Public Goods and Regional Cooperation for Development: A New Look

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This article takes a fresh look at regional public goods and their role in promoting sustainable development and cooperation in Latin America. At the outset, the article reviews the essential properties of public goods -nonexcludability of benefits, nonrivalry of benefits, and the aggregation technology of public supply- and their influence on the prognosis of supply of regional public goods. From a collective action prospective, the article draws important distinctions among four classes of public goods: national public goods, regional public goods, transregional public goods, and global public goods. The role of IDB, donor nations, customs unions, and others in facilitating the provision of these goods is investigated. Given the article's regional focus, much of the analysis is with respect to regional and transregional public goods. Myriad examples of Latin American regional public goods are given. The article also presents the pros and cons of regional subsidiarity. Finally, the article lists numerous policy recommendations.

Introduction

There is an increasing awareness that sustainable development is dependent on Global Public Goods (GPGs) and Regional Public Goods (RPGs) that serve as the social overhead capital necessary for market integration (Kaul *et al*., 1999; Sandler, 1997). These GPGs and RPGs promote social welfare through various sectors -health, environment, security, governance, and knowledge (Estevadeordal *et al*., 2004)- that are essential for development and progress. Globalization is, in large part, the driving force behind the increased interest in GPGs, while the new regionalism is the impetus behind the interest in RPGs. Globalization arises from enhanced cross-border flows, which include goods, services, financial capital, labor, raw materials, and intermediate goods. Sometimes overlooked, other important globalization-related transnational flows include externalities (uncompensated interdependencies) that result in market failures as resources fail to reach their most-valued use owing to costs or benefits that are not reflected in prices -e.g., the cost of acid rain produced as a by-product of electric generation in Latin America is not part of the price of electricity. Other modern-day externalities involve computer viruses or the spread

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of terrorist networks to other states. Cross-border externalities may be positive or negative and affect the five sectors enumerated earlier -e.g., for the health sector, the Internet can be used to disseminate best practices in new operative procedures in medicine.

In addition to GPGs, globalization has increased the concern for transnational public goods (bads) that affect two or more nations through their range of benefit (cost) spillovers. The increased presence and awareness of these transnational public goods stem from numerous causes (Sandler, 1997, 2004). *First*, augmented trade and financial flows, associated with globalization, mean that social overhead capital in one country facilitates trade and financial flows in other countries. Thus, this capital provides benefits not only at home, but also abroad, thereby furthering sustainable development at the regional level. *Second*, the increased pace of technological advancement creates more transnational public goods as ideas and innovations spread beyond national borders. *Third*, a growing interest in market integration enhances the need for transnational public goods, especially in terms of infrastructure that supports private enterprises and the operation of markets. *Fourth*, the fragmentation of nations, especially in Europe, Africa, and Asia, changes some National Public Goods (NPGs) into transnational ones. *Fifth*, the world's enhanced ability to monitor the planet, either from satellites or from terrestrial vantage points, allows new transnational public goods to be spotted -e.g., the spread of deserts or the buildup of greenhouse gases. Such gases are monitored by satellite or by an observatory on Mauna Loa on the island of Hawaii. *Sixth*, the anticipated initiative on Sustainable Development Goals will place increased emphasis on GPGs and RPGs in the environmental, health, and security sectors as a pathway to development (United Nations, 2012; UNCSD, 2012).

Globalization concerns have given rise to a new regionalism and the recognition that there are also more cross-border flows that require attention at the regional level (Arce & Sandler, 2002; Stålgren, 2000). RPGs provide some of the necessary regional social overhead capital. In Latin America, RPGs include the Central American Electricity Interconnection System (SIEPAC) linking Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama; the Regional Fund for Agricultural Technology (FONTAGRO) providing common-pool financing for agricultural innovation; and the Regional Biodiversity Strategy for the Andean Tropics coordinating biodiversity strategies to promote conservation (Arce, 2004). The same factors indicated above for the growing importance of transnational public goods also apply to RPGs, which, as a subclass of the latter, generate benefit spillovers that influence fewer or more countries.

RPGs serve a crucial function in South South Cooperation (SSC), because their provision can link or integrate Latin American infrastructure, thereby facilitating trade and development in the region. Sometimes, SSC is characterized as a RPG. While this characterization is fine, I prefer to view SSC as a means of facilitating the provision of a host of RPGs and GPGs. SSC is pivotal in the development of Latin America.

The purpose of the current article is to take a fresh look at RPGs from a development and integration viewpoint. In so doing, the article draws important distinctions from a collective action viewpoint among four classes of public goods: NPGs, RPGs, Transregional Public Goods (TRPGs), and GPGs. TRPGs are transnational public goods that benefit countries in two distinct regions -e.g., finding a cure for malaria. The article identifies factors that either inhibit or promote the provision of these various public goods. In practice, the article indicates what policies the Inter-American Development Bank (IDB) and other stakeholders can adopt to promote these four types of public goods. Along the way, the article lists some important RPGs in Latin America. To set the stage, the article begins with a brief review of the properties and types of public goods, because they come in myriad forms with different implications for policies. The article also investigates the main stakeholders and participants, and how they play a role in the provision of RPGs. In recent times, the diversity of these stakeholders has grown and includes multilateral institutions, public-private partnerships, donor countries, Non-governmental Organizations (NGOs), development banks, charitable foundations, and others. Finally, the article reexamines the rationale for subsidiarity with respect to RPGs and the growing importance of RPGs.

On Public Goods

The classic pure public good is characterized by two properties: nonrivalry of benefits and nonexcludability. Nonrivalry of benefits indicates that a unit of the good can be consumed by one agent without detracting, in the slightest, from the

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consumption opportunities still available to others from the same unit of the good. Nonrivalry of benefits means that there is no marginal cost from extending consumption of the public good to another user; hence, there is no rationale to limit the size of the group sharing the public good. If new users receive a positive marginal benefit from the public good, then consumption should be afforded to these users. Examples include a tsunami-early warning system, the tracking of hurricanes, remote-sensing monitoring of hurricane intensity, and the sharing of agricultural best practices, all of which apply to Latin America. Nonexcludable benefits arise when the public good's provision is available to payers and nonpayers alike. Curbing global warming or limiting ozone shield depletion are nonexcludable public goods at the global level, while protecting a watershed or eradicating a region-specific pest or disease are nonexcludable public goods at the regional level. Annihilating a region-based terrorist organization offers nonexcludable benefits to targeted countries. Nonexcludable benefits imply free riding in which those who benefit from the good reveal no preference in terms of a payment, since they will get the benefits regardless. This then means that governments or a collective of governments (in the case of RPGs or GPGs) may have to provide the good. In some cases, public-private partnerships or charitable foundations can foster provision of these public goods.

Although much attention was initially paid to pure public goods, most public goods are impurely public owing to partial rivalry and/or partial excludability of benefits (Cornes & Sandler, 1996). Partial rivalry typically arises from crowding or congestion costs where additional consumers detract from the quality or quantity of the good's benefits that are available to others from a unit of the public good. A regional interstate highway or waterway is subject to congestion, so that the marginal cost associated with additional users is not zero, thereby justifying a limit to the size of the sharing group. If, however, an impure public good is partially rival but nonexcludable, then the good will be overused since users will not account for the associated congestion cost that their use imposes on others. That is, the congestion externality will not be internalized through a user charge. An example of a partially rival, nonexcludable RPG is a commons, such as fisheries in Latin American waters.

A club good is an impure public good that is partially rival and excludable at a nominal cost. As such, a toll or user fee can internalize the marginal congestion cost, thereby leading to optimal utilization. Moreover, these tolls can be used to finance an optimal provision level (Buchanan, 1965; Cornes & Sandler, 1996). A properly design club can induce users to reveal their true preferences and to be charged accordingly. Consider a bridge spanning a river forming the borders of two countries. Individuals, who have a greater willingness to pay for the use of the bridge, will transverse it more often and pay more in total tolls. Each single transit will cost the same because crowding cost is the same for each transit, but those users with a greater need for the bridge will cross more frequently and pay the toll more often, thereby revealing their type and preferences. The bridge is a regional club good that can be financed by loans, which are later repaid with congestion-internalizing tolls. Any regional infrastructure project in Latin America that displays crowding and excludable benefits can be provided through a club arrangement that can be financed through IDB loans and repaid through user charges. These club loans can also come from other Latin American banks, such as *Corporación Andina de Fomento* (CAF), *Banco Nacional de Desarrollo Económico de Brasil* (BNDES), and *Fondo para el Desarrollo de la Cuenca del Plata* (FONPLATA). Club goods can be provided privately (e.g., toll roads in Texas) or publicly (e.g., public hospitals and universities). Other club good examples include satellite-launch facilities (e.g., Alcântara in Maranahão, Brazil), air-traffic control networks, power grids, crisis-management teams, and the Panama Canal. IDB's greater use of loans to finance RPGs can with time be tailored to the financing of regional club goods, especially if the loan can be repaid according to the collection of user fees.

Joint Products

Joint products arise when an activity yields multiple outputs. For private goods, the classic example is a sheep, which yields a hide and mutton. For public goods, a single activity can produce multiple outputs with varying degrees of publicness: e.g., the Amazon rainforest not only sequesters carbon, which is a GPG, but it also provides eco-tourism, which is a club good subject to crowding and the use of tolls or fees. In addition, the Amazon rainforest offers biodiversity, local watershed, local climates, and foods. Security pacts can provide alliancewide RPGs in the form of deterrence and proactive measures, while these pacts offer defensive NPG benefits to the allies (e.g., border protection and disaster relief). A regional electric power grid, such as SIEPAC in Central America, augments electric reliability

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(a purely public RPG), and supplies electric power (a private good) to its consumers. SIEPAC is an example of a joint product that stems from a public-private partnership that transcends national borders. Custom unions -*Mercado Común del Sur* (MERCOSUR), Andean Community of Nations (CAN), and Central American Integration System (SICA)- offer joint products by promoting regional infrastructure, best practices, and uniformity in transport regulations, which are RPGs. By increasing trade, member states gain an NPG. The allocation prognosis for joint products hinges on the *ratio* of excludable to total benefits. The larger is this *ratio*, the greater the anticipated allocative efficiency as markets and club arrangements can direct resources to their most-valued use through prices and tolls (Sandler, 2004). Customs unions can fund regional clubs when infrastructure permits exclusion of nonpayers.

Aggregation Technology of Public Supply

An important property of public goods is the aggregation technology of public supply (henceforth, aggregation technology), which indicates the manner in which individual provision levels are aggregated to determine the amount of the public good that is available for consumption by benefit recipients (Hirshleifer, 1983; Cornes & Sandler, 1984). Prior to 1983, the only aggregation technology in the literature was summation where each country's (or contributor's) public good provision are added together to ascertain the level of the public good. For cleansing an ecosystem, the amount of pollutants removed equals the summed efforts of the providing countries. The capacity of a regional waterway also depends on the summed provision levels. With a summation aggregator, every contributor's provision is perfectly substitutable for those of others; one nation's provided units have the same marginal impact on total provision as units supplied by other nations. This perfect substitutability provides strong motivation for free riding on the efforts of others, thereby resulting in suboptimal supply. In a regional context, a country would be less willing to assume a loan to supply a RPG unless other benefit recipients also assume loans to finance the RPG. Thus, IDB's (2012) effort to promote collaborative efforts through its Initiative for the Promotion of Regional Public Goods is well founded from a theoretical viewpoint. Other financial institutions -BNDES, CAF, and FONPLATA- can also apply their financial resources to finance such collective efforts to provide essential RPGs.

Generally, other aggregation technologies have a more favorable prognosis for RPG provision (Sandler, 1997). The weighted-sum aggregator puts nonunitary weights on the provision levels of the individual contributors. As such, the marginal impact that one country's provision exerts on the amount of the RPG is not necessarily the same as the marginal impact of other countries' provision levels. Thus, providers' efforts are not perfectly interchangeable or substitutable. In regards to the reduction of acid rain stemming from the elimination of sulfur or nitrogen emissions, a weighted-sum aggregator applies. This follows because the influence of emission cutbacks on acid deposition depends on wind patterns, the emission sites, and the pollutants' airborne time (Murdoch *et al*., 1997). A weighted-sum aggregation technology also applies to curbing the spread of a pest, since the effectiveness of countries' actions depend upon the concentration of the pest and natural barriers to inhibit its dispersion. With a weighted-sum aggregator, the potential undersupply of RPGs may be attenuated because some nations receive greater payoffs from their own efforts as the degree of substitutability among provision levels is reduced.

Two other important aggregators are weakest link and best shot. For a weakest-link RPG, the smallest contribution level fixes the amount of the public good for all benefit recipients. As such, contributors are motivated to match this smallest contribution since to give more would be a waste of money. Some forms of infrastructure abide by weakest link -e.g., the least developed or least reliable air-traffic control system in a multinational network influences the traffic flow for the entire network. Similarly, the country with the least effective monitoring system for disease outbreaks determines the protection of all at-risk countries in the region. Weakest-link RPGs underscore the need for the IDB, other Latin American banks, and donors to bolster the efforts of the weakest-link suppliers in order to raise the provision of the RPG. If these suppliers are assisted, then other countries will voluntarily match their increased contributions. At the other end of the spectrum, the largest contribution of a best-shot RPG determines the amount of the public good for all benefit recipients. Contribution levels below the maximum provision of others do not increase the RPG level. Geoclimatic-specific research findings in agriculture are best-shot RPGs. This is also true of developing best practices for treating regional diseases. Discovering intelligence that can result in an effective

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raid on a region-based terrorist group is also a best-shot RPG. For such goods, efforts must be concentrated and performed by the best-equipped country to accomplish the task; otherwise, wasteful duplication occurs or provision thresholds are not surpassed.

Many key sectors abide by multiple aggregators of public supply depending on the particular activity being investigated. In the governance sector, the country with the least sound financial practice will disproportionately influence the financial stability in the entire region. The country with the greatest security threat exerts the largest effect on the peace and security for the region. As such, peace may assume the characteristics of a weakest-link RPG, requiring stabilizing assistance to the most threatened country from other allies or donors. The development of sound financial practices is a best-shot RPG in the governance sector. For the health sector, monitoring disease outbreaks is a weakest-link RPG, while developing vaccines for diseases is a best-shot RPG (Sandler & Arce, 2002).

Sandler (1997) showed that aid flows should be directed toward weakest-link providers of RPGs, which are usually the poorer countries. This follows because the public good provision of these weakest-link countries must be brought up to an acceptable standard that satisfies all benefit recipients. To circumvent moral hazard and other considerations, donors may give in-kind transfers rather than funds (Vicary & Sandler, 2002). In contrast, aid flows should be directed toward best-shot providers of RPGs, which are often the richer countries. At first, this might appear counterintuitive; however, the rich countries are typically best positioned to surpass thresholds necessary to achieve a best-shot public good, such as a cure for a disease. The country with the best scientists and laboratories are best situated for making the discovery. Resources need to be concentrated where they do the most good for everyone. Thus, financial capacity is the key consideration for subsidizing weakest-link RPGs, while provision capacity is the key consideration for subsidizing best-shot RPGs. A country's ability to provide various RPGs, and not necessarily its income level, determines whose RPG efforts should be assisted by IDB, other financial institutions, and donors. For weighted-sum RPGs, aid should flow to those countries with the greatest marginal impact on the provision of RPGs. Hence, recent efforts by MERCOSUR's Structural Convergence Fund (FOCEM) to bolster the infrastructure of the two poorer members (Berretoni & Lucángeli, 2012) makes great sense for weakest-link and summation RPGs, but not for best-shot RPGs, where richer countries' provision benefits all countries in a region. These convergence efforts should not be blindly applied to all cases. We refer the reader to Arce & Sandler (2002) and Sandler (1997) for the desirable direction for aid flows in regards to other aggregation technologies -e.g., weaker link, better shot, and threshold.

Differences between NPGs, RPGs, TRPGs, and GPGs

NPGs possess benefits that are confined to the country's territory and do not transcend its borders. A country's central bank is an NPG. Other NPGs include the country's primary schools, its national guard, its justice system, its police, and its internal highways. Many NPGs are examples of social overhead capital that are complementary to RPGs and GPGs, since the NPGs facilitate the utilization and provision of public goods with wider ranges of spillovers. For example, a regional highway network needs a system of national highways for greater derived benefits, so that goods from other countries can reach their desired destination in another country. If regional health is to be promoted, then each nation's healthcare system in the region becomes an important consideration. NPGs can be provided at the national level with some help, at times, from donors, development banks, and other interested parties. Nations have an incentive to take out loans for their NPGs because the lion's share of the resulting benefits stays within the nation. NPGs are necessary for development.

RPGs are public goods whose benefits extend beyond a single nations' territory to some well-defined region. A region may correspond to myriad different concepts. The regional basis may be geological -e.g., nations along a river, or on a plain, or on a seacoast. In the seacoast case, the cleanup or prevention of an oil spill in, say, a gulf offers benefits to all potentially affected coastal nations as currents and random factors (e.g., wind or weather) influence which nations are ultimately impacted. In other instances, the region may be geographically based, such as countries in the Southern Cone of South America or in Central America. Propinquity may define a region, such as neighboring nations or countries within a defined distance from

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a reference country. Distance becomes important in the case of airborne pollutants such as sulfur and nitrogen emissions, which causes acid rain downwind. Geoclimatic factors may identify a region as countries that share similar conditions for crops. The identification of geoclimatic-based regions is particularly important for agricultural research -e.g., FONTAGRO. Regions may, at times, be politically defined as in the case of customs union. Cultural similarities (e.g., language or ethnicity) may be the basis for a region. Finally, historical considerations may determine a region, such as past ties to the same colonizing country. In its Initiative for the Promotion of Regional Public Goods, IDB (2012) characterizes RPGs as "goods, services, or resources that are consumed and produced collectively by the public sector and, if appropriate, the private sector in a minimum of three Latin American countries". This definition allows for public-private provision partnerships, and differs from the standard definition, which concerns the range of consumption spillovers and not the nature of the producers. For example, a best-shot RPG can be provided by a single country, but is consumed by countries in a region.

TRPGs have a benefit range that includes countries from two or more distinct regions. A transnational public good provides benefits to two or more countries, while a TRPG provides benefits to two or more regions. A public good whose benefits affect Central, North, and South America is a TRPG -e.g., hurricane-tracking satellites that monitor more than one geographical region. As nations supply RPGs through regional institutions, a need may arise to network these institutions to supply TRPGs -e.g., the preservation of rainforests on a continent or the linkage of customs unions. The Initiative for the Integration of Regional Infrastructure in South America (IIRSA), begun in 2000 by 12 South American countries, promotes TRPGs in the form of integrated energy, transport, and telecommunication networks as a means for facilitating interstate commerce. CAF, FONPLATA, and IDB have funded infrastructure projects of IIRSA, which, in turn, fosters SSC. Finally, GPGs display benefit ranges that include a large swath of the planet or, in some instances, the entire globe.

There are factors that both promote and inhibit the provision of these four classes of public goods. NPGs have the best provision prognosis because nations have proper incentives to provide these goods. The main concern is finance, which is where foreign aid from donor countries, regional development banks, NGOs, and multilateral institutions has a role to play. GPGs are promoted through their far-ranging benefit spillovers because donor countries gain benefits through their efforts to underwrite recipient countries' provision of the GPGs. For example, foreign assistance to preserve a rainforest provides global public benefits from the sequestration of carbon and the preservation of biodiversity, which helps the donor country and other countries. Such GPG efforts support current thinking about sustainable development goals (UNCSD, 2012). Multilateral institutions have an interest, the funds, and a mandate to supply GPGs. However, GPG provision can be inhibited by the large number of benefit-recipient nations, since collective action is generally harder to achieve among more participants. Moreover, some GPGs possess unfavorable publicness properties of nonexcludable and nonrival benefits, which promote free riding and inhibit provision.

Perhaps surprising, RPGs potentially pose more inhibitors than NPGs and GPGs. RPGs may offer few spillover benefits to donor nations outside of the region or to many supporters of multilateral organizations. For example, reducing acid rain in many parts of Latin America may have little benefit spillovers to donors in North America or Europe owing to prevailing wind patterns. Curbing region-specific diseases may also have few global benefit spillovers. Nations within a region have little incentive to assume debt for an RPG that benefits the entire region unless other nations in the region are also carrying their appropriate debt burden for the RPG. Thus, IDB's initiative to promote RPGs is an important step to surmount this hurdle. This is also true for efforts by BNDES, CAF, and FONPLATA. Regional rivalries and past conflicts may also inhibit the provision of RPGs. The absence of a long-standing culture to support regional development banks is another inhibitor of RPG provision. In contrast, there is such a culture to support the World Bank and the United Nations, which bolsters the provision of GPGs and TRPGs. On the positive side, there are some considerations that facilitate RPG provision including the new regionalism and customs unions. The former makes nations recognize the benefits from regional collective action, while the latter promotes collective action in terms of funding. Some RPGs, such as regional infrastructure, possess favorable properties such as exclusion and crowding that permit a club arrangement to provide the RPG. IIRSA can promote infrastructure projects with agreeable public good properties. Cultural and spatial propinquity among benefit recipients at the regional level can bolster RPG provision. In some

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regions, the limited number of countries bodes well for collective provision. Past and ongoing interactions can also foster RPG provision at the regional level.

TRPGs represent an interesting class of public goods whose benefit spillover range lies between that of RPGs and GPGs. Given TRPGs' greater range of benefit spillovers, there is a greater likelihood that donor nations may gain from supporting TRPGs compared to RPGs. Also, multilateral aid agencies have a greater interest to support TRPGs than RPGs. Given its multiregional spillover range, a TRPG may change its character between regions (e.g., prophylactic measures against malaria and river blindness differ among infected regions.) This consideration may or may not inhibit the provision of TRPGs. Two major inhibitors of TRPGs are the associated transaction costs in establishing networks among impacted regions and geographically dispersed spillover recipients. The latter consideration is also associated with another potential inhibitor -the large number of nations necessary for effective collective action. Finally, the absence of jurisdiction-specific institutions means that novel networks of regional institutions (e.g., customs unions) are needed and this need may forestall TRPG provision. This concern will dissipate as more regional collectives come into existence, which can then be linked among regions. The creation of these networks can be achieved through collaborative efforts of the regional development banks, the World Bank, or countries (e.g., the case of IIRSA).

Table 1 lists the primary promoting and inhibiting factors for the provision of NPGs, RPGs, TRPGs, and GPGs. Currently, NPGs and GPGs appear to have a better prognosis than RPGs and TRPGs, because NPGs' incentives are right and GPGs are championed by the multilateral institutions. However, this can change with efforts by the regional development

Table 1

Factors Promoting and Inhibiting NPGs, RPGs, TRPGs, and GPGs

National Public Goods (NPGs)
Incentives exist for nations to provide these goods (promote)
Loans from IDB, multilateral institutions, and donors can be taken out by the nation (promote)
NPGs are complementary to RPGs, TRPGs, and GPGs (promote)
Nations may lack finances (inhibit)
Regional Public Goods (RPGs)
New regionalism and customs unions can facilitate provision (promote)
Favorable characteristics of publicness (e.g., joint products, weighted-sum aggregator, and excludable benefits) (promote)
Cultural and spatial propinquity among spillover recipients (promote)
Fewer nations involved than for TRPGs and GPGs (promote)
Past and ongoing interactions among regional countries (promote)
Less donor spillovers owing to some regional specificity of benefits (inhibit)
Nations must form collectives to gain loans and provide collateral (inhibit)
Regional rivalry, fueled by past and current disagreements (inhibit)
Absence of a culture to support regional development banks (inhibit)

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Table 1

Factors Promoting and Inhibiting NPGs, RPGs, TRPGs, and GPGs

Transregional Public Goods (TRPGs)
Donor spillovers may arise, especially if joint products are present (promote)
Multilateral aid agencies have an interest (promote)
May be some dominant region-specific characteristics (influence uncertain)
Transaction costs associated with establishing transregional network (inhibit)
Large number of involved nations (inhibit)
Geographic dispersion of spillover recipients (inhibit)
Absence of a jurisdiction-specific institution, which may require networking of existing institutions (inhibit)
Global Public Goods (GPGs)
Donor spillovers exist (promote)
Multilateral institutions have an interest (promote)
Large number of nations involved (inhibit)
May possess unfavorable publicness properties (inhibit)

banks, public-private partnerships, donor nations, and charitable foundations.

Major Participants for RPGs and TRPGs

There are diverse stakeholders and participants in the provision of RPGs and TRPGs. In fact, the nature and number of these participants grow more varied over time and they provide an essential means for overcoming these goods' inhibitors. *First*, and foremost, there is IDB and other Latin American development banks that can provide loans and grants to member countries to fund RPGs. To date, IDB has relied on loans, but grants are more appropriate for RPGs and TRPGs with especially far-reaching excludable and nonrival benefits. *Second*, customs unions can underwrite RPG loans and promote infrastructure. *Third*, multilateral institutions can pool funds for best-shot, threshold, and summation RPGs and TRPGs. These institutions can bolster the provision of weakest-link public goods by subsidizing the efforts of the poorer countries. The World Health Organization (WHO) plays an important role in assisting in the provision on health-related RPGs and TRPGs. *Fourth*, networks of participants and institutions can provide TRPGs, such as the Global Environmental Facility (GEF) for environmental public goods and the Consultative Group for International Agricultural Research (GCIAR) for knowledge public goods. *Fifth*, public-private partnerships -e.g., the Global Fund and the Onchocerciasis Control Partnership- also promote RPG and TRPG provision. *Sixth*, donor countries with trade interests in Latin America (e.g., China, the United States, and Canada) gain from some RPGs, such as roads linking major seaports. These roads stimulate demand for their exports, thereby giving these countries a vested interest in some RPGs. *Seventh*, other important participants include charitable foundations (e.g., Gates and Wellcome) and NGOs (e.g., the Red Cross and Doctors without Borders).

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On Regional Subsidiarity

Subsidiarity derives from the notion that the smallest appropriate jurisdiction should provide the public good. In its starkest form, subsidiarity mandates that the decision-making jurisdiction should perfectly match the range of public benefit spillovers. Subsidiarity is consistent with global institutions supplying GPGs; the appropriate transregional jurisdiction or network providing TRPGs; regional institutions underwriting RPGs; and nations supporting NPGs. Subsidiarity is closely associated with the notion of fiscal equivalence (Olson, 1969). The analogy is, however, not perfect because, for developing regions, the financing of RPGs is often bolstered from outside of the decision-making district. Thus, a developing country may be making the provision decision for its NPGs, but the funding source may be from a regional development bank and other donors.

Adherence to regional subsidiarity is intended to ensure that decision-makers adjust their expenditure decisions on public goods to reflect those who derive benefits. In an ideal situation, subsidiarity promotes the equality between the marginal benefits (summed over regional recipients) to the marginal costs. If the decision-making jurisdiction lies within the RPG's spillover range, then undersupply is anticipated as not all recipients' derived marginal benefits are included when provision is decided. If, in contrast, the decision-making jurisdiction exceeds the RPG's spillover range, then oversupply is anticipated as tax spillovers to nonrecipients occur when RPG provision is decided. Regional subsidiarity limits transaction costs by reducing the number of participants, augmenting repeated interactions, and curtailing asymmetric information. Regional subsidiarity also promotes the evolution of regional institutions from shared cultures, norms, and experiences. A reliance on region-based institutions for supplying RPGs also reduces mission creep of multilateral institutions.

There are considerations that detract from the blind application of regional subsidiarity where the RPG's spillover range is the sole driver of jurisdictional design. *First*, economies of scale may justify having the RPG provided by an institution whose political domain exceeds that of the requisite region if the reduced unit cost offsets any lost efficiency from departing from subsidiarity. Global institutions may achieve scale economies for some RPGs by permitting fixed costs to be spread over serving the needs of multiple regions. *Second*, economies of scope from sharing common inputs can reduce unit costs from supplying two or more RPGs by a common jurisdiction, which does not match the spillover ranges of the provided RPGs. *Third*, by increasing the cumulative provision of the RPG, cost savings from economies of learning may justify oversized decision-making jurisdictions. *Fourth*, the requisite regional jurisdiction may not exist or may possess insufficient capacity. This is particularly true for RPGs whose range of benefit recipients do not correspond to any established political jurisdiction. *Fifth*, the aggregation technology may favor a jurisdiction larger than that identified by regional subsidiarity. This is likely the case for some best-shot RPGs, where the required provision effort is beyond the capabilities of any established region. *Finally*, the requisite financing for the RPG may require a providing jurisdiction that exceeds the RPG's range of benefits.

Table 2 summarizes the supporting and detracting influences on the application of regional subsidiarity.

Policy Recommendations

Many policy recommendations follow from the analysis of this article. IDB has essential roles, through its RPG initiative and its leadership, to promote myriad forms of RPGs. In so doing, IDB should consider the use of grants for select RPGs, where a large number of Latin American countries benefit and free-rider motives are especially strong. IDB can also play a pivotal role in the provision of TRPGs by serving as a catalyst for linking institutions in multiple regions. Given the increasing importance of RPGs in development, multilateral institutions and donor countries need to provide more funding for IDB and other regional development banks.

Customs unions in North, Central, and South America have a crucial role to play in the provision of RPGs and TRPGs. A customs union, which restricts trade to countries outside the union, can coordinate efforts among its members to provide RPGs, and it can secure loans to support RPGs. The linkage of customs unions is a means for providing TRPGs. Customs unions can also institute redistribution schemes for the provision of weakest-link RPGs (e.g., MERCOSUR Structural Convergence Fund). Another example is MERCOSUR's

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Table 2

Supporting and Detracting Influences on Regional Subsidiarity

Supporting factors for regional subsidiarity
Fosters efficiency by equating RPG's marginal benefits (summed over regional recipients) to its marginal costs.
Foster efficiency by limiting tax spillovers to nonbeneficiaries.
Limits transaction costs by reducing the number of participants, augmenting repeated interactions, and curtailing asymmetric information.
Supports the evolution of institutions from shared culture, norms, concerns, experiences, propinquity, and values.
Avoids "mission creep" of global institutions.
Detracting factors for regional subsidiarity
Economies of scale from reduced unit costs favor allocation by a larger jurisdiction than the spillover range of the public good.
Economies of scope from reduced unit costs encourage providing two or more RPGs in the same jurisdiction even when spillover ranges do not match.
Economies of learning may require oversized jurisdictions where the cumulative level of the RPG is larger.
The requisite regional institution either does not exist or does not possess sufficient capacity.
Some aggregation technologies (e.g., best shot) favor jurisdictions beyond those identified by regional subsidiarity.
The requisite financing may require a larger political jurisdiction than the range of benefit spillovers.

adoption of the Transport Agreement of the Southern Cone to develop regional transport corridors by bringing its component parts up to an acceptable standard (Costa, 2012). In the case of best-shot RPGs, customs unions can pool and coordinate efforts among their member states to surmount provision thresholds.

Many RPGs, especially infrastructure, possess excludable and partly rival benefits, which can be supplied by club arrangements. IDB, customs unions, and multilateral institutions can provide the initial feasibility study to promote the requisite club arrangements for these club RPGs. Club arrangements are particularly appropriate for the provision and financing of infrastructure.

As trade increases with Latin America, trading partners outside of Latin America must come to realize that Latin American RPGs can augment these partners' exports. As such, IDB and other Latin American financial institutions need to make these RPG spillover benefits transparent to these exporting countries in an effort to obtain RPG contributions. There is also a need to promote public-private partnerships at the regional level as has been done at the global level. IDB's initiative on RPGs moves in this direction by entertaining proposals with public and private sector participation. BNDES, CAF, and FONPLATA push their own RPG initiatives.

The nature of the RPGs, especially their aggregation technologies, informs policymakers on which countries' RPG provision should be bolstered through aid. Redistribution policies must be tailored on a good-by-good basis. ◆

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