

Devolution of Federal Agricultural Policy: The Case of Specialty Crop Block Grants

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I. Introduction

There is a lengthy history of devolution of federal policy and programs to the states through the use of grants-in-aid in general and block grants in particular. In the area of agricultural policy, for example, programs for agricultural research and extension have, since their origin, been jointly funded by a system of grants from the federal government to the states. In recent years, the possible consequence of a major devolution of farm policy and programs from the federal government to the states has received much attention¹.

Gunderson, et al (2004) explores the devolution of farm programs to the states. The authors suggest that approximately one-third of USDA spending, mainly associated with commodity and natural resource programs could be devolved to the states through the use of block grants within broad policy aims established by federal policy-makers. They present the case that devolution of commodity and natural resource programs to the states would recognize the differences between the states with respect to commodity production, production costs, income distribution, and opportunities for off-farm employment. They note that devolution is worth considering whenever it has the potential to make program delivery more cost effective and to better satisfy state citizens' preferences and goals. They also note that another potential benefit from devolution can arise from the large differences in costs between local areas as they address similar agricultural and natural resource issues.

The U.S. specialty crop industry has, in general, expressed a desire to devolve specific specialty crop farm policy area and programs to the states. This desire was exemplified by the Emergency Agricultural Assistance Act (EAAC) of 2001 which provided states with block grants to promote specialty crops.² The act provided almost \$160 million to all 50 states and Puerto Rico. The funds allocated to the states were used to fund a variety of programs and the decision on what

¹ There has been and continues to be a significant amount of debate about the relative merits of federal block grants to the states (Feingold, et al; Waller; General Accounting Office, CATO). It is not the objective of this paper to engage in that debate. Rather the intent is to provide some conceptual ideas concerning the agricultural policy composition, funding, and design of specialty crop block grants should they be included in future federal farm legislation. The history of federal grants-in-aid in general and block grants in particular can be found in (Canada, 2002), and (Canada, 2003)

² The term "specialty crop" has been defined a number of ways in both legislation and by government agencies. The Specialty Crop Competitiveness Act of 2004 (PL 108-465) defines specialty crops as fresh and dry fruit, vegetables, tree nuts, nursery and floriculture. This is the definition that will be used in this paper.

programs to fund was left almost entirely to the individual states with the provision that the programs funded improve the competitiveness of U.S. specialty crops.

The specialty crop block grant program continued with the passage of the Specialty Crop Competitiveness Act (SCCA) of 2004 (PL 108-465). The SCCA block grants are to support programs in research, marketing, education, pest and disease management, production, and food safety. The initial legislation (HR 3242) called for an annual appropriation of \$470 million in mandatory funds from the Commodity Credit Fund to support the block grant program. The final bill authorized the program subject to annual appropriations, and limited funding to \$44.5 million per year (\$7 million was appropriated in FY 2006).

The desire to permanently incorporate specialty crop block grants into federal farm legislation is receiving support from a number of specialty crop organizations, their membership, and other stakeholders.³ The U.S. specialty crop industry, in general, would like to see many of the provisions of the SCCA incorporated into the 2007 Farm Bill or other federal farm legislation.⁴

The remainder of this paper explores some of the issues associated with the devolution of federal farm policy through specialty crop block grants to the states. The next section presents a brief history of block grants. This provides the historical context for the use of block grants as a form of federal policy devolution and discusses the advantages and disadvantages of block grant programs.

The third section provides a discussion on some proposed goals for specialty crop block grants. The proposed goals are interrelated with a categorization of agricultural policy areas and programs that could be included in specialty crop block grants. The policy areas and programs presented are meant to be illustrative of those that could be included in specialty crop block grants rather than a definitive list and are presented to stimulate discussion of the broad issue relative to federal-state relations in agricultural policy.

³ A series of listening sessions and surveys were done in various regions of the U.S. among specialty crop producers and specialty crop producer organizations. There was some variance in the response but for the most part when asked "*Is an active government role necessary to maintain or improve U.S. specialty crop competitiveness?*" the general response was yes. The results of the listening sessions and surveys can be found at www.cissc.calpoly.edu/farmbill.

⁴ A recently introduced bill in the U.S. House of Representatives, HR 6193, The Equitable Agriculture Today for a Healthy American Act" has as one of its main objectives is the establishment of a permanent Specialty Crop State Block Grant Program (HR 6193 Title 1 Section 101).

The fourth section of the paper classifies the illustrative specialty crop agricultural policy areas and programs into one of three funding classifications: federal financed, state-federal financed and total state financed. The cost-share rules used to classify the specialty crop policy areas and programs are developed in Appendix A using a public finance model. The fifth section provides a discussion on specialty crop block grant design and funding. It is followed by a summary and conclusions section.

II. Historical Overview of Block Grants

The idea of devolution of federal policy and programs to the states predates the Constitution. As early as 1785, Congress provided for grants of land to the states under the Articles of Confederation. Devolution of federal policy to the states can come in many forms, including grant-in-aids, loans, loan guarantees, insurance and technical assistance. Two types of grants-in-aid, categorical grants, and block grants often appear among the policy alternatives when devolution is being considered.⁵ Categorical grants have a narrow range of eligible activities permitting funds to be used for only specific, narrowly defined purposes such as school breakfast programs. Congress can distribute categorical grants competitively or by formula and typically specifies the types of activities to which state or local governments can use the federal funds. Block grants have a broad range of eligible activities and are distributed to state and local governments on a formula basis to address broad functional areas (Canada, 2002).

The first significant use of block grants as grant-in-aids was initiated under the administration of President Lyndon Johnson. The first block grant (health) was enacted in 1966. This was followed by enactment of the Partnership for Health block grant program, approved in 1966, and the Safe Streets block grant program, created under the Omnibus Crime Control and Safe Streets Act (OCCSSA) of 1968. Categorical grants dominated federal grants-in-aid during Johnson and Nixon administrations. The categorical grants were used to fund a number of programs, including agricultural research, housing, health initiatives, and environmental programs. In an attempt to simplify the complexity and overlapping of the categorical grant programs, the Nixon

⁵ Categorical and block grants are conceptual classifications. It is sometimes difficult to classify a grant as one type or other.

administration proposed consolidating 129 different categorical grant programs into six block grants. The proposal was rejected by Congress, but by the end of the Ford administration and Congress had created three new large block grants. These block grants were the Community Development Block Grant (CDBG), the Social Services Block Grant (SSBG), and the Comprehensive Employment and Training Act (CETA) program. The first two are still in operation. Funding for the third ended in 1982, but other job training block grants have since been enacted.

The use of block grants as a means of consolidating categorical grants continued in the Reagan administration. Congress, as part of the Omnibus Budget Reconciliation Act of 1981, consolidated 77 categorical grants into nine block grants accounting for nearly 17 percent of federal funds sent to the states. The most recent expansion of block grants occurred in 1996, when the 104th Congress approved the Personal Responsibility and Work Opportunity Reconciliation Act, the welfare reform legislation that replaced the Aid to Families with Dependent Children and related programs with the Temporary Assistance for Needy Families (TANF) block grant.

The use of block grants to devolve federal policy to the states has both its supporters and critics. Supporters typically cite the following reasons for block grant proposals. First, shifting from federal government management to block grants administered at the state or local level reduces federal responsibility for the establishment of priorities and oversight by giving states or localities more flexibility in the use of funds.

A second argument for block grants is that state and local decision-making about priorities and resource allocation is more responsive to state and local preferences, needs, and costs than federal government decision-making. Thus, the case for block grants is simply that in those areas of policy in which there is broad agreement about the federal government goals and objectives relative to public policy, states can determine the specific strategies employed to reach those goals and objectives based on their knowledge of state and local conditions.

The third reason given for devolution of federal policy by block grants is that block grants can be used to eliminate the categorical nature of funds, making it harder for individual policy makers and advocates to take credit for services.

A fourth reason given in support of the use of block grants is that block grants can control spending. Although some block grants proposals include new or increased

spending, proponents argue that over time there will be administrative and other program savings that offset those increases.

Block grant critics have expressed a number of concerns relative to the merit of block grant programs. Among these concerns are that the conditions placed on the block grants may reduce or eliminate the flexibility of the block grant or that if states are given flexibility they will use the flexibility to target programs that are politically popular rather than those programs that exhibit the highest need or social benefits relative to federal government policy goals and objectives.

Another concern is whether the states have the institutional and administrative capacity in place when the block grant program begins to achieve any cost savings from administrative efficiencies. If such capacity is missing, however, the state costs of establishing such capacity may be greater than if the program had remained under federal control. A final concern often mentioned is that the allocation of block grant funding between the states is not equitable or that federal funding of block grants diminishes over time, forcing the states to substitute state funding for federal funding to maintain programs or force the states to eliminate public policy programs previously funded by federal funds.⁶ Several of these concerns will be discussed later in the paper relative to specialty crop block grant design and funding allocations.

III. Specialty Crop Block Grant Proposed Goals and Illustrative Categorization of Agricultural Policies and Programs

Specialty Crop Block Grant Goals

The stated federal policy goal of the first two specialty crop block grant programs was to improve the competitiveness of U.S. specialty crop agriculture. It is argued here, however, that competitiveness goal is part of a larger policy objective, namely the long-run sustainability of the U.S. specialty crop industry. The long-run sustainability of the U.S. specialty crop industry is defined to be a function of its economic sustainability, environmental sustainability, and social sustainability.⁷

⁶ A study of five Reagan block grants (Peterson and Nightingale, 1995) found that four of them decreased in funding from 1986 – 1995, despite a 66% increase in total grants to state and local governments during the same time period.

⁷ This goal is the one proposed in *U.S. Specialty Crops: Opportunities and Challenges* Report of the Specialty Crop Committee of the National Agricultural Research, Extension, Education and Economics Advisory Board April 30, 2006

Economic sustainability is defined as the economic return to production that would be required to keep productive assets (land, water, capital, labor, and entrepreneurship) employed in the production of specialty crops. As such, economic sustainability can be viewed as a reservation rate of return that would be dependent on geographic location of production, specialty crop price, cost of production, and economic scale and size of specialty crop producers (e.g., large commercial producer or small part time or full time producers, etc). A major benefit of a federal block grant program is to give the states some flexibility in addressing those issues.

The economic return to specialty crop production is primarily determined by the production costs and demand for the specialty crop in question.⁸ For example, research programs that lead to new production technologies that increase output per unit of input or allow substitution of a relatively less costly factor of production for a more costly factor of production while at the time maintaining the same level of output and quality can lead to reduced cost of production. Public policies and programs that encourage greater domestic consumption of specialty crops or provide support for developing and opening foreign markets have the potential to increase the demand for specialty crops.

Environmental sustainability is the ability to address the environmental/resource impacts that are either directly or indirectly related to agricultural production. Such impacts include the prevention of soil erosion, preservation of farmland, elimination of limitation of impacts of specialty crop production (chemicals, animal waste, dust, etc.) from specialty crop farms to air and water resources. Additional issues can include maintenance of open space, preservation of wildlife, humane treatment of animals, and the use of agricultural crops and production by-products for energy production in an effort to reduce the impact of agricultural wastes on environmental quality and reduce U.S. energy dependence on foreign nations.

Social sustainability is the ability to address the social impacts of specialty crop production. Such impacts include the adequacy of food availability and affordability, nutrition education and assistance, adequate economic opportunities for minority

⁸ Although specialty crop producers receive indirect government support in terms of conservation payments, market development and promotion subsidies, food assistance and government food purchase programs, input cost subsidization (e.g. credit, water), and research, it is small relative to the budget cost of crop price and income support payments paid to program crops such as wheat, rice, and corn.

farmers, provision of minimum income levels for rural residents, and maintenance of viable small scale specialty crop agriculture.

Though the long-run sustainability factors have been separated for discussion, there are agricultural policies and programs that can impact more than one aspect of sustainability. For example, a new production technology that lowers the cost of production research and is more environmental friendly improves both economic and environmental benefits. That is not to say that states should necessarily chose only agricultural policies and programs that impact more than one sustainability factor. One of the basic tenets of block grants programs is to allow states flexibility in the choice of policy programs that best fit their particular circumstance to achieve a broadly stated federal goal. Thus, it would be unlikely, given the differences in specialty crop production mix, location of production, markets, input costs, and state and local policy preferences, that each state would necessarily choose the same set of agricultural policy areas and programs to include in their specialty crop block grant program or where similar programs are selected that they would necessarily receive the same amount of funding. However, states should be aware that those public policies and programs they choose to fund under a block grant program can impact more than one sustainability factor.

Illustrative Categorization of Specialty Crop Block Grants Policies and Programs

Table 1 provides an illustrative categorization of potential agricultural policies and program areas that could be considered for inclusion in state specialty crop block grants. It is loosely based on the agricultural policy areas and programs that states funded under the Emergency Agricultural Assistance Act (EAAC) of 2001 specialty crop block grants to the states program. The categorization is not meant to provide the definitive work in assessing those agricultural policy and program areas that could be included in specialty crop block grants. Rather is it an attempt to relate potential agricultural polices and programs to the long-run sustainability factors⁹.

There are agricultural policies that were purposely left off the illustrative categorization. Public policies that have as a goal redistribution of income such as

⁹ As was mentioned in footnote 1 the intent of this paper is to provide come conceptual ideas concerning the agricultural policy composition, funding and design of specialty crop blocks should they be incorporated in federal farm legislation rather than the merits of such a block grant program. The authors are unaware of any empirical studies where the benefits of the specialty crop block programs developed by individual states under the Emergency Agricultural Assistance Act (EAAC) of 2001 specialty crop block grant program have been quantified.

food stamps (Warner 2001) or policy areas and programs where there are potential spillovers between the states such as interstate food safety issues or interstate environmental issues are best maintained at the federal level. Similarly, traditional program crop income support programs and the associated program areas are not considered because, in general, specialty crop producers and specialty crop producer organizations do not appear to favor such programs.¹⁰

Table 1 illustrates three broad agricultural policy areas that could be considered for inclusion into a state specialty crop block grant program. Listed under each policy area is a specific policy program. Each policy program is related to one or more of the long-run sustainability goals. The three policy areas are discussed below.

Environment Programs

There are a number of federal environmental policy programs in agriculture. These programs can be broadly classified as land retirement or working land programs. Working land programs are probably best suited to address the wide range of environmental issues faced by the specialty crop industry.¹¹ The federal working land programs include the Environmental Quality Incentives Program (EQIP), Ground and Surface Water Program, Klamath Basin Program, Wildlife Habitat Incentive Program, and Conservation Security Program.

Environmental working land programs can assist specialty crop producers by providing them additional revenue for the provision of environmental goods and services or reducing their cost of production by providing cost-share programs to assist specialty crop producers in meeting specific environmental standards such as air, and water quality standards. The use of working lands programs by specialty crop producers also demonstrates their willingness to address the public demand for environmental goods and services or concerns that the public may have about the direct or indirectly impact that specialty crop production may be having on

¹⁰ A general conclusion that can be drawn from the listening sessions and surveys mentioned in an early footnote is that specialty crop producers and specialty crop producer organizations are not generally in favor of program crop price and income support programs. At the same time, it should be noted that this policy position is not unanimous among the participants in the specialty crop industry. The dry bean industry, for example, prefers a direct payment program over a block grant program if the restriction on the planting of fruits and vegetables is eliminated (Brown).

¹¹ Schweikhardt (2006) compares and contrasts land retirement programs and working land programs relative to the specialty crop industry. He finds that working land environmental programs that address a wide range of environmental problems on land that is active in agricultural production is probably best suited to address the conservation needs of the specialty crop industry.

environmental quality. These goods and services include providing wildlife or species habitat, enhancing biodiversity, and preserving open space, or utilizing cover crops that help sequester carbon, filter water and clean the air. Cost-sharing programs can assist specialty crop producers in adopting specialty crop production technologies that protect soils from erosion, improve soil quality, and reduce ground and surface water contamination.

Table 1. Illustrative Categorization of Specialty Crop Block Grant Policy Areas and Programs				
		Long-Run Sustainability Factor		
Agricultural Policy	Programs	Economic	Environmental	Social
Environment	Working Land Programs	X	X	
Marketing	Agro-Tourism	X	X	X
	Crop Product Branding and Promotion	X		
	Direct Marketing	X		X
	Farm-To-School	X	X	X
	Organic Product Promotion	X	X	
	State-Grown Promotion	X		
	Trade Promotion and Development	X		
Research and Extension Education	Agricultural Sustainability	X	X	X
	Biofuels	X	X	
	Crop Production Technologies	X	X	
	Economic Research	X	X	X
	Extension Education	X	X	

Table 1. Illustrative Categorization of Specialty Crop Block Grant Policy Areas and Programs Cont.)				
		Long-Run Sustainability Goals		
Agricultural Policy	Programs	Economic	Environmental	Social
Research and Extension Education	Food Processing Value-Added	X		X
	Food Safety	X		X
	Harvest Technology	X	X	
	Marketing Research	X		
	Organic Production Technology	X	X	X
	Pest Prevention, Detection and Eradication	X	X	
	Waste Management	X	X	

Each program has some form of state administrative involvement in determining which projects receive funding. Each of the working lands programs has the potential to contribute to the specialty crop industry’s economic and environmental sustainability goals. Specialty crop industry concerns center around level of appropriated funding for these programs and to some extent the program emphasis. The likelihood of these programs being devolved to the states is unknown. However, partial devolution through specialty crop block grants would allow the states greater flexibility in addressing specific state and local specialty crop environmental issues. The degree of devolution is most likely dependent on the whether state flexibility in addressing the specific environmental issues embodied in the various working land programs can be done more effectively at the state level and would better satisfy state citizens’ preferences and goals.

Marketing Programs

Although there is no specific farm bill title or federal agricultural policy that addresses specialty crop marketing issues there are a number of marketing programs

that have been funded by state governments, specialty crop boards and commissions and, in some instances, federal funds to promote specific state specialty crops and value-added products. Most of the promotion is directed at potentially increasing the demand for a specific state's specialty crops. The prevailing idea is that if a specific state can increase the demand for its specialty crops and value-added products, then that demand increase will contribute to the economic sustainability of its specialty crop industry. The popularity of this type of state specialty crop promotion activity is evident from the fact that slightly over 50% of the \$153 million allocated to the states under Emergency Agricultural Assistance Act (EAAC) of 2001 specialty crop block grant program was spend on marketing (National Association of State Departments of Agriculture).

Three of the marketing programs listed above -- agro-tourism, farm-to-school, and organic marketing -- are shown to contribute to economic, environmental, and social sustainability. Agro-tourism provides an economic opportunity for small and medium sized specialty crop producers to increase their income from value-added activities. It provides a recreational activity that can be used to educate the public and provide a platform to introduce potential consumers to the nutritional benefits of consuming fruits and vegetables. This program contributes to societal sustainability by providing the public the opportunity to visit and view specialty crop farms to see first hand the contributions that specialty crop agriculture make to the environment.

Farm-to-school programs can be viewed as a long-run investment to increasing demand for many specialty crop products by educating school age children and young adults on the taste and nutrition benefit of fresh fruit and vegetables. To the extent this program can influence food tastes and preferences of school aged children and young adults the more likely it is that they will carry those tastes and preferences into the future when they are making their food purchases. The farm-to-school program can also be used to illustrate the environmental goods provided by specialty crop production. Additionally, the nutrition education provided to school aged children and young adults which could result in a healthier populace in the future and thus contribute to the social sustainability of the industry.

Organic marketing programs offers specialty crop producers the opportunity to develop and market products that can command a price premium in food markets. Organic farming systems rely on ecologically-based practices, such as cultural and biological pest management, and virtually exclude the use of synthetic chemicals in

crop production. Organic farming contributes to societal sustainability in several ways. It is perceived as providing safe nutritious food products and it is seen to provide a way to maintain economically viable small scale agriculture.

The remainder of the marketing programs listed in Table 1, with the exception of direct marketing programs, contributes to the economic sustainability of specialty crop producers primarily through promotion and branding programs. Direct marketing can be an important source of revenue for small and medium sized specialty crop producers. For example, approximately 19,000 farmers reported selling their produce *only* at farmers markets. Eighty-two percent of farmers markets were self-sustaining, meaning market income was sufficient to pay for all costs associated with the operation of the market. In addition, 58 percent of markets participated in some local, state or national nutrition program, and 25 percent of farmers markets aided in distributing food and food products to needy families (USDA, 2005). The latter two statistics illustrate the social sustainability characteristic of direct marketing.

Research and Extension Education Programs

The role of public policy and public funding for agricultural research and extension education is receiving increasing scrutiny and review as federal and state governments evaluate their spending priorities relative to limited budgets and changing market and population dynamics. The agricultural research and extension education system is being required by society and public-policy officials to address not only agricultural productivity and product innovation issues that affect food cost and market competitiveness issues but also concerns regarding nutrition and health, food safety and quality, convenience and variety, the environment, and societal issues such as worker safety, economic opportunity for small and minority producers, and food assistance. A detailed review of each research and extension education program presented in Table 1 is beyond the scope of this paper. Rather, a more general discussion of the economic, environmental, and societal sustainability issues relative to specialty crop research and extension education programs will be presented.

A review of Table 1 indicates that all of the research and education programs listed contribute to at least two of the sustainability goals, and programs for agricultural sustainability, economic research and extension education, and organics contribute to all three goals. Those research and extension education programs that

contribute to achieving some combination of economic, environmental, and social sustainability goals do so by assisting the specialty crop industry in meeting changing consumer food demand and by improving existing or developing new crop production and pest detection and control technologies that maintain or improve US specialty crop competitiveness and provide society with environmental and social benefits.

Research and extension education programs that assist the specialty crop in meeting changing consumer demand can be categorized as those that provide support in responding to consumer demand for more varied, convenient products with desirable sensory attributes such as taste and appearance. It could be argued that the greater burden for meeting consumer demand for varied, convenient products with desirable sensory attributes lies with the specialty crop industry since the likely benefits would be directed to specific specialty crop producers (e.g. larger tastier oranges, perishable vegetable with longer shelf life, etc). However, there is a supportive role for research and extension education in the areas of market research, development of new crop cultivars and specialty crop food products to meet changing consumer food product tastes. For example, development of differentiated products that have unique design or qualitative characteristics, in contrast to undifferentiated crops, can often be sold at higher prices than other products. Production of these niche items presents a growing opportunity for small and medium size farmers to satisfy changing customer tastes and increase the profitability of their goods.

The second general class of crop and specialty crop product research and extension education programs would be those that provide a basis for responding to other consumer preferences that the market may undervalue such as consumer demand for perceived environmentally benign goods, nonsensory attributes of food products such as such as nutrition and safety, or attributes that meet ethical or religious standards. These food attributes are more difficult for consumers to identify and thus not provide the market signals that would drive specialty crop producers toward new product development that meets those demands.

Economic research and extension education programs can provide economic information, contribute to technological change (production and management innovations, product introduction and marketing methods, and research and development management tools) and contribute to public policy (institutional

innovations, policy analysis tools, and policy impact assessment) that can assist specialty crop producers in achieving economic, environmental, and social sustainability. Economic research is also useful for identifying barriers and opportunities relative to the long-run sustainability of the U.S. specialty crop industry. There is relative little private incentive for investment in economic research and extension education, thus providing a strong justification for public investment.

Research and extension education programs in the development and adoption of new or improved specialty crop production technologies that result in achieving higher crop production productivity, lower costs of production, and provide for improved pest prevention, detection, and eradication can have significant impact on long-run specialty crop economic sustainability. These research and extension education programs can also be directed at reducing or eliminating the negative impact of existing specialty crop production technologies on the environment thus reducing social costs of production. For example, the development of chemical intensive specialty crop production practices significantly increased production productivity. However, this expansion had negative impacts on society by affecting farm worker health, water quality, and wildlife habitat. Consumers appear to have become increasingly concerned about these impacts in recent years. National polls show most consumers express some form of concern about exposure to chemical used in producing, storing and processing food products. New technologies that can reduce these environmental impacts while addressing social concerns will assist specialty crop producers in moving toward the environment and social sustainability goals especially if they also reduce economic costs.

IV. Funding Classifications for Illustrative Specialty Crop Policy and Programs

There are two objectives to this section of the paper. The first is to develop a cost-share allocation framework for specialty crop programs based on the public finance allocation rules developed in Appendix A. Three cost-share allocations are presented: federal financing; federal-state financing, and state financing. The second objective is to stimulate discussion on the appropriate federal-state funding share for each program listed on Table 1. The general rule followed in determining federal-state cost share funding type is that the greater the spillover benefit from any given program from a

specific state to other states, the greater the federal cost share should be, and the less the spillover benefits the less the federal cost share should be. There is naturally a degree of arbitrariness to the choice of cost-share allocation assigned to each specialty crop policy area program. Rationales for the choices are presented, and while it is likely there will not be agreement on cost-share type assigned to each of the specialty crop policy area program, the framework can be used to stimulate deliberation about the appropriate cost-share allocation. That discussion will center, in part, on the magnitude of direct and spillover benefits of the various specialty crop policy programs that have been presented.

It is argued that public finance funding rules would allow for the most economically efficient allocation of federal and state funds. This would appear to be in line with a primary rationale for devolving federal government policy (and funds) to the states through the use of specialty crop state block grants which is to allow the states some latitude in achieving federal government policy goals more efficiently and effectively at a local level than could be achieved at a federal level. However, as noted in the second section of the paper, critics of block grants often argue that when states are given the flexibility associated with block grants they will use that flexibility to target programs that are politically popular rather than those that exhibit the highest need or social benefits relative to the stated federal policy goals and objectives. That is political considerations can supersede economic efficiency considerations in the block grant funding allocation decisions.

The cost-share finance allocations are shown in Table 2. There is no attempt to provide percentage allocations where federal-state funding is suggested as the appropriate cost-share funding type, nor will any attempt rank the various programs relative to spillover benefits that they may produce. That is best left to the individual states and federal government to determine, but that determination should be based, at least in part, on the extent to which the states can demonstrate that benefit spillovers will occur from the proposed uses of the specialty crop block grant funds.

Table 2. U.S Specialty Crop Block Grant Funding				
		Funding Type		
Agricultural Policy	Programs	Federal Financed	State-Federal Financed	State Financed
Environmental	Working Land Programs		X	
Marketing	Agro-Tourism		X	
	Crop Product Branding and Promotion			X
	Direct Marketing		X	
	Farm-to-School		X	
	Organics Product Promotion		X	
	State-Grown Promotion			X
	Trade Promotion and Development			X
Agricultural Policy	Programs	Federal Funding	Federal-State Funding	State Funding
Research and Extension Education	Agricultural Sustainability		X	
	Biofuels	X		
	Crop Production Technologies	X		
	Economic Research		X	
	Extension Education		X	

Table 2. U.S Specialty Crop Block Grant Funding (Cont.)				
		Funding Type		
Agricultural Policy	Programs	Federal Funding	Federal-State Funding	State Funding
	Food Processing Value-Added		X	
	Food Safety		X	
	Harvest Technology	X		
	Marketing Research			X
	Organic Production Technology		X	
	Pest Prevention, Detection and Eradication		X	
	Waste Management			X

Environmental Programs

As was noted in section III environmental working land programs can assist specialty crop producers by providing them additional revenue for the provision of environmental goods and services or reducing their cost of production by providing cost-share programs to assist specialty crop producers in meeting specific environmental standards such as air, and water quality standards. These programs easily fall under the federal-state cost share funding type category since they already have some degree of state administrative involvement.

The percent of federal-state cost share would depend on the amount of spillover benefit that occurs due to these programs. The case can be made that to the extent that cleaner air and water in a state primarily benefit that state’s citizens relative to its spillover benefits to other states the more the state should bear the costs of those programs. However, it is also a valid argument to note that the provision of open space, farmland preservation, and provision of wildlife habitat in a specific state can have spillover benefits to the rest of the states. For example, a national goal is the protection of endangered species. Thus, to the extent a state has a relatively large proportion of endangered species within its boundaries the more spillover benefit it is

providing to the rest of the nation given that its working land programs are providing such a protection.

This example provides at least some framework for determining percentage allocations. The more a state provides for achievement of a national goal (preservation of farmland, open space, wildlife habitat, etc) the greater the federal contribution should be in the cost-share percentage.

Marketing Programs

Marketing programs fall under two different funding types, federal-state cost share and state funded. The state funded marketing program include specialty crop branding and promotion programs and state-grown promotion programs. There is a relatively long history of state-legislated commodity marketing orders.¹² In the 1980's many states launched the programs to collectively promote all products produced within the states under a single state brand. Examples included *Jersey Fresh* and *Something Special from Wisconsin*. This was followed in the 2000's with programs such as *Buy California Grown* and *A+ Alabama*. Currently 43 states have state branding programs.¹³ The degree to which these programs have been successful is mixed.¹⁴ An economic argument (Means, 1987) can be made that these types of programs have little likelihood of success since for the most part agricultural products are inherently difficult to differentiate and even where evidence exists that crop promotion programs and state grown programs can result in some degree of product differentiation (Hayes, Lence, and Stoppa, 2003) it is difficult to argue that specific crop promotion programs (e.g., Washington apples) or state-brand programs (e.g., Buy California Grown) would have significant spillover benefits to other states. It is much more likely that most of the benefits that would accrue from engaging in these types of promotional activities would accrue to the given state's specialty crop industry or to a specific specialty crop industry located within a state¹⁵.

¹² Forker and Ward (1993) counted as many as 261 state legislated marketing orders in 1989.

¹³ See Patterson (2006) for a tabular description of states, program name, year established, and budget.

¹⁴ Patterson et al., (1999) showed little evidence of the *Arizona Grown* program increased product sales while Govindasamy et al. (2003) argued that the *Jersey Fresh* program provided \$32 in return for fruit and vegetable growers for each dollar invested.

¹⁵ It might be argued that specific commodity and/or state promotion programs could increase aggregate consumer demand for a product or set of products; however, there would appear to be a lack of empirical evidence to support that argument.

Trade promotion and development programs potentially open up new foreign market and/or expand existing foreign markets for U.S. agricultural products. These programs have the same product differentiation issues associated with them as crop product branding and promotion programs and state-grown promotion programs have. If a given state promotes its products to a specific foreign market and another state promotes very similar products to the same foreign market using federal funds then the question arises to whether there is a spillover benefit. The lack of a spillover effect of a state promoting its specialty crop products in competition with other states is complicated by federal programs that support the development and promotion of U.S. agricultural products and have various programs to support individual industries in the promotion of their specific programs to foreign markets.

Thus it is likely that most if not the entire benefit of these types of promotional programs would be retained in the individual state and/or by specific industries within a state and unless a substantive argument can be made otherwise it would appear appropriate for these state specific trade promotion programs to be funded from mostly if not entirely by state funds.

The remainder of the marketing programs would seem to qualify for some type of federal-state funding match. Agro-tourism, direct marketing and organics product promotion programs can be useful in providing small and medium sized specialty crop producers with market outlets and the opportunity to increase their farm revenues. All of these programs have some history of receiving federal support through a variety of federal programs. The primary rationale for federal support of these programs is the maintenance of the small to medium sized family farms, preservation of open space, and long-run agricultural sustainability. If these continue to be federal goals for the agricultural sector, then it would seem appropriate to provide federal funding for them in form of specialty crop block grants so that the states can have the flexibility to develop specific programs in these areas that best fit their local conditions.

Farm-to-School programs can be used to educate children on the health benefits associated with the consumption of fresh fruits and vegetables. The 2001 report *The Surgeon General's Call to Action to Prevent Overweight and Obesity* notes that, left unabated, overweight and obesity may soon cause as much preventable disease and death as smoking. Further, their associated health problems have substantial economic consequences for the U.S. health care system. The increasing prevalence of overweight and obesity is associated with both direct and indirect costs. The costs

associated with obesity, totaling \$117 billion in 2000, are due to type 2 diabetes, coronary heart disease, and hypertension. Thus federal funding of programs like the farm-to-school program can have substantial spillover benefits if they result in reductions in diet related diseases.

Research and Extension Education Programs

Federal funding of agricultural research and extension education programs has a long history. In 1862, Congress passed the Morrill Land Grant College Act, which gave states and U.S. territories land that they could sell to develop colleges that would offer practical instruction in agriculture and mechanical arts. Studies have shown that past public investment in agricultural research resulted in large economic benefits of between 30% to 60% annual rate of return.¹⁶ This high rate of return implies that additional dollars for agricultural research would result in substantial increases in economic growth.

Government supports research and extension education programs in agriculture because of the "public nature" of knowledge¹⁷. The public nature of research and extension education programs results in benefits that cannot be captured (or captured to a very limited extent) by a single entity. Those benefits that are not captured become spillover benefits. Examples of spillover benefits from agricultural research and extension education programs include states copying technological innovations that can reduce production costs, reduce environmental damage for specialty crop production, increase yields, reduce crop susceptibility to pests, improve pest prevention, detection and eradication technologies, adopting or improving upon new plant cultivars or copying value-added products that were the result of agricultural research in other states. Additionally, agricultural research can provide benefits to consumers from lower priced products, improved products, and greater consumer product choices and provide economic information and extension education to

¹⁶Alston, et al in a summary of 289 studies of the returns to agricultural research and education (extension) since 1958, including 164 studies during the 1990 – 1998 time period found returns to agricultural research to be very high. A recent USDA study *Agricultural Research and Development: Public and Private Investments under Alternative Markets and Institutions* (1996) concluded that after adjusting for a number of possible errors that the rate of return was likely to around 35%. Similar studies on the extension education show rates of return in the 20% range (Huffman and Everson, 1993)

¹⁷ Knowledge has two characteristics of a public good. The first is that the use of the knowledge does not reduce the amount available to others and the second is that others cannot be prevented from using the knowledge once it becomes available.

agricultural producers, specialty crop stakeholders, and government officials that allows for more informed decision-making on their part.¹⁸

A basic question that must be addressed before discussing the funding type for the agricultural research programs and extension education areas in table 2 is what type of agricultural research should be devolved to the states and what type is best left to the federal government to pursue? Research programs can be defined as basic or applied. The National Science Foundation (NSF) defines basic research as research conducted to gain a more complete understanding of the subject under study without a specific application in mind. The NSF defines applied research as research aimed at gaining knowledge to meet a specific and recognized need.¹⁹ It is argued here that the basic research is best left in the hands of universities and public research agencies and specific applied research programs could be devolved to the states.

There are two rationales for this argument. First, there is a long history of basic agricultural research conducted by USDA and the Land Grant universities. USDA conducts research at the Agricultural Research Service, Economic Research Service, and Forest Service and it provided extramural funding since the latter-half of the 19th century to the Land Grant universities to do basic research. It is not likely that the states should or would want to duplicate these research efforts nor is it likely that any of the benefits that accrue to block grants programs could be achieved if these basic research programs were to be devolved to the states. The rationale for devolving selected applied research programs to the states rests on one of the basic premises for devolution of federal policy and funding to the states that state and local decision-making about priorities and resource allocation is more responsive to state and local preferences, needs, and costs than federal decision-making. Thus, the case for devolution of selected applied research programs to the states via specialty crop block grants is that the states based on their knowledge of state and local conditions should be

¹⁸ Although not discussed here two important questions need to be answered in determining the value of public financed research and extension education: First, what is the likelihood of success of any given research or extension education project? Second, is the research or extension education project is successful, what is its value to society?

¹⁹ Basic research would include research in the general sciences (e.g. genetics, biology, zoology) and pre-technical sciences (e.g. soil chemistry, plant physiology, nutrition, applied economics). Applied research concentrates on technology invention such as plant and animal breeding, horticulture, irrigation methods, and farm management among others. It should be noted that NSF characterization of basic and applied research is not universally accepted since what may be basic research to one researcher may be applied research to another.

in a better position than the federal government to determine what selected applied research best fits their needs.

All of the agricultural research program areas and extension education shown in Table 2 have the potential to provide spillover benefits from one state to the others. Three of the research and extension education program areas are indicated as federal funding type programs. Each of these areas can have major spillover benefits associated with each and each supports federal policy goals. Biofuels have the potential to be an important source of renewable energy, thus permitting the U.S. to reduce its reliance on foreign energy resources which is a stated national goal. State research in this area that leads to greater utilization of specialty crop biofuels (production residues, cannery wastes, etc) can easily be adopted by other states.

Research that results in improved specialty crop production technologies such as higher productivity, more sustainable specialty crop production practices, and increasing the number of disease resistant specialty crop cultivars to name can have significant spillover benefits.

Improvements in specialty crop harvest technologies might include labor-saving technologies, increased food safety, and more environmentally benign harvest technologies. There are spillover benefits between the various specialty crop states as improvements in specialty crop harvest technologies are made. The benefits could include less reliance on foreign workers for harvest, lower harvest costs, increased food safety, and less environment degradation. Each of these benefits assists the federal government in achieving some national policy objective: immigration reform, greater economic sustainability for the U.S. specialty crop industry, a safer food supply, and a cleaner environment.

Seven research and extension education programs are designated as federal-state funding types: agricultural sustainability, economic research, extension education, food processing value-added, food safety, organic production technology, and pest prevention, detection, and eradication. As was mentioned earlier no attempt is made to provide a numerical percentage of federal versus state funding for those programs where joint funding is the designated funding type. This is especially true for these seven programs. Although, a case can be made that spillover benefits will occur from the research and extension education programs in these seven program areas, it is less clear what percent of the research and extension education benefits would accrue directly to a specific state and what percentage would spillover between states. The

federal-state funding allocation will most likely have to be determined on a state by state program by program negotiation between the states and the federal government.

Two research areas are designated a state funding types. The benefits from marketing research studies and waste management projects are most likely to accrue mostly, if not entirely, to a specific state or specific specialty crop industry within a state. As was noted earlier unless a substantive argument can be made otherwise it would appear that funding for these types of programs come from state funds.

This section has provided an illustrative funding classification for each of the program areas listed in Table 2. The program areas are classified by funding type, i.e., federal funding, joint funding by the federal and state governments, or state funding. It should be emphasized that the funding type selected for each program area is based on the public finance funding allocation rules developed in Section III. The basic decision rule used was the degree to which benefits from these programs was thought spillover from state to the next. This suggests that a degree of arbitrariness is imbedded in the how the funding allocations were determined; however, the intent of this section was not to provide a definitive set of funding type allocations. Rather, the intent was to provide a funding type allocation framework and to stimulate discussion on what the appropriate federal-state funding share should be given if specialty crop block grants become a permanent component of federal farm legislation.

V. Block Grant Design Concepts and Funding issues

Earlier in the paper, a number of concerns relative to block grants were presented. These concerns include: (1) states using block grant funds to fund programs that are politically popular rather than those that exhibit the highest needs or benefits relative to the stated federal goals and objectives; (2) that the conditions placed on the block grants may reduce or eliminate the flexibility of the block grant; (3) that all states may not have the institutional or administrative support to manage a block grant program; and (4) the issue of determining the allocation of funding between the federal government and states and the maintenance of federal funding of specialty crop block grants over time.

Canada (2001) provides concepts for legislative design and oversight relative to federal grants to the states. Several of the concepts identified are relevant to the design of a specialty crop block grant program. The relevant concepts include

conditioning of grants, matching requirements; formulas for allocating funds, intergovernmental review, and congressional oversight. The matching requirement concept is addressed in the Funding Classification for Illustrative Specialty Crop Policy and Programs section of the paper. The discussion below will concentrate on conditioning of grants and formula allocation of specialty crop block grant funding since these are the concepts that best address the concerns described in the second section of the paper.

The conditioning of federal funds can be used to address points 1 and 2 above. The term “conditioning” refers to requirements the federal government places on recipients of grant funds. Two types of conditioning are discussed by Canada -- general requirements and crossover sanctions. General requirements apply to almost every federal assistance program and focus on the manner in which recipients use federal funds. They address such issues as financial accountability, non-discrimination, and environmental protection. Crossover sanctions impose financial sanctions in one functional area to influence state policy in another area. An example of a crossover sanction would be the withdrawal of federal highway funds if a state does not meet certain air quality standards.

The use of conditioning mechanisms to address points 1 and 2 for specialty crop block grants would require the federal government to designate the goals and objectives for the grant program, while providing states the flexibility to choose specific policy programs that best fit their particular circumstance to achieve the federal goals and objectives. Thus, if the conditioning is designed properly, it could reduce the public and political pressure on the state agency administering the specialty crop block grant to develop state programs that may be political popular but do not exhibit the highest needs or benefits relative to the federal goals and objectives. At the same time, proper design can still provide the states with the flexibility associated with a block grant program.

Concerns have been expressed that some states may not have the have the institutional or administrative support and/or manage a specialty crop block grant program.²⁰ These concerns range from states being unable to identify block grant

²⁰ It has been pointed out by critics of specialty crop block grants that some states were not as effective as others in administering projects that had identifiable benefits in the specialty crop block grant program that was authorized in the Emergency Agricultural Assistance Act (EAAC) of 2001 (House Committee on Agriculture, Subcommittee on Livestock and Horticulture Hearing, November 5, 2003, Serial No. 108-20,

benefits to the duplication or overlap between state and federal programs, to the overlap between state programs, to the costs of administering block grant programs. These concerns could be addressed by conditioning mechanisms and by the states providing evidence that they do have the institutional and administrative capabilities and capacities to manage a specialty crop block grant program. The latter could be a requirement for applying for a specialty crop block grant.

All block grant programs use formulas to determine the grant amounts available to recipients. Congress determines the formulas or the formula variables that are used to distribute the funds. The selection of the formula or formula variables can spark much debate in Congress and among recipients. There are a number of allocation principles that can be adopted by Congress. These include Fair Share, Need for Services, Fiscal Equalization, Actual Amount of Costs, and Targeting.

Fair Share allocations can be allocations based on some proportion of an economic measure or physical measure such as farm proceeds or acreage. Need for Services bases the allocation on need. The need is typically based on some sub-group of the target population such as small producers or organic producers. Fiscal Equalization allocations are based on the differing ability of state (or localities) governments to finance policy programs thus those deemed less fiscally able would receive higher allocations. Actual Amount of Costs allocations are based on the fact that some states (or localities) face higher costs than other states in providing comparable public services thus requiring more federal assistance. Targeting allocations concentrates funding to a select group of recipients such as those in some geographical regions such as drought regions of the U.S. A case could be made that any of these allocation methods could be used to allocate specialty crop block grant funds among the states. The allocation examples presented here are based on the Fair Share principle. It was chosen since this was the allocation principle in allocating funds to the states in the specialty crop block grant program that was authorized in the Emergency Agricultural Assistance Act (EAAC) of 2001.

Two types of Fair Share allocations are shown as examples. Table 3 shows the allocations that would occur if straight percentage of state farm receipts were used as the basis for the specialty crop funding allocations. Farm receipts are based on five different definitions of specialty crops.

**Table 3. Specialty Crop Block Grant Funding
Straight Percentage Average Farm Receipts 2003 - 2005
\$1.00**

	Fruit, Nuts, Vegetables & Greenhouse/ Nursery	All Specialty Crops	Fruits, Nuts, Vegetables, Greenhouse/ Nursery & Aquaculture	Fruits, Nuts, Vegetables, Greenhouse/ Nursery & Livestock and Products	All Specialty Crops & Livestock and Products
California	\$0.41	\$0.37	\$0.40	\$0.17	\$0.17
Colorado	\$0.01	\$0.02	\$0.01	\$0.03	\$0.03
Florida	\$0.10	\$0.09	\$0.10	\$0.04	\$0.04
Iowa	\$0.00	\$0.01	\$0.00	\$0.04	\$0.04
Michigan	\$0.03	\$0.03	\$0.03	\$0.02	\$0.02
Nebraska	\$0.00	\$0.01	\$0.00	\$0.04	\$0.04
New York	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02
Texas	\$0.04	\$0.05	\$0.04	\$0.08	\$0.08
Washington	\$0.06	\$0.07	\$0.06	\$0.03	\$0.03

Table 3 shows the allocation that would exist for every \$1.00 of specialty crop block grant funding for nine states. The nine states were chosen to show the allocation outcomes based on different specialty crop definitions. California would receive \$0.41 of every dollar allocated to specialty crop block grants if the specialty crop definition is defined to include fruits, nuts, vegetables, and greenhouse/nursery products. California's allocation would decrease to \$0.17 of every dollar, however, under the most inclusive definition of all specialty crop (fruits, nuts, vegetables, greenhouse/nursery, non-program grains, hay, other non-program crops, and livestock and products. In contrast, Iowa's specialty block grant allocation would increase from almost zero (\$0.005 per \$1.00) to \$0.04 per \$1.00 as the definition becomes more inclusive.

Table 4 shows the allocations that would exist for the same states and same specialty crop definitions if every state received a base amount plus some percentage of farm receipts. This is similar to the allocation principle adopted for the distribution of specialty crop block grant funds authorized under the Emergency Agricultural Assistance Act (EAAC) of 2001.

Table 4. Specialty Crop Block Grant Funding Base Plus Percentage Average Farm Receipts 2003- 2005

	Base 15% of Total Allocation \$1.00				
	Fruit, Nuts, Vegetables & Greenhouse/ Nursery	All Specialty Crops	Fruits, Nuts, Vegetables, Greenhouse/ Nursery & Aquaculture	Fruits, Nuts, Vegetables, Greenhouse/ Nursery & Livestock and Products	All Specialty Crops & Livestock and Products
California	\$0.353	\$0.320	\$0.347	\$0.146	\$0.144
Colorado	\$0.013	\$0.016	\$0.013	\$0.026	\$0.026
Florida	\$0.091	\$0.079	\$0.090	\$0.036	\$0.034
Iowa	\$0.005	\$0.008	\$0.005	\$0.040	\$0.039
Michigan	\$0.026	\$0.027	\$0.025	\$0.018	\$0.019
Nebraska	\$0.005	\$0.008	\$0.005	\$0.041	\$0.040
New York	\$0.021	\$0.020	\$0.021	\$0.019	\$0.019
Texas	\$0.037	\$0.042	\$0.037	\$0.067	\$0.067
Washington	\$0.054	\$0.059	\$0.053	\$0.026	\$0.029

Table 4 shows the specialty crop funding allocations that would occur if Congress divided 15% of the specialty crop block grant funding equally across the states and Puerto Rico. Each state would receive approximately \$0.0029 of each dollar allocated and Puerto Rico would receive \$0.0058 of each dollar allocated.²¹ The remaining funds are allocated based on the percent of average farm receipts of the individual states. The allocation in table 4 shows that with a base plus percentage allocation the amount funded to each of the predominantly specialty crop states is less than that under a straight percentage allocation, while those states that are predominantly program grain and live stock product states tend to receive larger allocations across all specialty crop definitions.

The two examples provided give an indication of the sensitivity of funding allocations based on (a) the formula and (b) the definition of specialty crops upon which the allocation is based. The choice of formula and of specialty crop definition will be a political decision, but the formula and crop definition chosen should reflect the goals and objectives of a specialty crop block grant program.

²¹ The \$0.0029 is obtained by dividing the \$0.15 by 52. The specialty crop block grants authorized under the Emergency Agricultural Assistance Act (EAAC) of 2001 allocated \$500,000 to each state as a base and allocated \$1,000,000 to Puerto Rico but Puerto Rico did not receive a percentage share of the remaining funds that were allocated to the states thus the percentage allocation are based on the 50 state farm receipts as a percentage of U.S. farm receipts for each of the five specialty crop definitions.

The other funding issue is the maintenance of federal funding for a specialty crop block program over time. An essential issue is the question of whether the specialty crop block grant program should be supported with mandatory or discretionary funds. An argument in favor of mandatory funding is that the economic importance to the specialty crop industry to the U.S. farm sector deserves greater equity with the major program crops in terms of the federal government's investment in its economic well-being. This fits well with the proposed goal of specialty crop block grant program, which is to improve the long-run sustainability of the U.S. specialty crop industry. Specialty crop industry organizations and representatives are generally in favor of programs that increase the demand and competitiveness of specialty crops in the U.S. and globally but do not distort domestic production of international markets. Several of the public policy programs discussed in the illustrative categorization section of the paper speak to that proposition.

Current high deficit levels, however, pose a problem for increasing mandatory funding for agriculture without an offsetting reduction in commodity program support, or other federal farm program areas. It is unlikely that either program crop producers or other existing beneficiaries of USDA programs would willingly redirect money to a specialty crop block grant program. While mandatory funding may provide greater security for long-term funding for specialty crop block grants than discretionary spending (which must be re-authorized each year), congressional appropriators have and likely will continue to make cuts in mandatory spending related to agriculture, suggesting that the stability of mandatory funding may also be less secure in the future. Nevertheless, the history of agricultural appropriations suggests that mandatory funding would provide a greater stability of long-term federal funding than discretionary funding.

VI. Summary and Conclusions

There is a lengthy history of devolution of federal policy and programs to the states through the use of grants-in-aid in general and block grants in particular. In recent years, the possible consequence of a major devolution of farm policy and programs from the federal government to the states has received much attention. The U.S. specialty crop industry has, in general, expressed a desire to devolve specific specialty crop farm policy area and programs to the states through the use of state block grants. This is due in part to the perceived success of specialty crop state block grant

programs that were authorized under the Emergency Agricultural Assistance Act (EAAC) of 2001 and the Specialty Crop Competitiveness Act (SCCA) of 2004 (PL 108-465). The desire in permanently incorporating specialty crop block grants into federal farm legislation is receiving support from a number of specialty crop organizations, their membership, and other stakeholders and has resulted in the introduction of HR 6193, "The Equitable Agriculture Today for a Healthy American Act" which would establish a permanent specialty crop state block grant program.

The paper provides a brief history of the use of block grants as a mechanism for devolution of federal government policy and associated funding to the states and discussed the advantages and disadvantage of block grants. An illustrative categorization of specialty crop block grant policies and programs is developed and each program is discussed relative its impact on achieving long-run sustainability for the U.S. specialty crop industry.

A public finance model is developed from which federal-state cost-share allocation rules for specialty crop policy programs are derived. Three cost-share allocations are presented -- federal financing, federal-state financing, and state financing. Each specialty crop policy program is then assigned one of the three cost-share allocations based on the general rule - the greater the spillover benefit from any given program from a specific state to other states the greater the federal cost share should be and the less the spillover benefits the less the federal cost share should be. There is naturally a degree of arbitrariness to the choice of cost-share type assigned to each specialty crop policy area program. Rationales for the choices are presented and while it is likely there will not be agreement on cost-share type assigned to each of the specialty crop policy area program hopefully the framework will stimulate discussion about the appropriate cost-share allocation and that discussion will center on the magnitude of direct and spillover benefits of the various specialty crop policy programs that have been presented.

The paper concludes with a discussion on block grant design concepts and funding issues. The discussion focuses on design concepts that could be used to eliminate some of the concerns expressed over devolution of federal policy and funding through the use block grants to the states. These concerns range from state flexibility, to political manipulation, to continuation of funding. Several types of federal funding of block grants are discussed and examples of different fair-share allocations are presented.

It appears that use of devolution of selected specialty crop policy areas and programs to the states is a viable tool for giving individual states the flexibility to develop policies to assist their specialty crop industries in achieving long-run sustainability. It is incumbent upon the states to select the appropriate policies that will return the largest benefits for the dollars expended. It will require both state and federal officials to determine the cost-share that is appropriate for each policy area program that a state chooses to support with block grant funds. Additionally, careful design and funding of the specialty crop block grants will be required if the concerns about block grants in general are to be overcome.

Appendix A. Public Finance Theory and the Use of Intergovernmental Grants in a Federal System of Government

This section applies the principles of public finance theory to the problem of the allocation of agricultural funding between the federal government and the states. This section applies the relevant economic literature in two areas to determine the role that block grants could play in financing agricultural programs. First, the problem of financing public goods is examined, with special emphasis on the problems of providing public goods in a federal system of government. Second, the use of intergovernmental grants to finance public goods is examined.

As Breton (p. 177) noted, the problem of financing public goods is not simply a matter of whether government should provide public goods, but also which unit of government should do so. Economic goods, he argued, can rarely be classified into the polar cases of pure private or pure public goods. In particular, Breton noted that a problem of "imperfect mapping" may arise in which the benefits of a program do not correspond to the geographic boundaries of a taxing jurisdiction. The problem of imperfect mapping is particularly important in a federal (i.e., multi-level system of government).

If the benefits of a good are perfectly mapped, that is, if the benefits of a good accrue strictly within the boundaries of the unit of government financing the good, then the government of that jurisdiction will provide the optimal quantity of the good to its citizens (assuming it has overcome the problem of ascertaining accurately the preferences of its citizens). On the other hand, if the benefits of the good are imperfectly mapped, or spill across the jurisdictional boundaries of the financing government, the investing government is likely to under invest in the good. As a means of overcoming the imperfect mapping problem, a higher level of government could provide a subsidy to the lower level unit of government to induce it to invest in the socially optimal quantity of the good (Breton, pp. 180-82).

Drawing on the welfare economics of Samuelson and the public finance economics of Breton, Oates examined the problem of underinvestment in public goods when benefits spill across jurisdictional boundaries. Assuming a world of two goods and two jurisdictions (the results can be generalized to many goods and jurisdictions), the optimal allocation for each community in the absence of spillovers can be defined as:

(1) $MRT = MRS_1$

(2) $MRT = MRS_2$, where

MRT = the marginal rate of transformation between goods X and Y

MRS_i = the marginal rate of substitution of community i between good X (a private good consumed by the citizens of community i) and good Y (a public good provided by the government of community i), which is, as Samuelson showed earlier, the sum of the marginal rates of substitution of all individuals in community i.

Thus, if there are no losses of benefits across jurisdictional boundaries, each community will invest in the level of public good Y that is optimal for its citizens. Again, this assumes the problem of preference revelation has been solved within each community (i.e., each jurisdiction has solved the problems of determining how much of the public good is optimal for its citizens and how the cost of the public good should be shared by its citizens).

If some portion of the benefits of good Y spill across the boundaries of the communities, such spillovers must be taken into account when determining the socially optimal level of good Y. The socially optimal level of consumption now becomes:

(3) $MRT = MRS_1 + a_2 * MRS_2$,

(4) $MRT = MRS_2 + a_1 * MRS_1$, where:

a_1 = the increase in consumption of public good Y that occurs in community 1 as a result of a one unit increase in the consumption of Y by community 2;

a_2 = the increase in consumption of public good y that occurs in community 2 as a result of a one unit increase in the consumption of Y by community 1, and

$$0 < a_1, a_2 < 1.$$

It is now possible to consider a broad range of spillover combinations and their implications for public investment decisions:

1. If $a_1 = a_2 = 0$, no spillovers will be generated, and each community will provide the socially optimal quantity of Y for its citizens (i.e., the outcome is the same as in equations (1) and (2));
2. If $a_1 = a_2 = 1$, the good is a pure Samuelsonian public good and must be provided by a higher level of government than the two community governments if an optimal level of investment is to be reached;
3. If $0 < a_1, a_2 < 1$, there will be spillovers generated between the communities and, in the absence of a system of compensating subsidies, the quantity of good Y provided by each jurisdiction will be less than the socially optimal quantity of Y (Oates, pp. 95-99).

To summarize, underinvestment in a public good may result when some portion of the benefits of that good accrue to individuals other than the original investor (where, in this case, the investor is a unit of government). A socially optimal level of investment can be obtained through the use of government subsidies. In a federal system of government, a socially optimal level of investment in public goods that create benefit spillovers across jurisdictional boundaries can be achieved through a system of intergovernmental subsidies (e.g., from the national government to the states).

Before considering the use of intergovernmental grants to correct the problem of underinvestment in public goods, it is necessary to examine the use of other policy tools to correct the problem. The first alternative is the reapportionment of jurisdictional boundaries. It is theoretically possible to redefine the boundaries of units of government in such a way that all benefit spillovers would be internalized to the decision process and, as a result, a socially optimal level of investment would be reached (Musgrave and Musgrave, pp. 597-602). Using a spatial model of public

goods, McMillan demonstrated that an optimal level of investment could be reached through the use of both grants and reapportionment of jurisdictions. Breton and Scott (1977) reached a similar result using a transaction cost minimization model.

To rely solely on reapportionment, however, would require a unique set of boundaries for each good that creates benefit spillovers. This alternative would require a large number of unique jurisdictions to cover each good that might create spillovers (Break, 1980a, p. 77). More important, while the existing boundaries of government may pose problems of imperfect mapping, such boundaries can only be changed at high political cost (Schultze, p. 185). Thus, while changes in jurisdictional boundaries are a possible solution to the underinvestment problem, they are unlikely to succeed if institutional rigidities of the existing jurisdictional boundaries prove impossible to overcome.

A second possible solution to the underinvestment problem would be the granting of taxing authority to the investing jurisdiction, thereby permitting it to tax the recipients of benefit spillovers. Such taxes may either be levied directly on outside citizens by the investing jurisdiction, or the investing jurisdiction may impose taxes on the activities of its own firms and citizens which, when the burden is shifted to outside citizens, compensate the jurisdiction for the spillover benefits it has created (Musgrave, p.115; Ellickson).

As with reapportionment, however, this option may create a large number of taxing authorities and raise the transaction costs of collecting the appropriate taxes. The establishment of taxes, the share of whose burden on outside citizens equals the share of benefits that spill across jurisdictional boundaries, may be an equally difficult and costly task. If this cannot be performed at the lower level of government, a central taxing authority may better serve to correct the underinvestment problem. Finally, as Stigler (p. 214) observed, a central taxing authority may be necessary when the taxed parties can escape their tax obligation by migrating beyond the boundaries of lower level governments.

A final option would simply be the negotiation of appropriate subsidies between units of government that create and receive benefit spillovers (Coase, pp. 28-42). While such an approach may succeed when the number of units is small, it becomes increasingly difficult as the number of units involved in the negotiation process increases, and thus the transaction costs associated with such negotiations rise

(Oates, p. 68; Wellisz, p. 361; Regan, p. 436-37; Stigler, 1966, pp. 113-14; Mishan, p. 31; Baumol, 1972, p. 308; Ellickson, pp.97-100). It must also be noted that Pigou (1946, pp. 183-84) recognized the self-correcting nature of the small-numbers case and only advocated intervention in those cases where the large number of parties involved makes it "technically difficult to exact payment.

If none of the options discussed above will succeed in promoting a socially optimal level of investment in public goods, the use of intergovernmental grants may be the most feasible option to achieve an optimal level of investment in the spillover-generating good. The problem remains, however, to design a system of grants that will encourage an optimal level of investment in the spillover-generating good.

Returning to Oates' more general solution, a set of subsidies that encourage an optimal level of investment in the spillover-generating good can be designed (Oates, pp. 99-104). The optimal conditions for each community were established earlier as:

$$(3) \quad \text{MRT} = \text{MRS}_1 + a_2 * \text{MRS}_2,$$

$$(4) \quad \text{MRT} = \text{MRS}_2 + a_1 * \text{MRS}_1.$$

If a_1 and a_2 are both non-zero (i.e., there are reciprocal spillovers), then both governments will receive a subsidy. To find the optimal subsidy for each, a system of equations must be solved:

$$(5) \quad \text{MRT} = \text{MRS}_1 + a_2 * \text{MRS}_2$$

$$(6) \quad \text{MRT} = a_1 * \text{MRS}_1 + \text{MRS}_2,$$

$$(7) \quad \text{MRS}_1 = \text{MRT} - S_1$$

$$(8) \quad \text{MRS}_2 = \text{MRT} - S_2$$

MRT = the marginal rate of transformation between private good X and a spillover-generating public good Y;

MRS_i = the marginal rate of substitution between good X and good Y for jurisdiction i , $i = 1, 2$

a_1 = the increase in the consumption of good Y that occurs in jurisdiction 1 as a result of the consumption of an additional unit of good Y by jurisdiction 2 ($0 < a_1 < 1$) ;

a_2 = the increase in the consumption of good Y that occurs in jurisdiction 2 as a result of the consumption of an additional unit of good Y by jurisdiction 1 ($0 < a_2 < 1$) ;

$S_1 = a_2 * MRS_2$ the unit subsidy paid to jurisdiction 1, expressed in units of good X.

$S_2 = a_1 * MRS_1$ the unit subsidy paid to jurisdiction 2, expressed in units of good X.

Equations 7 and 8 indicate that the outcome of community maximizing behavior will have each jurisdiction i expend their expenditures on public good Y to the point where the value placed on the marginal unit (MRS_i) is equal to the unit price ($MRT - S_i$)

The simultaneous solution of equations (2.5) through (2.8) provides the optimal subsidy for each jurisdiction:

$$(9) \quad S_1 = (a_2 * (1 - a_1) / (1 - a_1 * a_2)) * MRT$$

$$(10) \quad S_2 = (a_1 * (1 - a_2) / (1 - a_1 * a_2)) * MRT.$$

This result suggests some important implications for designing intergovernmental subsidies. As shown by equation (9), given a_1 , a larger value for a_2 (i.e., a larger share of benefits that spill from 1 into 2) will yield a larger subsidy paid to jurisdiction 1. Similarly, for a given level of a_2 in equation (2.10), a larger value for a_1 (i.e., a larger share of benefits that spill from 2 into 1) will yield a larger subsidy paid to jurisdiction 2. Once again, these results suggest that the grantor would pay a larger subsidy when a larger share of the benefits spill outside the funding jurisdiction.

Accepting that intergovernmental grants may be necessary to promote an optimal level of investment in public goods that create benefit spillovers, the question now turns to what form such grants should take. An analysis of alternative grant forms

is shown in Figure 1 (Scott, pp. 377-94; Wilde 1968, pp. 340-57 and 1971, pp. 143-55; Boadway and Wildasin pp. 518-29).

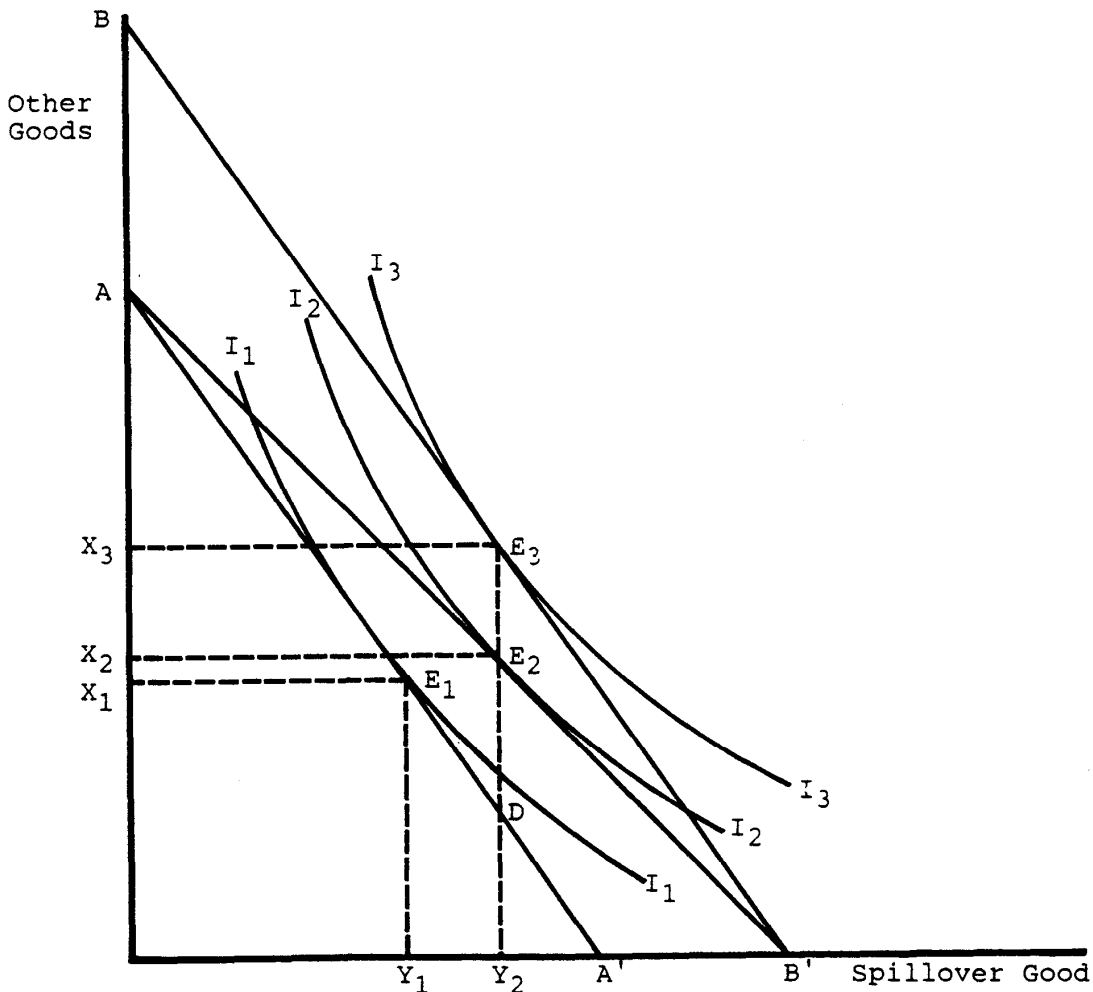


Figure 1: Comparison of an Unconditional Lump-Sum Grant and a Conditional Matching Grant

Source: Boadway and Wildasin, p. 520.

The jurisdiction can be assumed to have an initial budget AA' that is allocated between the spillover-generating public good and all other goods. The community The jurisdiction is assumed to allocate its resources between the consumption of a public good Y that creates benefit spillovers in other jurisdictions and all other goods. It should be noted that these other goods may be private goods consumed by the citizens of the jurisdiction or public goods that create no benefits outside the funding jurisdiction (Waldauer).

Indifference curve I_1 indicates that community welfare is maximized at point E_1 and the optimal quantities purchased will be Y_1 and X_2 . Assuming that another unit of government (either another unit of government at the same level acting directly--as among two states--or a higher level of government acting on behalf of other lower level governments--as between the federal government and a state government) provides a subsidy to the community to compensate it for the benefits that spill across its boundaries, what form should such a subsidy take?

It may take the form of an unconditional, lump-sum grant. Such a grant has no restrictions on its use and may be allocated by the recipient for any purpose. Thus, some of the grant may be allocated to the spill over-generating public good, and some of it may be allocated to private goods (via a reduction in taxes in the recipient community) or to public goods that do not create spillovers. Such a grant is shown in Figure 1 as a shift in the recipient's budget line from AA' to BB' . The recipient's new allocation, located at point E_3 tangent to the community indifference curve I_3 will be Y_2 of the spillover-generating good and X_3 of all other goods.

As an alternative to a lump-sum grant, the grant may take the form of a conditional matching grant. In this case, the grant will only be received if the recipient satisfies two conditions. First, the recipient must use the grant for production of the spillover-generating good. Second, the recipient must match the grant at a specified rate with its own funds.

Assuming the original slope of the budget line is h and that the matching rate implies that s is the share of the cost of good Y paid by the grantor, the new budget line will have a slope of $h*(1 - s)$ and will rotate from AA' to AB' . The new allocation of the recipient will be X_2 and Y_2 . If Y_2 is the socially optimal level of the public good, Figure 1 demonstrates that it can be achieved at least cost to the grantor by use of a conditional matching grant. As shown in Figure 1, the grantor's cost of achieving output Y_2 is DE_3 if a lump-sum grant is used, but only DE_2 if a matching grant is used. This result arises because the lump-sum grant produces only an income effect, while the matching grant reduces the recipient's price of the spillover-generating good, thereby combining the income effect with a price effect to provide a more powerful incentive for the recipient to increase its spending on the spillover-generating good. A number of studies of intergovernmental grant programs have confirmed that recipient jurisdictions do respond to such price effects and, as a result, the recipient's spending on the

spillover-generating good is stimulated more by a matching grant than by a lump-sum grant of equal size (Gramlich, pp. 222-35).

In comparing the cost efficiency of these two types of grants, it should be reiterated that the choice of grant form is determined by the objective of the grant program. This choice of objectives has important distributional consequences for both the grantor and the recipient. While it is true that the recipient would prefer the lump-sum grant (since it would be on the preferred indifference curve I_3), it must be emphasized that the purpose of the grant is not the maximization of the recipient's welfare. Instead, it is assumed in this analysis that the purpose of the grant is only to compensate the recipient for spillovers and induce the socially optimal level of investment in the public good at the minimum cost to the grantor. This objective can be accomplished at least cost with a matching grant.

If a conditional matching grant is to be used to finance a spillover-generating good, the problem of financing such a good now becomes the determination of the appropriate subsidy to be paid by the higher level government to the recipient government (i.e., the determination of the s in the $h^*[1 - s]$ budget line slope in Figure 1). A model of intergovernmental grants developed by Harford (pp. 99-103) provides a subsidy from each of two higher levels of government (state and national) to a local government that optimizes the quantity of the spillover-generating public good provided by the local government. Although this model introduces the additional complication of two higher levels of government rather than one, it permits some conclusions to be drawn about the optimal shares of the cost of the spillover-generating good that should be paid by the higher levels of government. These shares can then be translated into the optimal matching rates that can be used to finance the spillover-generating good through a conditional matching grant. For a joint state-federal program, the Harford model consists of two equations:

$$(11) N_1 = a_1 * B(Y) - (1 - s_1) * C(Y)$$

$$(12) N_2 = B(Y) - C(Y), \text{ where:}$$

N_1 = The state net benefit equation;

N_2 = The national net benefit equation;

a_1 = The share of the benefits of public good Y retained by the state jurisdiction;

s_1 = The share of the cost of public good Y paid by the national government;

$B(Y)$ = The benefit function for public good Y;

$C(Y)$ = The cost function for public good Y;

$0 < a_1 < 1$; and

$0 < s_1 < 1$.

The necessary conditions for achieving a socially optimal level of investment in Y are reached by equalizing the marginal cost and marginal benefit that accrues within each level of government. Differentiating equations (11) and (12) and setting them equal to zero yields the optimal conditions for each level of government:

$$(13) \quad a_1 \cdot dB/dY = (1 - s_1) \cdot dC/dY$$

$$(14) \quad dB/dY = dC/dY, \text{ where:}$$

dB/dY = The marginal benefit of public good Y;

dC/dY = The marginal cost of public good Y.

Solving equations (15) and (16) simultaneously yields the optimal share of the cost of good Y paid by the national government:

$$(15) \quad s_1 = 1 - a_1.$$

The results correspond to those discussed in earlier literature (e.g., Oates). Namely, Equation (17) shows that the federal government will compensate the state government for the share of the total benefits that spill across state boundaries.

This cost share can now be converted a matching rates that, if used to establish an open-ended conditional matching grant, will yield an optimal level of state investment in the spillover-generating good. The matching rate can be calculated as:

$$(16) \quad m_1 = (1 - s_1)/s_1$$

Thus, if the federal government grants m_1 dollars to the state government for each dollar the state government invests in the spillover-generating good, a socially optimal level of the good will be provided by the state government. Before examining the range of agricultural programs which might be financed through a system of intergovernmental grants, a summary of this section is in order. The provision of public goods is an especially difficult problem when decisions are made within a federal (i.e., multi-level) system of government. When a publicly-provided good yields benefits to residents outside the funding jurisdiction, the jurisdiction providing the good will not have an incentive to provide a socially optimal level of the good. The producing jurisdiction can be given an incentive to provide the socially optimal quantity of the good by providing it a subsidy equal to the difference between the marginal social benefit obtained from the good (including that portion which accrues to outside residents) and the marginal benefit retained by the funding jurisdiction.

In a federal system of government, such a subsidy is typically provided by a higher level government to compensate lower levels of government for the external benefits generated by these lower level jurisdictions. The lowest cost form of such a subsidy is an open-ended matching grant (i.e., a grant of m dollars from the higher level of government for each dollar spent by the lower level government on the spillover generating good). The matching rate must be established to equate the share of the marginal cost of the good paid by the higher level of government with the share of the marginal benefits of the good that accrue to persons outside the lower level of government. If benefit spillovers are pervasive in agricultural programs, matching grants are clearly an appropriate means through which to finance agricultural programs in the United States.

With this result in mind, equation (19) can shed some light on the matching rate at which the federal government should finance programs at the state level. For the share of benefits retained by the state (s_1) in equation (19), the national matching rate would be:

1. In those cases where the entire benefit of program is retained within the state ($s_1 = 1$), the federal matching rate on state spending would equal 0 (i.e., the federal government would not match state spending).
2. In those cases the entire benefit of the program spills outside the state ($s_1 = 0$), the federal government will finance the entire cost

of the program (i.e., the program would operate at the federal level).

3. In those cases where a portion of the benefits of the program spill outside the state ($0 < s_1 < 1$), the federal government will match state spending at a level where the matching rate reflects the spillover rate of the program.

Thus, the application of these public finance models to the problem of financing agricultural programs can provide some guidance in considering the policy alternatives in the devolution of agricultural programs from the federal government states. As discussed in detail in the next section, the type of agricultural program in question may determine the expected spillovers from such programs and, therefore, the funding mechanism that would be best suited for financing such programs.

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