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A REVIEW OF SUSTAINABLE FINANCING OF EXTENSION SERVICES IN DEVELOPING COUNTRIES

Paul E. McNamara, University of Illinois at Urbana-Champaign

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USAID
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A REVIEW OF SUSTAINABLE FINANCING OF EXTENSION SERVICES IN DEVELOPING COUNTRIES

MEAS Discussion Paper Series on Good Practices and Best Fit Approaches
in Extension and Advisory Service Provision

November 2014

Author:

Paul E. McNamara,
University of Illinois at Urbana-Champaign



“The quality of spending to agriculture is more important than the overall level of spending.”

Akroyd and Smith, 2007, “Review of Public Spending to Agriculture,” p. 20

**“...most donors have a strictly ahistorical view of development
and they lack an institutional memory.”**

Eicher, 1989, “Sustainable Institutions for African Agricultural Development,” p. 12

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Note from the Editors

The Modernizing Extension and Advisory Services (MEAS) discussion paper series is designed to further the comparative analysis of and learning from international extension efforts. The papers contain a review of extension and advisory services best practices drawn from the global body of experience in successfully reaching resource-limited farmers. The papers identify the underlying principles associated with high levels of success in reaching women and men farmers and how, in differing contexts, these core principles have been successfully adapted to fit local conditions in establishing productive, profitable and sustainable relationships with individual producers, producer groups, the private sector, and associated research and education institutions.

The series includes papers on a wide range of topics, such as the realities of pluralistic extension provisioning, sustainable financing, the role of farmer organizations, linking farmers to markets, the importance of gender, use of information and communication technologies, and climate change adaptation. The papers target policymakers, donor agency and project staff members, researchers, teachers and international development practitioners. All papers are available for download from the MEAS project website, www.meas-extension.org.

The editors,

Brent M. Simpson, Michigan State University

Paul McNamara, University of Illinois at Urbana-Champaign

1. INTRODUCTION

To feed a growing population and to reduce rural poverty, most developing countries have some type of extension system in place. Often the extension system is the dizzying mix of a public sector system with extension and advisory services delivered by non-governmental organizations (NGOs), extension-like services provided by private sector businesses in the form of advice and training from input dealers, and market and input access provided by outgrower schemes of large farms. The extension system is predominantly a public sector system in some countries (Vietnam, for example), while in others the role of NGOs appears to predominate; thus, there is no singular typology of pluralistic extension system that describes all developing countries. For development planners and analysts, particularly at the level where decision-makers consider agricultural development policy and strategy within a country, it is critical to ask, “How is it best to finance extension activities?” Answering this question well within a given country is key to having a sustainable system of extension that delivers essential extension services to the targeted groups to meet country agricultural development goals.

Finding solutions to sustainably financing extension consists of much more than simply asking how many funds should be channeled into the public sector system through both NGOs and private sector input dealers. The financing question also concerns how funds ought to be allocated within the public sector, how the flow of funds is designed, how the funds are controlled, and how they are linked to extension programs and activities. Though staffing costs and major capital expenditures (office, demonstration plot development, and vehicles) receive much of the attention in projects, the question of budgeting and access to funds for recurring expenditures within public extension systems (expenditures on items such as fuel, telephone and internet access, electricity, water, supplies for demonstration plots, farm laborers, vehicle repairs, and extension teaching supplies and materials) also impacts the sustainability of financing an extension system.

The financing question often receives attention for the wrong reasons and in the wrong way. Some within the agricultural development policy community have noted the weaknesses and failures of public extension and have thereby advocated for the private sector provision of extension services. Similarly, some development advocates have supported community-based extension services as the most appropriate way forward (farmer-led, farmer control of programming through vouchers or other mechanisms of extension services delivered to their farmer organizations, etc.). However, agricultural development researchers and analysts appear to agree that a “one-size fits all” approach does not exist for extension structures (Birner, et al. 2006), and by corollary, for extension financing.

This review examines the arguments and evidence concerning the various solutions to financing agricultural extension (as well as nutrition and health extension) programs in developing

countries. The intention of this review is to summarize lessons that we can draw from relevant literature in order to refine the country strategies for extension policy makers and agricultural officials.

The structure of this review paper is as follows. The next section (section 2) reviews the current state of financing extension services in developing countries and highlights some of the leading issues. Section 3 reviews the economic literature and research literature on extension, detailing key lessons from theory and previous experiences for designing the financing of extension services. Section 4 describes the variety of different financing approaches observed at the present time and summarizes the evidence concerning these approaches to financing. Section 5 reviews the roles of the private sector, the public sector, the community, and issues such as contracting out and contracting in for extension services. Section 6 outlines a research agenda regarding the financing of extension programs in developing countries. A concluding section wraps up the review.

2. THE PRESENT CHALLENGE FACING FINANCING EXTENSION SERVICES

Extension services in developing countries face a number of financial challenges. The challenges include a generally low level of support for agriculture in government budgets and in donor-supported aid programs. Even where agriculture receives increased attention, most often relative to research, agricultural extension programs come in second with respect to budgetary support. A second financing challenge is the *projectization* of finance for agricultural extension in many countries. In these countries, a high proportion of the extension activities delivered in the country, whether by public sector extension employees or by NGO or private sector providers, are financed through project finance vehicles. This raises concerns about project sustainability and the national government's ability and intention to support services over the long run. A third widely observed theme is the recurrent cost problem in agricultural extension, where national governments budget and pay for the costs of bringing in extension employees and of building offices (often through capital expenditures paid for by agricultural development projects), but the recurring funds needed to pay for ongoing program delivery costs (fuel, educational material and supplies, in-service costs, etc.) do not make the annual budget. In some cases budgets include funds for these operational costs but are diverted for other purposes or stolen by senior officials. A fourth financial problem facing extension in many countries concerns the politicization of extension services. Within extension bureaucracies in which political favors become very important and positions are allocated upon the basis of party influence or other political criteria, financial controls often fall by the wayside, with resources being channeled into extra-budgetary activities.

The fifth constraint facing extension finance occurs when the traditional and expected links between budgetary resources and performance of extension program duties break down in

certain extension systems, either because of politicization, corruption, or due to limited capacity and managerial ability. All of these issues pose a grave threat to the long-term sustainability of financing for an extension system within a given country.

3. DEFINITION OF EXTENSION SERVICES: PLURALITY AND VARIETY

A clear statement of the definition of extension and a shared understanding of the breadth and variety of extension programs makes a useful starting point for a discussion about sustainable financing of extension programs and activities. Extension is about human capital-enhancing education and training, usually delivered in non-formal settings for adult learners. For the purposes of this paper extension and advisory services includes adult education efforts across the four main extension approaches (Swanson and Rajalahti, 2010, p. 2), namely: technology transfer such as the Training and Visit (T&V) system implemented broadly in the 1970s and 1980s; advisory services that seek to answer farmer queries about practices or market conditions; non-formal education such as the Farmer Field School approach to teaching integrated pest management and helping farmers organize into groups (self-help or farmer groups); and facilitation extension which aims to organize farmers with similar aims into groups to meet farmer and group interests. Each of these extension approaches has some role to play in a well-functioning agricultural extension system. However, in many cases it is necessary to transform the system to emphasize facilitating roles of working with producer groups in helping them achieve market access and develop new agricultural practices and enterprises.

Furthermore, this paper takes as a given that in many countries if not all, delivery of extension and advisory services takes place from a plurality of actors, including the public sector (especially through a national extension service), the private sector (seed dealers and agro-vet suppliers, fee-for-service extension providers, extension contractors with government or NGOs, and extension agents employed by private company out-grower programs and contract farming operations), and local and international NGO providers. An important distinction concerning private sector providers concerns the financing of their work. In many cases, private sector providers of crop advisory services or vet services receive their payment through product sales or marketing margins and in no way rely on the public budget for their funding. In other cases, private sector extension providers serve as contract providers of services to farmers or farmer groups with their payment provided by government or by a foreign aid project. In the latter case, the public sector usually provides an ongoing role of coordination, contract monitoring and continued approval of payments.

So while extension might include training on the proper application of fertilizer, the provision of the fertilizer itself is not an extension activity. Furthermore, while Ministry of Agriculture (MOA) extension service staff might collect agricultural survey data to generate estimates of crop yields for national productivity estimates, this survey activity is not an extension activity. Much of the

debate about public and private roles surrounding extension in some countries appears to center on activities that are not extension activities.

Another important factor for defining extension systems is that of outputs and goals. In most developing countries with a pluralistic extension system involving a multitude of service deliverers, multiple goals are attributed to the system. Often the system is charged with boosting food security and agricultural productivity. Reducing poverty and strengthening the livelihoods of the small-scale men and women farmers and rural landless people are also often requested. In addition to these stated goals, all providers of extension system services have supplementary goals or objectives. Public sector extension usually experiences political pressures since they serve as the face of the government in rural districts and respond to requests to the MOA. Additionally, public sector extension systems have traditionally been pressured to hire people and provide employment. Private sector providers have a distinct commercial interest in their service provision. If the services are funded by sales, then product sales become the determinant of continued services. If there is little to no prospect of sales, then most private sector input dealers will curtail visits. Similarly, advice and training provided by private sector input dealers will be tailored to the sales of their product. In some cases comparisons will be made, but a clear commercial interest exists and is usually displayed in the nature of the provided advisory services.

4. CONCEPTUAL FRAMEWORK

This paper employs concepts from public finance and agricultural extension literature in international development to create a framework for assessing the sustainability of various modes of finance for extension programs. The key elements include understanding the diversity of extension efforts that exist in any given country and the perspective of the economic return to social investments used in economic development project and program appraisal and evaluation. Additionally, insights from institutional economics and public finance on the economic nature of the service being provided in an extension program or activity is crucial to this framework, as well as insights from the political economy of finance policy in developing countries.

PUBLIC GOODS AND PRIVATE GOODS

According to public finance theory and welfare economics, the way in which extension services ought to be financed depends upon the type of goods that actually make up the services. If a service or product displays the characteristics of a public good, then it is non-excludable and non-rival, meaning it is not possible to exclude people from using the good, while consumption of it does not hinder others from using it. These qualities prompt a strong economic rationale to provide public funding for the service.

Extension services vary as to whether they qualify as public goods or private goods. In determining whether an extension activity is a public good, economists examine the service to determine if it is excludable and rivalrous. When the service is excludable, it is possible to keep non-payers from benefiting from the service, and when one person's consumption of the good or service reduces another person's consumption or chance to consume, it is rivalrous.

In the context of agricultural extension services in developing countries, different types of goods exist. For example, agricultural information concerning market prices or weather information displays non-excludability and non-rivalry – a good example of a pure public good. On the other hand, field-specific information or agricultural business-specific information, teaching, or coaching can exhibit rivalry and excludability. This information could also be categorized as a toll-good, as it could easily exclude potential customers. With high excludability and low rivalry, soil testing or fertilizer recommendations for a specific farm can be seen as examples of toll-goods (Umali-Deininger, 1996).

In a first-best world of free trade where private markets exist and operate efficiently, the typology of government provides pure public good extension services (or funds their provision) and the private market handles the cases of toll goods (perhaps with regulation provided by the government). However, in agriculture within developing countries, inefficient markets for information services and significant market failures are prevalent (Birner and Anderson, 2007, p. 4). One significant market failure in agricultural extension is the lack of information on the gains producers may realize from engaging with extension. Often farmer expectations are far from reality in terms of what benefits they might receive from participating in an extension program. Additionally, serious payment ability and equity issues, particularly in terms of access that the most poor and vulnerable farmers have to extension services, arise that call into question the ability of the private market to generate a politically sustainable solution.

Another key concern to address is to determine who actually delivers the service. For training and education on fertilizer use, an input supply dealer might provide the training to farmers who are likely to be able to pay to purchase fertilizer. There are a number of extension service providers that might deliver the service for organizing a farmer group, namely the government extension service, a local or international NGO, or a private company or consultancy like the FNC (Box 1).

Box 1. The National Federation of Coffee Growers (FNC) Extension Services – Colombia

The FNC is one of the oldest rural private-public partnerships in the world, representing and advocating for the interests of Colombian coffee growers and producers to ensure fair wages, policies, and working conditions. The FNC provides nationwide extension services with over 1,000 extension agents giving technical assistance, support for accessing credit, and social services across Colombia. Organized by coffee growers for the interests of coffee growers, the FNC has extension services in 17 states of Colombia serving 560,000 mostly smallholder coffee growers within the FNC. This project had the largest number of impacts on farmers out of any MEAS assessment. Though the FNC does partner with governmental, private, and non-governmental organizations to execute their programs, it is a private-sector entity and functions as one.

(Mueller, Benjamin C., Miguel I. Gómez, and Katie Ricketts 2013)

Another dimension relevant to financing agricultural extension services is the nature of the service and work itself. While some agricultural extension services, such as publicly broadcasted market information as well as other widely low-cost disseminated information with low “touch,” (information that can be handled with few people and technology), most agricultural extension systems involve many staff and many more clients in the form of individual farmers, farmer groups, and farmer organizations. The bureaucratic structure of the extension program at scale usually involves a large number of widely distributed staff. Similar broad systems usually include primary education and front-line public health services. Pritchett and Woolcock (2004) explain how agricultural extension systems necessarily include a component that involves face-to-face or personal communication with farmers; this type of communication is transaction intensive and requires a high degree of discretion on the part of the extensionist. They emphasize the degree to which the transaction is idiosyncratic and the challenges this places on ensuring performance and quality of services. Furthermore, while some technologies can help monitor performance and hopefully improve quality, the impact of such monitoring technologies has not been measured (to my knowledge) and they are not widespread (for example, photo documentation of field worker visits with time and location stamps).

The feedback and complementary nature of extension is another potentially important quality of a functioning extension system. Here observers note the possibility that information flows back from farmers into the research system or into the MOA concerning farmer needs and desires (Birkhauser, Evenson, and Feder, 1991, p. 608). Such a feedback loop could improve the quality and impact of an agricultural research program and better target other government programs.

Lastly, there is the issue of extension services as merit goods (Box 2). In the United States, Food Stamps or coupons targeted at low-income families meeting certain criteria are often justified on the grounds of being a merit good. That is, no child should be left without sufficient food and, hence, the Food Stamp

Program meets that need. An argument can be made on merit good grounds that extension services, particularly those targeted at the rural poor, at women farmers in many societies, and at other marginalized groups, should be provided despite the lack of ability to pay or willingness to pay to sufficiently cover the costs of delivering an extension program.

Box 2. Merit Good

A good that an individual, a firm, or society should receive on the basis of need, not on willingness to pay and not on the ability to pay.

ECONOMIC RETURN APPROACH TO EXTENSION FINANCING – SOCIAL INVESTMENT

Before financing any investment, investors usually consider factors such as the risk and the rate of return they can expect. Before people consider how best to finance an investment, a discussion of the nature of the investment structure and returns must occur. The economic approach to evaluating public or social projects and programs involves calculating the social return to funds invested in the program or project. Typically, a calculation of the benefit-to-cost ratio is produced and a formula that examines the sum of discounted social investments and returns is employed:

Figure 1.

$$NPV = \sum_{t=0}^T \frac{R_t}{(1+i)^t}$$

In this framework, t denotes the time period and T denotes the ending period of the project or program. R refers to the net social benefits of a program and it is referenced for specific time periods t . The net social benefit is discounted to adjust for the time value of funds and i refers to the interest rate. In some project and program evaluations, the net benefits are further identified to account for targeting considerations; they are also identified to weight the results in order to differentiate between welfare gains achieved by the poorest or most vulnerable and higher earners in society (welfare weights). Usually economists calculate a social rate of return for extension and report it as a ratio of benefits to costs. In calculating costs, the value of all the resources utilized in the program should be measured, including donor-funded and privately contributed services and resources (seeds, equipment, etc.). On the benefit side, the complete set of benefits should be measured, including benefits that occur long after the program is over or the project has been completed. Many successful international development programs generate long-lived streams of benefits; for example, the program to develop a farmers' vegetable marketing cooperative in Nepal organized in the 1970s as part of an agricultural

development project is still delivering significant benefits to its more than 900 members outside of Kathmandu. If evaluators consider only the benefits within the project time period, they may significantly underestimate the real benefits provided by the extension activity.

The social return to investments into extension approach raises several important questions about extension and extension financing. What are the costs of delivering an extension program? What are the costs necessary to produce certain levels of benefits? What is the range of benefits produced by an extension system? Can they be quantified? What is the time frame on benefits? What discount rate should be used? Do knowledge spillovers occur? To what extent do they occur? Overall, is the investment into extension worth it? Does it produce enough value to justify the expense? What factors influence the level of benefits possibly produced by an extension system?

Birkhauser, Evenson and Feder summarize the body of economic analyses of agricultural extension programs and report estimated rates of returns. They report rates of return in developing countries that range from the negatives (one study) to greater than 500 percent. The majority of the reported estimates ranged from 13 percent to 80 percent (1991, p. 642).

Alston and co-authors (2000) present a meta-analysis of rates of return to agricultural research, reporting means, median, and mode values of the estimates of returns to extension and agricultural research. They find a 62.9 percent median rate of return for extension analyses compared to a 48.0 percent median rate of return for agricultural research. These estimates all concern research and extension on major staple crops and thus represent research on a subset of extension practice.

If the rates of return to agricultural extension programs in developing countries are in the range of 20 percent to 80 percent, then a troubling puzzle arises: why the lack of support among policy makers and donors for extension programs? Why the lack of budgetary support within developing countries for activities which can demonstrably boost national incomes?

In terms of evidence on rates of return to investments into extension, additional research with carefully constructed control groups and counterfactuals would strengthen the evidence base for extension. Rigorous research is also needed on the rates of return from extension delivered by different types of implementing agencies and financing and organizational structures. There is a need for impact studies and evaluation research that utilize randomized roll-outs of extension programs and carefully constructed quasi-experimental designs to build the evidence base regarding the nature of the value of agricultural extension (and nutrition and health extension) programs. Furthermore, there is a need for careful economic evaluations of extension programs

that are not in the area of primary crop production and extension. For example, useful quantitative analyses of extension efforts include topics like natural resource management and conservation measures, as well as on extension efforts that link farmers to markets or help to form new farmer groups for training and joint business activities. Additionally, research is needed on the targeting and impact extension efforts have on poverty, as poverty targeting is not often reported in the literature.

DEMAND FOR INFORMATION – WILLINGNESS TO PAY FOR EXTENSION INFORMATION AND SERVICES

Another aspect of the framework for analyzing the sustainability of finance for extension services concerns the demand expressed by farmers for extension services. Economists generally qualify this demand as the farmer's willingness to pay for extension information or extension services. Conceptually, this translates to the amount the farmer would be willing to pay for an extension visit or some other unit of extension service. Of course, this is an abstract notion, but there are examples of willingness to pay both in research studies and extension program experience with user fees and cost sharing. One important use of this information is to equate it with the marginal cost of providing the extension service that comes up with an estimate of the optimal or efficient level of extension service provision, under the assumption that extension does not carry merit good attributes or that other market imperfections do not affect the analysis. For example, if the willingness to pay was estimated to be above the marginal cost of provision for services, this could suggest a need for expanded services. If the marginal cost of provision was estimated above the willingness to pay level, extension policy makers might seek out means to increase the value of extension services to farmers or to better target extension services and reduce the services provided to farmers that are unlikely to value them highly. Additionally, information on the willingness to pay can illustrate what types of farmers are likely to receive services if services are privatized. It also shows which farmers are not likely to be able to pay or willing to pay.

Holloway and Ehui (2001) offer an estimate of the willingness to pay for a one-visit increase in the number of extension visits, using milk cooperative marketing data from Ethiopia. Through using milk production and marketing data on 168 milk marketing households and an inference from the relationship of extension visits to market participation, they estimate the willingness to pay by using an econometric regression model. While they find a wide dispersion in the values of willingness to pay for a one-unit increase in extension visitation, they estimate providing a unit of extension service to cost 2.14 Ethiopian Birr; they estimate 65 of the 168 households to be willing to pay that amount. They conclude that at least partial privatization may be possible in this case, as a significant fraction of the milk producers are willing pay the extension service cost. However, they do not report the description of the producers who had an estimated willingness to pay beneath the cost level, and we might conclude that these farmers were more likely to be smaller-scale, less productive farmers and poorer farmers. The willingness to pay highlights a

critical point: willingness to pay is not only a key aspect of any private-sector financing based on user fees or producer contributions, it is also a function of ability to pay. While a privatized system may be sustainable and self-financing, as the Holloway and Ehui research shows, a significant fraction of the producers are not willing to pay to sufficiently cover the cost of the service. In a high poverty context, does extension aim to reduce poverty along with increasing agricultural productivity? If so, then a purely privatized system is likely to leave many producers behind, which means the poverty reduction goal may not be met.

Dinar and Keynan (2001) and Keynan, Olin, and Dinar (1997) analyze a pilot program for extension service payment implemented in Nicaragua in 1996. The program was not designed to precisely measure farmer willingness to pay for extension services; it was instead designed to increase quality and responsiveness (demand-driven) in the extension services delivered and to measure farmer willingness to pay some charges for extension services. Farmers committed to paying a bonus to the extension agent, which created a linkage between service quality and the direct relationship between the agent and farmer. In the first year of the program Keynan, Olin, and Dinar (1997, p. 239) report, “Farmers paid more than 60 percent of their fees within a reasonable time...indicating that they were willing and able to pay.” They also report that remaining balances were paid over time and all 17 farmer groups continued the program the following year (1997, p. 240). They conclude that the program generated the desired impact on extensionists, and the agents sought out additional clients and were more responsive to client needs. Further, extension agents changed in desiring to obtain additional trainings to desiring to be in the field. Management encouraged this by introducing a rule that training would be permitted no more than two days per month.

To sum up, while the quantitative research base is quite limited regarding farmer willingness and ability to pay for extension services (of different kinds), some evidence exists that farmers are willing to pay and able to pay limited amounts, perhaps just not the full cost. However, some farmers, especially poorer farmers and smaller scale farmers, may not be able to afford payments unless they are structured so the farmer is not required to pay up front and farmer risk does not substantially increase through the payment. Furthermore, some farmers, including many of the most vulnerable farmers, may not be able to perceive *ex ante* the benefits and value of the services they might receive, thereby creating an informational market failure in the provision of extension services. This phenomenon is likely to be present in situations where extension services suffer from a history of poor performance and a lack of trust with farmers and client groups. More research regarding farmer willingness to pay in different settings, different topical emphases, and in different organizational and contractual structures would contribute to our understanding of farmer demand for extension services.

POLITICAL ECONOMY OF FINANCING

The framework for analyzing extension system financing must also contend with the political economy that controls budgets and finances within the agricultural sectors of developing countries. Literature and observers emphasize three main themes towards understanding extension budgeting and financing: (1) the recurrent cost problem in public extension; (2) the projectization of extension efforts in developing countries; and (3) the politics of spending within agriculture.

The recurrent cost problem in agricultural extension concerns the phenomenon of agricultural agents on staff at the MOA who are charged with serving farmers, yet neither fuel nor properly operating motorbikes are available for their use. Additionally, little funding from the MOA is available for purchasing supplies and seeds for farmer demonstration plots and teaching plots at extension centers. Further, the MOA does not provide funding for curriculums and supplies, while the only teaching materials available come from a project that closed several years ago.

Heller (1979) explains the recurrent cost problem as having three primary causes. First, since recurring costs are financed out of the recurrent budget and capital expenses are generally seen as “development expenditures”, both donors and country governments have an incentive to limit expenses. Second, the mix of recurrent costs resulting from development project expenditures will depend on the types of investment engaged. A road or a dam will require a lower rate of recurrent spending when compared to a school or development training center, both of which require a significant staff complement and set of inputs (i.e., books, demonstration supplies, etc.). Third, competing claims within the overall budget can easily crowd out such expenditures as supplies and fuel. Developing country governments face strong pressure to employ staff and avoid layoffs. Given these incentives, it is not surprising that funding for program-operating expenses are often deficient.

Gray and Martens (1983) analyze the political economy of the recurrent cost problem in the West African Sahel and they report serious gaps in government support for the operating and maintenance costs of development investments. They claim that governments tend to place a high opportunity cost on locally generated public funds from taxes and a correspondingly low opportunity cost on donor funds.

The projectization of agricultural extension refers to a state of affairs in the Ministry of Agriculture where all the viable and active ongoing extension efforts exist under the umbrella of a donor-funded development project. This is a phenomenon present in many low-income countries with substantial aid inflows, existing for a number of reasons. In countries with substantial donor-funded agricultural development projects with an extension component, the MOA may dedicate its best staff resources to serving key projects to optimize project performance and ensure a continued flow of funds or chance for renewal or follow-on project. A good example of this is the ADVANCE Program in Ghana (Box 3). As one very senior MOA official related to me when I queried why they had moved a large number of staff to a district with a substantial donor-funded agricultural development and extension project, “You put your best people in that area and on the project to ensure it performs.” The MOA prioritized high performance on the project and a continued close relationship with the donor. The donor-funded project brought the MOA opportunities to second its line staff with secondment pay and brought in funds for the delivery of the extension program in that geographic area. Despite the MOA’s stated desire for a strong national plan, the best strategy available with their limited budget is to use the donor-funded projects to deliver extension services in the areas the donors have targeted.

Box 3.
ADVANCE
Creating
Access
through
Private-
led
Extension
in Ghana

As part of the Agricultural and Value Chain Enhancement (ADVANCE) Program, Ghana’s agricultural sector is being transformed in the northern rural population through staple maize, rice, and soybean crop improvements. The volunteer and staff consultants connect farmers to markets, finance, inputs, information, and equipment services as part of ADVANCE’s value-chain approach, which increases the efficiency, and therefore the capacity, of smallholder farmers through better production and post-harvest handling practices. Led by ACDI/VOCA, a consortium of local and international partners implements the ADVANCE Program, USAID funds ADVANCE as part of the Feed the Future strategy.

One local commercial farm enterprise, Zocoffams, exemplifies how ADVANCE increases efficiency to help local businesses succeed. After more than ten years providing inputs and plowing services to farmers, Zocoffams received technical support from ADVANCE and was able to develop a business plan so they could access hard-to-reach markets. They applied for and, because of their strengthened business foundation, received a loan to invest in machinery replacements for inefficient tractors. The surge in growth and new partnerships with private investment groups is leading Zocoffams to build connections with smallholder farmers, providing them with input and plowing services that grow their farms as businesses. (ACDI/VOCA 2014).

On the plus side of this phenomenon, it must be recognized that in many of the countries no pool of available, trained, and experienced agricultural extension talents exists that is as large and as

deep as in public sector extension. While more qualified extension personnel exist in the NGO sector in some countries, in many countries the public sector agricultural extension staff is available and qualified to work on a variety of agricultural extension efforts. Furthermore, many donors relate directly to the host country government, and the MOA has great incentives to involve its staff in the projects as much as possible. The downside of the projectization of agricultural extension is that a coherent national extension program or approach is not implemented. Also, a patchwork quilt of donor-funded projects tends to stifle the development of solid institutional capacity, as different projects emphasize various extension approaches and methodologies. In meetings concerning the structure and performance of a particular country's agricultural extension system, the senior World Bank official responsible for agriculture remarked that the MOA no longer had an implemented policy or approach to extension that figured centrally in its programming; instead, projects are driving everything in the country's agricultural extension system. Larger countries and countries with higher incomes that are less dependent upon donor aid flows may not face this issue, but it appears to be a significant concern in many of the poorest countries.

The insight from the politics of policy and finance within the agriculture perspective is that while the MOA has a stated commitment to farmers, other politically powerful groups, including urban people, urban elites, senior elected officials and party officials, and civil servants, exist and exert influence on the policymaking process within agriculture. The political scientist Robert Bates (see Bates, 1981 for example) has emphasized the derived nature of food policy in Africa, stating, "Choices made with respect to food production are to a high degree made to serve the interests of groups other than the producers themselves (p.147)." A similar political analysis can be made of extension programming in its structure and financing. At the least, this mode of analysis highlights the real interests and power of groups such as civil servants, elite and politically connected farmers, small-scale farmers, agricultural associations and cooperatives, agro-industries, and other groups. The resulting approach to extension financing will come out of a political process; it is doubtful that the outcome will represent the maximization of the interests of small-scale farmers, given the constraints that civil service and larger scale, more politically connected farmers can place on the process. This may play out in extension financing through influencing civil service staffing and placement, especially in countries with a large capitol city and a widespread and remote rural area, with small towns or cities as District or State seats. The staffing pattern will be influenced by these politics, as many civil servants will prefer to have their families in the capitol city for its higher standard of living and education even though much of the work is centered in the rural areas. Similarly, the political lens might suggest the enduring presence of the distribution of subsidized inputs in the portfolio of MOA programs and activities. Lastly, the political lens helps explain the extreme reluctance of MOAs to trim staff in order to finance operating and maintenance expenditures, even in cases where so little funds for operating are available that the program appears to be moribund.

The political economy lens adds to the economic framework for analyzing extension financing in developing countries; we can glean understanding through considering political groups, political processes and functions, as well as the incentives and outcomes that arise from these forces. The political economy approach helps explain factors such as the recurrent cost problem, challenges in staffing and structure, and other factors related to extension financing.

INCENTIVES, MECHANISM DESIGN, AND INDUCED INSTITUTIONAL INNOVATION – FINANCE AND PERFORMANCE LINK

The quality of extension activities and programs is likely as important as the amount of money flowing into extension programs (Akroyd, Stephen, and Lawrence Smith, 2007). Therefore, attention should be placed on the implicit contracts and arrangements in place in extension programs with workers and supervisors and farmers and farmer groups. Do these arrangements, flows of payments, reporting structures and controls serve to increase farmer-responsive extension programming? What are the incentives for performance and quality of services delivered? What control programs are in place to ensure funds go to their intended uses? Anderson and Feder (2004) discuss the phenomenon of weak accountability within large public extension bureaucracies. As a result of the fact, they state, “The effectiveness of extension activities cannot be easily established and performance is measured in terms of input indicators, field staff are generally not held accountable for the quality of their extension work and are often able to shirk on quantity as well” (Anderson and Feder, 2004, p. 47). A critical challenge for sustainable financing of extension services, similar to the challenges faced in other large-scale distributed services in developing countries (like primary health care and public health services or primary education), is to develop financing innovations that enhance accountability and holistically attempt to pervert the intention of higher productivity.

5. ALTERNATIVES FOR FINANCING EXTENSION SERVICES

A wide variety of options for structuring and organizing the financing of agricultural extension services exist. We see the range of options displayed in different countries, and in some countries many types of financing exist side-by-side. Birner and co-authors (2006) developed a useful table describing the variety of options seen in extension financing (Figure 2 below).

This table categorizes the extension financing options across sources of finance and providers of the service. The table simply points out the variety of options. Information about the relative importance and the relationship between financing options and extension performance or other indicators are available.

Figure 2. Matrix of Options for Providing and Financing Pluralistic Agricultural Advisory Services

Extension Delivery Channel	Source of finance for the service				
	Public Sector	Farmers	Private companies	Non-governmental organizations (NGOs)	Farmer-based organizations (FBOs)
Public sector	Public sector extension services with different degrees	Public sector extension agents with farmers paying fees	Public sector extension agents hired by private companies	Public sector extension agents hired by NGOs	Public sector extension agents hired by FBOs
Private Companies	Publicly funded contracts or subsidies to private service providers	Private service providers hired and paid for by farmers	Information provided with sale of inputs	Private service providers hired and paid for by NGOs	Private service providers hired and paid for by FBOs
Non-governmental organizations (NGOs)	Publicly funded contracts or subsidies to NGO providers	Extension agents hired by NGOs, with farmers paying fees		Extension agents hired by NGOs as a free service to farmers	
Farmer-based organizations (FBOs)	Publicly funded contracts or subsidies to FBO providers	Extension agents hired by FBOs, with farmers paying fees		Extension agents hired by NGOs and paid for by FBOs	Extension agents hired by FBOs as a free service to farmers

Source: Taken from Birner, et al. 2006, adapted from W.M. Rivera, "Agricultural extension in transition worldwide: Structure financial and managerial reform strategies," *Public Administration and Development* (1996 Vol. 16: 151-161) and J. Anderson and G. Feder, "Agricultural extension: Good intentions and hard realities," *World Bank Research Observer* (2004 Vol. 19, No. 1: 41-60).

Within the rubric of a pluralistic extension system, what financing options and alternatives figure most importantly? A wide variety of alternative structures and approaches to financing extension systems exist. Even the variety observed within the public systems around the world is more than many observers appear to appreciate, varying along the lines of decentralized control of finance, use of bonuses or performance-linked payments to agents, contracting in of donor-funded extension projects, and other practices. What follows in this section is not intended as an exhaustive list of all the variations observed in forms and implementations of extension service and activity financing, but an overview of the main types observed.

PUBLIC SECTOR FINANCED AND DELIVERED

The public sector remains the primary source of funds for extension services worldwide with the public sector extension services delivering the bulk of extension messages and activities worldwide. The most common approach appears to be a large, widely distributed extension bureaucracy with national geographic coverage that includes positioning extension agents at the

local level. Despite all the well-known criticisms of the centralized large-scale public sector extension model, the rate of return studies, cited above, refer to efforts by agencies structured broadly along these lines.

The centralized approach to the public sector system has been modified in a number of countries (India, the Philippines, Nepal, Uganda, and others) to have funds flow to district and other local government levels and then put into agricultural extension services, such as with the Agricultural Technology Management Agency (ATMA) in India (Box 3). The promise of decentralization is for improved accountability and a means of heightening the responsiveness of the extension system to farmers and their local representatives. However, decentralization is not a panacea and, as Anderson describes (2007, p. 14), can lead to pressures from local government and an increase in duties not related to agricultural extension or possibly local elite capture.

India offers a fascinating institutional innovation case in its implementation of ATMA, which was designed as a means to decentralize extension and make it more responsive to farmers while increasing the market orientation of extension (Anderson 2007, p. 15). Through the establishment of local Registered Societies (based at the district level) it sought to promote collaboration between government departments, enhance farmer input into the design and delivery of the extension program, and increase interactions and collaborations with private sector partners.

Box 3. Agricultural Technology Management Agency (ATMA) – Bihar

The committee members approve and oversee block action plans to make sure the planning process starts from the bottom and includes resources flowing from the top in order to implement them. Currently underway is the development of the Farm Information and Advisory Centers housed in e-Kisan Centers throughout the Bihar State. Over 135 centers have been established, with 534 planned in total (Simpson, Brent M. and Singh, Krishna M. 2013, p 9).

ATMA's job is to integrate extension programs across all government departments while linking research and extension activities within each district and decentralizing decision-making. ATMA's bottom-up approach is supported at the state, district, and block levels, beginning with the farmer advisory committee made up of about 16 members (at least 30% of which must be women) in each village.

(Simpson, Brent M., and Krishna M. Singh 2013).

PUBLIC SECTOR FINANCED AND CONTRACTOR DELIVERED

Another commonly observed structure involves the MOA financing (including the case where it uses donor funds on a project) extension efforts where a contractor (an NGO or a for-profit organization) delivers the service. In this case, the Ministry provides contract oversight and

oftentimes measures overall project coordination and performance against objectives. In Chile, the government moved to a contracting approach for extension where better-off farmers paid a fee for extension services and the government paid the contractor for services for the poorest group of farmers. The government demonstrates a significant administrative and managerial capacity if able to manage this process. In Uganda, they combined a decentralization effort with their National Agricultural Advisory Services (NAADS) and a contracting out of the provision of extension services to private contractors and NGOs (Anderson 2007, p. 16).

Box 4. National Agricultural Advisory Services (NAADS) - Uganda

NAADS - Uganda was a decentralized agriculture advisory service system owned and controlled by farmers and some private organizations. One of NAADS's efforts included the promotion of the Rice Development Program, which trained farmers to produce their own seeds rather than rely on purchased seed that dents their starting costs. They can use their own seeds to maintain a plot of rice seed and to kick-start grain for higher yields. Some farmers have already adopted this approach by successfully using their own produced seed, with 50% of those trained (7,051 farmers as of 2013) expected to add to this number (naads.org.ug). As of October 2014, the NAADS program was disbanded by the Government of Uganda due to reported poor performance and instances of corruption.



provide technical advice on seeds, fertilizer and chemicals, along with their use and application, planting times, harvesting techniques, and equipment. One example includes the One Acre Fund in East Africa (Box 5). Especially valuable aspects of these contracts and services include the

USER CHARGES FINANCED AND PRIVATE PROVIDER DELIVERED

Another model is the private sector provider, like a crops advisor in Europe or the U.S., who provides agricultural services and can make farm visits for a fee. This entirely private sector model has the benefits that come with a very responsive extensionist who is focused on ensuring repeat business from his/her clients. It is financially sustainable as long as the producers can afford to pay the fees and see the value for the services. A drawback of this approach is that many of the poorest farmers will forgo utilizing extension services because of their inability to pay, and if there is a poor agricultural year, many extensionists may have to leave the sector.

MARKETING MARGINS FINANCED AND PRIVATE PROVIDER DELIVERED TO OUTGROWERS

For higher value crops such as cocoa, palm oil, cotton, rubber, and others, private sector companies operating agricultural marketing businesses or processing plants often work with contract farmers or with outgrowers on a less formal basis than a written contract to

business knowledge and ability to connect with markets and intermediate with growers regarding the quality of produce that they facilitate. While everyone understands that the private sector firm that is providing these services has business incentives to control the costs of extension services` as well as the price paid to producers to a market level price, real benefits to producers do occur. The benefits include information about new technologies, access to market opportunities and marketing channels, and often credit for inputs such as fertilizer, seeds, and chemicals.

From both a public finance perspective and an extension policy perspective, research is needed to answer questions about relative contribution to extension objectives of public funds invested in facilitating these types of efforts compared to more traditional public sector extension programs. Public sector contributions in this realm include grants to outgrowers for capital costs such as the development of farm fields, berms on flooded areas for rice production, irrigation equipment, and fishponds. Anecdotal evidence concerning impacts exists in research literature, but rigorous quantitative evidence with sufficient statistical controls, useful for summative evaluation statements and comparative purposes, is not widely present.

The One Acre Fund is a private-led agriculture organization that provides extension services to more than 130,000 small-scale farmers in Kenya, Rwanda, and Burundi. By offering agriculture inputs like staple crop seeds and fertilizer, training on correct usage of farm inputs, credit, and harvest sales to connect farmers to markets, One Acre Fund helps farmers increase their incomes by 50-100% per planted acre. In 2013, each One Acre Fund farmer made \$139 more over the year than farmers not involved in One Acre Fund through working with 1,900 full-time staff.

One woman, Ruth, learned how to use fertilizer and correctly plant maize seeds with One Acre Fund in 2009. She yielded ten bags of maize in that first season and was able to feed her eight children for the entire year, with surplus. Ruth was able to sell the surplus and use the money to pay for her son Patrick's school fees.

(<http://www.oneacrefund.org/results>)

Box 5.
ONE
ACRE
FUND
East
Africa

6. KNOWLEDGE AND EVIDENCE GAPS REGARDING THE SUSTAINABLE FINANCING OF EXTENSION SERVICES

This review has sought to address the existing literature, particularly the published scholarly literature, on extension financing in order to assess the state of practice regarding the sustainable financing of extension programs and activities. In the course of the review, a number of knowledge gaps and areas were found where further research and evaluation studies would

contribute to our knowledge concerning best fit financing approaches, also providing evidence to guide agricultural development extension policy and implementation. Specific areas where more research is needed include:

- Randomized and rigorous quasi-experimental evaluations of large scale (and pilot) extension efforts that allow quantitative assessment of rates of return to extension, impacts of extension on poverty reduction, and impacts of extension on agricultural productivity;
- Research on the long-term sustainability of farmer field schools (Eicher 2007, p. 16);
- Quantitative and qualitative research concerning factors that influence extension agent performance and quality of extension services;
- Cost analyses, cost-effectiveness analyses, and productivity analyses of extension programs, including ICT efforts in extension, public/private partnerships, and farmer field schools;
- Studies of the impacts of natural resources and common property management extension programs, including in the areas of water management, forest resources management, and other common property issues;
- Evaluations of private sector extension approaches, including private service providers receiving fees directly from farmers, extension services provided by input dealers, extension services provided by farmer associations and cooperatives, and services provided by processors and marketers and buyers.

7. CONCLUSIONS

The existing literature on extension financing provides some guidelines and evidence on ways forward for best-fit approaches in sustainable financing of extension services. Some general themes emerge from the literature concerning the role of government in financing and provision of extension. In areas where the service regards a pure public good, a government role in the financing and possibly the provision of the service seems essential. In services that display the aspects of a “toll good” where some exclusivity can occur, private extension services seem feasible. However, many papers raise practical concerns about the limits of the private sector in financing and delivering extension services, particularly in the group of countries that are among the least developed, as well as among the small-scale and poorer farmers.

The existing literature appears sparse on high quality evidence on the impact of extension, rates of return of different extension investments, the poverty impact and targeting of extension services, comparative costs of reaching farmers via different extension methodologies, the importance of different innovations and variations in the design of extension system financial structures, as well as reporting and control mechanism designs. When comparing with

development literature in maternal and child nutrition, the quality of evidence and the sheer number of articles available in extension literature is lower. This is natural given the scale of extension systems and donor funding history of the past twenty years. Going forward, donors, governments, and agricultural extension researchers interested in the sustainable financing of developing country pluralistic extension systems should employ more quasi-experimental designs into reform efforts, focus attention on measuring impact as well as costs, and utilize natural experiments to learn more about the optimal design of financial structures for agricultural extension in various developing countries.

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