SPENDING COOPERATION FOR THE PROVISION OF INTERNATIONAL PUBLIC GOODS*

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In its active form, responsibility is leadership…The danger for world stability is the weakness of the dollar, the loss of dedication of the United States to the international system's interest, and the absence of candidates to fill the resultant vacua.

—Charles P. Kindleberger, 1988, pp. 208-210

Moreover, public finance represents economic 'planning', i.e. positive intervention, and not just an automatic mechanism as in the abstract theory of harmony.

—Nobel Laureate Gunnar Myrdal, 1990, p. 156

It's politically fashionable to rant against government spending and demand fiscal responsibility. But right now, increased government spending is just what the doctor ordered, and concerns about the budget deficit should be put on hold.

—Nobel Laureate Paul Krugman, 2008

INTRODUCTION

The importance of international (or global) public goods (IPGs) has recently given rise to intense analyses in the academic literature (see, for example, Kaul et al., 1999 and Ferroni and Mody, 2002). A pure IPG, in principle, can generate benefits that spill over borders, regions, ethnic groups, and generations. Morrissey et al. (2002) classify IPGs into five categories: environment, health, knowledge, security, and governance. Types of IPGs as diverse as Internet securities, financial market stability, biodiversity preservation, and knowledge can be framed in terms of the so-called *weakest link*, *weaker link*, *better shot*, and *best shot* public goods (Sandler, 1998; Arce, 2004). The introduction of these adjectives characterizes the variety of ways in which the international collective action is translated into the provision of public goods. For instance, the smallest effort or contribution uniquely determines the public good level for a *weakest link* technology, while the largest effort or contribution uniquely determines the public good level for a *best shot* technology. Sandler (1998, p. 232) pointed out that some of the most worrisome public good challenges facing human beings adhere to the best-shot technology. It is quite conceivable that the provision of global public goods has remained under-provided and faced with a global governance challenge.

To help advance the provision of IPGs, this paper stresses the urgency of enhancing spending cooperation and coordination mechanisms between national authorities. The second section investigates the planning property of the government and analyzes ideal types of economic planning initiated by the local government and the central government. The third section uses several game examples to illustrate the provision of public goods. The fourth section analyzes global planning for the provision of IPGs via spending cooperation between national authorities. The fifth section concludes.

ECONOMIC PLANNING OF THE GOVERNMENT

In economic academia, the mainstream approach tends to treat the economy and other subjects such as politics as distinct areas, namely, the economy as one topic and politics as another. This mode of dichotomy, indeed, can be regarded as a general practice of dualism, a concept applied to describe a phenomenon of two co-existing but independent elements (Dow, 1990). Under the mainstream frame of reference, the prevalence of the price or market mechanism dominates economic analyses and "individuals and their wants are the main focus" (Rosen, 2005, p. 7). The economic role of government, as a result, has been logically reduced to resolving market failure.

The mainstream narrow view has, unfortunately, not only blurred the planning property of the government but has also created obstacles in

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the long-run progress of promoting society. The emergence or existence of government represents the collective will of a society to fulfill its goals, and this realization requires the implementation of various cooperative and institutional mechanisms initiated by the government. The market mechanism is *de facto* an important institution of the society's planning process, but any overestimation or underestimation of the market mechanism will certainly lead to a distorted perspective on the economic role of government.

Competition, the dynamic process of interaction among buyers and sellers in markets, puts the free market economy into action. One might wonder whether the full implementation of a free market economy (along with its institutions) caters to all the interests of differential people and communities. People, for instance, might be eager to pursue economic equality for social justice or to develop a self-reliant type of planning economy with limited external trade, and so on. Under these circumstances, the government has to assume a more active and positive role for planning an economy compatible with the expectations of its citizens.

The growth of income and wealth inequality has become a global phenomenon which has rapidly emerged as one of the most formidable challenges facing public finance economists. Indeed, the rich communities (nations) have tended to waste resources, whereas the poor communities (nations) have tended to destroy resources. Due to rising wealth inequalities all over the world and limited resources on earth, the global community has become less and less sustainable. To maintain a sustainable society with an efficient use of resources, it is necessary to achieve a more equitable distribution of wealth (Lin, 2006, 2007).

It can be fairly understood that the central planning experiences shown in past communist economies have led many people to develop a deep mistrust (and misunderstanding) of economic planning. It's time, however, for us to seriously re-recognize the significance of economic planning and to reevaluate the prevalence of radical market liberalism launched in the 1980s by the former Great Britain Prime Minister Margaret Thatcher and the late U.S. President Ronald Reagan. Over the past several decades, mainstream academics have, on the one hand, tended to underestimate the limitations of the market mechanism and, on the other hand, tended to overlook the advantages of economic planning for social long-term development.

In a modern society, economic planning can be understood as a wide search and participation process of coordinating a system of policy measures for bringing about the long-term development of a society. Individual behavior within this framework of collective action is verified by the network existing in the institutional structure and cultural setting. The nature of economic planning is different from that of competitive economic activity. To proceed with the work of economic planning, the government is obligated to initiate various cooperative and institutional mechanisms to internalize individual choices, to coordinate various needs and interests, and to ensure an equal chance for people of all classes in their participation.

Economic planning of the government will become more and more important in the twenty-first century. This tendency will be reflected in the increasing understanding about the causes and consequences of pressing issues such as environmental degradation and growing economic inequality in a capitalistic society. To help build a sustainable globally planned economy under the "think globally, act locally" guideline, this paper suggests that it is better for the local government to play a leading role in planning the local economy and, alternatively, for the central government to cooperate with foreign central governments in planning the global economy.

The aforementioned arrangement of economic planning of the government has several advantages. First, the system of more centralized planning at the local government level can help local policies better address local needs and interests. National planning (i.e., economic planning at a national level) frequently cannot cater to the specific interests of local residents. Thus, the central government had better play a supporting role for the local government (Lin, 2008). Secondly, the cooperation of a country's central government with foreign central governments is founded on the implementation of its own country's economic possibilities. Under this circumstance, the domestic economy will not be vulnerable to external shock since the central government is not easily subject to the clout of foreign governments.

Finally, the implementation of proper economic planning cannot only allow the operation of normal market activity but also help the efficient and timely provision of public goods. To better

allocate limited resources on earth and to resolve some pressing issues such as poverty, all levels of government should abandon the principle of sectionalism and learn how to cooperate with each other to greatly enhance the provision of public goods. That is, each local government must try to learn how to cooperate with other local governments on a national basis and such endeavors will lead to genuine emergence of national public goods (different from that under the dominance of a single central government). Similarly, each central government should learn how to cooperate with other central governments on an international basis and such endeavors will greatly contribute to the emergence of IPGs in a global community.

Poverty, for instance, is frequently entangled with the phenomena such as contagious diseases and criminal activities, which cause great negative impact on other individuals and communities. Reducing poverty, in a sense, possesses the property of public good if poverty reduction induces greater public health and security. From a global village perspective, the reduction of poverty has become even more significant if it contributes to disease eradication and global peace, both of which are considered as important IPGs. To further illustrate the significance of spending cooperation for the provision of (international) public goods, it might be useful to review some examples of public goods in the next section.

SOME EXAMPLES OF PUBLIC GOODS: A REVIEW

It is well known that the non-excludable property of public goods may result in the under-provision of public goods. This concept can be illustrated by the following simple game. Consider that there are two players, A and B. Each player can provide one unit or none of a public good. Each unit of public good yields a benefit of 4 to each player, at a cost of 6 to the contributor. The two players' payoffs under different outcomes are illustrated in Figure 1, where C stands for "contribute", and N stands for "not contribute."

When the two players decide not to provide any public good, the net benefit is zero for both players. If A contributes, but B does not, then A's net benefit equals -2, and B's net benefit is 4. Since this game is symmetric, if B contributes but A does not, the payoffs for the two players are reversed. Finally, if both players contribute, then each receives a net benefit of 2. We can easily verify that the Nash equilibrium outcome is {N, N}, in which neither player would provide the public good. Indeed, the strategy of "not contribute" is a dominant strategy; that is, for each player, choosing the strategy of N always generates a higher payoff than choosing C, regardless of the other player's strategy.

This simple game is the famous Prisoner's Dilemma game. A well-known consequence of the Prisoner's Dilemma game is the emergence of a Pareto-inferior equilibrium. In Figure 1, each player receives the net benefit of 2 in the outcome of {C, C}, whereas each of them receives nothing in the equilibrium outcome {N, N}. Although the outcome in which the two players contribute gives rise to higher payoffs for each of them, each player has an incentive to be a free rider. For example, if player A deviates away from the outcome of {C, C}, then he can receive a higher net benefit of 4. Since the payoffs are symmetric in this simple game, both players have the incentive to deviate away from {C, C}. Thus, {C, C} is not the equilibrium outcome.

However, the non-excludable property of public goods does not necessarily lead to the under-provision of public goods. In what follows, we propose some examples to demonstrate this point. First, we reverse the benefit and cost per unit of public good. That is, each unit of public good provided yields a benefit of 6 to each player, at a cost of 4 to the contributor. Figure 2 illustrates the payoffs under the four possible outcomes.[1] In this game, for the two players, the strategy of contributing is the dominant strategy. Namely, for each player, choosing the strategy of C always generates a higher payoff than choosing N, regardless of the other player's strategy. As a result, {C, C} is the unique Nash equilibrium. This result indicates that if the benefit from providing the public good is sufficiently large, then the property of non-excludability need not bring about a Pareto-inferior outcome.

Another possible situation in which {C, C} will be the Nash equilibrium outcome is the assurance game described by Cornes and Sandler (1996). The assurance game is illustrated by Figure 3. In this game, we assume that the public good gives rise to a positive benefit only when the two players contribute. Neither one receives a positive benefit when only one player contributes. Both players have to contribute a unit of the public good for the players to receive a benefit of 4 from each unit of public good provided. If the two players contribute a unit, then each receives a total benefit of 8 from

Figure 1

A \ B	N	C
N	0 0	-2 4
C	4 -2	2 2

Figure 2

A \ B	N	C
N	0 0	2 6
C	6 2	8 8

Figure 3

A \ B	N	C
N	0 0	-6 0
C	0 -6	2 2

Figure 4

A \ B	N	C
N	0 0	-2+*v* 4
C	4 -2+*v*	2+*v* 2+*v*

the two units of public good, at a unit cost of 6, and thus the net benefit for each player is 2. However, if only one player contributes, then the contributor pays the costs but receives nothing.

We can verify that the assurance game possesses two pure-strategy Nash equilibria: {C, C} and {N, N}; that is, the two players contribute or no one contributes. Although the structure of the benefit and cost is the similar to the Prisoner's Dilemma game, cooperation is a possible equilibrium outcome in the assurance game, whereas it does not occur in the Prisoner's Dilemma game. The reason for this is that the free rider obtains nothing in the assurance game, and thus the two players have the incentive to cooperate. From these examples, we have learned that the incentive to being a free rider is sensitive to the structure of the benefits and costs of public goods.

The emergence of the cooperation may stem from the consideration of altruism. Altruism refers to feeling of concern for other people. Although the notion of altruism does not meet the self-interest assumption made by the standard model, it will not affect the analysis tools adopted. That is, a player still seeks to achieve the highest level of utility in the presence of altruism.

We use Figure 4 to show how the presence of altruism may lead the cooperation to be a Nash equilibrium outcome. Suppose each unit of public good yields a benefit of 4 to each player, at a cost of 6 to the contributor. But now the existence of altruism will provide an additional benefit v to the contributor. As a result, the total benefit for the contributor is equal to $4 + v$, and the net benefit equals $-2 + v$.

We note that if v equals zero, then this game is reduced to the Prisoner's Dilemma game described above. If v is less than 2, then {N, N} is the unique Nash equilibrium outcome. If, however, v is greater than 2, then the strategy of contribution becomes the dominant strategy, and thus {C, C} is the unique Nash equilibrium outcome. This simple game indicates that cooperation may be the equilibrium outcome in the presence of altruism.

GLOBAL ECONOMIC PLANNING: SPENDING COOPERATION FOR THE PROVISION OF INTERNATIONAL PUBLIC GOODS

In some instances, the provision of public goods can generate very large benefits not only for the contributing country but also for other countries. National authorities around the world to a great extent, as the "fully privileged" game shown in the previous section, have a better chance of cooperating with others to contribute the provision of IPGs and to enjoy the benefits. From a global village perspective, several types of (national) public goods such as *national defense* cannot be considered as a pure public good any longer. Instead, it is appropriately considered as a special type of hostile club good. In this regard, central governments around the world should abandon traditional individual spending on national defense, and cooperate on various spending schemes for regional or global peace.

Take peacekeeping for example. Peacekeeping within a region or a country requires close cooperation between countries. In order to succeed, every country at stake has to actively participate in resolving the conflicts. If one country chooses to free ride on the efforts of others, the efforts done by all other countries will eventually become futile. This type of condition is very similar to the assurance game in which the public good will give rise to a positive benefit only when both players contribute.

The free-rider problem has been well documented in the models such as the tragedy of the commons, the prisoner's dilemma, and the logic of collective action (primarily developed by Olson, 1965). According to the aforementioned models, the choice of free-riding may tend to dominate the decision process and the public or collective benefit will not be created. This paper, however, wants to point out that countries will gradually realize that there has not been an abundance of room for them to free ride. First, the global economy has become much more complicated and integrated, and countries around the world will increasingly perceive the pressure of resolving some common problems such as the current global financial crisis. Thus, they will be forced to (or choose to) work together to restore the global financial market stability. Second, free-riding could generate an implicit daily cost. Since it is tempting to be a free rider, the provision of international public goods has been (and will be) substantially delayed. It can be well anticipated that the cost of providing public goods in the present global community could substantially increase. If countries later decide to participate in the provision of public goods which they previously refuse, they might incur a higher cost due to such a time delay (or lag).

Altruism has recently drawn attention in the analysis of a sustainable society and has been considered instrumental for global sustainability. According to van den Bergh (1996), the ethical-utopian perspective of sustainable development emphasizes "new individual value systems (respect for nature and future generations, basic needs fulfillment) and new social objectives (steady state); … long-run policy based on changing values and encouraging citizens (altruistic) behavior as opposed to individual (egoistic) behavior." (p. 59) When an individual takes the public benefit into account, he will obtain a higher level of satisfaction due to his devotion to public affairs. Or, he might experience the feeling of a reduction in his own efforts or costs (as he has done a good thing for many people). Similarly, a country might earn a better reputation and therefore obtain a higher sense of achievement if it cares about the global pressing issues. If this level of achievement or satisfaction derived from altruism is sufficiently large, as demonstrated in Figure 4, then the outcome of cooperation will appear.

In reality, economic planning for the provision of public goods in a global community is not an automatic mechanism. As Hayden (1987) has shown, critical to "any planning is the question of *when* actions and events are to occur." (p. 1281) For illustrative purposes, we might consider the following hypothetical scheme. Suppose country A is very vulnerable to avian flu and decides to eradicate avian flu via the government budget. It is better for other countries to financially and economically acknowledge country A's spending efforts (in promoting the emergence of an IPG). Country A, however, might have a budget shortfall to carry out other domestic policies (after the execution of its limited budget in the prevention of avian flu). Under this circumstance, we would expect some other countries to execute policy measures (possibly taking precedence over the needs of their individual country) that could provide or generate benefits (of another IPG) catering to country A's need.

CONCLUSIONS

Keynes has long understood the unstable nature of capitalism and emphasized that the government has to pay close attention to the frequent occurrence of economic instability and crises. As the global economy has become much more volatile as compared to a century ago, central governments all over the world must seriously plan how to cooperate with each other and give priority to the provision of international public goods. This paper also points out that the cooperation of a country's central government with foreign central governments should be founded on the implementation of its own country's economic possibilities. That is, it is better for the local government to play a leading role in promoting the long-term development of the local economy and the central government should play a crucial supporting role for the local government.

If we investigate the ongoing global financial crisis and serious economic downturn, we will soon comprehend the significance of initiating global economic planning. The current Keynesian approach of increasing public (deficit) spending adopted by each individual country could only generate limited and temporary impact on the economy. To restore the global financial market stability, an important type of IPG, and to further global economic sustainability, what we urgently need is a comprehensive economic plan for reinforcing government spending cooperation.

Note

[1] Cornes and Sandler (1996) refer to this game as the "fully privileged" game, because each player is motivated to privilege the other player.

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