Promises and Realities of Community-Based Agricultural Extension
Gershon Feder, Jock R. Anderson, Regina Birner and Klaus Deininger

1. Introduction

Amongst the public services through which governments have traditionally sought to promote agricultural performance, extension occupies a leading role. Hundreds of thousands of public (or publicly-paid) extension agents are employed by governments in developed and developing countries. International development agencies have provided in the past five decades many billions of dollars in programs to support and upgrade extension services in developing countries. Yet, development scholars and practitioners have generally concluded that the performance of extension services in developing countries has been disappointing. Thus, Kidd et al. (2000, pp. 95-6) report a “general feeling” that public extension services “are too inflexible and unresponsive, with the high cost bringing insufficient benefit”, and that “public extension services in the South are seen as being largely irrelevant to the real needs of farmers and the sector as a whole”. A 2001 review sponsored by the Food and Agriculture Organization of the United Nations (FAO) characterized extension services across the developing world as “failing” and “moribund”, in “disarray or barely functioning at all” (Rivera, Qamar and van Crowder, 2001, p. 15). Similarly, Chapman and Tripp (2003, p. 5) refer to “the overarching problem of public extension’s current high cost and low efficiency”. The challenge of providing farmers, and particularly smallholders, with cost-effective agricultural extension services engendered a voluminous literature debating the root causes of the disappointing record, and suggesting possible remedies (Kidd et al., 2000; Feder, Willett and Zijp, 2001; Anderson and Feder, 2004, 2007).

Many agricultural development scholars attribute the inadequate performance of public extension to an incentive failure on the part of extension agents. The failure derives from the fact that in most public systems, agents are nominally accountable to their superiors (who may often not be attentive to effective supervision), and are only indirectly (if at all) accountable to their farmer-clients. Ironically, farmers are better placed to assess the quality and impact of agents’ work than extension supervisors. The latter cannot easily determine the contribution of agents’ efforts to agricultural performance, as there are many other factors in play. In the hierarchical public extension systems that commonly prevail in developing countries, this situation reduces the incentives of extension agents to invest time and effort in identifying farmers’ priority issues and acquiring the knowledge and skills to address them, a situation not helped by the usually highly limited resources available for agents to engage with their clients in the field. The lack of information and feedback on different farmer groups’ needs and priorities hinders the design of relevant and effective extension programs (Anderson and Feder, 2007).
In view of these realities, many extension scholars and development practitioners have focused on assessing the merits and feasibility of demand-driven approaches to extension (Kidd et al., 2000; Rivera and Zijp, 2002; Chapman and Tripp, 2003; Rivera and Alex, 2005; Chipeta, 2006). In their purest form, in such extension approaches the providers of service are contracted directly by farmers’ groups or communities to deliver information and related services that are specified by farmers’ themselves, such as in the Indian Dairy Cooperatives. The funds to finance the contracts may be provided in part or in full by governments. But the contracts are issued and monitored by the community of clients. Decisions about contract renewal are made by the community as well, based on its satisfaction with the quality of services rendered in the past. Such a modus operandi is expected to provide agents with stronger incentives to provide quality advice. Furthermore, the design ensures that information and other services are in line with farmers’ needs and priorities. Several variants of such community-based and demand-driven extension approaches have been implemented in the past 15 years, mostly with public funding of the extension providers’ costs (Keynan, Olin and Din, 1977; Kidd et al., 2000; Dinar and Keynan 2001; Chapman and Tripp 2003; Hanson, Just and Lainez, 2006; Anderson and Feder, 2007; Birner and Anderson, 2007).

In this paper, we discuss in some detail the conceptual underpinnings of demand-driven extension approaches, highlight theoretical and practical challenges inherent in their design, and assess the evidence available so far on their actual performance. Accordingly, the next section describes features of agricultural extension relevant to understanding systems’ performance. The subsequent section outlines approaches to meeting the challenges through community-based demand-driven systems. We then review the actual experiences with such systems, and conclude with a summary of the insights gained and their implications for development policy.

2. Performance Attributes, Failures and Some Reforming Fixes in Extension Systems
The literature on agricultural extension highlights a number of market failures that provide justification for some form of collective action to ameliorate the failure. Birner and Anderson (2007) review several types of extension-related market failures:

(i) Information delivery (a key task of extension) often has public good characteristics, as the information may not entail excludability and rivalry.

(ii) Extension services can be a merit good, because the clients undervalue the benefits due to insufficient information or overly short planning horizon (a characteristic of poorer farmers).

(iii) Extension activities may carry externalities in that their impact serves national, possibly non-economic, objectives (e.g., food security or environmental goals).
(iv) The provision of information to large numbers of spatially dispersed and imperfectly organized smallholders entails economies of scale due to high transaction costs.

These failures explain the practically universal involvement of national or lower level governments with extension services, although the involvement does not necessarily require the provision of service through the staff of a public sector organization. The disenchantment with direct service provision by the public sector to which we alluded in the Introduction stems from a number of attributes that are frequently inherent in the way public extension systems are organized and managed. Anderson, Feder and Ganguly (2006), and Birner and Anderson (2007) provide an extensive discussion of these (often interrelated) attributes, which we summarize bellow:

(i) Scale and complexity: The high cost of reaching large, geographically dispersed, remote, and often not highly literate smallholder farmers who have limited access to mass media, is an important aspect of the reality of many parts of the developing world. The problem is aggravated by the fact that farming systems are often complex with several types of crops and livestock, and entail variation in soils, aspect and micro-climate. Farmers themselves vary greatly in their individual characteristics. Budgetary and practical considerations compel extension agents to interact directly with only a fraction of their clientele. It is often the larger scale, better resourced and more innovative farmers that get the attention of extension agents, because they are more likely to provide small rewards to the agents (e.g., free meals or some produce), or because they can readily follow the advice given even if it requires acquisition of purchased inputs (e.g., fertilizers). Such concentration on a non-representative portion of the clientele naturally reduces the potential for farmer-to-farmer diffusion, which in turn reduces the benefits and impact of extension (cf. Pritchett and Woolcock, 2004.).

(ii) Dependence on broader policy environment: As for other agricultural programs, the impact of extension activities depends not only on the design of the specific program or service delivered, but also on other policies and investments where the decision makers are exogenous to the extension system (e.g., price policies, input supply systems, rural credit, transport infrastructure). Extension’s impact may be more adversely affected by this dependence if the feedback (regarding relevance and implementability) to the designers of key information and advice content is deficient, either because it relies on non-representative farmers (due to issues raised in (i) above), or the incentives of agents to provide detailed feedback are compromised (discussed below).

(iii) Interaction with knowledge generation: In most countries, agricultural research and agricultural extension organizations are managed as separate organizations. Coordination and two-way feedback flows have often been deficient (e.g., Mureithi and Anderson, 2004). The incentive structure in research organizations seldom links researchers’ payoff directly to the performance of farmers, and thus the prioritization of research agendas (on which extension management usually has limited influence) does
not always closely reflect farmers’ priorities. Consequently, extension agents may not have the knowhow to advise farmers on some specific issues that significantly affect agricultural performance.

(iv) Public duties other than knowledge transfer: Extension workers are civil servants (whether they are local government or national government employees) and they are often the most extensive field-level cadres that governments have. Governments are therefore often tempted to use extension staff for other (non-extension) duties, whether as a routine additional assignments, or as ad-hoc tasks (e.g., collection of agricultural statistics, distribution of subsidized inputs, assisting and collecting loan applications, disaster relief activities, rural health and family planning programs, and election campaign work on behalf of local or national ruling parties). In Peru, during the turbulent land reform era, extension staff played a large role in the land redistribution activities. Many of such non-extension tasks are easily amenable to monitoring by supervisors, and they will naturally tend to be performed rather than tasks that are not as visible (such as the intensity and quality of information conveyed to farmers). Furthermore, some of the non-extension tasks provide opportunities for monetary gains through corruption (such as the distribution of rationed inputs), and agents may have incentives to focus on these. Therefore, even when the non-extension tasks have merits on their own, they will tend to diminish the extent and quality of the agricultural knowledge-dissemination function of extension.

(v) Difficulty in attributing impact: Agricultural performance is affected by a multitude of exogenous factors as well as farmers’ circumstances, making it difficult to assess what contribution has been made by extension services to the actual outcomes on farmers’ fields and to farmers’ incomes. Econometric procedures may enable economists to make such attributions for a system as a whole in a given geographical area for specific time periods. This requires baseline information, appropriate control groups, and procedures to account for the systemic biases in extension placement and contacts (Birkhaeuser, Evenson and Feder, 1991). However, at the level of individual agents and their supervisors, attribution is not feasible, and consequently, extension managers tend to monitor performance through information on input indicators (visits made, meetings and field days arranged, sample kits distributed). While these indicators are easier to assemble, they do not necessarily convey information on the quality and relevance of the knowledge gained by farmers, or on the impact of such knowledge on yields and incomes. Generally, the incentives to deliver high-quality monitoring information are weak (Martens et al., 2002, p. 20).

(vi) Weak accountability to farmers: Most public extension entities are organized as hierarchical public services, where employees are accountable to their superiors, and the ultimate accountability of the organization’s leadership is to local (county, province) or national political authorities. In smallholder-dominated developing countries, farmers are often not sufficiently organized as a political constituency to be able to exert influence on extension management. Even when farmers are organized in national or
large regional associations, the chain of accountability from the individual agent to the top echelons of the extension organization may be too diffused to induce agents to feel accountability to the specific groups of farmers with whom they interact. Moreover, farmer constituencies are often dominated by larger scale and wealthier farmers, so that even where farmers can influence (through the political system) the content of extension programs, these may reflect the priorities and interests of limited and better-off groups, rather than those of the numerically larger but poorer farm classes. The lack of accountability to poorer groups of farmers is compounded by social traditions whereby agents, who are typically better-educated and of higher social status than the multitude of farmers, consider these farmers as “inferior” and incapable of properly assessing agricultural technology and management issues.

(vii) **Bureaucratic procedures**: As in many government organizations, bureaucratic management and personnel procedures make it difficult for extension agents to respond flexibly to local demands, especially in highly centralized systems. Bureaucratic culture is a typical obstacle to the reform of public sector agencies. Encouraging processes of institutional learning and change is a major challenge in public sector agencies. Likewise, bureaucratic structures often discourage the coordination of agricultural extension with other departments. As pointed out above, even links to the agricultural research system are often weak in spite of their obvious importance.

(viii) **Weak incentives to perform**: Since supervisors have difficulty in attributing impact at farm level to the effort of individual agents, and because agents are typically not accountable to the farmers (who are actually the best judges of extension agents’ relevance and effectiveness), agents are not strongly motivated to exert themselves. This is reflected variously in a limited effort to interact with farmers in the field, little willingness to learn from farmers’ experience, low-quality and generic advice offered, and weak incentive to invest in updating one’s knowledge, or to acquire skills for effective dissemination of knowledge. At higher management levels, there are no incentives to create mechanisms (e.g., participatory processes) for fostering accountability to the grassroots clients who can best observe the quality and quantity of extension input, or to give farmers a say in the prioritizing of extension programs.

(ix) **Weak political commitment and support**: Because even in the aggregate it is difficult to attribute agricultural performance to extension efforts, and because extension activities are not as visible as other rural investments such as irrigation or road projects, politicians may perceive a lower (political) payoff to extension expenditures. Thus, in a context of limited fiscal resources, decision makers tend to assign low priority to extension. This situation will be exacerbated by (often justified) perceptions of poor performance of the system as a whole, which emanates from the incentive problems outlined above. Periodical expansions of extension systems that are spurred by external donor-funded programs tend to be short lived, because once the external funding is exhausted, there is no domestic political support for higher levels of funding (Feder, Anderson, and Ganguly, 2006). Large public extension systems thus tend
to be financially unsustainable. In particular, in times of overall budget crises, extension budgets are among those most likely to be curtailed. Because of the large share of staff costs in extension expenditures, and due to the rigidity of public personnel policies, field operations (staff travel and per-diem funds), maintenance of equipment and buildings, and training costs will tend to be the main items being cut. This, in turn, will further reduce the effectiveness of extension organizations.

The weaknesses and issues outlined above were recognized over the years by extension scholars and practitioners, and various reforming fixes and modifications have been proposed and introduced to address them (e.g., Feder, Willett and Zijp, 2001). Birner and Anderson (2007) outline four general themes (discussed below) that characterize reform directions: institutional design, funding mechanisms, management approaches, and extension methods. Elements from these reforms have been incorporated into variants of community-based extension (CBE), whereby farmer-based organizations (FBOs) are involved in the management and the execution of extension services. Birner et al. (2006) provide a useful classification of such schemes (their Table 1 p. 18) as well as a framework for designing and analyzing different extension schemes (their Figure 2). That framework is informed by New Institutional Economics and transaction cost considerations and such concepts are used in the discussion below of the four reform directions focused on here. CBE is perceived by many observers as an important strategy to ameliorate state failures in providing agricultural extension (e.g., World Bank in its Participation Sourcebook [http://www.worldbank.org/wbi/sourcebook/sba203.htm]; Rivera and Zijp, 2002; and the World Bank in its living Web-based Agriculture Investment Sourcebook).

**Institutional design**

Decentralization is an important strategy to make public agencies more responsive to local needs. It can take two forms: devolution, or making public agencies accountable to locally elected governments, and deconcentration, or transferring authority to offices at lower levels of government but retaining accountability within the line agency (Rondinelli, 1981). Decentralization involves its own challenges (Bardhan and Mookherjee, 2006; Anderson, 2007). Problems of political interest capture and incentives to burden extension agents with other tasks may increase after decentralization. If funding responsibilities are transferred to local governments, extension may no longer be a priority, especially when basic needs, such as water, education, and health, are not being met (Faguet, 2004).

The institutional design of public sector extension agencies can help overcome some of the weaknesses of public extension systems discussed earlier. Increased autonomy for extension agencies can be an important approach to reducing political interest capture and limiting opportunities to burden extension
agents with tasks outside their mandate. The challenge of increased autonomy is “delegatee drift” (Voigt and Salzberger, 2002): a more autonomous agency may not necessarily pursue the public goals that policymakers intended in setting up the agency.

Contracting the provision of extension advice and training is an important strategy to address state failures by institutional design (Rivera and Zijp 2002). In this case, the state continues to finance extension, thus addressing the public good market failure entailed in information provision, but it can in principle overcome some of the weaknesses of a public service organization, such as the problem of bureaucratic rules and attitudes. Importantly, if contracting is done through competitive bidding, the competition mechanism can be used to address some incentive problems. However, contracting involves considerable challenges, because the public sector needs to manage the contracting process, which involves all the problems inherent in procurement, including potential corruption. Whether the public sector is better able to overcome the problems inherent in managing its own extension agents than the challenges inherent in procurement is an empirical question.

**Funding mechanisms**

The way funding is provided to public sector agencies can affect incentive problems. A mechanism widely used in agricultural research, but less so in agricultural extension (an exception is Peru in recent years), is the competitive grant. An important strategy to improve financial sustainability and induce demand responsiveness is cost recovery—for example, by charging a fee for participation in extension activities. However, several problems are associated with cost recovery. It may be politically difficult to move to a fee-for-extension scheme. The willingness or ability to pay, especially among poor farmers, may be constrained by market failures. While having to pay a fee increases farmers’ incentive to hold extension providers accountable, it is not necessarily a mechanism that makes extension providers accountable to the farmers. In the absence of a market mechanism, it is necessary to establish institutional channels by which farmers’ demands are translated into management decisions. As long as farmer-to-agent ratios are more than 1,000:1, establishing such mechanisms necessarily involves farmer-based organizations rather than individual farmers. Such mechanisms have their own challenges, as we discuss below.

**Management approaches**

The public sector can use a range of managerial approaches to address the problem of weak incentives. As in any organization, merit-based recruitment and promotion is one of the most important strategies in this regard. Other instruments include performance contracts and other “managing for results” approaches, seeking feedback through client satisfaction surveys, establishing professional standards, and other efforts
to promote a “mission-oriented” service. An improved public management approach aims at introducing a range of private sector management techniques to public administration. Because public sector extension is typically part of the general public administration, the opportunities to use such instruments are often constrained by formal civil service rules and by an informal bureaucratic culture. Changing such formal and informal rules for extension in isolation from the rest of the bureaucracy is likely to be difficult or impossible. The creation of semiautonomous agencies is one strategy to increase the scope for applying management approaches that aim to resolve incentive problems.

**Extension methods**

Extension methods differ widely with regard to the scope they create for allowing farmers to articulate demand. On one end of the spectrum are transfer-of-technology methods that aim at disseminating new technologies developed in research stations, such as through lectures and instructions, demonstration plots, and information dissemination via radio. Such methods leave limited room for the articulation of farmers’ demands. On the other end of the spectrum are participatory extension methods, including participatory technology development and the Farmers’ Field School approach, which create more space to tailor extension to the demands of farmers (Tripp, Wijeratne, and Piyadasa, 2005; Davis, 2006; Anderson, 2007; van den Berg and Jiggins, 2007). One challenge often faced by public sector extension agents is that the use of participatory extension methods requires the development of specific skills, such as group facilitation. Without investing in training for extension agents to develop such skills, it is difficult for the public sector—as for any other extension provider—to use the potential inherent in participatory methods (Swanson, 2008).

3. Community-Based Extension in Principle

In community-based extension (CBE) systems, in their purest form, the extension service is contracted by the community, or is part of the staff of a farmers’ association. In a more diluted format of community extension, farmers’ organizations, whether representing single communities or wider constituencies, have a say in the design and execution of extension programs. Such an approach can provide improvement in the extension service received by farmers, and may provide advantages to smallholders. In most developing countries, the farmers-to-agent ratio is more than 1,000:1 (e.g., Anderson and Feder, 2004). Hence, it is difficult for farmers to exercise demand and hold service providers accountable without some

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2 This essay does not have space to do justice to the controversy surrounding the relevance and effectiveness on participatory approaches in general but readers should be aware that there is a lively debate about how true such methods are to their rhetoric, nicely highlighted in the collection edited by Cooke and Kothari (2001), but with a rich cyber-based literature such as at [http://donnysyofyan.multiply.com/journal/item/61](http://donnysyofyan.multiply.com/journal/item/61) and [http://robertchamberlain.blogspot.com/2007/09/cooke-bill-and-uma-kothari-eds-2001.html](http://robertchamberlain.blogspot.com/2007/09/cooke-bill-and-uma-kothari-eds-2001.html)
form of organization. Farmers’ associations can play an important role in aggregating farmers’ demands for extension and in representing farmers in participatory models of extension management. For example, farmers’ associations or community organizations can represent farmers in developing plans for extension. They can also represent farmers on procurement boards charged with contracting extension providers and can participate in multistakeholder management boards. Moreover, farmers’ organizations can help reduce the transaction costs of providing extension, as in group-based extension approaches. They can partner with public sector agencies as well as NGO service providers to make extension more demand driven. In the case where extension is contracted by the community or the farmers’ organization, the content of the extension program is dictated by farmers’ representatives. An important advantage of CBE is the fact that the providers of extension advice are, in principle, directly accountable to the farmers who are members of the community or the organization. An effective role in the contracting of service providers and in the assessment of their performance is crucial in creating such accountability. Thus, when designed properly, CBE can overcome the critical issue afflicting traditional top-down extension systems, namely, weak incentive to perform to the satisfaction of farmers. The difficulties of monitoring and attributing impact and assessing relevance are also less acute, as the services are focused on issues reflecting farmers demand, and farmers are involved in providing feedback or even in assessing the service. There are also better prospects for garnering political support (and the derived budgetary support and financial sustainability): a more effective service with attributable impacts can produce political payoffs for local and national politicians and can therefore attract support. Moreover, in CBE the public-good aspect of extension is defined at a local or community level, and it may enable some cost recovery, as the free-rider problem is easier to resolve. However, there are several issues, some specific to CBE and some typical of extension systems, which may hamper the effectiveness of CBE. We turn now to consider these issues.

A major challenge for CBE is the classical problem of collective action. If the benefits of extension advice are “nonexcludable,” farmers have limited incentives to incur the transaction costs of participating in the organizational activities that are related to the establishment and management of the organization (the “free rider” problem). The incentives to join local farmer groups for the purpose of group-based extension may be rather high, because the participants expect to benefit directly from their participation, and the already high social capital is reinforced. However, to participate in extension planning and management beyond the local level, farmers need to become organized at a more aggregate level, which poses its own challenges. The literature on the role of group size and heterogeneity in collective action is extensive, and the relations continue to be debated (e.g., Poteete and Ostrom 2004). Often, farmers may have social capital that has been generated in the context of their small community, and that would facilitate group activities and will induce leaders and members to exert unpaid efforts on behalf of the
group. But that capital may not exist across communities (Hayami, 2008). In such a case, to the extent that CBE requires organizations and collective action across communities, the incentives may not suffice to facilitate that. Donor-sponsored CBE programs often tackle this problem by financing the organization of cross-community farmer entities and compensating farmer leaders and representatives for the time and effort they invest in these collective activities. However, it is a common phenomenon that organizations formed for donor-funded projects collapse once project funding ends (e.g., Ameur, 1994; Purcell and Anderson, 1997 for the case of extension). As pointed out by Hayami (2008, p. 115): “The hasty expansion of community-driven participatory development projects by external aid agencies, along the current vogue of social capital and community participation in the absence of real understanding of local economic and social systems, has resulted in a serious waste of development resources”.

There is another issue that is encountered in many participatory development programs, and which is likely to affect BCE programs that depend to some extent on public sector implementation mechanisms. The problem arises from the entrenched top-down and patronizing attitudes that often characterizes all levels of governments that deal with small- and medium-scale farmers. Thus, even when CBE concepts and participatory operational modalities are championed by influential policy makers (possibly encouraged and fortified by financial and intellectual support of external donors), there may be resistance at various levels of the relevant bureaucracies. Resistance may reflect itself in attempts to dilute participatory bodies’ powers, foot-dragging on budget transfers, and co-option of farmer leaders to support the interests of the bureaucracy rather than those of the community. Training of various levels of government in participatory concepts is a solution often adopted by champions of BCE, but it may not suffice to resolve the problem, as pointed out by Braun et al. (2006, p. 35): “…given that farmers, and especially women, have very little political influence in most developing countries, such efforts to move towards participation [in extension systems] often flounder on bureaucratic procedures, hierarchical structures, political exigencies, budget constraints, etc.”

CBE systems are not equally suited for all kinds of extension. They have particular comparative advantages to facilitate extension for activities that require collective action, such as many types of natural resource management and pest management. Where farms are diverse in enterprise mix and where more farm-specific advice is required, the comparative advantage of CBE approaches is lower.

Another major challenge of CBE is avoiding social exclusion and elite capture — a common problem in rural development programs and in extension specifically. Rural communities and farmers’ organizations are often dominated by middle-class and relatively wealthy farmers. Poor farmers and socially marginalized groups typically play a limited role in the leadership of communities and rural organizations, even if they are members. In particular, the representation of women in them is often low, a problem
linked to the socio-cultural role of women in many societies as well as to the time constraints faced by women (see, e.g., Meinzen-Dick and Zwarteveen, 1998; Quisumbing, 2003). One strategy to deal with the elite capture and the social exclusion problems is the formation of specialized organizations, such as a group exclusively for women farmers. Institutional design can also help to address some of the problems. For example, women and disadvantaged groups may be allocated seats in participatory planning and management boards for extension.

The concept of CBE presumes that sufficient numbers of would-be qualified advisory professionals (or organizations containing such professionals) are available to do the needful (Chapman and Tripp, 2003, p. 7). Often, the expectation is that the existing public extension service cadres would form the core of such an industry, either as part of a semi-autonomous public (or privatized) entity that can be contracted, or as individual professionals following a privatization of the extension service. The NGOs dealing with rural development services in some countries are also viewed as potential extension service providers. The designers of CBE projects commonly pay attention to the issue of accrediting and regulating service providers. However, in countries with endemic governance deficiencies, the process of accreditation may be corrupted. The background and training of the pool of potential service providers (including the existing public extension personnel) may not suffice to address the more specific and localized issues that are likely to be brought up in a demand-driven system. Large-scale training (at public expense, at least initially) may be required (Chapman and Tripp, 2003).

Farmers’ organizations are often confronted with capacity problems, particularly when they become service providers and hire extension agents. This requires skills in management, accounting, and supervision. Investment in the managerial capacity of farmers’ organizations through training can be an important strategy to overcome the management challenges they face. The dairy cooperatives in India (in important part through their umbrella organizations), for example, have a high capacity to provide services to their members because of specific investments in their capacity by the National Dairy Development Board. Leadership training is also an important strategy, because meeting the collective action problem requires vision and leadership.

Depending on their size and activities, the organization may be obliged to hire professional managers, a practice that compounds supervision problems. Community organizations are not immune to mismanaging funds. When an organization deals with various farmers’ agendas, rather than exclusively with extension, agricultural extension may not necessarily be a priority for the leadership of the organization. Lobbying for state support in the form of subsidies is often a higher priority than helping the members become more competitive. On the other hand, integrating extension into an existing entity that was founded for a broader set of goals is an important strategy to reduce the transaction costs of collective
action. When farmers’ organizations become large, they are also likely to become subject to political interest capture, because politicians have incentives to use them for mobilizing votes. Likewise, leaders of large organizations may have incentives to run for political office, which in turn may lead to conflicts of interest. As noted, politicians have also been known to misuse public extension systems for their own purposes. Private provision of extension dodges most such political capture problems but fails to serve many impoverished groups adequately. So, CBE approaches, although not risk-free, may present the most attractive options for extension provision in many situations. Accordingly, the important matter of performance in practice should be turned to, as in the section that follows.

4. Evidence on the Performance of Community-Based Extension

The literature provides extensive coverage of experiences with community-based extension in the past two decades. However, much of the material is descriptive, and even within the empirical literature there is a paucity of rigorous econometric studies. As we will argue below, there are ample indications that the difficulties envisaged theoretically are indeed encountered in practice, and are amplified by practical implementation hurdles that are specific to community-based extension initiatives. The discussion is organized around several key issues. Since the experience of the National Agricultural Advisory Services (NAADS) program of Uganda provides insights on a number of aspects, we start with a description of this program. The Farmer Field School (FFS) approach to extension services also contains elements of community-based extension, and the experiences with its implementation provide useful insights. We will thus bring in description of key aspects of this approach as well. Finally, the Agricultural Technology Agency (ATMA) model that is being implemented in India is one of the largest applications of decentralized community-based extension that we will refer to, and warrants a description of its procedures. Our discussion is focused on implementation cases that have been supported by the World Bank; other cases likely feature less community engagement (e.g., Raabe, 2008).

NAADS is a decentralized long-term program that started in 2001 in 24 sub-counties of several districts of Uganda. Since then, with support from several donors, the program has been expanded to dozens of additional districts, aiming to reach national coverage in the near future (Government of Uganda, 2007). The program is centrally guided, but is implemented and administered in a decentralized manner, at least partially within the country’s existing local government structures. A national Board formulates strategic

3 Unfortunately, some disclaimers are necessary here. ATMA in India has some community elements but it is not really community-based; at best it has farmers’ groups and their representatives in the governance structure, otherwise, it is still largely a public sector extension service. NAADS in Uganda is also not fully community-based, as the public administration continues to effectively run the system. So both these important cases for which there is relatively abundant evidence available are what has been described above as “diluted” CBE systems.
objectives, selects districts and sub-counties to be included in the program (based on agreed criteria),
defines key implementation procedures (e.g., procurement procedures, monitoring and reporting
requirements), and provides technical services to local government levels of the program on issues that
are beyond their capacity. The Board is also responsible for certification, regulation, and overall quality
verification of extension service providers (who may come from the private sector, NGOs, or semi-public
organizations).

In participating districts, the implementation of the program is overseen by a Chief Administrative Officer
supported by District Councils. These councils, which include local politicians representing various
stakeholders, officials, and farmers, oversee procurement boards. They were expected to also guide the
process of converting local public extension workers into private advisory service providers (relatively
little progress was achieved on this). Within each district, participating sub-counties form a council
(composed of local politicians, officials) and stakeholders that is responsible for local-level strategy,
managing program funds, and involving farmers’ fora (composed of representatives of farmers from
groups of villages) in planning and setting guidelines, and liaising with districts (Government of Uganda,
2001).

Within NAADS sub-counties, farmer-participants (who comprise only a fraction of the farming
population) organize themselves in farmers’ groups based on members’ shared priorities and needs. Each
group elects two representatives to the sub-county farmers’ forum, and it is at that level that priority
technology needs are identified. Nominally, the forum, jointly with local officials, contracts and monitors
service providers who deliver training and advice in the identified priority areas.

While the budget for the program at the local level is provided mostly through earmarked transfers from
the national government (largely using targeted donor-supplied financing), these resources are to be
complemented by an allocation from sub-county and district governments’ regular budget (5%) as well as
a nominal contribution (2%) from farmer-participants (Government of Uganda, 2001).

The farmer field school (FFS) approach to delivering information and educational services was designed
originally as a means to introduce knowledge of integrated pest management (IPM) to irrigated rice
farmers in Asia, and has since been expanded to numerous countries, covering various agricultural themes
(van den Berg and Jiggins, 2007). A typical FFS educates farmer participants on agro-ecosystems analysis
as well as specific technological features of their crops and the field environment.

The FFS approach relies on participatory training methods to convey knowledge to field school
participants, with the extension agent-trainer expected to act not just as a transmitter of information, but
mainly as a facilitator encouraging farmers’ own discovery and discussion of their experiences and
observations. A typical FFS entails a season-long sequence of half-day sessions of hands-on, farmer experimentation and non-formal training to a selected group of 20-25 farmers during a single crop-growing season. The selection of participants into the training is done with strong community involvement through its established leadership and existing social structures. The participants are expected to contribute to the wider community through dissemination of knowledge and follow-up activities such as field experiments and collective actions. Initially, paid trainers or public extension staff lead the training, delivering elements and practical solutions for overall good crop management practices. Through group interactions, attendees sharpen their decision-making abilities and are empowered by learning leadership, communication and management skills (e.g., van de Fliert, 1993). Some of the participating farmers may be selected to receive additional training so as to be qualified as farmer-trainers, who then take up training responsibilities (for some fee, possibly paid by their community) with official backup support such as training materials.

The ATMA model of participatory decentralized extension was implemented originally as a pilot program in a World Bank funded agricultural development project in India in the period 1998 – 2003. It has since been expanded to a national program funded by the Indian union government. The program operates at a district level (there are some 600 districts in the twenty-eight states of India), and entails within each district a semi-autonomous agency (referred to as ATMA) dealing with extension matters. The agency can receive both public and private funds, as well as charge fees to clients. Each ATMA is directed and overseen by a governing board that includes representatives of all farmer classes in the district, as well as other stakeholders (private sector, rural banks, NGOs, official agencies dealing with agricultural development). The governing boards define strategic priorities reflecting the interests of the constituencies represented on the board. Within each village, farmers are also organized in self-help groups and other farmer interest groups, and these groups elect representatives into the block (sub-district) Farmer Advisory Committee (FAC). The chairs of the FACs serve on the ATMA governing board, which is led by the district collector (the most senior district government official). The ATMA director is a non-voting member of the board. Block work programs are prepared by agricultural extension officials, but need to be approved by block-level FACs before being sent to the ATMA governing board for review and approval. The FACs meet monthly to review progress in implementing the annual work plans and to suggest revisions. The design of the system thus provides, at least nominally, for ample farmers influence on extension activities, since every village is represented in the FAC (Swanson, 2008).

With this background on NAADS, FFS and ATMA we can turn to a review of the limited evidence on performance of CBE approaches.
Insights on the risk of capture (which, as we noted earlier, is not unique to CBE) are derived from the experience of the NAADS program in Uganda. Several observers whom we cite below commented on a bias in implementation, leading to the favoring of wealthier farmers. Thus, one early study concluded that the mobilization of groups through local government leaders appealed to the progressive wealthier elite, while “the poorer sections of the population … were perceived to be excluded” and that NAADS had “a strong bias towards the better off” (Boesen et al., 2004, p. 66). A study of the Mukono district reports that farmers perceive that “poor farmers were left out”, and suggests that the “required relatively high levels of literacy and the lengthy debates (on prioritization) precluded women and the poor” (Obaa, Mutimba and Semana 2005, pp. 8, 9). An OXFAM/FODOWE study cited by Kibwika (2006, p. 101) reports on the basis of a 2004 survey that “the only people who benefit from NAADS are those with convertible assets … or those with access to external financing such as remittances”. Similarly, Parkinson (2008) observes that, by 2006, the program had “introduced a number of short-term approaches that systematically rewarded wealthier and more connected farmers” (p. 123). In support of this statement she provides data showing that NAADS group leadership comprises farmers of higher education and wealth status than that of regular members, concluding that “poorer farmers … were less able to benefit from the types of technology NAADS provided” (pp. 164-165). Bukenya (forthcoming, 2008) arrives at a similar conclusion.

Farmer field school training programs have also been reported to be vulnerable to elite capture. In her study of the early phases of FFS in Indonesia, van de Fliert (1993, p. 157) commented that “The composition of the field school groups observed was not representative of the farmer population in the villages. The groups contained many village officials, and farmers with relatively high education, large (owned) fields, and off-farms jobs, and no women at all”. A later report on the Indonesian experience cites observations of a field operative complaining that the relegation of participant selection to the established village leadership resulted in preference for members of the village elite (Fakih, Rahardjo, and Pimbert, 2003, p. 36). More generally, the report concluded that FFS effort in Indonesia has not been characterized by equity in its coverage (pp. 64-65). Similarly, Feder and Savastano (2007) demonstrated econometrically in their analysis of Indonesian Field School data that wealthier farmers with higher educational attainment had a higher probability of being selected for participation in the FFS training than others.

A study of livestock field schools in Vietnam claims a necessity (in the context of that particular training theme) to skip the poorest segment of the community because of a perception that they could not marshal the resources to raise even small livestock (Dalsgaard et al., 2005, p. 10). The study cites, however,
evidence from livestock field schools in Bangladesh, Benin, and Senegal, where adherence to poverty-focused selection criteria yielded satisfactory levels of participation by the poor.

The Decentralized Agricultural and Forestry Extension Project in Indonesia, whereby farmers’ groups received grants to commission training and demonstration materials from public extension agents, reported only “isolated” incidents of elite capture (World Bank, 2005). However, it is observed that among the 16 reported village-level case studies’ training activities, nine cases entailed training of groups amounting to less than 20% of the farming households (five cases involving less than 10% of farming households). Since the project did not include specific poverty-related selection criteria, it is not obvious that the poor received much representation in such small select groups.

Difficulties in implementing farmers’ priorities:

The NAADS program in Uganda provides an illustration of the practical difficulties faced in attempting to reflect farmers’ priorities in the advice delivered by service providers, even within a nominally demand-driven, community-based, extension system. Several observers of the program cited below suggested that farmers’ actual control of priority setting for their groups’ training is limited in reality (especially with the rather arbitrary restriction to only three commodities), undermining one of the key expected advantages of community-based extension systems. Obaa, Mutimba and Semana (2005) provide a detailed description of the various elements of the decision chain that leads to the design of a service contract by a provider within the NAADS program. Ultimately the priorities in the service contract are not defined for each group separately, but rather are determined at the sub-county level, and consequently the content of the training reflects an aggregate demand of many groups as well as top-down priorities of the national and local government (emphasis on commercial crops). The training received by any group may therefore contain some or none of the priorities expressed by that specific group. Indeed, Obaa, Mutimba and Semana (2005) report cases where farmers did not obtain training on the priorities they identified, and were actually getting advice on enterprises that were not their priority. Similarly, a study in one NAADS district (Friis-Hansen, 2004) reports participants’ frustration with the length of time consumed by various layers of the enterprise prioritization process, noting that “the enterprises on which they receive advisory services only rarely (are) similar to those for which they articulated needs” (p. 9), partly because of NAADS’ emphasis on commercial crops that are often not farmers’ first priority.

Frustration with the priority-setting process is reported to have led to high drop-out rates by participants from the program (Parkinson, 2008). The practical difficulty seems to stem from the high administrative transaction cost of establishing a financing and procurement system that can transfer funds down to a community (single farmer group) level and enable direct contracting of services by a single farmer group.
Such a system also faces a challenge in monitoring the uses of funds and has vulnerabilities to capture and corruption even at the community level, as discussed by Plateau and Abrams (2002) and Deininger and Liu (2008). The latter cite evidence from a case study by Jean Ensminger on large-scale diversion of community project funds in the context of a different (non-extension) community-based development project in an African country. In Chile and Costa Rica, the government attempted to reduce the transaction cost of making funds for contracting extension available directly to farmers through the distribution of vouchers. The farmer-holders of vouchers could use them to pay to qualified extension service providers. As the payment was made directly by farmers to the service provider, it was expected that farmers’ priorities would be fully addressed by the extension agent. However, the institutional arrangements required to monitor and control the use of the vouchers so as to prevent fraud were inadequate, leading to major abuses and reduced effectiveness (Bebbington and Sotomayor, 2005; Berdegué and Marchant, 2002; Cox and Ortega, 2004; Dinar, 1996). Evidently, an appropriate control system needs to be significantly more extensive and hence more expensive.

**Difficulties in implementing farmers’ control of service providers’ contracts:**

As argued in Section 3, effective control of service providers’ contracts by the community is critical to generate incentives for high-quality service delivery. Again the NAADS system in Uganda illustrates the practical difficulties in translating this principle into reality. As noted, contracts within the NAADS system are awarded by the sub-county administration because there is no mechanism to transfer funds down to a village community level. The performance of service providers is not formally monitored by members of each group but, rather, it is the formal responsibility of the farmers’ forum that represents farmer groups from the entire sub-county. The existence of a wedge between the actual service recipients and the issuers and enforcers of the contracts weakens providers’ accountability to the farmers who receive advice, and thus diminishes the incentives to provide high quality service. Even the monitoring by representatives of the farmers forum is deficient: farmers’ who are entrusted with this task are supposed to receive compensation for the time and effort exerted in monitoring on behalf of the larger community but funds to pay them are often not available, reducing the incentives to perform a role that only marginally serves their own farming group (Muwonge, 2007). Evidently, the farming population of a sub-county cannot be perceived as a community in a social sense, and thus it does not possess the social capital that would facilitate and induce voluntary (unpaid) actions on behalf of the group. As argued by Hayami (2008, p. 111): “For the community to have sufficient social relation capital in organizing cooperation among its members, its membership must be small enough to ensure intense social interactions”.

**Limited availability of competent service providers:**
The advantages of CBE (and more generally all demand-driven extension systems) are predicated on the availability of a cadre of skilled service providers who can compete for the extension contracts issued by communities. Those providers who do not perform satisfactorily would then be weeded out by the competitive market process. Centralized screening and accreditation mechanisms can be introduced to limit the ability of unqualified service providers to take advantage of farmers’ lack of familiarity with the true capacity of a bidder in initial rounds of a CBE program. However, in many developing countries there is a rather thin market of qualified service providers, and the situation is exacerbated by the vulnerability of the accreditation mechanism to corruption and political manipulation. In some more-developed countries (e.g., UK and New Zealand), the privatization and dismantling of public extension systems released into the market for extension service provision large numbers of competent would-be advisors. In contrast, the skills of extension staff in many developing countries were built on a slender educational preparation and were geared towards generic technology messages, rather than the more specific and localized issues that farmers tend to identify as their priorities. A transitional period whereby potential service providers equip themselves (through training and recruitment) with the skills that are likely to be demanded would need to be taken in account. However, this generates an incentive problem, as it is unlikely that potential providers would invest heavily their own resources in training staff prior to actual identification of demand and assurance of landing contracts. This induced Chapman and Tripp (2003, p. 7) to perceive a public sector role in organizing and funding training in the transitional phase. The issue is even more acute when the dismantling of the public extension system is held up by political or administrative obstacles. This is illustrated by the experience in Uganda, where the retrenchment of the public extension system that was planned to run in parallel with the implementation of the CBE seemingly did not materialize due to legal issues. Cadres of the public extension service were therefore mostly not available to compete for the provision of services, and various NGOs, private groups, and semi-public entities, of varying backgrounds and records, gained contracts. Procedures for providers’ qualification and accreditation could be implemented only with delay and were fraught with irregularities and the training and skills updating (funded in part by the NAADS program) were not systematically carried out. The inadequacy of service providers and the resultant low quality of service were highlighted in the NAADS mid-term review (Kazigati, 2005, p. 45; Nyanzi, 2005, p. 46). Similarly, Ekwamu and Brown (2005, p. 28) reported that “the quality of service provision emerged as a major issue in personal interviews with farmer groups”. Deficiencies and irregularities in the procedures for procuring service provision are claimed to have led to the award of contracts to providers who lacked qualifications and who consequently delivered low-quality service (Parkinson, 2008, pp. 139-140). Based on field interviews, Muwonge (2007) raises concerns regarding service quality, which he attributes to deficient monitoring of provider performance. Problems due to inadequate availability of qualified service
providers have afflicted also the voucher-based extension programs in Chile and Costa Rica in the early 1990s (Bebbington and Sotomayor, 1995, Ameur, 1994). China’s program whereby farmer associations contract technical services from public entities such as research institutes, universities, and individual scientists was also assessed to have suffered due to the limited access to subject matter specialists (Kidd et al., 2000). The current scaling-up phase of the ATMA program in India is claimed to be adversely affected by limited capacity of existing personnel and the inadequate skills of extension agents inherited from the long-defunct T&V extension system ((Sulaiman and Hall, 2008, Swanson, 2009).}

**Inadequate and unsynchronized funding at the community level:**

Inadequate or late funding of extension operations is a common problem in publicly-funded extension due to limited political support for extension, as highlighted in Section 2. Delays in the arrival of funds in the course of the agricultural season can greatly diminish the utility of training that attempts to illustrate technical points to farmers through the growing crop. This issue was cited as a source of diminished effectiveness in the case of the FFS training project in Indonesia (Feder, Murgai and Quizon, 2004a, p. 59). In the case of the NAADS program in Uganda, even though at the central government level there has been significant political support (and ample funding), at local government levels the political support is claimed to be lower, resulting in lower priority in the allocation of complementary local funds and late award of contracts (Muwonge, 2007). This led to rushed contracts and training that is not synchronized with the agricultural growing season (Muwonge, 2007).

Voucher programs may be perceived as enabling a solution to budget-cycle problems, but as we pointed out above, they can be prone to abuse. Problems of funding are typically not observed while community-based approaches are at a pilot phase, as the funding is often coming largely from external sources, supervision by government champions and external donors is tight, and the scale of the operation is relatively small, making it easy to draw senior management attention to administrative obstacles. Both Sulaiman and Hall (2008), and Swanson (2009) attribute the current floundering of the ATMA program in India, at least in part, to the relative reduction of funding when the program moved from pilot phase in limited geographical areas to a nation-wide coverage.

**Change in attitudes and top-down orientation of extension organizations is difficult:**

Most CBE programs maintain a dependence on public sector organizations (whether at the local or national level, or both), and they are introduced with the encouragement and initial funding of external donors. The long-term effectiveness and sustainability of such reforms depend crucially on the extent to which government bureaucracies and field-level workers can adopt the participatory mode of operation
that underlies CBE. The pilot phase of the Indian ATMA illustrated that a formal structure of governance that deliberately engages beneficiaries, and appropriate training of extension personnel, can indeed flourish in what is traditionally top-down field of extension endeavor in this nation. According to Swanson (2008), the farmer-orientation of the ATMA model in India positively affected the motivation and morale of the field extension staff: “For the first time, they could see the direct impact of their work on the lives of farmers, farm women and rural young people within their block and district. This new arrangement had a direct and positive impact on their performance. In the process, they were transformed from merely transferring technology (i.e., delivering information) to becoming problem solvers in working with farmer groups to identify and help solve specific problems or needs in pursuing different enterprises” (p. 32). However, Swanson (2009) points out that when the program moved to a national scale, funds for appropriate training of extension staff in the concepts and methods of participatory processes were not provided, resulting in disappointing performance. Similarly, Sulaiman and Hall (2008, p. 3) refer to “attitudinal barriers at all levels” and “lack of local ownership” as two of the factors underlying their concern that ATMA will suffer the same fate as the failed T&V extension system.(p. 32).

Given that most officials have been brought up in a top-down organizational culture, where farmers are viewed as wards of the state, it is not surprising that change is hard and reversals occur. In the Ugandan NAADS system, local governments do not fully “own” the community-based approach, even though it has some strong champions at the national level (Muwonge, 2007). This is reflected in foot-dragging on local complementary budget allocations, and in the assertion of de-facto control of contracting by officials at the sub-county level, even though nominally this was a responsibility for which the farmers’ forum was to have much influence. The emphasis on commercial crops that reflects to the agricultural development strategy of the national government often takes precedence in selecting training programs over expressed priority needs of farmers’ groups (Bahiigwa, Rigby, and Woodhouse, 2004). In Indonesia, a review of two decades of FFSs concluded that while many field workers subscribe to the participatory principles of this community based approach: “… there is little evidence that the culture and practice of participation in Community IPM has fundamentally influenced government bureaucracies. Overall, the FAO-Government programme on Community IPM has had little enduring effect at higher levels of the bureaucracy. Relatively more progress and change have occurred at the provincial and district government levels…In broad terms, lack of real change in organisational culture, structures and procedures were the main obstacles for the uptake and institutionalisation of Community IPM in the bureaucracy” ”(Fakih, Rahardjo, and Pimbert, 2003, pp 45-46).

Observers of the experience of the decentralized extension project in Indonesia that was completed in 2005 highlighted the limited comprehension by local-level staff of the CBE concept, and perceived that a
A couple of staff training workshops over a period of a few months would not suffice to change a mindset developed over years of top-down interaction with farmers (Bourgeois and Kusumaningrum, 2006, p. 77). This is reflected in the fact that a key local institution (the District Extension Committee - DEC) that was created by the project as a stakeholders forum (including, in particular, farmer representatives) to provide strategic guidance and define extension priorities has not functioned effectively. The main reasons were that “most DECs remain dominated by government through an over-representation (usually 50 percent or more) or perceived authority of government members” (World Bank, 2005, p. 8).

In Vietnam, the introduction of participatory extension through a Livestock Field School program faced significant difficulties because of “a strong inclination towards applying the familiar (and thus comfortable) style of top-down instruction” (Dalsgaard et al., 2005, p. 5). The external donors (who were promoting a CBE concept) had to compromise and accept a system that retains a distinct flavor of traditional top-down, technocratic extension development, because “too much ‘participatory arm twisting’ by external advisors was not welcome” (Dalsgaard et al., 2005, p. 6). More generally, after almost two decades of experimentation with FFS approaches in various crops in Vietnam (invariably with external donor funding), the field school model has not yet been widely mainstreamed into the agricultural extension system of Vietnam (van de Fliert et al., 2007).

**Quantitative studies of the impact of community-based extension**

There have been many quantitative analyses of the impacts of CBE programs. A number of these studies deal with small-scale pilot programs, or with a limited geographical area within a national program. It is therefore difficult to ascertain to what extent their results would hold for a large-scale program, or whether they are representative of a national program. Studies of CBE are also subject to the typical methodological and data challenges that make the evaluation of extension impact difficult (Birkhaeuser, Evenson and Feder, 1991).

A study of two pilot programs in Nicaragua (Dinar and Keynan, 2001) used secondary data to calculate incremental farm-level net revenue margins for one program and benefit–cost ratios for the other program. Both programs arranged for service contracts between public (in the case of the first program) or private (in the case of the second program) service providers and farmers, with a substantial public subsidy. Gross margins varied among the four regions in the first program and the aggregate gain, while positive, was not considered robust. Moreover, the calculation did not account for government expenditures and did not allow statistical testing. The analysis of the second program suggested a high benefit-cost ratio (1.77), but it did not account for all the public costs, and was not subjected to statistical testing.

A Honduran small-scale public program to provide privately-contracted extension services to groups of farmers has been evaluated by Hanson, Just, and Lainez (2006). Similar to the NAADS program, the
service provider contracts are not drawn directly between the farmer group and the provider, but in the
Honduran case representatives of each group are interviewed at the end of the season by program officials
to assess client satisfaction. The overall rates of return on operations in two geographical areas were 8% and 10%, with a number of arbitrary assumptions on the profile of benefits over time. It is not clear
whether the overhead costs of the program administration were included in the calculation.

Farmer field school programs were the focus of quite a few empirical studies (e.g., Feder, Murgai and
Quizon, 2004a,b; Godtland et al., 2004; Tripp, Wijeratne and Piyadasa, 2005; Ricker-Gilbert et al., 2008)
and extensive literature reviews citing such studies are available in Davis (2006) and van den Berg and
Jiggins (2007). The studies are too numerous for us to review them here, but our conclusion is that the
results are mixed. Some of the positive results claimed are based on inadequate econometric analysis that
does not properly account for selection biases. Insufficient attention is given to the full cost of the training,
which tends to be higher (per farmer) than less intensive extension methods. It has also been noted that
diffusion of information between trained farmers and other members of the community is problematic due
to the detailed and experiential nature of the training, as highlighted by Braun et al., (2006, p. 39): “This
[limited diffusion] leaves open the question how the beneficial impact of FFS on participating farmers can
be scaled up beyond the relatively small numbers that can be reached directly through FFS. … The
experience so far is that too many key characteristics of the FFS erode during mass replication for the
benefits to be sustained.”

The NAADS program in Uganda, being one of the largest national CBE programs, has been studied by
many, although only two studies undertook a rigorous econometric analysis based on a sufficiently large
sample. A study by Benin et al (2007) relying on a 2004 survey of 894 households suggests that the
program had a significant and positive impact on the adoption of new crop and livestock enterprises
(vanilla, groundnut, goats, bees), modern technology, and post-harvest technologies. However, the results
do not indicate significant differences between NAADS and non-NAADS sub-counties in crop yields or
total (crop and livestock) income, although it suggests that farmers in NAADS sub-counties avoided some
of the large drops in crop income experienced by those in non-NAADS sub-counties. A serious limitation
on the robustness of the result is due to the fact that the study does not systematically account for the
possible selection bias whereby the sub-counties covered by NAADS are different from those not selected
for inclusion in the program. Another drawback is the estimation of income and consumption changes on
the basis of respondents’ recall over a five-year horizon.

Another study of NAADS impact, based on a more limited sample of households interviewed in 2005/6,
attempts to tackle selection bias through an instrumental variable procedure (Muwonge 2007). In one of
the specifications (that actually relies on ordinary least squares regression) the study estimates that
NAADS participation increased the value of farm production by 18%, but the result may not be too robust as it is statistically significant only at the 90% confidence level. It is noteworthy that, once instrumental variables are used, extension impact is not significant. The author rejects the instrumental variables specification on the grounds that there is no indication of an endogeneity problem, but this conclusion is most likely due to the choice of weak instrumental variables (none of which is at the household level).

A study conducted at the pilot phase of the ATMA program in 28 project districts suggested that the reformed extension system contributed to increasing farm income and rural employment through agricultural diversification. Thus, during a four-year period (1999–2003), the horticultural cropping area increased from 12 to 16 percent; oilseed crop area increased from 3 to 11 percent; and the crop area for herbs, medicinal and aromatic crop area increased from 1 to 5 percent. During this period, the area planted to cereal crops (primarily wheat and rice) declined from 55 to 47 percent, but yields increased 14 percent, resulting in no appreciable loss in the production of staple food crops. During this period, average farm income across these 28 pilot project districts increased 24 percent, in contrast with only 5 percent in non-project districts (Tyagi and Verma 2004). The analysis may have inadequately tackled selection biases and baseline advantages of some of the program districts, thus the attributions may entail an over-estimate. The scaled up program that expanded the ATMA model to the national level has not been evaluated rigorously, but it is perceived to be floundering: Rashid Sulaiman and Andy Hall (2008) attribute the difficulties to numerous implementation challenges, including: “Insufficient support; Mismatch with diversity of application contexts; Lack of local ownership; Capacity and institutional constraints”. Swanson (2009) agrees with the assessment of the poor status of the national program, but argues that the key problem is insufficient resources to invest in training extension staff in the Indian states in participatory methods.

A study of the impact of the Indonesia Decentralized Agricultural and Forestry Extension uses a panel sample of program participants and non-participants to infer impact on income and other performance criteria (Bourgeois and Kusumaningrum, 2006). The study, which is afflicted by a number of data and methodological issues, produced numerous mixed results, and curiously it indicated no project impact on agricultural incomes but some impact on non-farm income. The results are summarized by one of the authors as follows (Kusumaningrum, 2007, p. 1): “There is no clear indication that the Participatory Action and People Participation method directly … improved the welfare rural people. Field research indicated that provision of inputs and services to target groups was not constant over the project’s time frame (five years). But still the project provided some benefits for the farmers, including better knowledge in how to acquire resources; learning how to make proposals and how to discuss and decide together about priorities”.
The few cases reviewed above serve to highlight the need for cogent quantitative analysis of extension schemes of different types but especially CBE variants.

5. Conclusion

The belief that agricultural producers can productively use improved information to advance their productivity and profitability as well as contribute to higher agricultural and economic growth and poverty reduction is widely held and has been a key rationale for agricultural extension being an important element of agricultural development strategy for decades. But the validity of this belief has come under increasing scrutiny in recent years as evidence of less than satisfactory experience has been accumulating in the developing world as well as the agencies that are engaged in assisting national efforts.

We began our review by examining the conceptual underpinnings of demand-driven extension approaches, whereby users of agricultural extension services are empowered, usually through their community structures such as farmers’ associations (of varying degree of formality of constitution) or other associations that bring people together over shared interests, to influence what is attempted and how it is achieved in such service systems. The organizational structures represent vehicles for bringing social capital and engaged linkage to help in the delivery of information and other services that can be provided through advisory endeavor. The key rationale in pursuing such approaches is to overcome the theoretical and practical challenges inherent in the design of traditional public extension models, typically conducted by agencies located within a ministry of agriculture. The essence of the “demand-driven” approaches is to make extension workers accountable to the users of the services, and to enable beneficiaries to articulate well their needs and get them attended by extension providers, and more directly to be aware of and reactive to the effectiveness of delivery. Since user beneficiaries may not be fully conscious of the opportunities available, there is an element of faith or hope (bolstered by appropriate institutional design and implementation) that the providers will indeed be able to deliver cogent information in timely and effective manners.

It should come as no surprise, especially after much of the discussion in the early sections of our review, that the reality of recent experience with CBE approaches to delivery of agricultural advisory services, as reviewed in the final section, finds them to be somewhat lacking in terms of having successfully overcome all the problematic features of extension delivery in the past. In our review, of the unfortunately rather few cases where performance has been relatively carefully studied, we find that elite capture, at least to a significant extent, is “alive and well”. An accepting realist might say “Life is unfair, and since this is so, it will stay this way!” Certainly, the evidence from CBE in situations as different as those of Uganda, Indonesia and Vietnam where deliberate design efforts sought to empower all in the extension effort, the better-off did better than the less advantaged.
The experience has not been much better in having the empowered farmer beneficiaries be successful in setting the extension agenda and “supervising” delivery of desired services. For instance, articulating farmer priorities and getting these into extension work-programs was a central design feature of NAADS in Uganda but this was seriously compromised in implementation both because of influences that might be called political, and because on bureaucratic constraints on devolving authority to the village-based farmer group. The experience with the pilot phase of the ATMA model in India in this respect may have been better, perhaps because of the greater number of checks and balances incorporated in the arrangements for ATMA governance combined with proper training of staff involved. The disappointing experience of the same model at the scaled-up phase points out that the conclusions derived from a relatively small (in the Indian context) pilot cannot be simply extrapolated.

A related aspect of farmer empowerment is in implementing farmers’ control of service providers’ contracts. This is evidently an aspect that requires considerable administrative imagination and novel mechanisms that have seemingly yet to be forged effectively, given the experience overviewed in section 4. Part of the challenge for CBE derives from the problem, often encountered in developing countries, of a chronic shortage of competent potential service providers. The important role for public investment here is largely one of providing resources and mechanisms for training cadres of extension workers with relevant skill mixes, not an easy thing to do with the educational facilities available in many countries.

Altruism extends only so far in service delivery of any sort. With the frequently experienced problems of timely availability of adequate funds to support CBE activities as desired and demanded by community or farmer groups, there have been many frustrations in the studied CBE endeavors. These difficulties were common in plaguing the traditional publicly delivered extension services of recent decades but to the extent that CBE is dependent on such flows of public resources, especially those coming down from national budgets, these realities are just as damaging, in terms of efficient public spending, for CBE-type delivery systems.

Top-down thinking is hard to shake off among those accustomed to its lures, or so it seems in the cases studied. Deep-seated cultural attitudes are surely important features of the challenge of effectively empowering farmers and changing mind-sets of extension workers ostensibly working on their behalf. To summarize these various challenges in the experience, CBE, in spite of its promise, is no panacea! There are important knowledge gaps yet to be filled, especially as revealed in our short terminal section on the limited econometric evidence supporting understanding and public debate on investment in agricultural extension, and so we conclude our short review with the inevitable academic call for further research in this surely important area of investment for agricultural and economic development.
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