external benefit. This scheme naturally meets the benefit principle. If, however, there is some asymmetric information between the parties to the project, the transaction costs to eliminate the asymmetric information become high. When the central government provides guidelines on the estimation of benefits or expenses incurred in this case, the negotiations will presumably go more smoothly.

### III River Administration Policy

#### III-1 River administrator

The River Act, the core act of the river-related laws and regulations in Japan, separates class A rivers and class B rivers (Article 3, Paragraph 1 of the River Act). Class A rivers are designated by the minister of Ministry of Land, Infrastructure, Transport and Tourism (MLIT) (Article 4, Paragraph 1 of the same act), while class B rivers are designated by governors of local governments (Article 5, Paragraph 1 of the same act). The minister of MLIT administers the class A rivers (Article 9, Paragraph 1 of the same act) and may delegate the administration of a part of river to prefectural governors (Article 9, Paragraph 2 of the same act). These segments are called “designated segments” and the other segments are “direct management segments”. As seen from Table 1, the designated segments are much longer (direct

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6 Promulgated on July 10, 1964 (Act No. 167 of 1964). This River Act was newly enacted by totally revising the old River Act enacted in 1896.
7 Part of the administrative works for directly administered distances can be delegated to the head of a
management segments only account for about 12% of the total length of class A rivers).

Table 1 Class of rivers and allocation of authorities and administrative works

<table>
<thead>
<tr>
<th>Class of rivers</th>
<th>Designation</th>
<th>Administrator</th>
<th>River length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct management segments of class A rivers</td>
<td>Central government</td>
<td>Central government</td>
<td>10,584km</td>
</tr>
<tr>
<td>Designated segments of class A rivers</td>
<td>Central government</td>
<td>Prefecture</td>
<td>77,366km</td>
</tr>
<tr>
<td>Class B rivers</td>
<td>Prefecture</td>
<td>Prefecture</td>
<td>35,816km</td>
</tr>
<tr>
<td>Law applicable rivers</td>
<td>City, town and village</td>
<td>City, town and village</td>
<td>20,283km</td>
</tr>
</tbody>
</table>


In principle, the class B rivers are administered by the prefectural governors (Article 10, Paragraph 1 of the same act). If a part of a river flows in a city designated by a cabinet order, the prefectural governors can delegate the authorities of class B rivers to the mayors (Article 10, Paragraph 2 of the same act). If a river straddles two or more prefectures, the prefectural governors discuss the designation (Article 5, Paragraph 2 of the same act) and decide on the detail of the management through consultation (Article 11, Paragraph 1 of the same act). In addition, other rivers designated by mayors, rivers to which various provisions of the River Act apply mutatis mutandis, are called “law applicable rivers” (Article 100 of the same act). The last remaining category is “general rivers” (Article 100-2 of the same act). For the purpose of the act, a river is referred to as a “stream or surface of public water.” Lakes and ponds are included.

On what legal basis are rivers designated as class A or class B? The River Act, related laws, and regulations provide no clear criteria or requirements. They merely stipulate that the designation of class A rivers requires consultation with the head of related administrative agencies, with the Panel on Infrastructure Development, and with the prefectural governors (Article 4, Paragraph 3 of the same act). The designation of class B rivers requires consultation with mayors (Article 5, Paragraph 4 of the same act). If a river straddles a boundary of two or more prefectures, consultation with the prefectural governors is required (Article 5, Paragraph 2 of the same act).

On the other hand, the minister of MLIT designates class A rivers as rivers designated by Cabinet Order as especially important rivers for preserving lands and the national economy. These rivers, together, make up the “class A river system.” The criteria for the designation of

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8 For example, Lake Biwa (Shiga prefecture), Lake Inawashiro (Fukushima prefecture), and Lake Yamanaka (Yamanashi prefecture) are categorized as class A rivers.

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class A river system and the criteria for the designation of designated segments of class A rivers are provided in Ordinance for Enforcement of the River Act (Article 1-2 and Article 2-2).\(^9\)

In summarizing the characteristics of these designation criteria in conjunction with the topics in this article, we can mainly highlights two points. First, when a river system or river straddles two or more prefectures and coordinated efforts are required to sort out the interests in river improvement, water use, and environmental preservation, the river system is designated as a class A river system composed of direct management segments. This means that the central government directly administers any river system or river that has spillover effects and requires the elimination of conflicts of interest. Second, there are many criteria not directly related to the spillover effects. These criteria are provided in order to mitigate the burdens of local public entities posed by the vastness of their waterways and the steep learning curve to master the sophisticated technologies required for river administration. In effect, about half of the 109 class A river systems in Japan can be administered independently by one prefecture in entirety (see Table 2).

### Table 2  Breakdown of first class river system

<table>
<thead>
<tr>
<th>Distinction</th>
<th>Number of river systems</th>
<th>Direct management segments</th>
<th>Designated segment</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete in one prefecture</td>
<td>53</td>
<td>4,039km</td>
<td>19,466km</td>
<td>23,505km</td>
</tr>
<tr>
<td>Straddle a few prefectures</td>
<td>12</td>
<td>847km</td>
<td>6,861km</td>
<td>7,709km</td>
</tr>
<tr>
<td>Straddle several prefectures</td>
<td>44</td>
<td>5,694km</td>
<td>50,656km</td>
<td>56,350km</td>
</tr>
<tr>
<td>Total</td>
<td>109</td>
<td>10,581km</td>
<td>76,983km</td>
<td>87,564km</td>
</tr>
</tbody>
</table>

(Source) Date prepared by the secretariat for the 47th round meeting of Decentralization Promotion Committee (May 15, 2008)

### III-2 Distribution of water rights

One important role for river administrators is to distribute water rights in relation to river use. According to the River Act Research Institute (2007), there are three forms of river usage: free use, permitted use, and privileged use. Free use refers to the right to freely use rivers without obtaining permits from the river administrator. This may include use for swimming, water intake for households, washing, fishing, or walking along the riverside. Use is restricted if it may impair the utility of the river or the use of the river by others. If a would-be user files a required application for this type of use, the restriction of use is lifted based on the application and the use is permitted. This type of use is called permitted use. Permitted use may be required

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\(^9\) These designation criteria are explicitly indicated, effective from fiscal 2004, pursuant to the recommendations put forward in the Second Decentralization Promotion Plan (1998).
for new construction, renovation, or the removal of artificial structures in the river area (Article 26 of the same act), or the drainage of sewerage over a certain threshold (Article 16 of the Ordinance for Enforcement of the same act). Lastly, privileged use is the granting of exclusive use to specified persons for uses never permitted to the public. This applies to the exclusive use of water streams of rivers (Article 23 of the Act) or the exclusive occupation of river areas (Article 24 of the same act). The exclusive use of water streams is granted for hydropower generation facilities or for irrigation or industrial uses. As shown in Table 3, irrigation use accounts for 71.7% of the overall use of class A rivers (number of cases) while use for power generation accounts for 86.7% of the overall water intake at the peak.

Table 3  State of exclusive use of water streams of class A rivers

<table>
<thead>
<tr>
<th></th>
<th>Tap water</th>
<th>Industrial water</th>
<th>Irrigation water</th>
<th>Power generation water</th>
<th>Sundry use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>7.1%</td>
<td>4.3%</td>
<td>71.7%</td>
<td>8.8%</td>
<td>8.1%</td>
</tr>
<tr>
<td>Intake at peak</td>
<td>1.0%</td>
<td>0.9%</td>
<td>11.0%</td>
<td>86.7%</td>
<td>0.3%</td>
</tr>
</tbody>
</table>


The river administrator has the authority to grant usage permits. Here, we briefly discuss their shared roles. The Minister of Land, Infrastructure, Transport and Tourism has the right to grant permission for the specified water use of class A rivers for all segments, direct management or designated. Specified water use means use for hydropower generation, large-scale waterworks and sewerage systems, and large-scale canals for industry or irrigation. Heads of the regional development bureaus (or the Head of the Hokkaido Regional Development Bureau, in Hokkaido) have the authority to permit use with respect to direct management segments, while prefectural governors have a comparable authority for designated segments. Of these, mid-scale waterworks, sewerage systems, mid-scale canals for industry or irrigation require authorization from the minister of MLIT. These are called “quasi specified water uses.” Prefectural governors have the authority to permit the use of water with respect to

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10 Article 2, Item 3 of the Order for Enforcement of River Act. “A large scale,” a category not described in this section, refers to rivers that more than 10 thousand people use for water or from which a maximum of 2,500 cubic meters of water or more is drawn per day, industrial canals from which a maximum of 2,500 cubic meters of industrial water is drawn per day, and irrigation canals that provide irrigation over an area of at least 300 hectares of land or from which 1 cubic meter of water is drawn per second.

11 See Article 79, Paragraph 1 of the River LawRiver Act and Article 45, Item 4 and Article 20-2 of the Order for Enforcement of River LawRiver Act. “A mid-scale,” a category not described in this section, refers to rivers that more than 5,000 thousand people use for water or from which a maximum of 1,200 cubic meters of water or more is drawn per day, industrial canals from which a maximum of 1,200 cubic meters of industrial water is drawn per day, and irrigation canals that provide irrigation over an area of at least 100 hectares of land or from which 0.3 cubic meters of water is drawn per second.
class B rivers, but the use of specified water requires the authorization of the minister of MLIT\textsuperscript{12}. According to the significance of water use, (1) the minister of MLIT has the authority to permit use, (2) the prefectural governors have the authority to permit use, but only with the authorization of the minister of MLIT, and (3) the prefectural governors have the authority to permit use without the authorization of the minister of MLIT. These roles may be shared in consideration of externality, in that such uses have significant impact on the national economy.

III-3 Improvement of rivers

Other important roles for the river administrator are to improve rivers, to perform river works with a view to preventing water disasters or developing water resources\textsuperscript{13}, and this includes measures to perform river maintenance works such as the dredging of mud or the felling of trees, bushes, and bamboo groves. River works include improvement works to actively improve the functions of rivers by constructing river management facilities and adding improved functions\textsuperscript{14}, and repair works to restore the deteriorated functions of rivers to normal conditions (River Act Research Institute (2007)). The Cabinet Order for the River Act\textsuperscript{15} provides technical standards to ensure that river management facilities have safe structures in consideration of water levels or water flows (Article 13, Paragraphs 1 and 2 of the same act).

In implementing river improvement works, the river administrator is required to establish a basic river improvement policy and a river improvement plan. A basic river improvement policy should be developed for each river system (Article 16 of the same act). The minister of MLIT is responsible for the class A river system, while the prefectural governors are responsible for the class B river system (river system in which a class B river is contained). The river improvement plan establishes the segments requiring improvement works according to the basic policy (Article 16-2 of the same act). Heads of the regional development bureaus (or the Head of the Hokkaido Regional Development Bureau, in Hokkaido) develop river improvement plans for the direct management segments of class A rivers. The prefectural governors develop the plans for designated segments and class B rivers; provided that when prefectural governors develop the plans for designated segments and class B rivers; provided that when

\textsuperscript{12} Article 79, Paragraph 2, Item 4 of River Act, Article 47 of the Order for Enforcement of River Act

\textsuperscript{13} The River Act defines river works as any works carried out for rivers to increase the public benefit arising from the flow of river streams, or to eliminate or mitigate any contaminations (Article 8 of the same act)

\textsuperscript{14} The River Act defines river administration facilities as facilities that increase the public interest in association with the functions of dams, water gates, bankers, revetments, or other river streams, or facilities that eliminate and mitigate any contamination (Article 3, Paragraph 2 of the same act).

\textsuperscript{15} This Cabinet Order is called the Ordinance on the Structural Standard for River Administration Facilities (Cabinet Order No. 199 of July 20, 1976)
they are required to obtain the authorization or consent of the minister of MLIT. Thus, the central government is ultimately responsible for the respective river systems, and the spillover issue seems to be considered, to some degree.

III-4 Cost-sharing

III – 4 – 1 Cost-sharing between the central government and local governments

How are expenses incurred for river improvement to be borne? The River Act provides for the principle that the central government should bear the expenses for administering direct management segments of class A rivers, while the prefectural governments should bear expenses for designated segments of class A rivers and class B rivers (Article 59 and Article 60, Paragraph 2 of the same act). At the same time, the act provides for the expenses incurred by the prefectural governments with respect to direct management segments and those by the central government with respect to the designated segments and class B rivers. In practice, prefectural governments are required to bear 30% of the expenses incurred for large-scale improvement works carried out by the central government for direct management segments and one-third of the expenses for other improvement works (Article 60, Paragraph 1 of the same act). The central government is required to bear two-thirds of the expenses incurred for emergency improvement works, 5.5/10 of the expenses for large-scale improvement works, and 50% of the expenses for other improvement works carried out by prefectural governments (Article 60, Paragraph 2 of the same act). For class B rivers, the central government is required to bear up to no more than 50% of the expenses for improvement works (Article 62 of the same act). The central government, however, is required to bear 50% of the expenses for improvement works carried out according to the basic river improvement policy (Article 37, Paragraph 2 of the Order for Enforcement of the same act).

The central government bears 50% or more of the expenses for class A rivers. Yet as noted above, the designation of class A rivers is not always applied according to the magnitude of the spillover effect. No rivers in Japan are long or wide enough to run the whole of the country. Therefore, the cost-sharing between the central government and prefectural governments is not decided on benefit principle.

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16 For the river improvement plan related to the designated distances of a first class river, see Article 79, Paragraph 1 of the River Act and Article 45, Item 1 of the Order for Enforcement of the River Act. For the basic river improvement policy or plan related to class B rivers, see Article 79, Paragraph 2, Item 1 of the River Act.
Table 4  Incurrence of costs required for improvement works

<table>
<thead>
<tr>
<th>Class of rivers</th>
<th>Central government</th>
<th>Prefecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct management segments of first rivers</td>
<td>67-70%</td>
<td>30-33%</td>
</tr>
<tr>
<td>Designated segments of first rivers</td>
<td>50-67%</td>
<td>33-50%</td>
</tr>
<tr>
<td>Class B rivers</td>
<td>0-50%</td>
<td>50-100%</td>
</tr>
</tbody>
</table>

### III-4-2 Cost-sharing among prefectural governments

The River Act provides that when a prefecture enjoys significant benefits without contributions from the river management by the minister of MLIT or other prefectural governors in neighboring area, they can require the prefecture to incur a part of the river management expenses (Article 63 of the Act). When, for example, the construction of bankers in prefecture A prevents flood damage in prefecture B, or when prefecture C at downstream can prevent water disasters thanks to the construction of a dam in prefecture A, the minister of MLIT or the governor of prefecture A can demand compensation from either of the beneficiaries, prefecture B or C. However, the River Act only requires the minister of MLIT (or prefecture A) to consult with the governor of prefecture B or C in advance and does not clarify the rules for demanding compensation from prefecture B or C. Many of the projects directly administered by the central government provide benefits to several prefectures. The regional development bureaus have developed a method for sharing expenses among prefectures and have consulted with the prefectures extensively on this issue.

The concepts of “alternative construction expenditures method” and “justifiable expenditures method” are often applied to the shared costs among local governments. These concepts are used to determine expenses incurred for the constructions of dams with several usages (expenses for separate uses such as flood prevention, hydropower generation, irrigation canals, waterworks, or industrial canals). The calculation method, the “Separable Alternative Costs Justifiable Expenditures Method,” is provided in the Order for Enforcement of the Law Concerning Specified Multi-purpose Dam. For the purpose of multi-purpose dams, the alternative construction expenditures are expenditures incurred when a facility to generate the same benefits as a multi-purpose dam is constructed separately, and the justifiable investment amount is equivalent to the benefits received for each usage when a multi-purpose dam is constructed.

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17 According to the River Planning Section, River Bureau, Ministry of Land, Infrastructure and Transport
18 The following is a brief description of cost-sharing among usages according to the Separable Alternative Costs Justifiable Expenditures Method. Suppose that a specified multipurpose dam has three usages, X, Y and Z. Usage X incurs a separable cost of its own. A separable cost is an amount derived by deducting from the actual construction costs the expenses incurred when a dam contributing only to Y and Z is constructed by separating usage X. This is the marginal cost of usage X. This cost is calculated
With respect to shared expenses among prefectures, the benefits each prefecture receives are justifiable investment amounts when prefecture A constructs an irrigation facility and prefectures B and C can enjoy its benefits in addition to prefecture A. Similarly, when the irrigation facility is not constructed and prefectures A, B and C construct facilities such as bankers to receive similar utility, the expenses incurred by each prefecture for the development refer to separable alternative costs. The expense incurred by each prefecture is determined as a percentage of the total expenditures by using justifiable investment amounts and alternative construction expenditures. In fact, the Otaki Dam, a multi-purpose dam along the Kinokawa river, provides water improvement benefits to Wakayama prefecture, in addition to Nara prefecture. Hence, the cost-sharing by both prefectures was determined based on the above approach.

Apart from the approaches for cost-sharing between the central government and prefectural governments, other special measures have been provided and the percentage of the cost borne by the central government has been raised. These special measures include the Special Measures for Hokkaido Region (Article 96 of the River Act), the Special Law Concerning Less Advanced Regions\textsuperscript{19}, the Okinawa Promotion and Development Special Measure Act, and the Remote Islands Development Act. We also need to pay attention to these.

\textbf{III-5 Negotiations among local governments}

In principle, a class B river is managed by the governor of the prefecture where the river flows (Article 10, Paragraph 1 of the Act). When the river straddles two or more prefectures, the Act provides that the governors of the related prefectures may determine a different administration approach in consultation with each other (Article 11, Paragraph 1 of the Act). If, for example, a class B river intermittently crosses boundaries of two or more prefectures, it would not be reasonable to manage the river along the prefectural boundary. Hence, the Act for each usage, and the costs are aggregated. The aggregated costs are generally less than the total construction costs. The construction costs in excess of the total separable costs are called residual joint construction costs, which are equivalent to the fixed costs incurred even when all the three usages are removed. Usage X incurs the amount as a percentage of the residual joint construction costs in addition to separable costs. The amount which is used to calculate the percentage is defined as the amount derived by deducting separable costs from the lower of appropriate investment amounts and alternative construction costs. That is, the fixed costs are also incurred approximately in proportion to the benefits.

\textsuperscript{19} Law No. 112 of June 2, 1961. The official title is the “Act on the Special Provision on the Proportion of Expenses to be Borne by the State in Relation to Public Works Projects for the Development of Underdeveloped Regions.” The special measures law for underdeveloped regions was prepared by combining special fiscal measures for the Tohoku Development Promotion Law, Kyushu Region Development Promotion Law, Shikoku Region Development Promotion Law, and Chugoku Region Development Promotion Law enacted from 1957 to 1960 and the special fiscal measures prescribed in the Hokkaido Regional Development Law, a law already enacted.
provides that prefectural governors are permitted to develop an alternative administration system. When a prefectural boundary crosses a class B river and different river administrators oversee the upstream and downstream stretches of the river, the administration method may prescribe as follows: if the upstream segments are shorter than the downstream segments, the river administrator of the upstream portion delegates the management right over the segments to the river administrator of the downstream portion, who then bears the expenses incurred at the upstream portion. When a prefectural boundary runs along a class B river and different river administrators oversee the administration of the right bank and left bank, the right bank administrator may delegate the management authority to the left bank administrator, who then bears the administration expenses incurred on the right bank.

The Sakaigawa river running in Tokyo prefecture and Kanagawa prefecture is an example of a class B river administered by an “alternative management system.” The Sakaigawa river is sourced from a point adjacent to the west of Machida city, Tokyo. The upstream portion flows along the prefectural boundary between Tokyo and Kanagawa, crossing the boundary intermittently. The downstream portion flows through Yamato city, Yokohama city, and Fujisawa city of Kanagawa prefecture, then into the Sagami Bay. The Tokyo governor and Kanagawa governor have entered into an agreement on the administration authority and the distributions of expenses incurred20 according to Article 11, Paragraph 1 of the River Act. The agreement prescribes that the river is divided into an upstream portion and downstream portion, irrespective of the actual prefectural boundary. According to the agreement, the administration authority for the upstream portion is delegated to the Kanagawa governor and that for the downstream portion is delegated to the Tokyo governor. It is also agreed that the Kanagawa government bears the management costs for the upstream portion and Tokyo prefecture bears the costs for the downstream portion21.

There are class B rivers not administered by the alternative management system, such as the Sakaigawa river: the administration authority is divided along the actual prefectural boundary. Prominent examples include Niida river running from Iwate prefecture into Aomori prefecture, or the Okawa river and Tsuyagawa river flowing from Iwate prefecture into Miyagi prefecture. Prefectural boundaries cross these rivers, and different river administrators oversee the upstream portions and downstream portions. The administration authority of the upstream portions of these rivers is owned by the Miyagi prefectural governor and the management authority of the downstream portions is owned by either the Aomori prefectural governor or

20 This agreement sets forth the administrator, the administration distances, and the nature of administration. It also provides that when an overall plan for river improvement works for the distances is developed or changed, prior consultation is required. The current agreement is effective for 10 years from April 1, 2005. When the agreement expires, another agreement may be entered into.

21 According to the person in charge from the Project Instruction and Coordination Section of the River Department, Construction Bureau in the Tokyo Metropolitan Government.
Miyagi prefectural governor\textsuperscript{22}. At the middle of Shisagawa river flowing from Saga into Nagasaki, there is a segments where the prefectural boundary crosses the river in a north-south direction. The administration authority over the left area along the bank of the river is owned by the Nagasaki prefectural governor and that over right area is owned by the Saga prefectural governor. The two prefectures consult with each other whenever any work is undertaken in an area where the prefectural boundary crosses in a north-south direction; that is, any work that may give rise to a conflict of interest between the two prefectures\textsuperscript{23}.

\section*{IV  Road Administration Policy}

\subsection*{IV-1  Road administrator}

As noted above, the meaning of a river, as used in daily life, does not always coincide with the definition of a river provided in the River Act. The same is true of roads. The Road Act\textsuperscript{24} defines a road as any “road supplied for general traffic,” and roads include ancillaries of the roads, such as facilities or structures to provide utility as integral parts of the roads (Article 1 of the Road Act). Thus, private roads and roads developed for specified purposes such as agricultural roads or forestry roads are not roads for the purpose of the Road Act.

There are four categories of roads governed by the Road Law: national expressways, national roads, prefectural roads, and city roads (Article 3 of the same act). Table 5 shows the entities that designate/authorize these four categories of roads and their road administrators.

\begin{table}[h]
\centering
\begin{tabular}{|l|l|l|l|}
\hline
Class of roads & Designation/authorization of routes & Road administrator & Actual length \\
\hline
National expressways & Central government & Central government & 7,641km 0.6\% \\
General national roads (direct management national roads) & Central government & Central government & 22,787km 1.9\% \\
General national roads (subsidiary national roads) & Central government & Prefecture & 31,949km 2.7\% \\
Prefectural roads & Prefecture & Prefecture & 129,393km 10.7\% \\
Municipal roads & City, town and village & City, town and village & 1,012,088km 84.1\% \\
\hline
\end{tabular}
\caption{Classes of roads and allocation of authorities and administrative works}
\end{table}

(Source) “Annual Road Statistics” (2007); the actual length as of April 1, 2008

\textsuperscript{22} According to the person in charge from the River Section of the Civil Engineering Improvement Department in the Iwate Prefectural Government.

\textsuperscript{23} According to the person in charge from the River Sand Banker Protection Section, Land Development, Saga Prefectural Government.

\textsuperscript{24} Law No. 180 of June 10, 1952. The current Road Law was enacted by totally revising the old Road Law enacted in 1919.
National expressway roads are defined by the National Expressway Act. They include (1) roads whose routes are designated by Cabinet Orders on expected routes for trunk roads for national land development, and (2) roads whose routes are designated by Cabinet Orders on roads expected to be constructed as national expressways through Cabinet resolutions (Article 1-26 of the National Expressway Act), and the minister of MLIT becomes their administrator. The trunk roads for the development of the national land refer to motorways expected to be constructed as national expressway roads by the central government in order to achieve the purposes provided in Article 1 of the National Development Arterial Expressway Construction Law.

General national roads are designated by Cabinet Order (Article 5, Paragraph 1 of the Road Act). Unlike class A rivers, which are designated by the minister of MLIT, national roads are designated by Cabinet Order because the unanimous consent of Cabinet members is thought to be more politically, economically, and culturally significant than a ministerial decision (Road Act Research Institute (2007)). In principle, the administrators of general national roads are prefectural governors, but segments designated by Cabinet Order (direct management national segments) are administered by the minister of MLIT. Meanwhile, prefectural governors administer other segments (subsidiary national roads) (Article 13 of the same law).

Prefectural roads are roads authorized by prefectural governors within the respective jurisdictions of prefectures, and their administrators are prefectural governors (Article 7, Paragraph 1 of the same act). The term “designation” is used for national expressway roads, while the term “authorization” is used for prefectural and city roads. Before the authorization of prefectural roads, the authorization of routes requires the resolutions of the respective prefectural jurisdictions (Article 7, Paragraph 2 of the same act). If a part of a route runs within the jurisdiction of a city designated by Cabinet Order, the prefectural governor should consult with the city mayor (Article 7, Paragraph of the same law). When a prefectural governor attempts to authorize a road straddling two or more prefectures, the governor should consult with the related governors and may designate the route within the jurisdiction through

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25 Some of the administration work for national expressway roads and directly administered national roads can be delegated to the head of the local development bureau or the Hokkaido Regional Development Bureau (Article 25-2 of the National Expressway Act, Article 97-2 of Road Act).
26 “The objective of this law is to open national expressways running nationwide north to south and east to west, in order to develop national lands universally, to create opportunities for the location and promotion of epoch-making industries and the expansion of the national people’s living territories, and to promote the construction of new cities and new villages in relation thereto (Article 1 of the National Development Arterial Expressway Law).
27 Cabinet Order designating the routes of general national roads (Cabinet Order No. 58 of March 29, 1965).
28 Cabinet Order designating the distances of general national roads (Cabinet Order No. 164 of March 29, 1965). Moreover all the general national roads within Hokkaido are directly administered national roads.
the resolutions of respective prefectural parliaments (Article 7, Paragraph 4 of the same act).

Municipal roads refer to roads authorized by respective mayors, and the mayors become their administrators (Article 8, Paragraph 1 of the same act). The authorization of municipal roads, like that of prefectural roads, requires resolutions at their parliaments in advance (Article 8, Paragraph 2 of the same act). Unlike prefectural roads, any road straddling two or more municipalities may be authorized as municipal roads when a competent mayor approves it through a resolution at the parliament (Article 8, Paragraphs 3 and 4 of the same act).

What is the legal basis or criterion for the designation/authorization of these roads? No criteria for only municipal roads are provided. The National Expressway Act and Road Act provide criteria for the designation/authorization of national expressways, general national roads, and prefectural roads, respectively. Summarizing the criteria for the designation/authorization from the perspective of spillover, we note that criteria in consideration of spillover effects have been included.

First, the designation for national expressways requires that an expressway constitute an important part of the nationwide motor traffic network, connect important regions in political, economic, and cultural terms, and be a route of significant interest to the nation (Article 4, Paragraph 1 of the National Expressway Act).

Next, the designation for general national roads requires that a general national road connect important capital cities or other important cities in political, economic, or cultural terms (hereinafter important cities) by running nationwide in a north-south, east-west direction, or circulating direction, and by connecting to nationwide trunk roads such as national expressways (Article 5, Item 1 of the Road Law). A road can be designated as a directly administered national road if it is both efficient (e.g., by connecting important bases by the shortest route) and effective (e.g., by connecting very important bases) (Article 1-2 of the Order for Enforcement of the same act).

On the other hand, some of the designation criteria have little to do with spillover. If a road linking an important city with a population of 100,000 or more to a directly administered national road linked to national expressways or other important cities is located in the administrative jurisdiction of one local government, it is designated as a general national road rather than a prefectural or municipal road (Article 5, Item 2 of the same law). A road running through two or more municipalities in a prefecture will not be designated as a prefectural road unless it connects major areas, major ports, or major stations29 (Article 7 of the same act). But if a road is especially necessary for a local development, it may be authorized as a prefectural road even if it runs only through one city or town (Article 7-6 of the same law). Niigata Prefecture Road Route 45 (Sado city; 167 kilometers) and Hiroshima Prefecture Road Route

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29 Major areas refer to cities and towns with populations of at least 5,000. Major ports include important ports and bays prescribed in the Bay Port Law, and local bay ports and airports. Major terminal areas refer to major terminal stations for railways and tracks.
204 (Kure city; 7 kilometers) are authorized as prefectural roads even though each only runs through one city or town.

**IV-2 Exclusive occupation of roads**

A road administrator has been granted the authority to permit the exclusive occupation of a road in addition to road improvement, as mentioned later. The exclusive occupation of a road refers to the continuous occupation of a road by installing the structures or facilities enumerated in Article 32, Paragraph 1 of the Road Act. Road uses include free use such as road traffic, permitted use for the installation of stalls or constructions works, and privileged use for the installation of utility poles or embedding of gas conduits (Shiono (2008)).

Basically the road administrator has the authority to issue permits for the use and privileged use, and grant the exclusive use of roads that satisfy certain criteria (Article 33 of the Act). There are some exceptions, however. For the use of a road for a project for the benefit of the nation, the central government can only obtain consent after consultation with the road administrator (Article 35 of the Act). When one intends to use a road exclusively for certain structures for the implementation of projects for tap water, waterworks and sewerage, railway, gas and electricity, the road administrator gives the permit as long as the applicant meets the criteria for the permission in Article 33, Paragraph 1 of the same Law (Article 36, Paragraph 2 of the same act). Meanwhile, under the Act on Railway Tracks and the Railway Operation Act, if an operator using a road exclusively for the construction of track or the installation of railways receives a permit from the minister of MLIT, the operator is deemed to have received the approval of the road administrator (Article 4 of the Act on Railway Trucks, Article 61 of Railway Operation Act). The Oil Pipeline Operation Act provides that the road administrator shall grant a permit for the use of a road exclusively for the construction of an oil pipeline whenever the provisions of Article 33, Paragraph 1 of the Road Act are satisfied (Article 35, Paragraph 2 of the Oil Pipeline Operation Act). In consideration of the above, With regard to the exclusive use of roads for projects carried out with high public interest and beyond the administrative boundaries, the permission-granting authority of road administrator tends to be limited. When a road administrator is a prefectural governor or mayor, we may highly appreciate it from the perspective of externality that the permission-granting authority of the road administrator is restricted and the central government is involved to a certain extent.

**IV-3 Road improvements**

The road improvements by a road administrator include new construction, renovation, maintenance, repair, disaster recovery, and other management. According to the Road Act Research Institute (2007), new road construction refers to the new construction of a road and
road renovation refers to work done to improve road functions (relative to before renovation). Land acquisition is necessary for these purposes. Road maintenance refers to any act to maintain the function of a road, such as snow removal or weed elimination. Repair refers to the work done to restore the function of a damaged road outside the scope of disaster-recovery works. Disaster-recovery work refers to the recovery and restoration works prescribed in Article 2, Paragraph 2 of the Act on Temporary Measures for Subsidies from the National Treasury to Cover Expenses for Projects to Recover Facilities for Agriculture, Forestry and Fisheries Damaged by Disaster. Specifically, this work is done to restore roads damaged by disasters or to restore the utility of roads to pre-disaster levels. The technical criteria for these acts are prescribed in road structure ordinances (Article 30 of the same Act). Other management refers to management other than the above and includes administrative works such as decision-making and public announcements on road segments, commencement and abolition of road supply, compilation and keeping of road registries and administrative works for exclusive occupation.

In improving a road, the minister of MLIT may have a certain involvement in prefectural governments, who in turn are involved in municipal governments. This involvement naturally relates to technical and safety aspects (Article 75 of the same Act), but it may relate to other aspects as well. Prefectural roads, for example, are structures operated by prefectural governors, but prefectural governors are required to consult with the minister of MLIT for authorization to change or abolish a prefectural road because of any road closely related to a national expressway or to general national roads (Article 74, Paragraph 1 of the same Act). When the administrator of a subsidiary national road intends to newly construct or renovate the road, the administrator is required to obtain a permit from the minister of MLIT (Article 74, Paragraph 2 of the same Law). A road administrator is also required to develop a road improvement plan. If a road administrator is a prefectural governor, he or she must to report to the minister of MLIT, and if the administrator is a mayor, he or she must report to the prefectural governor (Article 76 of the same Law). Thus, the spillover issue can be addressed to some extent, as the central government can be involved in road administration over a wider area.

IV – 4  Cost-sharing

IV – 4 – 1 Cost-sharing between central government and local governments

According to the fundamental principle, the road administrator should bear expenses related

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30 While the river improvement basic policy or plan prepared by a prefectural governor requires the authorization or permission of the minister of MLIT of Land, Infrastructure and Transport, a road improvement plan prepared by a local public entity does not require the authorization or permission of the minister of MLIT.
to the management of the road he or she administers (Article 49 of the same act). As an exception, the central government and local government each bears a portion of the expenditures. The minister of MLIT is the administrator for national expressway roads, which can be divided into roads operated by expressway companies required to obtain permits from the minister of MLIT pursuant to the Road Improvement Special Measure Law31, and roads directly administered by the central government. The former roads are part of the “toll road system,” and the expressway companies bear the expenses necessary to manage them (Article 3, Paragraph 1 of the Road Improvement Special Measure Law). The other roads are part of the “direct management system.” The central government incurs 3/4 of the expenditures for new construction or renovation, and disaster recovery. The central government incurs all the expenses for other aspects of management (Article 20 of the National Expressway Act). For the new construction or renovation of national roads, the central government incurs 2/3 of the expenses when the minister of MLIT implements the project and one-half of the expenses when a prefectural government implements the project (Article 50-2 of the same Law). With respect to the maintenance, repair, and other management, the central government incurs 5.5/10 of the expenses for directly administered national roads (Article 50, Paragraph 2 of the same Law). For subsidiary national roads, the central government may grant subsidies covering up to 1/2 (Article 56 of the same Law). For prefectural or city roads, the central government may incur expenditures for up to 1/2 of expenses for new construction or renovation targeting major prefectural roads or city roads designated by the minister of MLIT (Article 56 of the same Law). Table 6 summarizes these issues.

Table 6 Sharing of costs required for the improvement of roads

<table>
<thead>
<tr>
<th>Class of roads</th>
<th>Central government</th>
<th>Local government</th>
</tr>
</thead>
<tbody>
<tr>
<td>National expressway</td>
<td>Toll</td>
<td>75-100%</td>
</tr>
<tr>
<td></td>
<td>Newly directly administered</td>
<td>55-67%</td>
</tr>
<tr>
<td>General national roads</td>
<td>Direct</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>Subsidiary</td>
<td></td>
</tr>
<tr>
<td>Prefecture roads</td>
<td></td>
<td>0-50%</td>
</tr>
<tr>
<td>City, town and village roads</td>
<td></td>
<td>0-50%</td>
</tr>
</tbody>
</table>

IV – 4 – 2 Sharing of expenses among local governments

As discussed in Section III – 4 – 2, when a prefecture significantly benefits from the

31 These refer to East Nippon Expressway Co., Ltd., Metropolitan Expressway Co., Ltd., Central Nippon Expressway Co., Ltd. West Nippon Expressway Co., Ltd., Hanshin Expressway Public Corporation, and Honshu-Shikoku Bridge Expressway Co., Ltd. (Article 1 of the National Expressway Law)
administration of a river in neighboring area by the minister of MLIT or by other prefectural governors without bearing any of the costs, the River Act provides that the minister of MLIT or governors may demand that the benefiting prefecture bear the costs (Article 63 of River Act). The Road Act provides clauses to a similar effect (Article 50, Paragraphs 3 and 4 of the Road Act). These clauses, however, have not yet been applied in practice32.

IV – 5 Negotiations among local governments

In Section III – 5, It was noted that in accordance with the exceptions to the administration of class B rivers related to the boundary as prescribed in Article 11, Paragraph 1 of the River Act, for example, Tokyo and Kanagawa have administered Sakaigawa, a class B river running along the boundary between Kanagawa and Tokyo, by dividing it into an upstream portion and downstream portion. Similar provisions are provided with respect to roads. When roads administered by prefectural governors or mayors cross the boundaries of their jurisdictions, the administrators may decide the administration methods by consulting the other administrators (Article 19 of the same act). Tokyo and Sagamihara city (Kanagawa prefecture) have entered into an agreement for the management of a city road running across the Sakaigawa river. Sagamihara city located at the upstream portion manages bridges on the upstream portion while the Tokyo government manages those on the downstream portion. They can decide expenses necessary for the management through negotiations (Article 54 of the same act). The administrators have agreed that Sagamihara bears the management expenses for bridges over the upstream portion and Tokyo bears the management expenses for those over the downstream portion. For prefectural roads, Route 109 which is a Shimane and Hiroshima prefectural road running along the boundary between Shimane and Hiroshima prefectures serves as a good example. At the point crossing the boundary, Shimane administers the segments from the start while Hiroshima manages the segments towards the end.

Similar agreements have been reached for subsidiary national roads, in addition to prefectural or city roads. For the Kakuto Tunnel of National Road Route 221 running along the boundary between Kumamoto and Miyazaki prefectures, Kumamoto is responsible for the portion within Miyazaki, while the expenses for the management of the tunnel are incurred by both prefectures in proportion to the length running through each prefecture33.

32 According to the person in charge from the Road Policy Section of the Road Bureau in the Ministry of Land, Infrastructure and Transport.
33 According to the person in charge from the Road Improvement Section of the Civil Engineering Department in Kumamoto Prefecture.
V  Concluding remarks

This article has identified river management policy and road management policy as an example of public goods with spillover effects among regions, and has discussed the management policies in term of the spillover effects. To summarize in the context of the concerns highlighted in this paper, I can assert that river and road administration policies in Japan can be characterized by the following three issues.

(1) With regard to the sharing of roles between the central government and local governments, the system considers the spillover issue to some extent. Yet the central government has often directly administered cases where no spillover is acknowledged, especially for rivers.

(2) With regard to cost-sharing between the central government and local governments, the former incurs expenses for both rivers and roads, irrespective of the magnitude of the benefits. With regard to cost-sharing among local governments, a system has been established where respective governments incur costs in proportion to the benefits. This system has actually been adopted for rivers.

(3) With regard to negotiations among local governments, negotiations on administration or cost-sharing for class B rivers and subsidiary national roads have actually been conducted among related local governments.

Assuming the world represented by the Decentralization Theorem of Oates (1972), where a central government has average information on each region, local public goods that confer benefits only within a jurisdiction should be provided by the local government of that jurisdiction. We may have to question the situation described in (1) above in this context. At the same time, we have to empirically examine this issue based on substantive research on whether local governments are truly in a superior position to the central government. On the other hand, the condition described in (2) above, where the benefits of public goods are provided solely within a certain jurisdiction and do not spill over to other jurisdictions, should also be questioned from the perspective of marginal accountability. These points are not limited to rivers and roads, but are true of local public finance policies overall.

What can we conclude regarding the issue of spillover? One consideration in (1) relates to the criteria under which the central government should directly administer rivers requiring coordination in terms of conflict of interest. And importantly, in the same context, when a prefectural government prepares a basic policy to improve rivers or a river improvement plan, it needs the permission or consent of the central government. This begs a question: When the central government is relieved of the government acts related to authorization, consent, and consultation and delegates the river or road improvement to local governments, can efficient resource allocation be achieved through negotiations between regions?

We cannot prepare data sufficient to clearly answer this question for the purpose of this
article. As noted in (2) and (3), however, cost allocation among prefectures in proportion to benefits has been achieved for projects directly administered by the central government, negotiations among prefectures have actually been conducted for class B rivers, and negotiations among prefectures and municipalities have been conducted with respect to subsidiary national roads and local roads directly administered the central government. This indicates that negotiations among regions may be feasible and calls for further substantive research.
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